5.6 GREENHOUSE GAS EMISSIONS AND ENERGY

This section evaluates greenhouse gas (GHG) emissions associated with the proposed project and analyzes compliance with applicable regulations. Consideration of the project's consistency with applicable plans, policies, and regulations, as well as the introduction of new sources of GHGs, are included in this section. GHG technical data are included in Appendix E, Air Quality/Greenhouse Gas Emissions Data.

5.6.1 REGULATORY SETTING

FEDERAL

U.S. EPA GHG Tailor Rule and GHG Reporting System

On December 7, 2009, the United States Environmental Protection Agency (U.S. EPA) issued an endangerment finding that current and projected concentrations of the six 1997 Kyoto Protocol Treaty GHGs—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs)—in the atmosphere threaten the public health and welfare of current and future generations. This finding came in response to the Supreme Court ruling in *Massachusetts v. EPA*, which found that GHGs are pollutants under the federal Clean Air Act. As a result, the U.S. EPA issued its GHG Tailoring Rule in 2010, which applies to facilities that have the potential to emit more than 100,000 metric tons of carbon dioxide equivalents (MTCO2e). In 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA* (No. 12-1146), finding that the U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a permit pursuant to the Clean Air Act's Prevention of Significant Deterioration or Title V operating permit programs. The U.S. EPA's Greenhouse Gas Reporting Program requires facilities that emit 25,000 metric tons of $MTCO_2e$ or more of GHG to report their GHG emissions to the U.S. EPA to inform future policy decisions.

STATE

Assembly Bill 32 (California Global Warming Solutions Act) and Related GHG Rules

The California Air Resources Board (CARB) is the lead agency for implementing Assembly Bill (AB) 32, the California Global Warming Solutions Act adopted by the Legislature in 2006. AB 32 requires the CARB to prepare a scoping plan containing the main strategies that will be used to achieve reductions in GHG emissions in California.

In 2007, CARB approved a statewide 1990 emissions level and corresponding 2020 GHG emissions limit of 427 million $MTCO_2e$ (CARB 2007). In 2008, CARB adopted its *Climate Change Scoping Plan*, which projects, absent regulation or under a "business as usual" scenario, 2020 statewide GHG emissions levels of 596 million $MTCO_2e$ and identifies the numerous measures (i.e., mandatory rules and regulations and voluntary measures) that will achieve at least 174 million $MTCO_2e$ of reductions and reduce statewide GHG emissions to 1990 levels by 2020 (CARB 2009). In 2011, CARB released a supplement to the 2008 *Scoping Plan Functional Equivalent Document* that included an updated 2020 business as usual statewide GHG emissions level projection of 507 million $MTCO_2e$ (CARB 2011), and in 2014 CARB adopted its *First Update to the Climate Change Scoping Plan* (CARB 2014).

Executive Order B-30-15, 2030 Carbon Target and Adaptation, issued by Governor Brown in April 2015, sets a target of reducing GHG emissions by 40 percent below 1990 levels in 2030. By directing State agencies to take measures consistent with their existing authority to reduce GHG emissions, this order establishes coherence between the 2020 and 2050 GHG reduction goals set by AB 32 and seeks to align California with the scientifically established GHG emissions levels needed to limit global warming below two degrees Celsius.

To reinforce the goals established through Executive Order B-30-15, Governor Brown went on to sign Senate Bill (SB) 32 and AB 197 on September 8, 2016. SB 32 made the GHG reduction target to reduce GHG emissions by 40 percent below 1990 levels by 2030 a requirement as opposed to a goal. AB 197 gives the Legislature additional authority over CARB to ensure the most successful strategies for lowering emissions are implemented, and requires CARB to, "protect the state's most impacted and disadvantaged communities …[and] consider the social costs of the emissions of greenhouse gases."

There are five key goals for reducing GHG emissions in California through 2030: (1) increase renewable electricity to 50 percent; (2) double energy efficiency savings achieved in existing buildings and make heating fuels cleaner; (3) reduce petroleum use in cars and trucks by up to 50 percent; (4) reduce emissions of short-lived climate pollutants, and (5) manage farms, rangelands, forests, and wetlands to increasingly store carbon. In addition, the order requires CARB to work closely with other State agencies and the public to update the State's climate change scoping plan. Under the scoping plan, approximately 85 percent of the State's emissions are subject to a cap-and-trade program where covered sectors are placed under a declining emissions cap. Emissions reductions are achieved through regulatory requirements and the option to reduce emissions further or purchase allowances to cover compliance obligations. It is expected that emission reductions from this cap-and trade program will account for a large portion of the reductions required by AB 32. Although there was initial concern AB 197 may have come at the expense of the Cap-and-Trade Program, AB 398 (approved in July 2017) extended the state's Cap-and-Trade program through 2030, thereby ensuring the program will continue to assist the state in meeting future GHG reduction goals.

On December 14, 2017, CARB adopted the *2017 Climate Change Scoping Plan Update* (2017 Scoping Plan Update) that is the State's strategy for achieving California's 2030 GHG target (CARB 2017). The primary objective of the 2017 Scoping Plan Update is to identify the measures needed to achieve the mid-term GHG reduction target for 2030 (i.e., reduce emissions by 40 percent below 1990 levels by 2030), as established under Executive Order B-30-15 and SB 32. The 2017 Scoping Plan Update identifies an increased need for coordination among state, regional, and local governments to achieve the GHG emissions reductions that can be gained from local land use planning and decisions. It notes emission reduction targets set by more than one hundred local jurisdictions in the state could result in emissions reductions of up to 45 million $MTCO_2e$ and 83 million $MTCO_2e$ by 2020 and 2050, respectively. To achieve these goals, the 2017 Scoping Plan Update includes a recommended plan-level efficiency threshold of six metric tons or less per capita by 2030 and no more than two metric tons by 2050.

The major elements of the 2017 Scoping Plan Update framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero emission vehicle (ZEV) buses and trucks

- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030);
- Implementation of SB 350, which expands the Renewable Portfolio Standard (RPS) to 50 percent and doubles energy efficiency savings by 2030
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH_4 and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030
- Continued implementation of SB 375
- Post-2020 Cap-and-Trade Program that includes declining caps
- 20 percent reduction in GHG emissions from refineries by 2030
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink

CARB Mandatory Reporting of GHG Emissions

CARB has adopted the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Title 17, CCR, Section 95100 – 95133 [17 CCR §95100 – 95133]), which requires facilities that emit greater than or equal to 10,000 MTCO2e from combustion annually to report their GHG emissions to CARB.

Assembly Bill 1493

With the passage of AB 1493 (Pavley I) in 2002, California launched an innovative and proactive approach for dealing with GHG emissions and climate change at the State level. AB 1493 requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards apply to automobiles and light trucks from 2009 through 2016. Although litigation was filed challenging these regulations and the U.S. EPA initially denied California's related request for a waiver, a waiver has since been granted. In 2012, the EPA issued a final rulemaking that sets even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 among light-duty vehicles. In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The components of the Advanced Clean Cars program are the Low-Emission Vehicle regulations and the Zero-Emission Vehicle regulation. The program combines the control of smog, soot, and global warning gases and requirements for greater numbers of zero-emission vehicles into a single package of standards.

Senate Bill 375 and SCAG 2016 RTP/SCS

In January 2009, California SB 375 went into effect, known as the Sustainable Communities and Climate Protection Act. The objective of SB 375 is to better integrate regional planning of transportation, land use, and housing to reduce sprawl and ultimately reduce greenhouse gas emissions and other air pollutants. SB 375 tasks CARB to set GHG reduction targets for each of California's 18 regional Metropolitan Planning Organizations (MPOs). Each MPO is required to prepare a Sustainable Communities Strategy (SCS) as part of its Regional Transportation Plan (RTP). The SCS is a growth strategy in combination with transportation policies that will show how the MPO will meet its GHG reduction target. If the SCS cannot meet the reduction goal, an

Alternative Planning Strategy may be adopted that meets the goal through alternative development, infrastructure, and transportation measures or policies.

In August 2010, CARB released the proposed GHG reduction targets for the MPOs to be adopted in September 2010. The proposed reduction targets for the Southern California Association of Governments (SCAG) region were eight percent by year 2020 and 13 percent by year 2035. In September 2010 and February 2011, the eight percent and the 13 percent targets were adopted, respectively.

On April 4, 2012, SCAG's Regional Council adopted the *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy: Towards a Sustainable Future.* The 2012 RTP/SCS included a strong commitment to reduce emissions from transportation sources to comply with SB 375. The document contained a host of improvements to the region's multimodal transportation system. These improvements included closures of critical gaps in the network that hinder access to certain parts of the region, as well as the strategic expansion of the transportation system where there is room to grow in order to provide the region with greater mobility. The RTP/SCS demonstrated the region's ability to attain and exceed the GHG emission-reduction targets set forth by the CARB, and outlined a plan for integrating the transportation network and related strategies with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands.

SCAG's Regional Council adopted an update to the 2012 RTP/SCS on April 7, 2016, the *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy* (2016 RTP/SCS). The 2016 RTP/SCS expands upon the 2012 RTP/SCS's goal of balancing future mobility and housing needs with economic, environmental, and public health goals. Included in the 2016 RTP/SCS are 13 major initiatives primarily focused around preserving and maintaining the existing transportation system, expanding and improving mass transit (with a specific emphasis on passenger rail), decreasing reliance on vehicular modes of transportation through the expansion of pedestrian and bicycle infrastructure, and focusing new growth around transit. Through proactive land use planning and improvements to the transportation network, implementation of the 2016 RTP/SCS will result in an eight percent reduction in greenhouse gas emissions per capita by 2020, an 18 percent reduction by 2035, and a 21 percent reduction by 2040 when compared with 2005 levels. These reductions meet or exceed the State's mandate, which require an eight percent reduction by 2020 and 13 percent by 2035.

In March 2018, CARB established new regional GHG reduction targets for SCAG and other MPOs in the State (CARB 2018a). The new SCAG targets are an 8 percent reduction in per capita passenger vehicle GHG reductions by 2020 and a 19 percent reduction by 2035. The 2016 RTP/SCS, however, remains the approved SCS for the SCAG MPO until such time as SCAG prepares an updated SCS.

California Green Building Standards Code

The California Energy Commission (CEC) first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings in 1978 in response to a legislative mandate to reduce energy consumption in the State. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code). The purpose of the CALGreen Code is to "improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) planning and design; (2) energy efficiency; (3) water efficiency and conservation; (4) material conservation and resource efficiency; and (5) environmental air quality." The CALGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC).

CALGreen contains both mandatory and voluntary measures. For non-residential land uses, there are 39 mandatory measures including, but not limited to, exterior light pollution reduction, wastewater reduction by 20 percent, and commissioning of projects over 10,000 square feet. Two tiers of voluntary measures apply to non-residential land uses, for a total of 36 additional elective measures.

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2019 standards, adopted May 9, 2018, will go into effect on January 1, 2020 and improve upon existing standards, focusing on three key areas: proposing new requirements for installation of solar photovoltaics for newly constructed low-rise residential buildings; updating current ventilation and indoor air quality requirements, and extending Title 24 Part 6 to apply to healthcare facilities. The 2019 standards also propose several smaller improvements in energy efficiency.

Renewable Portfolio Standard (RPS)

On April 12, 2011, Governor Brown signed SB X1-2 to increase California's RPS to 33 percent by 2020. SB 350, signed in October 2015, further increased the RPS to 50 percent by 2030.

REGIONAL AND LOCAL

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) adopted a *Policy on Global Warming and Stratospheric Ozone Depletion* in April 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the Air Quality Management Plan. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include the following directives:

- Phase out the use and corresponding emissions of CFCs, methyl chloroform (1,1,1-trichloroethane or TCA), carbon tetrachloride, and halons by December 1995
- Phase out the large quantity use and corresponding emissions of HCFCs by the year 2000
- Develop recycling regulations for HCFCs (e.g., SCAQMD Rules 1411 and 1415)
- Develop an emissions inventory and control strategy for methyl bromide
- Support the adoption of a California GHG emission reduction goal

The legislative and regulatory activity detailed above are expected to require significant development and implementation of energy efficient technologies and shifting of energy production to renewable sources.

City of Duarte

Duarte Municipal Code Chapter 19.52, Sustainable Development Practices, are established to encourage conservation of natural resources, increased energy efficiency, and use of sustainable practices in the development process, and to implement State laws regarding reduction in greenhouse gas emissions, water conservation, and other resource conservation directives. All new construction in the City is required to apply sustainable development practices as identified in Chapter 19.52. Prior to implementing the standards, the level of development (project size) and the corresponding required sustainable development practices must be identified and incorporated into project design and building plans.

On November 13, 2012, the City adopted an *Energy Action Plan*, created in partnership with the San Gabriel Valley Council of Governments (SGVCOG) and Southern California Edison (SCE). The plan provides the City guidance in following the California's *Long Term Energy Efficiency Strategic Plan* (CEESP) by ascertaining existing and future energy use and develops an energy efficiency strategy to meet future energy reduction goals. As the plan is a part of a unified regional framework, it also assists in identifying a clear path to successfully implementing actions, policies, and goals that will achieve the City's reduction targets. In addition, the City promotes utility company incentive programs to retrofit existing development with energy efficient lighting, air conditioning and heating systems to reduce energy consumption.

5.6.2 ENVIRONMENTAL SETTING

GREENHOUSE GASES

Gases that trap heat in the atmosphere and affect regulation of the earth's temperature are known as GHGs. Many chemical compounds found in the earth's atmosphere exhibit the GHG property. GHGs allow sunlight to enter the atmosphere freely. When sunlight strikes the earth's surface, it is either absorbed or reflected back toward space. Earth that has absorbed sunlight warms up and emits infrared radiation toward space. GHGs absorb this infrared radiation and "trap" the energy in the earth's atmosphere. Entrapment of too much infrared radiation produces an effect commonly referred to as "global warming."

GHGs that contribute to climate regulation are a different type of pollutant than criteria or hazardous air pollutants because climate regulation is global in scale, both in terms of causes and effects. Some GHGs are emitted to the atmosphere naturally by biological and geological processes such as evaporation (water vapor), aerobic respiration (CO_2), and off-gassing from low oxygen environments such as swamps or exposed permafrost (CH_4). However, GHG emissions from human activities such as fuel combustion (e.g., CO_2) and refrigerants use (e.g., HFCs) significantly contribute to overall GHG concentrations in the atmosphere, climate regulation, and global climate change. Human production of GHGs has increased steadily since pre-industrial times (approximately pre-1880), and atmospheric carbon dioxide concentrations have increased from a pre-industrial value of 280 parts per million (ppm) in the early 1800's to 414 ppm in July 2019 (NOAA 2019). The effects of increased GHG concentrations in the atmosphere include climate change (increasing temperature and shifts in precipitation patterns and amounts), reduced ice and snow cover, sea level rise, and acidification of oceans. These

effects in turn will impact food and water supplies, infrastructure, ecosystems, and overall public health and welfare.

The 1997 United Nations' Kyoto Protocol international treaty set targets for reductions in emissions of four specific greenhouse gases—CO_2, CH_4, N_2O, and SF_6—and two groups of gases, HFCs and PFCs. These GHGs are the primary GHGs emitted into the atmosphere by human activities. Water vapor is also a common GHG that regulates the earth's temperature; however, the amount of water vapor in the atmosphere can change substantially from day to day, whereas other GHG emissions remain in the atmosphere for longer periods of time. The six common GHGs are described below.

- **Carbon Dioxide (CO_2).** CO_2 is released to the atmosphere when fossil fuels (oil, gasoline, diesel, natural gas, and coal), solid waste, and wood or wood products are burned.
- **Methane (CH_4)**. CH_4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from the decomposition of organic waste in municipal solid waste landfills and the raising of livestock.
- **Nitrous Oxide (N_2O).** N_2O is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels.
- **Sulfur Hexafluoride (SF_6)**. SF_6 is commonly used as an electrical insulator in high voltage electrical transmission and distribution equipment such as circuit breakers, substations, and transmission switchgear. Releases of SF_6 occur during maintenance and servicing as well as from leaks of electrical equipment.
- **Hydrofluorocarbons (HFCs) and Perfluorocarbons (PFCs)**. HFCs and PFCs are generated in a variety of industrial processes. Although the amount of these gases emitted into the atmosphere is small in terms of their absolute mass, they are potent agents of climate change due to their high global warming potential.

GHGs can remain in the atmosphere long after they are emitted. The potential for a particular GHG to absorb and trap heat in the atmosphere is considered its global warming potential (GWP). The reference gas for measuring GWP is CO_2, which has a GWP of one. By comparison, CH_4 has a GWP of 25, which means that one molecule of CH_4 has 25 times the effect on global warming as one molecule of CO_2. Multiplying the estimated emissions for non-CO_2 GHG by their GWP determines their CO_2e, which enables a project's combined global warming potential to be expressed in terms of mass CO_2 emissions. The GWPs and estimated atmospheric lifetimes of the common GHGs are shown in *Table 5.6-1*, *Global Warming Potential (GWP) of Common GHG (100 Year Horizon)*.

Table 5.6-1
GLOBAL WARMING POTENTIAL (GWP) OF COMMON GHG (100-YEAR HORIZON)

GHG	GWP(A)	GHG	GWP(A)
Carbon Dioxide (CO_2)	1	Perfluorocarbons (PFCs)	
Methane (CH_4)	25	CF_4	6,500
Nitrous Oxide (N_2O)	298	C_2F_6	9,200
Hydrofluorocarbons (HFCs)		C_4F_{10}	7,000
HFC-23	14,800	C_6F_{14}	7,400
HFC-134a	1,430	Sulfur Hexafluoride (SF_6)	22,800
HFC-152a	140		
HCFC-22	1,700		

Source: CARB 2014
A) GWPs are based on the United Nations Intergovernmental Panel on Climate Change (U.N. IPCC) 4th Assessment Report.

STATEWIDE GHG EMISSIONS

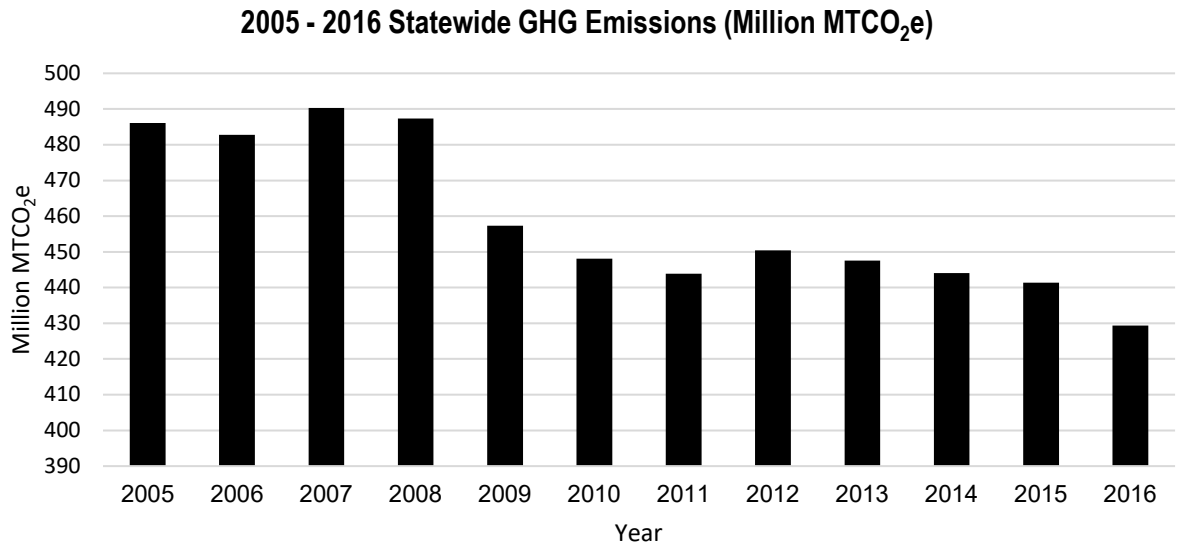
CARB prepares an annual statewide GHG emissions inventory using regional, State, and Federal data sources, including facility-specific emissions reports prepared pursuant to the State's Mandatory GHG Reporting Program. The statewide GHG emissions inventory helps CARB track progress towards meeting the State's GHG emissions target of 431 million $MTCO_2e$ set by AB 32, as well as establish and understand trends in GHG emissions[1]. Statewide GHG emissions for the 2005 – 2016 time period are shown in *Table 5.6-2*, *2005-2016 Statewide GHG Emissions (Million $MTCO_2e$)*.

As shown in *Table 5.6-2*, statewide GHG emissions have generally decreased over the last decade, with 2015 levels (440 million $MTCO_2e$) approximately 10 percent less than 2004 levels (488 million $MTCO_2e$). The transportation sector (169 million $MTCO_2e$) accounted for more than one-third (approximately 39.4percent) of the State's total GHG emissions inventory (429 million $MTCO_2e$) in 2015.

[1] CARB approved use of 431 million $MTCO_2e$ as the state's 2020 GHG emission target in May 2014. Previously, the target had been set at 427 million $MTCO_2e$.

Table 5.6-2
2005-2016 STATEWIDE GHG EMISSIONS (MILLION $MTCO_2e$)

Scoping Plan Sector	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16
Agriculture	34	35	36	36	33	34	35	36	35	36	34	34
Commercial/Residential	42	43	43	44	44	45	46	43	44	37	38	39
Electric Power	108	105	114	120	101	90	88	95	90	88	84	69
High GWP	9	10	11	12	12	14	15	16	17	18	19	20
Industrial	96	93	90	91	88	91	91	91	94	94	92	90
Recycling and Waste	8	8	8	8	8	8	8	8	9	9	9	9
Transportation	189	189	189	178	170	165	162	161	161	162	166	169
TOTAL $MMTCO_2e$[(A)]	***486***	***483***	***490***	***487***	***457***	***448***	***444***	***450***	***448***	***444***	***441***	***429***



Source: CARB 2018b
A) Totals may not equal due to rounding. CARB GHG inventory uses GWPs based on the U.N. IPCC's 4th Assessment Report.

EXISTING PROJECT SITE GHG EMISSIONS

The existing land uses within the project area contribute to existing city, regional, and statewide GHG emissions. The project area's existing GHG emissions, presented below in *Table 5.6-3*, *Planning Area Existing GHG Emissions*, were estimated using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2. GHG emissions generated within the planning area primarily come from the area, energy, and mobile sources described in *Section 5.5*, *Air Quality*, as well as the following addition sources specific to GHG emissions:

- **Energy Use and Consumption:** Emissions generated from purchased electricity and natural gas. As estimated using CalEEMod, the existing land uses in the planning area

use and consume approximately 4,171,930 kilowatt-hours (kWh) of electricity per year and 3,283,970 thousand British Thermal Units (kBtu) of natural gas per year.

- **Solid Waste Disposal:** Emissions generated from the transport and disposal of waste generated by the existing light industrial uses. CalEEMod estimates approximately 389 tons of solid waste are generated per year by the people working in the planning area.
- **Water/wastewater:** Emissions from electricity used to supply water to the light industrial buildings, and treat the resulting wastewater generated. As estimated in CalEEMod, the existing land uses within the Planning Area wouldn't use any water per year for outdoor use but would use approximately 72.6 million gallons of water per year for indoor use (e.g., bathroom faucets).

The project area's existing GHG emissions were estimated using default emissions assumptions provided by CalEEMod, with the project-specific modifications described in *Section 5.5.2* and below:

- **Mobile Sources.** The default weekday trip generation rates for the proposed land use types were replaced with trip generation rates contained in the Traffic Impact Study (TIS) prepared for the project (Fehr & Peers, 2019). According to the TIS, the existing land uses generate approximately 1,248 trips per weekday[2]. CalEEMod does not estimate N_2O emissions from on-road vehicle travel or off-road construction sources. To account for this, CalEEMod emissions estimates were adjusted as follows:
  - N_2O emissions were estimated for the project by comparing the ratio of CO_2 and N_2O emissions for the on-road (light-duty vehicles) contained in the State's most recent GHG inventory (CARB 2018c, 2018d). In 2016, statewide CO_2 and N_2O emissions estimates for the on-road transportation sector (light-duty gasoline vehicles) were 115.4 and 0.005 million metric tons, respectively (N_2O emissions are therefore equal to 0.004 percent of CO_2 emissions for this sector).
  - Based on the latest estimate available from CARB, the LCFS regulation resulted in a 3.7 percent reduction in average carbon intensity content in 2017, thus the CalEEMod estimate of CO_2 emissions was reduced by accordingly (CARB 2018c).

- **Energy Use and Consumption.** In addition to natural gas usage, the existing land uses in the Project area would generate indirect GHG emissions from electricity use. SCE provides electricity service in the City of Duarte. The CalEEMod default GHG intensity values for this electric service provider are from 2012 and do not represent existing and future reductions in GHG intensity that have been achieved under the State's RPS. To account for this, CalEEMod default assumptions regarding energy use were adjusted as follows:
  - The SCE GHG intensity value was reduced based on an increase in renewable energy mix from 20 percent under estimated Year 2012 conditions (the CalEEMod default data year) to 33 percent under existing conditions (2019, based on 2017 available data from SCE). This adjustment reduced the estimated amount of CO_2 produced by the SCE energy mix from approximately 702 pounds/megawatt-hour (lbs/MWh) to 531 lbs/MWh (SCE 2016).

[2] Due to minor differences and rounding in square footages and trip rates, the CalEEMod emissions estimates for existing 2019 conditions are based on a total of 1,250 daily weekday trips.

- Electricity generation emissions factors for CH_4 (0.033 lbs/MWh) and N_20 (0.004 lbs/mWh were obtained from the U.S. EPA's EGRID database for year 2016 (U.S. EPA 2017).

Existing GHG emissions from on-site uses are summarized in *Table 5.6-3*.

Table 5.6-3
EXISITNG GHG EMISSIONS

Source	GHG Emissions (Metric Tons / Year)			
	CO_2	CH_4	N_2O	Total $MTCO_2e$
Area	<0.0	<0.0	0.0	<0.0
Energy	1,178.8	0.1	<0.0	1,183.6
Mobile(A)	1,695.3	0.1	0.1	1,718.7
Waste	79.0	4.7	0.0	195.8
Water	250.6	2.4	0.1	327.3
Total Existing GHG Emissions(B)	3,203.2	7.2	0.1	3,425.4

Source: MIG, 2019 (see Appendix E)
A) CalEEMod 2016.3.2 does not incorporate GHG emissions reductions resulting from the State's LCFS. Although LCFS largely reduces GHG from upstream fuel processing (and not individual tailpipe emissions) the aggregate effect on transportation fuels is a reduction in GHG emissions throughout the state from lower fuel carbon content. Accordingly, this EIR analysis reduces transportation combustion emissions pursuant to LCFS requirements. Based on the latest estimate available from CARB, the LCFS regulation resulted in a 3.7percent reduction in average carbon intensity content in 2017. Thus, CalEEMod transportation emissions were adjusted by multiplying by a factor of .963 to account for the LCFS regulation (CARB 2018c).
B) Totals may not equal due to rounding.

ENERGY SETTING

Energy use can affect air quality and other natural resources adversely. Energy is primarily categorized in three areas: electricity, natural gas, and fuels used for transportation. According to the United States Energy Information Administration (U.S. EIA), California is the most populous state in the United States, representing 12 percent of the total national population, and has the largest economy, second only to Texas in total energy consumption. However, California has one of the lowest per capita energy consumption levels in the United States. This is a result of California's mild climate, extensive efforts to increase energy efficiency, and implementation of alternative technologies. California leads the nation in electricity generation from solar, geothermal, and biomass resources (U.S. EIA 2018).

Total annual energy consumption in the United States as of October 2018 was approximately 83.7 quadrillion Btu (U.S. EIA 2019). Fossil fuels provided approximately 79 percent of this energy, consisting of petroleum (approximately 30 percent), natural gas (approximately 33 percent), and coal (approximately 16 percent) resources. Total renewable sources accounted for approximately 12percent of energy consumption, and nuclear electric power accounted for approximately 9percent of the energy consumed in the United States. In 2016, California was ranked the fourth lowest state in terms of energy use on a per capita basis (199 million Btu per person).

Electricity

Almost half of California's net electricity generation was from renewable resources, including hydropower, in 2017 (U.S. EIA 2019). In 2017 the California electric system used 292,039 Gigawatt hours (GWh) of electricity, of which 206,336 GWh was produced in-state (CEC 2018a). Los Angeles County consumed 67,598 GWh of electricity, about 23 percent of the State's electricity consumption (CEC, 2019a).

SCE is the utility provider for the City of Duarte. In the 2017 fiscal year, SCE sold approximately 85,879 million kWh of electricity in total (SCE 2018a); approximately 46percent of the electricity that SCE delivered to customers came from carbon-free resources, including solar energy (approximately 13percent, wind energy (approximately 10percent), and geothermal energy (approximately 8percent) (SCE 2018b).

Based on the CalEEMod emissions estimates prepared for the project, existing on-site development is estimated to consume approximately 3,283,970 kWh per year. Based on a service population of approximately 262, this works out to approximately 15,923 kWh/service population annually.

Natural Gas

California accounts for less than one percent of total U.S. natural gas reserves and production; however, almost two-thirds of California households use natural gas for home heating (U.S. EIA 2019). In 2017, California consumed about 25,142 million therms of natural gas. Approximately 18 percent of natural gas was consumed by the residential sector. Los Angeles County consumed approximately 2,956 million therms of natural gas in the same year, accounting for 12 percent of statewide consumption. The residential sector made up approximately 38 percent of county-wide consumption (CEC 2019b).

The Southern California Gas Company (SoCalGas) provides natural gas service to the City. SoCalGas facilities located within the City of Duarte include medium pressure mains (pipelines) that feed from high pressure lines through pressure regulating stations. SoCalGas is the principal distributor of natural gas in Southern California and provides natural gas for residential, commercial, and industrial markets. The annual natural gas sale to all markets in 2017 was approximately 5,142 million Btu.

Based on the CalEEMod emissions estimates prepared for the project, existing on-site development is estimated to consume approximately 3,283,970 kBtu per year. Based on a service population of approximately 262, this works out to approximately 12,474 kBtu/service population annually.

Transportation

California's transportation sector consumed 79.3 million Btu of energy per capita in 2017, which ranked 32nd in the nation (U.S. EIA 2017). Most gasoline and diesel fuel sold in California for motor vehicles is refined in California to meet State-specific formulations required by CARB.

According to the Board of Equalization (BOE), statewide taxable sales figures indicate a total of 15,584 million gallons of gasoline and 3,124 million gallons of diesel fuel were sold in 2017

(CEC, 2019c; CDFTA 2018). Although exact estimates are not available by County, retail fuel outlet survey data indicate Los Angeles County accounted for approximately 23.4 percent and 9.7 percent of total statewide gasoline and diesel sales, respectively (CEC, 2018b).

It is not possible to know the exact amount of vehicle miles travelled, or VMT, in the Los Angeles County region; however, several estimates are available. According to Caltrans' Traffic Data Branch, there were approximately 201 billion vehicle miles travelled on the State Highway System alone from January 2018 to January 2019 (Caltrans 2019). The SCAG 2016 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) estimates VMT in the six-county SCAG region to be approximately 152 billion miles per year and approximately 179 billion miles per year in its 2012 and 2040 baseline VMT modeling scenarios (see *Section 5.6.1* for a discussion of SCAG's RTP/SCS).[3] For Los Angeles County, the SCAG RTP/SCS estimates annual VMT to be approximately 78 and 85 billion miles per year for the 2012 and 2040 baseline VMT modeling scenarios. The 2016 RTP/SCS does not contain an estimate of annual VMT for the year 2020. According to CARB's Emission Factor (EMFAC) Model 2017 Web Database, annual VMT estimates for the SCAG region and Los Angeles County are equal to approximately 195 billion miles per year and 104 billion miles per year, respectively (CARB 2019).[4]

The TIS prepared for the proposed project identifies the existing land uses in the project area generate approximately 7,457 trips per weekday (Fehr & Peers 2019). This level of trip generation was estimated by CalEEMod to produce 3,884,754 vehicle miles travelled, or VMT, per year (see Appendix E).

5.6.3 SIGNIFICANCE THRESHOLD CRITERIA

METHODOLOGY

The CalEEMod software was used to estimate the direct (e.g., mobile sources) and indirect (e.g., electricity and natural gas consumption) source emissions from construction and operation of the updated Duarte Station Specific Plan. Mobile source emissions calculations in CalEEMod were supplemented with traffic trips within the TIS.

GHG SIGNIFICANCE THRESHOLDS

To provide guidance to local lead agencies on determining the significance of GHG emissions in their CEQA documents, the SCAQMD convened the first GHG Significance Threshold Working Group (Working Group) meeting on April 30, 2008. To date, the Working Group has convened a total of 15 times, with the last meeting taking place on September 28, 2010. Based on the last Working Group meeting, the SCAQMD identified an interim, tiered approach for evaluating GHG emissions intent on capturing 90 percent of development projects where the SCAQMD is not the

[3] SCAG 2016 RTP/SCS VMT estimates are derived by multiplying the 2012 and 2040 SCAG region population estimates shown on page 63 of the 2016 RTP/SCS by the 2012 and 2040 baseline VMT per capita estimates shown on page 167 of the 2016 RTP/SCS (SCAG 2016). These values align with the baseline values reported by CARB in Appendix B of its evaluation of the performance of the 2016 RTP/SCS (CARB 2016).

[4] CARB's EMFAC 2017 Web Database includes VMT estimates for vehicles such as heavy duty trucks that are not covered by the SCAG 2016 RTP/SCS and thus is a higher estimate of VMT in the SCAG and Los Angeles County regions.

lead agency. The following describes the basic structure of the SCAQMD's tiered, interim GHG significance thresholds:

A. Tier 1 consists of evaluating whether or not the project qualifies for applicable CEQA exemptions.
B. Tier 2 consists of determining whether or not a project is consistent with a greenhouse gas reduction plan. If a project is consistent with a greenhouse gas reduction plan, it would not have a significant impact.
C. Tier 3 consists of using screening values at the discretion of the Lead Agency; however, the Lead Agency should be consistent for all projects within its jurisdiction. The following thresholds were proposed for consideration:
    a. 3,000 $MTCO_2e$/yr for all land use types; or
    b. 3,500 MTCO2e/yr for residential; 1,400 MTCO2e/yr for commercial; 3,000 MTCO2e/yr for mixed use projects.
D. Tier 4 has three options for projects that exceed the screening values identified in Tier 3:
    a. Option 1: Reduce emissions from business-as-usual by a certain percentage (currently undefined)
    b. Option 2: Early implementation of applicable AB 32 Scoping Measures
    c. Option 3: For plan-level analyses, analyze a project's emissions against an efficiency value of 6.6 MTCO2e/yr/service population (SP) by 2020 and 4.1 MTCO2e/yr/service population by 2035. For project-level analyses, analyze a project's emissions against an efficiency value of 4.8 and 3.0 MTCO2e/yr/SP for the 2020 and 2035 calendar years, respectively.

The Duarte Station Specific Plan's horizon year is 2025, five years after the SCAQMD's 2020 Tier 4 efficiency target. As such, a 2030 plan-level efficiency target has been derived based on the 2020 efficiency targets, since the next State GHG reduction target under SB 32 is for the year 2030. The resulting, interpolated efficiency target for the year 2030 is 4.0 $MTCO_2e$/yr/SP.[5]

CEQA SIGNIFICANCE CRITERIA

The issues presented in the Initial Study Environmental Checklist (*CEQA Guidelines* Appendix G) have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if it causes one or more of the following to occur:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

[5] To remain on track with future GHG reduction goals, it is necessary to identify the efficiency target for 2030. Pursuant to existing legislation, GHG emissions are required to be reduced to 40 percent below 1990 levels by 2030. Using the efficiency metric for 2020, 6.6 $MTCO_2e$/yr/SP (the same efficiency as 1990 pursuant to AB 32 reduction requirements) and multiplying through by 60 percent (i.e., 40 percent below 1990 levels) results in a derived efficiency metric of 4.0 $MTCO_2e$/yr/SP for year 2030. The City is not applying or proposing to use 4.0 $MTCO_2e$/yr/SP as a CEQA GHG significance threshold for general use; rather, it is only intended for use on this Project.

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

- Conflict with or obstruct a state or local plan for reviewable energy or energy efficiency.

Based on these significance thresholds and criteria, the project's effects have been categorized as either "no impact," a "less than significant impact," or a "potentially significant impact." Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant unavoidable impact.

The standards used to evaluate the significance of impacts are often qualitative rather than quantitative because appropriate quantitative standards are either not available for many types of impacts or are not applicable for some types of projects.

5.6.4 PROJECT IMPACTS AND MITIGATION MEASURES

GREENHOUSE GAS EMISSIONS

GREENHOUSE GAS EMISSIONS GENERATED BY DEVELOPMENT ASSOCIATED WITH IMPLEMENTATION OF THE PROPOSED PROJECT COULD HAVE A SIGNIFICANT IMPACT ON GLOBAL CLIMATE CHANGE.

Impact Analysis: Implementation of the Duarte Station Specific Plan would result in construction and operational activities that would generate GHG emissions. As described in more detail below, the GHG emissions generated from build-out of the project area would not exceed SCAQMD thresholds and would result in a less-than-significant impact on GHG emissions.

Construction Emissions
Implementation of the Duarte Station Specific Plan would result in construction activities that would generate GHG emissions primarily from fuel combustion in equipment and worker, vendor, and haul trips to and from future development projects during demolition, site preparation, grading, building construction, paving, and architectural coating activities. As described in *Section 5.5.4*, construction would generally take place in two phases. Phase 1 would begin in 2020, and Phase 2 would begin in 2022. To determine if anticipated typical construction activities could result in a significant GHG emissions impact, construction emissions were modeled using CalEEMod, Version 2016.3.2.

Generally, the SCAQMD recommends amortizing construction GHG emissions over a 30-year period since construction activities for a project typically only occurring towards the start of a project and cease to emit GHGs upon completion. This normalizes construction emissions so that they can be grouped with operational emissions and compared to appropriate thresholds, plans, etc. The annual construction-related GHG emissions that could with implementation of the Specific Plan are shown in *Table 5.6-4*, *Construction GHG Emission Estimates*.

Table 5.6-4
CONSTRUCTION GHG EMISSIONS ESTIMATES

Source	GHG Emissions (Metric Tons / Year)			
	CO_2	CH_4	N_2O	Total MTCO2e
Phase 1 Construction Emissions				
2020	1,551.7	0.1	0.0	1,555.1
2021	161.1	<0.0	0.0	161.5
Phase 2 Construction Emissions				
2022	1,133.0	0.1	0.0	1,135.8
2023	128.3	<0.0	0.0	128.7
Total Emissions	2,574.1	0.3	0.0	2,981.1
30-Year Amortization	--	--	--	99.4
Source: MIG 2019. See Appendix E				

Operational Emissions
Once operational, the Duarte Station Specific Plan would result in GHG emissions from mobile, energy, and area sources. Mobile sources would result primarily in emissions of CO_2, with emissions of CH_4 and NO_2 also occurring in minor amounts. In addition to mobile sources, GHG emissions would also be generated from natural gas usage, electricity use, water conveyance and use, wastewater treatment, and solid waste disposal. Natural gas use would result in the emission of two GHGs: CH_4 (the major component of natural gas) and CO_2 (from the combustion of natural gas). Electricity use associated with both the physical usage of the development, as well as the energy needed to transport water/wastewater, would result in the production of GHGs if the electricity is generated through non-renewable sources (i.e., combustion of fossil fuels). Solid waste generated by the proposed project, would contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy when transporting and managing the waste. In addition, landfilling, the most common waste management practice, results in the release of CH_4 from the decomposition of organic materials.

Potential operational GHG emissions resulting from the project were modeled using CalEEMod, Version 2016.3.2. The modeling buildout the Specific Plan is consistent with the change in land uses described *Section 5.5.4*, as well as the following adjustment to default model assumptions:

- **Mobile Sources.** The default, weekday trip generation rates for existing land use types were replaced with trip generation rates contained in the TIS prepared for the Duarte Station Specific Plan (Fehr & Peers 2019). According to the TIS, the proposed land uses generate approximately 7,457 total daily vehicle trips per weekday. The Saturday and Sunday trip generation rates were scaled based on the difference between default weekday trip generation rates in CalEEMod and the TIS.
    - N_2O emissions were estimated for the project by comparing the ratio of CO_2 and N_2O emissions for the on-road (light-duty vehicles) contained in the State's most recent GHG inventory (CARB 2018c, 2018d). In 2016, statewide CO_2 and N_2O emissions estimates for the on-road transportation sector (light-duty gasoline vehicles) were 115.4 and 0.005 million metric tons, respectively (N_2O emissions are therefore equal to 0.004 percent of CO_2 emissions for this sector).
    - The CalEEMod estimate of CO_2 emissions was reduced by 10 percent to reflect the reduction in carbon intensity that would be achieved under the State's Low Carbon Fuel Standard by 2020.

- **Energy Use and Consumption.** In addition to natural gas usage, operation of the proposed project would generate GHG emissions from electricity use. CalEEMod contains default energy efficiency values that are based on the 2016 energy code. To account for more efficient energy use that is anticipated to occur under the 2019 and subsequent energy codes, CalEEMod default assumptions regarding energy use were adjusted as follows:
    - CalEEMod default energy efficiency values were adjusted downwards by 53percent for residential land uses and 30 percent for non-residential land uses (lighting only) to reflect the CEC's adoption of the 2019 energy efficiency standards, which will take effect January 1, 2020 (CEC, 2018c). The adjustment for residential land uses includes an on-site electric renewable energy system, such as a solar PV system.

The total unmitigated GHG emissions estimated to occur under buildout of the Duarte Station Specific Plan are shown below in *Table 5.6-5*, *2025 Buildout Scenario GHG Emissions*. As described above, the SCAQMD recommends the use of an efficiency threshold for plan-level analysis in which potential emissions levels are considered in terms of how many GHG emissions would be produced by each resident and employee using a project's facilities. Thus, the adjusted 2030 plan-level efficiency target of 4.0 $MTCO_2e$/yr/SP was used.

Table 5.6-5
2025 BUILDOUT SCENARIO GHG EMISSIONS

Source	GHG Emissions (MTCO2e / Year)		
	Existing (2019)	Buildout (2040)	Net Change
Area	<0.0	328.6	328.5
Energy	1,183.6	2,427.7	1,244.1
Mobile(A)	1,718.7	8,356.9	6,638.2
Waste	195.8	411.3	215,6
Water	327.3	440.1	122.8
Operational Total	3,425.4	11,964.0	8,638.6
Construction	--	99.4	99.4
Total Emissions	3,425.4	12,064.0	8,539.2
Service Population (SP)	262	4,625 (B)	4,363
MTCO2e/SP	13.1	2.6	-10.5
SCAQMD Tier 4 Adjusted 2030 Plan Level Efficiency Threshold	--	4.0	--
Exceeds Threshold?	--	No	--

Source: MIG 2019 (see Appendix E)
Notes: See *Table 5.6-3* for existing GHG emissions in the Specific Plan area.

(A) CalEEMod 2016.3.2 does not incorporate GHG emissions reductions resulting from the State's LCFS. Although LCFS largely reduces GHG from upstream fuel processing (and not individual tailpipe emissions) the aggregate effect on transportation fuels is a reduction in GHG emissions throughout the state from lower fuel carbon content. Accordingly, this EIR analysis reduces transportation combustion emissions pursuant to LCFS requirements. Based on the latest estimate available from CARB, the LCFS regulation resulted in a 3.7percent

Table 5.6-5
2025 BUILDOUT SCENARIO GHG EMISSIONS

Source	GHG Emissions (MTCO2e / Year)		
	Existing (2019)	Buildout (2040)	Net Change
reduction in average carbon intensity content in 2017 and should result in a 20percent reduction in average carbon intensity in 2020. Thus, CalEEMod transportation emissions were adjusted by multiplying by a factor of .963 for existing and 0.9 for project emissions to account for the LCFS regulation (CARB 2018c). (B) Based upon SCAG's average square feet (SF)/employee (SCAG 2016): General Office building is 280 SF/employee (100,000SF / 280SF/employee = 357 employees); Restaurant and retail is 475 SF/employee (12,500 SF / 475SF/employee = 26 employees). Based on the 2019 Department of Finance, in 2019, there are approximately 3.03 people per dwelling unit (1,400 units * 3.03 people/DU = 4,242). This yields a total service population of 4,625.			

As shown above in *Table 5.6-5*, buildout of the proposed Duarte Station Specific Plan would result in a net increase in total GHG emissions of approximately 8,539.2 $MTCO_2e$/yr, compared to 2019 conditions. Comparing 2019 emission levels to 2025 emission levels somewhat limits the ability to distinguish changes in emissions that occur from the proposed changes in land uses—as opposed to regulatory requirements (e.g., upgraded building efficiency standards, LCFS, etc.) that would be in place whether or not the Specific Plan is adopted. It would also be inappropriate to use a bright line, mass-based threshold to evaluate the significance of GHG emissions since the proposed project being analyzed at programmatic level. Instead, the total GHG emissions associated with the project are evaluated on a per-service population (SP) basis to determine if GHG emissions in the planning area would be consistent with the GHG reduction targets set forth in AB 32, SB 32, and Executive Order S-03-05. As described under Section 5.6.3, the efficiency target for 2030 is 4.0 $MTCO_2e$/yr/SP.

The GHG emission estimates generated by CalEEMod indicate the project would emit approximately 12,064.0 $MTCO_2e$ annually by 2025. Dividing the Specific Plan's service population (4,625 employees and residents) results in an efficiency metric of 2.6 $MTCO_2e$/yr/SP. Not only does this efficiency metric meet the derived SCAQMD efficiency threshold of 4.0 $MTCO_2e$/yr/SP, it also vastly improves upon the existing efficiency of project land uses (i.e., 13.1 $MTCO_2e$/yr/SP, an approximate 80 percent reduction).

As shown in *Table 5.6-5*, the primary source of GHG emissions resulting from buildout of the Specific Plan is mobile sources, specifically the apartment land uses. The residential apartment land use accounts for approximately 89 percent of total annual VMT occurring with buildout of the Specific Plan. The TIS prepared for the project indicates the land use trip generation rates were reduced to reflect: 1) the characteristics of the street system servicing the project site; 2) accessibility of routes to and from the site; 3) locations of commercial centers to which the new residents could be drawn; and 4) locations of residential areas from which other persons would be drawn (Fehr & Peers 2019; pg. 24). As described under *Section 5.5.4*, these reductions accounted for in the TIS would reduce 22.5 percent of the default total vehicle trips (i.e., 9,626 total daily weekday trips) that would be generated under buildout.

As discussed above, implementation of the Specific Plan would reduce per-service population GHG emissions from approximately 13.1 $MTCO_2e$/yr/SP to 2.6 $MTCO_2e$/yr/SP, which is consistent with the SCAQMD's derived 2030 GHG efficiency threshold of 4.0 $MTCO_2e$/yr/SP. In addition, the project site would be well served by high-quality transit amenities and non-motor vehicle infrastructure and would also be in proximity to areas of interest (e.g., commercial centers) that would reduce GHG emissions from the largest emission source (i.e., mobile

sources). Since the proposed Specific Plan would reduce per-service population GHG emissions and be consistent with the SCAQMD's derived 2030 GHG emission threshold, this impact would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

CONSISTENCY WITH APPLICABLE GHG PLANS, POLICIES, OR REGULATIONS

IMPLEMENTATION OF THE PROPOSED PROJECT COULD CONFLICT WITH AN APPLICABLE GREENHOUSE GAS REDUCTION PLAN, POLICY, OR REGULATION.

Impact Analysis: As discussed previously, implementation of the proposed Duarte Station Specific Plan would result in construction and operational GHG emissions. The State, SCAG, and City of Duarte have adopted plans to curtail the emission of GHGs.

CARB Scoping Plan
The 2017 Climate Change Scoping Plan is CARB's primary document used to ensure State GHG reduction goals are met. The plan identifies an increasing need for coordination among State, regional, and local governments to achieve the GHG emissions reductions that can be gained from local land use planning and decisions. The major elements of the 2017 Climate Change Scoping Plan, which is designed to achieve the State's 2030 GHG reduction goal, are listed in Section 5.6.1. Nearly all of the specific measures identified in the 2017 Climate Change Scoping Plan would be implemented at the State level, with CARB and/or another state or regional agency having the primary responsibility for achieving required GHG reductions. The proposed Specific Plan, therefore, would have limited ability to directly conflict with any of the specific measure identified in the 2017 Climate Change Scoping Plan. Nonetheless, the overarching goal of the 2017 Climate Change Scoping Plan is to achieve a 40 percent reduction in GHG emissions below 1990 levels by the Year 2030. To achieve this statewide goal, the 2017 Climate Change Scoping Plan recommends a statewide efficiency metric of six metric tons per capita by 2030 and two metric tons per capita by 2050. These statewide per capita targets are based on the statewide GHG emissions inventory that includes all emissions sectors in the State. As shown in *Table 5.6-5*, the proposed Specific Plan would emit approximately 12,064 $MTCO_2e$ annually by 2025. When divided through by the population the Planning Area would support (i.e., 4,625 people) the resulting per capita efficient metric would be approximately 2.6 $MTCO_2e$/yr/capita. This is less than half of CARB's per capita efficiency metric of six metric tons per capita by 2030.

The proposed Specific Plan would, at buildout, be below the 2017 Climate Change Scoping Plan's recommended GHG emissions efficiency metric for 2030. Therefore, buildout of the proposed Specific Plan would not conflict with the 2017 Climate Change Scoping Plan. This impact would be less than significant.

SCAG 2016 RTP/SCS
The 2016 RTP/SCS is a growth strategy and transportation plan whose primary intent is to demonstrate how the SCAG region will meet its GHG reduction target through the year 2040. The 2016 RTP/SCS contains goals and land use policies designed to improve mobility, strengthen the economy and sustainability, and maintain and optimize the performance of the existing transportation system. *Table 5.1-1 Consistency with 2016 SCAG RTP/SCS,* in Section

5.1 on Land Use, summarizes the Specific Plan's consistency with applicable goals and land use policies for the RTP/SCS.

As shown in *Table 5.1-1* the Specific Plan would be consistent with applicable goals and policies identified in the 2016 RTP/SCS. It should also be noted that the primary goal of SCAG's RTP/SCS is to reduce emissions by eight percent per capita by 2020, 18 percent per capita by 2035, and 21 percent per capita by 2040 relative to 2005 levels. This level of reduction would meet and exceed the region's GHG targets set by CARB (eight percent per capita by 2020 and 13 percent per capita by 2035).

Although the proposed Specific Plan is estimated to increase annual VMT generated by land uses in the planning area by approximately 19,581,600 miles per year, it would not be in conflict with the SCAG 2016 RTP/SCS. As described under the previous discussion, the proposed Specific Plan's location and non-vehicular infrastructure is estimated to reduce VMT generated by the land uses within the planning area by approximately 22.5 percent, compared to default trip generation. In addition, the Specific Plan increases the number of jobs in the area, and introduces residential land uses in an area that is well served by regional transit (e.g., the Metro Gold Line). As such, the use of regional transit facilities and non-vehicular modes of transportation are expected to increase in the planning area and its vicinity under Specific Plan buildout conditions.

The proposed Specific Plan is consistent the goals and policies of the 2016 RTP/SCS and is estimated to reduce annual VMT by approximately 22.5 percent compared to standard trip generation rates. As such, the proposed Specific Plan would be consistent with the 2016 RTP/SCS. This impact would be less than significant.

Duarte Municipal Code and Energy Action Plan
The City of Duarte does not have an applicable plan, policy, or regulation specifically adopted for the purpose of reducing the emissions of GHGs. The *Duarte Municipal Code* Chapter 19.52 (Sustainable Development Practices) promotes natural resources conservation, increased energy efficiency, and use of sustainable practices in the development process and the implementation of State laws involving reducing GHG emissions, water conservation and other resource conservation directives for all new construction in the City. The City also adopted an *Energy Action Plan* on November 13, 2012, created in partnership with the SGVCOG and SCE. The plan provides the City guidance in following the CEESP by ascertaining existing and future energy use and develops an energy efficiency strategy to meet future energy reduction goals. As discussed above, the proposed project would comply with the 2019 Title 24 Building Code, which is approximately 53 percent more efficient than the 2016 standards for residential land uses and 30 percent more efficient for non-residential land uses. Development proposed in the Planning Area would not conflict with City policies and goals.

In addition, the proposed project would also be subject to all applicable regulatory requirements, further reducing project-related GHG emissions. The proposed project is a transit-oriented development with a mix of commercial, retail, and residential uses that would inherently reduce vehicle trips, VMT, and related GHG emissions. The proposed project would not conflict with or impede implementation of reduction goals identified in AB 32, SB 32, and other strategies to help reduce GHG emissions. Therefore, the proposed project would not conflict with an applicable GHG reduction plan, policy, or regulation. Impacts would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

ENERGY CONSUMPTION

DEVELOPMENT FACILIATED UNDER IMPLEMENTATION OF THE PROPOSED PROJECT COULD USE ENERGY IN A WASTEFUL, INEFFICIENT, OR NECESSARY WAY.

Impact Analysis: Short-term energy demand would result from construction activities occurring as a result of buildout of the Specific Plan. Short-term demand would include energy needed to power worker and vendor vehicle trips as well as construction equipment. Long-term energy demand would result from operation of businesses and land uses within the Specific Plan area, which would include activities such as lighting, heating and cooling of structures, etc. Operational energy demands would typically result from vehicle trips, electricity and natural gas usage, and water and wastewater conveyance.

Construction Energy Consumption
Based on market conditions, the proposed project is expected to be constructed in two phases over the next approximately six years. *Table 5.6-6*, *Construction Fuel Consumption*, provides an estimate of construction fuel consumption based on information provided by the CalEEMod air quality computer model (see Appendix E). As shown in *Table 5.6-6*, construction of the proposed project is estimated to consume approximately 267,856 gallons of fuel. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction site in the region or State. Furthermore, all diesel-fueled construction vehicles would be required to meet the latest emissions standards. Since on- and off-road vehicles would be required to construct the project, and these pieces of equipment would be subject to the latest energy efficient standards, fuel consumption would not be inefficient, wasteful, or unnecessary.

Table 5.6-6
CONSTRUCTION FUEL CONSUMPTION

Equipment	Quantity	Horsepower	Load Factor	Fuel Consumption Rate[A] (gallons per hour)	Duration[B] (total hours)	Total Fuel Consumption[C,D] (gallons)
PHASE 1						
Air Compressors	1	78	0.48	1.50	120	179.7
Crane	1	231	0.29	2.68	1610	4,314.2
Rubber Tired Dozers	6	247	0.4	23.71	720	17,072.6
Excavators	4	158	0.38	9.61	640	6,148.1
Forklifts	3	89	0.2	2.14	5,520	11,790.7
Generator Sets	1	84	0.74	3.73	1,840	6,862.5
Graders	1	187	0.41	3.07	160	490.7
Pavers	2	130	0.42	4.37	320	1,397.8
Paving Equipment	2	132	0.36	3.80	320	1,216.5
Rollers	2	80	0.38	2.43	320	778.2
Concrete/Industrial Saws	1	81	0.73	3.55	160	567.6

Table 5.6-6
CONSTRUCTION FUEL CONSUMPTION

Equipment	Quantity	Horsepower	Load Factor	Fuel Consumption Rate[A] (gallons per hour)	Duration[B] (total hours)	Total Fuel Consumption[C,D] (gallons)
Tractors/Loaders/Backhoes	10	97	0.37	14.36	5,630	80,824.3
Welders	1	46	0.45	1.24	1,840	2,285.3
					PHASE 1 TOTAL[D]	133,928
PHASE 2						
Air Compressors	1	78	0.48	1.50	120	179.7
Crane	1	231	0.29	2.68	1610	4,314.2
Rubber Tired Dozers	6	247	0.4	23.71	720	17,072.6
Excavators	4	158	0.38	9.61	640	6,148.1
Forklifts	3	89	0.2	2.14	5,520	11,790.7
Generator Sets	1	84	0.74	3.73	1,840	6,862.5
Graders	1	187	0.41	3.07	160	490.7
Pavers	2	130	0.42	4.37	320	1,397.8
Paving Equipment	2	132	0.36	3.80	320	1,216.5
Rollers	2	80	0.38	2.43	320	778.2
Concrete/Industrial Saws	1	81	0.73	3.55	160	567.6
Tractors/Loaders/Backhoes	10	97	0.37	14.36	5,630	80,824.3
Welders	1	46	0.45	1.24	1,840	2,285.3
					PHASE 2 TOTAL[D]	133,928
					GRAND TOTAL[D]	*267,856*

Notes:
A) Derived using the following equation:
Fuel Consumption Rate = Horsepower x Load Factor x Fuel Consumption Factor; Fuel Consumption Factor for a diesel engine is 0.04 gallons per horsepower per hour (gal/hp/hr) and a gasoline engine is 0.06 gal/hp/hr.
B) Total hours of duration derived from CalEEMod modeling results; refer to Appendix E, *Air Quality/Greenhouse Gas Data*.
C) Total Fuel Consumption calculated using the following equation:
Total Fuel Consumption = Duration in Hours x Fuel Consumption Rate
D) Values may be slightly off due to rounding.

Source: Refer to Appendix E, Air Quality/Greenhouse Gas Data, for CalEEMod assumptions used in this analysis.

Operational Energy Consumption

Operation of the proposed land uses would consume energy in the form electricity, natural gas, and petroleum (i.e., diesel and gasoline). As estimated in CalEEMod, the proposed land uses are estimated to increase natural gas consumption by 17,979,830 kBtu annually and electricity consumption by 5,707,140 kWh annually. As estimated by the TIS prepared for the Specific Plan (refer to Appendix E) and the emissions modeling conducted using CalEEMod defaults, buildout of the proposed Specific Plan is anticipated to result in an increase in trip generation by approximately 19,581,600 annual VMT. Using EMFAC2017, average fuel economy for Los Angeles County (South Coast sub-region) was estimated for light duty automotive (LDA), light duty truck (LDT), and heavy-heavy duty truck (HHDT) vehicle classification under 2025 Specific Plan buildout conditions. Petroleum vehicle fuel consumption associated with operation of the proposed Specific Plan was estimated using these fuel economy values in conjunction with the fleet mix and trip generation values used in CalEEMod. *Table 5.6-7*, *Operational Fuel Consumption* provides an estimate of the annual fuel consumption of vehicles traveling to and from the proposed project.

Table 5.6-7
OPERATIONAL FUEL CONSUMPTION

Vehicle Type	Percent of Vehicle Miles Traveled(A)	Annual Vehicle Miles Traveled(B)	Average Fuel Economy (miles per gallon)(C)	Total Annual Fuel Consumption (gallons)(D)
Passenger Cars	76.1(E)	17,857,900	27.4(F)	651,619
Light/Medium Trucks	20.4(G)	4,787,137	14.7(H)	325,900
Heavy Trucks/Other	3.5(I)	821,323	7.2(J)	114,034
Total(K,L)	***100***	***23,466,360***	**--**	***1,071,533***

Notes:
(A) Percent of Vehicle Miles Traveled distribution based on trip characteristics within the CalEEMod model.
(B) Annual VMT calculated by multiplying percent vehicle trips by annual VMT (i.e., Annual VMT x percent of Vehicle Trips).
(C) Average fuel economy derived from EMFAC2017 for Los Angeles County (South Coast sub-region) for the 2025 calendar year.
(D) Total Daily Fuel Consumption calculated by dividing the daily VMT by the average fuel economy (i.e., VMT/Average Fuel Economy).
(E) Percent based on LDA, LDT1, LDT2 and MCY vehicle classifications in CalEEMod.
(F) Based on LDT2 vehicle class in EMFAC2017 for Los Angeles County (South Coast sub-region) for the 2025 calendar year.
(G) Percent based on MDV, LHD1, LHD2, and MHD vehicle classifications in CalEEMod.
(H) Based on LHDT2 vehicle class in EMFAC2017 for Los Angeles County (South Coast sub-region) for the 2025 calendar year.
(I) Percent based on HHD, OBUS, UBUS, SBUS, and MH vehicle classifications in CalEEMod.
(J) Based on HHDT vehicle class in EMFAC2017 for Los Angeles County (South Coast sub-region) for the 2025 calendar year.
(K) Values may be slightly off due to rounding.
(L) Although the TIS provides a daily VMT estimate associated with the proposed Project, the VMT estimates used to calculate total, annual fuel consumption are based on CalEEMod estimates for consistency with the air quality and greenhouse gas emission estimates. The CalEEMod project file was updated with trip generation rates contained in the TIS.

Although trip generation, petroleum, and natural gas and electricity consumption would increase under implementation of the proposed project, consumption rates per service population would decrease from existing conditions (see *Table 5.6-8*, *Energy Consumption per Service Population*).

Table 5.6-8
ENERGY CONSUMPTION BY SERVICE POPULATION

Source	Existing Conditions	Buildout	Percent Change
Annual VMT per SP(A)	14,827	5,104	-65.6
Natural Gas per SP(B)	12,474	4,622	-63.0
Electricity per SP(B)	15,923	2,149	-86.5

Source: MIG 2019
(A) Based on VMT estimates generated in CalEEMod with trip generation rates from Fehr and Peers TIA.
(B) Based on estimates generated by CalEEMod.

As shown in *Table 5.6-8*, increased land use density proposed under the Specific Plan would provide for more efficient use of resources within the City, thus ensuring that the proposed Project would not result in the wasteful or inefficient use of energy resources. Additionally, as discussed above, the proposed Specific Plan would be consistent with the 2016 RTP/SCS's goals and policies, which are aimed at reducing transportation related GHG emissions.

Thus, the Specific Plan would not result in a wasteful, inefficient, or unnecessary consumption of energy resources. This would be a less than significant impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

CONSISTENCY WITH APPLICABLE ENERGY EFFICIENCY AND RENEWABLE ENERGY PLANS OR REGULATIONS

IMPLEMENTATION OF THE SPECIFIC PLAN COULD CONFLICT OR OBSTRUCT A STATE OR LOCAL PLAN FOR RENEWABLE ENERGY OR ENERGY EFFICIENCY.

Impact Analysis: Development proposed would be consistent with the current Green Building Energy Codes and would not interfere with the installation of any renewable energy system. In addition to energy efficiency measures required by Title 24, the City also adopted an *Energy Action Plan* on November 13, 2012, created in partnership with the SGVCOG and SCE. The plan provides the City guidance in following the CEESP by ascertaining existing and future energy use and develops an energy efficiency strategy to meet future energy reduction goals. As the plan is a part of a unified regional framework, it also assists in identifying a clear path to successfully implementing actions, policies, and goals that will achieve the City's reduction targets. Energy efficiency targets that would be incorporated as part of the *Energy Action Plan* include, but are not limited to:

- Reduce household electricity consumption 20 percent by 2020
- Reduce electricity use 10 percent by 2020
- Move toward net zero electricity use in new buildings by 2020
- Achieve Platinum Level Status in SCE's Energy Leader Partnership Model

The proposed project would adhere to all Federal, State, and local requirements for energy efficiency. Therefore, the Project would be consistent with applicable State and local plans for promoting use of renewable energy and energy efficiency. This impact would be less than significant.

5.6.5 CUMULATIVE IMPACTS AND MITIGATION MEASURES

Table 4-1, Cumulative Projects List, identifies the related projects and other possible development in the area determined as having the potential to interact with the proposed project to the extent that a significant cumulative effect may occur. The following discussions are included per topic area to determine whether a significant cumulative effect would occur.

GREENHOUSE GAS EMISSIONS GENERATED BY IMPLEMENTATION OF THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS COULD HAVE A SIGNIFICANT IMPACT ON GLOBAL CLIMATE CHANGE.

Impact Analysis: Global climate change is the result of GHG emissions worldwide; individual projects do not generate enough GHG emissions to influence global climate change. Thus, the analysis of GHG emissions is, by nature, a cumulative analysis focused on whether an individual project's contribution to global climate change is cumulatively considerable. As described in Section 5.6.4, buildout of the proposed Specific Plan would generate emissions that would be far below the SCAQMD's derived per SP GHG efficiency metric for 2030, as well as CARB's per capita GHG efficiency metric for 2030. In addition, the proposed Specific Plan would not conflict with or otherwise obstruct the implementation of a plan, policy, or regulation adopted for the purposes of increasing energy efficiency for renewable energy. As such, the proposed Specific Plan would not generate GHG emissions that are cumulatively considerable. This impact would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

ENERGY CONSUMED BY THE IMPLEMENTATION OF THE PROPOSED PROJECT COULD BE WASTEFUL, INEFFICIENT, OR UNNECESSARY.

The proposed Specific Plan, as well as other on-going and future project in the Southern California region, are well supplied by energy resources, including diesel and gasoline fuels, as well as electricity and natural gas. The project's cumulative impact on energy resources would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.6.6 SIGNIFICANT UNAVOIDABLE IMPACTS

Implementation of the proposed project would result in less than significant project and cumulative impacts related to GHG emissions and energy consumption. As such, no significant unavoidable impacts would result from implementation of the Duarte Station Specific Plan.

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List of Acronyms, Abbreviations, and Symbols	
Acronym / Abbreviation	**Full Phrase or Description**
AB	Assembly Bill
BOE	Board of Equalization
Btu	British Thermal Units
CalEEMod	California Emissions Estimator Model
CALGreen Code	California Green Building Standards Code
CARB	California Air Resources Board
CBSC	California Building Standards Commission
CEC	California Energy Commission
CEESP	California's Long Term Energy Efficiency Strategic Plan
CH_4	Methane
CO_2	Carbon Dioxide
EMFAC	Emission Factor Model
GHG	Greenhouse Gas
GWh	GigaWatt-hour
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
IAQ	Indoor Air Quality
kWh	kiloWatt-hour
LCFS	Low Carbon Fuel Standard
MPO	Metropolitan Planning Organization
$MTCO_2e$	Metric Tons of Carbon Dioxide Equivalents
MWh	MegaWatt-hour
N_2O	Nitrous Oxide
PFC	Perfluorocarbons
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCS	Sustainable Communities Strategy
SF_6	Sulfur Hexaflouride
SGVCOG	San Gabriel Valley Council of Governments
SoCalGas	Southern California Gas Company
SP	Service Population
TIS	Traffic Impact Study
U.N. IPCC	Intergovernmental Panel on Climate Change
U.S. EIA	United States Energy Information Administration
U.S. EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Travelled
ZEV	Zero Emission Vehicle