# 3.6. ENERGY RESOURCES

The following summarizes the applicable regulations and the existing setting and provides a detailed impact assessment related to energy resources. Refer to the Energy Resources Technical Report (Appendix G) for additional details related to applicable regulations and the existing setting.

## 3.6.1 Regulatory Framework

### 3.6.1.1 Federal Regulations

**Energy Policy and Conservation Act**. The Federal Energy Policy and Conservation Act of 1975 established the first fuel economy standards for on-road motor vehicles in the U.S. Pursuant to the Act, the National Highway Traffic Safety Administration (NHTSA) is responsible for establishing additional vehicle standards. In 2012, new fuel economy standards for passenger cars and light trucks were approved for model years 2017 through 2021 (77 Federal Register 62624–63200).

**Alternative Motor Fuels Act**. The Alternative Motor Fuels Act of 1988 amended a portion of the Energy Policy and Conservation Act to encourage the use of alternative fuels, including electricity. This Act directed the Secretary of Energy to conduct a study regarding alternative fuel vehicles' performance, fuel economy, safety, and maintenance costs and report to Congress the results of a feasibility study concerning the disposal of such federal vehicles.

**Intermodal Surface Transportation Efficiency Act (ISTEA)**. ISTEA, passed in 1991, presented an intermodal approach to highway and transit funding with collaborative planning requirements, giving additional powers to state and local transportation decision-makers and metropolitan planning organizations.

**Energy Policy Act**. The Energy Policy Act of 1992 was passed to reduce U.S. dependence on foreign petroleum and improve air quality. The Energy Policy Act includes several provisions intended to build an inventory of alternative fuel vehicles in large, centrally fueled fleets in metropolitan areas. The Energy Policy Act requires certain Federal, state, and local government and private fleets to purchase a percentage of light duty alternative fuel vehicles each year.

**Transportation Equity Act for the 21st Century (TEA-21)**. The TEA-21 was enacted in 1998 as the successor legislation to ISTEA and builds on its established initiatives. This Act reauthorized the Congestion Management Air Quality Program and authorized federal highway, highway safety, transit and other surface transportation programs over the next six years.

**Energy Policy Act**. The Energy Policy Act of 2005 includes provisions for renewed and expanded tax credits for electricity generated by qualified energy sources (i.e., landfill gas), provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification, and establishes a Federal purchase requirement for renewable energy called the Renewable Fuels Standard (RFS).

**Energy Independence and Security Act (EISA)**. On December 19, 2007, the EISA was signed into law requiring increased levels of renewable fuels (the RFS) to replace petroleum. The RFS program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the United States. As required under the Act, the original RFS program required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS program was expanded in several key ways that lay the foundation for achieving significant reductions in GHG emissions from the use of renewable fuels, reducing imported petroleum, and encouraging the development and expansion of the renewable fuels sector in the U.S.

**Light Duty Vehicles Standards**. On May 19, 2009, President Obama announced a national policy for fuel efficiency and emissions standards in the U.S. auto industry. The adopted federal standard applied to passenger cars and light-duty trucks for model years 2012 through 2016. The rule surpassed the prior Corporate Average Fuel Economy (CAFE) standards and required an average fuel economy standard of 35.5 miles per gallon (mpg) and 250 grams of carbon dioxide ($CO_2$) per mile by model year 2016, based on USEPA calculation methods. These standards were formally adopted on April 1, 2010. In August 2012, standards were adopted for model year 2017 through 2025 passenger cars and light-duty trucks. By 2020, new vehicles are projected to achieve 41.7 mpg—if GHG reductions are achieved exclusively through fuel economy improvements—and 213 grams of $CO_2$ per mile (Phase 2 standards). By 2025, new vehicles are projected to achieve 54.5 mpg and 163 grams of $CO_2$ per mile, a reduction of approximately 50 percent relative to 2010.

On September 27, 2019, the USEPA and the NHTSA published the “Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program” (84 Federal Register 51310 [September 27, 2019]). The Part One Rule revokes California’s authority to set its own GHG emissions standards and set zero-emission vehicle (ZEV) mandates in California. Both the GHG emission standards and the ZEV sales standards reduce GHG emissions and fossil fuel energy consumption; as a result of the loss of ZEV sales requirements, there may be fewer ZEVs sold and thus additional gasoline-fueled vehicles sold in future years. California expects Part Two of these regulations to be adopted in 2020, and it is anticipated that the federal government may adopt revised GHG emission standards and fuel efficiency standards.

**Moving Ahead for Progress in the 21st Century Act (MAP-21)**. Signed in 2012, MAP-21 represented the first multi-year transportation authorization enacted since 2005, funding surface transportation programs with more than $105 billion for fiscal years 2013 and 2014. MAP-21 also authorized $70 million for a public transportation research program that focuses on energy efficiency and system capacity, among other items. With the exception of the provisions of MAP-21, there is no federal legislation related specifically to the subject of energy efficiency in public transportation project development and operation.

#### 3.6.1.2 State Regulations

**Warren-Alquist Act**. The California Legislature passed the Warren-Alquist Act in 1974. The Warren-Alquist Act created the California Energy Commission (CEC), which is the State's primary energy policy and planning agency. The legislation directed the CEC to formulate and adopt the nation's first energy conservation standards for both buildings constructed and appliances sold in California; removed the responsibility of electricity demand forecasting from the utilities, which had a financial interest in high-demand projections, and transferred it to a more impartial CEC; and directed CEC to embark on an ambitious research and development program, with a particular focus on fostering what were characterized as non-conventional energy sources. Several regulatory entities administer energy policy throughout the State. The California Public Utilities Commission (CPUC) regulates privately owned utilities providing the telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation services.

**Senate Bill 1389**. SB 1389 requires the CEC to prepare a biennial integrated energy policy report assessing major energy trends and issues facing the State's electricity, natural gas, and transportation fuel sectors. The report is also intended to provide policy recommendations to conserve resources, protect the environment, and ensure reliable, secure, and diverse energy supplies.

**Senate Bill 1078 and Senate Bill 107**. SB 1078 (2002) and SB 107 (2006) created the Renewable Energy Standard, which required electric utility companies to increase procurements from eligible renewable energy resources by at least 1 percent of their retail sales annually until reaching 20 percent by 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the State's Renewables Portfolio Standard to 33 percent renewable power by 2020. On April 12, 2011, Governor Jerry Brown signed SB X1-2 to increase California's Renewables Portfolio Standard to 33 percent by 2020. SB 350 (Chapter 547, Statues of 2015) further increased the Renewables Portfolio Standard to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027.

**Senate Bill 100**. On September 10, 2018, Governor Jerry Brown signed SB 100, which further increased California's Renewables Portfolio Standard to achieve 50 percent renewable resources by December 31, 2026, and a 60 percent target by December 31, 2030, while requiring retail sellers and local publicly owned electric utilities to procure eligible renewable electricity for 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030, and that the CARB should plan for 100 percent eligible renewable energy resources and zero-carbon resources by December 31, 2045.

**Assembly Bill 118**. In 2007, Assembly Bill 118 created the Alternative and Renewable Fuel and Vehicle Technology Program, to be administered by the CEC. This Program authorizes the CEC to award grants, revolving loans, loan guarantees and other appropriate measures to qualified entities to develop and deploy innovative fuel and vehicle technologies that will help achieve California's petroleum reduction, air quality and climate change goals, without adopting or advocating any one preferred fuel or technology. The statue was amended in 2008 and 2013,

which authorized the CEC to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the State's climate change policies.

**Senate Bill 350**. The Clean Energy and Pollution Reduction Act of 2015, SB 350 (Chapter 547, Statutes of 2015) was approved by Governor Jerry Brown on October 7, 2015. SB 350 does the following: (1) increases the standards of California's RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) requires the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provides for the evolution of the Independent System Operator into a regional organization; and (4) requires the State to reimburse local agencies and school districts for certain costs mandated by the State through procedures established by statutory provisions.

**Title 24 Standards**. The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. The standards require that enforcement agencies determine compliance with the California Code of Regulations, Title 24, Part 6 before issuing building permits for any construction.

**California Green Building Standards Code**. Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality."

**California Transportation Plan**. The California Transportation Plan is a statewide, long-range transportation plan to meet future mobility needs developed by the California Department of Transportation. The Plan defines performance-based goals, policies, and strategies to comply with MAP-21 and to achieve an integrated, multimodal transportation system. The Plan addresses how the State will achieve maximum feasible emissions reductions, taking into consideration the use of alternative fuels, new vehicle technology and tailpipe emissions reductions.

**Senate Bill 375**. SB 375 addresses energy resources associated with the transportation sector through regional transportation and sustainability plans. SB 375 required the CARB to adopt regional GHG emissions reduction targets for the automobile and light-truck sector for the milestone years 2020 and 2035, and tasked regional MPOs with the preparation of SCS within their RTPs.

**Senate Bill 743**. SB 743 encourages land use and transportation planning decisions and investments to reduce VMT that contribute to GHG emissions. SB 743 requires the Office of Planning Research to develop revisions to the CEQA Guidelines and establish criteria to determine the significance of transportation impacts of projects within transit priority areas.

#### 3.6.1.3 Regional Regulations

**Metro Energy Management**. Metro has implemented several policies and plans to enhance energy efficiency throughout its system. In 2011, Metro published its Energy Conservation and Management Plan (ECMP) to serve as a strategic blueprint for proactively guiding energy use in a sustainable, cost-effective, and efficient manner. The ECMP complements Metro's 2007 Energy and Sustainability Policy, focusing on electricity for rail vehicle propulsion, electricity for rail and bus facility purposes, natural gas for rail and bus facility purposes, and the application of renewable energy. Metro's efforts to improve energy efficiency and expand renewable energy use are directly correlated with systemwide GHG emissions reductions; the 2012 Metro Climate Action and Adaptation Plan relied upon the ECMP sustainability analyses to set a path forward for reducing Metro's GHG emissions.

Adopted in 2012, the Metro Countywide Sustainability Planning Policy & Implementation Plan outlines Metro's robust approach to improving energy efficiency, reducing GHG emissions, and providing a healthier and more accessible network of transportation and transit infrastructure. The plan includes core principles and priorities that guide Metro's transportation planning efforts to influence sustainability outcomes as a regional mobility provider, a project manager, and a steward of public funds. Metro identified three key social, economic, and environmental priorities for each fundamental principle to be advanced through the transportation planning process.

Metro prepares an annual Energy & Resource Report to provide an annual evaluation of the sustainability performance of the multi-modal system, measured across ten specific performance metrics and through updates on program impact. Between 2017 and 2018, Metro reduced its systemwide energy use per vehicle revenue mile (VRM) by approximately 6.5 percent. Metro has committed to incorporating renewable natural gas (RNG) into its bus fleet, and intends to achieve zero carbon emissions by 2050 through strategies including transitioning its fleet to 100 percent zero-emission buses by 2030 and ensuring 100 percent renewable energy use by 2035. Metro published an updated iteration of its Climate Action and Adaptation Plan in 2019 that summarizes current and projected GHG emissions from Metro operations, describes how climate change could affect Metro's system and operations, and identifies steps to reduce emissions and increase resilience to climate change.

In 2020 Metro published *Moving Beyond Sustainability*, a 10-year strategic plan that is the most comprehensive to date and sets goals, targets, strategies, and actions that align with and emanate from other key Metro guidance documents. The plan is organized into topical strategic focus areas including water quality and conservation, solid waste, materials, construction and operations, energy resource management, emissions and pollution control, resilience and climate adaptation, and economic and workforce development. By recognizing the intersectionality of these various focus areas, Metro designed a robust, holistic plan to guide the

expansion and enhancement of its transit services into the future. Targets of the plan specifically related to energy resources include:

- Reduce potable water use by 22 percent from the 2020 Business as Usual scenario.
- Reduce annual operational solid waste disposal 24 percent from business as usual scenario.
- Achieve LEED Silver certification for all new facilities over 10,000 square feet, and achieve Envision certification where LEED is not applicable.
- Design and build 100 percent of capital projects to CALGreen Tier 2 standards.
- Reduce energy consumption by 17 percent at facilities from the 2030 Business as Usual Scenario.
- Increase onsite renewable energy generation to 7.5 MW.

**Southern California Association of Governments (SCAG)**. SCAG is the MPO for the regional planning jurisdiction encompassing Los Angeles, Ventura, San Bernardino, Riverside, Orange, and Imperial Counties. SCAG is required by federal law to prepare and update a long-range RTP (23 United States Code [U.S.C.] Section 134 et seq.) California SB 375, codified in 2008 in Government Code Section 65080 (b)(2)(B), also requires that the RTP include a SCS that outlines growth strategies for land use and transportation and helps reduce the State's GHG emissions from cars and light duty trucks. SCAG adopted the Connect SoCal 2020–2045 RTP/SCS (Connect SoCal) in May 2020, which is the most recent and applicable RTP for the Proposed Project. The Proposed Project is identified in Connect SoCal as the "BRT Connector – Orange/Red Line to Gold Line."

Connect SoCal includes a commitment to reduce emissions from transportation sources to comply with SB 375. The 2016-2040 RTP/SCS states that the region will meet or exceed the SB 375 per capita targets, lowering regional per capita GHG emissions by 8 percent by 2020, 18 percent by 2035, and 22 percent by 2040. The GHG emissions reductions from automobile and light-truck sectors would result from decreased transportation fuels consumption.

**Los Angeles Countywide Sustainability Plan**. The Los Angeles Countywide Sustainability Plan is a regional sustainability plan for unincorporated areas of Los Angeles County. The Countywide Sustainability Plan includes various goals to improve countywide sustainability features and can serve as a template for cities within LA County to formulate their own municipality-level sustainability plans.

#### 3.6.1.3 Local Regulations

The Cities through which the Proposed Project traverses have published planning documents that address energy. Refer to the Energy Technical Report for a more detailed discussion of the specific elements of each plan below that are relevant to the Proposed Project.

City of Los Angeles

**GreenLA Climate Action 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 CO2 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.

**Mobility Plan 2035**. State law requires that municipal General Plans must contain seven mandatory elements: land use, transportation, housing, conservation, open space, noise, and safety; the City of Los Angeles has 12 elements within its General Plan to better address the specific local planning challenges it faces. Adopted by the City Council in September 2016, Mobility Plan 2035 represents the transportation element of the Los Angeles General Plan dedicated to improving multimodal connectivity throughout the City.

**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.

**L.A.'s 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.

City of Burbank

The City of Burbank adopted its General Plan 2035 in 2013, which contains numerous items related to management of energy resources. Goals include promoting planning and programs that reduce air pollutants to improve the health and sustainability of the City and County. Implement policies that reduce fossil fuel combustion (by reducing VMT and promoting conservation and use of renewable energy) to lessen adverse impacts on both air quality and climate change.

City of Glendale

The City of Glendale General Plan contains several elements that address energy resources management, conservation, and efficiency that are relevant to Proposed Project implementation. The Glendale Circulation Plan contains Goals and Objectives that set direction for the City's policies, principles, standards, and programs related to community mobility. In

addition to the Circulation Plan, Glendale published a Greener Glendale Plan – The City of Glendale's Sustainability Plan that also addresses energy resource management and efficiency related to public transit and transportation fuels consumption. Tenets of the Greener Glendale Plan pertinent to the Proposed Project include public transit accessibility, the energy benefits of reducing on-road passenger vehicle travel and transportation fuels consumption, and objectives and strategies aimed at expanding and encouraging public transit access and use.

City of Pasadena

The City of Pasadena updated the Mobility Element of its General Plan in 2015, which contains Mobility Objectives that are incorporated into local planning endeavors to promote a city where people can circulate without cars. In 2018, the City of Pasadena prepared a climate action plan (CAP) 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. City initiatives to reduce GHG emissions are directly and indirectly correlated with energy resource management, improving energy efficiency, and reducing transportation fuels consumption.

## 3.6.2. Existing Setting

Various forms of energy resources are used to fuel on-road vehicles, provide lighting and heat for residential and non-residential buildings, treat, supply, and distribute potable water, among many other end uses. Direct and indirect energy resources involved in the transit system implementation include electricity, natural gas, and transportation fuels (i.e., gasoline and diesel fuel). This section provides a brief discussion of the types of energy resources that would be consumed by construction and operation of the Proposed Project and how they are produced and distributed to the respective end uses.

Electricity

The production of electricity requires the consumption or conversion of other natural resources, whether it be water (hydroelectric power), wind, oil, gas, coal, or solar energy. The delivery of electricity as a utility involves several system components for distribution and use. Electricity is distributed through a network of transmission and distribution lines referred to as a power grid. Energy capacity, or electrical power, is generally measured in watts (W), while energy use is measured in watt-hours (Wh), which is the integral electricity consumption over a time period of one hour. On a utility scale, the capacity of electricity generation and amount of consumption is generally described in megawatts (MW) and megawatt-hours (MWh), respectively. Within the Proposed Project area, electricity providers include Los Angeles Department of Water and Power (LADWP), Burbank Water and Power, Glendale Water and Power, and Pasadena Water and Power (PWP).

Natural Gas

Natural gas is a combustible mixture of simple hydrocarbon compounds (primarily methane) that is a fossil energy source formed deep beneath the earth's surface. Natural gas consumed in California is obtained from its naturally occurring subterranean reservoirs and delivered through high-pressure transmission pipelines. Natural gas provides almost one-third of the total energy requirements in California and is generally measured in units of standard cubic feet or British thermal units. The Southern California Gas Company (SoCalGas) is the natural gas provider for the Project Area.

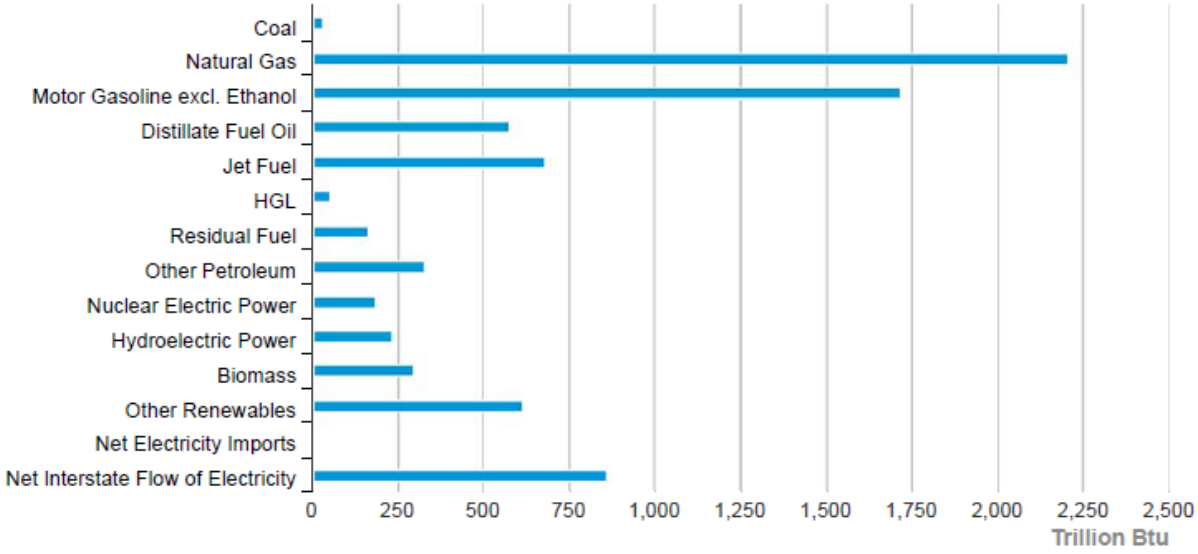
Transportation Fuels

The spark-ignited internal combustion engines of on-road motor vehicles and off-road equipment use fossil fuel energy for propulsion. Gasoline and diesel fuel are formulations of fossil fuels refined for use in various applications. Gasoline is the primary fuel source for most passenger automobiles, and diesel fuel is the primary fuel source for most off-road equipment and medium and heavy-duty trucks.

### 3.6.2.1 State Setting

This subsection provides a brief overview of the statewide energy resources for electricity, natural gas, and transportation fuels. Electricity, natural gas, and renewable energy production, consumption, research, and conservation within the State are managed by the CEC in coordination with the CPUC and the California Department of Conservation. California's consumption by source for the year 2018 is shown in **Figure 3.6-1**. Natural gas and gasoline are the most consumed resources and account for 27.6 percent and 21.5 percent of all energy consumption in the State.

**Figure 3.6-1 - California Energy Consumption by Source 2018**




**SOURCE**: U.S. Energy Information Administration, 2020.

Electricity

According to the U.S. Energy Information Administration State Energy Profile, California leads the nation in electricity generation from renewable sources including solar, geothermal, and biomass. California is also a leading producer of electricity from conventional hydroelectric power and wind, ranking fourth in the nation in both. Electricity in California is produced in a variety of ways and consumed in many more. In 2018, renewable resources—including hydroelectric and non-commercial solar installations—supplied almost half (44 percent) of California's in-State electricity generation, which was approximately 195,027 gigawatt hours (GWh) of electrical power. Hydropower accounted for approximately 13 percent of generation in 2018 and fluctuates based on precipitation patterns. Non-hydroelectric renewable technologies, such as solar, wind, geothermal, and biomass, provided about 30 percent of net generation from utility-scale (greater than one MW) facilities. Natural gas-fired power plants provided more than 46 percent of in-State electricity, and nuclear power accounted for approximately 9.4 percent. Solar and wind now account for approximately 23 percent of in-State electricity generation. In 2018 California also relied on 90,648 GWh of net electricity imports, less than 15 percent of which was sourced from coal-fired power plants.

Natural Gas

California's natural gas output equals about one-tenth of state demand. Almost two-thirds of California households use natural gas for home heating, and almost half of the State's utility-scale electricity generation is fueled by natural gas. Several interstate natural gas pipelines enter the State from Arizona, Nevada, and Oregon and bring natural gas into California from the Southwest, the Rocky Mountain region, and western Canada. Almost all the natural gas delivered to California is used in the State or is placed in storage. California has 14 natural gas storage reservoirs in 12 storage fields, together those fields have a natural gas storage capacity of about 600 billion cubic feet.

Transportation Fuels

According to the CEC, transportation fuels account for nearly 40 percent of statewide total energy demand and approximately 39 percent of the State's GHG emissions. In 2018, California consumed 15.5 billion gallons of gasoline and 3.7 billion gallons of diesel fuel. Petroleum-based fuels currently account for more than 90 percent of California's transportation fuel use. To address the magnitude of transportation fuel consumption, California has implemented several polices, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHG emissions from the transportation sector, and reduce on-road vehicle miles traveled. The California initiatives have begun to gradually reduce statewide dependence on fossil fuels, and the CEC predicts that demand for gasoline will continue to decline as the expansion of public transit infrastructure and use of alternative fuels becomes more prevalent.

### 3.6.2.2 Local Setting

This subsection provides an overview of local energy resources and the Metro energy resources profile. Although the Proposed Project would traverse local utility jurisdictions of Burbank Water and Power, Glendale Water and Power, and PWP, it is assumed that the ZEV buses would primarily utilize Metro facilities within the City of Los Angeles for recharging and maintenance. Additional charging may be supplemented at Pasadena City College, which would be provided by PWP. The amount of charging that may occur at Pasadena City College is unknown at this time, and the proportion of electricity supplied by Pasadena City College would not change the total expenditure of energy resources associated with Proposed Project operations. Energy consumption at station platforms would result in negligible increases to electricity service providers other than LADWP. Therefore, the discussion of local electricity resources focuses on LADWP and Metro resources, as well as regional transportation fuels consumption.

Electricity

LADWP provides electrical service throughout the City, serving approximately four million people within a service area of approximately 465 square miles. LADWP generates power from a variety of energy sources, such as wind, solar, and geothermal sources. According to LADWP's 2017 Power Strategic Long-Term Resource Plan, the department has a net dependable generation capacity greater than 7,880 MW and experienced a net record instantaneous peak demand of 6,500 MW in 2017. Approximately 30 percent of LADWP's 2017 electricity purchases were from renewable sources, which is similar to the statewide proportion. By 2030, LADWP forecasts its energy supply sourcing to be approximately 26 percent natural gas, 60 percent renewable, nine percent nuclear, and five percent large hydroelectric infrastructure. In 2019, LADWP committed with the City to achieve carbon neutrality by 2050, and updated its RPS targets to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036. As the power supply becomes more dependent upon renewable energy, overall grid efficiency will increase, and associated GHG emissions will be reduced. In the County of Los Angeles, 68,486,187,103 kWh (68,486 GWh) of electricity were consumed in 2018.

Natural Gas

Natural gas is provided to the region by SoCalGas, which is the principal distributor of natural gas in Southern California, serving residential, commercial, and industrial markets. SoCalGas services approximately 21.6 million customers in more than 500 communities encompassing approximately 20,000 square miles throughout Central and Southern California. SoCalGas receives gas supplies from several sedimentary basins in the western U.S. and Canada, including supply basins located in New Mexico (San Juan Basin), West Texas (Permian Basin), the Rocky Mountains, and Western Canada as well as local California supplies.

SoCalGas, along with five other California utility providers, released the 2018 California Gas Report, presenting a forecast of natural gas supplies and requirements for California through the year 2035. SoCalGas predicts a decrease in natural gas demand in future years due to a decrease in per capita usage, energy efficiency policies, and the transition of the State to renewable energy displacing fossil fuels including natural gas.

Transportation Fuels

The CEC maintains a statewide database of annual transportation fuel retail sales in accordance with the Petroleum Industry Information Reporting Act called the California Retail Fuel Outlet Annual Reporting system. Annual gasoline and diesel fuel sales are available by county within the database for years 2010 through 2018. Retail transportation fuels sales in Los Angeles County in 2018 were approximately 3,638 million gallons of gasoline and approximately 253 million gallons of diesel fuel. More transportation fuels were purchased in Los Angeles County than any other county in the State, accounting for 24 percent of statewide gasoline sales and 14 percent of statewide diesel sales.

### 3.6.2.3 Metro System Energy

Metro's contribution to regional energy consumption includes on-road vehicle fuel use (primarily compressed natural gas) and electricity for rail vehicle propulsion and maintenance and administrative facility operation. The 2019 Energy and Resource Report examined Metro energy use for the 2019 calendar year and refined estimates prepared by previous analysis. **Table 3.6-1** presents the Metro system energy consumption by end use between 2015 and 2019. As of 2019, the Metro system comprises 124,695,827 million revenue miles consuming approximately 53.5 megajoules (MJ) of energy per revenue mile, for a total of 6,667.1 million MJ. Metro system energy consumption has decreased by 6.9 percent during the period from 2015 to 2019. Metro has prioritized generating system energy from alternative fuels in recent years. Approximately 30 percent of Metro's electricity is generated by renewable sources, and Metro is on track to utilize 33 percent renewable energy by 2020. Metro plans to phase out all directly operated natural gas buses by 2030 to be replaced by ZEVs.

**Table 3.6-1 - Metro Operations Energy Consumption**

| End Use | Annual Energy Consumption (Megajoules) | | | | |
|---|---|---|---|---|---|
| | 2015 | 2016 | 2017 | 2018 | 2019 |
| Vehicle Fuel | 5,796,786,075 | 5,644,897,527 | 5,787,683,879 | 5,317,489,842 | 5,357,290,785 |
| Rail Propulsion | 719,276,609 | 711,196,744 | 775,022,735 | 817,378,502 | 781,571,203 |
| Facilities | 642,626,521 | 660,898,312 | 564,325,336 | 491,666,179 | 528,225,942 |
| **Total** | **7,158,689,205** | **7,016,992,583** | **7,127,031,949** | **6,626,534,523** | **6,667,087,930** |

**Notes**: GGE = gasoline gallon equivalent; kWh = kilowatt hours
**SOURCE**: Metro, Energy and Resource Report, 2019.

## 3.6.3 Significance Thresholds and Methodology

### 3.6.3.1 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) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; and/or
b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (see PRC Section 21100(b)(3)). The CEQA Guidelines recommend that the assessment of energy impacts assess energy use for all phases and components, including transportation-related energy, during construction and operation.

Appendix F of the CEQA Guidelines addresses energy conservation. The objective of conserving energy involves the wise and efficient use of energy, which is achieved through intersecting efforts to decrease overall per capita energy consumption, decrease reliance on fossil fuels such as coal, natural gas, and oil, and increase reliance on renewable energy sources. The CEQA Guidelines acknowledge that environmental impacts analysis related to energy may consider:

- The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance and/or removal.
- The effects of the project on local and regional energy supplies and on requirements for additional capacity.
- The effects of the project on peak and base period demands for electricity and other forms of energy.
- The degree to which the project complies with existing energy standards.
- The effects of the project on energy resources.

The above criteria are used to determine the potential significance of energy resources impacts associated with the Proposed Project. Consumption of electricity, natural gas, and transportation fuels during construction and operations are evaluated quantitatively in the context of local and regional resources. Consistency with relevant renewable energy and energy efficiency planning is addressed qualitatively.

### 3.6.3.2 Methodology

Under CEQA, energy impacts analyses should evaluate direct and indirect effects of a project on the environment. Direct energy effects include the one-time expenditure of gasoline and diesel fuels used by off-road equipment and on-road vehicles during construction activities, as well as operational electricity required for propulsion of the ZEV buses. Indirect energy effects

for the Proposed Project include the induced change in regional transportation fuels consumption resulting from mode shift associated with BRT trips replacing passenger vehicle trips, and the expenditure of natural resources at power plants to produce the electricity for bus propulsion. Direct and indirect energy resources effects are quantified separately for construction and operations.

### Construction

Construction activities would result in the direct expenditure of gasoline and diesel fuels to power off-road equipment and on-road vehicles involved in construction activities. Preliminary planning by Metro determined that construction would last up to 30 months and would generally comprise sidewalk demotion and restoration, BRT station facilities installation, and roadway repaving and restriping. Landscaping features would also be installed in medians along certain segments of the corridor. Construction activities would employ diesel-fueled off-road equipment and on-road material delivery and debris hauling trucks, as well as gasoline-fueled vehicles associated with construction crew trips. The construction energy impacts analysis estimated the one-time expenditure of diesel fuel and gasoline fuel associated with the Proposed Project.

CalEEMod is the preferred regulatory tool for estimating construction emissions of air pollutants, including GHG emissions, from proposed land use and transportation development projects. Estimates of GHG emissions that would be generated by construction were produced using CalEEMod, as disclosed in Section 3.8, Greenhouse Gas Emissions of the Draft EIR. The estimates of $CH_4$ emissions from off-road equipment and estimates of $CO_2$ emissions from on-road vehicles were used to quantify construction diesel and gasoline fuel consumption using the emission factors presented in **Table 3.6-2**, derived from the USEPA Emission Factors for Greenhouse Gas Inventories which is used by CARB in development of their OFFROAD and EMFAC models.

**Table 3.6-2 – Mobile Fuel Combustion Factors**

| Vehicle Type | Fuel Type | Combustion Factor (Units) |
|---|---|---|
| Off-Road Equipment | Diesel | 0.20 gCH4/gallon |
| On-Road Trucks | Diesel | 10.21 kgCO2/gallon |
| On-Road Passenger Vehicles | Gasoline | 8.78 kgCO2/gallon |

**SOURCE**: USEPA, Emission Factors for Greenhouse Gas Inventories, 2020.

The CalEEMod output emissions of $CH_4$ from off-road equipment and emissions of $CO_2$ from on-road vehicles were multiplied by the corresponding conversion factors to estimate the one-time expenditure of fuel consumption during construction. The passenger vehicle emissions were multiplied by the CARB Off-Model Adjustment Factors published in response to the SAFE Vehicle Rule Part One, using the 2024 value of 1.0315.

All construction activities would be conducted in accordance with the Metro Green Construction Policy, which includes best management practices that would control and minimize the consumption of fuels by off-road equipment and on-road vehicles. Although not accounted for in the quantitative analysis of energy resources, the following measures would be adhered to during construction to reduce fuel consumption to the maximum extent feasible:

- Maintain equipment according to manufacturer specifications.
- Restrict idling of construction equipment and on-road heavy duty trucks to a maximum of 5 minutes when not in use, except as provided to the applicable CARB regulations regarding idling for off-road and on-road equipment.
- Prepare haul routes that conform to local requirements to minimize traversing through congested streets or near sensitive receptor areas.
- Use electric power in lieu of diesel power where available.

### Operations

Operational energy consumption would occur directly through the consumption of electricity for propulsion of the ZEV buses, and indirectly through induced changes to transportation fuels consumption through regional mode shift displacing on-road vehicle trips. In addition to the displacement of on-road vehicle trips, operation of the Proposed Project would supplant eastern portions (approximately 303,124 annual revenue miles) of the existing Metro 180 bus line operations, which currently uses CNG for vehicle propulsion. Indirect energy effects resulting from reduced Metro 180 bus travel are accounted for assuming future conversion to electric propulsion. Additionally, natural and renewable resources are indirectly consumed to provide the electricity used to charge the ZEV buses, and consumption of these resources is addressed qualitatively based on the LADWP electricity generation profile described earlier in this section.

Annual direct electricity demand was estimated using projected annual VRM of the ZEV buses as presented in the Operating Statistics and O&M Costs Report, which relied upon an estimated one-way trip distance along the BRT corridor of 18.1 miles.

**Table 3.6-3** presents a summary of the daily and annual VRM for the Proposed Project. Operations would result in approximately 1,348,500 VRM annually. It was assumed that the buses would recharge at the El Monte Metro Division, the farthest Metro Division from the route likely to accommodate the Project's fleet, which would increase daily VMT by 36.6 miles of "deadhead" travel per bus. Charging at PCC, the North Hollywood transit station, or another location on the route would result in less "deadhead" VMT. It was conservatively assumed that the fleet would use up to 20 individual buses per day for operations, and therefore total annual deadhead miles would be 267,180. When combined with VRM, the total annual BRT miles would be 1,615,680 for operations. The electricity consumption associated with ZEV bus propulsion was estimated using a fuel economy factor of 2.2 kWh per VMT (Metro 2019 Climate Action Adaptation Plan).

**Table 3.6-3 – Project BRT Revenue Miles**

| Day of Week | Daily Trips (One-Way) | Daily VRM (miles) | Days per Year | Annual VRM (miles) |
|---|---|---|---|---|
| Monday-Thursday | 208 | 4,012 | 203 | 814,400 |
| Friday | 220 | 4,243 | 52 | 220,600 |
| Saturday | 152 | 2,932 | 52 | 152,400 |
| Sunday/Holiday | 144 | 2,777 | 58 | 161,100 |
| **Total Annual Vehicle Revenue Miles** | | | | **1,348,500** |

**SOURCE**: Kimley-Horn, *Operating Statistics and O&M Costs Report*, 2020.

The Proposed Project would also result in changes to regional on-road VMT through transportation mode shift displacing passenger vehicle trips. **Table 3.6-4** presents the results of regional transportation modeling under the Existing (2017) condition and the Existing plus Project (2017) condition along with the 2042 Baseline and Proposed Project conditions in 2042. The table shows that Proposed Project would reduce VMT in the existing and 2042 conditions. 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 3.6-4 – Regional On-Road Vehicle Miles Traveled**

| Scenario | Daily VMT | Annual VMT |
|---|---|---|
| Existing (2017) | 428,794,449 | 148,791,691,153 |
| Existing + Project (2017) | 428,721,905 | 148,766,500,989 |
| Change from Existing (2017) | -72,594 | -25,190,164 |
| Percent Change from Existing (2017) | -0.014% | -0.014% |
| | | |
| 2042 Baseline | 511,871,989 | 177,619,580,183 |
| Proposed Project (2042) | 511,785,330 | 177,589,509,510 |
| Change from 2042 Baseline | -86,659 | -30,070,673 |
| Percent Change from 2042 Baseline | -0.017% | -0.017% |

**SOURCE**: Kimley-Horn, *Transportation Technical Report,* 2020.

The CARB mobile source emissions inventory contains projections for air pollutant. The CARB mobile source emissions inventory contains projections for air pollutant emissions and fuel consumption throughout California. Projected regional fuel consumption within Los Angeles County in 2017 and 2042 from EMFAC2017 was utilized to estimate daily and annual transportation fuels consumption by the on-road vehicle fleet under the Baseline and Proposed Project conditions. Based on the EMFAC2017 database for the operational year 2017,

approximately 42.06 gallons of gasoline and 5.76 gallons of diesel fuel are consumed for every 1,000 on-road VMT by the regional fleet. In the operational year 2042, approximately 24.88 gallons of gasoline and 5.61 gallons of diesel fuel would be consumed. These factors were multiplied by the annual VMT for the Baseline and Proposed Project conditions to estimate changes in annual gasoline and diesel fuels consumption resulting from implementation of the Project.

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. The existing Metro Line 180 connects Hollywood with Pasadena and would be restructured to reduce service along the route by approximately 303,124 annual VRM under operations. The operational analysis accounted for the displaced bus VRM assuming that the Metro Line 180 would be operating ZEV buses in 2042. Therefore, the Metro consumption factor of 2.2 kWh per mile was applied to the reduction in annual Metro bus VRM resulting from operation of the Proposed Project.

The Proposed Project would not require the use of any natural gas resources by the operational year of 2042. When operations commence in 2024, it is possible that the fleet would operate CNG buses in its service until ZEV buses become available. The employment of CNG buses would be temporary and would not represent long-term operational conditions. As of 2019, Metro's directly operated natural gas bus fleet comprised 65,492,776 VRM annually and consumed approximately 44,203,405 therms of natural gas—averaging 0.675 therms of natural gas per VRM (0.675 therms per VRM)—of which approximately 41 percent is sourced from RNG. A conservative estimate of annual natural gas consumption associated with operation of the BRT corridor in the opening year of 2024 is presented for informational disclosure using the 2019 natural gas consumption factor.

## 3.6.4 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 energy resources is independent of the specific alignment and Proposed Project components. The following impact conclusions are valid for the Proposed Project and all route variations, treatments, and configurations.

**Impact 3.6-1)** Would the Proposed Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

### Construction

**Less-Than-Significant Impact**. Construction activities would use energy in the form of petroleum-based fuels associated with the use of off-road construction vehicles and equipment, construction worker travel, and delivery truck travel, and haul truck travel. Construction is anticipated to last up to 30 months, and as a conservative approach, petroleum-based fuels consumption during construction activities accounted for the maximum construction duration. **Table 3.6-5** presents a summary of the one-time expenditure of petroleum-based fuels that would be required for construction.

**Table 3.6-5 – Project Construction Energy Consumption**

| Construction Activity | Off-Road Equipment Diesel (Gallons) | On-Road Vehicles Diesel (Gallons) | Total Diesel (Gallons) | Construction Worker Gasoline (Gallons) |
|---|---|---|---|---|
| Demolition | 75,500 | 18 | 75,518 | 2,269 |
| Site Preparation | 83,000 | 359 | 83,359 | 1,135 |
| Station Construction | 722,000 | 2,458 | 724,458 | 7,739 |
| Paving | 180,000 | 693 | 180,693 | 2,129 |
| Roadway Striping | 30,850 | 346 | 31,196 | 1,059 |
| **Total Construction Fuel Consumption (Gallons)** | | | **1,095,225** | **14,331** |
| **Annual Average Fuel Consumption (Gallons)** | | | **438,090** | **5,733** |

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

Annual average petroleum-based fuels consumption during construction activities would be approximately 438,090 gallons of diesel fuel and 5,733 gallons of motor gasoline. As disclosed in 4.3.3, Local Transportation Fuels, 2018 Los Angeles County retail sales of diesel fuel and gasoline were approximately 253 million gallons and 3,658 million gallons, respectively. Relative to existing petroleum-based transportation fuels consumption in Los Angeles County, construction would temporarily increase annual diesel fuel consumption within the County by approximately 0.17 percent and would temporarily increase annual gasoline fuel consumption by approximately 0.0002 percent.

All equipment and vehicles that would be used in construction activities would comply with applicable CARB regulations, the Pavley and Low Carbon Fuel Standards, the CAFE Standards. Construction would not place an undue burden on available petroleum-based fuel resources. Based on the CARB EMFAC2017 mobile source inventory, and given that the Proposed Project fleet will be fully ZEV by no later than 2030, the one-time expenditure of gasoline would be offset by operations within one year and the one-time expenditure of diesel fuel would be offset within five years of operation through transportation mode shift. The temporary additional transportation fuels consumption does not require additional capacity provided at the local or regional level.

Construction activities may include lighting for security and safety in construction zones. Lighting would be sparse and would not require additional capacity provided at the local or regional level.

The Proposed Project would adhere to the provisions of the Metro Green Construction Policy to control and minimize emissions to the maximum extent feasible. At least 50 percent of debris generated by demolition activities will be diverted from landfills, and all equipment and vehicles would be maintained in accordance with manufacturer specifications and would be subject to idling limits. Thus, based on the substantiation provided above, construction would not result in

wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the Proposed Project would result in a less-than-significant impact related to construction activities.

### Operations

**Less-Than-Significant Impact in the Near Term; No Impact in the Long Term**. Operations would result in changes to energy resources consumption through direct electricity demand for ZEV bus propulsion and indirect, induced displacement of transportation fuels combustion from passenger vehicles on the regional roadway network. Operation of the BRT corridor would annually comprise 1,348,500 VRM and 267,180 deadhead miles, for a total of 1,615,680 bus miles. **Table 3.6-6** presents the direct annual energy consumption associated with operations. Using Metro's electric bus fuel economy of 2.2 kWh per mile, annual electricity consumption would be approximately 3,554.5 MWh assuming that the BRT line is powered by electricity. If the BRT line employed vehicles powered by natural gas, Proposed Project operations would directly consume 1,090,480 Therms annually.

**Table 3.6-6 – Project Direct Operational Energy Consumption**

| Route | Annual Vehicle Revenue Miles | Electric Bus Fuel Economy (kWh/mile) | Annual Electricity Consumption (MWh) | Metro CNG Bus Fuel Economy (Therms/VRM) | Annual Natural Gas Consumption (Therms) |
|---|---|---|---|---|---|
| Proposed Project | 1,615,680 | 2.2 | 3,554.5 | 0.675 | 1,090,480 |
| Metro Line 180 | -303,124 | 2.2 | -666.9 | 0.675 | -204,589 |
| **Net Total** | **1,312,556** | **Electricity** | **2,887.6** | **Natural Gas** | **885,891** |

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

#### *Existing/Baseline Analysis*

Metro system operations consumed approximately 341,592 MWh of electricity in 2017. If operational in 2017, the Existing plus Proposed Project electric vehicles would result in a net consumption of 2,887.6 MWh after accounting for reduced Metro Line 180 service, representing a 0.8 percent systemwide increase in electricity use. Electricity to charge buses would potentially be provided by LADWP, SCE, or PWP. Although the Proposed Project would traverse local utility jurisdictions of Burbank Water and Power, Glendale Water and Power, and PWP, it is assumed that the ZEV buses would primarily utilize Metro facilities within the City of Los Angeles for recharging and maintenance. Additional charging may be supplemented at Pasadena City College, which would be provided by PWP, or at the El Monte Maintenance and Storage Facility, which would be provided by SCE. The amount of charging that may occur at Pasadena City College or El Monte Maintenance and Storage Facility is unknown at this time, and the proportion of electricity supplied by PWP or SCE would not change the total expenditure of energy resources associated with Proposed Project operations. Energy consumption at station platforms would result in negligible increases to electricity service providers other than LADWP. Therefore, the discussion of local electricity resources focuses on LADWP and Metro resources, as well as regional transportation fuels consumption.

According to LADWP's 2017 Power Strategic Long-Term Resource Plan, there is a net dependable generation capacity greater than 7,880 MW and the electrical infrastructure experienced a net record instantaneous peak demand of 6,500 MW in 2017. A 1.1 percent increase in Metro's contribution to the peak demand on the LADWP infrastructure would have a negligible impact on available energy resources. Existing plus Project operations would also eliminate approximately 303,124 annual VRM from Metro Line 180, which would result in a reduction of 667 MWh of electrical demand associated with Metro system operations. The net annual electricity consumption of the Proposed Project would be approximately 2,887.6 MWh per year, which would not constitute a significant increase in demand.

If operational in 2017 and electric buses were not available, Existing plus Project operations would require approximately 1,090,480 Therms of natural gas annually, and produce a net increase in consumption of approximately 885,891 Therms after accounting for the reduced Metro Line 180 operations as shown in **Table 3.6-6**. In 2017, Metro's directly operated bus fleet consumed approximately 38,562,151 Therms of natural gas. If operational in 2017, Existing plus Project operations would increase Metro bus fleet natural gas consumption by approximately 2.3 percent. The 2.3 percent increase in Metro natural gas consumption in 2017 would not place an undue burden on regional RNG resources. Therefore, the Proposed Project's near-term energy impact would be less than significant.

In addition to direct energy consumption, implementation of the Proposed Project would reduce on-road regional VMT by displacing vehicle trips. **Table 3.6-7** presents the annual VMT and the corresponding gasoline and diesel fuel consumption in the operational year of 2017 with and without the Proposed Project. Existing plus Project operations would reduce regional transportation fuels consumption by approximately 1,059,489 gallons of gasoline and 145,106 gallons of diesel fuel annually based on fuel consumption of the regional fleet. Reducing on-road VMT is a key land use and transportation strategy for improving air quality, reducing GHG emissions, and decreasing reliance on petroleum-based transportation fuels for regional mobility. The results of the regional transportation modeling and operational fuels consumption analysis demonstrate that the Existing plus Project condition would not have a significant effect related to transportation fuels consumption.

**Table 3.6-7 – Regional Vehicle Miles Traveled and Fuels Consumption (Year 2017)**

| Scenario | Annual VMT | Annual Gasoline Consumption (Gallons) | Annual Diesel Fuel Consumption (Gallons) |
|---|---|---|---|
| Existing (2017) | 148,791,691,153 | 6,258,126,454 | 857,105,515 |
| Existing + Project (2017) | 148,766,500,989 | 6,257,066,965 | 856,960,409 |
| Net Difference | -25,190,164 | -1,059,489 | -145,106 |

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

Energy effects of the Proposed Project related to electricity, natural gas, and transportation fuels consumption are evaluated in total by converting to MJ. Electricity is converted to MJ using a factor of 3,600 MJ/MWh based on Metro's energy conversion chart. For transportation fuels, the conversion factors to MJ include of 1.155 gasoline gallon equivalents (GGE) per diesel gallon and 131.2 MJ per GGE. **Table 3.6-8** presents a summary of total Proposed Project energy effects. If operational in 2017 and employing electric propulsion buses, the Proposed Project would reduce annual transportation fuels energy consumption by approximately 150,572,368 MJ. The use of natural gas buses for Existing plus Project operations would result in a net annual reduction of approximately 67,501,280 MJ.

**Table 3.6-8 – Proposed Project Total Energy Consumption (Year 2017)**

| Source | Value | Conversion Factor | Annual Energy (MJ/year) |
|---|---|---|---|
| **Electric Buses** | | | |
| Bus Propulsion Electricity | 2,887.6 MWh | 3,600 MJ/MWh | 10,395,360 |
| Displaced Gasoline Fuel | -1,059,489 Gal | 131.2 MJ/Gallon | -138,982,453 |
| Displaced Diesel Fuel | -145,106 Gal | 151.5 MJ/Gallon | -21,985,275 |
| Total Energy | | | -150,572,368 |
| **Natural Gas Buses** | | | |
| Bus Propulsion NG | 885,891 Therms | 105.5 MJ/Therm | 93,466,448 |
| Displaced Gasoline Fuel | -1,059,489 Gal | 131.2 MJ/Gallon | -138,982,453 |
| Displaced Diesel Fuel | -145,106 Gal | 151.5 MJ/Gallon | -21,985,275 |
| Total Energy | | | -67,501,280 |

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

If operational in 2017, the Proposed Project would result in marginal increases to Metro system electricity or natural gas use, depending on the type of vehicle available, and would not create a disproportionate demand on existing energy resources. Implementation of the Proposed Project would result in less than significant short-term energy impacts.

### *Baseline Year 2042 Analysis*

In the operational year 2042, all of Metro's directly operated bus fleet will be fully converted to electric propulsion and there would no possibility for the employment of natural gas vehicles. Operation of the Proposed Project in 2042 would result in a net electricity demand of approximately 2,887.6 MWh per year. As of 2018, approximately 32 percent of LADWP's electric generation profile came from renewable sources. LADWP is committed to achieving a doubling of energy efficiency in electricity generation between 2017 and 2027 and producing 65 percent of its electricity from renewable resources in 2036. The expenditure of natural resources to produce LADWP electricity will be cut in half by 2036, according to compliance with its own energy efficiency planning initiatives. Operation of the Proposed Project in 2042 would not result in a significant impact to electric utilities.

Under the 2042 Baseline condition, annual VMT would be approximately 177,619,580,813, resulting in the consumption of approximately 4,460,414,998 gallons of gasoline and 995,923,521 gallons of diesel fuel. Implementation of the Proposed Project would reduce annual VMT by over 30 million and would decrease regional gasoline and diesel fuels consumption by 755,140 gallons and 168,608 gallons, respectively. **Table 3.6-9** presents the annual change in regional on-road VMT and annual transportation fuels consumption resulting from implementation of the Proposed Project in 2042. The reduction of on-road VMT and regional dependence on petroleum-based transportation fuels is a primary focus of regional land use and transportation planning strategies.

**Table 3.6-9 – Regional Vehicle Miles Traveled and Fuels Consumption (Year 2042)**

| Scenario | Annual VMT | Annual Gasoline Consumption (Gallons) | Annual Diesel Fuel Consumption (Gallons) |
|---|---|---|---|
| 2042 Baseline | 177,619,580,813 | 4,460,414,998 | 995,923,521 |
| Proposed Project | 177,589,509,510 | 4,459,659,858 | 995,754,913 |
| Net Difference | -30,070,642 | -755,140 | -168,608 |

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

Energy effects of the Proposed Project related to electricity, natural gas, and transportation fuels consumption are evaluated in total by converting to MJ. Electricity is converted to MJ using a factor of 3,600 MJ/MWh based on Metro's energy conversion chart. For transportation fuels, the conversion factors to MJ include of 1.155 gasoline gallon equivalents (GGE) per diesel gallon and 131.2 MJ per GGE. **Table 3.6-10** presents a summary of total Proposed Project energy effects. In 2042, operation of the Proposed Project would reduce annual transportation fuels energy consumption by approximately 124,624,580 MJ. Accounting for the 10,395,360 MJ of electricity demand, the net annual energy effects of Proposed Project operations would be an equivalent reduction of approximately 114,229,190 MJ.

**Table 3.6-10 – Proposed Project Total Energy Consumption (Year 2042)**

| Source | Value | Conversion Factor | Annual Energy (MJ/year) |
|---|---|---|---|
| Bus Propulsion Electricity | 2,887.6 MWh | 3,600 MJ/MWh | 10,395,360 |
| Displaced Gasoline Fuel | -755,140 Gallons | 131.2 MJ/Gallon | -99,074,368 |
| Displaced Diesel Fuel | -168,608 Gallons | 151.5 MJ/Gallon | -25,550,182 |
| Total Energy | | | -114,229,190 |

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

The effects of Proposed Project operations on regional petroleum-based transportation would not constitute a wasteful or inefficient use of energy resources. On the contrary, implementation of the Proposed Project would improve regional transportation energy efficiency. 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 3.6-2)** Would the Proposed Project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

### Construction

**Less-Than-Significant Impact**. Energy resources consumption during construction would be predominantly combustion of petroleum-based transportation fuels. Construction would result in a one-time expenditure of approximately 1,095,225 gallons of diesel fuel and 14,331 gallons of gasoline. Average annual fuel consumption would be approximately 438,090 gallons of diesel fuel and 5,733 gallons of gasoline. Implementation of Metro's Green Construction Policy, the CALGreen Code, and Title 24 would ensure that construction would be consistent with State and local energy plans and policies to reduce energy consumption. The Green Construction Policy commits Metro contractors to using less-polluting construction equipment and vehicles and implementing best practices to reduce harmful diesel emissions. Best practices include Tier 4 emission standards for off-road diesel-powered construction equipment with greater than 50 horsepower and restricting idling to a maximum of five minutes. The CALGreen Code requires reduction, disposal, and recycling of at least 50 percent of nonhazardous construction materials and requires demolition debris to be recycled and/or salvaged. Therefore, the Proposed Project would result in a less-than-significant impact related to construction activities.

### Operations

**No Impact**. The Proposed Project is a BRT system providing energy efficient mass transit to communities in need of enhanced accessibility options. The BRT system would reduce auto passenger vehicle trips and reduce reliance on petroleum-based transportation fuels. The benefits of the Proposed Project are consistent with the goals, objectives, and policies of SCAG and the Cities of Los Angeles, Burbank, Glendale, and Pasadena outlined in the local regulatory framework above. As the renewable energy portfolios of Metro and LADWP expand over time, natural resources consumption to provide the electricity required for BRT operations would become more energy efficient. The Proposed Project would not conflict with any adopted plan or regulation to enhance energy efficiency or reduce transportation fuels consumption and would support the initiatives of the Metro 2019 Climate Action and Adaptation Plan. In addition, the Proposed Project would not interfere with LADWP renewable portfolio targets and would not result in a wasteful or inefficient expenditure of LADWP resources. The Proposed Project would positively contribute to statewide, regional, and local efforts to create a more efficient and sustainable transportation infrastructure network. 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.