

## E. GREENHOUSE GAS EMISSIONS

This section describes the general background information on global climate change, meteorology, and regulatory framework, and evaluates the impacts of the Draft General Plan on greenhouse gas emissions. It analyzes climate change impacts on a cumulative basis because no single project is large enough to result in a measureable increase in global concentrations of greenhouse gas emissions.

### 1. Setting

The following section provides background information on greenhouse gases and global climate change.

**a. Greenhouse Gases.** Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. Global surface temperatures have risen by 0.74°C ( $\pm 0.18^\circ\text{C}$ ) over the last 100 years (1906–2005). The rate of warming over the last 50 years is almost double that over the last 100 years.<sup>1</sup> The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases are the primary causes of the human-induced component of warming. Greenhouse gases are released by the burning of fossil fuels, land clearing, agriculture, and other activities and lead to an increase in the greenhouse effect.<sup>2</sup>

Greenhouse gases are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are the following:

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF<sub>6</sub>)

Over the last 200 years, humans have caused substantial quantities of greenhouse gases to be released into the atmosphere. These extra emissions are increasing greenhouse gas concentrations in the atmosphere and enhancing the natural greenhouse effect, which is believed to be causing global warming. While some greenhouse gasses are naturally occurring – such as CO<sub>2</sub>, methane, and N<sub>2</sub>O – others, including HFCs, PFCs, and SF<sub>6</sub>, are completely new to the atmosphere.

---

<sup>1</sup> Intergovernmental Panel on Climate Change, 2007. *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.

<sup>2</sup> The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the heat escaping, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the naturally occurring greenhouse effect is necessary to keep our planet at a comfortable temperature.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of greenhouse gases above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

Greenhouse gases vary considerably in terms of global warming potential (GWP). GWP is a concept developed to compare the ability of each greenhouse gas to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere (atmospheric lifetime). The GWP of each gas is measured relative to CO<sub>2</sub>, the most abundant greenhouse gas. The definition of the GWP for a particular greenhouse gas is the ratio of heat trapped by one unit mass of the greenhouse gas to the ratio of heat trapped by one unit mass of CO<sub>2</sub> over a specified time period. Greenhouse gas emissions are typically measured in terms of pounds or tons of CO<sub>2</sub> equivalents (CO<sub>2</sub>e). Table IV.E-1 shows the GWPs for each type of greenhouse gas. For example, SF<sub>6</sub>, which is used in such activities as the transmission and distribution of electricity, is 22,800 times more potent at contributing to global warming than CO<sub>2</sub>.

**Table IV.E-1: Global Warming Potential of Greenhouse Gases**

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide	50-200	1
Methane	12	25
Nitrous Oxide	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF <sub>4</sub> )	50,000	7,390
PFC: Hexafluoromethane (C <sub>2</sub> F <sub>6</sub> )	10,000	12,200
Sulfur Hexafluoride (SF <sub>6</sub> )	3,200	22,800

Source: Intergovernmental Panel on Climate Change, 2007. *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.

The following discussion summarizes the characteristics of the six greenhouse gases.

**(1) Carbon Dioxide (CO<sub>2</sub>).** In the atmosphere, carbon generally exists in its oxidized form as CO<sub>2</sub>. Natural sources of CO<sub>2</sub> include the respiration (breathing) of humans, animals and plants, volcanic outgassing, decomposition of organic matter, and evaporation from the oceans. Human caused sources of CO<sub>2</sub> include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Natural sources release approximately 150 billion tons of CO<sub>2</sub> each year, far outweighing the 7 billion tons of man-made emissions of CO<sub>2</sub> each year. Nevertheless, natural removal processes, such as photosynthesis by land and ocean-dwelling plant species, cannot keep pace with this extra input of man-made CO<sub>2</sub>, and, consequently, the gas is building up in the atmosphere.

In 2002, CO<sub>2</sub> emissions from fossil-fuel combustion accounted for approximately 98 percent of man-made CO<sub>2</sub> emissions and approximately 84 percent of California's overall greenhouse gas emissions (CO<sub>2</sub>e). The transportation sector accounted for California's largest portion of CO<sub>2</sub> emissions, with

gasoline consumption making up the greatest portion of these emissions. Electricity generation was California's second largest category of greenhouse gas emissions.

**(2) Methane (CH<sub>4</sub>).** Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH<sub>4</sub> emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation, manure management, and rice cultivation are also significant sources of CH<sub>4</sub> in California. Methane accounted for approximately 7.2 percent of gross climate change emissions (CO<sub>2</sub>e) in California from 2000-2014.<sup>3</sup>

Total annual emissions of methane in California are approximately 500 million tons, with manmade emissions accounting for the majority. As with CO<sub>2</sub>, the major removal process of atmospheric methane—a chemical breakdown in the atmosphere—cannot keep pace with source emissions, and methane concentrations in the atmosphere are increasing.

**(3) Nitrous Oxide (N<sub>2</sub>O).** Nitrous oxide is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N<sub>2</sub>O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N<sub>2</sub>O emissions in California. Nitrous oxide emissions accounted for approximately 2.9 percent of man-made greenhouse gas emissions (CO<sub>2</sub>e) in California, 2000-2012.<sup>4</sup>

**(4) Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF<sub>6</sub>).** Hydrofluorocarbons are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.<sup>5</sup> Perfluorocarbons and SF<sub>6</sub> are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry leads to greater use of PFCs. Hydrofluorocarbons, PFCs, and SF<sub>6</sub> accounted for about 4.1 percent of man-made greenhouse gas emissions (CO<sub>2</sub>e) in California, 2000-2012.<sup>6</sup>

**b. Impacts of Climate Change.** The potential impacts of global climate change are described in the following section.

---

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

<sup>6</sup> Ibid.

**(1) Temperature Increase.** Temperatures in California are expected to rise 3 to 10.5°F by the end of the century.<sup>7</sup> Because greenhouse gases persist for a long time in the atmosphere, accumulate over time, and are generally well-mixed, their impact on the atmosphere cannot be tied to a specific point of emission.

Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from the following:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation and reduction in sunlight from the addition of greenhouse gases and other gases to the atmosphere from volcanic eruptions); or
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., from deforestation, reforestation, urbanization, and desertification).

The primary effect of global climate change has been a rise in the average global temperature. The impact of human activities on global climate change is readily apparent in the observational record. For example, surface temperature data show that 11 of the 12 years from 1995 to 2006 rank among the 12 warmest since 1850, the beginning of the instrumental record for global surface temperature.<sup>8</sup> Climate change modeling shows that further warming could occur, which would induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include but are not limited to the following:

- The loss of sea ice and mountain snowpack resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;
- Rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps in the Greenland and Antarctic ice sheets;
- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;
- Decline of the Sierra snowpack, which accounts for a significant amount of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;
- Increase in the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas of Los Angeles and the San Joaquin Valley by the end of the 21<sup>st</sup> century; and

---

<sup>7</sup> California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California*. July.

<sup>8</sup> California, State of, 2008. California Energy Commission's Public Interest Energy Research Program. *The Future is Now: An Update on Climate Change Science, Impacts, and Response Options for California*. September.

- High potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level.

**(2) Precipitation and Water Supply.** Global average precipitation is expected to increase overall during the 21<sup>st</sup> century as the result of climate change but will vary in different parts of the world. However, global climate models are generally not well-suited for predicting regional changes in precipitation because of the scale of regionally important factors (e.g., proximity of mountain ranges) that affect precipitation.<sup>9</sup>

Most of California's precipitation falls in the northern part of the State during the winter. A vast network of man-made reservoirs and aqueducts capture and transport water throughout the State from northern California rivers, as the greatest demand for water comes from users in the southern part of the State during the spring and summer.<sup>10</sup> The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

Some models predict drier conditions and decreased water flows, while others predict wetter conditions in various parts of the world. If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, thus reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent over the next 100 years.

The extent to which various meteorological conditions will impact groundwater supply is unknown. Warmer temperatures could increase the period when water is on the ground by reducing soil freeze. However, warmer temperatures could also lead to higher evaporation or shorter rainfall seasons, shortening the recharge season. Warmer winters could increase the amount of runoff available for groundwater recharge. However, the additional runoff would occur at a time when some basins, particularly in Northern California, are being recharged at their maximum capacity.

Where precipitation is projected to increase in California, the increases are focused in Northern California. However, various California climate models provide mixed results regarding changes in total annual precipitation in the State through the end of this century; therefore, no conclusion on an increase or decrease can be made. Considerable uncertainties about the precise effects of climate change on California hydrology and water resources will remain until there is more precise and consistent information about how precipitation patterns, timing, and intensity will change.<sup>11</sup> The East Bay Municipal Utility District (EBMUD) supplies water for the City of Albany. The principal raw water source for EBMUD is the Mokelumne River in the Sierra Nevada, with a diversion point at Pardee Reservoir in Calaveras and Amador Counties.<sup>12</sup> The EBMUD evaluated the potential effects

---

<sup>9</sup> Intergovernmental Panel on Climate Change, 2007, op. cit.

<sup>10</sup> California Climate Change Center, 2006, op. cit.

<sup>11</sup> California, State of, 2006. Department of Water Resources. *Progress on Incorporating Climate Change into Management of California's Water Resources*. July.

<sup>12</sup> East Bay Municipal Utility District. 2012. *Water Supply Management Program 2040 Plan*. Website: [ebmud.com/water-and-wastewater/water-supply/water-supply-management-program-2040](http://ebmud.com/water-and-wastewater/water-supply/water-supply-management-program-2040) (accessed June 24, 2014). April.

of climate change of future water supplies for the East Bay and found that the District will likely “experience changes in its Mokelumne River watershed water supply in the future; though, due to relatively coarse information currently available about the degree of future climate changes, these impacts cannot be known exactly.”<sup>13</sup> As such, the District identified potential strategies to meet future challenges of reduced supply due to the effects of climate change.<sup>14</sup>

- Employ potable demand management measures;
- Increase system storage;
- Optimize use and storage of excess water in wet years;
- Reoperation of Mokelumne Reservoir system;
- Intra- and interregional cooperation and agreements;
- Development of drought resistant supplies (not dependent on hydrologic conditions); and
- Diversification of water supply source locations.

**(3) Sea Level Rise.** Rising sea level is one of the major areas of concern related to global climate change. Two of the primary causes for a sea level rise are the thermal expansion of ocean waters (water expanding as it heats up) and the addition of water to ocean basins by the melting of land-based ice. From 1961 to 2003, global average sea level rose at an average rate of 0.07 inches per year, and at an accelerated average rate of about 0.12 inches per year during the last decade of this period (1993 to 2003).<sup>15</sup> Over the past 100 years, sea levels along California’s coasts and estuaries have risen about seven inches.<sup>16</sup>

Sea levels could rise an additional 22 to 35 inches by the end of the century as global climate change continues.<sup>17</sup> Although these projections are on a global scale, the rate of sea level rise along California’s coast is relatively consistent with the worldwide average rate observed over the past century. Therefore, it is reasonable to assume that changes in worldwide sea level rise will also be experienced along California’s coast.<sup>18</sup>

Sea level rise of this magnitude would increasingly threaten California’s coastal regions with more intense coastal storms, accelerated coastal erosion, threats to vital levees, and disruption of inland water systems, wetlands, and natural habitats. Rising sea levels and more intense storm surges could increase the risk for coastal flooding. The San Francisco Bay Conservation and Development

---

<sup>13</sup> Ibid. p. 4-20.

<sup>14</sup> Ibid.

<sup>15</sup> California, State of, 2008. California Energy Commission’s Public Interest Energy Research Program. *The Future is Now: An Update on Climate Change Science, Impacts, and Response Options for California*. September.

<sup>16</sup> Ibid.

<sup>17</sup> California Climate Change Center, 2006, op. cit.

<sup>18</sup> California, State of. Department of Water Resources, 2006. *Progress on Incorporating Climate Change into Management of California’s Water Resources*. July.

Commission (BCDC) employed geographic information system software to identify the shoreline areas likely to be most impacted by a one meter rise in sea level.<sup>19</sup>

In the San Francisco Bay Area, the background rate of sea level rise has been estimated to be approximately 0.079 inch per year over the past 100 years.<sup>20</sup> An increased rate of sea level rise is anticipated in the near future due to projected global climate change. Although the rate of increase has not been precisely modeled and cannot be known with certainty, several projections predict a rise in sea level of at least 50 centimeters (approximately 20 inches) and as much as 200 centimeters (approximately 80 inches) by the year 2100. Sea level rise is also discussed in Section IV.I, Hazards and Hazardous Materials.

**(4) Water Quality.** Water quality depends on a wide range of variables such as water temperature, flow, runoff rates and timing, waste discharge loads, and the ability of watersheds to assimilate wastes and pollutants. Climate change could alter water quality in a variety of ways, including higher winter flows that reduce pollutant concentrations (through dilution) or increase erosion of land surfaces and stream channels, leading to higher sediment, chemical, and nutrient loads in rivers. Water temperature increases and decreased water flows can result in increasing concentrations of pollutants and salinity. Increases in water temperature alone can likely lead to adverse changes in water quality and aquatic habitat value, even in the absence of changes in precipitation.

Land and resource use changes can have impacts on water quality comparable to or even greater than those from global climate change. The net effect on water quality for rivers, lakes, and groundwater in the future is dependent not just on climate conditions, but also on a wide range of other human actions and management decisions.

**(5) Public Health.** Global climate change is anticipated to result in not only changes to average temperature but also to more extreme heat events.<sup>21</sup> These extreme heat events increase the risk of death from dehydration, heart attack, stroke, and respiratory distress, especially with people who are ill, children, the elderly, and the poor, who may lack access to air conditioning and medical assistance. According to the California Climate Change Center, more research is needed to understand the effects of higher temperatures and how adapting to these temperatures can minimize health effects.

**c. Regulatory Framework.** The federal and State regulatory framework related to greenhouse gas emissions is described below.

---

<sup>19</sup> California, State of, 2009. San Francisco Bay Conservation and Development Commission. *Climate Change*. Website: [www.bcdc.ca.gov/planning/climate\\_change/climate\\_change.shtml](http://www.bcdc.ca.gov/planning/climate_change/climate_change.shtml).

<sup>20</sup> National Oceanic & Atmospheric Administration, 2007. *Mean Sea Level Trend (station) 9414290 San Francisco, California*. Website: [tidesandcurrents.noaa.gov/sltrends\\_station.shtml?stnid=9414290](http://tidesandcurrents.noaa.gov/sltrends_station.shtml?stnid=9414290).

<sup>21</sup> California Climate Change Center, 2006, op. cit.

**(1) Federal Regulations.** The United States has historically had a voluntary approach to reducing greenhouse gas emissions. However, on April 2, 2007, the United States Supreme Court ruled [549 U.S. 497 (2007)] that the U.S. Environmental Protection Agency (USEPA) has the authority to regulate CO<sub>2</sub> emissions under the federal Clean Air Act (CAA). While there currently are no adopted federal regulations for the control or reduction of greenhouse gas emissions, the USEPA commenced several actions in 2009 to implement a regulatory approach to global climate change, including the ones described below.

On September 22, 2009, the USEPA issued a final rule for mandatory reporting of greenhouse gases from large greenhouse gas emission sources in the United States. In general, this national reporting requirement will provide the USEPA with accurate and timely greenhouse gas emissions data from facilities that emit 25,000 metric tons or more of CO<sub>2</sub> per year. This publicly-available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial greenhouse gases, along with vehicle and engine manufacturers, will report at the corporate level. An estimated 85 percent of the total U.S. greenhouse gas emissions, from approximately 10,000 facilities, are covered by this rule.

On December 7, 2009, the USEPA Administrator signed a final action under the CAA, finding that six greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles contribute to global climate change. This USEPA action does not impose any requirements on industry or other entities. However, the findings are a prerequisite to finalizing the greenhouse gas emission standards for light-duty vehicles discussed further below. The USEPA received ten petitions challenging this determination. On July 29, 2010, USEPA denied these petitions.

On April 1, 2010, the USEPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a final joint rule to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that will reduce greenhouse gas emissions and improve fuel economy. USEPA is finalizing the first-ever national greenhouse gas emissions standards under the CAA, and NHTSA is finalizing Corporate Average Fuel Economy standards under the Energy Policy and Conservation Act. The USEPA greenhouse gas standards require light-duty vehicles to meet an estimated combined average emissions level of 250 grams of CO<sub>2</sub> per mile in model year 2016, equivalent to 35.5 miles per gallon.

In December 2010, the USEPA issued its plan for establishing greenhouse gas pollution standards under the CAA in 2011. The agency looked at a number of sectors and is moving forward on greenhouse gas standards for fossil fuel power plants and petroleum refineries – two of the largest industrial sources, representing nearly 40 percent of the greenhouse gas pollution in the United States.

On August 9, 2011, USEPA and the NHTSA announced the first-ever standards to reduce greenhouse gas emissions and improve the fuel efficiency of heavy-duty trucks and buses. The final combined standards of the Heavy-Duty National Program will reduce CO<sub>2</sub> emissions by about 270 million metric tons (MMT) and save about 530 million barrels of oil over the life of vehicles built for the 2014 to 2018 model years. The heavy duty sector addressed in the USEPA and NHTSA rules (including the largest pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses in between) accounts for nearly 6 percent of all U.S. greenhouse gas emissions and 20 percent

of transportation emissions. In addition, air quality will continue to improve as less fuel use leads to reduced ozone and particulate matter.

On April 18, 2012, the USEPA finalized cost effective regulations to reduce harmful air pollution from the oil and natural gas industry, while allowing continued, responsible growth in U.S. oil and natural gas production. The final rules are expected to yield a nearly 95 percent reduction in volatile organic compounds (VOC) emissions from more than 11,000 new hydraulically fractured gas wells each year. The rules will also reduce air toxics and emissions of methane, a potent greenhouse gas.

On July 1, 2014 the USEPA proposed updates to its air standards for new municipal solid waste landfills. These updates would require certain landfills to capture additional landfill gas, which would reduce emissions of methane and further reduce pollution that harms public health.<sup>22</sup>

On August 3, 2015 the USEPA issued the Clean Power Plan, which put the nation on track to cut pollution from the power sector by 32 percent below 2005 levels, while also cutting smog- and soot-forming emissions that threaten public health by 20 percent. These emission guidelines are for states to follow in developing plans to reduce greenhouse gas emissions from existing fossil fuel-fired electric generating units.

**(2) State Regulations.** In 1967, the California Legislature passed the Mulford–Carrell Act, which combined two Department of Health bureaus, the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board, to establish the California Air Resources Board (ARB). Since its formation, the ARB has worked with the public, the business sector, and local governments to find solutions to California’s air pollution problems.

The ARB is typically the lead agency for implementing climate change regulations in the State. There are many regulations and statutes in California that address, both directly and indirectly, greenhouse gas emissions, such as renewable portfolio standards (SB 1078, SB 107, SB 2(1X)) and energy efficiency standards (Title 24, Cal. Code Regs.). Key State regulatory activities specifically addressing climate change and greenhouse gas emissions are discussed below.

**Assembly Bill 1493 (2002).** In a response to the transportation sector’s significant contribution to California’s CO<sub>2</sub> emissions, AB 1493 (Pavley) was enacted on July 22, 2002. AB 1493 requires the ARB to set greenhouse gas emission standards for passenger vehicles and light duty trucks (and other vehicles whose primary use is noncommercial personal transportation in the State) manufactured in 2009 and all subsequent model years. These standards (starting in model years 2009 to 2016) were approved by the ARB in 2004, but the needed waiver of Clean Air Act Preemption was not granted by the USEPA until June 30, 2009. The ARB responded by amending its original regulation, now referred to as Low Emission Vehicle III, to take effect for model years starting in 2017 to 2025.

---

<sup>22</sup> U.S. Environmental Protection Agency, 2015. *Regulatory Initiatives*. Website: [www.epa.gov/climatechange/EPAactivities/regulatory-initiatives.html](http://www.epa.gov/climatechange/EPAactivities/regulatory-initiatives.html) (accessed August 10, 2015) August 3.

**Executive Order S-3-05 (2005).** Governor Arnold Schwarzenegger signed Executive Order S-3-05 on June 1, 2005, which proclaimed that California is vulnerable to the impacts of climate change. To combat those concerns, the executive order established California's greenhouse gas emissions reduction targets, which established the following goals:

- Greenhouse gas emissions should be reduced to 2000 levels by 2010;
- Greenhouse gas emissions should be reduced to 1990 levels by 2020; and
- Greenhouse gas emissions should be reduced to 80 percent below 1990 levels by 2050.

The Secretary of the California Environmental Protection Agency (CalEPA) is required to coordinate efforts of various State agencies in order to collectively and efficiently reduce greenhouse gases. A biannual progress report must be submitted to the Governor and State Legislature disclosing the progress made toward greenhouse emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, the coastline, and forestry, and report possible mitigation and adaptation plans to address these impacts.

**Assembly Bill 32 (2006), California Global Warming Solutions Act.** California's major initiative for reducing greenhouse gas emissions is AB 32, passed by the State legislature on August 31, 2006. This effort aims at reducing greenhouse gas emissions to 1990 levels by 2020. The ARB has established the level of greenhouse gas emissions in 1990 at 427 MMT CO<sub>2</sub>e. The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires the ARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce greenhouse gases that contribute to global climate change.

The Scoping Plan was approved by the ARB on December 11, 2008, and contains the main strategies California will implement to achieve the reduction of approximately 30 percent, from the State's projected 2020 emission level (this is a reduction of 42 MMT CO<sub>2</sub>e, or almost 10 percent from 2002-2004 average emissions). The Scoping Plan also includes ARB-recommended greenhouse gas reductions for each emissions sector of the State's greenhouse gas inventory. The Scoping Plan calls for the largest reductions in greenhouse gas emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO<sub>2</sub>e);
- The Low-Carbon Fuel Standard (15.0 MMT CO<sub>2</sub>e);
- Energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO<sub>2</sub>e); and
- A renewable portfolio standard for electricity production (21.3 MMT CO<sub>2</sub>e).

The Scoping Plan identifies 18 emission reduction measures that address cap-and-trade programs, vehicle gas standards, energy efficiency, low carbon fuel standards, renewable energy, regional transportation-related greenhouse gas targets, vehicle efficiency measures, goods movement, solar roof programs, industrial emissions, high speed rail, green building strategies, recycling, sustainable forests, water, and air. The measures would result in a total reduction of 174 MMT CO<sub>2</sub>e by 2020.

On August 24, 2011, the ARB unanimously approved both ARB's new supplemental assessment and reapproved its Scoping Plan, which provides the overall roadmap and rule measures to carry out AB 32. The ARB also approved a more robust CEQA equivalent document supporting the supplemental analysis of the cap-and-trade program. The cap-and-trade took effect on January 1, 2012, with an enforceable compliance obligation that began January 1, 2013.

ARB has not yet determined what amount of greenhouse gas reductions it recommends from local government operations and local land use decisions; however, the Scoping Plan states that land use planning and urban growth decisions will play an important role in the State's greenhouse gas reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions (meanwhile, ARB is also developing an additional protocol for community emissions). ARB further acknowledges that decisions on how land is used will have large impacts on the greenhouse gas emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The Scoping Plan states that the ultimate greenhouse gas reduction assignment to local government operations is to be determined. With regard to land use planning, the Scoping Plan expects an approximately 5.0 MMT CO<sub>2</sub>e reduction due to implementation of SB 375 (described later in this chapter).

The ARB approved the First Update to the Climate Change Scoping Plan on May 22, 2014, which is currently underway. The First Update identifies opportunities to leverage existing and new funds to further drive greenhouse gas emission reductions through strategic planning and targeted low carbon investments. The First Update defines ARB's climate change priorities until 2020, and also sets the groundwork to reach long-term goals set forth in Executive Orders S-3-05 and B-16-2012. The Update highlights California's progress toward meeting the "near-term" 2020 greenhouse gas emission reduction goals and defined in the initial Scoping Plan. It also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

**Senate Bill 97 (2007).** SB 97, signed by the Governor in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code, Sections 21083.05 and 21097), acknowledges climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Resources Agency guidelines for mitigating greenhouse gas emissions or the effects of greenhouse gas emissions, as required by CEQA.

The California Natural Resources Agency adopted the amendments to the CEQA Guidelines in January 2010, which went into effect in March 2010. The amendments do not identify a threshold of significance for greenhouse gas emissions, nor do they prescribe assessment methodologies or specific mitigation measures. The amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations based on substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs when they perform individual project analyses.

**Senate Bill 375 (2008).** Signed into law on October 1, 2008, SB 375 supplements greenhouse gas reductions from new vehicle technology and fuel standards with reductions from more efficient land use patterns and improved transportation. Under the law, the ARB approved greenhouse gas reduction targets in February 2011 for California's 18 federally designated regional planning bodies, known as Metropolitan Planning Organizations (MPOs). The ARB may update the targets every 4 years and must update them every 8 years. MPOs in turn must demonstrate how their plans, policies and transportation investments meet the targets set by the ARB through Sustainable Community Strategies (SCS). The SCS are included with the Regional Transportation Plan (RTP), a report required by State law. However, if an MPO finds that their SCS will not meet the greenhouse gas reduction target, they may prepare an Alternative Planning Strategy (APS). The APS identifies the impediments to achieving the targets.

**(3) Bay Area Air Quality Management District.** The Bay Area Air Quality Management District (BAAQMD) is the regional government agency that regulates sources of air pollution within the nine San Francisco Bay Area counties. The BAAQMD regulates greenhouse gas emissions through the following plans, programs, and guidelines.

**Clean Air Plans.** BAAQMD and other air districts prepare clean air plans in accordance with the State and federal Clean Air Acts. The Bay Area 2010 Clean Air Plan is a comprehensive plan to improve Bay Area air quality and protect public health through implementation of a control strategy designed to reduce emissions and ambient concentrations of harmful pollutants. The 2010 Clean Air Plan also includes measures designed to reduce greenhouse gas emissions. The BAAQMD is in the process of updating this plan and will release the 2015 Clean Air Plan later this year.

**BAAQMD Climate Protection Program.** The BAAQMD established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin. The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of greenhouse gas and in reducing air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders.

**BAAQMD CEQA Air Quality Guidelines.** The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. The guidelines also include recommended assessment methodologies for air toxics, odors, and greenhouse gas emissions. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. In May 2011, the updated BAAQMD CEQA Air Quality Guidelines were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts.

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. The court did not determine whether the thresholds of significance

were valid on their merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD complied with CEQA. In May of 2012, the BAAQMD filed an appeal of the court's decision. The Court of Appeal of the State of California, First Appellate District, reversed the trial court's decision. The court of Appeal's decision was appealed to the California Supreme Court, which granted limited review, and the matter is currently pending there.

In view of the court's order, the BAAQMD is no longer recommending that the thresholds of significance from the 2011 CEQA Air Quality Guidelines be used as a generally applicable measure of a project's significant air quality impacts. Following the court order, the BAAQMD released revised CEQA Air Quality Guidelines in May of 2012 that include guidance on calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. The BAAQMD recognizes that lead agencies may rely on the previously recommended Thresholds of Significance contained in its CEQA Air Quality Guidelines adopted in 1999. However, the 1999 CEQA Guidelines do not contain a threshold for greenhouse gas emissions.

Under the 2011 CEQA Air Quality Guidelines, a local government may prepare a qualified greenhouse gas Reduction Strategy that is consistent with AB 32 goals. If a project is consistent with an adopted qualified Greenhouse Gas Reduction Strategy and General Plan that addresses the project's greenhouse gas emissions, it can be presumed that the project will not have significant greenhouse gas emissions under CEQA. The 2011 Guidelines also included a quantitative threshold for project level analyses based on estimated greenhouse emissions as well as per capita metrics.

**(4) Metropolitan Transportation Commission/Association of Bay Area Governments Sustainable Communities Strategy.** The Metropolitan Transportation Commission (MTC) is the federally recognized MPO for the nine county Bay Area, which includes Alameda County and the City of Albany. In March 2011, Plan Bay Area released its Initial Vision Scenario, which presents a first draft of targeted growth areas and regional projections. Based on the Initial Vision Scenario, Plan Bay Area adopted a preferred SCS scenario. On March 22, 2013 the Draft Plan Bay Area was released and the Plan Bay Area EIR was released on April 2, 2013 for public review and comment. These documents were certified and adopted in July 2013.

**(5) City of Albany General Plan.** While the City of Albany 1990–2010 General Plan does not include policies that specifically address global climate change, the following goals and policies would be expected to reduce greenhouse gas emissions:

- **Goal CIRC 4:** Support public transit, and other means to reduce reliance on the automobile as the primary means of transportation.
- **Policy CIRC 4.1:** Monitor existing and proposed transit service for responsiveness to residents' and employers' needs.
- **Policy CIRC 4.3:** Continue to work with the City's Trip Reduction Ordinance and continue to develop programs and incentives for the use of carpools, staggered work hours, bicycling, walking and the increased use of public transit for residents and employees in the community.
- **Policy CIRC 4.5:** Increase pedestrian travel throughout the City by connecting major pathway systems such as the BART linear park to other City, regional, and State Parks, and other community facilities.

- **Policy CIRC 4.7:** Assure that sidewalks, pathways, and trails used by pedestrians are safe and provide unhindered access for all.
- **Goal CIRC 6:** Improve and enhance the City's bicycle route and path system.
- **Policy CIRC 6.1:** Develop a plan for bike routes for Albany linking existing bike paths and routes in Berkeley and El Cerrito. Implement this plan as part of the City's overall road maintenance and traffic sign program within the annual capital projects budget, as well as through specific transportation funding.
- **Policy CIRC 6.2:** Work to obtain funding sources to develop the Bay Trail in Albany and along the entire East Bay Shoreline corridor as an alternative, parallel route to I-80.
- **Program HE 2.1.3:** Enact a density bonus ordinance consistent with State law requirements.
- **Goal CROS 2:** Increase street tree planting throughout Albany to beautify the City and to help purify the air.
- **Policy CROS 2.1:** Develop and implement a comprehensive street tree planting program for City residential and commercial streets, including establishing priorities, setting time schedules, and developing a comprehensive maintenance program.
- **Goal CROS 4:** Strive to maintain and improve the quality of Albany's natural environment and cultural resources, and natural resources in general.
- **Policy CROS 4.1:** Coordinate with CalTrans and MTC to monitor air quality impacts of improvements to Interstates 80 and 580 to assure that Albany's air quality will not be allowed to deteriorate any further.
- **Policy CROS 4.3:** Promote preservation of trees and other vegetation by requiring an inventory of significant site vegetation prior to development application review.
- **Policy CROS 4.4:** Continue to cooperate in local, sub-regional and regional efforts to implement the Clean Air Plan and meet State Air Quality Standards.
- **Policy CROS 4.5:** Require tree preservation measures during site design and construction.
- **Policy CROS 4.6:** Develop a comprehensive water conservation policy for City facilities and new development, including requirements for drought-resistant landscaping, water-conserving fixtures, and continue to support EBMUD public information campaigns to reduce water consumption.
- **Policy CROS 6.3:** Develop a plan for bikeways for Albany, linking existing bike paths in Berkeley and El Cerrito. Implement this plan as part of the City's overall road maintenance and traffic signs program within the annual capital projects budget, as well as through specific transportation funding (refer to Circulation Element.)
- **Policy CROS 6.4:** Increase non-automobile public access routes throughout the City by connecting major pathway systems such as the BART linear park to other City, regional and State Parks.

The policies listed above will be superseded by policies in the updated Albany General Plan. The new Plan includes several policies and action programs that are specifically aimed at reducing greenhouse gas emissions. Some of the policies and programs originated in the Albany Climate Action Plan, described below.

(6) **City of Albany Climate Action Plan.** The Albany City Council adopted the City of Albany Climate Action Plan<sup>23</sup> (CAP) in April 2010. The CAP outlines a course of action for the City and community to reduce greenhouse gasses and, thus, the effects of global climate change. The CAP was designed to support three primary functions:<sup>24</sup>

- Provide clear guidance to City staff regarding when and how to implement key provisions of the plan;
- Inspire residents and businesses to participate in community efforts to reduce greenhouse gasses; and
- Demonstrate Albany’s commitment to comply with State greenhouse gas reduction efforts.

The CAP is broad in scope and is intended to reduce greenhouse gas emissions generated in municipal and community-wide activities including building and community energy use, transportation and land use, waste reduction and diversion, water conservation, and green infrastructure enhancements. The strategies, objectives, measures, and actions are meant to direct the City’s reduction efforts through 2020.

The strategies identified in the CAP provide approximately 15,660 MMT CO<sub>2</sub>e of potential reductions, or 19 percent below 2004 baseline levels, by 2020. This level of reduction goes beyond the recommendation of the State’s Climate Action Scoping Plan, which calls on local governments to reduce emissions to 15 percent below current levels by 2020. The CAP includes six major strategies intended to reduce greenhouse gas emissions:

- **Transportation and Land Use.** Create an interconnected transportation system and land-use pattern that shifts travel from personal automobiles to walking, biking, and public transit.
- **Buildings and Energy.** Minimize energy consumption; create high performance buildings, and transition to clean, renewable energy sources.
- **Waste.** Become a zero-waste community.
- **Green Infrastructure.** Enhance natural assets that improve community quality of life.
- **Water Conservation.** Celebrate water as an essential community resource.
- **Food and Agriculture.** Create a sustainable and climate-friendly food system.

In July 2010, the City of Albany approved the CAP Implementation Plan<sup>25</sup> to identify opportunities for short-term and more extended-term implementation of CAP measures given current funding and

---

<sup>23</sup> Albany, City of, 2010. *City of Albany Climate Action Plan*. Website: [www.albanyca.org/index.aspx?page=256](http://www.albanyca.org/index.aspx?page=256) (accessed June 24, 2014). April.

<sup>24</sup> Ibid. p. I-2.

<sup>25</sup> Albany, City of, 2010. *City of Albany Climate Action Plan—Implementation Plan*. Website: [www.albanyca.org/index.aspx?page=256](http://www.albanyca.org/index.aspx?page=256) (accessed June 24, 2014). July.

staffing levels. The Implementation Plan also identifies opportunities for additional funding and staffing that may be required to increase the scale at which the CAP can be implemented.<sup>26</sup>

As measures within the CAP are under development, the City of Albany continues to identify and quantify emissions reduction benefits of climate and sustainability strategies that could be implemented in the future, including energy efficiency, renewable energy, vehicle fuel efficiency, alternative transportation, vehicle trip reduction, land use and transit planning, waste reduction and other strategies.<sup>27</sup> The City is also considering strategies and reduction targets beyond 2020, which is the CAP horizon year.

**d. Emissions Inventories.** An emissions inventory identifies and quantifies the primary human-generated sources and sinks of greenhouse gases. This section summarizes the latest information on global, United States, California, and City of Albany greenhouse gas emission inventories.

**(1) Global Emissions.** Worldwide net emissions (including the effects of land use and forestry) of greenhouse gases in 2010 were 46 billion metric tons<sup>28</sup> of CO<sub>2</sub>e per year,<sup>29</sup> representing a 35 percent increase from 1990.

**(2) United States Emissions.** In 2012, the United States emitted about 6.5 billion metric tons of CO<sub>2</sub>e or about 21 metric tons per year per person. The total 2012 CO<sub>2</sub>e emissions represent a 5 percent increase since 1990 but a 10 percent decrease since 2005. Of the six major sectors nationwide – residential, commercial, agricultural, industry, transportation, and electricity generation – electricity generation accounts for the highest amount of greenhouse gas emissions since 1990 (approximately 32 percent), with transportation being a close second at 27 percent since 1990; these emissions are generated entirely from direct fossil fuel combustion.<sup>30</sup>

**(3) State of California Emissions.** The ARB is responsible for developing the California Greenhouse Gas Emission Inventory. This inventory estimates the amount of greenhouse gases emitted to and removed from the atmosphere by human activities within the State and supports the AB 32 Climate Change Program.

According to ARB emission inventory estimates, California emitted approximately 460 million metric tons of CO<sub>2</sub>e emissions in 2012.<sup>31</sup> California ranks second in the nation in terms of total greenhouse gas emissions (Texas is highest), with a per-capita greenhouse gas emission rate of

---

<sup>26</sup> Ibid.

<sup>27</sup> Albany, City of, 2013. *City of Albany 2010 Community-Wide Greenhouse Gas Emissions Inventory*. January.

<sup>28</sup> A metric ton is equivalent to approximately 1.1 tons.

<sup>29</sup> U.S. Environmental Protection Agency, 2014. *Climate Change Indicators in the United States: Global Greenhouse Gas Emissions*. Website: [www.epa.gov/climatechange/science/indicators/ghg/global-ghg-emissions.html](http://www.epa.gov/climatechange/science/indicators/ghg/global-ghg-emissions.html) (accessed June 23, 2014).

<sup>30</sup> Ibid.

<sup>31</sup> California Air Resources Board, 2014. *Greenhouse Gas Inventory Data for 2000–2012*. Website: [www.arb.ca.gov/cc/inventory/data/data.htm](http://www.arb.ca.gov/cc/inventory/data/data.htm) (accessed June 23, 2014).

approximately 12 metric tons per person (43 percent less than the national average in 2012); only 5 other states (all in the northeast) have lower per-capita greenhouse gas emissions.<sup>32</sup>

California greenhouse gas emissions from the transportation sector—still the State’s largest single source of greenhouse gases, contributing 36 percent of total emissions—declined modestly compared to 2011; however, over the past 7 years, transportation-related greenhouse gas emissions have dropped 12 percent.<sup>33</sup> The ARB attributes much of this decrease to the growing statewide fleet of fuel-efficient vehicles—the hybrid vehicle market share increased in 2012 to 7.4 percent from the 2011 level of 5.4 percent.<sup>34</sup>

ARB staff has projected 2020 unregulated greenhouse gas emissions, which represent the emissions that would be expected to occur in the absence of any greenhouse gas reduction actions, would be 507 MMT of CO<sub>2</sub>e.<sup>35</sup> The total emissions are lower than originally forecast (596 MMT) in the AB32 Scoping Plan to account for new estimates for future fuel and energy demand and accounting for the recent economic recession.

Greenhouse gas emissions in 2020 from the transportation sector as a whole are expected to increase to 184 MMT of CO<sub>2</sub>e (2012 inventory is 167 MMT of CO<sub>2</sub>e). The industrial sector consists of large stationary sources of greenhouse gas emissions and includes oil and gas production and refining facilities, cement plants, and large manufacturing facilities. Emissions for this sector are forecast to grow to 91.5 MMT of CO<sub>2</sub>e by 2020, an increase of approximately 3 percent from the 2012 emissions inventory level. The commercial and residential sectors are expected to contribute 45.3 MMT of CO<sub>2</sub>e, or about 9 percent of the total Statewide greenhouse gas emissions in 2020.<sup>36</sup>

**(4) San Francisco Bay Area Emissions.** The BAAQMD established a climate protection program in 2005 to acknowledge the link between climate change and air quality. The BAAQMD regularly prepares inventories of criteria and toxic air pollutants to support planning, regulatory and other programs. The most recent emissions inventory estimates greenhouse gas emissions produced by the San Francisco Bay Area in 2011.<sup>37</sup> The inventory, which was published January 2015, updates the Air District’s previous greenhouse gas emission inventory for base year 2007.

In 2011, 86.6 million metric tons of CO<sub>2</sub>e of greenhouse gases were emitted by the San Francisco Bay Area. Fossil fuel consumption in the transportation sector was the single largest source of the San Francisco Bay Area’s greenhouse gas emissions in 2011. The transportation sector (including on-road motor vehicles, locomotives, ships and boats, and aircraft) contributed 39.7 percent of greenhouse gas

---

<sup>32</sup> California Air Resources Board, 2014. *California Greenhouse Gas Emissions for 2000 to 2012: Trends of Emissions and Other Indicators*. Website: [www.arb.ca.gov/cc/inventory/data/data.htm](http://www.arb.ca.gov/cc/inventory/data/data.htm) (accessed June 23, 2014). May 13.

<sup>33</sup> Ibid.

<sup>34</sup> Ibid.

<sup>35</sup> California Air Resources Board, 2013. *Greenhouse Gas Inventory: 2020 Emissions Forecast*. Website: [www.arb.ca.gov/cc/inventory/data/forecast.htm](http://www.arb.ca.gov/cc/inventory/data/forecast.htm) (accessed June 23, 2014).

<sup>36</sup> Ibid.

<sup>37</sup> Bay Area Air Quality Management District, 2015. *Source Inventory of Bay Area Greenhouse Gas Emissions*. January.

emissions and the industrial and commercial sectors (excluding electricity and agriculture) contributed 35.7 percent of greenhouse gas emissions in the Bay Area. Energy production activities such as electricity generation and co-generation were the third largest contributor with approximately 14.0 percent of the total greenhouse gas emissions. Off-road equipment such as construction, industrial, commercial, and lawn and garden equipment contributed 1.5 percent of greenhouse gas emissions.

**(5) City of Albany Emissions.** In 2007, the City of Albany adopted an aggressive greenhouse gas reduction target in response to AB 32 goals, requiring the community’s greenhouse gas emissions to be reduced by 25 percent below 2004 baseline emission levels by 2020. The City, in coordination with ICLEI—Local Governments for Sustainability (formerly the International Council for Local Environmental Initiatives), developed a baseline greenhouse gas emissions inventory for both community-wide and municipal sources for the 2004 operational year. The baseline inventory was compiled using ICLEI’s Clean Air Climate Protection (CACP) software. The community-wide sources within the CACP software are intended to represent greenhouse gas emissions from the following sectors: residential, commercial, and industrial energy use; transportation; and solid waste.

While the baseline inventory is meant to capture emissions that physically occur in Albany as a direct result of activities within the community, it also includes some of the emissions in other jurisdictions caused as an indirect result of activities within Albany for which adequate data exists (e.g., electricity use, wastewater). Other indirect emissions, such as transportation beyond City limits, air travel by Albany residents, and the production and transportation of goods consumed in Albany, are not included in the emission inventory because of the difficulty in accurately quantifying these emissions.

The 2004 baseline greenhouse gas emissions inventory for the City of Albany is 69,830 metric tons (MT) CO<sub>2</sub>e. As shown in Table IV.E-2, approximately 34 percent of the greenhouse gas emissions are related to transportation. This percentage does not reflect the greenhouse gas emissions associated with travel on State highways; these indirect emissions were left out of the 2004 baseline inventory because of the inability of City policies to control or affect State highway vehicle miles travelled (VMT) patterns. However, greenhouse gas emissions related to water consumption, also indirect emissions, are included in the 2004 baseline inventory due to the availability of historical water consumption data from the EBMUD specific to Albany.

**Table IV.E-2: 2004 Greenhouse Gas Emissions Inventory of Albany**

Sector	CO <sub>2</sub> e Emissions (MTs)
Residential energy use	20,495
Commercial–industrial energy use	20,788
Transportation <sup>a</sup>	23,703
Waste	3,652
Water consumption	1,190
<b>Total</b>	<b>69,830</b>

<sup>a</sup> Emission do not include emissions from State highway VMT due to the inability of City policies to control or affect state highway VMT patterns.

Note: Total reflects rounding.

Source: Albany, City of, 2010. *City of Albany Climate Action Plan*. April.

## 2. Impacts and Mitigation Measures

This section evaluates significant impacts to greenhouse gas emissions that could result from implementation of the proposed Draft General Plan. It establishes the thresholds of significance, identifies the methodology used in this section, and then evaluates the General Plan. Where potentially significant impacts are identified, mitigation measures are recommended as appropriate.

**a. Criteria of Significance.** The BAAQMD and *CEQA Guidelines* have identified the following significance criteria for evaluating greenhouse gas impacts for General Plan documents. Implementation of the General Plan would result in significant adverse impacts related to greenhouse gas emissions if it would:

- **Generate greenhouse gas emissions**, either directly or indirectly, that may have a significant impact on the environment; or
- **Conflict with an applicable plan, policy, or regulation** adopted for the purpose of reducing the emissions of greenhouse gases.

For Plan level analysis, the BAAQMD has defined the operation-related greenhouse gas emission threshold as 6.6 metric tons (MT) CO<sub>2</sub>e per service population (SP) (residents plus employees).

These significance thresholds were adopted as part of the May 2011 CEQA Air Quality Guidelines. As previously noted, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. The court did not determine whether the thresholds of significance were valid on their merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD complied with CEQA.

Although lead agencies may rely on the 2011 BAAQMD CEQA Air Quality Guidelines for assistance in calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, the BAAQMD has been ordered to set aside the thresholds and is no longer recommending that they be used as a general measure of a project's significant air quality impacts. The BAAQMD also recognizes that lead agencies may rely on the previously recommended thresholds of significance contained in its CEQA Air Quality Guidelines adopted in 1999.<sup>38</sup> However, the 1999 CEQA Guidelines do not contain thresholds to determine the significance of greenhouse gas emissions.

The court's invalidation of BAAQMD's thresholds presents uncertainty for local agencies regarding proper evaluation of air quality and greenhouse gas emissions in CEQA documents. Although reliance on the thresholds is no longer required, local agencies still have a duty to evaluate impacts related to air quality and greenhouse gas emissions. In addition, CEQA grants local agencies broad discretion to develop their own thresholds of significance, or to rely on thresholds previously adopted or recommended by other public agencies or experts so long as they are supported by substantial evidence.<sup>39</sup> The BAAQMD's approach to developing a quantitative threshold of significance for greenhouse gas emissions was to identify the emissions level for which a plan would not be expected to substantially conflict with existing California legislation and policy adopted to reduce Statewide greenhouse gas emissions. According to the BAAQMD CEQA Air Quality Guidelines, if a plan would generate greenhouse gas emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact, and would be considered significant. The Alameda County

<sup>38</sup> Bay Area Air Quality Management District, 1999. *BAAQMD CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans*. December.

<sup>39</sup> CEQA 2014 Guidelines Section 21082; Sections 15064.7 and 15064.4 (addressing GHG impacts).

Superior Court did not question the science behind the thresholds or their merit. For that reason, substantial evidence supports continued use of the 2011 BAAQMD CEQA Air Quality Guidelines and the significance thresholds contained therein, and those guidelines are used for the analyses in this section.

**b. Project Impacts.** The following section provides an evaluation and analysis for the potential impacts of the General Plan for each of the criteria of significance listed above.

**(1) Generate Greenhouse Gas Emissions.** Greenhouse gas emissions associated with land use projects would predominantly consist of CO<sub>2</sub>. In comparison to criteria air pollutants, such as ozone and PM<sub>10</sub>, CO<sub>2</sub> emissions persist in the atmosphere for a substantially longer period of time. While emissions of other greenhouse gases, such as CH<sub>4</sub>, are important with respect to global climate change, emission levels of other greenhouse gases are less dependent on the land use and circulation patterns associated with the General Plan than are levels of CO<sub>2</sub>.

The efficiency metric of 6.6 MT per Service Population (SP) per year of CO<sub>2</sub>e established by the BAAQMD was derived from statewide emissions estimates and would accommodate statewide projected population and employment growth while allowing for consistency with AB 32 goals, which mandate achieving 1990 greenhouse gas emissions levels by 2020.

The buildout of the City of Albany Draft General Plan would contribute to greenhouse gas emissions through direct and indirect emissions from mobile sources, energy use, water and wastewater generation, solid waste generation, and equipment use. Greenhouse gas emissions are by nature a cumulative impact. The Draft General Plan would add residents and jobs that create additional energy demand and therefore contribute to added greenhouse gas emissions.

The City of Albany has a Climate Action Plan (CAP) that includes GHG reduction strategies; many of those strategies are incorporated as policies and actions in the Draft General Plan. However, the CAP is not formally recognized by the BAAQMD as a “qualified” Greenhouse Gas Reduction Strategy. Therefore, a greenhouse gas efficiency approach was conducted based on the BAAQMD’s CEQA Guidelines to quantify emissions associated with the Draft General Plan for the purposes of determining the greenhouse gas emissions per SP. Baseline and future greenhouse gas emissions were quantified to analyze potential increases in each emission sector, as a result of the Draft General Plan.

The Climate Action Plan uses land use data to project future communitywide emissions. Emissions would increase by 3 percent between 2004 and 2020, and would increase 22 percent between 2004 and 2050. The increase in emissions is primarily due to anticipated future population growth projected by The Association of Bay Area Governments.<sup>40</sup>

Population and employment are expected to grow steadily over the Draft General Plan planning horizon. Population and employment forecasts are shown in Table IV.E-3 and Table IV.E-4.

---

<sup>40</sup> Albany, City of, 2010, *Albany Climate Action Plan*, op. cit.

**Table IV.E-3: City of Albany Draft General Plan Population and Employment Projections**

Year	Population	Employment	Service Population
2010	18,560	5,070	23,630
No Growth in Albany through 2035	18,560	5,070	23,630
Draft General Plan 2035	20,640	6,070	26,710

Source: Fehr and Peers, July 2015.

**Table IV.E-4: Population, Housing, and Jobs Baseline (2014) and 2035 Draft General Plan**

Unit	2014 Existing	2035 Draft General Plan	Net Difference
Population	18,585	20,385	1,800
Housing Units	7,845	8,660	815
Jobs	4,560	5,410	850

Note: Housing units include vacant and occupied units. The 2014 Existing column shows jobs in 2015.

Source: City of Albany, 2015; Barry Miller, Planning Consultant to the City of Albany, 2015; LSA Associates, Inc., 2015.

A significant greenhouse gas impact would occur if emissions are greater than 6.6 MT CO<sub>2</sub>e per SP from all emission sectors. To determine the additional greenhouse gas emissions associated with implementation of the Draft General Plan, greenhouse gas emissions were calculated using the California Emission Estimator Model (CalEEMod) Version 2013.2.2. Commercial and retail building area was estimated based on employee rates per square foot provided by U.S. Green Building Council.<sup>41</sup> Additionally, the projected 815 new residential units were included in CalEEMod. The greenhouse gas reduction measures in the City's Climate Action Plan were included in the analysis. Trip lengths for Draft 2035 General Plan conditions were evaluated using the average daily VMT per service population provided in the traffic analysis (see Section IV.C, Transportation and Circulation). The estimated greenhouse gas emissions were added to the projected 2050 MT CO<sub>2</sub>e emissions included in Climate Action Plan. The factors used in the calculation and the results are shown in Table IV.E-5.

As shown in Table IV.E-5, the SP greenhouse gas emissions would be 3.3 MT CO<sub>2</sub>e per SP. Therefore, the Draft 2035 General Plan emissions would be less than 6.6 MT CO<sub>2</sub>e per SP and would not result in a significant impact with respect to release of greenhouse gas emissions. The Draft 2035 General Plan would also not result in a cumulatively considerable contribution to substantial adverse physical effects on the environment related to global climate change, and mitigation would not be required.

<sup>41</sup> U.S. Green Building Council, 2008. *Building Area Per Employee By Business Type*. Available online at: [www.usgbc.org/Docs/Archive/General/Docs4111.pdf](http://www.usgbc.org/Docs/Archive/General/Docs4111.pdf) (accessed August 6, 2015) May 13.

**Table IV.E-5: Draft General Plan Greenhouse Gas Emissions Analysis**

Emission Source	Year	Emissions (MT CO <sub>2</sub> e /year)
GHG Emission Inventory	Base Year 2004	69,830
GHG Emission Projections (Climate Action Plan)	2020	71,995
	2050	85,106
GHG Emission Projection with Draft General Plan	2050	88,847
2035 General Plan Projected Service Population	26,710	
2050 General Plan GHG/SP <sup>a</sup>	3.3 MT CO <sub>2</sub> e /SP/year	
BAAQMD GHG/SP Threshold	6.6 MT CO <sub>2</sub> e/SP/year	
Does the 2035 General Plan GHG/SP exceed 6.6?	No	

Notes: CO<sub>2</sub>e = carbon dioxide equivalent; GHG = Greenhouse Gas; MT = metric tons; SP = service population

<sup>a</sup> Service population for 2035 Draft General Plan conditions.

Source: Albany, City of, 2010. *City of Albany Climate Action Plan*; LSA Associates, Inc. August 2015; Fehr and Peers July 2015.

Additionally, as outlined in the CAP, the City of Albany has established emission reduction goals to improve communitywide emissions efficiency per service population by 27 percent over 2004 levels by 2020.<sup>42</sup> The reduction target exceeds the target required by the BAAQMD CEQA Air Quality Guidelines and would further reduce greenhouse gas emissions per service population, and this impact would be less than significant and no additional mitigation measures would be required.

**(2) Conflict with Applicable Plans and Policies.** Regional and State plans have been adopted for the purpose of preparing for sea level rise impacts and for reducing greenhouse gas emission. The California Environmental Protection Agency Climate Action Team and the ARB have developed several reports to achieve the Governor’s greenhouse gas targets that rely on voluntary actions of California businesses, local government and community groups, and State incentive and regulatory programs. These include the 2006 Report to Governor Schwarzenegger and the Legislature, ARB’s 2007 Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California, and ARB’s Climate Change Proposed Scoping Plan: a Framework for Change.<sup>43,44, 45</sup>

The reports identify strategies to reduce California’s emissions to the levels proposed in Executive Order S-3-05 and AB 32. Table IV.E-6 summarizes those strategies that may be applicable to the Draft General Plan and assesses how the Draft General Plans efforts comply with those strategies. As shown in Table IV.E-6, the Draft 2035 General Plan would implement appropriate greenhouse gas reduction strategies and would not conflict with or impede implementation of reduction goals identified in AB 32, the Governor’s Executive Order S-3-05, and other strategies to help reduce greenhouse

<sup>42</sup> Albany, City of, 2010, *Albany Climate Action Plan*, op. cit.

<sup>43</sup> California Climate Action Team, 2010. *2010 Climate Action Team Report to the Governor and Legislature*. December.

<sup>44</sup> California Air Resources Board, 2007. *Expanded List of Early Action Measures*, October.

<sup>45</sup> California Air Resources Board, 2008. *Climate Change Proposed Scoping Plan: A Framework for Change*. October.

gases to the level proposed by the State. Therefore, this impact would be less than significant and no additional mitigation would be required.

**Table IV.E-6: General Plan Compliance with Greenhouse Gas Emission Reduction Strategies**

Scoping Plan Strategies	Draft General Plan Compliance
<i>Energy Efficiency Measures</i>	
<p><b>Energy Efficiency</b> Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities).</p> <p><b>Renewables Portfolio Standard</b> Achieve a 33 percent renewable energy mix statewide.</p> <p><b>Green Building Strategy</b> Expand the use of green building practices to reduce the carbon footprint of California’s new and existing inventory of buildings.</p> <p><b>Million Solar Roofs Program</b> Install 3,000 MW of solar-electric capacity under California’s existing solar programs.</p>	<p><b>Compliant.</b> <i>The Draft General Plan includes a number of goals, policies, and actions that address energy efficiency, including measures to encourage energy conservation, efficiency, and green design in new construction and existing buildings</i></p> <ul style="list-style-type: none"> <li>• <b>Policy CON-6.1: Green Construction.</b> Adopt development standards and guidelines which support “green” construction and environmental leadership in the building industry.</li> <li>• <b>Policy CON-6.2: Energy and Water Audits.</b> Promote the use of energy audits and water audits by Albany residents and businesses to identify and eliminate sources of waste, conserve resources, and reduce utility costs. Lead by example by performing such audits on municipal buildings and properties, and undertaking appropriate improvements to address energy and water inefficiencies in City facilities.</li> <li>• <b>Policy CON-6.3: Energy Retrofits.</b> Encourage the retrofitting of residential and commercial buildings to increase energy efficiency and maximize the use of renewable energy.</li> <li>• <b>Policy CON-6.4: Cool Roofs and Pavement.</b> Encourage the design of roofs, pavement, and other exposed surfaces in a manner that mitigates the heat island effects of development and improves energy efficiency.</li> <li>• <b>Policy CON-6.5: Solar Access.</b> Preserve solar access rights in a way that is consistent with state law and supports the use of photovoltaic energy systems.</li> <li>• <b>Policy CON-6.6: Green Businesses.</b> Create green business programs and other incentive and recognition based initiatives which encourage private enterprise to use greener practices in their operations.</li> <li>• <b>Policy CON-6.7: Renewable Energy.</b> Support low cost financing programs which incentivize private investment in energy efficiency and renewable energy systems.</li> <li>• <b>Action CON-6.A: Green Building Code.</b> Require new construction to meet or exceed California Green Building Code standards for energy and water efficiency.</li> <li>• <b>Action CON-6.B: Zero Emissions Municipal Buildings.</b> Pursue a zero emissions target for City buildings through the development of renewable energy systems, performance data displays, and energy efficiency improvements to public buildings.</li> </ul>

**Table IV.E-6: General Plan Compliance with Greenhouse Gas Emission Reduction Strategies**

Scoping Plan Strategies	Draft General Plan Compliance
<i>Water Conservation and Efficiency Measures</i>	
<p><b>Water Use Efficiency</b> Continue efficiency programs and use cleaner energy sources to move and treat water. Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce greenhouse gas emissions.</p>	<p><b>Compliant.</b> <i>Policies in the Draft General Plan would reduce impacts associated with increased water demand as shown in the following policies:</i></p> <ul style="list-style-type: none"> <li>• <b>Policy CON-6.8: Water Conservation Measures.</b> Conserve water in City facilities and new development by maintaining requirements for bay-friendly landscaping and water-conserving plumbing fixtures, and by continuing to support EBMUD’s public information campaigns to reduce water consumption.</li> <li>• <b>Policy CON-6.9: Reducing Water Usage.</b> Partner with EBMUD, PG&amp;E, Stopwaste.org and other organizations to achieve water efficiency and reduced usage and support indoor and outdoor conservation practices.</li> <li>• <b>Policy CON-6.10: Reclaimed Water.</b> Support the use of reclaimed water, both on an individual basis (e.g., gray water recycling for private residences) and on a citywide basis for landscaping and irrigation.</li> <li>• <b>Action CON-6.H: Irrigation Efficiency.</b> As funding allows, replace existing City irrigation infrastructure with more efficient infrastructure that reduces losses from evapotranspiration and creates the opportunity for the future application of reclaimed water.</li> </ul>
<i>Industrial Sources</i>	
<p><b>Industrial Emissions</b> Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.</p>	<p><b>Compliant.</b> <i>The City of Albany will work with BAAQMD and ARB to encourage assessment of greenhouse gas emissions for any new or expanded industrial sources within the approval authority of ARB, BAAQMD, and the City of Albany government.</i></p>
<i>Open Space and Agriculture</i>	
<p><b>Sustainable Forests</b> Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.</p>	<p><b>Compliant.</b> <i>The General Plan includes strategies to related to sequestration.</i></p> <ul style="list-style-type: none"> <li>• <b>Policy CON-2.1: Trees and the Environment.</b> Recognize the importance of trees and vegetation to improving air and water quality in the City and contributing to local efforts to reduce global climate change.</li> <li>• <b>Policy CON-2.2: Tree Preservation.</b> Require preservation of mature trees during the review of development proposals and subsequent construction projects. Site design and construction plans should identify individual trees and groves of trees and include measures to protect them wherever feasible. When tree preservation is not feasible, require replacement trees and ongoing maintenance measures to avoid net loss of tree coverage.</li> <li>• <b>Policy CON-2.3: Tree Planting.</b> Undertake street tree planting and maintenance programs to beautify the City, create shade, provide habitat for birds and other animals, and enhance the built environment.</li> </ul>

**Table IV.E-6: General Plan Compliance with Greenhouse Gas Emission Reduction Strategies**

Scoping Plan Strategies	Draft General Plan Compliance
<p><b>Sustainable Forests</b> <i>Continued</i></p>	<ul style="list-style-type: none"> <li>• <b>Policy CON-2.4: Bay Friendly Landscaping.</b> Encourage bay-friendly and drought-tolerant landscaping to enhance aesthetics, buffer residences from noise and air pollution, create privacy, reduce wind, and provide habitat.</li> </ul>
<b><i>Solid Waste Reduction Measures</i></b>	
<p><b>Waste Diversion, Composting, and Commercial Recycling, and Move Toward Zero-Waste</b> Increase waste diversion from landfills beyond the 50 percent mandate to provide for additional recovery of recyclable materials. Composting and commercial recycling could have substantial greenhouse gas reduction benefits. In the long term, zero-waste policies that would require manufacturers to design products to be fully recyclable may be necessary.</p>	<p><b>Compliant.</b> <i>The Draft General Plan includes policies, actions and strategies related to the reduction of solid waste.</i></p> <ul style="list-style-type: none"> <li>• <b>Policy CON-7.1: Zero Waste.</b> Work toward an ultimate target of “zero waste” by continuing to reduce solid waste generation and expand local recycling and composting programs.</li> <li>• <b>Policy CON-7.2: Expanded Waste Diversion.</b> Work with Stopwaste.org, Alameda County, and other organizations to adopt local ordinances which expand the scope of recycling and waste reduction.</li> <li>• <b>Policy CON-7.3: Waste Reduction.</b> Support regional, statewide, and national initiatives to reduce waste through such measures as eliminating junk mail, reducing excessive product packaging, increasing e-waste recycling, promoting the sharing and reuse of consumer goods in lieu of individual consumption, extending producer responsibility, food waste reduction, and expanding the market for recycled goods and products.</li> <li>• <b>Policy CON-7.4: Education and Outreach.</b> Continue education and outreach on the importance and benefits of waste reduction.</li> </ul>
<b><i>Transportation and Motor Vehicle Measures</i></b>	
<p><b>Vehicle Climate Change Standards.</b> AB 1493 (Pavley) required the State to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of greenhouse gas emissions from passenger vehicles and light duty trucks. Regulations were adopted by the CARB in September 2004.</p> <p><b>Light-Duty Vehicle Efficiency Measures.</b> Implement additional measures that could reduce light-duty greenhouse gas emissions. For example, measures to ensure that tires are properly inflated can both reduce greenhouse gas emissions and improve fuel efficiency.</p> <p><b>Heavy- and Medium-Duty Fuel and Engine Efficiency Measures.</b> Regulations to require retrofits to improve the fuel efficiency of heavy-duty trucks that could include devices that reduce aerodynamic drag and rolling resistance. This measure could also include hybridization of and increased engine efficiency of vehicles.</p> <p><b>Low Carbon Fuel Standard.</b> ARB identified this measure as a Discrete Early Action Measure. This measure would reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.</p>	<p><b>Compliant.</b> <i>The Draft General Plan does not involve the manufacture, sale, or purchase of vehicles. However, vehicles operating within the City would comply with any vehicle and fuel standards that the ARB adopts.</i></p> <ul style="list-style-type: none"> <li>• <b>Policy T-2.3: Low-Emission Vehicles.</b> Encourage the use of low emission or zero emission vehicles, along with the infrastructure to support such vehicles, such as electric vehicle charging stations.</li> <li>• <b>Policy T-2.7: Evaluating Air Emissions.</b> Evaluate transportation-related air pollution and greenhouse gas emissions associated with development proposals. Work with applicants to reduce such emissions while supporting infill development.</li> <li>• <b>Policy T-3.1: Bikeway System.</b> Support development of a bikeway system that meets the needs of commuters and recreation users, reduces vehicle trips, and links residential neighborhoods with BART and regional destinations.</li> <li>• <b>Policy T-3.2: Designated Bike Network and Improvements.</b> Designate a network of bike paths, lanes, and routes as the primary system for bicyclists traveling through Albany.</li> </ul>

**Table IV.E-6: General Plan Compliance with Greenhouse Gas Emission Reduction Strategies**

Scoping Plan Strategies	Draft General Plan Compliance
<p><b>Goods Movement.</b> Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.</p>	<p><b>Compliant.</b> <i>City of Albany is committed to improving efficiency of goods movement. Many of the policies related to transportation focus on improving efficiency of the roadways within the City and with efficiency of the State highway system.</i></p>
<p><b>Regional Transportation-Related Greenhouse Gas Targets.</b> Develop regional greenhouse gas emissions reduction targets for passenger vehicles. Local governments will play a significant role in the regional planning process to reach passenger vehicle greenhouse gas emissions reduction targets. Local governments have the ability to directly influence both the siting and design of new residential and commercial developments in a way that reduces greenhouse gases associated with vehicle travel.</p>	<p><b>Compliant.</b> <i>The City of Albany is committed to achieve the Bay Area’s regional transportation emission reduction targets per SB 375. The Draft General Plan includes policies and actions designed to reduce vehicle miles traveled, encourage and provide alternative modes of transportation, design complete streets, and reduce regional emissions.</i></p> <ul style="list-style-type: none"> <li>• <b>Policy CON-3.5: Sustainability and the Sharing Economy.</b> Explore ways to incorporate elements of the sharing economy into strategies to reduce greenhouse gas emissions. This could include such activities as car-sharing, bike-sharing, home-sharing, and reduced consumption and waste made possible by sharing of consumer goods (tools, etc.).</li> <li>• <b>Action CON-3.B: Project-Level Greenhouse Gas Emission Analysis.</b> Evaluate greenhouse gas emissions associated with development proposals and work with applicants to reduce emissions during project review.</li> <li>• <b>Action CON-3.C: Zero Emission City Vehicles.</b> Improve the fuel efficiency of the City vehicle fleet by purchasing low emission or zero emission vehicles as vehicles are retired from service.</li> </ul>

Source: Air Resources Board, 2008, Climate Change Proposed Scoping Plan: A Framework for Change; City of Albany, 2015; LSA Associates, Inc., 2015.

The California Attorney General’s Office released a document titled Sustainability and General Plans: Examples of Policies to Address Climate Change in January, 2010, which includes resources and examples of innovative local planning efforts.<sup>46</sup> The Albany General Plan is consistent with these recommended strategies as outlined in Table IV.E-7.

<sup>46</sup> California AGO, 2010. *Sustainability and General Plans: Examples of Policies to Address Climate Change in January.*

**Table IV.E-7: Draft General Plan Compliance with Attorney General Office’s Strategies**

Attorney General Strategies	Draft General Plan Compliance
<p>Smart growth, jobs/housing balance, transit-oriented development, and infill development through land use designations, incentives and fees, zoning, and public-private partnerships.</p>	<p><b>Draft General Plan</b></p> <ul style="list-style-type: none"> <li>• <b>Policy CON-3.4: Land Use and Transportation Strategies.</b> Implement the measures expressed in the Land Use, Transportation, and Housing Elements of the General Plan to achieve more sustainable development and travel patterns in Albany, including: <ul style="list-style-type: none"> <li>○ An expanded, safer, and more accessible pedestrian and bicycle network that reduces dependence on automobile travel and creates more walkable and connected neighborhoods;</li> <li>○ Greater emphasis on mixed uses along the San Pablo and Solano Avenue corridors, integrating residential uses above commercial uses and thereby reducing auto trips and trip lengths for goods and services;</li> <li>○ A balance between job growth and housing growth, and more opportunities for residents to live closer to work;</li> <li>○ Public transportation improvements (bus, BART, and possible future shuttle) which provide more viable alternatives to driving, including the possibility of an “infill” station at Solano Avenue;</li> <li>○ Higher densities along the San Pablo corridor, enabling more development to be accommodated in the center of the region and reducing the necessity of developing “greenfields” on the periphery of the Bay Area; and</li> <li>○ Transportation demand management programs, including flextime, telecommuting, signal synchronization, carpooling, and other measures to reduce congestion and vehicle idling and cut down on solo passenger driving.</li> </ul> </li> <li>• <b>Policy LU-1.8: Transit-Oriented Development.</b> Encourage land use patterns which support transit use, including additional mixed use (commercial and higher-density residential) development along the San Pablo and Solano Avenue corridors.</li> </ul>
<p>Create transit, bicycle, and pedestrian connections through planning, funding, development requirements, incentives and regional cooperation; create disincentives for auto use.</p>	<ul style="list-style-type: none"> <li>• <b>Policy T-1.3: Complete Streets Operating Procedures.</b> Incorporate Complete Streets practices as a routine part of City operations.</li> <li>• <b>Policy T-1.4: Complete Streets Design.</b> Follow locally adopted policies and standards in the design of City streets, including the Active Transportation Plan and the Climate Action Plan, as well as the General Plan.</li> <li>• <b>Policy T-1.5: Connecting the City.</b> Ensure that the design of streets and other transportation features helps to connect the city and facilitate safer and more convenient travel between Albany and surrounding communities.</li> <li>• <b>Policy T-2.1: Transit-Oriented Development.</b> Encourage land use patterns which support walking, bicycling, and public transit use, thereby reducing greenhouse gas emissions and fossil fuel consumption.</li> <li>• <b>Action T-2.A: Grant Applications.</b> Pursue grants and other funding sources which support multi-modal transportation improvements and other measures to reduce transportation emissions.</li> </ul>

**Table IV.E-7: Draft General Plan Compliance with Attorney General Office’s Strategies**

Attorney General Strategies	Draft General Plan Compliance
Green procurement and alternative fuel use through municipal mandates and voluntary bid incentives.	<ul style="list-style-type: none"> <li>• <b>Policy T-2.3: Low-Emission Vehicles.</b> Encourage the use of low emission or zero emission vehicles, along with the infrastructure to support such vehicles, such as electric vehicle charging stations.</li> <li>• <b>Action T-2.C: Trip Reduction Ordinance.</b> Update the City’s Trip Reduction Ordinance to reflect current conditions.</li> <li>• <b>Action T-2.D: TDM Ordinance.</b> Create and implement a TDM ordinance to reduce peak commute trips and encourage alternatives to solo passenger driving.</li> <li>• <b>Action T-2.E: City Vehicle Fleet.</b> Improve the fuel efficiency of the City’s vehicle fleet by purchasing low or zero emissions vehicles as gasoline-engine vehicles are retired from service.</li> </ul>
Alternative fuel facilities and infrastructure through land use designations, zoning, and public private partnerships.	<ul style="list-style-type: none"> <li>• <b>Action CON-3.D: Alternative and Electric Fuel Vehicles.</b> Plan for and develop the infrastructure necessary for alternative fuel vehicles, including electric cars. This should include automobile charging areas for electric and plug-in hybrid vehicles. Incentives for such vehicles, such as preferential parking, should be developed.</li> </ul>
Renewable energy generation (utility and residential) through feasibility evaluations, land use designations, zoning, permit streamlining, incentives and financing.	<ul style="list-style-type: none"> <li>• <b>Policy CON-6.3: Energy Retrofits.</b> Encourage the retrofitting of residential and commercial buildings to increase energy efficiency and maximize the use of renewable energy.</li> <li>• <b>Policy CON-6.5: Solar Access.</b> Preserve solar access rights in a way that is consistent with state law and supports the use of photovoltaic energy systems.</li> <li>• <b>Policy CON-6.7: Renewable Energy.</b> Support low cost financing programs which incentivize private investment in energy efficiency and renewable energy systems.</li> </ul>
Water diversion, recycling, water efficiency, energy efficiency and energy recovery in cooperation with public services districts and private entities.	<ul style="list-style-type: none"> <li>• <b>Policy CON-6.8: Water Conservation Measures.</b> Conserve water in City facilities and new development by maintaining requirements for bay-friendly landscaping and water-conserving plumbing fixtures, and by continuing to support EBMUD’s public information campaigns to reduce water consumption.</li> <li>• <b>Policy CON-6.9: Reducing Water Usage.</b> Partner with EBMUD, PG&amp;E, Stopwaste.org and other organizations to achieve water efficiency and reduced usage and support indoor and outdoor conservation practices.</li> <li>• <b>Policy CON-6.10: Reclaimed Water.</b> Support the use of reclaimed water, both on an individual basis (e.g., gray water recycling for private residences) and on a citywide basis for landscaping and irrigation.</li> <li>• <b>Policy CON-7.1: Zero Waste.</b> Work toward an ultimate target of “zero waste” by continuing to reduce solid waste generation and expand local recycling and composting programs.</li> <li>• <b>Policy CON-7.2: Expanded Waste Diversion.</b> Work with Stopwaste.org, Alameda County, and other organizations to adopt local ordinances which expand the scope of recycling and waste reduction. A particular emphasis should be placed on increasing the diversion rate for multi-family buildings and commercial businesses and expanding recycling of construction and demolition debris.</li> <li>• <b>Policy CON-7.3: Waste Reduction.</b> Support regional, statewide, and national initiatives to reduce waste through such measures as eliminating junk mail, reducing excessive product packaging, increasing e-waste recycling, promoting the sharing and reuse of consumer goods in lieu of individual consumption, extending producer responsibility, food waste reduction, and expanding the market for recycled goods and products.</li> </ul>

**Table IV.E-7: Draft General Plan Compliance with Attorney General Office’s Strategies**

Attorney General Strategies	Draft General Plan Compliance
<p>Urban and rural forestry through tree planting requirements and programs; preservation of agricultural land and resources that sequester carbon; heat island reduction programs.</p>	<ul style="list-style-type: none"> <li>• <b>Policy CON-2.1: Trees and the Environment.</b> Recognize the importance of trees and vegetation to improving air and water quality in the City and contributing to local efforts to reduce global climate change.</li> <li>• <b>Policy CON-2.2: Tree Preservation.</b> Require preservation of mature trees during the review of development proposals and subsequent construction projects.</li> <li>• <b>Policy CON-2.3: Tree Planting.</b> Undertake street tree planting and maintenance programs to beautify the City, create shade, provide habitat for birds and other animals, and enhance the built environment.</li> <li>• <b>Action CON-2.A: Street Tree Planting Program.</b> Continue implementation of a comprehensive street tree planting and maintenance program for Albany streets, including priorities, time schedules, and species selection guidelines.</li> <li>• <b>Action CON-2.B: Tree Preservation Requirements.</b> Continue to study alternatives for protecting large specimen trees and addressing tree removal and preservation issues on private property.</li> <li>• <b>Action CON-2.C: Tree Inventories.</b> Implement standard operating procedures requiring inventories of trees and significant site vegetation as a part of development application review.</li> </ul>
<p>Regional cooperation to find cross-regional efficiencies in greenhouse gas reduction investments and to plan for regional transit, energy generation, and waste recovery facilities.</p>	<ul style="list-style-type: none"> <li>• <b>Policy CON-2.9: Food Production and Transportation.</b> Promote local food production, urban agriculture, farmers markets, farm-to-table restaurants, and more sustainable methods of growing and transporting food. Local food production can reduce transportation associated with food, thereby reducing food costs and greenhouse gas emissions and promoting public health.</li> <li>• <b>Policy CON-7.2: Expanded Waste Diversion.</b> Work with Stopwaste.org, Alameda County, and other organizations to adopt local ordinances which expand the scope of recycling and waste reduction. A particular emphasis should be placed on increasing the diversion rate for multi-family buildings and commercial businesses and expanding recycling of construction and demolition debris.</li> </ul>
<p>Community outreach and education to foster community involvement, input, and support for greenhouse gas reduction planning and implementation.</p>	<ul style="list-style-type: none"> <li>• <b>Policy CON-2.8: Community Gardens.</b> Encourage the creation of community gardens in Albany, and the use of open land for food production and urban agriculture. A variety of locations should be considered including parks, school yards, university lands, and other public and private properties.</li> <li>• <b>Policy CON-3.1: Greenhouse Gas Reduction Goal.</b> Undertake local programs to support net zero greenhouse gas emissions by 2050 and a 60 percent reduction in emissions by 2035, relative to a 2004 baseline.</li> <li>• <b>Policy CON-3.2: Climate Change as a Planning Consideration.</b> Ensure that planning and development decisions consider potential impacts associated with global climate change, including rising sea levels and potential greenhouse gas emissions.</li> <li>• <b>Policy CON-3.3: Climate Outreach.</b> Develop outreach and education programs that increase awareness of global climate change and the steps Albany residents can take to reduce their carbon footprints.</li> </ul>

**Table IV.E-7: Draft General Plan Compliance with Attorney General Office’s Strategies**

Attorney General Strategies	Draft General Plan Compliance
	<ul style="list-style-type: none"> <li>• <b>Action CON-3.A: CAP Progress Reports and Updates.</b> Provide periodic progress reports on the implementation of Climate Action Plan (CAP) measures regarding building energy and water efficiency measures. Update the CAP at least once every five years to reflect the completion of specified actions, the development of new actions, the availability of resources and technology, and new targets for greenhouse gas reduction.</li> <li>• <b>Action CON-3.B: Project-Level Greenhouse Gas Emission Analysis.</b> Evaluate greenhouse gas emissions associated with development proposals and work with applicants to reduce emissions during project review.</li> </ul>

Source: AGO, 210, *Sustainability and General Plans: Examples of Policies to Address Climate Change*; City of Albany, 2015; LSA Associates, Inc., 2015.

**c. Cumulative Impacts.** Cumulative impacts are the collective impacts of one or more past, present, or future projects, that when combined, result in adverse changes to the environment. It is now widely recognized that anthropogenic (human-caused) emissions of greenhouse gases and aerosols are contributing to changes in the global climate, and that such changes (e.g., sea level rise, increase in the occurrence and intensity of wildfires) are having, and will have adverse effects on the environment, the economy, and public health. These are cumulative effects of past, present, and future actions worldwide. While worldwide contributions of greenhouse gases are expected to have widespread consequences, it is not possible to link particular changes to the environment of California or elsewhere to greenhouse gases emitted from a particular source or location.

When considering a project’s contribution to impacts from climate change, it is possible to examine the quantity of greenhouse gases that would be emitted either directly from project sources or indirectly from other sources, such as production of electricity. However, that quantity cannot be tied to a particular adverse effect on the environment of California or elsewhere associated with climate change. Rather, climate change is a global environmental problem in which: (a) any given development project contributes only a small portion of any net increase in global greenhouse gases and (b) global growth is continuing to contribute large amounts of greenhouse gases across the world. As such, the above analysis section addresses climate change primarily as a cumulative impact. Because no significant project level impacts were identified for greenhouse gas emissions, the project would also not make a cumulatively considerable contribution to substantial adverse physical effects on the environment related to global climate change.

Therefore, consistent with State CEQA Guidelines, all future projects<sup>47</sup> that are consistent with the adopted Draft 2035 General Plan, would be presumed to have a less than significant impact related to greenhouse gas emissions.

<sup>47</sup> Excludes projects that include stationary sources of greenhouse gas emissions.