4.7 GREENHOUSE GAS EMISSIONS

INTRODUCTION

This section of the Draft EIR provides a discussion of existing regulations, plans, and policies pertaining to global climate change and the reduction of greenhouse gas (GHG) emissions, a quantified estimate of GHG emissions that would result from the Project, and an analysis of the significance of the impact of these GHGs.

The Project's GHG emissions are considered within the context of Statewide and local GHG reduction laws, plans, policies, and codes. Calculation worksheets, assumptions, and model outputs used in the analysis are contained in **Appendix D** of this Draft EIR.

ENVIRONMENTAL SETTING

Regulatory Framework

a. Federal

Federal Clean Air Act

The US Supreme Court ruled in *Massachusetts v. Environmental Protection Agency*[1] that carbon dioxide (CO2) and other GHGs are pollutants under the federal Clean Air Act (CAA), which the US Environmental Protection Agency (USEPA) must regulate if it determines they pose an endangerment to public health or welfare.[2] The Court did not mandate that the USEPA enact regulations to reduce GHG emissions. Instead, the Court found that the USEPA could avoid taking action if it found that GHGs do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change.

On April 17, 2009, the USEPA issued a proposed finding that GHGs contribute to air pollution that may endanger public health or welfare. On April 24, 2009, the proposed rule was published in the Federal Register under Docket ID No. EPA-HQ-OAR-2009-0171.[3] The USEPA stated that high atmospheric levels of GHGs "are the unambiguous result of human emissions and are very likely the cause of the observed increase in average temperatures and other climatic changes." The USEPA further found that

1 Massachusetts v. Environmental Protection Agency, 127 S.Ct. 1438 (2007)

2 Perry W. Payne and Sara Rosenbaum, "Massachusetts et al. v Environmental Protection Agency: Implications for Public Health Policy and Practice," *Public Health Reports* 122 No. 6 (2007): 817–819, https://doi.org/10.1177/003335490712200614.

3 *Federal Register,* "Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act" (December 15, 2009), accessed November 2017, https://www.federalregister.gov/documents/2009/12/15/E9-29537/endangerment-and-cause-or-contribute-findings-for-greenhouse-gases-under-section-202a-of-the-clean.

"atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202 of the Clean Air Act." The final rule was effective on January 14, 2010.[4] While these findings alone did not impose any requirements on industry or other entities, this action was a prerequisite to regulatory actions by the EPA, including, but not limited to, GHG emissions standards for light-duty vehicles.

In response, the USEPA is promulgating a regulation to require reporting of all GHG emissions from all sectors of the economy. The final rule applies to fossil fuel suppliers and industrial gas suppliers, direct greenhouse gas emitters and manufacturers of heavy-duty and off-road vehicles and engines. The rule does not require control of greenhouse gases; rather, it requires only that sources above certain threshold levels monitor and report emissions.[5]

Corporate Average Fuel Economy Standards

In response to the *Massachusetts v. Environmental Protection Agency* ruling, the George W. Bush administration issued Executive Order 13432 in 2007, directing the USEPA, the US Department of Transportation (USDOT), and the US Department of Energy (USDOE) to establish regulations that reduce GHG emissions from motor vehicles, nonroad vehicles, and nonroad engines by 2008.[6] In 2009, the National Highway Traffic Safety Administration (NHTSA) issued a final rule regulating fuel efficiency for and GHG emissions from cars and light-duty trucks for model year 2011; in 2010, the USEPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.[7]

In 2010, President Obama issued a memorandum directing the EPA, USDOT, USDOE, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the USEPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles.[8]

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4 United States Environmental Protection Agency (USEPA), "Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Section 202(a) of the Clean Air Act," accessed November 2017, https://www.epa.gov/ghgemissions/endangerment-and-cause-or-contribute-findings-greenhouse-gases-under-section-202a-clean/.

5 *Federal Register,* "Mandatory Reporting of Greenhouse Gases" (October 30, 2009), https://www.gpo.gov/fdsys/pkg/FR-2009-10-30/pdf/E9-23315.pdf.

6 US Government Publishing Office, Administration of George W. Bush, "Executive Order 13432—Cooperation Among Agencies in Protecting the Environment With Respect to Greenhouse Gas Emissions From Motor Vehicles, Nonroad Vehicles, and Nonroad Engines," 631 (May 14, 2007), https://www.gpo.gov/fdsys/pkg/WCPD-2007-05-21/pdf/WCPD-2007-05-21-Pg631.pdf.

7 USEPA, "Regulations for Greenhouse Gas Emissions from Commercial Trucks & Buses" (December 27, 2017), https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-commercial-trucks.

8 USEPA, "Presidential Announcements and Letters of Support related to Greenhouse Gas Emissions" (August 28, 2017), https://www.epa.gov/regulations-emissions-vehicles-and-engines/presidential-announcements-and-letters-support-related.

The proposed standards projected to achieve 163 grams/mile of CO2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon (mpg) if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021. In 2017, the USEPA recommended no change to the GHG standards for light-duty vehicles for model years 2022–2025.[9] The USEPA intends to reconsider the final determination by April 1, 2018.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2016, the USEPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2018–2027 (for certain trailers) and 2021–2027 (for semitrucks, large pickup trucks, vans, and all types and sizes of buses and work trucks). The final standards are expected to lower CO2 emissions by approximately 1.1 billion metric tons (MT), save vehicle owners fuels costs of about $170 billion, and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program.[10,11]

USEPA Actions

In response to the mounting issue of climate change, the USEPA has taken the following two actions to regulate, monitor, and potentially reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the USEPA issued a rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. In general, this national reporting requirement provides the USEPA with accurate and timely GHG emissions data from facilities that emit 25,000 MT or more of CO2 per year and allows the operators of these facilities to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective opportunities to reduce emissions in the future.[12] An estimated 85 percent of the total US GHG emissions from approximately 10,000 facilities are covered by this rule.

9 USEPA, "Final Rule for Model Year 2017 and Later Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards" (August 16, 2017), https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-model-year-2017-and-later-light-duty-vehicle.

10 The emission reductions attributable to the regulations for medium- and heavy-duty trucks were not included in the Project's emissions inventory due to the difficulty in quantifying the reductions. Excluding these reductions results in a more conservative (i.e., higher) estimate of emissions for the Project.

11 USEPA, "Final Rule for Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles—Phase 2," accessed July 12, 2016, https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-greenhouse-gas-emissions-and-fuel-efficiency.

12 USEPA, "Greenhouse Gases Reporting Program Implementation," fact sheet (November 2013), https://www.epa.gov/sites/production/files/2014-09/documents/ghgfactsheet.pdf.

Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA

On December 7, 2009, USEPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Compliance Certification Application (Endangerment Finding).[13] These include:

- Endangerment Finding: *The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs—CO2, methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6)—in the atmosphere threaten the public health and welfare of current and future generations.*
- Cause or Contribute Finding: *The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.*

These findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing the proposed USEPA GHG standards for light-duty vehicles. These standards were jointly proposed by the USEPA and the NHTSA, and the final rule became effective January 14, 2010. In collaboration with the NHTSA, the USEPA finalized emission standards for light-duty vehicles (2012–2016 model years) in May 2010 and for heavy-duty vehicles (2014–2018 model years) in August 2011. Furthermore, the agencies finalized standards to extend the light-duty vehicle GHG National Program for model years 2017–2025. The standards are estimated to cut GHG emissions from cars and light trucks in half by 2025, reducing emissions by 6 billion metric tons over the life of the program—more than the total amount of CO2 emitted by the United States in 2010.

Energy Independence and Security Act

The Energy Independence and Security Act of 2007 (EISA) facilitates the reduction of national GHG emissions by requiring the following:[14]

- Increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of renewable fuel in 2022, with at least 16 billion gallons from cellulosic biofuels and a cap of 15 billion gallons for corn-starch ethanol;
- Prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for

13 Federal Register, Endangerment and Cause or Contribute Findings for Greenhouse Gases" (December 15, 2009), https://www.federalregister.gov/documents/2009/12/15/E9-29537/endangerment-and-cause-or-contribute-findings-for-greenhouse-gases-under-section-202a-of-the-clean

14 USEPA, "Summary of the Energy Independence and Security Act," https://www.epa.gov/laws-regulations/summary-energy-independence-and-security-act.

consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;

- Requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- While superseded by USEPA and NHTSA actions described above, (i) establishing miles per gallon targets for cars and light trucks; and (ii) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks, and create a separate fuel economy standard for trucks.

Additional provisions of EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."[15]

b. State

Executive Orders

Executive Order S-3-05

Executive Order S-3-05, signed by Governor Arnold Schwarzenegger and issued in June 2005, proclaimed that California is vulnerable to the impacts of climate change.[16] It declared that increased temperatures could reduce the Sierra snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established the following total GHG emission targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

However, in adopting the California Global Warming Solutions Act of 2006, also known as Assembly Bill (AB) 32 (Pavley), discussed below, the Legislature did not adopt the 2050 horizon-year goal from Executive Order No. S-3-05 and, in the 2006 legislative session, rejected legislation to enact the Executive Order's 2050 goal.

15 A green job, as defined by the United States Department of Labor, is a job in business that produce goods or provide services that benefit the environment or conserve natural resources

16 National Resources Conservation Service, "Emerging Issues Committee Members," https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_008701.pdf.

Executive Order S-01-07

Executive Order S-1-07, the Low Carbon Fuel Standard (issued on January 18, 2007), requires a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020.[17] Regulatory proceedings and implementation of the Low Carbon Fuel Standard have been directed to the California Air Resources Board (CARB). The Low Carbon Fuel Standard has been identified by CARB as a discrete early action item in the adopted Climate Change Scoping Plan (discussed below). CARB expects the Low Carbon Fuel Standard to achieve the minimum 10 percent reduction goal; however, many of the early action items outlined in the Climate Change Scoping Plan work in tandem with one another. Other specific emission reduction measures included are the Million Solar Roofs Program[18] and Assembly Bill (AB) 1493 (Pavley I), Vehicle Emissions: Greenhouse Gases, which establishes motor vehicle GHG emissions standards.[19] To avoid the potential for double-counting emission reductions associated with AB 1493, the Climate Change Scoping Plan has modified the aggregate reduction expected from the Low Carbon Fuel Standard to 9.1 percent. In accordance with the Climate Change Scoping Plan, this analysis incorporates the modified reduction potential for the Low Carbon Fuel Standard. CARB released a draft version of the Low Carbon Fuel Standard in October 2008. The final regulation was approved by the Office of Administrative Law and filed with the Secretary of State on January 12, 2010; the Low Carbon Fuel Standard became effective on the same day.

Executive Order B-30-15

Executive Order B-30-15, signed by Governor Edmund Gerald "Jerry" Brown and issued in April 29, 2015, established a new Statewide policy goal to reduce GHG emissions to 40 percent below their 1990 levels by 2030. Furthering advancing the targets of AB 32, reducing GHG emissions by 40 percent below 1990 levels in 2030, and by 80 percent below 1990 levels by 2050 (consistent with Executive Order S-3-05), aligns with scientifically established levels needed to limit global warming to less than 2 degrees Celsius.[20]

Assembly Bill 32 and Related Legislation

AB 32, the Global Warming Solutions Act of 2006, requires a sharp reduction of GHG emissions to 1990 levels by 2020. To achieve these goals, which are consistent with the California Climate Action Team,

17 Office of the Governor, Executive Order S-01-07 (January 18, 2007), https://www.arb.ca.gov/fuels/lcfs/eos0107.pdf.

18 US Department of Energy, "Laying the Foundation for Solar America: The Million Solar Roofs Initiative" (October 2016), https://www.nrel.gov/docs/fy07osti/40483.pdf

19 The standards enacted in Pavley I are the first GHG standards in the nation for passenger vehicles and took effect for model years starting in 2009 and going through 2016. Pavley I could potentially result in 27.7 million metric tons CO2e reduction in 2020. Pavley II will cover model years 2017 to 2025 and potentially result in an additional reduction of 4.1 million metric tons CO2e.

20 Office of the Governor, "Governor Brown Established Most Ambitious Greenhouse Gas Reduction Target in North America" (April 29, 2015), https://www.gov.ca.gov/2015/04/29/news18938/.

which works to coordinate statewide efforts to implement global warming emission reduction programs and the state's Climate Adaptation Strategy after the passing of AB 32, AB 32 mandates that CARB establish a quantified emissions cap and institute a schedule to meet the cap; implement regulations to reduce Statewide GHG emissions from stationary sources consistent with the California Climate Action Team strategies; and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. To reach the reduction targets, AB 32 requires CARB to adopt—in an open, public process—rules and regulations that achieve the maximum technologically feasible and cost-effective GHG reductions.

The California Climate Action Team stated that "smart land use" is an umbrella term for strategies that integrate transportation and land-use decisions.[21] Such strategies generally encourage jobs/housing proximity, promote transit-oriented development (TOD), and encourage high-density residential/commercial development along transit corridors. These strategies develop more efficient land-use patterns within each jurisdiction or region to match population increases, workforce, and socioeconomic needs for the full spectrum of the population. "Intelligent transportation systems" is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and the movement of people, goods, and service.[22]

Climate Change Scoping Plan

CARB approved a Climate Change Scoping Plan (Scoping Plan) on December 11, 2008, as required by AB 32. The Scoping Plan proposed a "comprehensive set of actions designed to reduce overall carbon GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health."[23] The Scoping Plan had a range of GHG reduction actions, including direct regulations; alternative compliance mechanisms; monetary and nonmonetary incentives; voluntary actions; market-based mechanisms, such as a cap-and-trade system; and an AB 32 implementation regulation to fund the program.

The Scoping Plan called for a "coordinated set of strategies" to address all major categories of GHG emissions.[24] Transportation emissions were to be addressed through a combination of higher standards for vehicle fuel economy, implementation of the Low Carbon Fuel Standard, and greater consideration to

21 California Energy Commission, "The Role of Land Use in Meeting California's Energy and Climate Change Goals" (June 2007), http://www.energy.ca.gov/2007publications/CEC-600-2007-008/CEC-600-2007-008-SD.PDF.

22 California Environmental Protection Agency, *Climate Action Team Report to Governor Schwarzenegger and the Legislature* (March 2006), 58.

23 CARB, *Climate Change Scoping Plan: A Framework for Change* (December 2008), https://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf.

24 CARB, *Climate Change Scoping Plan*, p. ES-7

reducing trip length and generation through land use planning and transit-oriented development. Buildings, land use, and industrial operations were encouraged and, sometimes, required to implement energy efficiency practices. Utility energy supplies will change to include more renewable energy sources through implementation of the Renewables Portfolio Standard. Established in 2002 under Senate Bill (SB) 1078, the California Renewables Portfolio Standards (RPS) were accelerated in 2006 under SB 107, which required that, by 2010, at least 20 percent of electricity retail sales come from renewable sources. In April 2016, the California Energy Commission (CEC) updated the RPS pursuant to SB 350, intended to set the new target 50 percent renewables by 2030.[25] This will be complemented with emphasis on local generation, including rooftop photovoltaics and solar hot water installations. Additionally, the Scoping Plan emphasized opportunities for households and businesses to save energy and money through increasing energy efficiency. It indicated that substantial savings of electricity and natural gas would be accomplished through improving energy efficiency.

Subsequent to the adoption of the Scoping Plan, a lawsuit was filed challenging CARB's approval of the Scoping Plan Functional Equivalent Document (Supplemental FED). On May 20, 2011 (Case No. CPF-09-509562), the court found that the environmental analysis of the alternatives in the Supplemental FED to the Scoping Plan was not sufficient under CEQA. CARB staff prepared a revised and expanded environmental analysis of the alternatives, and the Supplemental FED to the Scoping Plan was approved on August 24, 2011. The Supplemental FED to the Scoping Plan indicated that the potential exists for adverse environmental impacts associated with implementation of the various GHG emission reduction measures recommended in the Scoping Plan.

CARB updated the Scoping Plan in May 2014 (2014 Scoping Plan). The 2014 Scoping Plan[26] adjusted the 1990 GHG emissions levels to 431 million metric tons of carbon dioxide equivalents (MMTCO2e); the updated 2020 GHG emissions forecast is 509 MMTCO2e, which credited for certain GHG emission reduction measures already in place (e.g., the RPS). The 2014 Scoping Plan also recommended a 40 percent reduction in GH emissions from 1990 levels by 2030, and a 60 percent reduction in GHG emissions from 1990 levels by 2040.

The 2017 Scoping Plan,[27] approved on December 14, 2017, builds on previous programs and takes aim at the 2030 target established by the 2016 SB 32 (Pavley), which is further discussed below. The 2017 Scoping

25 California Energy Commission, *Enforcement Procedures for the Renewables Portfolio Standards for Local Publicly Owned Electric Utilities: Amended Regulations* (April 12, 2016), http://www.energy.ca.gov/2016publications/CEC-300-2016-002/CEC-300-2016-002-CMF.pdf.

26 CARB, *First Update to the Climate Change Scoping Plan: Building on the Framework* (May 2014).

27 CARB, *California's 2017 Climate Change Scoping Plan* (November 2017), https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

Plan outlines options to meet California's aggressive goals to reduce GHGs by 40 percent below 1990 levels by 2030. In addition, the plan incorporates the State's updated RPS requiring utilities to procure 50 percent of their electricity from renewable energy sources by 2030. It also raises the State's Low Carbon Fuel Standard and aims to reduce emissions of methane and hydrofluorocarbons by 40 percent from 2013 levels by 2030 and emissions of black carbon by 50 percent from 2013 levels.

Cap-and-Trade Program

AB 32 established the goal of reducing GHG emissions Statewide to 1990 levels by 2020. To help achieve this goal, CARB adopted a regulation to establish a cap-and-trade program that places a cap on the aggregate GHG emissions from entities responsible for roughly 85 percent of the State's GHG emissions. As part of the cap-and-trade program, CARB conducts quarterly auctions where it sells emission allowances. Revenues from the sale of these allowances fund projects that support the goals of AB 32, including transit and rail investments.

On October 20, 2011, CARB's board adopted the final cap-and-trade regulation;[28] the program began on January 1, 2012. The scope of GHG emission sources subject to cap-and-trade in the first compliance period (2013–2014) included all electricity generated and imported into California, and large industrial facilities emitting more than 25,000 MTCO2e per year (e.g., oil refineries and cement manufacturers). The scope of GHG emission sources subjected to cap-and-trade during the second compliance period (2015–2017) expands to include distributors of transportation fuels (including gasoline and diesel), natural gas, and other fuels. The point of regulation for transportation fuels when they are "supplied" (i.e., delivered into commerce). As such, vehicle miles traveled (VMT) are covered by the cap-and-trade program.

Advanced Clean Cars Regulations

In 2012, CARB approved the Advanced Clean Cars (ACC) program, a new emissions-control program for vehicle model years 2017–2025. The program combines the control of smog, soot, and GHGs with requirements for greater number of zero-emission vehicles. By 2025, when the rules will be fully implemented, automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.[29]

28 CARB, Cap-and-Trade 2016 (September 18, 2017), https://www.arb.ca.gov/regact/2016/capandtrade16/capandtrade16.htm.

29 CARB, The Advanced Clean Cars Program (January 18, 2018), https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program.

AB 197: Statewide GHG Emissions Limit

On September 8, 2016, Governor Brown signed AB 197, which requires CARB to approve a Statewide GHG emissions limit equivalent to the Statewide GHG emission level in 1990 to be achieved by 2020.[30] AB 197 requires the CARB to prepare and approve a scoping plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions. The bill became effective on January 1, 2017.

Senate Bills

Senate Bill 375

SB 375, signed into law in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocations.[31] The act requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) that prescribes land use allocation in that MPO's regional transportation plan (RTP). CARB, in consultation with MPOs, provided regional reduction targets for GHGs for the years 2020 and 2035.

Senate Bill X1-2: 2020 Renewable Portfolio Standard

On April 12, 2011, California governor Jerry Brown signed SB X1-2.[32] This bill supersedes the 33 percent by RPS created by Executive Order S-14-08, previously signed by Governor Schwarzenegger. The RPS required that all retail suppliers of electricity in California serve 33 percent of their load with renewable energy by 2020. A number of significant changes are made in SB X1-2. It extends application of the RPS to all electric retailers in the State, including municipal and public utilities, and community choice aggregators.

SB X1-2 creates a three-stage compliance period for electricity providers to meet renewable energy goals: 20 percent of retail sales must be renewable energy products by 2013, 25 percent of retail sales must be renewable energy products by 2016, and 33 percent of retail sales must be renewable energy products by 2020. The 33 percent level must be maintained in the years that follow. This three-stage compliance period requires the RPS to be met increasingly with renewable energy that is supplied to the California grid and is located within or directly proximate to California. SB X1-2 mandates that renewables from this category make up:

- At least 50 percent for the 2011–2013 compliance period;

30 California Legislative Information, Assembly Bill No. 197 (September 8, 2016), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB197.
31 California Legislative Information, Senate Bill No. 375 (September 30, 2008), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200720080SB375.
32 California Energy Commission, Renewable Portfolio, http://www.energy.ca.gov/portfolio/

- At least 65 percent for the 2014–2016 compliance period; and
- At least 75 percent for 2016 and beyond.

SB X1-2 sets rules for the use of Renewable Energy Credits (RECs) as follows:

- Establishes a cap of no more than 25 percent unbundled RECs going toward the RPS between 2011 and 2013, 15 percent from 2014 to 2016, and 10 percent thereafter;
- Does not allow for the grandfathering of tradable REC contracts executed before 2010, unless the contract was (or is) approved by the California Public Utilities Commission (CPUC);
- Allows banking of RECs for 3 years only; and
- Allows energy service providers, community choice aggregators, and investor-owned utilities with 60,000 or fewer customers to use 100 percent RECs to meet the RPS.

SB X1-2 also eliminates the Market Price Referent, which was a benchmark to assess the above-market costs of RPS contracts based on the long-term ownership, operating, and fixed-price fuel costs for a new 500-megawatt (mW) natural-gas-fired, combined-cycle gas turbine.

Senate Bill 350: Clean Energy and Pollution Reduction Act

SB 350, the Clean Energy and Pollution Reduction Act of 2015, was signed on October 7 of that year.[33] SB 350 implements some of the goals of Executive Order B-30-15 described above. The objectives of SB 350 are: (1) to increase the procurement of our electricity from renewable sources from 33 percent to 50 percent; and (2) to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.[34]

Senate Bill 32: Statewide Reductions in GHG Emissions

On September 8, 2016, Governor Brown signed SB 32, which extends AB 32 another 10 years to 2030 and updates the State's objectives. SB 32 calls for Statewide reductions in GHG emissions to 40 percent below 1990 levels by 2030. The bill became effective on January 1, 2017.[35]

Senate Bill 97

SB 97, approved on July 10, 2017, requires the Office of Planning and Research (OPR) to prepare and develop guidelines for the mitigation of GHG emissions or the effects thereof, including but not limited to

33 California Legislative Information, Senate Bill No. 350 (October 7, 2015), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350.
34 Senate Bill 350 (2015–2016 Reg, Session) Stats 2015, ch. 547.
35 California Legislative Information, Senate Bill No. 32 (September 8, 2016), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB32.

effects associated with transportation and energy consumption.[36] These guidelines were required to be transmitted to the Natural Resources Agency by July 1, 2009, to be certified and adopted by January 1, 2010. OPR submitted the Proposed Draft Guideline Amendments for Greenhouse Gas Emissions to the Secretary for Natural Resources on April 13, 2009. The California Natural Resources Agency conducted formal rulemaking in 2009 on December 30 of that year and adopted the Guideline Amendments, which address the specific obligations of public agencies when analyzing GHG emissions under CEQA to determine a project's effects on the environment.

However, neither a threshold of significance nor any specific mitigation measures is included or provided in these CEQA Guideline Amendments. The Guideline Amendments require a Lead Agency to make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a project. The Guideline Amendments give discretion to the Lead Agency whether to (1) use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use; and/or (2) rely on a qualitative analysis or performance-based standards. Further, the Guideline Amendments identify three factors that should be considered in the evaluation of the significance of GHG emissions:

1. The extent to which a project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the Lead Agency determines applies to the project; and
3. The extent to which the project complies with regulations or requirements adopted to implement a Statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The administrative records of the promulgation of the Guidelines Amendments also clarify "that the effects of greenhouse gas emissions are cumulative and should be analyzed in the context of California Environmental Quality Act's requirements for cumulative impact analysis."[37]

The Natural Resources Agency is required to periodically update the guidelines to incorporate new information or criteria established by CARB pursuant to AB 32. SB 97 applies retroactively to any environmental impact report, negative declaration, mitigated negative declaration, or other document required by CEQA that has not yet been certified.

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36 California Legislative Information, Senate Bill No.97 (August 24, 2007), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200720080SB97.

37 Cynthia Bryant, Director of the Office of Planning and Research, letter to Mike Chrisman, Secretary for Natural Resources, April 13, 2009.

Center for Biological Diversity v. California Department of Fish and Wildlife

The California Supreme Court's decision published on November 30, 2015, in *Center for Biological Diversity v. California Department of Fish and Wildlife* (Case No. 217763; the Newhall Ranch case) reviewed the methodology used to analyze GHG emissions in an EIR prepared for a project that proposed 20,885 dwelling units with 58,000 residents on 12,000 acres of undeveloped land in a rural area of the City of Santa Clara.[38] That EIR used the "business as usual" (BAU) methodology to determine whether the project would impede the State of California's compliance with statutory emissions reduction mandate established by the AB 32 Scoping Plan. The Court did not invalidate the BAU approach entirely, but did hold that

> *the Scoping Plan nowhere related that statewide level of reduction effort to the percentage of reduction that would or should be required from individual projects and nothing Department of Fish and Wildlife or Newhall have cited in the administrative record indicates the required percentage reduction from business as usual is the same for an individual project as for the entire state population and economy.*[39]

The California Supreme Court suggested regulatory consistency as a pathway to compliance, stating that a Lead Agency might assess consistency with AB 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities. The Court recognized that to the extent a project's design features comply with or exceed the regulations outlined in the Scoping Plan, and adopted by CARB or other State agencies, a Lead Agency could appropriately rely on their use as showing compliance with performance-based standards adopted to fulfill a Statewide plan for the reduction or mitigation of greenhouse gas emissions. This approach is consistent with CEQA Guidelines Section 15064, which provides that a determination that an impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including plans or regulations for the reduction of greenhouse gas emissions. Importantly, the Supreme Court also suggested "a lead agency may rely on existing numerical thresholds of significance for greenhouse gas emissions (*brightline threshold approach*)."[40]

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38 California Department of Fish and Wildlife, *Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan,* https://www.wildlife.ca.gov/regions/5/newhall.

39 Center for Biological Diversity et al. v. California Department of Fish and Wildlife (2015) (62 Cal.4th 204, 195 Cal.Rptr.3d 247, 361 P.3d 342).

40 The South Coast Air Quality Management District (SCAQMD), *Interim CEQA Greenhouse Gas (GHG) Significance Thresholds,* draft guidance document (October 2008), Attachment E, http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf.

California Energy Commission

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

California's Energy Efficiency Standards for Residential and Nonresidential Buildings, found in Title 24, Part 6 of the California Code of Regulations (CCR) and commonly referred to as "Title 24," were established in 1978 in response to a legislative mandate to reduce California's energy consumption. Title 24 requires the design of building shells and components to conserve energy. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.[41]

An update to Title 24 was adopted by the CEC on April 23, 2008. The 2008 Title 24 standards applied to building permits for which an application was submitted on or after January 1, 2010. The CEC adopted the changes made in 2008 to the Building Energy Efficiency Standards to respond to the mandates of AB 32 and to pursue California energy policy that energy efficiency is the resource of first choice for meeting California's energy needs. The CEC adopted to 13 Title 24 standards as well as the 2016 Title 24 standards, which became effective on January 1, 2017, and are applicable to the Project.[42] The 2016 standards will continue to improve upon prior Title 24 standards for new construction of, and additions and alterations to, residential and nonresidential buildings.[43]

California Green Building Standards (Title 24, Part 11)

The California Green Building Standards Code, which is Part 11 of the CCR, is commonly referred to as the CALGreen Code.[44] The 2008 edition, the first edition of the CALGreen Code, contained only voluntary standards. The 2010 CALGreen Code contains mandatory requirements for State-regulated buildings and structures throughout California beginning on January 1, 2011. The 2010 CALGreen Code contains requirements for construction site selection, stormwater control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more. The 2010 CALGreen Code provides for design options, allowing the designer to determine how best to achieve compliance for a given site or building condition. The 2010 CALGreen Code also requires building commissioning, which is a process for verification that all building systems, such as heating and cooling equipment and lighting systems, are functioning at their maximum efficiency.

41 California Energy Commission, "2016 Building Energy Efficiency Standards," http://www.energy.ca.gov/title24/2016standards/.
42 See California Energy Commission, "2016 Building Energy Efficiency Standards" for additional information.
43 See California Energy Commission, "2016 Building Energy Efficiency Standards.".
44 California Buildings Standards Commission, "California Green Building Standards Code (Cal. Code Regs., Title 24, Part 11)" (January 1, 2017), http://www.bsc.ca.gov/Home/CALGreen.aspx.

The 2016 CALGreen Code went into effect on January 1, 2017; it provides a number of important updates in the 2016 CALGreen Code, such as increased requirements for electrical vehicle charging infrastructure and a new universal waste code section.

California Appliance Efficiency Regulations (Title 20, Sections 1601 through 1608)

The 2016 Appliance Efficiency Regulations, adopted by the CEC, include standards for new appliances, equipment, and lighting if are sold or offered for sale in California. These standards include minimum levels of operating efficiency and other cost-effective measures to promote the use of energy- and water-efficient appliances.[45]

c. Regional

Southern California Association of Governments

Sustainable Communities Strategy

The City is a member agency of the Southern California Association of Governments (SCAG). To fulfill its commitments as an MPO under the Sustainable Communities and Climate Protection Act, SCAG adopted the *2016–2040 Regional Transportation Plan/Sustain Communities Strategy* (2016–2040 RTP/SCS). The 2016–2040 RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. It is designed to reduce GHG emissions from passenger vehicles by 8 percent per capita by 2020, 18 percent by 2035, and 21 percent by 2040. The 18 percent reduction by 2035 over 2005 levels represents a 2 percent greater reduction compared to the projection contained in the 2012–2035 RTP/SCS. The 2016–2040 RTP/SCS reaffirms the land use policies that were incorporated into the 2012–2035 RTP/SCS. The SCS focuses the majority of new regional housing and job growth in high-quality transit areas and other opportunity areas in existing main streets, downtowns, and commercial corridors, resulting in an improved jobs/housing balance and more opportunities for TOD. Many of Los Angeles's transportation corridors are SCS high-quality transit areas.

The SCS identifies several GHG emission reduction actions and strategies for the State, SCAG, and local jurisdictions. The SCS recommends that local jurisdictions (1) update zoning codes to accelerate adoption of SCS land use strategies; (2) prioritize transportation investments to support compact infill development that includes a mix of land uses and housing options; (3) develop infrastructure plans and educational programs that promote active transportation options; (4) emphasize active transportation projects as part

45 California Energy Commission, *2016 Appliance Efficiency Regulations* (January 2017), http://www.energy.ca.gov/2017publications/CEC-400-2017-002/CEC-400-2017-002.pdf.

of complying with the Complete Streets Act of 2008 (AB 1358); and (5) increase the efficiency of existing transportation systems.

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990.[46] The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the Air Quality Management Plan (AQMP). 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 chlorofluorocarbons, 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 hydrochlorofluorocarbons by the year 2000;
- Develop recycling regulations for hydrochlorofluorocarbons (e.g., SCAQMD Rules 1411 and 1415);
- Develop an emissions inventory and control strategy for methyl bromide; and
- Support the adoption of a California GHG emission reduction goal.

SCAQMD released draft guidance regarding interim CEQA GHG significance thresholds. Within its October 2008 document, SCAQMD proposed the use of a percent emission reduction target to determine significance for commercial/residential projects that emit greater than 3,000 MT of GHG per year. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold for stationary source/industrial projects where SCAQMD is the Lead Agency.[47]

SCAQMD has yet to adopt a GHG significance threshold for land use development projects (e.g., residential/commercial projects), but it has formed a GHG Significance Threshold Working Group to further evaluate potential GHG significance thresholds. Members of the working group include government agencies and representatives from various stakeholder agencies that provide input to SCAQMD on developing GHG CEQA significance thresholds.

46 SCAQMD, "SCAQMD's Historical Activity on Climate Change," http://www.aqmd.gov/nav/about/initiatives/climate-change.

47 SCAQMD, "Greenhouse Gases: CEQA Significance Thresholds," http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds.

d. Local

City of Compton

General Plan Air Quality Element

The City has adopted the 1991 General Plan and includes an Conservation/Open Space/Park and Recreation Element.[48] This Element addresses issues for improving air quality and for the conservation of energy resources to reduce GHG emissions. The Element includes goals and policies to help achieve this goal through available technology and conservation practices.

The City of Compton's working Draft General Plan Air Quality Element identifies the City's goals for 2010 through 2030 related to improving local air quality and sets the policies and programs for achieving them.[49] These goals include local initiatives such as environmentally sensitive land use planning, transportation planning, trip reduction strategies, and the control of stationary emissions that will address localized emissions sources. Applicable goals include emissions related to energy and stationary sources. Energy conservation programs reduce current and future consumption that can offset future usage and maximize the benefits of furnace and water heater controls.

Existing Conditions

Greenhouse Gases and Climate Change

Global Context

GHGs are global pollutants that have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for a long enough time to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule depends on multiple variables and cannot be pinpointed, more CO2 is currently emitted into the atmosphere than is avoided or sequestered. CO2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO2 through photosynthesis and dissolution, respectively. These are two of the most common processes of CO2 sequestration. Of the total annual human-caused CO2 emissions, approximately 54 percent is sequestered within a year through ocean uptake, northern hemisphere forest regrowth, and other terrestrial sinks; the remaining 46 percent of human-caused CO2 emissions are stored in the atmosphere.

Similarly, the effects of GHGs are borne globally (sea-level rise, hurricanes, droughts, etc.), as opposed to the localized air quality effects of criteria air pollutants and toxic air contaminants (TACs). The quantity of GHGs that it takes to ultimately result in climate change is not precisely known, but that quantity is

48 City of Compton, *General Plan,* "Conservation/Open Space/Parks and Recreation Element" (December 3, 1991).
49 City of Compton, *Draft 2030 Comprehensive General Plan*, "Update, Air Quality Element" (November 6, 2014).

enormous. No single project would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or microclimates. However, it is the combined GHG contributions per project that create an impact.

GHGs with lower emissions rates than CO2 may still contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO2. The measure of CO2 equivalent (CO2e) is used to account for the different potentials of GHGs to absorb infrared radiation. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

CH4 and nitrous oxide N2O are generally much lower than those of CO2 and are associated with anaerobic microbial activity resulting from agricultural practices, flooded soils, and landfills. CH4 and N2O have approximately 23 and 296 times the GWP of CO2, respectively.

Greenhouse Effect

GHGs play a critical role in determining the Earth's surface temperature because these gases absorb solar radiation. Solar radiation enters the Earth's atmosphere from space. A portion of the radiation is absorbed by the Earth's surface, and a smaller portion of this radiation is reflected back into space. The radiation absorbed by the Earth is reradiated as lower-frequency infrared radiation, which is then selectively absorbed by GHGs in the Earth's atmosphere. As a result, the greater the amount of GHGs in the atmosphere, the greater the amount of infrared radiation trapped, resulting in a warming of the atmosphere. This phenomenon is commonly referred to as the "greenhouse effect." Scientists have speculated that increased GHG emissions from human activity (anthropogenic) could lead to a less habitable climate. Anthropogenic GHG emissions leading to atmospheric levels in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the Earth's atmosphere and oceans, with corresponding effects on global air and water circulation patterns and climate. CO2 emissions associated with fossil fuel combustion are the primary contributors to human-induced emissions.

Climate Change Effects for California

Climate change could affect environmental conditions in California in a variety of ways. One effect of climate change is rising sea levels. Sea levels along the California coast rose approximately 7 inches during the last century, and they are predicted to rise an additional 7 to 22 inches by 2100, depending on the future levels of GHG emissions. The effects of a rise in sea level could include increased coastal flooding, saltwater intrusion (especially a concern in the low-lying Sacramento–San Joaquin Delta, where pumps delivering potable water to Southern California could be threatened), and disruption of wetlands.

As the State's climate changes over time, the range of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the State if suitable conditions are no longer available. Additional concerns associated with climate change include a reduction in the snowpack, leading to less overall water storage in the mountains (the largest "reservoir" in the State), and increased risk of wildfires caused by changes in rainfall patterns and plant communities. Changes in the climate can also impact California's weather patterns and rainfall, causing droughts in certain areas and flooding in others.

Sources of Greenhouse Gas Emissions

GHGs are the result of both natural and anthropogenic activities. With respect to anthropogenic activities, motor vehicle travel, air travel, consumption of fossil fuels for power generation, industrial processes, heating and cooling, landfills, agriculture, and wildfire are the primary sources of GHG emissions. Additionally, land use decisions and future development projects pursuant to implementation of a general plan can affect the generation of GHG emissions from multiple sectors, resulting in direct or indirect GHG emissions. For example, electricity consumed in the lighting and heating of buildings is an indirect source of GHG emissions because it requires electricity from power plants, which emits GHG directly into the atmosphere. Conversely, tailpipe emissions from the use of vehicles generates direct GHG emissions.

GHGs are a group of emissions that include CO2, CH4, N20, HFCs, PFCs, SF6, and nitrogen trifluoride (NF3). Carbon dioxide is the most abundant GHG. As stated above, other GHGs are less abundant, but have higher global warming potential than CO2. Thus, emissions of other GHGs are frequently expressed in the equivalent mass of CO2; denoted as CO2e. A general description of GHGs discussed is provided in **Table 4.7-1: Description of Identified Greenhouse Gases.**

Table 4.7-1
Description of Identified Greenhouse Gases

GHG	General Description
Carbon Dioxide (CO2)	An odorless, colorless GHG that has both natural and anthropocentric sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic (human caused) sources of CO2 are burning coal, oil, natural gas, and wood.
Methane (CH4)	A flammable gas and is the main component of natural gas. When one molecule of CH4 is burned in the presence of oxygen, one molecule of CO2 and two molecules of water are released. A natural source of CH4 is the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain CH4, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and cattle.

GHG	General Description
Nitrous Oxide (N2O)	A colorless GHG. High concentrations can cause dizziness, euphoria, and sometimes slight hallucinations. N2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used in rocket engines, race cars, and as an aerosol spray propellant.
Hydroflourocarbons (HFCs)	Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in CH4 or ethane (C2H6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at Earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. Because they destroy stratospheric ozone, the production of CFCs was stopped as required by the Montreal Protocol in 1987. HFCs are synthetic man-made chemicals that are used as substitute for CFCs as refrigerants. HFCs deplete stratospheric ozone, but to a much lesser extent than CFCs.
Perfluorinated Chemicals (PFCs)	PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane and hexafluoroethane. The two main sources of PFCs are primary aluminum production and semi-conduction manufacturing.
Sulfur Hexaflouride (SF6)	An inorganic, odorless, colorless, nontoxic, and nonflammable gas. SF6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semi-conductor manufacturing, and as a tracer gas for leak detection.
Nitrogen Triflouride (NF3)	An inorganic, nontoxic, odorless, nonflammable gas. NF3 is used in the manufacture of semiconductors, as an oxidizer of high energy fuels, for the preparation of tetrafluoro hydrazine, as an etchant gas in the electronic industry, and as a fluorine source in high power chemical lasers.

[a] *GHGs identified in this table are ones identified in the Kyoto protocol and other synthetic gases recently added to the IPCC's Fifth Assessment Report.*

Greenhouse Gas Emissions Inventory and Trends

Existing Statewide GHG Emissions

The CARB Statewide inventory of GHGs by scoping plan is shown in **Table 4.7-2: California GHG Inventory 2007–2015.** As shown**,** from 2007 to 2015 California produced 440.36 $MMTCO_2e$, including imported electricity and excluding combustion of international fuels and carbon sinks or storage. As of 2015, the major source of GHGs in California is transportation, contributing to approximately 38 percent of the State's total GHG emissions. Industrial generation is the second largest source, contributing to approximately 23 percent of the State's GHG emissions.

Table 4.7-2
California GHG Inventory 2007–2015

	Emissions (MMTCO2e)								
Main Sector	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Transportation[a]	189.35	178.24	171.45	168.11	164.7	164.38	163.05	164.89	169.38
Industrial[b]	99.16	99.63	97.31	101.12	101.08	101.46	104.27	104.69	102.97
Electric power	114.22	120.43	101.64	90.58	88.30	95.33	89.84	88.37	84.09
Commercial	17.07	17.68	18.64	20.09	20.73	21.11	21.64	21.37	22.17
Agriculture/Forestry	36.02	36.06	33.83	34.64	35.28	36.42	34.93	36.03	34.65
Residential	30.06	30.48	30.21	31.26	32.03	30.04	31.19	26.26	26.93
Other[c]	0.28	0.27	0.26	0.27	0.25	0.24	0.18	0.24	0.17
Total Emissions	**486.16**	**482.78**	**453.34**	**446.06**	**442.38**	**448.97**	**445.08**	**441.85**	**440.36**

Source: California Air Resources Board (CARB), California Greenhouse Gas Emission Inventory (June 2017) https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_sector_sum_2000-15.pdf.

Note: MMTCO2e = million metric tons of carbon dioxide equivalent.

[a] *Includes equipment used in construction, mining, oil drilling, industrial, and airport ground operations.*

[b] *Reflects emissions from combustion of natural gas, diesel, and lease fuel plus fugitive emissions.*

[c] *Reflects solvents and other chemicals*

Existing Project Site GHG Emissions

The Project includes the existing CHS Campus, totaling approximately 40 acres in size. The CHS Campus includes eight primary buildings, numerous portable classrooms, and other outdoor multipurpose fields.

The Project also includes the additional 10 parcels of land along the southeast, totaling approximately 2 acres in size. These parcels include multifamily residential buildings, a church, and a commercial car wash. The total combined Project Site is approximately 42 acres.

GHG emissions associated with the operation of the existing uses are estimated in **Table 4.7-3: Existing Operational GHG Emissions**. As shown, current GHG emissions at the Project Site are approximately 2,701 Metric Tons Carbon Dioxide Equivalent (MTCO2e) per year. Area source emissions are generated by maintenance equipment, landscape equipment, and use of products that contain solvents. In addition, mobile source emissions from the existing uses are generated by motor vehicle trips to and from the Project Site. Energy emissions are generated by combustion of natural gas, other fuels, other sources of energy including building usage and lighting. Due to the limited number of events, after school activities such as athletic events, would have a negligible increase in GHG emissions.

Table 4.7-3
Existing Operational GHG Emissions

Emission Source	Existing High School (MTCO2e/Year)	Acquisition Parcels (MTCO2e/Year)	Total (MTCO2e/Year)
Area	<1	6	6
Energy	830	75	906
Operational (Mobile)	1,050	328	1,378
Waste	218	16	234
Water	162	15	177
Total			**2,701**

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*Source: Refer to Air Quality Modeling Data **Appendix D1 (Annual),** Section 2.2: Overall Operational.*
Notes: Numbers are rounded to the nearest whole number; therefore, totals may have a slight variation from the sum of the numbers shown. Total includes decimals before being rounded from the other sites. MMTCO2e = million metric tons of carbon dioxide equivalent.

ENVIRONMENTAL IMPACTS

Methodology

Construction

The Project's construction emissions were calculated using the latest available California Emissions Estimator Model (CalEEMod), version 2016.3.2. Details of the modeling assumptions and emission factors are provided in **Appendix D** of this EIR. CalEEMod calculates emissions from off-road equipment usage and on-road vehicle travel associated with haul, delivery, and construction worker trips. GHG emissions during construction were forecasted based on the proposed construction schedule and applying the mobile-source and fugitive dust emissions factors derived from the SCAQMD-recommended CalEEMod.

The Project's construction emissions calculations reflect the types and quantities of construction equipment that would be used to remove existing pavement; grade and excavate the Project Site; construct the proposed additions and related improvements; and plant new landscaping within the Project Site.

In accordance with the SCAQMD's guidance, GHG emissions from construction were amortized over the lifetime of the Project. The SCAQMD defines the lifetime of a project as 30 years.[50] Therefore, total construction GHG emissions were divided by 30 to determine annual construction emissions estimates comparable to operational emissions.

50 SCAQMD, "Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans" (2008).

Operation

The CalEEMod model was also used to calculate potential GHG emissions generated by new and increased land uses on the Project Site, including area sources, electricity, natural gas, mobile sources, solid waste generation and disposal, and water usage/wastewater generation.[51]

Mobile-source emission calculations associated with operation of the new and increased land uses use a projection of annual VMT, which is derived from the Traffic Study prepared for the Project. These values account for the daily and seasonal variations in trip frequency and length associated with student, faculty, and visitor trips to and from the Project Site, and other activities that generate a vehicle trip. CalEEMod calculates GHG emissions from all other sources based on the increase in square footage of the Project.

The emissions calculations for the Project include credits or reductions for consistency with regulatory requirements, such as reductions in energy or water demand (compliance with 2016 CalGreen Code). Calculation of Project emissions conservatively did not include actions and mandates that are not already in place but are expected to be enforced in 2020 (e.g., Pavley II, which could further reduce GHG emissions from use of light-duty vehicles by 2.5 percent). This methodology is used to analyze consistency with the applicable GHG reduction plans and policies and demonstrate the efficacy of the measures contained therein, but it is not a threshold of significance.

Consistency with Applicable Plans and Policies

A consistency analysis will be provided which describes the extent the Project complies with or exceeds performance-based standards included in the regulations outlined in the applicable portions of State Mandated programs, the Attorney General's Recommendations, and the City's General Plan.

Thresholds of Significance

To assist in determining whether the proposed Project would have a significant effect on the environment, the District finds the proposed Project may be deemed to have a significant impact related to greenhouse gas emissions if it would:

Threshold GHG-1: **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.**

Threshold GHG-2: **Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.**

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51 An evaluation of stationary sources is not necessary as the stationary sources emissions will be created by emergency generators which would only be used in an emergency.

Project Impact Analysis

Threshold GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Reconstruction of CHS Campus

GHG emissions related to a project are not confined to a particular air basin but are dispersed worldwide. Therefore, impacts identified for a project are not project-specific impacts to global warming, but the project's contribution to this cumulative impact. New and expanded school projects would generate GHG emissions impacts through direct and indirect GHG emissions.

The Project would result in direct and indirect GHG emissions generated by different types of emissions sources, including:

- Construction: emissions associated with demolition, earthwork/grading, construction-related equipment, water usage, and vehicular activity;
- Area source: emissions associated with landscape equipment;
- Energy source (building operations): emissions associated with space heating and cooling, water heating, energy consumption from classrooms including ovens and science labs, and indoor and outdoor lighting;
- Mobile source: emissions associated with motor vehicles traveling to and from the Project Site;
- Solid waste: emissions associated with decomposition of waste, which generates methane based on the total amount of degradable organic carbon, and conveyance of waste by trash collection vehicles; and
- Water/Wastewater: emissions associated with energy used to pump, convey, deliver, and treat water.

Overall, it is not anticipated that development of a school would generate GHG emissions that would exceed the SCAQMD significance thresholds. Schools are typically growth-accommodating land uses built to serve the local community; therefore, a new school would reduce the overall VMT in the region and thereby reduce mobile-source GHG emissions. The Project would comply with the 2017 Scoping Plan early action Statewide measures (e.g., Low Carbon Fuel Standard [LCFS] and renewable portfolio standard [RPS]) and would also be built to meet the latest Building Energy Efficiency Standards and CALGreen. Compliance with these statewide requirements and measures would reduce GHG emissions. Building improvements are anticipated to result in increased energy efficiency, thereby reducing emissions from energy usage (i.e., natural gas and electricity).

Since adoption of the 2008 Scoping Plan, state agencies have adopted programs identified in the plan, and the legislature has passed additional legislation to achieve the GHG reduction targets. Statewide

strategies to reduce GHG emissions include the LCFS, California Appliance Energy Efficiency regulations, California Building Standards (i.e., CALGreen and the 2016 Building Energy Efficiency Standards), 33 percent RPS,[52] and changes in the corporate average fuel economy standards (e.g., Pavley I and California Advanced Clean Cars [Pavley II]). According to the 2017 update to the Scoping Plan, the State is on track to achieving the 2020 targets of AB 32.[53] The Project would comply with these GHG emissions reduction measures.

Construction

The current accepted method for accounting for the construction GHG emissions within the SCAQMD service area is to annualize these emissions over a project's operational lifetime, which is generally defined as 30 years for analysis purposes. A summary of the GHG emissions for the construction phases is provided in **Table 4.7-4: Construction GHG Emissions.** As shown below, total construction emissions would be approximately 4,392 MTCO2e. During construction of the Project, all operational facilities will cease with the exception of a few stationary sources. Although this would add a credit to the amount of generated construction emissions, the total GHG emissions would be therefore be negligible.

Construction emissions amortized over 30 years would be approximately 146 MTCO2e/year. Per SCAQMD, the amortized construction emissions are included in the operational impacts as shown in **Table 4.7-4: Construction GHG Emissions**.

Table 4.7-4
Construction GHG Emissions

Year	CO2e Emissions (Metric Tons per Year)
2021	761
2022	2,661
2023	970
Total Construction GHG Emissions	4,392
Annualized over Project's Lifetime	146

*Source: Refer to **Appendix D4 (Annual)**, Section 2.1: Overall Construction.*

52 CARB, "Status of Scoping Plan Recommended Measures," http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf.

53 CARB, *California's 2017 Climate Change Scoping Plan* (November 2017), https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

Operation

The GHG emissions from operation of the Project involves the usage of on-road vehicles, electricity, natural gas, water, landscape equipment, and the generation of solid waste and wastewater. As shown in **4.7-3**, the GHG emissions from the existing Project Site is 2,701 MTCO2e per year.

When taking into consideration implementation of current State mandates and the updated building features, the Project's GHG emissions would result in approximately 1,849 MTCO2e per year, as shown in **Table 4.7-5: Annual GHG Summary**. This result to less than 1 percent of the State's 2015 GHG emissions. The Project's net GHG operational emissions at buildout would result in 852 MTCO2e per year fewer than existing conditions.

Table. 4.7-5
Annual GHG Summary

GHG Emissions Source	Existing	Project	Net Emissions (Project – Existing)
	MTCO2e/year		
Construction (amortized)	--	146	+146
Operational (mobile)	906	722	-184
Area	6	<1	-6
Energy	1,378	690	-688
Waste	234	175	-59
Water	177	116	-61
Total	**2,701**	**1,849**	**-852 (31%)**

*Source: Refer to Air Quality Modeling Data **Appendix D1 (Existing Annual)** and **Appendix D4 (Annual)**.*

Area Source Emissions

Area source emissions were calculated using the CalEEMod emissions inventory model, which includes landscape maintenance equipment. As shown in **Table 4.7-5**, Project operational GHG emissions from area sources would result in less than 1 MTCO2e per year, approximately 6 MTCO2e fewer per year than existing conditions. Project area source emissions would not result in any increase in GHG emissions when compared to existing conditions.

Energy Emissions (Electricity and Natural Gas Usage)

GHGs are emitted as a result of activities in buildings when electricity and natural gas are used as energy sources. Combustion of any type of fuel emits CO2 and other GHGs directly into the atmosphere; when this occurs in a building, it is a direct emission source associated with that building. GHGs are also emitted during the generation of electricity from fossil fuels. When electricity is used in a building, the electricity generation typically takes place off site at the power plant. Although the source of direct emissions is the power plant creating the energy, for accounting purposes the GHG emissions are attributed to the buildings using the electricity. The more energy that a building uses the higher its GHG emissions.

Estimated emissions from the combustion of natural gas and other fuels from the implementation of the Project are calculated using the CalEEMod emissions inventory model. Energy use in buildings is divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building, such as plug-in appliances. CalEEMod calculates energy use from systems covered by Title 24 (e.g., heating, ventilation, and air conditioning [HVAC] system, water heating system, and lighting system); energy use from lighting; and energy use from office equipment, appliances, plug-ins, and other sources not covered by Title 24 or lighting.

As shown in **Table 4.7-5**, Project GHG emissions from energy consumption would result in 690 MTCO2e per year, approximately 688 MTCO2e fewer per year than existing conditions. Project energy source emissions would not result in any increase in GHG emissions operational emissions when compared to existing conditions.

Mobile-Source Emissions

Mobile-source emissions were calculated using CalEEMod, as recommended by SCAQMD. CalEEMod calculates the emissions associated with on-road mobile sources associated with employees and delivery vehicles visiting the Project site based on the number of daily trips generated and VMT.

Vehicle trips generated by growth within the Project area would result in operational GHG emissions through the combustion of fossil fuels. CO2 emissions were determined based on the annual VMT provided in the traffic analysis with trip rates. VMT was based on a 2,500-student maximum capacity, which would generate approximately 5,075 daily trips, as presented in the traffic impact analysis prepared for the Project that is included in **Appendix O.**

The Project is located within an existing urbanized area and is located within a well-serviced transit stop transit corridor within 15-minute or less service frequency during peak commute hours. More specifically, 19 bus lines and 1 rail line currently serve the Project vicinity. Of these 19 bus lines, 12 bus lines are operated by the Los Angeles County Metropolitan Transportation Authority (Metro), 5 bus lines are

operated by the City of Compton Renaissance Transit System (COM), 1 bus line is operated by the City of Gardena Transit (GTRANs), and 1 bus line is operated by Torrance Transit System (TTS). The Metro Blue Light Rail Transit (LRT) is operated by Metro. The existing location provides convenient access to public transit and opportunities, which would facilitate a reduction in VMT and related vehicular GHG emissions. Given that there are 6,468 existing trips for the High School, the Project would result in 1,393 fewer trips when compared to existing operations. Project mobile-source emissions would not result in any increase in GHG emissions operational emissions when compared to existing conditions.

Solid Waste Generation Emissions

Solid waste generation and associated emissions are calculated based on the square footage of the Project Site, using default data found in CalEEMod for the proposed land uses. Disposal of organic waste in landfills can lead to the generation of methane or CH4, a potent GHG. By generating solid waste, the Project would contribute to the emission of fugitive CH4 from landfills, as well as CO2 and N2O from the operation of trash collection vehicles. As shown in **Table 4.7-5**, Project GHG emissions from solid waste would result in approximately 175 MTCO2e per year, which is approximately 59 MTCO2e fewer per year when compared to existing conditions. Project solid waste emissions would not result in any increase in GHG emissions when compared to existing conditions.

Water Consumption and Wastewater Generation

California's water conveyance system is energy intensive, with electricity used to pump, convey, and treat water. The Project will result in indirect GHG emissions due to water consumption and wastewater generation. Water consumption and wastewater generation, and their associated emissions, are calculated based on the square footage of the Project Site, using CalEEMod data. As shown in **Table 4.7-5**, Project GHG emissions from water and wastewater generation would result in approximately 116 MTCO2e per year, which would result in approximately 61 MTCO2e per year fewer emissions when compared to existing conditions. Project water and wastewater emissions would not result in any increase in GHG emissions when compared to existing conditions.

Total Emissions

When taking into consideration the updated building features, including compliance with the requirements set forth in the California Green Building Code and the full implementation of State mandates, the Project GHG emissions would be 1,849 MTCO2e per year, which would result in 852 MTCO2e per year fewer emissions when compared to existing conditions.

In addition, after school events at the new performing arts center, stadium, and pool have the potential to increase the operational emissions. However, due to the few number of events and the limited nature

of such events, the GHG emissions would be similar to those of that of existing emissions. Therefore, any such increase of GHG emissions would be negligible.

Impacts would be less than significant.

Relocation of District Uses

As part of the Project, the District's Facilities Department and Pupil Services, Enrollment Center, and Special Education offices would be demolished and relocated to a location not on the Project Site. These relocated uses would be demolished as part of the Project and are included the construction emissions above.

Given that the relocated uses would be contained within already existing buildings, construction of new buildings is not warranted. These relocated uses would maintain the same operational uses as the existing and therefore would result in minimal change from their existing operational uses.

Impacts would be less than significant.

Threshold GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Reconstruction of CHS Campus

Consistency with State Requirements

As described previously, several initiatives, plans, policies, and regulations have been adopted at the State and local levels related to reducing GHG emissions. In general, California's goals and strategies for the systematic Statewide reduction of GHG emissions are embodied in the combination of EO S-3-05 and AB 32. As shown in **Table 4.7-5**, the proposed development would not hinder progress toward achieving the goals of EO S-3-05. GHG emissions would not conflict with AB 32 or EO S-3-05.

Consistency with Attorney General's Recommendation

The Project would incorporate design features that are consistent with the California Office of the Attorney General's recommended policies and measures to reduce GHG emissions. The Attorney General's recommended measures and the Project's conformance with each are listed in **Table 4.7-6: Project Consistency with the Attorney General's Recommendations.**

In addition, AB 32 requires California to reduce its GHG emissions by approximately 28 to 33 percent below existing baseline levels. CARB identified reduction measures to achieve this goal as set forth in the CARB Scoping Plan. Potential indirect GHG emissions could also be generated by incremental electricity

consumption and waste generation. As shown in **Table 4.7-5**, the proposed Project would reduce its net GHG emissions by approximately 31 percent. As such, the Project would be consistent with the recommendations set forth by the Attorney General and AB 32.

Potential GHG impacts are considered to be less than significant.

Table 4.7-6
Project Consistency with the Attorney General's Recommendations

Recommended Measures	Project Compliance
Smart groth, jobs/housing balance, transit-oriented development, and infill development through land use designations, incentives and fees, zoning, and public-private partnerships.	**Not Applicable.** The Project involves reconstruction of the existing CHS Campus, which includes removal of the existing buildings and construction of new, modern buildings, facilities, and athletic fields.
Create transit, bicycle, and pedestrian connections through planning, funding, development requirements, incentives and regional cooperation; create disincentives for auto use.	**Not Applicable.** The Project involves reconstruction of the existing CHS Campus, which includes removal of the existing buildings and construction of new, modern buildings, facilities, and athletic fields.
Energy- and water-efficient buildings and landscaping through ordinances, development fees, incentives, project timing, prioritization, and other implementing tools.	**Consistent.** The reconstruction of the CHS Campus would include newer efficient utilities, lighting, and plumbing fixtures. Exterior lighting would use energy conservation fixtures. AB 1881 establishes a model water-efficient landscape ordinance. The Project would be required to be consistent with the latest CalGreen requirements.
Waste diversion, recycling, water efficiency, energy efficiency and energy recovery in cooperation with public services, districts and private entities.	**Consistent.** The Project would be required to adhere to the use of sustainability practices involving solid waste generation and disposal.
Regional cooperation to find cross-regional efficiencies in GHG reduction investments to plan for regional transit, energy conservation, and waste recovery facilities	**Consistent.** Refer to responses above.

Source: California Office of the Attorney General, Sustainability and General Plans: Examples of Policies to Address Climate Change (updated January 22, 2010).

Consistency with City of Compton General Plan

The City's General Plan includes goals, policies, and measures that promote improving air quality and reducing GHG emissions. These include the reduction of automobile use, improvement in site planning and building design, and coordination with other local government agencies for air quality programs. **Table 4.7-7: Consistency with Applicable City of Compton General Plan Goals and Policies** contains a list of GHG-reducing goals. As shown, the Project is consistent with the applicable goals.

Table 4.7-7
Consistency with Applicable City of Compton General Plan Goals and Policies

Goal	Consistency
Goal 4: Reduce emissions associated with energy consumption	**Consistent.** The Project would include implementation of current State mandates and would result in an update in building features at the CHS Campus site. As shown in **Table 4.7-5**, Project GHG emissions from energy consumption would result in approximately 688 MTCO2e fewer per year when compared to existing conditions.
Goal 5: Reduce air pollution emissions and impacts through site planning and building design	**Consistent.** The Project would comply with SCAQMD Rule 403 (Fugitive Dust), which requires the use of stringent best available control measures to minimize emissions during construction activities. Observance of this regulation would ensure air pollution strategies designed to reduce the Project's air quality and GHG impacts are met.

Relocation of District Uses

As part of the Project, the District's Facilities Department and Pupil Services, Enrollment Center, and Special Education offices would be demolished and relocated to a location not on the Project Site. As mentioned above, the relocated uses would not significantly increase emissions.

Upon relocation, the function of these existing District uses would be similar to existing conditions and are not anticipated to require an increase in operational or staffing capacity. As such, these relocated uses would not conflict with any local or regional plan, including SCAG and the City's Air Quality Element, and therefore would not exceed assumptions in the AQMP.

Impacts would be less than significant.

CUMULATIVE IMPACTS

As discussed in **Section 3.0: Environmental Setting**, a number of related development projects are proposed for sites within the City, which also contains the Project Site. The proposed Project, in combination with these related projects, would increase development in the City. **Table 3.0-2: Related Projects** identifies 15 related projects that are planned or are under construction in the City. The related projects primarily reflect infill development within the City, consisting of various commercial, retail, and residential uses.

Climate change is a cumulative impact from various global sources of activities that incrementally contribute to global GHG concentrations. Individual projects provide a small addition to total concentrations but contribute cumulatively to a global phenomenon. The goal of AB 32 is to require GHG emission reductions from existing conditions. As a result, cumulative GHG and climate change impacts

must be analyzed from the perspective of whether they would impede the State's ability to meet its emission reduction goals.

To achieve Statewide goals, CARB is in the process of implementing regulations to reduce Statewide GHG emissions. However, currently, no applicable significance thresholds, specific reduction targets, and approved policies or guidance are in place to assist in determining significance at the project or cumulative level. Additionally, currently no generally accepted methodology exists to determine whether GHG emissions associated with a specific project represent new emissions or existing and/or displaced emissions.

In conformance with City of Compton recommendations for green buildings, GHG emissions reductions would be achieved through energy-efficient lighting and building design; installation of low-flow appliances; and water conservation. The methods used to establish this relative reduction are consistent with the approach used in the CARB's 2017 Scoping Plan for the implementation of AB 32 through 2020. The Project's features and GHG reduction measures make the Project consistent with the goals of AB 32.

The Project is consistent with the approach outlined in the CARB's Scoping Plan, particularly its emphasis on the identification of emissions reduction opportunities that promote growth while achieving greater energy efficiency and accelerating the transition to a low-carbon economy. The location and design of the Project reflect and support these core objectives. In addition, as recommended by CARB's 2017 Scoping Plan, the Project would use green building features as a framework for achieving crosscutting emissions reductions.

Given the Project's consistency with the State-mandated goals, the Attorney General's recommendations, and the City's General Plan, the Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. In the absence of applicable adopted standards and established significance thresholds and given the Project's consistency with State and City GHG emission reduction goals and objectives, the Project's contribution to the cumulative impact of global climate change would not be cumulatively considerable with the addition of the related projects.

MITIGATION MEASURES

No mitigation is required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

GHG emission impacts would be less than significant.