

# Chapter 8—Energy and Global Climate Change

## 8.1 Introduction

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This chapter describes existing conditions (environmental and regulatory) and assesses the potential energy and climate change impacts of the 2020 Metropolitan Transportation Plan/Sustainable Communities Strategy (proposed MTP/SCS). The chapter provides estimated existing and future energy consumption and greenhouse gas (GHG) emission inventories from all sources, and describes the methodology used to make those estimates. Where necessary and feasible, mitigation measures are identified to reduce these impacts.

The information presented in this chapter is based on a review of existing and available information and is regional in scope. Data, analysis, and findings provided in this section were considered and prepared at a programmatic level. Emissions of air pollutants are addressed in Chapter 5 – Air Quality.

The consumption of nonrenewable energy (e.g., gasoline and diesel fuel) results in GHG emissions that ultimately result in anthropogenic (human-caused) climate change. Alternative energy sources such as natural gas, ethanol, and electricity (unless derived from solar, wind, nuclear, or other energy sources that do not produce carbon emissions) also produce GHG emissions that exacerbate global climate change. An overview of climate change, the anticipated impacts of climate change to California, and the climate change impacts of the proposed MTP/SCS are provided in this chapter.

The following sections address GHG emissions, their sources, and impacts on climate change. Statewide policies that address vehicle fuel efficiency are included in the analysis.

In response to the Notice of Preparation (NOP), SACOG received comments related to energy and global climate change from ECOS, Sierra Club (Placer County), and the Sacramento Municipal Utilities District (SMUD). The commenters expressed that the Draft EIR should consider the following:

- encourage member jurisdictions to align their climate actions plans with the MTP/SCS,
- relationship between vehicle miles traveled (VMT) and GHG,
- modeling assumptions that affect GHG projections,
- energy efficiency,
- electrical load needs,
- impacts of climate change, and
- GHG impacts.

The CEQA Guidelines note that comments received during the NOP scoping process can be helpful in “identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in an EIR and in eliminating from detailed study issues found not to be important.” (CEQA Guidelines, Section 15083.) Neither the CEQA Guidelines nor Statutes require a lead agency

to respond directly to comments received in response to the NOP, but they do require they be considered. Consistent with these requirements, this comment has been carefully reviewed and considered by SACOG and is reflected in the analysis of impacts in this chapter. Appendix PD-1 includes all NOP comments received.

Chapter 5 – Air Quality evaluates the potential impacts related to emissions of air pollutants as they relate to the aforementioned comments. Appendix PD-1 includes all NOP comments received.

## **8.2 Environmental Setting**

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### **8.2.1 An Overview of Global Climate Change**

Certain gases in the earth’s atmosphere, classified as GHGs, play a critical role in determining the earth’s surface temperature. Solar radiation enters the atmosphere from space. A portion of that radiation is absorbed by the earth’s surface, and a smaller portion of this radiation is reflected toward space. The absorbed radiation is then emitted from the earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The earth has a much lower temperature than the sun; therefore, the earth emits lower frequency radiation. Most solar radiation passes through GHGs; however, infrared radiation is also absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead “trapped,” resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are found to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth’s climate, known as global climate change or global warming. It is “extremely likely” that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations from the burning of fossil fuels and other anthropogenic climate drivers (IPCC 2014:5).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas most pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere long enough to be dispersed around the globe. Although the lifetime of any GHG molecule depends on multiple variables and cannot be determined with any certainty, it is understood that more CO<sub>2</sub> is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, soils, and other forms of sequestration. Of the total annual human-caused CO<sub>2</sub> emissions, approximately 55 percent are estimated to be sequestered through ocean and land uptake every year, averaged over the last 50 years, whereas the remaining 45 percent of human-emitted CO<sub>2</sub> emissions remain stored in the atmosphere (IPCC 2013:467).

The quantity of GHGs in the atmosphere responsible for climate change is not precisely known, but it is enormous (approximately 50,000 million metric tons of carbon dioxide equivalent [MMTCO<sub>2</sub>e] in 2010). No single project alone would measurably contribute to an incremental change in the

global average temperature or to global or local climates or microclimates. From the standpoint of CEQA, GHG impacts relative to global climate change are inherently cumulative.

## **8.2.2 An Overview of Energy Consumption**

### *ELECTRICITY CONSUMPTION*

California relies on a regional power system composed of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. In 2016, approximately 71 percent of the electrical power needed to meet California's demand was produced in the state (CEC 2019a). Approximately 29 percent of its electricity demand is imported from the Pacific Northwest and the Southwest (CEC 2019a). In 2017, California's electricity was derived from natural gas (43.4 percent), large hydroelectric resources (17.89 percent), coal (0.15 percent), nuclear sources (8.69 percent), oil (0.02), petroleum coke/waste heat (0.20), and renewable resources that include geothermal, biomass, small hydroelectric resources, wind, and solar (29.65 percent) (CEC 2019a).

According to the California Energy Commission (CEC), total statewide electricity consumption increased from 166,979 gigawatt-hours (GWh) in 1980 to 227,606 GWh in 1990. The statewide electricity consumption in 2000 was 261,046 GWh reflecting a growth rate of 1.38 percent between 1990 to 2000 (CEC 2018a). Statewide consumption was 285,434 GWh in 2016, an annual growth rate of 0.56 percent between 2000 and 2016. The SACOG region consumed approximately 18,700 GWh in 2016, roughly 6.4 percent of the state total (CEC 2019b).

Peak electricity demand, expressed in megawatts (MWh), measures the largest electric power requirement during a specified period, usually integrated over one hour. A single MWh is enough power to meet the expected electricity needs of 1,000 typical California homes. Peak demand is important in evaluating system reliability, determining congestion points on the electrical grid, and identifying potential areas where additional transmission, distribution, and generation facilities may be needed. California's peak demand typically occurs in August between 3:00 p.m. and 5:00 p.m. High temperatures lead to increased use of air conditioning, which in combination with industrial loads, commercial lighting, and office equipment comprise the major demand for electricity consumption in the peak demand period in the state. In 2016, peak electricity demand (i.e., energy demand during a period in which electrical power is expected to be provided for a sustained period at a significantly higher than average supply level) for California was 60,543 MWh (CEC 2018b).

Pacific Gas and Electric (PG&E), Roseville Electric, and SMUD provide electricity within the plan area of the proposed MTP/SCS. Each of these electricity providers have individual assets, and also buy power (e.g., brokering) from a diverse mix of generating sources, including fossil-fueled plants, hydroelectric powerhouses, wind and solar farms, and nuclear power plants.

### *OIL*

Gasoline and diesel fuel constitute 83 and 17 percent of petroleum-based fuels sold in California, respectively. According to the state Board of Equalization, 15.58 billion gallons of gasoline and 3.12 billion gallons of diesel were sold in 2016 (CEC 2019c).

California is currently ranked third in the nation among oil producing states. Total crude oil production in California totaled 186,079 thousand barrels annually in 2016, a decline of approximately 13 percent from 2010 (EIA 2019a).

California's refineries are located in the San Francisco Bay Area, the Los Angeles area, and the Central Valley. Imported crude oil is received by tanker, barge, pipeline, rail, or truck at nearly 100 terminals. Most of those are marine terminals. The crude oil is then sent to refineries by pipeline for refining.

#### **NATURAL GAS**

In 2016, the SACOG region consumed approximately 526 million therms of natural gas (CEC 2019d). Natural gas supplies are derived from underground sources and brought to the surface at gas wells. Once it is extracted, gas is purified and the odorant that facilitates gas detection is added to the normally odorless gas. Natural gas suppliers, such as PG&E, then send the gas into transmission pipelines, which are usually buried underground. Compressors propel the gas through the pipeline system, which delivers it to homes and businesses.

In 2016, California produced approximately 194,400 million cubic feet of natural gas annually (EIA 2019b). PG&E is the largest publicly-traded (investor-owned) utility in California and provides natural gas for residential, industrial, and agency consumers within the plan area of the proposed MTP/SCS.

### **8.2.3 Effects of Climate Change**

According to the Intergovernmental Panel on Climate Change (IPCC), which was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, global average temperature will increase by 1.5 degrees Celsius (°C) (2.7 degrees Fahrenheit [°F]) by 2040. This 1.5 degrees of warming represents a global average indicating that portions of the earth will experience more dramatic warming than others. Oceans, which support high specific heat, will experience less dramatic warming as compared to continents, particularly in inland regions.

According to *California's Fourth Climate Change Assessment* (2012), with global GHGs reduced at a moderate rate, California will experience average daily high temperatures that are warmer than the historic average by 2.5 °F from 2006 to 2039, by 4.4 °F from 2040 to 2069, and by 5.6 °F from 2070 to 2100; and if GHG emissions continue at current rates then California will experience average daily high temperatures that are warmer than the historic average by 2.7 °F from 2006 to 2039, by 5.8 °F from 2040 to 2069, and by 8.8 °F from 2070 to 2100 (OPR, CEC, and CNRA 2018:5).

Since the 2012 climate change assessment, California has experienced several of the most extreme natural events in its recorded history: a severe drought from 2012–2016, an almost non-existent Sierra Nevada winter snowpack in 2014–2015, increasingly large and severe wildfires, and back-to-back years of the warmest average temperatures (OPR, CEC, and CNRA 2018:3). According to the California Natural Resources Agency's (CNRA) *Safeguarding California Plan: 2018 Update*, California experienced the driest 4-year statewide precipitation on record from 2012 through 2015 and the smallest and second smallest Sierra snowpack on record in 2015 and 2014 (CNRA 2018:55). In contrast, the northern Sierra Nevada experienced its wettest year on record during the 2016–2017 water year (CNRA 2018:64). According to the National Oceanic Administration and National

Aeronautics and Space Administration (NOAA), 2016, 2017, and 2018 were the hottest recorded years in history (NOAA 2019). The changes in precipitation exacerbate wildfires throughout California through a cycle of high vegetative growth coupled with dry, hot periods which lowers the moisture content of fuel loads. As a result, the frequency, size, and devastation of forest fires increases. In November 2018, the Camp Fire completely destroyed the town of Paradise in Butte County and caused 85 fatalities, becoming the state's deadliest fire in recorded history. Moreover, changes in the intensity of precipitation events following wildfires can also result in devastating landslides. In January 2018 following the Thomas Fire, 0.5 inches of rain fell over just 5 minutes in Santa Barbara causing destructive mudslides formed from the debris and loose soil left behind by the fire. These mudslides resulted in 21 deaths.

As temperatures increase, the amount of precipitation falling as rain rather than snow also increases, which can lead to increased flooding because water that would normally be held in the snowpack of the Sierra Nevada and Cascade ranges until spring flow into the Central Valley during winter rainstorm events. This scenario places more pressure on California's levee/flood control system (CNRA 2018:190–192). Furthermore, in the extreme scenario involving the rapid loss of the Antarctic ice sheet and the glaciers atop Greenland, the sea level along California's coastline is expected to rise 54 inches by 2100 if GHG emissions continue at current rates (OPR, CEC, and CNRA 2018:6).

Temperature increases and changes to historical precipitation patterns will likely affect ecological productivity. Existing habitats may migrate from climatic changes where possible, and those that lack the ability to retreat will be severely threatened. Altered climatic conditions dramatically endanger the survival of arthropods, which could have cascading effects throughout ecosystems (Lister and Garcia 2018). Conversely, a warming climate may support the populations of other insects such as mosquitos and ticks, which transmit diseases harmful to human health such as the Zika virus, West Nile virus, and Lyme disease (European Commission Joint Research Centre 2018).

Changes in temperature, precipitation patterns, extreme weather events, wildfires, and sea-level rise have the potential to threaten transportation and energy infrastructure, crop production, forests and rangelands, and public health (CNRA 2018:64, 116–117, 127; OPR, CEC, and CNRA 2018:7–14). The effects of climate change will also have an indirect adverse impact on the economy as more severe natural disasters cause expensive, physical damage to communities and the state.

Additionally, adjusting to the physical changes associated with climate change can produce mental health impacts such as depression and anxiety (Fritze et al. 2008).

The *Sacramento Region Climate Adaptation Plan* identifies increased temperature and changes to historical precipitation patterns as the most likely and adverse primary climate change impacts to affect the plan area of the proposed MTP/SCS. These primary impacts, in turn, stimulate secondary impacts such as wildfire and localized and regional flooding. Due to its proximity to major rivers such as the Sacramento and American rivers, as well as its position within the watersheds of these rivers, the plan area of the proposed MTP/SCS is particularly susceptible to regional flooding impacts (SACOG 2015).

## **8.2.4 Effects of Energy Consumption Off the Grid**

Depending on the source and use of the fuel, the impacts of energy consumption can be far reaching. Electricity generation, and the extraction and consumption of fossil fuels affect air emissions, water quality, solid waste, and land resources. Each of these is described in more detail below.

### *AIR EMISSIONS*

Fossil fuel related energy production can lead to sulfur dioxide, nitrogen oxide, particulates, and CO<sub>2</sub> emissions. These emissions can be responsible for smog, acid rain, and haze. Emissions of particulates can settle on ice and snow, resulting in increased solar absorption and accelerated melting, which increases the effects of climate change in the form of a positive feedback loop.

### *WATER QUALITY*

The production of energy can have an impact on water resources by the use of water for cooling and the creation of steam, the discharge of water after use, and the discharge of pollutants into natural water sources. The impact varies by the source of energy used, and technologies used in energy creation.

### *SOLID WASTE*

Certain technologies used in the generation of energy create solid waste. While some of this can be disposed of in landfills, others like nuclear energy rods, oil sludge, and ash from coal require special handling as they may contain toxic materials.

### *LAND RESOURCES*

Energy production usually requires the use of certain resources. While this varies by source and purpose, it usually entails the extraction of materials, like natural gas, coal, and oil, and/or the siting of large facilities, like nuclear and hydro-electric. The impacts vary from the erosion of land from mining, to the destruction of natural habitat, to contamination and disruption of water systems.

## **8.3 Regulatory Setting**

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### **8.3.1 International Regulations, Plans and Policies**

#### *UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE*

The U.S. aligned with other countries around the world in 1994 by signing the United Nations Framework Convention on Climate Change. Under the convention, governments collaborate and share information on national based policies and best practices related to curbing GHG emissions and adapting to the impacts of climate change.

### **8.3.2 Federal Regulations, Plans and Policies**

#### *CLEAN AIR ACT OF 1970*

##### **CAFE Standards**

In *Massachusetts et al. v. Environmental Protection Agency et al.*, 549 U.S. 497 (2007), the Supreme Court of the U.S. ruled that CO<sub>2</sub> emission fit within the definition of “air pollutant” under the federal Clean Air Act (CAA) and that the U.S. Environmental Protection Agency (EPA) has the statutory authority to regulate GHG emissions.

In October 2012, EPA and the National Highway Traffic Safety Administration (NHTSA), issued final rules to further reduce GHG emissions and improve corporate average fuel economy (CAFE) standards for light-duty vehicles for model years 2017 and beyond (77 Federal Register [FR] 62624). These rules would increase fuel economy to the equivalent of 54.5 miles per gallon, limiting vehicle emissions to 163 grams of CO<sub>2</sub> per mile for the fleet of cars and light-duty trucks by model year 2025 (77 FR 62630). However, on April 2, 2018, the EPA administrator announced a final determination that the current standards are not appropriate and should be revised. On August 2, 2018, the U.S. Department of Transportation and EPA proposed the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE Rule), which would amend existing CAFE standards for passenger cars and light trucks, retaining the current model year 2020 standards through model year 2026 (NHTSA 2018), instead of steadily increasing fuel efficiency and reducing emissions over time. However, at the time of writing this Draft EIR, the SAFE Rule has not been formally adopted by EPA, and California (along with 16 other states) have filed a lawsuit against EPA. The ultimate approval of the SAFE Rule, and the outcome of any pending or potential lawsuits (and how such lawsuits could delay or affect the SAFE Rule’s implementation), is unknown at this time. Nor is it known how future motor vehicle emissions will be impacted. Refer to Chapter 5 – Air Quality for more details.

##### **California Greenhouse Gas Waiver**

In December of 2005, the California Air Resources Board (CARB) requested, and on June 14, 2011, the EPA granted, an amendment to California’s motor vehicle GHG emission standards beginning with model year 2009. The CAA standards require a waiver for states to enact emission standards for new cars. On June 14, 2011, EPA confirmed that CARB’s amendments to its motor vehicle GHG emission standards are within the scope of the existing waiver of preemption issued. However, EPA is also proposing, in addition to the SAFE Rule, but as a separate action, to revoke California’s waiver that would allow the state to keep the 2021-2025 standards in place. This includes CARB’s zero emission vehicle (ZEV) programs. The ultimate revocation of California’s waiver, and the outcome of any related lawsuits (and how such lawsuits could delay or affect the rule’s implementation), is unknown at this time. Nor is it known how future motor vehicle emissions will be impacted. At the time of writing this Draft EIR, no formal action has been taken. Refer to Chapter 5 – Air Quality for more details.

#### *ENERGY POLICY ACT OF 1992 AND 2005*

The Energy Policy Act of 1992 (EPAAct) was passed to reduce the country’s dependence on foreign petroleum and improve air quality. EPAAct includes several parts intended to build an inventory of

alternative fuel vehicles (AFVs) in large, centrally fueled fleets in metropolitan areas. EPA requires certain federal, state, and local government and private fleets to purchase a percentage of light-duty AFVs capable of running on alternative fuels each year. In addition, financial incentives are also included in EPA. Federal tax deductions are allowed for businesses and individuals to cover the incremental cost of AFVs. States are also required by the act to consider a variety of incentive programs to help promote AFVs. The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

#### *MOVING AHEAD FOR PROGRESS IN THE 21ST CENTURY*

Moving Ahead for Progress in the 21st Century (MAP 21) legislation makes significant changes to the framework that directs federal transportation funding, giving more flexibility to recipients, while metropolitan planning organizations (MPOs) establish performance measures and targets to evaluate these investments. This flexibility changes requirements and incentives for spending on sustainable transportation initiatives. The bill is the first significant change to transportation funding since the passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users in 2005.

Specifically, MAP 21 requires MPOs to address performance measures in planning and project selection. Long-range plans are required to include performance targets, and transportation improvement programs must discuss the anticipated effects of selected projects toward achieving the performance targets. In addition, electric vehicle (EV) charging and natural gas fueling stations are expressly authorized uses of funding under the Congestion Mitigation and Air Quality Improvement Program, surface transportation, and highway safety programs.

### **8.3.3 State Regulations, Plans, and Policies**

#### *STATEWIDE GHG EMISSION TARGETS AND CALIFORNIA'S 2017 CLIMATE CHANGE SCOPING PLAN*

Reducing GHG emissions in California has been the focus of the state government for approximately two decades (State of California 2018). GHG emission targets established by the state legislature include reducing statewide GHG emissions to 1990 levels by 2020 (Assembly Bill [AB] 32 of 2006) and reducing them to 40 percent below 1990 levels by 2030 (Senate Bill [SB] 32 of 2016). Executive Order S-3-05 calls for statewide GHG emissions to be reduced to 80 percent below 1990 levels by 2050. Executive Order B-55-18 calls for California to achieve carbon neutrality by 2045 and achieve and maintain net negative GHG emissions thereafter. These targets are in line with the scientifically established levels needed in the U.S. to limit the rise in global temperature to no more than 2 degrees Celsius, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected; these targets also pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (United Nations 2015:3).

*California's 2017 Climate Change Scoping Plan (2017 Scoping Plan)*, prepared by CARB, outlines the main strategies California will implement to achieve the legislated GHG emission target for 2030 and “substantially advance toward our 2050 climate goals” (CARB 2017a:1, 3, 5, 20, 25–26). It identifies the reductions needed by each GHG emission sector (e.g., transportation, industry, electricity generation, agriculture, commercial and residential, pollutants with high global warming potential,

and recycling and waste). CARB and other state agencies are currently developing a Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal of Executive Order B-55-18.

The state has also passed more detailed legislation addressing GHG emissions associated with industrial sources, transportation, electricity generation, and energy consumption, as summarized below. Energy consumption, and the regulations that apply to its generation and consumption, are identified within the discussion.

#### *TRANSPORTATION-RELATED STANDARDS AND REGULATIONS*

As part of its Advanced Clean Cars program, CARB established more stringent GHG emission standards and fuel efficiency standards for fossil fuel–powered on-road vehicles. In addition, the program’s ZEV regulation requires battery, fuel cell, and plug-in hybrid electric vehicles to account for up to 15 percent of California’s new vehicle sales by 2025 (CARB 2016a:15). By 2025, when the rules will be fully implemented, GHG emissions from the statewide fleet of new cars and light-duty trucks will be reduced by 34 percent and cars will emit 75 percent less smog-forming pollution than the statewide fleet in 2016 (CARB 2016b:1).

Executive Order B-48-18, signed into law in January 2018, requires all state entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as 200 hydrogen fueling stations and 250,000 electric vehicle–charging stations installed by 2025. It specifies that 10,000 of these charging stations must be direct-current fast chargers.

CARB adopted the Low Carbon Fuel Standard (LCFS) in 2007 to reduce the carbon intensity of California’s transportation fuels. The LCFS applies to fuels used by on-road motor vehicles and by off-road vehicles, including construction equipment (Wade, pers. comm., 2017).

CARB’s ZEV programs could be affected if EPA revokes California’s waiver that would allow the state to keep the 2021-2025 standards in place. However, as described in Chapter 5 – Air Quality, the ultimate approval date of the SAFE Rule or the revocation of California’s waiver, and the outcome of any related lawsuits (and how such lawsuits could delay or affect implementation of the revocation), are all unknown at this time. Nor is it known how future motor vehicle emissions (and ZEV programs) could be impacted. Consequently, the implications of such future potential regulatory actions are speculative at this time. For example, a potential revocation of California’s waiver could lead to legal action that could affect the SAFE Rule’s applicability to fuel standards within the state. It is also possible that market forces could impact the SAFE Rule’s efficacy in California (i.e., market demand for motor vehicle fuel efficiency in California could exceed the minimum fuel economy standards established by the SAFE Rule). Thus, this Draft EIR does not attempt to characterize or predict how SAFE Rule adoption or revocation of California’s waiver could affect GHG emissions within the state or the plan area of the proposed MTP/SCS, as such would be speculative and this Draft EIR reflects the baseline conditions at the time the NOP was released.

### **The Sustainable Communities and Climate Protection Act of 2008**

California’s Sustainable Communities and Climate Protection Act (SB 375) (Stats. 2008, ch.728) requires MPOs to prepare a SCS that demonstrates how the region will meet its GHG per capita

emissions reduction targets through integrated land use, housing, and transportation planning. Specifically, the SCS must identify a transportation network that is integrated with the forecasted development pattern for the plan area and will reduce GHG emissions (over a 2005 base year) from automobiles and light trucks in accordance with targets set by CARB. In March 2018, CARB established new GHG emissions reduction targets for all MPOs in the state. SACOG's GHG emissions reduction target for Year 2035 was increased from 16 percent to a conditional 19 percent (CARB 2018a). The SACOG 2035 target was reset conditionally to 19 percent based on a pilot test proposed by SACOG staff of an enhanced SCS that recognizes some of the differences between the Sacramento region and the other three large MPOs. If SACOG is not able to secure the funding and commitments to implement the proposed pilot project, CARB staff would evaluate the SCS performance against an 18 percent target.

While increasing the SB 375 targets, CARB also noted that the increase fell short of what was needed to fully achieve state goals on GHG emissions reduction and climate change mitigation. In combination, the staff report and presentation materials to the CARB Board show that in total, the revised SB 375 GHG emissions reduction targets for all of the state's MPOs would result in a statewide reduction of 19 percent (compared to 18 percent from the prior targets), but that a 25 percent reduction was needed to fully meet the GHG emissions reduction goals of the 2017 Scoping Plan (CARB 2018a). The difference between the 19 percent resulting from CARB's updated SB 375 targets and the 25 percent identified need is referred to in other various CARB documents as the "gap."

In the SB 375 target resetting, CARB recognized that additional state action was needed to close this gap. "The recommended targets also recognize that additional State policy and funding tools are being developed to support further VMT reduction that will both help the State overall in achieving needed emission reductions and support MPOs in their ability to achieve higher targets by 2035" (CARB 2018a). The categories of state action to accomplish this, with help of MPOs and other organizations, were: funding mechanisms to incentivize infill development; improved performance analysis to assist agencies in funding supportive transportation projects; expanding investment in transit and active transportation; and pricing policies and programs. A common theme to all the additional actions is the focus on VMT reduction.

Two additional state documents provide context for understanding how these GHG emissions reduction targets relate to the transportation issues discussed in this chapter. One is the *2017 Scoping Plan* itself, which also recognizes that statewide collaboration is needed to address the gap; and further, that the gap in GHG emissions reductions would be closed through VMT reduction strategies (CARB 2017a):

Discussions among a broad suite of stakeholders from transportation, the building community, financial institutions, housing advocates, environmental organizations, and community groups are needed to begin the process to pursue and develop the needed set of strategies to ensure that we can achieve necessary VMT reductions, and that the associated benefits are shared by all Californians. Appendix C further details potential actions for discussion that can be taken by State government, regional planning agencies, and local governments, to achieve a broad, statewide vision for more sustainable land use and close the VMT gap.

The second document, published by CARB in January 2019, provided additional detail on the scope of the challenge, and its relationship to CEQA:

An RTP/SCS that meets the applicable SB 375 targets alone will not produce the GHG emissions reductions necessary to meet state climate goals in 2030 nor in 2050. This means that SB 375 targets are not stand-alone CEQA thresholds for GHG or transportation impact analysis (though SCS compliance may nonetheless entitle projects to certain CEQA exemptions or streamlining procedures pursuant to statute). In other words, a project that is consistent with an SCS may be eligible for certain exemptions, but compliance does not necessarily more broadly imply consistency with state climate goals nor with science-based GHG reduction targets, in CARB staff's non-binding view. Some land use development projects contemplated in an SCS that will be operational in 2030 and 2050 will be consistent with state climate goals, and SB 375 defines project circumstances under which CEQA streamlining is available to qualified projects consistent with an SCS. Other projects may need to consider additional mitigation measures to further reduce per capita light-duty transportation-related GHG emissions to levels that would not conflict with state climate goals. Likewise, certain transportation infrastructure projects that will be operational in 2030 and 2050 that substantially increase VMT may conflict with state climate goals, even if they are included in an SCS that meets the applicable SB 375 targets.

## **2018 Progress Report – California's Sustainable Communities and Climate Protection Act**

In November 2018, CARB released the *2018 Progress Report on California's Sustainable Communities and Climate Protection Act* (2018 Progress Report) to evaluate the performance of the SCSs prepared pursuant to the first set of reduction targets established by SB 375. The 2018 Progress Report found that MPOs are not on track to meet the GHG reductions expected under SB 375 for 2020 due to an overall increase in statewide VMT per capita. While the state will meet its overall 2020 target due to reductions achieved in the energy sector, additional VMT reductions will be needed to meet longer-term state GHG reductions targets for 2030 and 2050.

## **Senate Bill 743 of 2013**

SB 743 of 2013 (Steinberg, 2013; PRC Section 21099(b)(2)) required that the Governor's Office of Planning and Research (OPR) propose changes to the State CEQA Guidelines to address transportation impacts in high frequency transit areas and other areas of the State. In response, Section 15064.3 was added to CEQA in December 2018, requiring that transportation impacts no longer consider congestion but instead focus on the impacts of VMT. Agencies have until July 1, 2020 to implement these changes, but can also choose to implement these changes immediately. In support of these changes, OPR published its *Technical Advisory on Evaluating Transportation Impacts in CEQA*, which recommends that the transportation impact of a project be based on whether the project would generate a level of VMT per capita (or VMT per employee or some other metric) that is 15 percent lower than that of existing development in the region (OPR 2017:12–13), or alternatively be based on a different threshold that is supported by substantial evidence. OPR's technical advisory explains that this criterion is consistent with Section 21099 of the PRC, which states that the criteria for determining significance must "promote the reduction in greenhouse gas emissions" (OPR 2017:18). This metric is intended to replace the use of delay and level of service to measure transportation-related impacts. More detail about SB 743 is provided in the "Regulatory Setting" section of Section 16.3.2 – Transportation.

## Renewable Portfolio Standard

The state has passed legislation requiring the increasing use of renewables to produce electricity for consumers. California utilities are required to generate 33 percent of their electricity from renewables by 2020 (SB X1-2 of 2011); 52 percent by 2027 (California Renewables Portfolio Standard Program [SB 100 of 2018]); 60 percent by 2030 (also SB 100 of 2018); and 100 percent by 2045 (also SB 100 of 2018).

## Building Energy Efficiency Standards (Title 24, Part 6)

The energy consumption of new residential and nonresidential buildings in California is regulated by the state's Title 24, Part 6, Building Energy Efficiency Standards (California Energy Code). CEC updates the California Energy Code every 3 years with more stringent design requirements for reduced energy consumption, which results in the generation of fewer GHG emissions. The current California Energy Code (2016) is scheduled to be replaced by the 2019 standards on January 1, 2020. The 2019 California Energy Code will require builders to use more energy-efficient building technologies for compliance with increased restrictions on allowable energy use. Additionally, new residential units will be required to include solar panels, sized to offset the estimated electrical requirements of each unit (CCR, Title 24, Part 6, Section 150.1[c]14). CEC estimates that the combination of required energy-efficiency features and mandatory solar panels in the 2019 California Energy Code will result in new residential buildings that use 53 percent less energy than those designed to meet the 2016 California Energy Code. The CEC also estimates that the 2019 California Energy Code will result in new commercial buildings that use 30 percent less energy than those designed to meet the 2016 standards, primarily through the transition to high-efficacy lighting (CEC 2018a).

## Warren-Alquist Act

The 1974 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as CEC. The creation of the act occurred as a response to the state legislature's review of studies projecting an increase in statewide energy demand, which would potentially encourage the development of power plants in environmentally sensitive areas. The act introduced state policy for siting power plants to reduce potential environmental impacts, and additionally sought to reduce demand for these facilities by directing CEC to develop statewide energy conservation measures to reduce wasteful, inefficient, and unnecessary uses of energy. Conservation measures recommended establishing design standards for energy conservation in buildings that ultimately resulted in the creation of the Title 24 Building Energy Efficiency Standards (California Energy Code), which have been updated regularly and remain in effect today. The act additionally directed CEC to cooperate with OPR, CNRA, and other interested parties in ensuring that a discussion of wasteful, inefficient, and unnecessary consumption of energy is included in all environmental impact reports required on local projects.

## Assembly Bill 2076: Reducing Dependence on Petroleum

Pursuant to AB 2076 (Chapter 936, Statutes of 2000), CEC and CARB prepared and adopted a joint agency report in 2003, *Reducing California's Petroleum Dependence*. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation

fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita VMT (CEC and CARB 2003). Further, in response to the CEC's 2003 and 2005 *Integrated Energy Policy Reports*, Governor Davis directed CEC to take the lead in developing a long-term plan to increase alternative fuel use.

### **Alternative Fuels Plan 2005**

AB 1007 (Stats. 2005, ch. 371) requires the CEC to prepare a plan to increase the use of alternative fuels in the State. The California Alternative Fuel Plan, prepared in partnership with CARB, is presented as an alternative fuels goal coupled with a series of implementing requirements. It contains the following goals for renewable fuel use: nine percent by 2012, 11 percent by 2017, and 26 percent by 2022. This comes from an increase in alternative fuel vehicles, made possible by public sector investment as a catalyst for private sector involvement. The plan was published in 2007.

#### *OTHER CLIMATE CHANGE-RELATED LEGISLATION*

### **Short-Lived Climate Pollutant Reduction Strategy**

In March 2017, CARB adopted the Short-Lived Climate Pollutant (SLCP) Reduction Strategy pursuant to SB 605 and SB 1393 (i.e., proposed regulation). SLCPs are climate pollutants with high global warming potential (GWP) with a short atmospheric lifespan as compared to CO<sub>2</sub>. These include methane, black carbon, and fluorinated gases (F-gases). Achievable goals under the SLCP Reduction Strategy include a 50-percent reduction in anthropogenic black carbon (i.e., emissions sourced from human activity rather than natural events such as wildfires) and a 40-percent reduction in methane and F-gases from 2013 levels by 2030. Additional goals include converting manure and organic wastes to energy sources and soil amendment products, reducing the disposal of edible foods by diverting them to food banks, reducing emissions from residential wood stoves, and phasing out the use of F-gases (CARB 2017b).

### **Cap-and-Trade Program**

In 2011, CARB adopted the cap-and-trade regulation and created the cap-and-trade program. The program covers GHG emissions sources that emit more than 25,000 metric tons of carbon dioxide equivalent (MTCO<sub>2e</sub>) per year such as refineries, power plants, industrial facilities, and transportation fuels. The cap-and-trade program includes an enforceable state-wide emissions cap that declines approximately 3 percent annually. CARB distributes allowances, which are tradable permits, equal to the emissions allowed under the cap. Sources that reduce emissions more than their limits can auction carbon allowances to other covered entities through the cap-and-trade market. Sources subject to the cap are required to surrender allowances and offsets equal to their emissions at the end of each compliance period. The cap-and-trade program took effect in early 2012 with the enforceable compliance obligation beginning January 1, 2013. The cap-and-trade program was initially slated to sunset in 2020, but the passage of SB 398 in 2017 extended the program through 2030.

### **Draft 2030 Natural and Working Lands Implementation Plan**

In a joint, interagency effort, the California Environmental Protection Agency, California Department of Food and Agriculture (CDFA), CNRA, CARB, and California Strategic Growth Council released

the *Draft California 2030 Natural and Working Lands Climate Change Implementation Plan* (Draft Plan, Natural and Working Lands Plan) in January 2019. The Draft Plan is specific to the natural and working lands sector, which includes farmland, rangeland, forests, grasslands, wetlands, riparian areas, seagrass, and urban green space. The Draft Plan addresses the carbon flux from this sector, including the ever-dynamic changes in both GHG emissions and carbon sequestration associated with the management of these lands and includes reduction from GHGs and black carbon from forest fires and fire management. Current management practices in California's natural and working lands sector result in more GHG emissions than carbon sequestration. The Draft Plan serves as a multidisciplinary approach to conserve and maintain a resilient natural and working lands sector that will gradually shift the natural and working lands sector from being a net carbon emitter to being a net carbon sink, while also improving air quality, water quality, wildlife habitat, recreation, and providing other benefits. The Draft Plan sets goals for, at a minimum, increasing the rate of State-funded soil conservation practices fivefold, doubling the rate of State-funded forest management and restoration efforts, tripling the rate of state-funded oak woodland and riparian reforestation, and doubling the rate of State-funded wetland and seagrass restoration (CalEPA et al. 2019:13). The measures included in the Draft Plan are projected to result in cumulative emissions reductions of 21.6 to 56.8 MMTCO<sub>2e</sub> by 2030 and cumulative emissions reductions of -36.6 to -11.7 MMTCO<sub>2e</sub> by 2045 (CalEPA et al. 2019:13–14).

## **California's Climate Adaptation Strategy**

California's overall plan for climate adaptation is expressed in *Safeguarding California Plan: 2018 Update* (CNRA 2018). The plan provides policy guidance for State decisionmakers and is part of continuing efforts to reduce impacts and prepare for climate risks. The plan includes 76 policy recommendations across 11 policy sectors. One of the key sectors is agriculture. Policy A-2.6 of the plan is to build further collaboration between CDFA, the Department of Resources Recycling and Recovery (CalRecycle), and other partner agencies to identify strategies on how healthy soils can contribute to achieving some of the other State agency waste reduction and environmental objective and goals (CNRA 2018:130). The finished compost generated from facilities implemented in response to the proposed regulation would be used consistent with this adaptation planning policy, because local land use and permit approvals are typically conditioned upon such consistency.

### **8.3.4 Local Regulations, Plans and Policies**

#### *SACRAMENTO REGION TRANSPORTATION CLIMATE ADAPTION PLAN*

In 2015, the SACOG Board adopted the Sacramento Region Transportation Climate Adaptation Plan as part of its 2016 MTP/SCS updating, affirming the importance of climate adaptation in addition to emissions mitigation. The plan provides high-level action and identifies key vulnerabilities to climate change in the region's transportation infrastructure. With recommendations for best practices and strategies, the plan builds a foundation for future work such as stakeholder engagement, in-depth asset-level assessments, funding, and monitoring (SACOG 2015).

#### *GENERAL PLANS*

Several of SACOG's member agencies have general plan elements and policies that specifically address energy use and conservation, as well as the reduction of GHG emissions and strategies to prepare for the effects of climate change. Such general plans contain goals, objectives, and policies

aimed at reducing energy consumption and GHG emissions. These include policies on energy retrofits to existing residential and commercial land uses, zoning and building ordinances for energy efficiency of new construction, and ways to reduce VMT through land use and transportation priorities.

#### *LOCAL AND REGIONAL GREENHOUSE GAS REDUCTION PLANS, CLIMATE ACTION PLANS, AND RELATED INITIATIVES*

Many of SACOG's member jurisdictions and partner agencies have climate action plans (CAPs), GHG reduction plans, and/or sustainability plans that set goals and targets on the reduction of GHG emissions, and outline policies to help achieve those goals. At the time of writing this Draft EIR, the cities of Sacramento, Elk Grove, West Sacramento, Citrus Heights, Folsom, West Sacramento, and Woodland as well as the counties of Sacramento, Yolo, and Placer have adopted CAPs, GHG Reduction Plans, or Sustainability Plans. In addition, many of the member jurisdictions (e.g., City of Galt and City of Winters) within the plan area of the proposed MTP/SCS have begun the CAP process by conducting baseline emissions inventories, which establish a reference point for GHG emissions reduction.

Many of the completed CAPs in the area address similar issues related to emissions produced by transportation, energy usage, and operational emissions. The types and quantity of emissions produced in the SACOG region vary among county boundaries. For instance, Yolo and Sutter counties have a higher proportion of emissions produced by agricultural activities that are not observed in more urban or less cultivated counties. Considering this, Yolo and Sutter counties have established more policies for reducing emissions due to these activities.

For most jurisdictions, transportation and energy usage produce a majority of GHG emissions. Policies observed among CAPs in the region establish a needed framework for improved circulation networks and energy conservation. Transportation policies aim to reduce VMT by offering more opportunities for alternative transportation modes, such as bicycling and transit use. In addition, many of the CAPs frame policies to promote transit-oriented development. Future residents in these developments will have close access to frequent local transit. In order to reduce emissions caused from energy usage, jurisdictions are committed to establishing policies that will provide energy efficiency for both residential and commercial land uses. Cities and counties include programs to improve energy efficiencies in old and new buildings and decrease the use of fossil fuels by providing incentives for renewable energy sources.

#### *MAYORS' CLIMATE COMMISSION ON CLIMATE CHANGE*

The Mayors' Climate Commission of Climate Change is a joint initiative of the mayors of the cities of Sacramento and West Sacramento. The mayors have established the Commission to develop a common vision and set of strategies for both cities to achieve Carbon Zero by 2045. The Commissions will be structured around key sectors including the built environment, mobility, and community health and resiliency. The Commission is currently in the process of developing a Recommendation Report that will highlight priority strategies to achieve Carbon Zero to inform Sacramento and West Sacramento's update to their CAPs.

The Capital Region Climate Readiness Collaborative is a regional coalition that provides a network designed to promote greater resilience coordination at the regional and local level across the six-county Sacramento region (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties). The purpose of this collaborative is to help leaders from government, business, agriculture, academia, labor, and community groups come together – within and across market and jurisdictional boundaries – to share information and best practices, leverage efforts and resources, avoid duplication, identify critical needs and strategies, and develop funding strategies to meet those needs.

## **8.4 Impacts and Mitigation Measures**

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### **8.4.1 Methods and Assumptions**

This program-level analysis generally evaluates potential climate change and energy impacts from implementation of the proposed MTP/SCS based on the projected land use pattern and planned transportation network relative to existing conditions in the plan area of the proposed MTP/SCS.

By 2040, implementation of the proposed MTP/SCS would result in a land use pattern and transportation network that is different from existing conditions. Unless otherwise stated, “existing conditions” in the proposed MTP/SCS refers to conditions in the baseline year of 2016. The proposed MTP/SCS uses 2016 because it is the most recent year for which comprehensive land use, demographic, traffic count, and VMT data are available for the SACOG region. Chapter 1 – Introduction includes a more detailed discussion of the baseline for the proposed MTP/SCS. Exceptions to the baseline year include the following:

- estimates of GHG emissions associated with agricultural activity were derived using 2012 statewide data, which represents the most recent year for which data were available; and
- consistent with statutory direction pursuant to SB 375 a GHG baseline year was used to compare the per capita reductions achieved from the proposed MTP/SCS for which 2005 was selected.

For each impact, implementation of the proposed MTP/SCS is assessed on three levels. First, impacts are assessed at the regional level for the entire plan area. Second, impacts are assessed for the plan area of the proposed MTP/SCS’s five Community Types: Center and Corridor Communities, Established Communities, Developing Communities, Rural Residential Communities, and Lands Not Identified for Development. And third, implementation of the proposed MTP/SCS is assessed in terms of its impacts to the region’s high frequency transit areas (HFTAs). Refer to Chapter 2 – Project Description for a full description of the Community Types and HFTAs and the projected land use pattern and planned transportation improvements within these areas.

### *CLIMATE CHANGE*

Using existing and projected land use and transportation data, total GHG emissions, measured in MTCO<sub>2</sub>e, were estimated for the baseline, the federal transportation conformity year (2027), the SB 375 target year (2035), and the project horizon year (2040) from the following sources: area sources, natural gas combustion, electricity consumption, passenger vehicles, agricultural operations, high global-warming-potential (high GWP) gases, waste generation, and water consumption and

wastewater generation. These results were then extrapolated to conform to GHG reduction target years established by SB 32 (2030) and Executive Order S-3-05 (2050) to evaluate consistency with reduction values contained in the 2017 Scoping Plan.

Table 8-1 below shows the total GHG emissions for the plan area of the proposed MTP/SCS for 2016, 2030, 2040, and 2050. The method and calculations are described in subsequent paragraphs.

**Table 8-1  
Proposed MTP/SCS GHG Emissions in 2016, 2030, 2040, and 2050 (MTCO<sub>2</sub>e/year) By Sector<sup>1</sup>**

<b>Sector</b>	<b>2016</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>
Area Sources	16,850	18,674	20,067	21,366
Natural Gas	1,975,555	1,991,661	2,059,911	2,066,987
Electricity	3,715,155	2,277,293	955,159	506,234
Mobile Sources (all vehicles) <sup>2</sup>	9,691,625	7,862,665	7,331,384	5,957,186
Agriculture <sup>3</sup>	1,410	1,404	1,400	1,396
High GWP <sup>4</sup>	1,283	1,491	1,618	1,767
Solid Waste	768,464	825,878	871,308	912,053
Water	357,263	241,785	156,391	74,119
<b>TOTAL</b>	<b>16,527,605</b>	<b>13,220,852</b>	<b>11,397,238</b>	<b>9,541,109</b>

<sup>1</sup> Land use and transportation data were provided by SACOG for the years 2016, 2027, 2035, and 2040. Emissions were extrapolated by Ascent based on trends and statewide targets for the years 2030 and 2050.

<sup>2</sup> The total emissions were estimated with EMFAC2014 for the plan area.

<sup>3</sup> Agricultural values were derived from the 2016 statewide GHG inventory and the 2012 values for total statewide acres of agriculture then scaled using projected acres of agriculture for the plan area of the proposed MTP/SCS.

<sup>4</sup> High GWP gases were derived from the 2016 statewide GHG inventory and 2016 statewide population estimates then scaled using population projections for the plan area of the proposed MTP/SCS.

Source: Modeling performed by Ascent Environmental, July 2019.

In 2018, CARB updated its statewide GHG emissions inventory for 2016 (CARB 2018b). The inventory for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O included emissions from the following sectors: Transportation, Industrial, Electric Power, Commercial and Residential, Agriculture, High GWP Gases, and Recycling and Waste. This analysis estimates GHG emissions using sectors consistent with categories used in California Emissions Estimator Model (CalEEMod) (i.e., transportation, natural gas, electricity, solid waste, and water). Additional estimates were produced for the agriculture and high GWP gases sectors.

These estimates were produced using SACOG’s projected land use and transportation estimates for the years 2016, 2027, 2035, and 2040, then scaled in consideration of emissions trends and statewide GHG reduction goals for 2030 (i.e., achievement of 40 percent below 1990 GHG levels) and 2050 (i.e., achievement of 80 percent below 1990 GHG levels).

### **Transportation Operations**

Transportation vehicle activities for the years 2016, 2027, 2035, and 2040 were forecasted with SACOG’s current travel demand model, SACSIM. SACSIM forecasts travel for typical weekday conditions. “Chapter 16 – Transportation” provides more details on the model. GHG emissions from all mobile sources were estimated using CARB’s vehicle emissions model (EMFAC2014).

These emissions were extrapolated based on trends and statewide targets for the years 2030 and 2050 to show all years presented in Table 8-1.

## **Energy Production and Consumption**

Energy production and consumption impacts were assessed for all years as residential and non-residential electricity production, and natural gas consumption. Energy consumption rates were derived from the values assumed in CalEEMod and applied on a regional scale based on existing and anticipated land uses for the forecast years.

## **Agriculture**

The impacts for agricultural and forestry operations were assessed for the baseline by calculating the SACOG region's share of agricultural emissions from the statewide inventory. Baseline agricultural GHG emissions were derived using the 2016 statewide inventory and applying emissions to a per acre basis. These emissions were then scaled in consideration of SACOG's existing and forecasted acres of agricultural lands under the proposed MTP/SCS. These emissions are representative of SACOG's fair share of agricultural GHG emissions.

## **High GWP Gases**

Climate change impacts related to high GWP gases were estimated for the baseline by evaluating the SACOG region's fair share of producing high GWP gases from the statewide inventory. Baseline GWP GHG emissions were derived using the 2016 statewide inventory and applying emissions on a per capita basis. This emissions estimate was then scaled in consideration of SACOG's existing and forecasted population in the plan area of the propose MTP/SCS. These emissions are representative of SACOG's fair share of agricultural GHG emissions.

## **ENERGY**

Total energy use from the residential and commercial sectors, measured in GWh of electricity, therms of natural gas, and gallons of gasoline and diesel, were estimated for the baseline (2016), the project year (2040), and two interim years (2027 and 2035). These years differ from those used in the GHG estimates because the 2017 Scoping Plan does not contain a specific target for energy consumption per capita. The year 2016 was used for the baseline due to the availability of data for this single year from state and local sources. This includes data on energy consumption from CEC; emission inventories from CARB; electricity profiles from SMUD, PG&E, and Roseville Electric; and, land use and demographic estimates from the California Department of Housing and Community Development and SACOG. In addition, the lack of regional land use data for more recent years makes forecasting energy consumption difficult as estimates not based on accurate small-scale geographic land uses, like parcels, are less accurate. Table 8-2 shows the energy consumption for each year by source in the plan area of the proposed MTP/SCS.

**Table 8-2  
Electricity, Natural Gas, and Gasoline Consumption Estimates for 2016, 2027, 2035, and 2040 in the  
Plan Area of the Proposed MTP/SCS**

<b>Energy Source</b>	<b>2016</b>	<b>2027</b>	<b>2035</b>	<b>2040</b>
Electricity (GWh)	13,013	13,822	14,508	14,913
Natural Gas (therms)	363,722,676	349,502,624	362,951,902	372,003,363
Gasoline (1000 gallons)	984,921	713,772	34,338	628,944
Diesel (1000 gallons)	187,066	208,936	223,309	231,015

Sources: SACOG 2019 and Ascent Environmental 2019

Electricity and natural gas usage data for 2016 were calculated for the plan area from the residential energy consumption survey (RECS 2015). For 2027, 2035, and 2040, energy consumption was estimated in CalEEMod by calculating the rate of consumption by different residential and non-residential land use types in 2016. These rates were then applied to the growth in each category for each of the horizon years in the proposed MTP/SCS, 2035 and 2040. In the proposed MTP/SCS, residential land uses are split into ten categories by household size, and five housing types (single-family detached, single-family attached, apartment 2 to 4-unit building, apartment 5 or more-unit building, and mobile home). The per capita use is based on the estimates of total households in SACSIM for years 2016, 2035, and 2040.

Gasoline and diesel consumption from all vehicles was estimated using outputs from EMFAC2014, developed by CARB to estimate emissions from on-road sources. Regional VMT values for baseline and the horizon year were then inputted into the EMFAC2014 to estimate total gallons of gasoline and diesel consumption.

As described in Chapter 5 – Air Quality, the ultimate timing for approval of the SAFE Rule or revocation of California’s waiver, and the outcome of any related lawsuits (and how such lawsuits could delay or affect implementation of the federal actions), are all unknown at this time. Nor is it known how future motor vehicle emissions (and ZEV programs) could be impacted. Consequently, the implications of such future potential regulatory actions are speculative at this time. For example, a potential revocation of California’s waiver could lead to legal action that could affect the SAFE Rule’s applicability to fuel standards within the state. It is also possible that market forces could impact the SAFE Rule’s efficacy in California (i.e., market demand for motor vehicle fuel efficiency in California could exceed the minimum fuel economy standards established by the SAFE Rule). Thus, this Draft EIR does not attempt to characterize or predict how SAFE Rule adoption or revocation of California’s waiver could affect GHG emissions (and EMFAC models) within the state or the plan area of the proposed MTP/SCS as doing so would be speculative and this Draft EIR reflects the baseline conditions at the time the NOP was released. Also, it is assumed here that implementing agencies will comply with applicable federal, state and locals laws and regulations.

#### **8.4.2 Criteria for Determining Significance**

For the purposes of this EIR, SACOG has determined that adoption and/or implementation of the proposed MTP/SCS would result in significant impacts under CEQA, if any of the following would occur:

## *GHG EMISSIONS*

- GHG-1** Conflict with the SACOG region’s achievement of SB 375 GHG emissions reduction targets.
- GHG-2** Substantially interfere with achievement of the state’s long-term climate goals, as set forth in CARB’s 2017 Scoping Plan
- GHG-3** Substantially interfere with achievement of applicable local GHG reduction plan goals.
- GHG-4** Increase GHG emissions from project construction activities resulting from the proposed MTP/SCS in a manner inconsistent with achievement of the state’s climate goals.

## *ENERGY*

- ENE-1** Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
- ENE-2** Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

### **8.4.3 Impacts and Mitigation Measures**

#### *IMPACT GHG-1: CONFLICT WITH THE SACOG REGION’S ACHIEVEMENT OF SB 375 GHG EMISSIONS REDUCTION TARGETS.*

#### **Regional Impacts**

Pursuant to SB 375, CARB has established regional on-road GHG per capita emissions reduction targets for light-duty trucks and passenger vehicles. This section describes the regional impact from the projected land use pattern, planned transportation improvements, and other transportation strategies in the proposed MTP/SCS as they relate to SB 375 and the regional targets. Because this impact relates to a regional target, smaller area impacts are only considered in aggregation. Therefore, no separate analyses of local Community Types or HFTAs are conducted.

One of the goals of SB 375 is to achieve the GHG emissions reduction targets set by CARB through integrated planning for land use, transportation, and housing. Achievement of the 2035 SB 375 target is an objective of the proposed MTP/SCS. The growth in the proposed MTP/SCS, as described in Chapter 2 – Project Description, provides a mix of housing options, located closer to jobs and transit. The proposed growth is more compact in form and more effectively uses existing infrastructure. In addition, the proposed transportation projects include expansion of existing rail and bus service, increased headways to reduce wait time between transit service, increased bicycle and pedestrian improvements, and targeted roadway and highway improvement and expansion.

Chapter 16 – Transportation includes an analysis of the relationship between land use and travel behavior, which describes the land use through a set of measures that impact the amount and type of travel in a region. These measures include regional accessibility, street pattern, mix of use, distance to nearest transit, and residential density. Through the development of the proposed MTP/SCS, SACOG has utilized key land use / transportation relationships, in the development of

the land use growth allocations, and the transportation projects and improvements in the plan area of the proposed MTP/SCS. The benefits measured by these metrics not only impact VMT, but also increase walk and bike trips, as well as transit ridership. (Refer to Table 16-9 in Chapter 16 – Transportation for more information on the key land use-transportation relationships and travel improvements in the proposed MTP/SCS.)

For the SACOG region, the target set by CARB is 19 percent below 2005 levels by 2035. The 2005 GHG per capita emissions were modeled for the plan area of the proposed MTP/SCS to be 23.2 pounds per day. With the proposed MTP/SCS, the 2035 emissions levels were modeled to be 18.9 pounds per day, a 19 percent reduction from 2005. Notably, SACOG 2035 target was reset conditionally to 19 percent based on a pilot test proposed by SACOG staff of an enhanced SCS that recognizes some of the differences between the Sacramento region and the other three large MPOs. If SACOG is not able to secure the funding and commitments to implement the proposed pilot project, CARB staff would evaluate the SCS performance against an 18 percent target. Table 8-3 below outlines these reductions.

**Table 8-3  
Proposed MTP/SCS Senate Bill 375 Reduction Targets**

Year	GHG (lb/day per capita)	Percent Reduction from 2005
2005	23.2	--
2035	18.9	19%

Source: SACOG 2019

These projections do not include any additional measures from the *2017 Scoping Plan* (e.g., programs to improve the efficiency of the vehicle fleet, or to reduce the reliance on carbon-based fuels), based on guidance on the SB 375 target provided by CARB (CARB 2017a, CARB 2018a, CARB 2019). The SB 375 target is intended to capture reductions in GHG emissions generated by reductions in travel and operational efficiencies on roadways. Implementation of the state’s Advanced Clean Cars program, LCFS, and ZEV Mandate (and other 2017 Scoping Plan measures), will reduce levels even further.

Therefore, the impact on achieving the SB 375 GHG emissions reduction targets related to the projected land use pattern and planned transportation improvements from implementation of the proposed MTP/SCS is considered less than significant (LS) for Impact GHG-1. No mitigation is required.

**IMPACT GHG-2: SUBSTANTIALLY INTERFERE WITH ACHIEVEMENT OF THE STATE’S LONG-TERM CLIMATE GOALS. AS SET FORTH IN CARB’S 2017 SCOPING PLAN**

## Regional Impacts

### *Emissions From the Passenger-Vehicle Sector*

SB 375 seeks to reduce GHG emissions from the passenger-vehicle sector by reducing VMT within developed areas and areas planned for development within the jurisdictions of the state’s 18 MPOs. SB 375, the law that the proposed MTP/SCS is prepared pursuant to, is identified in the 2017 Scoping Plan as a necessary component to achieving the goal of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030 as mandated by SB 32.

In a staff report issued February 2018 entitled *Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets*, CARB identifies the SACOG region’s conditional target for GHG emissions reductions as a 19 percent decrease in per-capita passenger-vehicle GHG emissions as compared to 2005 levels by 2035 (CARB 2018a). This reduction target adds to the GHG reductions achieved through the implementation of other statewide programs (e.g., cap and trade, RPS). The proposed MTP/SCS’s performance with respect to the SB 375 target is analyzed in Impact GHG-1 above.

While the proposed MTP/SCS would meet the region’s SB 375 target, nonetheless, as discussed in the Regulatory Setting, recent reports on the state’s climate goals suggest that the regional 2035 GHG emissions reduction targets under SB 375 are not adequate to fully meet the goals of the *2017 Scoping Plan*. Collectively, CARB determined that if the state’s 18 MPOs’ all met the SB 375 GHG emission reduction targets set by CARB in 2018, a 19 percent reduction in per capita VMT would be achieved by 2035. In the target re-setting report, CARB expressed that to meet the statewide reduction goals set forth by SB 32 and the *2017 Scoping Plan*, the state would need to reduce per-capita GHG emissions by 25 percent by 2035, resulting in a 6 percent gap between the 19 percent emissions reductions targets set for the regions (averaged for the 18 MPOs and compared to a baseline year of 2005). The conclusion is, even meeting the SB 375 GHG emissions reduction targets, a 6 percent gap compared to the state’s 25 percent reduction need would remain.

As CARB noted, “An RTP/SCS that meets the applicable SB 375 targets alone will not produce the GHG emissions reductions necessary to meet state climate goals in 2030 nor in 2050” (CARB 2019). CARB has also noted that greater reductions in VMT will be required to make up the 6 percent gap in GHG. Further, according to the 2018 Progress Report “California – at the state, regional, and local levels – has not yet gone far enough in making the systemic and structural changes to how we build and invest in communities that are needed to meet state climate goals.” (CARB 2018d). It will take collaboration among all these levels of government to identify the additional VMT reductions needed to achieve the state’s climate goals because the MPOs do not have the land use authority or resources to meet challenge alone.

Another pathway to close the gap between GHG reductions achieved through SCS implementation and the GHG reductions necessary to meet the state’s GHG reduction goals could be through application of a 15 percent VMT reduction on a project-by-project basis as recommended by OPR (CARB 2019:11). As GHG reductions from the transportation sector become more difficult to achieve, it is also possible that Cap-and-Trade could be a viable method of capturing transportation emissions and reducing them through market-based carbon trading. Such an expansion of that program is speculative at the time of writing this Draft EIR, however.

Given the state’s emphasis on VMT reduction as the only feasible way to achieve additional GHG reductions needed, and in recognition of the climate change benefits that occur from reduced VMT resulting in reductions in GHGs, the projected land use pattern proposed under the proposed MTP/SCS supports high density, transit-oriented development throughout the plan area. However, SACOG lacks the land use authority to enforce the proposed MTP/SCS throughout the region. Implementation of the projected land use pattern under the proposed MTP/SCS is within the purview of the implementing agencies overseeing land use development within the plan area. However, as described in Chapter 2 – Project Description, in order to incentivize implementation, SACOG has established a number of programs that support the needed high density and transit-oriented development in the region and the smart growth vision set forth in the Blueprint. For example:

- The Community Design Program funds placemaking projects that improve or enhance the livability of a community and promotes land use projects that lead to fewer vehicle miles traveled and more walking, biking, and transit use.
- The Active Transportation Program funds facilities for walking and biking in urban, suburban, and rural portions of the region, and connections between them. The program awards funds to projects that demonstrate a current need for walking or biking facilities, along with the potential to increase walking and biking if implemented, helping to realize the multimodal vision of the MTP/SCS.
- The Regional Program elevates projects that realize the performance benefits of the MTP/SCS, and also ensures a minimum investment level for high quality active transportation projects. Projects under the Regional Program must reduce regional VMT per capita; reduce regional congested VMT per capita; increase multimodal travel; provide long-term economic benefit within the region; improve goods movement; improve safety and security; and demonstrate ‘State of Good Repair’ benefits.
- The Green Region program targets investments that bring in new implementing partners into the transportation sector, with the goal of expediting electrification of the region’s transportation network.
- The Transportation Demand Management Program aims to reduce vehicle trips and miles traveled by implementing cost-effective and innovative programs, services, projects, strategies, and policies that encourage people to change their travel behavior. The program consists of three avenues for distributing funding to project sponsors working towards those goals. The Traditional TDM program works with established regional partners, such as transportation management agencies, to continue implementing known TDM strategies and programs. TDM Mini-Grants support small events and non-infrastructure programs or projects to reduce single occupancy vehicle trips and miles and prioritizes testing new strategies and tactics for changing travel behavior. The TDM Innovations Grant Program also seeks to explore new and innovative projects and activities that implement strategies to reduce single-occupant vehicle travel and produce measurable results, such as parking pricing programs, technology-based solutions, and marketing projects.
- SACOG Air Quality programs seek to decrease the volume of pollutants emitted in a number of ways, from increasing multimodal options to informational programs to influence the voluntary reduction of driving during poor air quality events. Originally part of the region’s commitment to decrease ozone-related emissions, components of the Air Quality programs are also present in other SACOG programs, such as the evolution of the Sacramento Emergency Clean Air and Transportation program from a standalone project to being part of Green Region.

Collectively, SACOG funding programs have supported projects that reduce VMT and GHG emissions by building transportation infrastructure or campaigns/programs to incentivize infill development, connecting people to community destinations with walking and biking facilities, reducing transportation-related emissions, and exploring new options to decrease VMT. Through competitive distribution, SACOG is able to advance the projects and programs that best implement the MTP/SCS.

Nonetheless, given the evidence put forth by CARB in the *2017 Scoping Plan*, and in the documents prepared by CARB related to the SB 375 target resetting finalized in March 2018, more must be done to reduce emissions from the transportation sector to achieve the state's climate goals.

#### *Operational Emissions from Combined Sectors*

As described in the Methods and Assumptions section of this chapter, operational GHG emissions were measured in MTCO<sub>2e</sub>/year from transportation, electricity consumption, natural gas combustion, area, solid waste, and water consumption and wastewater generation. These sectors reflect the categories generated from CalEEMod. MTCO<sub>2e</sub>/year estimates were also provided for agricultural-related emissions and high GWP gases (see Table 8-1).

For the region, 2016 GHG emissions totaled 16,527,605 MTCO<sub>2e</sub> (Table 8-1). Based on the methodology described in Section 8.4.1 – Methodology, estimates were developed for the years 2030, 2040, and 2050. Emissions for 2030 totaled 13,220,852 MTCO<sub>2e</sub>/year (20 percent reduction from 2016), emissions for 2040 totaled 11,397,238 MTCO<sub>2e</sub>/year (31 percent reduction from 2016), and emissions for 2050 totaled 9,541,109 MTCO<sub>2e</sub>/year (42 percent reduction from 2016). These steady declines are largely attributable to the anticipated increase in the proportion of renewable energy sources supplying electricity to the plan area of the proposed MTP/SCS.

GHG emissions from sectors other than the passenger-vehicle mobile-source sector could also conceivably be reduced in future years due to the implementation of statewide regulations and policy directed at reducing emissions. For example, emissions from agriculture and the solid waste sector may be reduced through the actions contained in the SLCP strategy and regulatory requirements of SB 1383, which requires a 50 percent reduction in the level of statewide disposal of organic waste compared to 2014 levels by 2020 and a 75 percent reduction by 2025, as well as the policies enumerated in the Draft 2030 Natural and Working Lands Implementation Plan. SB 350, the 100 Percent Clean Energy Act of 2018 also requires that the state's electricity sector achieve carbon neutrality by 2045 with benchmark targets of 50 percent renewable energy by 2026 and 60 percent by 2030. However, while these reductions are expected, implementation of statewide regulations, such as the aforementioned plans, is beyond the scope of SACOG's authority.

The *2017 Scoping Plan* recognizes that 2030 serves as a benchmark year in the state's long-term climate change goals; however, the *2017 Scoping Plan* guides the state only to the 2030 goal. Moreover, given that the 2050 target of achieving an 80 percent reduction from 1990 GHG levels has not yet been codified in legislation (although established by Executive Order S-3-05), the *2017 Scoping Plan* does not provide a framework to achieve emissions targets beyond 2030. Nonetheless, given the identified gap between SACOG's 19 percent reduction target and the state's 25 percent reduction target for 2030, it is anticipated that such a gap would remain when looking toward 2050.

Implementation of the projected land use pattern under the proposed MTP/SCS would be subject to Title 24 Building Code requirements, including the California Energy Code and the mandatory requirements of the CalGreen Code. Future development would also be required to undergo environmental review that would evaluate the potential for climate change impacts to occur. It is likely that in cases where climate change impacts are identified, appropriate and feasible mitigation would be applied to reduce GHG emissions including on- and off-site GHG reduction measures (e.g., low-flow water appliance, energy-efficient home appliances, landscaping limits), investments in local or regional programs to reduce GHGs (e.g., electrified school bus programs, home

refurbishment rebate programs), and the purchase of carbon offsets through programs verified by third party such as the Climate Action Reserve.

### *Construction Emissions*

The construction of the projected land use pattern and planned transportation improvements would require use of vehicles and equipment that would consume fuel and emit GHGs for construction activities, materials transport, and worker commutes. Typical earth-moving equipment that may be necessary to construct such facilities includes graders, scrapers, backhoes, jackhammers, front-end loaders, generators, water trucks, and dump trucks. Construction-related GHG emissions would be temporary and last only for the duration of construction. Local agencies, such as air pollution control districts, are generally charged with determining acceptable thresholds of GHG emissions, measured in MTCO<sub>2</sub>e/year. Quantification of short-term construction-related GHG emissions is generally based on a combination of methods, including the use of exhaust emission rates from emissions models, such as OFFROAD 2007 and EMFAC 2017. These models require consideration of assumptions, including construction timelines and energy demands (e.g., fuel and electricity).

Implementing agencies vary on whether they require quantification of construction emissions and whether they consider construction emissions as cumulatively significant impacts. For land use and transportation projects located within the jurisdiction of an air district or implementing agency that does not recommend construction emissions be quantified, construction-related GHG emissions may not be considered significant. Other air districts within the plan area of the proposed MTP/SCS, including SMAQMD, recommend applying a “bright-line” threshold to evaluate construction emissions. However, as is the case for SMAQMD thresholds, such thresholds have typically been developed in consideration of nearer-term statewide GHG reduction goals, such as achieving 1990 levels of GHG emissions by 2020 as mandated by AB 32 (SMAQMD 2018). Given the variation in how air districts and implementing agencies analyze construction-related GHG emissions, construction of the projected land use pattern and planned transportation improvements under the proposed MTP/SCS could be inconsistent with the state’s long-term climate change targets as framed in the 2017 Scoping Plan.

### *Conclusion*

As a result, the potential of the proposed MTP/SCS to substantially interfere with achievement of the climate goals set forth in CARB’s 2017 *Scoping Plan* related to transportation, passenger-vehicle sector, other operational sectors (i.e., energy, solid waste, other on- and off-road mobile-sources, water and wastewater treatment), and construction emissions at the regional level is considered potentially significant (PS) for Impact GHG-2. Mitigation is required. Mitigation Measures GHG-1, GHG-2, and GHG-3 are described below.

## **Localized Impacts**

For all Community Types in the proposed MTP/SCS, an aggregated evaluation of GHG emissions was undertaken using the formula described in the Methods and Assumptions section of this chapter. Additional measures from the 2017 *Scoping Plan* aimed at reducing emissions from electricity and natural gas consumption were considered. Impacts are described below.

### *Center and Corridor Communities*

The Center and Corridor Communities are projected to contain a significant amount of more energy efficient attached, multi-family residential products, which are shown to have lower emissions as compared to other land uses.

In addition, Center and Corridor Communities will include a variety of planned transportation improvements by 2040 including new HOV lanes, auxiliary lanes, roadway widenings, bicycle and pedestrian infrastructure improvements, transit facilities, increased transit service, and roadway maintenance and rehabilitation projects, that are expected to reduce GHG emissions.

However, for reasons similar to those described in the discussion of regional impacts, the potential remains to interfere with the *2017 Scoping Plan* GHG reduction targets related to the projected land use pattern and planned transportation improvements from implementation of the proposed MTP/SCS at the local level, and would therefore be potentially significant (PS) for Impact GHG-1. Mitigation is required. Mitigation Measures GHG-1, GHG-2, and GHG-3 are described below.

### *Established Communities*

The growth pattern in Established Communities indicates that while these areas are proposed to have population, housing, and employment growth, the growth rate will be relatively modest when compared to Center and Corridor Communities and Developing Communities, which will have a much higher rate of growth.

Established Communities are mostly lower density residential, office parks, and strip retail. They are considered to be mostly built-out, with little or no vacant land to develop. With little or no growth occurring, GHG emissions will remain constant, or even decrease slightly with the implementation of the *2017 Scoping Plan* measures outlined in the regional impacts section above. Established Communities will include a variety of planned transportation improvements by 2040 including new HOV lanes, auxiliary lanes, roadway widenings, bicycle and pedestrian infrastructure improvements, transit facilities, increased transit service, and roadway maintenance and rehabilitation projects.

However, for reasons similar to those described in the discussion of regional impacts, the potential remains to interfere with the *2017 Scoping Plan* GHG reduction targets related to the projected land use pattern and planned transportation improvements from implementation of the proposed MTP/SCS at the local level, and would therefore be potentially significant (PS) for Impact GHG-2. Mitigation is required. Mitigation Measures GHG-1, GHG-2, and GHG-3 are described below.

### *Developing Communities*

Developing Communities are expected to have a high rate of growth during the proposed MTP/SCS plan period. Although Developing Communities will serve a substantial portion of the growth in residential units and employment, the housing type will experience a significant shift from large lot detached to small lot detached and attached housing, increasing energy efficient and, therefore, emissions reductions. However, because Developing Communities contain little or no development in 2016, projected growth of lower density residential with supporting retail and public uses, will likely result in some increased GHG emissions.

Developing Communities will not necessarily include the same mix of transportation projects as Center and Corridor Communities and Established Communities. Developing Communities will include more road widening projects and newly constructed road projects to serve the new

residential and employment developments that will be built by 2040. In addition, while Developing Communities have little or no transit service today, at build-out they may include bus service every 30 minutes or less. These areas also often include walk and bike facilities via trails. This will reduce emissions from travel.

The measures from the *2017 Scoping Plan*, as described above in the regional impacts section, are assumed to be largely implemented in Developing Communities. These areas have more opportunities to implement measures like on-site renewable energy sources, building efficiency, and appliance efficiency as they are being built within the timeframe of SB 32. This will help to reduce the emissions from the growth that occurs in the Developing Communities.

However, for reasons similar to those described in the discussion of regional impacts, the potential remains to interfere with the *2017 Scoping Plan* GHG reduction targets related to the projected land use pattern and planned transportation improvements from implementation of the proposed MTP/SCS at the local level, and would therefore be potentially significant (PS) for Impact GHG-2. Mitigation is required. Mitigation Measures GHG-1, GHG-2, and GHG-3 are described below.

#### *Rural Residential Communities*

These communities are expected to receive very limited growth by 2040. This is the lowest growth rate of any Community Type, resulting in a decreasing share of regional population, housing units, and employment. Rural Residential Communities are dominated by single family houses sitting on one to 20-acre parcels which, according to EIA data, are less efficient in terms of electricity and natural gas consumption when compared to multi-family products (EIA 2019). However, they are likely to receive the benefits from the *2017 Scoping Plan* aimed at GHG reductions as other Community Type.

These areas are mostly auto oriented, with little or no transit service. Existing transportation infrastructure in Rural Residential Communities consists primarily of roads serving automobile traffic with some very limited transit service in a few places in the region. Implementation of the proposed MTP/SCS will result in the construction of roadway improvements, including road maintenance and rehabilitation, roadway widenings, newly constructed roadways, and freeway improvements. There may also be limited improvements to transit service, thus maintaining the auto-dependent nature of these areas. However, they are likely to receive the benefits from the *2017 Scoping Plan* aimed at GHG reductions as other Community Types.

However, for reasons similar to those described in the discussion of regional impacts, the potential remains to interfere with the *2017 Scoping Plan* GHG reduction targets related to the projected land use pattern and planned transportation improvements from implementation of the proposed MTP/SCS at the local level, and would therefore be potentially significant (PS) for GHG-2. Mitigation is required. Mitigation Measures GHG-1, GHG-2, and GHG-3 are described below.

#### *Lands Not Identified for Development in the Proposed MTP/SCS*

Although some housing and employment growth, consistent with historical trends, may occur in this Community Type within the MTP/SCS planning period, the proposed MTP/SCS does not forecast any development in these areas by 2040. The proposed MTP/SCS will make a limited number of transportation investments in this Community Type by 2040, including road maintenance, road widenings and safety enhancements, and other roadway improvements.

However, for reasons similar to those described in the discussion of regional impacts, the potential remains to interfere with the *2017 Scoping Plan* GHG reduction targets related to the projected land use pattern and planned transportation improvements from implementation of the proposed MTP/SCS at the local level, and would therefore be potentially significant (PS) for GHG-2. Mitigation is required. Mitigation Measures GHG-1, GHG-2, and GHG-3 are described below.

### **High Frequency Transit Areas Impacts**

For all HFTAs in the proposed MTP/SCS, an aggregated evaluation of GHG emissions was done using the formula described in the Methods and Assumptions section of this chapter. Additional measures from the 2017 Scoping Plan aimed at reducing emissions from electricity and natural gas consumption were considered. Impacts are described below.

#### *Placer County High Frequency Transit Areas*

A large portion of housing growth in Placer County HFTAs between 2016 and 2040 are assumed to be attached (see the Product Description chapter). As discussed, EIA data shows this housing type to be more efficient than its single-family counterpart on a per unit basis in terms of consumption of electricity and natural gas (EIA 2019). This will support the plan's GHG emissions reduction goals.

Placer County HFTAs will include a variety of planned transportation improvements by 2040, including new HOV lanes, auxiliary lanes, roadway widenings, bicycle and pedestrian infrastructure improvements, transit facilities, increased transit service, and roadway maintenance and rehabilitation projects. Transit service will include increased frequency on local fixed route buses, but the majority of transit service increases will be commuter service to downtown Sacramento. In addition, Placer County HFTAs are served by the Capital Corridor train, as well as high-quality transit service in Roseville. This creates more non-auto modes of travel, reducing emissions from travel.

However, for reasons similar to those described in the discussion of regional impacts, the potential remains to interfere with the *2017 Scoping Plan* GHG reduction targets related to the projected land use pattern and planned transportation improvements from implementation of the proposed MTP/SCS for Placer County HFTAs, and would therefore be potentially significant (PS) for GHG-2. Mitigation is required. Mitigation Measures GHG-1, GHG-2, and GHG-3 are described below.

#### *Sacramento County High Frequency Transit Areas*

Sacramento County HFTAs include the majority of the City of Sacramento and portions of Rancho Cordova, Folsom, and Citrus Heights. Between 2016 and 2040, a large percentage of all new residential products are assumed to be attached (see the Product Description chapter), and residential densities are generally high, which will support a more energy efficient housing supply and will help reduce GHG emissions.

Sacramento County HFTAs would include a variety of planned transportation improvements by 2040, including new HOV lanes, auxiliary lanes, roadway widenings, bicycle and pedestrian infrastructure improvements, transit facilities, increased transit service, and roadway maintenance and rehabilitation projects. Transit service will include increased frequency on local fixed route buses, major increases in light rail service, new streetcar service, and more express bus service. In addition, the Sacramento HFTAs are served by light rail, Capital Corridor, and numerous bus routes. In 2040, Sacramento HFTAs are assumed to have a streetcar corridor in downtown, and bus rapid transit service. This offers more non-auto modes of travel, reducing travel related emissions.

However, for reasons similar to those described in the discussion of regional impacts, the potential remains to interfere with the *2017 Scoping Plan* GHG reduction targets related to the projected land use pattern and planned transportation improvements from implementation of the proposed MTP/SCS in Sacramento County HFTAs, and would therefore be potentially significant (PS) for GHG-2. Mitigation is required. Mitigation Measures GHG-1, GHG-2, and GHG-3 are described below.

#### *Yolo County High Frequency Transit Areas*

Yolo County HFTAs include the majority of West Sacramento and Davis, and some portions of Yolo County near the Sacramento International Airport where Sacramento Regional Transit District will run light rail service. As noted, residential growth in Yolo County HFTAs is dominated by attached housing at generally high densities (see the Product Description chapter). These housing types support the plan's goals of reducing energy consumption and GHG emissions.

Yolo County HFTAs will include a variety of transportation improvements by 2040, including new HOV lanes, auxiliary lanes, roadway widenings, bicycle and pedestrian infrastructure improvements, transit facilities, increased transit service, and roadway maintenance and rehabilitation projects. Transit service will include increased frequency on local fixed route buses, a major light rail extension to Sacramento International Airport, new streetcar service in West Sacramento, and increased express service to downtown Sacramento. In addition, the Yolo County HFTAs are served by Capital Corridor as well as numerous bus routes. In 2040, the area will include bus rapid transit and a streetcar in West Sacramento. This would reduce travel related emissions by offering non-auto modes of travel.

However, for reasons similar to those described in the discussion of regional impacts, the potential remains to interfere with the *2017 Scoping Plan* GHG reduction targets related to the projected land use pattern and planned transportation improvements from implementation of the proposed MTP/SCS in Yolo County HFTAs, and would therefore be potentially significant (PS) for GHG-2. Mitigation is required. Mitigation Measures GHG-1, GHG-2, and GHG-3 are discussed below.

#### *MITIGATION MEASURES*

##### **Mitigation Measure GHG-1: Implement Mitigation Measure TRN-1.**

##### **Mitigation Measure GHG-2: Coordinate and support local agencies within the plan area of the proposed MTP/SCS to reduce regional GHGs from all sectors.**

SACOG, in partnership with air districts within the plan area of the proposed MTP/SCS, shall work with the counties and cities within the plan area to adopt qualified GHG reduction plans (e.g., CAPs), develop GHG-reducing planning policies, and implement local climate initiatives. These reductions can be achieved through a combination of programs, including ZNE in new construction, retrofits of existing buildings, incentivizing the development of renewable energy sources that serve both new and existing land uses, and other measures.

**Mitigation Measure GHG-3: Implement all feasible on- and off-site mitigation measures to reduce GHG emissions below a lead agency–approved threshold of significance.**

The applicable lead agency can and should implement, where necessary and feasible to address site-specific construction climate change impacts, the following measures to avoid or minimize impacts related to construction GHG emissions:

- Project proponents shall require its contractors to restrict the idling of on- and off-road diesel equipment to no more than 5 minutes while the equipment is on-site.
- Project proponents of new facilities shall implement waste, disposal, and recycling strategies (i.e., 10 percent recycled content for Tier 1 and 15 percent recycled content for Tier 2) in accordance with the voluntary measures for non-residential land uses contained in Section A5.405 of the 2016 CALGreen Code or in accordance with any update to these requirements in future iterations of the CALGreen Code in place at the time of project construction.
- Project proponents of new facilities shall achieve or exceed the enhanced Tier 2 target for nonresidential land uses of recycling or reusing 80 percent of the construction waste as described in Section A5.408 of the 2016 CALGreen Code or in accordance with any update to these requirements in future iterations of the CALGreen Code in place at the time of project construction.
- Project proponents shall require all diesel-powered, off-road construction equipment meet EPA’s Tier 3 or Tier 4 emissions standards as defined in 40 CFR 1039 and comply with the exhaust emission test procedures and provisions of 40 CFR Parts 1065 and 1068. This measure can also be achieved by using battery-electric off-road equipment as it becomes available.
- Project proponents shall implement a program that incentivizes construction workers to carpool, and/or use public transit or electric vehicles to commute to and from the project site.

**SIGNIFICANCE AFTER MITIGATION**

Mitigation Measure GHG-1 has the potential to assist SACOG in achieving higher VMT reductions through new or expanded technologies, methods, measures, and programs; however, the efficacy or feasibility of such technologies, methods, measures, and programs are unknown at this time and beyond the scope of SACOG’s authority to control. As a result, while it is possible that such technologies, methods, measures, and programs could reduce emissions as necessary to achieve the state’s long-term climate change goals, reaching a conclusion to that effect would be speculative.

Mitigation Measure GHG-2 would further reduce VMT emissions in addition to reductions from other sectors (i.e., energy, area, water, and waste). SACOG’s support of local climate change would be consistent with guidance in the *2017 Scoping Plan*, which indicates that local and regional GHG reduction efforts are necessary for the state to meet its long-term climate change goals. However, there is no assurance that local jurisdictions would implement the necessary measures to reduce the plan area of the proposed MTP/SCS fair share GHG inventory to levels consistent with statewide reduction targets. Additionally, SACOG cannot require local implementing agencies to adopt GHG reduction plans or policies.

While Mitigation Measures GHG-1 and GHG-2 would reduce GHG emissions throughout the plan area of the proposed MTP/SCS, the actual reductions achieved are uncertain at this time. If the implementing agency adopts these mitigation measures, Impact GHG-2 may be reduced, but not to a less-than-significant level. For projects proposing to streamline environmental review, lead agencies must comply with state guidance on VMT reduction and conduct project-level analysis for each project to analyze whether, based on substantial evidence in the record, the proposed mitigation would reduce the VMT impact to less than significant. However, SACOG cannot require the implementing agency to adopt this mitigation measure, and it is ultimately the responsibility of the implementing agency to determine and adopt project-specific mitigation. Therefore, Impact GHG-2 remains significant and unavoidable (SU) for purposes of this program-level review.

Mitigation Measure GHG-3 would serve to mitigate the amount of GHGs emitted during construction phasing of the projected land use pattern and planned transportation improvements under the proposed MTP/SCS. While it is possible that such measures could reduce impacts such that construction emissions would be consistent with the *2017 Scoping Plan* and the state's long-term climate change goals, SACOG cannot require or enforce construction mitigation for projects outside of its purview. If the implementing agency adopts these mitigation measures, construction-related impacts under Impact GHG-2 may be reduced, but not to a less-than-significant level. For projects proposing to streamline environmental review, lead agencies must conduct project-level analysis for each project to analyze whether, based on substantial evidence in the record, the proposed mitigation would reduce the construction-related impact to less than significant. However, SACOG cannot require the implementing agency to adopt this mitigation measure, and it is ultimately the responsibility of the implementing agency to determine and adopt project-specific mitigation. Therefore, construction-related impacts under Impact GHG-2 remain significant and unavoidable (SU) for purposes of this program-level review.

*IMPACT GHG-3: CONFLICT WITH APPLICABLE LOCAL GHG REDUCTION PLANS.*

## **Regional Impacts**

In the development of the proposed MTP/SCS, SACOG analyzed local CAPs, specific plans, and general plans that included targets for GHG reductions and made efforts to address policies within the plans. The local GHG reduction plans are adopted in an effort to comply with the goals set for local governments in the *2017 Scoping Plan*. While the land use pattern and planned transportation investments and strategies of the proposed MTP/SCS are consistent with SB 375 (see GHG-1), ultimately it is the local jurisdictions that have authority to determine consistency with local plans. SACOG has no jurisdiction in approval of the projected land use pattern within the plan area of the proposed MTP/SCS.

In addition, the proposed MTP/SCS does not address all of the potential reduction measures, goals, and GHG targets from various local agencies. CAPs, general plans, and other plans that address climate change and reduce GHG emissions will set targets based on state, regional, or local conditions. Not all plans will have identical GHG reduction goals and implementation measures. Entities in the SACOG region are in different stages of the CAP or GHG reduction planning process. As emissions inventories and climate action or GHG reduction plans are prepared and near completion or adoption, jurisdictions would set benchmarks to evaluate the implementation of their plan.

The proposed MTP/SCS relies on the benefits of dense, compact development coupled with an efficient and diversified transportation network. It seeks to reduce overall and per capita energy consumption and related GHG emissions from all sources. These actions would help to reduce GHG emissions associated with changes in land use and transportation systems at both the local and regional level, and thus could result in beneficial contributions to localized GHG emissions reductions identified in local plans.

Therefore, the projected land use pattern and planned transportation improvements in the proposed MTP/SCS at the regional level do not conflict with the applicable local GHG reduction plans. This impact is considered less than significant (LS) for Impact GHG-3. No mitigation is required.

#### **MITIGATION MEASURES**

None required.

**IMPACT ENE-1: RESULT IN POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACT DUE TO WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY RESOURCES, DURING PROJECT CONSTRUCTION OR OPERATION.**

#### **Regional Impacts**

Implementation of the projected land use pattern and planned transportation improvements under the proposed MTP/SCS would result in energy consumption during construction and operation activities. Construction of land uses and planned transportation improvements would require the use of energy-consuming equipment for site preparation, grading, building assembly, and equipment installation. A wide variety of equipment powered through the combustion of liquid fuels may be used during the construction of new or expanded organic waste handling facilities. Examples of equipment typically used during construction include pavers, trenchers, mixers, cranes, dumpers/tenders, excavators, graders, tractors, trucks, forklifts, dozers, loaders, and scrapers. Internal-combustion engines that consume diesel and gasoline typically power these types of equipment and can have outputs ranging from 5 to 750 horsepower. Off-road equipment with diesel engines of 25 horsepower or larger are regulated by CARB for purposes of emissions reductions (13 CCR Section 2449). These regulations require operators to limit idling during operation and to upgrade older equipment with modern engines, which additionally provides benefits for the reduction of fuel consumption.

The transportation of workers and materials to and from project sites would require the consumption of diesel and gasoline fuels. Medium- and heavy-duty trucks and vans with Gross Vehicle Weight Ratings between 8,500 and 33,000 pounds would typically be used. Under CARB's Truck and Bus Regulations, vehicles with a Gross Vehicle Weight Rating greater than 14,000 pounds are required to have diesel engines built to 2010 standards no later than 2023 (CARB 2018c).

Construction activities would occur over the duration of the proposed MTP/SCS's horizon (i.e., 2040) at various locations throughout the plan area of the proposed MTP/SCS. The location, size, magnitude, and duration of construction activities within the plan area of the proposed MTP/SCS is unknown at the time of writing this EIR. However, construction activities, as compared to operational energy demand, would be short term in nature.

With respect to operations of the projected land use pattern and planned transportation improvements, baseline energy consumption was calculated for 2016 and compared to 2040. Per capita annual energy consumption in the SACOG region is shown in Table 8-4. In 2016, annual per capita consumption was approximately 5,476 kilowatt hours of electricity, 153 therms of natural gas, 400 gallons of gasoline, and 2 gallons of diesel fuel. Assuming the growth in the proposed MTP/SCS, annual per capita energy consumption is expected to decrease to 4,976 kilowatt hours of electricity, 124 therms of natural gas, 380 gallons of gasoline, and increase to 3 gallons of diesel by 2040. Table 8-4 summarizes these findings.

**Table 8-4  
Per Capita Energy Consumption in the Plan Area of the Proposed MTP/SCS**

Source	2016	2040	Percent Reduction (2016 to 2040)
Electricity (kwh per capita)	5,476	4,976	9%
Natural Gas (therms per capita)	153	124	19%
Gasoline (gallons per capita)	400	380	5%
Diesel (gallons per capita)	2	3	-57%

Source: SACOG 2019

The energy consumption that would occur as a result of implementation of the proposed MTP/SCS would not constitute “wasteful, inefficient, or unnecessary” use of energy. Fuel use and energy consumption related to construction and operation are occurring at baseline conditions, and would continue to occur without the projected land use pattern or planned transportation improvements in the proposed MTP/SCS. Also, as shown in Table 8-4 above, per capita energy consumption would generally go down (with the exception of diesel fuel) by 2040 as compared to 2016 from implementation of the projected land use pattern and planned transportation improvements in the proposed MTP/SCS. (Diesel emissions are primarily from heavy-duty vehicles and engine efficiency and fleet turnover is not happening at the same rate as VMT increases from these engine types (e.g., VMT increases are outpacing regulations and introduction of ZEV in this sector is more difficult). Consequently, no regional environmental impact would occur from the wasteful, inefficient, or unnecessary use of energy. Impact ENE-1 would be less than significant. No mitigation is required.

### Localized Impacts

*Center and Corridor Communities, Established Communities, Developing Communities, Rural Residential Communities, and Lands Not Identified for Development in the Proposed MTP/SCS*

The potential localized environmental impact of the wasteful, unnecessary, or inefficient use of energy from the projected land use pattern and planned transportation improvements in the proposed MTP/SCS is the same as the regional impact and is considered less than significant (LS) for Impact ENE-1. No mitigation is required.

### High Frequency Transit Area Impacts

*Placer County, Sacramento County, and Yolo County High Frequency Transit Areas*

The potential environmental impact of the wasteful, unnecessary, or inefficient use of energy from the projected land use pattern and planned transportation improvements in the proposed MTP/SCS in HFTAs is the same as the regional impact and is considered less than significant (LS) for Impact ENE-1. No mitigation is required.

## **MITIGATION MEASURES**

None required.

**IMPACT ENE-2: CONFLICT WITH OR OBSTRUCT A STATE OR LOCAL PLAN FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY.**

## **REGIONAL IMPACTS**

Implementation of the proposed MTP/SCS would not conflict with or obstruct a state or local plan for increasing renewable energy or energy efficiency. The proposed MTP/SCS would result in the development of new land uses that would induce new demand for electricity and natural gas; however, as discussed in Chapter 2 – Project Description, the proposed MTP/SCS’s land use policies are directed at reducing automobile use through construction of compact and mixed use development in areas that offer transportation choices such as walking, biking, and transit. The land uses constructed under the proposed MTP/SCS would also be subject to the GHG reduction policies of a CAP, if applicable. At the time of writing this Draft EIR, many cities and counties in the region have CAPs, GHG Reduction Plans, or Sustainability Plans that include policies to increase the use of renewable energy throughout the region. The projected land use pattern included in the proposed MTP/SCS would not conflict with the applicability of those policies to future development within the plan area of the proposed MTP/SCS. The projected land use pattern would also be subject to the most recent iteration of the California Energy Code, which requires that single-family residential development include solar photovoltaics. Future land uses would also be required to adhere to future iterations of the California Energy Code which is updated on a triennial basis (once every three years) and is expected to become increasingly more stringent over time to further the state’s renewable energy and GHG reduction goals.

Thus, the projected land use pattern in the proposed MTP/SCS would not conflict with a state or regional plan related to the increased use of renewable energy on a regional scale and would be a less-than-significant impact (LS) for Impact ENE-2. No mitigation is required.

The proposed MTP/SCSs would include planned transportation improvements that would further reduce dependence on petroleum products and increase reliance on renewable energy. For example, planned transportation improvements include decreasing automobile use as a primary mode of transportation by providing adequate pedestrian and bicycle facilities. Investments in EV charging infrastructure would also occur, which would relocate energy derived from petroleum combustion to the electricity grid, which, as discussed in Section 8.3 – Regulatory Setting, would be sourced by a greater portion of renewable energy as a result of SB 100 and the RPS. City and county policies to improve the regions EV infrastructure would continue to apply with implementation of the proposed MTP/SCS.

Therefore, the planned transportation improvements in the proposed MTP/SCS would not conflict with a state or regional plan related to the increased use of renewable energy on a regional scale and would be a less-than-significant impact (LS) for Impact ENE-2. No mitigation is required.

## **Localized Impacts**

*Center and Corridor Communities, Established Communities, Developing Communities, Rural Residential Communities, and Lands Not Identified for Development in the Proposed MTP/SCS*

Impacts related to conflicting with a state or regional plan to increase use of renewable energy would be the same as those discussed for regional impacts. Therefore, the potential to conflict with a state or regional plan to increase use of renewable energy in the Center and Corridor Communities, Established Communities, Developing Communities, Rural Residential Communities, and Lands Not Identified for Development Community Types from implementation of the projected land use pattern and planned transportation improvements in the proposed MTP/SCS would be a less-than-significant (LS) impact for Impact ENE-2. No mitigation is required.

## **High Frequency Transit Area Impacts**

*Placer County, Sacramento County, and Yolo County High Frequency Transit Areas*

Impacts to HFTAs would be the same as those discussed under regional impacts. Therefore, the projected land use pattern and planned transportation improvements in the proposed MTP/SCS would not conflict with the goal of increasing reliance on renewable electricity sources in HFTAs. This impact is considered less than significant (LS) for Impact ENE-2. No mitigation is required.

### **MITIGATION MEASURES**

None required.

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