3.5 Energy

3.5.1 Introduction

This section discusses the Project setting in relation to energy. It describes existing conditions, the current regulatory setting, and potential impacts from operation and construction of the Build Alternatives, including design options and MSF site options.

The utilities and service system study area encompasses the GSA and DSA. Information in this section is based on the Eastside Transit Corridor Phase 2 Energy Conservation and Utilities Service/Systems Impacts Report (Appendix F).

3.5.2 Regulatory Framework

3.5.2.1 Federal

Energy resources are protected by federal law including the Energy Policy and Conservation Act of 1975 and Alternative Motor Fuels Act of 1988, Moving Ahead for Progress in the 21st Century Act (MAP-21), Energy Policy Acts of 1992 and 2005, Energy Independence and Security Act of 2007, and Safer Affordable Fuel-Efficient Vehicles Rule Part One: One National Program. The laws are summarized below and discussed in more detail in Appendix F.

- The Energy Policy and Conservation Act of 1975 promotes energy conservation when feasible, including mandating vehicle economy standards. The Alternative Motor Fuels Act of 1988 amends a portion of the Energy Policy and Conservation Act to encourage the use of alternative fuels, including electricity.

- MAP-21 incorporates energy conservation as a core consideration in surface transportation development and included, in surface transportation development funding, the funding of a public transportation research program with a focus on energy efficiency, system capacities, and other surface transportation factors.

- The Energy Policy Act of 1992 established regulatory and voluntary measures to encourage the use of alternative fuels. The act was followed up in 2005 with amended fuel economy testing procedures and other regulations and requirements to establish to tax incentives, grant programs, and demonstration and testing initiatives intended to promote the adoption of alternative fueled vehicles.

- The Energy Independence and Security Act of 2007 consists of various provisions to enhance energy efficiency and the availability and adoption of renewable energy and alternative fuel.

- Safer Affordable Fuel-Efficient Vehicles Rule Part One amends existing Corporate Average Fuel Economy (CAFE) and tailpipe carbon dioxide (CO_2) emissions standards for light-duty vehicles On August 10, 2021, new CAFÉ standards were proposed for 2024-2026 model year light-duty vehicles, and on December 21, 2021, the NHTSA repealed the SAFE I Rule preemption on state fuel efficiency and GHG standards.

3.5.2.2 State

Energy resources are protected by the California Energy Commission (CEC) and state laws and programs including the Alternative and Renewable Fuel and Vehicle Technology Program, Assembly Bill 1007, Alternative Fuels Plan, Assembly Bill 1493, California Advanced Clean Cars Program, California Advanced Clean Cars II Program, Executive Order B-16-12, Senate Bills 350 and 100, and the California Code of Regulations Energy Efficiency Standards.

The CEC is responsible for, among other things, forecasting future energy needs for the state and to prepare a biennial integrated energy policy report that includes assessments and forecasts of energy supply, production, transportation, delivery and distribution, demand and price, as well as assessing major energy trends and issues facing the state's electricity, natural gas, and transportation fuel sectors. The assessments and forecasts are used to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety.

The Alternative and Renewable Fuel and Vehicle Technology Program was established under Assembly Bill (AB) 118 and administered by the CEC. The program establishes measures including grant awards, revolving loans, and loan guarantees to develop and deploy new fuel and vehicle technologies to help achieve California's target petroleum reductions, air quality, and climate change goals. The program was amended in 2008 and 2013 to allow the CEC to develop and deploy alternative and renewable fuels, alternative and renewable fueled vehicles, and other advanced transportation technologies to meet the state goals.

Assembly Bill 1007, Alternative Fuels Plan, AB 1007, (Pavley, Chapter 371, Statutes of 2005) requires the CEC to prepare an alternative fuels plan to increase the use of alternative fuels in California. The State Alternative Fuels Plan, approved by the CEC on November 2, 2007, aims to clean the state's air, diversify fuel sources, and protect the state from oil spikes that affect prices, the economy, and jobs. Additionally, the plan indicates that significant efforts would be needed to reduce vehicle miles travelled by all Californians through more effective land use and transportation planning and greater mass movement of people and goods.

Assembly Bill 1493 (2002), California Advanced Clean Cars Program, requires the California Air Resources Board (CARB) to develop and adopt GHG emission standards for automobiles. CARB, in coordination with the USEPA and NHTSA, developed a set of regulations that are collectively known as the Advanced Clean Cars Program. The Low-Emission Vehicle III Regulation for GHG (LEV III GHG) builds upon AB 1493, which established GHG emission standards for 2009 through 2016 model year passenger vehicles, by requiring further reductions in passenger vehicle GHG emissions for 2017 and subsequent model years. The LEV III GHG regulation is projected to reduce GHG emissions by 40 percent in 2025 when compared to 2012 model year vehicles. The ZEV regulation also requires auto manufacturers to offer for sale specific numbers of full battery-electric, hydrogen fuel cell, and plug-in hybrid-electric vehicles.

On September 16, 2020, CARB held the first public workshop to solicit input on the development of the Advanced Clean Cars II (ACC II) regulations. These regulations will seek to reduce criteria and GHG emissions from new light- and medium-duty vehicles beyond the 2025 model year and increase the number of zero emission vehicles (ZEV) for sale. The proposed Advanced Clean Cars II regulations establish the next set of LEV and ZEV requirements. The regulations are scheduled to go to the CARB Board in summer of 2022.

Executive Order B-16-12 sets aggressive targets to meet certain goals in 2015, 2020, and 2025 and supports the rapid commercialization of clean vehicles and advances two long-term environmental and energy goals for the transportation section: (1) decrease transportation section GHG emissions to 80 percent below 1990 levels by 2050; and (2) reduce at least 1.5 billion gallons of petroleum fuels by 2025 through the use of clean and efficient vehicles (Office of Governor Edmund G. Brown Jr. 2013).

Senate Bill (SB) 350 (2015) increases the state's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. In addition, the state is required to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. SB 100 (2018) increases the renewable electricity procurement goal set by SB 350 from 50 percent to 60 percent by 2030. SB 100 requires renewable energy and zero-carbon electricity system to supply 100 percent of electric retail sales by 2045.

California Code of Regulations (CCR) Energy Efficiency Standards Title 24, Part 6, Chapter 2-53 applies to all newly constructed residential and nonresidential buildings in the State of California and regulates minimum energy efficiencies for cooler, heating, ventilation, water heating, and lighting. CCR, Title 24, Part 11 (also referred to as CALGreen) identifies mandatory building measures and voluntary measures that may be incorporated into the design of buildings. Relative to energy usage, CALGreen contains requirements for cool roofs, exterior lighting, bicycle parking, and electric vehicle charging. In addition, CALGreen requires mandatory inspections of energy systems (e.g., heat furnace, air conditioner, and mechanical equipment) for non-residential buildings larger than 10,000 square feet to ensure that all are working at their maximum capacity and according to their design efficiencies.

3.5.2.3 Regional

Regional agencies involved in the use of energy resources include the California Association of Governments (SCAG) and Air Quality Management Districts.

SCAG is required by state and federal mandates to prepare a Regional Transportation Plan (RTP) every three years that also includes a Sustainable Communities Strategies (SCS). The most recent RTP (*Connect SoCal 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy* [2020 RTP/SCS], adopted on September 3, 2020) establishes goals that relate to the Project and energy efficiency and conservation including (1) Preserve and ensure a sustainable regional transportation system; (2) Maximize the productivity of our transportation system; (3) Actively encourage and create incentives for energy efficiency, where possible; and (4) Encourage and use and growth patterns that facilitate transit and active transportation

The South Coast Air Quality Management District (SCAQMD) is responsible for contributing to the development of State Implementation Plans (SIPs) in compliance with the Federal Clean Air Act (CAA) and California CAA by indicating how air quality standards will be met through the development of air quality management plans. Among other strategies, these plans promote reductions in vehicle miles traveled (VMT) through the development of transportation alternatives.

3.5.2.4 Local

Metro has adopted plans, policies, and strategies that address energy efficiency, including both general goals focused on sustainability, as well as specific actions designed to reduce energy consumption and expenditures. The most applicable plans and strategies include the Energy Conservation and Management Plan, Sustainable Rail Plan, Climate Action and Adaptation Plan, and

First/Last Mile Strategic Plan. Metro's adopted policies that support energy efficiency include the following:

- **Energy and Sustainability Policy** (2007) – Established to aid Metro in controlling energy consumption and encouraging energy efficiency, conservation, and sustainability.
- **Environmental Policy** (2009) – A comprehensive policy that provides guidance on such aspects as mitigating potential environmental impacts generated by development activities and reducing consumption of natural resources. Specific commitments related to energy include promoting renewable energy sources to address energy and environmental challenges.
- **Renewable Energy Policy** (2011) – Calls for renewable energy solutions while minimizing non-renewable energy use and also calls for a review of technical feasibility for renewable power projects on Metro property and infrastructure.
- **Green Construction Policy** (2011) – Adopted to reduce emissions from construction equipment and includes a commitment by Metro that all on-road and off-road vehicles used in construction of a project will be greener and less polluting, and that best practices will be implemented to meet or exceed air quality emission standards. Measures related to energy use include limiting idling, maintaining equipment to manufactures' specifications, and using electric power in lieu of diesel power where available.
- **Complete Streets Policy** (2014) – Establishes design and planning guidelines to promote walking, bicycling, transit use, and public health, and to promote an integrated, sustainable transportation system that serves all users within the community.

The *Los Angeles County 2035 General Plan* includes Elements which address energy consumption and needs. The county identified a high transportation and non-transportation energy demand and projected growth in the region will continue to strain the mineral supply. Energy consumption patterns demonstrate that residents in Los Angeles County consume proportionally more energy for transportation than the rest of California and that the low-density, automobile-dependent communities place high demand on such resources (Los Angeles County 2015).

- The Mineral and Energy Resources Section in the Conservation and Natural Resources Element: addresses the use and management of valuable energy and mineral resources.
- The Conservation and Natural Resources Element sets forth goals and policy direction to promote efficient and sustainable use of renewable and non-renewable energy resources.
- The Mobility Element of the general plan includes policy guidance and strategies to reach long-term transportation goals, including the promotion of alternatives to the single-occupant automobile. Specifically, Goal M4 promotes an efficient multimodal transportation system that serves the needs of all residents. Goal M5 promotes land use planning and transportation management that facilitates the use of transit.

The cities within the Build Alternative DSAs have local regulations related to energy resources and energy conservation These regulations include the relevant general plan policies, ordinances, and municipal codes of the cities of Commerce, Montebello, Pico Rivera, Santa Fe Springs, and Whittier. Not all of the local jurisdictions that could be affected by the Project have specific general plan policies

related to energy resources; however, other policies contained in those general plans, such as those related to improving air quality, improving traffic flow, supporting public transit, and reducing VMT also support energy conservation and efficiency. Generally, all the various general plan policies and municipal codes focus on conservation of nonrenewable resources.

3.5.3 Methodology

Potential impacts to energy resources were assessed based on the amount of energy consumed during construction of the Build Alternatives, as well as the operational energy consumption associated with stations, LRVs, parking facilities, and MSFs, and projected changes in regional VMT for highway/major road vehicle traffic. The analysis also includes an evaluation of the alternatives relative to energy conservation through the wise and efficient use of energy as identified in Appendix F of the State CEQA Guidelines. The purpose of Appendix F is to ensure that energy implications are considered in project decisions. Specific emphasis is given to reducing inefficient, wasteful, and unnecessary consumption of energy.

Analysis of potential impacts to energy resources includes consideration of the following elements:

- Construction-related energy consumption for each of the Build Alternatives
- Energy operating costs required to operate each the Build Alternatives (including the energy required to operate rail lines)
- Changes to energy consumption from mobile sources in the area as a result of regional changes in the VMT of cars, trucks, and other highway vehicles operating in the regional area
- Energy consumption related to the operation of stations, parking facilities, and MSFs
- Net project operating energy impacts including both energy resource savings and costs as a result of the Project investment in rail infrastructure
- Project impacts on local and regional energy supplies and on requirements for additional capacity
- The degree to which the Project complies with existing energy standards

Additionally, CEQA Guidelines Appendix F states that the means of achieving the goal of energy conservation include the following:

- Decreasing overall per capita energy consumption
- Decreasing reliance on fossil fuels such as coal, natural gas and oil
- Increasing reliance on renewable energy sources

These conservation factors are considered in the impact discussion of Impact ENG-1.

3.5.3.1 Construction Energy Analysis

Energy consumption during construction was determined by analyzing the energy requirements of construction equipment, worker commute vehicles, material hauling and delivery vehicles, and construction processes. The energy demands of construction associated with the at-grade, aerial, and underground components of the Build Alternatives were each analyzed using the following methodology.

The estimate of construction-related energy use was calculated by applying United States Energy Information Administration (USEIA)-derived CO_2 emissions per energy unit factors to total carbon dioxide equivalent (CO_2e) emissions estimated using the California Emissions Estimator Model (CalEEMod) for the Eastside Transit Corridor Phase 2 Climate Change and Greenhouse Gases Impacts Report (Appendix H), and the Eastside Transit Corridor Phase 2 Air Quality Impacts Report (Appendix C), prepared for the Project. Construction energy demand was quantified in units of gallons for fuels and kilowatt-hours (kWh) for electricity. USEIA unit conversion factors were also used to convert energy consumption to metric million British thermal units (MMBTU) for comparison to other Project energy usage.

Only direct energy consumption was evaluated for Project construction. Indirect energy consumption would occur as part of Project construction associated with grid-based energy demand of construction equipment and lighting. Use of grid-based electricity during construction would reduce the need for diesel fueled portable generators included in construction energy use estimates; thus, this small amount of indirect energy consumption would decrease Project reliance on fossil fuels and would be consistent with the goals of Appendix F of the State CEQA Guidelines and was not quantified.

3.5.3.2 Operational Energy Analysis

The methodology for determining operation-related impacts is the same for each Build Alternative.

3.5.3.2.1 Vehicle Miles Traveled and Fuel Consumption Energy Analysis

Project-related operational emissions of CO_2 associated highway VMT were calculated as part of Appendix H, Climate Change and Greenhous Gases Impacts Report, and Appendix C, Air Quality Impacts Report, using the motor vehicle emissions model, Emission Factor Model for On-road Motor Vehicles (EMFAC) 2017 and predicted regional highway traffic VMT. By applying USEIA-derived CO_2 emissions per energy unit factors to CO_2 emissions from gasoline-fueled and diesel-fueled sources respectively, highway VMT energy consumption was quantified in units of gallons of gasoline and diesel fuel. USEIA unit conversion factors were also used to convert energy consumption to MMBTU for comparison to other Project energy usage.

3.5.3.2.2 Light Rail Transit, Station, and MSF Operations

The energy that would be used by stations, MSFs, and parking facilities was determined following the same methodology used in the separate Appendix H, Climate Change and Greenhouse Gases Impacts Report. Electricity needed to operate the LRVs was estimated from the route distance, headway between trains, and the average energy intensity for the train operation. The Federal Transit Administration's National Transit Database (2019) was used to estimate the average energy intensity for Metro's LRT service. Annual energy demand was estimated by applying the 8.4 kWh per mile

energy intensity factor for Metro LRT operations to the projected LRV operations along the length of the alignment for each alternative. Vehicles were assumed to operate on weekdays every 5 minutes between the hours of 4:00 AM and 12:00 PM, every 10 minutes between the hours of 12:00 PM and 8:00 PM, and every 15 minutes between the hours of 8:00 PM and 2:00 AM, and operate on weekends every 20 minutes between the hours of 4:00 AM and 7:00 AM and between the hours of 7:30 PM and 2:00 AM, every 15 minutes between the hours of 7:00 AM and 9:00 AM and the hours of 6:30 PM and 7:30 PM, every 10 minutes between the hours of 9:00 AM and 6:30 PM.

Chester and Horvath (2008) published various fundamental environmental factors for rail. These factors, combined with electricity usage factors from San Francisco Municipal Railway (Muni) (San Francisco), Massachusetts Bay Transportation Authority (MBTA) Green Line (Boston), and Bay Area Rapid Transit (BART) (San Francisco) were used to estimate from train control operations.

Energy demand associated with operation of the parking facilities, stations and MSFs were calculated based on total building area using CalEEMod default energy consumption factors. Annual energy demand for the LRT stations were estimated using CalEEMod default energy demand parameters for the most appropriate surrogate land use present in the model (i.e., enclosed parking structure with elevator for underground stations; unenclosed parking structure with elevator for aerial stations; and unenclosed parking structure for at-grade stations) based on the size, in square feet, of the station and the type of structure. All stations were estimated based on a footprint of approximately 14,000 square feet. Underground stations were estimated to consume 75,000 kWh; aerial stations were estimated to consume 26,800 kWh; and at-grade stations were estimated to consume 24,200 kWh. Annual energy demand from parking facilities were estimated using the CalEEMod default energy demand parameter for the parking lot land use, which is 140 kWh per year per parking space. Annual energy demand for an MSF was estimated using CalEEMod default energy demand parameters for the most appropriate surrogate land use present in the model (i.e., unrefrigerated warehouse with rail for the MSF facility structure and parking lot for the remainder of the MSF site). An MSF facility structure with a footprint of 177,000 square feet based on preliminary site designs was assumed for both MSF site options.

Because local and regional bus routes would not be altered as part of the Project, energy consumption from buses were not included in the analysis.

3.5.4 Thresholds of Significance

In accordance with Appendix G of the State CEQA Guidelines, a Build Alternative would have a significant impact related to energy if it would:

Impact ENG-1: Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

Impact ENG-2: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.5.5 Existing Setting

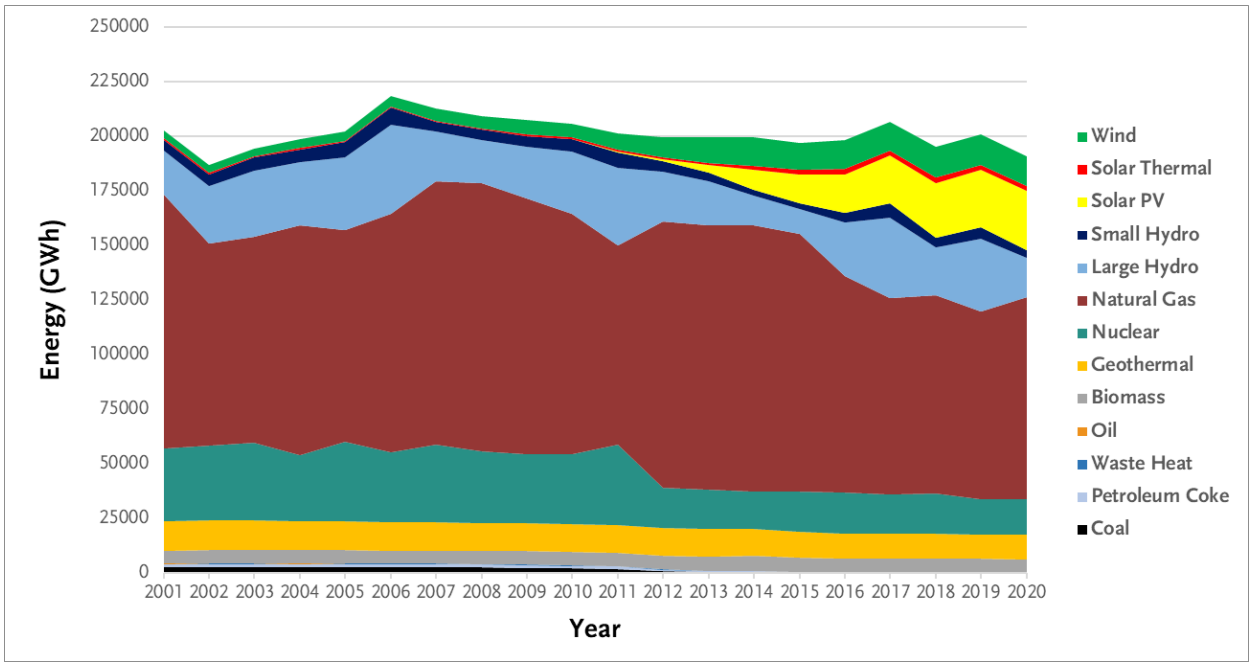
Existing conditions of the state's energy and electricity supply and demand were developed from the two most recent CEC Integrated Energy Policy Reports (2017 and 2019) (CEC 2018a and CEC 2020a) and the CEC's Energy Almanac (CEC 2021).

3.5.5.1 Electricity Sector Study Area

In 2020, total system electric generation for California was 272,576 gigawatt-hours (GWh), which is reduction of two percent, or 5,356 GWh, from 2019 levels (CEC 2021). This reduction is consistent with the downward or flat trend in energy demand that has been occurring over recent years as a result of energy efficiency programs and installation of behind-the-meter solar photovoltaic (PV) systems[1] that directly displace utility-supplied generation.

The CEC's 2019 *Integrated Energy Policy Report* identifies that the state's electricity sector is rapidly changing in response to climate policy and market changes. This includes a transition away from fossil natural gas, which is being replaced by resources including renewables, transmission upgrades, energy storage, energy efficiency, and demand response to meet air quality, climate, and other environmental goals. Over the last decade, renewable capacity in the state increased from 9,313 megawatts (MW) in 2009 to 23,313 MW in 2018 moving towards achieving the state's renewable procurement requirements, including the requirement that 33 percent of retail electricity sales must be served with renewable resources by 2020, and 60 percent by 2030 as identified in SB 100. In 2020, the state of California achieved an estimated 33 percent of total system electricity generation from renewable resources (CEC 2021).

Figure 3.5.1 depicts the change in the state's electricity system generation supply mix from 2001 to 2020, including a doubling of renewable supplies (CEC 2020a).



Source: CEC, 2020a.

Figure 3.5.1. In-State Electric Generation by Fuel Type

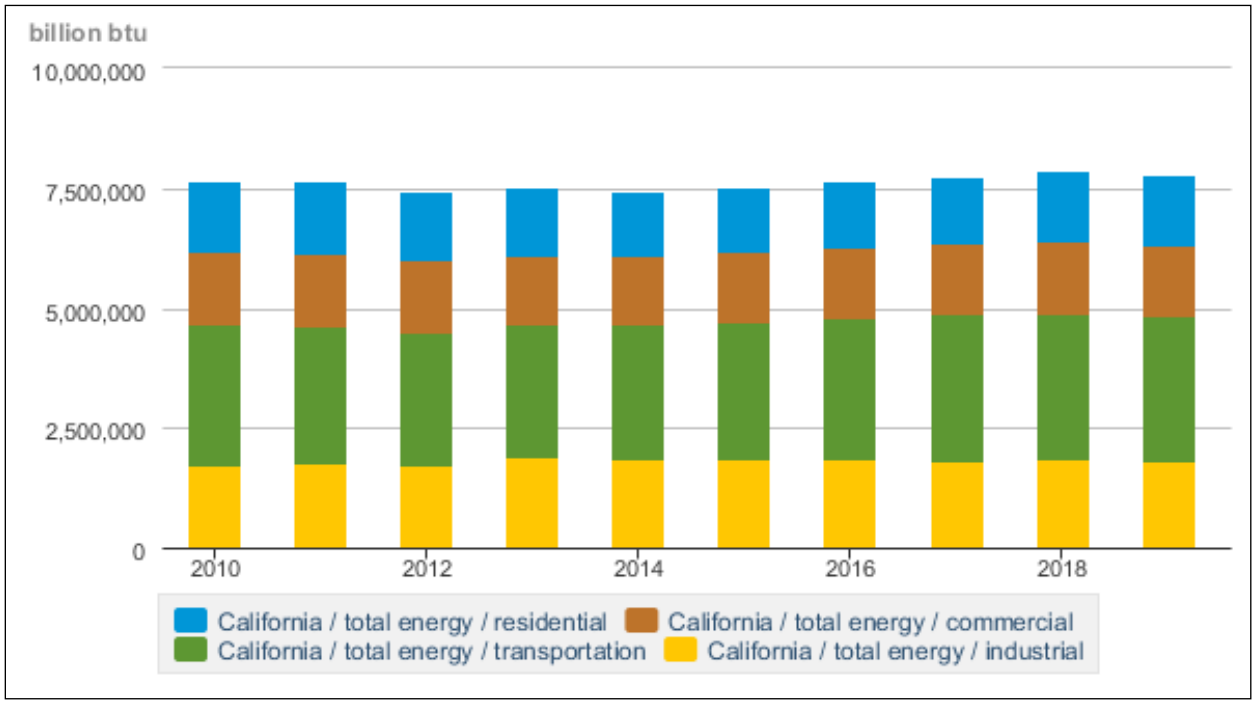
Note: California uses both in-state and out-of-state sources of electricity generation. In 2020, in-state electricity generation accounted for 190,222 GWh or approximately 70 percent of total network power generation, which is an approximately 5 percent decline as compared to 2019, due in part, to reduced generation from hydroelectric power plants resulting from dry conditions.

[1] Behind-the-meter PV systems provide a single building or facility with direct power, without passing through an electric meter.

3.5.5.2 Transportation Sector

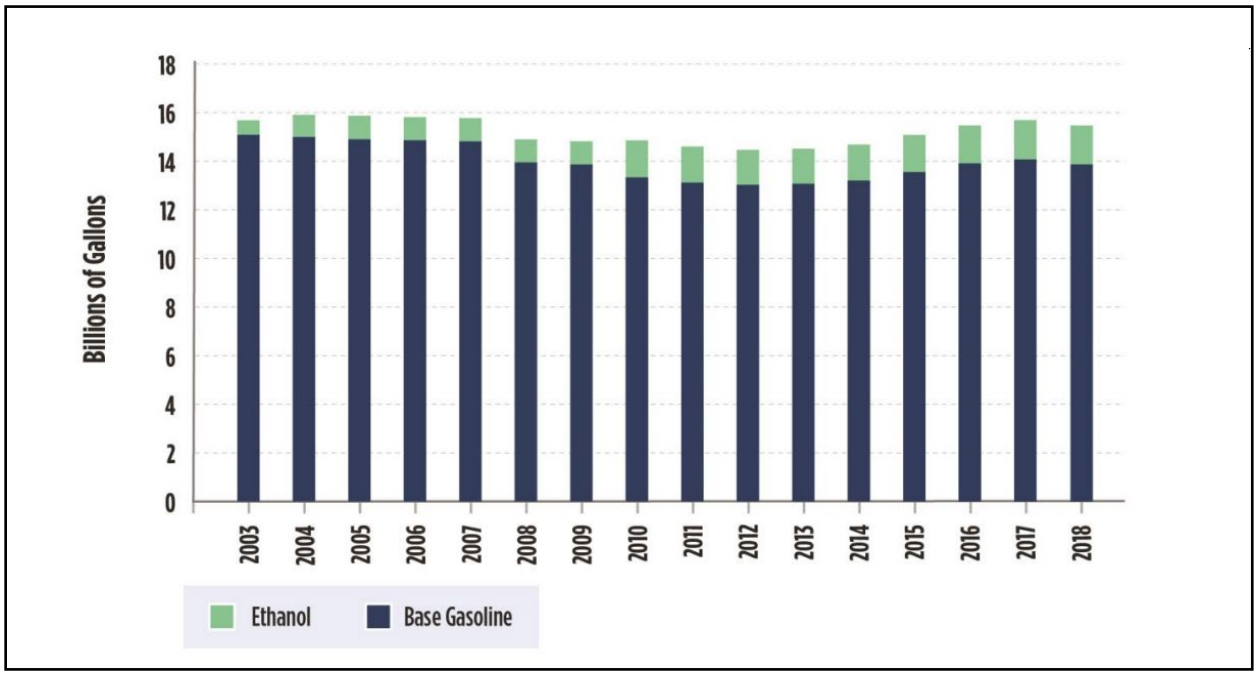
As shown in **Figure 3.5.2** the transportation sector in California consumes a relatively large amount of the energy in the state (approximately 50 percent). and is the largest source of the state's GHG emissions, accounting for approximately 41 percent (CEC 2020a).

Gasoline remains the dominant fuel within the transportation sector, followed by diesel and aviation fuels. California is one of the largest consumers of gasoline in the world. However, California has implemented a range of regulations and incentives to advance its clean transportation goals, and as shown in **Figure 3.5.3** and **Figure 3.5.4**, the use of alternative fuels, including ethanol, biodiesel, and renewable diesel have increased in recent years (CEC 2020a). Further, as shown in **Figure 3.5.5**, there is an increasing use of electricity as a transportation fuel. The distribution among different fuels will change over time, depending on the changes in vehicle sales trends. While petroleum-based fuels are anticipated to continue to represent the largest shares of transportation energy demand through 2030, improvements in fuel efficiency and increased electrification are expected to result in a future decline in gasoline demand over the coming decades (CEC 2020a).



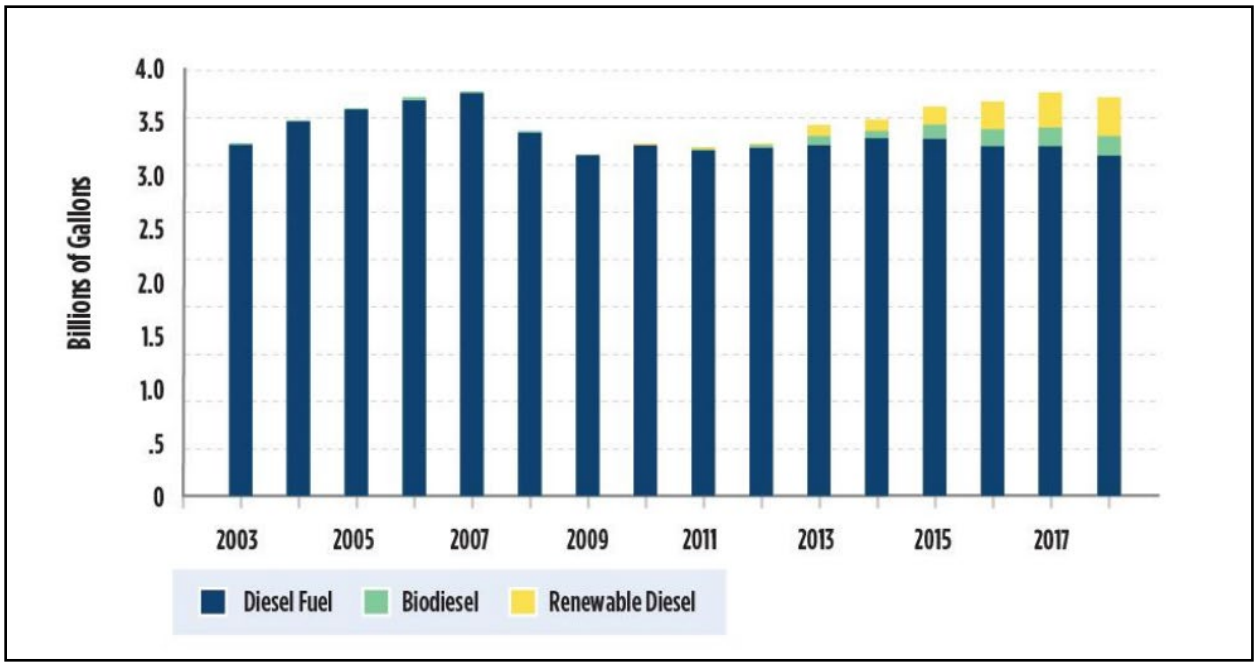
Source: USEIA, 2021a.
Key: BTU – British Thermal Units

Figure 3.5.2. California Energy Use by Sector (2010-2019)



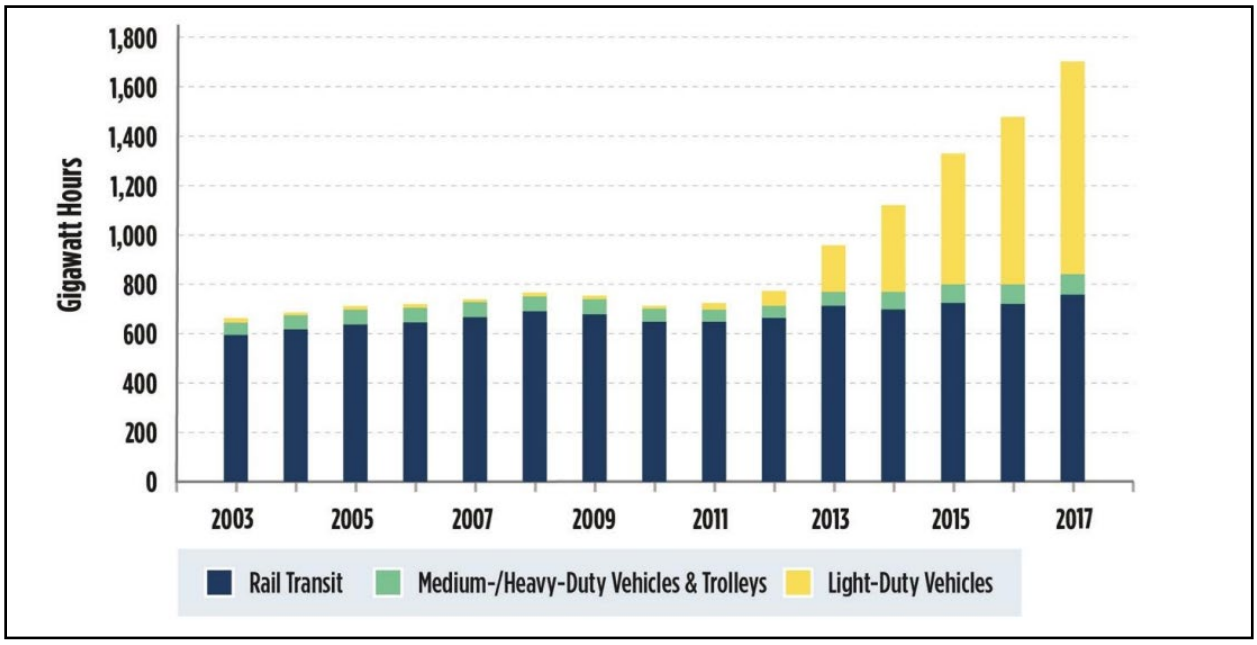
Source: CEC, 2020a.

Figure 3.5.3. California Gasoline and Ethanol Consumption (2003-2018)



Source: CEC, 2020a.

Figure 3.5.4. California Diesel Fuel, Biodiesel, and Renewable Diesel Consumption (2003-2018)



Source: CEC, 2020a.

Figure 3.5.5. California Transportation Electricity Consumption (2003-2017)

The CEC's 2017 *Integrated Energy Policy Report (CEC 2018a)* and *California Energy Demand 2018-2030 Revised Forecast* (CEC 2018b) presents gasoline and diesel demand forecasts for both a low petroleum price case (high-demand) scenario and a high petroleum price case (low-demand) scenario. The high-demand scenario projects peak gasoline demand to be 12.3 billion gallons in 2030 (25 percent below 2014 levels). The low-demand scenario projects a peak demand of 12.7 billion gallons in 2030 (a decrease of 19 percent below 2014 levels). Greater numbers of zero-emission vehicles and increasing fuel economy of light-duty gasoline vehicles are largely responsible for the decrease in gasoline demand (CEC 2018b). Diesel demand is expected to increase moderately, following the growth of California's economy. Under all demand scenarios total diesel demand is projected at 4.6 billion gallons in 2030.

Transportation in Los Angeles County continues to be dominated by single-occupancy automobiles (Metro 2008). High percentages of single-occupancy vehicles result in higher VMT throughout the region. In turn, high VMT translates into high energy use and increased air quality pollutants in the SCAG region. Subsequently, high VMT translates into high energy use and increased air quality pollutants.

As shown in **Table 3.5-1**, existing conditions data for regional traffic energy consumption was modeled for the existing conditions year of 2019. [2] The annual automobile energy consumption data for the region was developed as part of the Project transportation model. Highway traffic in the region was estimated to consume approximately 6.28 billion gallons of gasoline and 239 million gallons of diesel fuel under the Existing Conditions, equating to approximately 787,613 billion BTUs. No LRT operates within the GSA under the existing conditions.

[2] As described in Section 3.14, Transportation and Traffic, the base year data in Metro's regional travel demand forecasting model (the Corridor Based Model 2018 [CBM18]) is from 2017 and represents the data that was most recently available when the model was created in 2018. This data has been used to represent 2019, the base year in this study.

Table 3.5-1. Annual Regional Transportation Energy Use, Existing Conditions

Vehicle Class	Gasoline Demand (thousand gallons)	Diesel Demand (thousand gallons)	Electrical Demand (kWh)	Natural Gas Demand (billion BTU)	Total Operational Energy Demand (billion BTU)
Regional Highway Traffic[1]	6,274,509	238,829	n/a	n/a	787,613

Source: CDM Smith/AECOM JV, 2021.
Note:
1 Regional highway traffic accounts for all vehicular traffic in the region which would be affected by the Project.
Key:
BTU = British thermal unit per mile kWH = kilowatt-hour

Typically, in a CEQA analysis, project-related impacts are compared to existing (without project) conditions. However, pursuant to CEQA Guidelines Section 15125(a)(2), a lead agency has the discretion to exclusively use a future conditions baseline for the purposes of determination of significance under CEQA in instances where showing an existing conditions analysis would be misleading or without informational value. Use of an existing conditions baseline would be misleading for the Project because it ignores the regional background growth in population, traffic, and transportation infrastructure that would occur between the existing conditions baseline year of 2019 and Project build-out (i.e., the 2019 existing conditions will be substantially altered by regional growth that will occur independent of the Project, which, in turn, would mask the impacts that are attributable to the Project and would not provide the reader with an accurate and meaningful delineation of Project-related impacts). Use of existing conditions would further inappropriately attribute regional energy reductions associated with future engine efficiency standards, which do not exist under existing conditions, to the project.

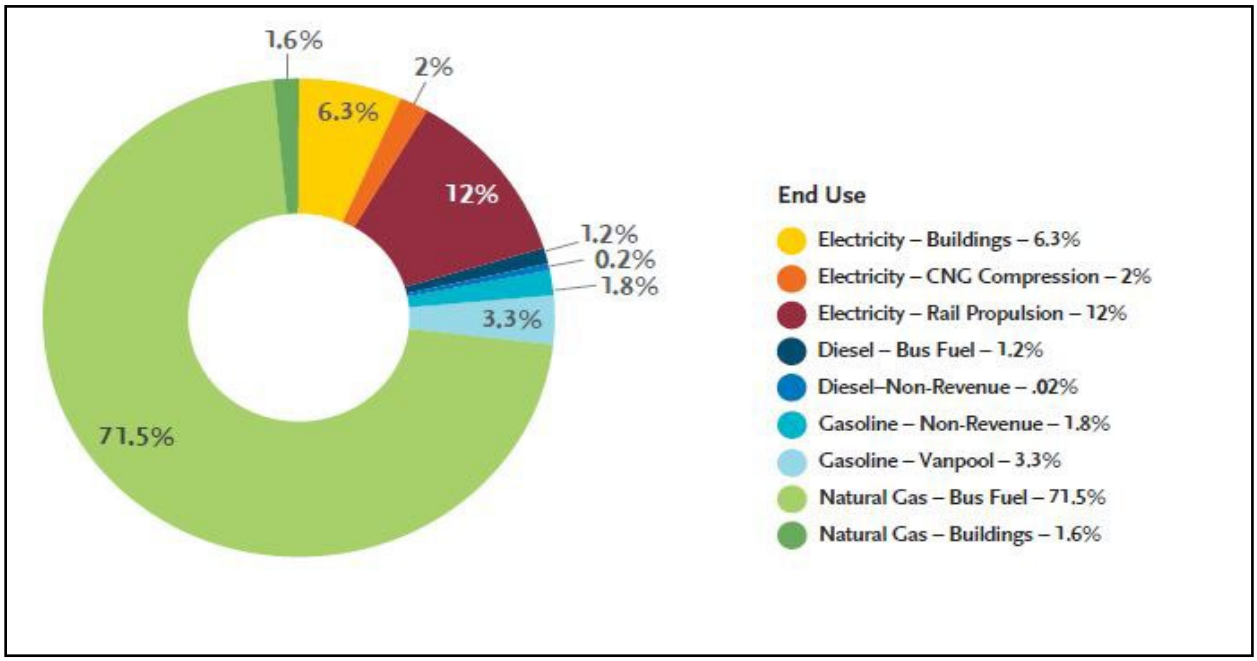
Therefore, for the quantification of energy emissions, Project energy demand will be defined as the difference between a Build Alternative (2042) and the existing conditions in 2019 adjusted for regional growth (i.e., the projected future conditions baseline) that would occur by 2042 (2042 without Project Conditions). Fuel consumption factors for highway vehicles (the preeminent energy use affected by this Project) decrease as engine technology improves and vehicle manufacturers meet more stringent state and federal engine efficiency standards. Since all alternatives would reduce VMT associated with highway traffic as compared to 2042 without Project Conditions, using 2042 highway traffic emission rates would result in less fuel reduced associated with VMT reductions as compared to reductions which might be achieved under existing conditions. Therefore, evaluation of Project impacts during the 2042 design year would conservatively evaluate the energy impacts of operations.

3.5.5.3 Metro Energy Use and Fuel Consumption

Metro's 2019 *Energy and Resource Report* indicates that Metro has experienced a decline in passenger trips (bus, rail, and vanpool) from 2013 to 2018, in line with the national trend. An important factor in the decline of transit ridership includes increased personal vehicle ownership and increased driving in recent years (Metro 2019).

2011 was the last year Metro operated diesel buses. Currently, Metro operates the largest compressed natural gas bus fleets in the nation. In July 2017, the Metro Board of Directors voted to transition the entire Metro bus fleet to zero-emissions by 2030 (Metro 2018).

Metro's implementation of energy conservation measures and building design and fuel efficiency measures has resulted in reduced energy consumption since 2013. In 2018, Metro reduced overall energy use by 7.9 percent compared to 2017 through reduced vehicle fuel use by buses and support vehicles (Metro 2019). In 2017, 30 percent of Metro's electricity came from renewable sources (Metro 2018). In 2018, 31 percent of Metro's electricity came from renewable energy sources (Metro 2019). **Figure 3.5.6** shows a breakdown of Metro's energy by end use in 2017. Metro's electricity use is split between powering the rail and bus system (92 percent) and transit facilities (8 percent) (Metro 2018).



Source: Metro, 2018.

Figure 3.5.6. 2017 Metro Energy by End Use

3.5.5.4 Electric Power

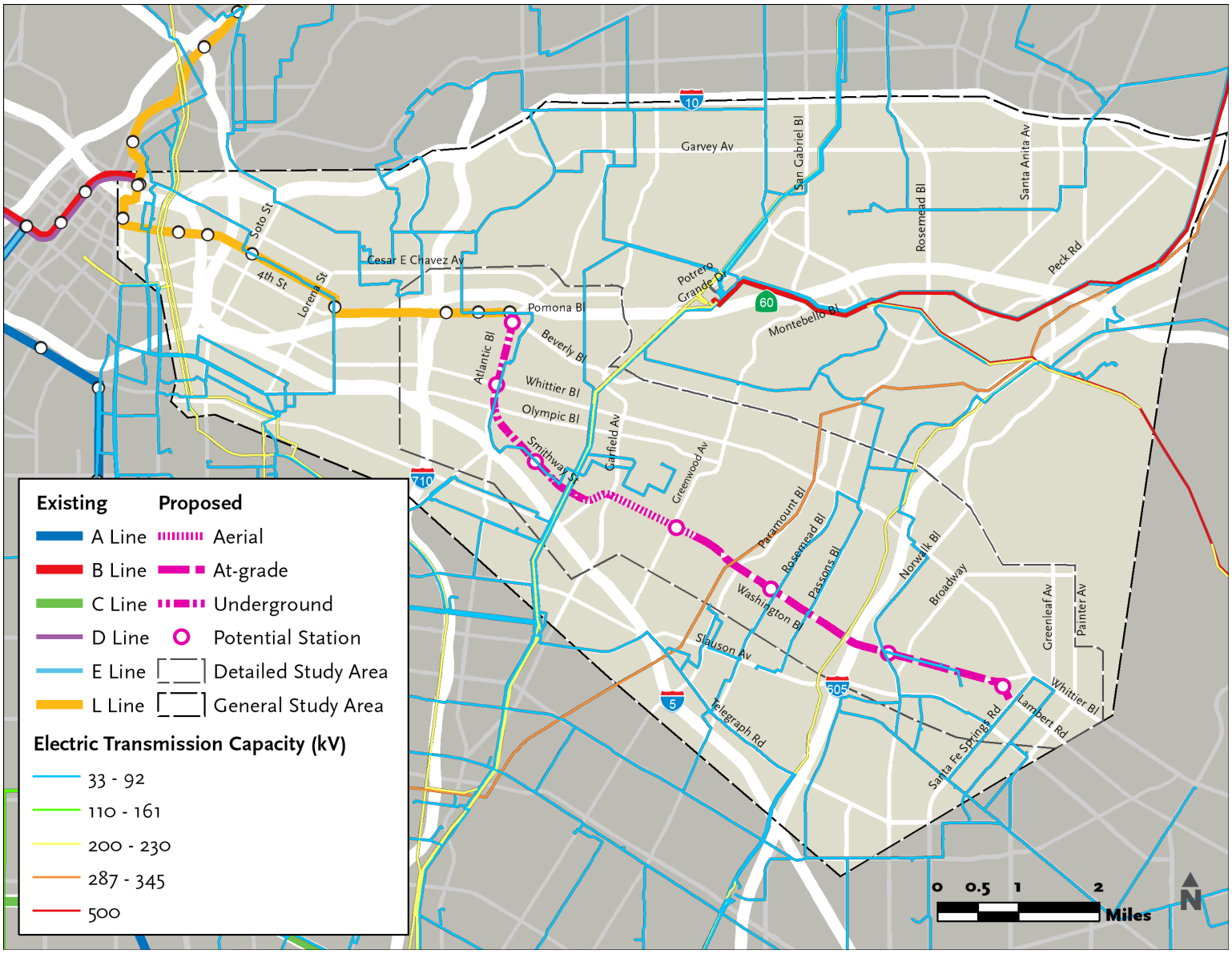
Southern California Edison (SCE) is an electric utility company and subsidiary of Edison International. SCE provides energy to approximately 15 million people in California and is one of the largest electric utilities in the United States (SCE 2019). The CEC reports on electricity consumption by planning area annually. The total electricity usage in the SCE planning area in 2018 was 104,406.6 million kWh (CEC 2019b). For planning purposes, this number can be compared to the CEC's most recent estimate of energy production in the planning area. For 2018, their report, *California Energy Demand 2018-2030 Staff Revised Forecast,* projects the net energy consumed as 110,000 million kWh (CEC 2018). As outlined in the 2020 Sustainability Report, the SCE aims to deliver 100 percent carbon-free power to retail-sales customers by 2045 (SCE 2020). Sources for carbon-free energy include solar, geothermal, wind, hydro, biomass and biowaste, and nuclear energy.

Figure 3.5.7 illustrates SCE's electric transmission grid in the GSA. Transmission lines can carry alternating current or direct current with voltages typically ranging from 110 kV to 765 kV. Transmission lines can be overhead and underground; underground transmission lines are more often found in urban areas. Sub-transmission lines generally carry voltages ranging from 33 kV to 100kV. These sub-transmission lines transmit power from higher voltage lines or other bulk power sources to local distribution network substations. An overhead power line can be single or double circuit. A single-circuit transmission line carries conductors for only one circuit.

3.5.5.5 Natural Gas

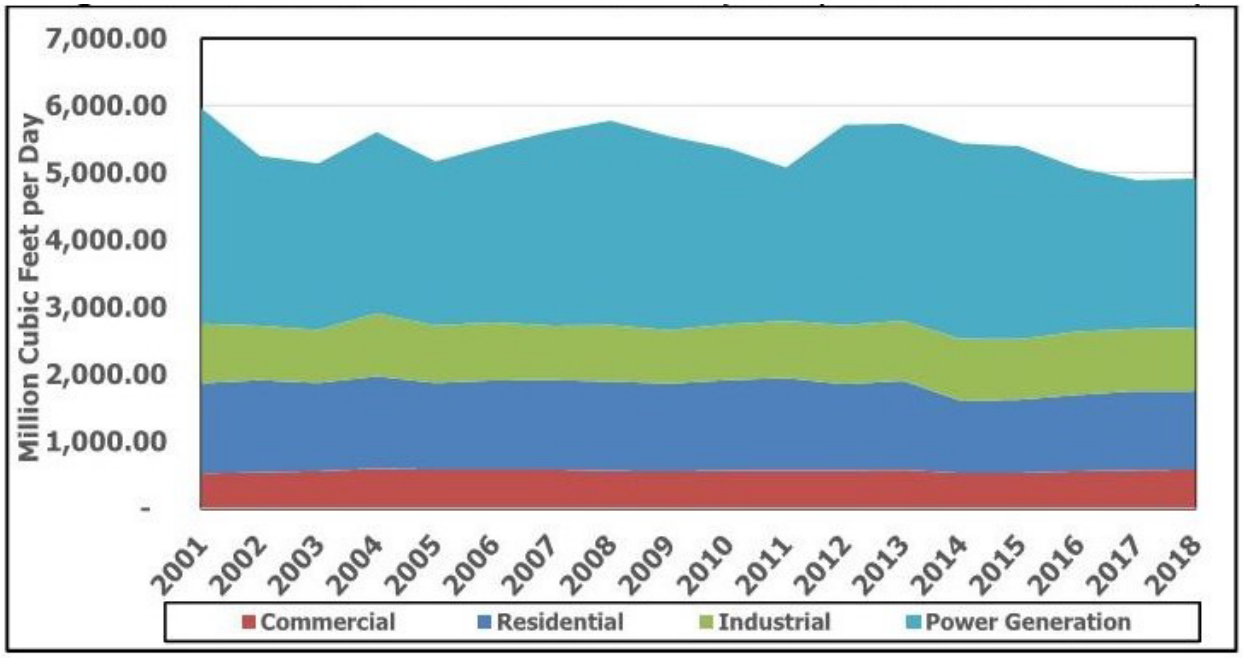
The Southern California Gas Company (SoCalGas) is a natural gas provider and subsidiary of Sempra Energy. SoCal Gas pipelines may be located anywhere, including under streets and sidewalks and on private property. Low pressure and other smaller distribution lines are connected to gas meters at homes and businesses. The California DigAlert database provided information regarding the presence of underground pipeline infrastructure.

Natural gas supplies more than 10.5 million homes, approximately 445,000 buisnesses, and about 37,000 factories and industruial consumers, and more than 640 electric generating units throughout California (CEC 2018a). California is one of the largest natural gas consumers in the United States. Approximately 85 to 90 percent of the natural gas used in California comes from out of state sources as in-state production declines. **Figure 3.5.8** illustrates California's natural gas consumption for the major sectors between 2001 and 2018. As shown, the power generation sector consumes the largest share, accounting for 45 percent in 2018. In 2018, residential and commercial sectors accounted for approximately 36 percent of the state's natural gas demand, while the industrial sector accounted for approximately 19 percent. **Figure 3.5.9** shows the historic statewide natural gas consumption and the forecasted high, mid, and low consumption for natural gas consumption through 2030 (CEC 2020a). As shown, the latest demand forecast anticipated a lower demand as compared to the 2017 forecast.



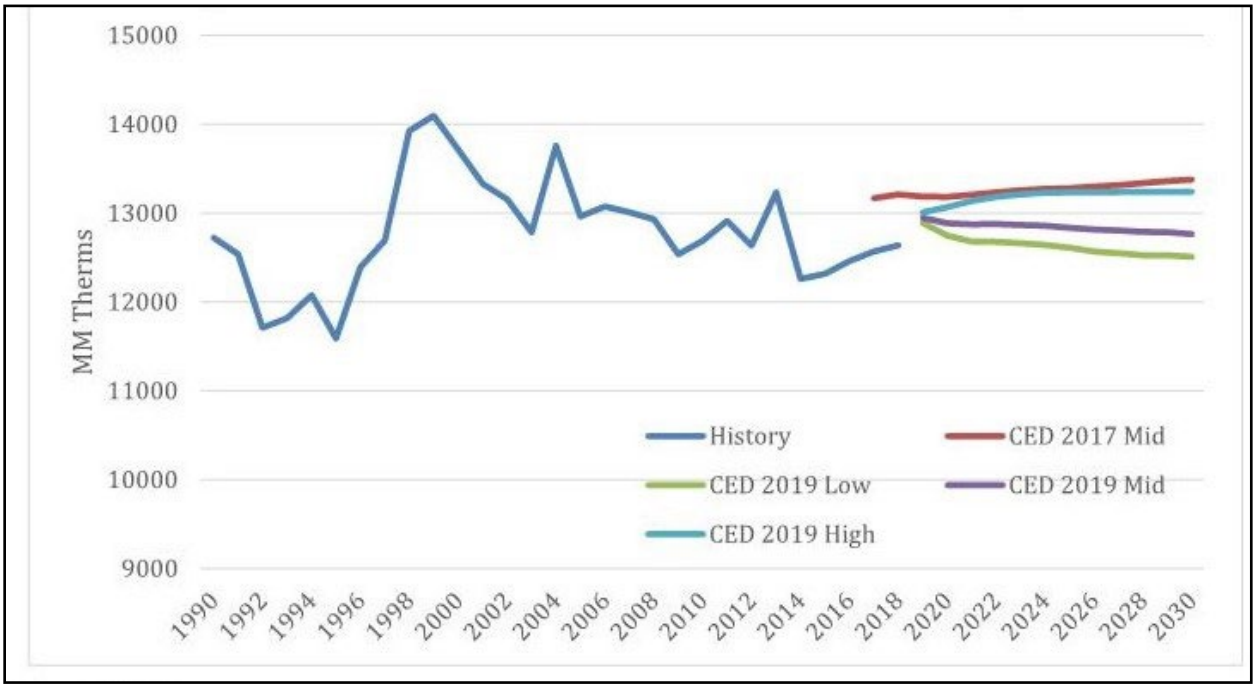
Source: CEC, 2021.

Figure 3.5.7. Southern California Edison Electric Transmission Lines



Source: CEC, 2020a.

Figure 3.5.8. California Natural Gas Consumption - All Sectors (2000-2018)



Source: CEC, 2020a.
Key:
CED = California Energy Demand

Figure 3.5.9. Statewide Natural Gas Historic and Forecasted Consumption

3.5.6 Impact Evaluation

3.5.6.1 Impact ENG-1: Energy Consumption

Impact ENG-1: Would a Build Alternative result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Virtually every aspect of Alternative 1 construction and operation requires the consumption of some form of energy resources. This section analyzes the potential for significant environmental impacts from the wasteful, inefficient, or unnecessary consumption of energy resources under the base alternatives and design options.

3.5.6.1.1 Alternative 1 Washington

Operational Impacts

Operational energy use was estimated for Alternative 1 including the energy demand of project elements, such as LRVs, six new stations, parking facilities, and an MSF which is essential in maintaining a reliable light rail system; MSF operations are also discussed in **Section 3.5.6.1.4**. The energy use estimates also include the energy demand of regional elements whose energy use would be altered by the Project, such as regional traffic.

Light Rail and Station Operations

As shown in **Table 3.5-2** and **Table 3.5-3**, annual operations of the approximate 9.0 miles of new LRT guideway under this alternative would consume approximately 4.3 million kWh of electricity, equivalent to 14.7 billion BTUs. Annual operation of the LRT stations would require an additional 0.8 million kWh of electricity, equivalent to 2.6 billion BTUs.

Parking Facilities

Annual operations of parking facilities to be constructed under Alternative 1 would consume 0.3 million kWh of electricity, equivalent to 0.9 billion BTUs, assuming surface parking facilities at Greenwood station, Rosemead station, Norwalk station, and Lambert station.

Regional Traffic

Operation of Alternative 1 would reduce annual highway VMT within the region by approximately 3.2 million VMT compared to 2042 without Project Conditions. This decrease would result in annual regional reduction in consumption of approximately 89 thousand gallons of gasoline and four thousand gallons of diesel fuel from highway vehicles. This reduction is equivalent to 11.3 billion BTUs of energy. Reduction in vehicle energy consumption would result in a beneficial impact to energy resources in the region and would reduce regional reliance on fossil fuels.

Maintenance and Storage Facility

As shown in **Table 3.5-2**, annual operation of the Commerce MSF site option would require consumption of approximately 0.8 million kWh per year of electricity, equivalent to 2.7 billion BTU per year. It would also consume a small amount of natural gas for comfort heating, totaling approximately 0.2 billion BTU per year.

As shown in **Table 3.5-3**, annual operation of the Montebello MSF site option would require consumption of approximately 0.8 million kWh per year of electricity, equivalent to 2.8 billion BTU per year. It would also consume a small amount of natural gas for comfort heating, totaling approximately 0.2 billion BTU per year.

Total Operational Energy Consumption

As shown in **Table 3.5-2** and **Table 3.5-3**, total operational energy consumption under Alternative 1 would be greater than the energy consumption under 2042 without Project Conditions. This increase would result from increased electrical demand associated with operation of the LRT guideway, stations, and an MSF. This alternative would reduce highway VMT and as such, fossil fuel energy demand would decrease as compared to 2042 without Project Conditions. When considering only non-renewable energy demand (i.e., fossil fuel combustion in highway vehicles and the portion of grid power provided by non-renewable sources), regional energy consumption under Alternative 1 would be reduced as compared to 2042 without Project Conditions. Alternative 1 would result in a net annual reduction in non-renewable energy consumption of approximately 7.8 billion BTUs with the Commerce MSF site option or 7.9 billion BTUs with the Montebello MSF site option relative to 2042 without Project Conditions.

Alternative 1 would result in a shift of 11.3 billion BTUs of fossil fuel energy demand from highway vehicles to regional electricity demand. Regional electricity supplies are becoming increasingly renewable, with a minimum 60 percent renewables energy portfolio (RPS) required to be achieved for public energy providers in the State of California by 2030 and a 100 percent RPS (e.g., fully renewable grid energy supply) required by 2045. Alternative 1 would result in long-term beneficial impacts to energy resources through decreased reliance on non-renewable fossil fuels and increased reliance on the renewable grid energy supplies. Therefore, operation of Alternative 1 would not result in the wasteful, inefficient, or unnecessary consumption of energy resources and would have less than significant impacts on energy consumption.

Regional energy demand under Alternative 1 would be less than that under the 2019 existing conditions. As presented for information purposes in **Table 3.5-2** and **Table 3.5-3**, fuel consumption in the GSA would decrease by over 1 million gallons of gasoline and would increase by less than 15 thousand gallons of diesel. This change in fuel consumption would be driven by regional growth and improvements to vehicle fuel efficiencies that will occur independent of the Project. Electricity demand would increase by a total of 6.1 million kWh associated with operation of the Project facilities. Overall energy demand under Alternative 1 would be 126,345 billion BTUs less than that under the 2019 existing conditions, with the difference driven by non-project vehicle engine efficiency standards.

Operational energy impacts are summarized in **Table 3.5-2** and **Table 3.5-3**.

Table 3.5-2. Estimated Energy Consumption from Operation – Alternative 1 with Commerce MSF Site Option

Operational Component	Gasoline Demand (Thousand Gallons)	Diesel Demand (Thousand Gallons)	Electrical Demand (kWh)	Natural Gas Demand (Billion BTU)	Operational Energy Total (Billion BTU)[1]
Light Rail Guideway	n/a	n/a	4,296,555	n/a	14.7
Stations	n/a	n/a	770,938	n/a	2.6
Parking Facilities	n/a	n/a	254,800	n/a	0.9
Commerce MSF	n/a	n/a	753,899	0.2	2.7
Regional Highway Traffic	5,207,869	252,980	n/a	n/a	661,248
2042 Total Alternative 1 Energy Demand	5,207,869	252,980	6,076,191	0.2	661,268
2019 Existing Conditions Energy Demand	6,274,509	238,829	n/a	n/a	787,613
2042 Alternative 1 minus 2019 Existing Conditions Energy Demand[2]	(1,066,640)	14,151	6,076,191	0.2	(126,345)
2042 without Project Conditions Energy Demand	5,207,958	252,984	n/a	n/a	661,259
2042 Alternative 1 minus 2042 without Project Conditions Net Energy Demand[2]	(89)	(4)	6,076,191	0.2	9.6
2042 Alternative 1 minus 2042 without Project Conditions Non-Renewable Net Energy Demand[2,3]	(89)	(4)	972,191	0.2	(7.9)

Source: CDM Smith/AECOM, JV 2021.
Notes:
1 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline; 3,412 BTU per kilowatt-hour. (USEIA 2021c).
2 Energy reductions (beneficial impacts) are shown in parentheses.
3 Non-renewable energy includes electricity after accounting for 84 percent clean energy, consistent with the 2030 target in SCE's 2020 *Integrated Resource Plan, 38 MMT Preferred Conforming Portfolio and Action Plan*.
Key:
BTU = British thermal unit kWh = kilowatt-hours

Table 3.5-3. Estimated Energy Consumption from Operation – Alternative 1 with Montebello MSF Site Option

Operational Component	Gasoline Demand (Thousand Gallons)	Diesel Demand (Thousand Gallons)	Electrical Demand (kWh)	Natural Gas Demand (Billion BTU)	Operational Energy Total (Billion BTU)[1]
Light Rail Guideway	n/a	n/a	4,296,555	n/a	14.7
Stations	n/a	n/a	770,938	n/a	2.6
Montebello MSF	n/a	n/a	776,768	0.2	2.8
Regional Highway Traffic	5,207,869	252,980	n/a	n/a	661,248
2042 Total Alternative 1 Energy Consumption	5,207,869	252,980	6,099,061	0.2	661,269
2019 Existing Conditions Energy Demand	6,274,509	238,829	n/a	n/a	787,613
2042 Alternative 1 minus 2019 Existing Conditions Energy Demand[2]	(1,066,640)	14,151	6,099,061	0.2	(126,345)
2042 without Project Conditions Energy Demand	5,207,958	252,984	n/a	n/a	661,259
2042 Alternative 1 minus 2042 without Project Conditions Net Energy Demand[2]	(89)	(4)	6,099,061	0.2	9.6
2042 Alternative 1 minus 2042 without Project Conditions Non-Renewable Net Energy Demand[2,3]	(89)	(4)	975,850	0.2	(7.8)

Source: CDM Smith/AECOM, JV 2021.
Notes:
1 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline; 3,412 BTU per kilowatt-hour. (USEIA 2021c).
2 Energy reductions (beneficial impacts) are shown in parentheses.
3 Non-renewable energy includes electricity adjustments to account for 84 percent clean energy, consistent with the 2030 target in SCE's *2020 Integrated Resource Plan, 38 MMT Preferred Conforming Portfolio and Action Plan.*
Key:
BTU = British thermal unit kWh = kilowatt-hours

Design Options

Atlantic/Pomona Station Option

As with the base Alternative 1, operation of Alternative 1 with the Atlantic/Pomona Station Option would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. Implementation of Alternative 1 with the Atlantic/Pomona Station Option would not result in any appreciable change to the Project's operational energy consumption as compared to the base Alternative 1. Thus, operation of Alternative 1 with the Atlantic/Pomona Station Option would result in less than significant impacts on energy consumption.

Montebello At-Grade Option

As with the base Alternative 1, operation of Alternative 1 with the Montebello At-Grade Option would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. Implementation of Alternative 1 with the Montebello At-Grade Option would not result in any appreciable change to the Project's operational energy consumption as compared to the base Alternative 1. Thus, operation of Alternative 1 with the with the Montebello At-Grade Option would result in less than significant impacts on energy consumption.

Construction Impacts

Base Alternative and Design Options

To determine construction-related energy consumption, the analysis used construction GHG emissions and USEIA CO_2 energy factors. Construction energy impacts are summarized in **Table 3.5-4**, **Table 3.5-5** and **Table 3.5-6**. See also Appendix F.

Table 3.5-4. Estimated Total Energy Consumption from Construction – Alternative 1 with Commerce MSF

Project Component[1]	Construction GHG Emissions ($MTCO_2e$)	Diesel Fuel Demand (Thousand Gallons)	Gasoline Fuel Demand (Thousand Gallons)	Energy Consumption (Billion BTUs)[2]
Light Rail Guideway	3,690	289	88	50.3
Stations	2,601	233	27	35.2
Parking Facilities	86	5	4	1.2
Commerce MSF	1,099	68	48	15.1
Street Widening and TPSS	1,162	100	17	15.8
Total	8,639	694	184	117.6

Source: CDM Smith/AECOM, JV 2021.
Note:
1 GHG emissions associated with off-site vehicle trips (vendor trips, hauling trips, and worker commuting) are included in GHG emissions for each component of Project construction.
2 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline. (USEIA 2021c).
Key:
BTU = British thermal unit MSF = maintenance and storage facility $MTCO_2e$ = metric tons carbon dioxide equivalents
TPSS = traction power substations

Table 3.5-5. Estimated Total Energy Consumption from Construction – Alternative 1 with Montebello MSF

Project Component[1]	Construction GHG Emissions ($MTCO_2e$)	Diesel Fuel Demand (Thousand Gallons)	Gasoline Fuel Demand (Thousand Gallons)	Energy Consumption (Billion BTUs)[2]
Light Rail Guideway	3,690	289	88	50.3
Stations	2,601	233	27	35.2
Parking Facilities	86	5	4	1.2
Montebello MSF	1,374	85	60	18.9
Street Widening and TPSS	1,162	100	17	15.8
Total	8,914	711	196	121.3

Source: CDM Smith/AECOM, JV 2021.
Notes:
1 GHG emissions associated with off-site vehicle trips (vendor trips, hauling trips, and worker commuting) are included in GHG emissions for each component of Project construction.
2 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline. (USEIA 2021c).
Key:
BTU = British thermal unit MSF = maintenance and storage facility $MTCO_2e$ = metric tons carbon dioxide equivalents
TPSS = traction power substations

Table 3.5-6. Estimated Energy Consumption from Construction – Montebello At-Grade Option

Project Component[1]	Construction GHG Emissions ($MTCO_2e$)	Diesel Fuel Demand (Thousand Gallons)	Gasoline Fuel Demand (Thousand Gallons)	Energy Consumption (Billion BTUs)
Montebello Aerial Option (Base Alternative)	399	32	9	5.4
Montebello At-Grade Option	211	16	6	2.9

Source: CDM Smith/AECOM, JV 2021.
Note:
1 GHG emissions associated with off-site vehicle trips (vendor trips, hauling trips, and worker commuting) are included in GHG emissions for each component of Project construction.
Key:
BTU = British thermal unit MSF = maintenance and storage facility $MTCO_2e$ = metric tons carbon dioxide equivalents

Construction of Alternative 1 would result in a temporary energy demand of 117.6 billion BTUs with the Commerce MSF site option and 121.3 billion BTUs with the Montebello MSF site option. This impact would be temporary, whereas the Project would result in long-term, beneficial impacts to energy resources in the region (e.g., decreased dependence on fossil fuels).

Specific energy conservation measures would be confirmed in final design consistent with Metro's 2011 ECMP and 2013 *Sustainable Rail Plan*, as well as Metro's energy and environmental policies. Additional BMPs set forth in Metro's Green construction policy would further reduce energy consumption during construction. These BMPs include, but are not limited to: the required use of renewable diesel fuel in construction equipment; the required use of Tier 4 off-road emission standard

equipment as regionally available; the required use of USEPA 2007 on-road emission standard compliant trucks; the limitation of vehicle idling to 5 minutes or fewer when not in use; and the use of grid-power in lieu of diesel generators where available. Therefore, construction of Alternative 1, Alternative 1 with the Atlantic/Pomona Station Option, and Alternative 1 with the Montebello At-Grade Option would not result in the wasteful, inefficient, or unnecessary consumption of energy resources and would have less than significant impacts on energy consumption.

Design Options

Atlantic/Pomona Station Option

As described above, the construction of Alternative 1 would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. While the Atlantic/Pomona Station, the TBM receiving pit, and the alignment north of the proposed Atlantic/Whittier station would be located at a different position from the base Alternative 1, comparable construction and excavation activities would be performed for Atlantic/Pomona Station Option. Substantial additional construction is not anticipated for the Atlantic/Pomona Station Option and construction GHG emissions would not materially differ from the base Alternative 1. Therefore, implementation of the Atlantic/Pomona Station Option would not result in a meaningful change to the consumption of energy resources. Thus, construction of Alternative 1 with the Atlantic/Pomona Station Option would result in less than significant impacts on energy consumption.

Montebello At-Grade Option

As described above, the construction of Alternative 1 would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. Implementation of Alternative 1 with the Montebello At-Grade Option would result in a less than one 2.5 billion BTU difference in construction energy consumption compared to the base Alternative 1, less than one five percent of total construction energy consumption. **Table 3.5-6** presents the energy demand associated with the Montebello At-Grade Option and corresponding portion of the base alternative. Thus, construction of Alternative 1 with the Montebello At-Grade Option would result in less than significant impacts on energy consumption.

3.5.6.1.2 Alternative 2 Atlantic to Commerce/Citadel IOS

Operational Impacts

Base Alternative and Design Option

Operational energy use was estimated for the base Alternative 2 and Alternative 2 with the Atlantic/Pomona Station Option including the energy demand of project elements, such as LRVs, three new stations, and an MSF which is essential in maintaining a reliable light rail system. MSF operations are discussed in **Section 3.5.6.1.4**. Similar to Alternative 1, implementation of the Atlantic/Pomona Station Option would not result in a material change to Alternative 2 operational energy demand. The energy use estimates also include the energy demand of regional elements whose energy use would be altered by the Project, such as regional traffic.

Light Rail and Station Operations

As shown in **Table 3.5-7, a**nnual operations of the approximate 3.2 miles of new LRT guideway would consume approximately 1.1 million kWh of electricity, equivalent to 3.9 billion BTUs. Annual operation of the LRT stations would require an additional 0.3 million kWh of electricity, equivalent to 1.2 billion BTUs.

Parking Facilities

No new parking facilities would be constructed as part of the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option.

Regional Traffic

Operation of the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would reduce annual highway VMT within the region by approximately 1.6 million VMT compared to the Project Alternative. This decrease would result in annual regional reduction in consumption of approximately 45 thousand gallons of gasoline and two thousand gallons of diesel fuel from highway vehicles. This reduction is equivalent to 5.7 billion BTUs of energy. Reduction in vehicle energy consumption would result in a beneficial impact to energy resources in the region and would reduce regional reliance on fossil fuels.

Maintenance and Storage Facility

Annual operation of the Commerce MSF site option would require consumption of approximately 0.8 million kWh per year of electricity, equivalent to 2.7 billion BTU per year. It would also consume a small amount of natural gas for comfort heating, totaling approximately 0.2 billion BTU per year.

Total Operational Energy Consumption

As shown in **Table 3.5-7**, total operational energy consumption under the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would be greater than the energy consumption under 2042 without Project Conditions. This increase would result from increased electrical demand associated with operation of the LRT guideway, stations, and MSF. The base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would reduce highway VMT and as such, fossil fuel energy demand would decrease as compared to 2042 without Project Conditions. When considering only non-renewable energy demand (i.e., fossil fuel combustion in highway vehicles and the portion of grid power provided by non-renewable sources), regional energy consumption under the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would be reduced as compared to 2042 without Project Conditions. The base Alternative 2 with the Commerce MSF site option would result in a net annual reduction in non-renewable energy consumption of 4.3 billion BTUs relative to 2042 without Project Conditions. Alternative 2 with the Atlantic/Pomona Station Option would not result in any appreciable change to the Project's operational energy consumption.

Operation of the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would result in a shift of 5.7 billion BTUs of fossil fuel energy demand from highway vehicles to regional electricity demand. Regional electricity supplies are becoming increasingly renewable, with a minimum 60 percent RPS required to be achieved for public energy providers in the State of California by 2030 and a 100 percent RPS (i.e., fully renewable grid energy supply) required by 2045. The base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would result in long-term beneficial impacts to energy resources through decreased reliance on non-renewable fossil fuels and increased reliance on the renewable grid energy supplies. Therefore, operation of the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would not result in the wasteful, inefficient, or unnecessary consumption of energy resources and would have less than significant impacts on energy consumption.

Regional energy demand under the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would be less than that under the 2019 existing conditions. As presented for information purposes in **Table 3.5-7**, fuel consumption in the study area would decrease by over 1 million gallons of gasoline and would increase by less than 14 thousand gallons of diesel. This change in fuel consumption would be driven by regional growth and improvements to vehicle fuel efficiencies that will occur independent of the Project. Electricity demand would increase by a total of 2.2 million kWh associated with operation of the Project facilities. Overall energy demand under the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would be 126,352 billion BTUs less than that under the 2019 existing conditions, with the difference driven by non-project vehicle engine efficiency standards.

Operational energy impacts are summarized in **Table 3.5-7.**

Table 3.5-7. Estimated Energy Consumption from Operation – Alternative 2 with Commerce MSF

Operational Component	Gasoline Demand (Thousand Gallons)	Diesel Demand (Thousand Gallons)	Electrical Demand (kWh)	Natural Gas Demand (Billion BTU)	Operational Energy Total (Billion BTU)[1]
Light Rail Guideway	n/a	n/a	1,130,672	n/a	3.9
Stations	n/a	n/a	342,716	n/a	1.2
Commerce MSF	n/a	n/a	753,899	0.2	2.7
Regional Highway Traffic	5,207,914	252,982	n/a	n/a	661,253
2042 Total Alternative 2 Energy Consumption	5,207,914	252,982	2,227,287	0.2	661,261
2019 Existing Conditions Energy Demand	6,274,509	238,829	n/a	n/a	787,613
2042 Alternative 2 minus 2019 Existing Conditions Energy Demand[2]	(1,066,595)	14,153	2,227,287	0.2	(126,352)
2042 without Project Conditions Energy Demand	5,207,958	252,984	n/a	n/a	661,259
2042 Alternative 2 minus 2042 without Project Conditions Net Energy Demand[2]	(45)	(2)	2,227,287	0.2	2.1
2042 Alternative 2 minus 2042 without Project Conditions Non-Renewable Net Energy Demand[2,3]	(45)	(2)	356,366	0.2	(4.3)

Source: CDM Smith/AECOM, JV 2021.
Notes:
1 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline; 3,412 BTU per kilowatt-hour. (USEIA 2021c).
2 Energy reductions (beneficial impacts) are shown in parentheses.
3 Non-renewable energy includes electricity after accounting for 84 percent clean energy, consistent with the 2030 target in SCE's 2020 Integrated Resource Plan, 38 MMT Preferred Conforming Portfolio and Action Plan.
Key:
BTU = British thermal unit kWh = kilowatt-hours

Construction Impacts

Base Alternative and Design Option

Construction energy impacts are summarized in **Table 3.5-8.** Similar to Alternative 1, implementation of the Atlantic/Pomona Station Option would not result in a material change to Alternative 2 construction energy demand. Construction of the base Alternative 2 would result in a temporary energy demand of 63.9 billion BTUs with the Commerce MSF site option. This impact would be temporary, whereas the Project would result in long-term, beneficial impacts to energy resources in the region (i.e., decreased dependence on fossil fuels).

Construction of Alternative 2 with the Atlantic/Pomona Station Option would not cause a meaningful change to the consumption of energy resources during construction. While the Atlantic/Pomona Station, the TBM receiving pit, and the alignment north of the proposed Atlantic/Whittier station would be located at a different position from the base Alternative 2, comparable construction and excavation activities would be performed for the Atlantic/Pomona Station Option. Substantial additional construction is not anticipated for the Atlantic/Pomona Station Option and construction GHG emissions would not materially differ from the base Alternative 2.

Table 3.5-8. Estimated Total Energy Consumption from Construction – Alternative 2 with Commerce MSF

Project Component[1]	Construction GHG Emissions ($MTCO_2e$)	Diesel Fuel Demand (Thousand Gallons)	Gasoline Fuel Demand (Thousand Gallons)	Energy Consumption (Billion BTUs)[2]
Light Rail Guideway	1,602	129	34	21.8
Stations	1,955	177	18	26.5
Commerce MSF	1,099	68	48	15.1
Street Widening and TPSS	39	3	1	0.5
Total	4,696	377	100	63.9

Source: CDM Smith/AECOM, JV 2021.
Notes:
1 GHG emissions associated with off-site vehicle trips (vendor trips, hauling trips, and worker commuting) are included in GHG emissions for each component of Project construction.
2 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline. (USEIA 2021c).
Key:
BTU = British thermal unit MSF = maintenance and storage facility $MTCO_2e$ = metric tons carbon dioxide equivalents
TPSS = traction power substations

Specific energy conservation measures would be confirmed in final design consistent with Metro's 2011 ECMP and 2013 *Sustainable Rail Plan*, as well as Metro's energy and environmental policies. Additional BMPs set forth in Metro's Green construction policy would further reduce energy consumption during construction. These BMPs include, but are not limited to: the required use of renewable diesel fuel in construction equipment; the required use of Tier 4 off-road emission standard equipment as regionally available; the required use of USEPA 2007 on-road emission standard compliant trucks; the limitation of vehicle idling to 5 minutes or fewer when not in use; and the use of grid-power in lieu of diesel generators where available. Therefore, construction of the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would not result in the wasteful, inefficient, or unnecessary consumption of energy resources and would have less than significant impacts on energy consumption.

3.5.6.1.3 Alternative 3 Atlantic to Greenwood IOS

Operational Impacts

Base Alternative and Design Options

Operational energy use was estimated for the base Alternative 3 and Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option including the energy

demand of project elements, such as includes the energy use of new LRVs, four new stations, regional traffic, parking facilities, and an MSF which is essential in maintaining a reliable light rail system. MSF operations are also discussed in **Section 3.5.6.1.4**. Similar to Alternative 1, implementation of the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would not result in a material change to Alternative 3 operational energy demand. The energy use estimates also include the energy demand of regional elements whose energy use would be altered by the Project, such as regional traffic.

Light Rail and Station Operations

As shown in in **Table 3.5-9** and **Table 3.5-10**, annual operations of the approximately 4.6 miles of new LRT guideway would consume approximately 2.0 million kWh of electricity, equivalent to 6.9 billion BTUs. Annual operation of the LRT stations would require an additional 0.5 million kWh of electricity, equivalent to 1.6 billion BTUs.

Parking Facilities

Annual operations of parking facilities to be constructed under the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would consume less than 52 thousand kWh of electricity, equivalent to 0.2 billion BTUs. Parking facilities assumed under this alternative include a surface parking lot at Greenwood station.

Regional Traffic

Operation of the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would reduce annual highway VMT within the region by approximately 2.5 million VMT compared to 2042 without Project Conditions. This decrease would result in annual regional reduction in consumption of approximately 71 thousand gallons of gasoline and 3 thousand gallons of diesel fuel from highway vehicles. This reduction is equivalent to 9.1 billion BTUs of energy. Reduction in vehicle energy consumption would result in a beneficial impact to energy resources in the region and would reduce regional reliance on fossil fuels.

Maintenance and Storage Facility

As shown in **Table 3.5-9**, annual operation of the Commerce MSF site option would require consumption of approximately 0.8 million kWh per year of electricity, equivalent to 2.7 billion BTU per year. It would also consume a small amount of natural gas for comfort heating, totaling approximately 0.2 billion BTU per year.

As shown in **Table 3.5-10**, annual operation of the Montebello MSF site option would require consumption of approximately 0.8 million kWh per year of electricity, equivalent to 2.8 billion BTU per year. It would also consume a small amount of natural gas for comfort heating, totaling approximately 0.2 billion BTU per year.

Total Operational Energy Consumption

As shown in in **Table 3.5-9** and **Table 3.5-10**, total operational energy consumption under the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would be greater than the energy consumption under 2042 without Project Conditions. This increase would result from increased electrical demand associated with operation of the LRT guideway, stations, and MSF. The base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would reduce highway VMT and as such, fossil fuel energy demand would decrease as compared to 2042 without Project Conditions. When considering only non-renewable energy demand (i.e., fossil fuel combustion in highway vehicles and the portion of grid power provided by non-renewable sources), regional energy consumption under the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would be reduced as compared to 2042 without Project Conditions. The base Alternative 3 with either the Commerce MSF or Montebello MSF site option would result in a net annual reduction in non-renewable energy consumption of 7.1 billion BTUs relative to 2042 without Project Conditions. Alternative 3 with the Atlantic/Pomona Station Option and Alternative 3 with the Montebello At-Grade Option would not result in any appreciable change to the Project's operational energy consumption.

The base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would result in a shift of 9.1 billion BTUs of fossil fuel energy demand from highway vehicles to regional electricity demand. Alternative 3 would result in long-term beneficial impacts to energy resources through decreased reliance on non-renewable fossil fuels and increased reliance on the renewable grid energy supplies. Therefore, operation of the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would not result in the wasteful, inefficient, or unnecessary consumption of energy resources and would have less than significant impacts on energy consumption.

Regional energy demand under the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would be less than that under the 2019 existing conditions. As presented for information purposes in **Table 3.5-9** and **Table 3.5-10**, fuel consumption in the study area would decrease by over 1 million gallons of gasoline and would increase by less than 14 thousand gallons of diesel. This change in fuel consumption would be driven by regional growth and improvements to vehicle fuel efficiencies that will occur independent of the Project. Electricity demand would increase by a total of 3.3 million kWh associated with operation of the Project facilities. Overall energy demand under the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would be 126,352 billion BTUs less than that under the 2019 existing conditions, with the difference driven by non-project vehicle engine efficiency standards.

Operational energy impacts are summarized in **Table 3.5-9** and **Table 3.5-10.**

Table 3.5-9. Estimated Energy Consumption from Operation – Alternative 3 with Commerce MSF

Operational Component	Gasoline Demand (Thousand Gallons)	Diesel Demand (Thousand Gallons)	Electrical Demand (kWh)	Natural Gas Demand (Billion BTU)	Operational Energy Total (Billion BTU)[1]
Light Rail Guideway	n/a	n/a	2,035,210	n/a	6.9
Stations	n/a	n/a	463,488	n/a	1.6
Parking Facilities	n/a	n/a	51,800	n/a	0.2
Commerce MSF	n/a	n/a	753,899	0.2	2.7
Regional Highway Traffic	5,207,887	252,981	n/a	n/a	661,250
Total Energy Consumption	5,207,887	252,981	3,304,397	0.2	661,261
2019 Existing Conditions Energy Demand	6,274,509	238,829	n/a	n/a	787,613
2042 Alternative 3 minus 2019 Existing Conditions Energy Demand[2]	(1,066,622)	14,152	3,304,397	0.2	(126,352)
2042 without Project Conditions Energy Demand	5,207,958	252,984	n/a	n/a	661,259
2042 Alternative 3 minus 2042 without Project Conditions Net Energy Demand[2]	(71)	(3)	3,304,397	0.2	2.4
2042 Alternative 3 minus 2042 without Project Conditions Non-Renewable Net Energy Demand[2,3]	(71)	(3)	528,704	0.2	(7.1)

Source: CDM Smith/AECOM, JV 2021.
Notes:
1 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline; 3,412 BTU per kilowatt-hour. (USEIA 2021c).
2 Energy reductions (beneficial impacts) are shown in parentheses.
3 Non-renewable energy includes electricity after accounting for 84 percent clean energy, consistent with the 2030 target in SCE's *2020 Integrated Resource Plan, 38 MMT Preferred Conforming Portfolio and Action Plan.*
Key:
BTU = British thermal unit kWh = kilowatt-hours

Table 3.5-10. Estimated Energy Consumption from Operation – Alternative 3 with Montebello MSF

Operational Component	Gasoline Demand (Thousand Gallons)	Diesel Demand (Thousand Gallons)	Electrical Demand (kWh)	Natural Gas Demand (Billion BTU)	Operational Energy Total (Billion BTU)[1]
Light Rail Guideway	n/a	n/a	2,035,210	n/a	6.9
Stations	n/a	n/a	463,488	n/a	1.6
Parking Facilities	n/a	n/a	51,800	n/a	0.2
Montebello MSF	n/a	n/a	776,768	0.2	2.8
Regional Highway Traffic	5,207,887	252,981	n/a	n/a	661,250
2019 Existing Conditions Energy Demand	5,207,887	252,981	3,275,466	0.2	661,261
2042 Alternative 3 minus 2019 Existing Conditions Energy Demand[2]	6,274,509	238,829	n/a	n/a	787,613
2042 without Project Conditions Energy Demand	(1,066,622)	14,152	3,327,266	0.2	(126,352)
2042 Alternative 3 minus 2042 without Project Conditions Net Energy Demand[2]	5,207,958	252,984	n/a	n/a	661,259
2042 Alternative 3 minus 2042 without Project Conditions Non-Renewable Net Energy Demand[2,3]	(71)	(3)	3,327,266	0.2	2.4
2019 Existing Conditions Energy Demand	(71)	(3)	532,363	0.2	(7.1)

Source: CDM Smith/AECOM, JV 2021.
Notes:
1 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline; 3,412 BTU per kilowatt-hour. (USEIA 2021c).
2 Energy reductions (beneficial impacts) are shown in parentheses.
3 Non-renewable energy includes electricity adjustments to account for 84 percent clean energy, consistent with the 2030 target in SCE's *2020 Integrated Resource Plan, 38 MMT Preferred Conforming Portfolio and Action Plan.*
Key:
BTU = British thermal unit kWh = kilowatt-hours

Construction Impacts

Base Alternative and Design Option

Construction energy impacts are summarized in **Table 3.5-11** and **Table 3.5-12**. Similar to Alternative 1, implementation of the Atlantic/Pomona Station Option would not result in a material change to Alternative 3 construction energy demand. Construction of the base Alternative 3 would result in a temporary energy demand of 74.5 billion BTUs with the Commerce MSF site option and 78.3 billion BTUs with the Montebello MSF site option. This impact would be temporary, whereas the Project

would result in long-term, beneficial impacts to energy resources in the region (i.e., decreased dependence on fossil fuels).

Table 3.5-11. Estimated Total Energy Consumption from Construction – Alternative 3 with Commerce MSF

Project Component[1]	Construction GHG Emissions ($MTCO_2e$)	Diesel Fuel Demand (Thousand Gallons)	Gasoline Fuel Demand (Thousand Gallons)	Energy Consumption (Billion BTUs)[2]
Light Rail Guideway	2,001	160	43	27.2
Stations	2,178	198	19	29.5
Parking Facilities	17	1	1	0.2
Commerce MSF	1,099	68	48	15.1
Street Widening and TPSS	182	16	3	2.5
Total	5,477	443	114	74.5

Source: CDM Smith/AECOM, JV 2021.
Notes:
1 GHG emissions associated with off-site vehicle trips (vendor trips, hauling trips, and worker commuting) are included in GHG emissions for each component of Project construction.
2 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline. (USEIA 2021c).
Key:
BTU = British thermal unit MSF = maintenance and storage facility $MTCO_2e$ = metric tons carbon dioxide equivalents
TPSS = traction power substations

Table 3.5-12. Estimated Total Energy Consumption from Construction – Alternative 3 with Montebello MSF

Project Component[1]	Construction GHG Emissions ($MTCO_2e$)	Diesel Fuel Demand (Thousand Gallons)	Gasoline Fuel Demand (Thousand Gallons)	Energy Consumption (Billion BTUs)[2]
Light Rail Guideway	2,001	160	43	27.2
Stations	2,178	198	19	29.5
Parking Facilities	17	1	1	0.2
Montebello MSF	1,374	85	60	18.9
Street Widening and TPSS	182	16	3	2.5
Total	5,752	460	126	78.3

Source: CDM Smith/AECOM, JV 2021.
Notes:
1 GHG emissions associated with off-site vehicle trips (vendor trips, hauling trips, and worker commuting) are included in GHG emissions for each component of Project construction.
2 USEIA energy-unit conversion factors used to convert different project energy consumptions to common energy units (BTU) as follows: 0.137 million BTU per gallon of diesel fuel; 0.120 million BTU per gallon of gasoline. (USEIA 2021c).
Key:
BTU = British thermal unit MSF = maintenance and storage facility $MTCO_2e$ = metric tons carbon dioxide equivalents
TPSS = traction power substations

Construction of Alternative 3 with the Atlantic/Pomona Station Option would not cause a meaningful change to the consumption of energy resources during construction compared to the base Alternative 3. While the Atlantic/Pomona Station Option, the TBM receiving pit, and the alignment north of the proposed Atlantic/Whittier station would be located at a different position from the base Alternative 3, comparable construction and excavation activities would be performed for Atlantic/Pomona Station Option. Substantial additional construction is not anticipated for the Atlantic/Pomona Station Option and construction GHG emissions would not materially differ from the base Alternative 3.

As presented in **Table 3.5-6** in **Section 3.5.6.1.1**, implementation of Alternative 3 with the Montebello At-Grade Option would result in an additional 2.5 billion BTU in construction energy consumption compared to the base Alternative 3, less than five percent of total construction energy consumption. Implementation of the Montebello At-Grade option would not cause a substantial change to the consumption of energy resources during construction.

Specific energy conservation measures would be confirmed in final design consistent with Metro's 2011 ECMP and 2013 *Sustainable Rail Plan*, as well as Metro's energy and environmental policies. Additional BMPs set forth in Metro's Green construction policy would further reduce energy consumption during construction. These BMPs include, but are not limited to: the required use of renewable diesel fuel in construction equipment; the required use of Tier 4 off-road emission standard equipment as regionally available; the required use of USEPA 2007 on-road emission standard compliant trucks; the limitation of vehicle idling to 5 minutes or fewer when not in use; and the use of grid-power in lieu of diesel generators where available. Therefore, construction of the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would not result in the wasteful, inefficient, or unnecessary consumption of energy resources and would have less than significant impacts on energy consumption.

3.5.6.1.4 Maintenance and Storage Facilities

Operational Impacts

MSF Site Options and Design Option

As detailed in **Section 3.5.6.1.1**, **Section 3.5.6.1.2**, and **Section 3.5.6.1.3**, the operation of the Project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. Each Build Alternative would result in a substantial shift in energy demand from fossil fuel highway vehicles to increasingly renewable regional electricity demand. Operation of an MSF is essential in maintaining a reliable light rail system and was included in the Project energy assessment. Annual operation of the Commerce MSF site option would require consumption of approximately 0.8 million kWh per year of electricity, equivalent to 2.7 billion BTU per year. It would also consume a small amount of natural gas for comfort heating, totaling approximately 0.2 billion BTU per year. Annual operation of the Montebello MSF site option would require consumption of approximately 0.8 million kWh per year of electricity, equivalent to 2.8 billion BTU per year. It would also consume a small amount of natural gas for comfort heating, totaling approximately 0.2 billion BTU per year. Operation of the Montebello MSF At-Grade Option would not result in any appreciable change to energy consumption as compared to the base Montebello MSF site option.

While operation of an MSF would require a small amount of natural gas for comfort heating, the Project under any of its Build Alternatives would nonetheless represent a substantial shift in energy resource dependence away from fossil fuels. Therefore, operation of the MSF site options would not

result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project operation.

Construction Impacts

MSF Site Options and Design Option

As detailed in **Section 3.5.6.1.1**, **Section 3.5.6.1.2**, and **Section 3.5.6.1.3**, the construction of the Project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction. The operation of an MSF is essential in maintaining a reliable light rail system; therefore, construction of an MSF was included in the Project energy assessment. Construction of the Commerce MSF site option would require 68 thousand gallons of diesel fuel and 48 thousand gallons of gasoline, equivalent to 15.1 billion BTUs. Construction of the Montebello MSF site option would require 85 thousand gallons of diesel fuel and 60 thousand gallons of gasoline fuel, equivalent to 18.9 billion BTUs. The energy consumption difference for construction of the Montebello MSF At-Grade Option would be less than 2.5 BTUs, which is less than five percent of total construction energy consumption.

While construction of an MSF would require the short-term consumption of energy resources, primarily in the form of diesel fuel, the Project under any of its Build Alternatives would contribute to a long-term regional shift in energy resource dependence away from fossil fuels. Therefore, construction of an MSF site option would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction.

3.5.6.2 Impact ENG-2: Energy Plans

Impact ENG-2: Would a Build Alternative conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

3.5.6.2.1 Alternative 1 Washington

Operational Impacts

Various state and local plans influence the adoption of renewable energy and energy efficiency requirements in the GSA. Many of the applicable energy plans include components that are larger state or regional regulatory actions with which the Project cannot directly or indirectly comply with or obstruct. Such plans include the California Clean Cars Program which governs emission standards for automobile manufacturers, the Alternative and Renewable Fuel and Vehicle Technology Program which empowers the CEC to incentivize the development of alternative and renewable fuel technologies, and the California RPS which requires 60 percent renewable or zero-carbon grid power by 2030 and 100 percent renewable or zero-carbon grid power by 2045. Other plans and policies have goals which could be directly or indirectly impacted by the project.

The California Alternative Fuels Plan aims to expand alternative fuel adoption and availability to protect the state economy from petroleum pricing variations and spikes but included topics such as conventional vehicle efficiency and other components of the transportation system. The plan concludes that significant reductions to regional VMT, and enhanced land use and transportation planning would be necessary. As stated in **Section 3.5.6.1.1**, Alternative 1 would reduce regional highway travel by 3.2 million VMT and would thus not conflict with the plan.

While SCAG's 2020 RTP/SCS is primarily a transportation and land-use plan, the plan includes transportation policies which would reduce energy and fossil fuel demand and encourage energy efficiency. The Project is identified in the 2020 RTP/SCS as a major transit capital project and is included in the plan's regional growth and transportation projections. Further, the Project, alongside other transit improvement projects planned to be implemented throughout the region, would facilitate broader adoption of mass transit and contribute to regional VMT reductions, as projected in the 2020 RTP/SCS. Therefore, the Project would not conflict with or obstruct the 2020 RTP/SCS.

Metro has established multiple energy-related plans and policies including the *2007 Energy and Sustainability Policy*, *2009 Environmental Policy*, *2011 Renewable Energy Policy*, *2011 Energy Conservation and Management Plan*, *2013 Sustainable Rail Plan*, *2014 Complete Street Policy*, *2016 First/Last Mile Strategic Plan*, *2019 CAAP*, and *2020 Moving Beyond Sustainability Strategic Plan*. While each of these plans addresses a specific aspect of Metro operations or planning, from an operational energy perspective, the plans cumulatively encourage:

- Reductions to natural resources and fossil fuel consumption
- Efficient use of fuels and electricity
- The promotion and procurement of renewable energy sources, such as PV installations, as feasible
- Enhancing community-transit integration through improvements to walking, biking, and other transit-mode connections

Alternative 1 would contribute to a regional shift in transportation energy demand away from fossil fuels toward grid power. Stations, lighting in parking lots, and the MSF would each be designed and constructed to achieve energy efficiency consistent with or exceeding Metro's and CCR Title 24 efficiency requirements. Further, the Project would, by its nature, enhance community access to public transit through the operation of the LRT. Therefore, the Project would not conflict with or obstruct Metro's energy-related plans and policies.

Local plans by the County of Los Angeles and cities of Commerce, Montebello, Pico Rivera, Santa Fe Springs, and Whitter establish energy-related requirements and goals. The applicable energy-related aspects of these plans can be summarized as:

- Enhance, promote, and make accessible user-friendly public transit systems
- Encourage the use of alternative fuels and energy sources
- Encourage energy conservation features and reduce energy demand in new development
- Reduce trips and VMT
- Reduce natural resource and fossil fuel consumption

Alternative 1 would, enhance and make public transit systems more accessible in the GSA. Additionally, the Project LRT vehicles would use electricity rather than conventional fossil fuels and would contribute to a regional shift in transportation energy demand away from fossil fuels and onto increasingly renewable grid power. Further, new Project construction would include energy

conservation and efficiency features consistent with Title 24. For these reasons, and the VMT reductions previously discussed, operation of Alternative 1, Alternative 1 with the Atlantic/Pomona Station Option, and Alternative 1 with the Montebello At-Grade Option would be consistent with and would not conflict with or obstruct the applicable local plans for renewable energy or energy efficiency. Thus, operation of Alternative 1 would have a less than significant impact.

Design Options

Atlantic/Pomona Station Option

Operation of the Atlantic/Pomona Station Option would remain consistent with applicable plans. Thus, construction of Alternative 1 with the Montebello At-Grade Option would have a less than significant impact.

Montebello At-Grade Option

Operation of the Montebello At-Grade Option would remain consistent with applicable plans. Thus, construction of Alternative 1 with the Montebello At-Grade Option would have a less than significant impact.

Construction Impacts

The CCR Title 24 establishes energy efficiency metrics by which all newly constructed buildings in the State of California must comply. The Project would be constructed in a manner consistent with the regulations and efficiency requirements at the time of construction and would not conflict with Title 24.

Metro's 2011 Green Construction Policy addresses the air quality implications of construction from Metro projects. From a construction energy perspective, the plan encourages the limiting of idling and the use of grid-electric power when feasible during construction. Construction of Alternative 1 would be consistent with Metro's Green Construction Policy. Thus, construction of Alternative 1, Alternative 1 with the Atlantic/Pomona Station Option, and Alternative 1 with the Montebello At-Grade Option would have a less than significant impact.

Design Options

Atlantic/Pomona Station Option

Construction of the Atlantic/Pomona Station Option would remain consistent with applicable plans. Thus, construction of Alternative 1 with the Montebello At-Grade Option would have a less than significant impact.

Montebello At-Grade Option

Construction of the Montebello At-Grade Option would remain consistent with applicable plans. Thus, construction of Alternative 1 with the Montebello At-Grade Option would have a less than significant impact.

3.5.6.2.2 Alternative 2 Atlantic to Commerce/Citadel IOS

Operational Impacts

Base Alternative and Design Option

Various state and local plans influence the adoption of renewable energy and energy efficiency requirements in the GSA. Many of the applicable energy plans, such as the California Clean Cars Program, the Alternative and Renewable Fuel and Vehicle Technology Program, and the California Renewables Portfolio Standard, include components that are larger state or regional regulatory actions with which the Project cannot directly or indirectly comply with or obstruct.

California EO B-16-12 established a 1.5-billion-gallon fuel reduction target to be met by 2025. The Project would not be constructed until after this time, therefore the Project would not contribute to or conflict with the achievement of this target.

As stated in **Section 3.5.6.1.2**, the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would reduce regional highway travel by 1.6 million VMT compared to 2042 without Project Conditions and would thus not conflict with the California Alternative Fuels Plan.

The Project is identified in the 2020 RTP/SCS as a major transit capital project and is included in the plan's regional growth and transportation projections. Further, the Project, alongside other transit improvement projects planned to be implemented throughout the region, would facilitate broader adoption of mass transit and contribute to regional VMT reductions, as projected in the 2020 RTP/SCS. Therefore, the Project would not conflict with or obstruct the 2020 RTP/SCS.

The base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would contribute to a regional shift in transportation energy demand away from fossil fuels toward grid power. Stations, lighting in parking lots, and the MSF would each be designed and constructed to achieve energy efficiency consistent with or exceeding Metro's and CCR Title 24 efficiency requirements. Further, the Project would, by its nature, enhance community access to public transit through the operation of the LRT. Therefore, the Project would not conflict with or obstruct Metro's energy-related plans and policies.

The base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would, by its nature, enhance and make more accessible public transit systems in the GSA. Additionally, the Project LRT vehicles would use electricity rather than conventional fossil fuels and would contribute to a regional shift in transportation energy demand away from fossil fuels and onto increasingly renewable grid power. Further, new Project construction would include energy conservation and efficiency features consistent with Title 24. For these reasons, and the VMT reductions previously discussed, operation of the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would be consistent with and would not conflict with or obstruct the applicable local plans for renewable energy or energy efficiency. Thus, operation of the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would have a less than significant impact.

Construction Impacts

Base Alternative and Design Option

The CCR Title 24 establishes energy efficiency metrics by which all newly constructed buildings in the State of California must comply. The Project would be constructed in a manner consistent with the regulations and efficiency requirements at the time of construction and would not conflict with Title 24.

Metro's 2011 Green Construction Policy addresses the air quality implications of construction from Metro projects. From a construction energy perspective, the policy encourages the limiting of idling and the use of grid-electric power when feasible during construction. Construction would be consistent with Metro's Green Construction Policy during construction. Thus, construction of the base Alternative 2 or Alternative 2 with the Atlantic/Pomona Station Option would have a less than significant impact.

3.5.6.2.3 Alternative 3 Atlantic to Greenwood IOS

Operational Impacts

Base Alternative and Design Options

Various state and local plans influence the adoption of renewable energy and energy efficiency requirements in the GSA. Many of the applicable energy plans, such as the California Clean Cars Program, the Alternative and Renewable Fuel and Vehicle Technology Program, and the California Renewables Portfolio Standard, include components that are larger state or regional regulatory actions with which the Project cannot directly or indirectly comply with or obstruct.

California EO B-16-12 established a 1.5-billion-gallon fuel reduction target to be met by 2025. The Project would not be constructed until after this time, therefore the Project would not contribute to or conflict with the achievement of this target.

As stated in **Section 3.5.6.1.3**, the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would reduce regional highway travel by 2.5 million VMT compared to 2042 without Project Conditions and would thus not conflict with the California Alternative Fuels Plan.

The Project is identified in the 2020 RTP/SCS as a major transit capital project and is included in the plan's regional growth and transportation projections. Further, the Project, alongside other transit improvement projects planned to be implemented throughout the region, would facilitate broader adoption of mass transit and contribute to regional VMT reductions, as projected in the 2020 RTP/SCS. Therefore, the Project would not conflict with or obstruct the 2020 RTP/SCS.

The base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would contribute to a regional shift in transportation energy demand away from fossil fuels toward grid power. Stations, lighting in parking lots, and the MSF would each be designed and constructed to achieve energy efficiency consistent with or exceeding Metro's and CCR Title 24 efficiency requirements. Further, the Project would, by its nature, enhance community

access to public transit through the operation of the LRT. Therefore, the Project would not conflict with or obstruct Metro's energy-related plans and policies.

The base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would, by its nature, enhance and make more accessible public transit systems in the GSA. Additionally, the Project LRT vehicles would use electricity rather than conventional fossil fuels and would contribute to a regional shift in transportation energy demand away from fossil fuels and onto increasingly renewable grid power. Further, new Project construction would include energy conservation and efficiency features consistent with Title 24. For these reasons, and the VMT reductions previously discussed, operations would be consistent with and would not conflict with or obstruct the applicable local plans for renewable energy or energy efficiency. Thus, operation of the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would have a less than significant impact.

Construction Impacts

Base Alternative and Design Options

The CCR Title 24 establishes energy efficiency metrics by which all newly constructed buildings in the State of California must comply. The base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would be constructed in a manner consistent with the regulations and efficiency requirements at the time of construction and would not conflict with Title 24.

Metro's 2011 Green Construction Policy addresses the air quality implications of construction from Metro projects. From a construction energy perspective, the policy encourages the limiting of idling and the use of grid-electric power when feasible during construction. Construction would be consistent with Metro's Green Construction Policy during construction. Thus, construction of the base Alternative 3 or Alternative 3 with the Atlantic/Pomona Station Option and/or the Montebello At-Grade Option would have a less than significant impact.

3.5.6.2.4 Maintenance and Storage Facilities

Operational and Construction Impacts

MSF Site Options and Design Option

As detailed in **Section 3.5.6.2.1, Section 3.5.6.2.2**, and **Section 3.5.6.2.3**, the operation and construction of the Project would not conflict with or obstruct applicable state or local plans for renewable energy or energy efficiency. Moreover, the Project would reduce highway VMT, transition regional transportation energy demand away from natural resources (such as fossil fuels) to increasingly renewable grid electricity and would enhance transit in the GSA – consistent with the goals of the applicable plans. Operation of the Commerce MSF site option, Montebello MSF site option, or the Montebello MSF At-Grade Option is essential in maintaining a reliable light rail system and was included in the Project energy assessment and energy plan consistency analysis. Therefore, operation and construction of the Commerce MSF site option, Montebello MSF site option, or the Montebello MSF At-Grade Option would not conflict with or obstruct applicable state or local plans for renewable energy or energy efficiency.

3.5.7 Project Measures and Mitigation Measures

As discussed in **Section 3.5.6**, the Build Alternatives and Build Alternatives with the design option(s) would have less than significant impacts under Impact ENG-1 (Energy Consumption) and Impact ENG-2 (Energy Plans). The MSF site options would have less than significant impacts under Impact ENG-1 (Energy Consumption) and Impact ENG-2 (Energy Plans). No project measures or mitigation measures would be required for operation or construction. **Table 3.5-13 i**dentifies the combined impact of the base alternatives with the associated MSF site option(s), and the alternatives with one or both design options (as applicable) with the associated MSF site option(s). A**ll impacts would be less than significant for all alternatives and design options.**

3.5.8 Significance After Mitigation

As identified in **Table 3.5-13**, **no mitigation measures are required for** the Build Alternatives and Build Alternatives with the design option(s). Less than significant impacts would remain.

Table 3.5-13. Summary of Mitigation Measures and Impacts After Mitigation

CEQA Impact Topic		Alternative 1: Washington Boulevard								Alternative 2: Commerce/Citadel IOS		Alternative 3: Washington/Greenwood IOS							
		Base Alternative 1[1]		Alternative 1 + Atlantic/Pomona Station Option		Alternative 1 + Montebello At-Grade Option		Alternative 1 + Atlantic/Pomona Station Option + Montebello At-Grade Option		Base Alternative 2[2]	Alternative 2 + Atlantic/Pomona Station Option	Base Alternative 3[3]		Alternative 3 + Atlantic/Pomona Station Option		Alternative 3 + Montebello At-Grade Option		Alternative 3 + Atlantic/Pomona Station Option + Montebello At-Grade Option	
		Commerce MSF	Montebello MSF	Commerce MSF	Montebello MSF	Commerce MSF	Montebello MSF At-Grade Option	Commerce MSF	Montebello MSF At-Grade Option	Commerce MSF		Commerce MSF	Montebello MSF	Commerce MSF	Montebello MSF	Commerce MSF	Montebello MSF At-Grade Option	Commerce MSF	Montebello MSF At-Grade Option
ENG-1 Energy Consumption	Applicable Mitigation	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
	Impacts After Mitigation	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS
ENG-2 Energy Plans	Applicable Mitigation	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
	Impacts After Mitigation	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS	LTS

Source: CDM Smith/AECOM JV, 2022.
Notes:
The Base Alternatives are shaded in light yellow. Design options are not shaded.
1 The Base Alternative 1 includes the Atlantic station (reconfigured/relocated) and aerial Greenwood station.
2 The Base Alternative 2 includes the Atlantic station (reconfigured/relocated).
3 The Base Alternative 3 includes the Atlantic station (reconfigured/relocated) and aerial Greenwood station.
NI = No Impact LTS = Less Than Significant SU = Significant and Unavoidable

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