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3.5 Greenhouse Gas Emissions and Energy

3.5.1 Introduction

This section describes existing greenhouse gas (GHG) emissions and sources and energy uses Statewide and within Humboldt as well as the relevant regulatory framework. This section also analyzes possible impacts related to GHG emissions and energy use from implementation of the Regional Climate Action Plan (RCAP).

3.5.2 Environmental Setting

3.5.2.1

Greenhouse Gas Emissions

Greenhouse Effect, Global Warming, and Climate Change

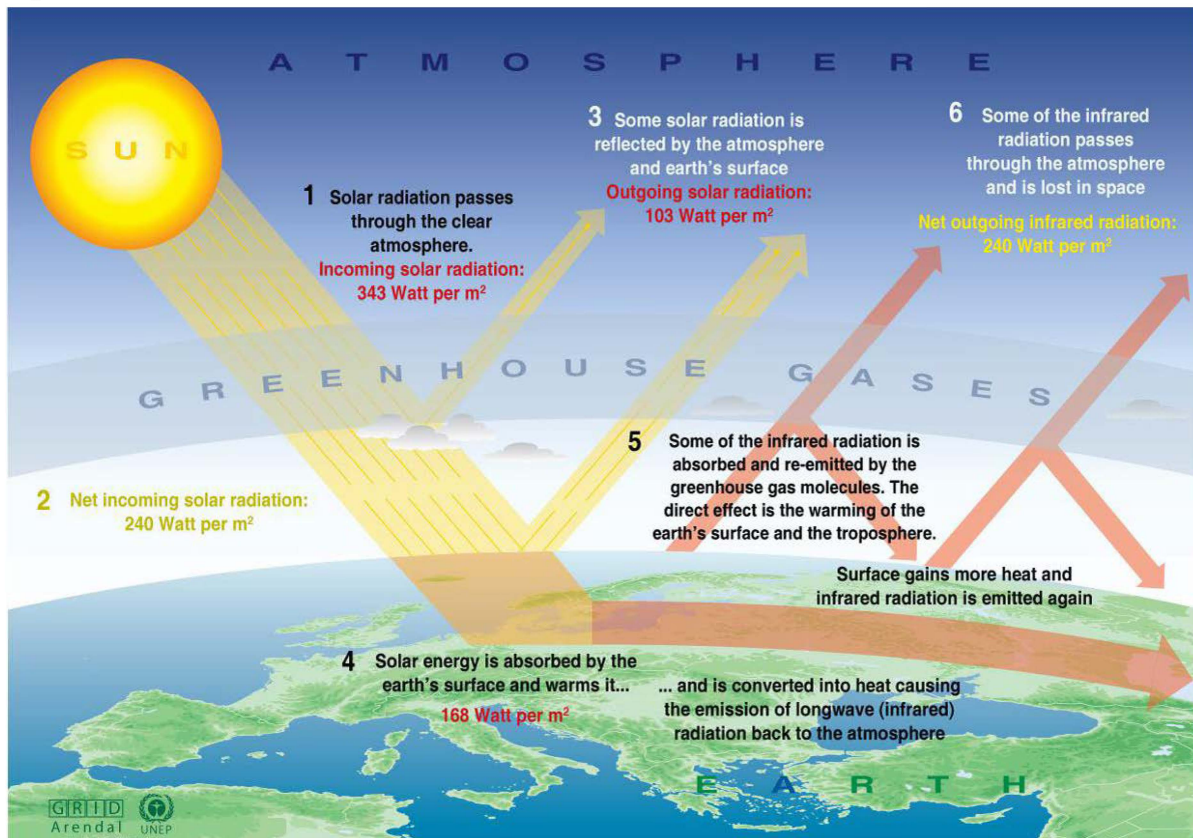
Most of the energy that affects the Earth's climate comes from the sun. Some solar radiation is absorbed by the Earth's surface, and a smaller portion of this radiation is reflected by the atmosphere back toward space. As the Earth absorbs high frequency solar radiation, its surface gains heat and then re-radiates lower frequency infrared radiation back into the atmosphere.

Most solar radiation passes through gases in the atmosphere classified as GHGs; however, infrared radiation is selectively absorbed by GHGs. GHGs in the atmosphere play a critical role in maintaining the balance between the Earth's absorbed and radiated energy, the Earth's radiation budget, by trapping some of the infrared radiation emitted from the Earth's surface that otherwise would have escaped to space (see Figure 3.5-1). Radiative forcing is the difference between the incoming energy and outgoing energy. Specifically, GHGs affect the radiative forcing of the atmosphere, which in turn affects the Earth's average surface temperature. This phenomenon, the greenhouse effect, keeps the Earth's atmosphere near the surface warmer than it would be otherwise and allows successful habitation by humans and other forms of life.

Combustion of fossil fuels and deforestation release carbon into the atmosphere that historically has been stored underground in sediments or in surface vegetation, thereby exchanging carbon from the geosphere and biosphere to the atmosphere in the carbon cycle. With the accelerated increase in fossil fuel combustion and deforestation since the Industrial Revolution of the 19th century, concentrations of GHGs in the atmosphere have increased exponentially. Such emissions of GHGs in excess of natural ambient concentrations contribute to the enhancement of the natural greenhouse effect. This enhanced greenhouse effect has contributed to global warming, an increased rate of warming of the Earth's average surface temperature. Specifically, increases in GHGs lead to increased absorption of infrared radiation by the Earth's atmosphere and warm the lower atmosphere further, thereby increasing temperatures and evaporation rates near the surface.

Variations in natural phenomena such as volcanoes and solar activity produced most of the global temperature increase that occurred during preindustrial times. More recently, however, increasing atmospheric GHG concentrations resulting from human activity have been responsible for most of the observed global temperature increase.

Figure 3.5-1 The Greenhouse Gas Effect



Source: United Nations Environmental Program/GRID-Arendal. 2005. Greenhouse Effect. <https://www.grida.no/resources/6467> (accessed October 2024).

Warming affects global atmospheric circulation and temperatures; oceanic circulation and temperatures; wind and weather patterns; average sea level; ocean acidification; chemical reaction rates; precipitation rates, timing, and form; snowmelt timing and runoff flow; water supply; wildfire risks; and other phenomena, in ways collectively referred to as climate change. Climate change is the alteration in the average weather of the Earth that is measured by modifications in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

TEMPERATURE PREDICTIONS

The United Nations Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fourth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios. The report also concluded that “[w]arming of the climate system is

unequivocal,” and that “[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations.” Warming of the climate system is now considered to be unequivocal, with the global surface temperature increasing about 1.33 degrees Fahrenheit (°F) over the last 100 years. The IPCC predicts increases in global average temperature of between 2°F and 11°F over the next 100 years.¹

GREENHOUSE GASES AND GLOBAL EMISSION SOURCES

Gases that trap heat in the atmosphere are referred to as GHGs. Prominent GHGs that naturally occur in the Earth’s atmosphere are water vapor, carbon dioxide (CO₂), methane (CH₄), oxides of nitrogen (NO_x), and ozone. Anthropogenic (human-caused) GHG emissions include releases of these GHGs plus release of human-made gases with high global warming potential (GWP) (ozone-depleting substances such as chlorofluorocarbons [CFCs]) and aerosols, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). The GHGs listed by the IPCC (CO₂, CH₄, nitrous oxide (N₂O), HFCs, PFCs, and SF₆) are discussed below, in order of abundance in the atmosphere. Water vapor, despite being the most abundant GHG, is not discussed below, because natural concentrations and fluctuations far outweigh anthropogenic influences, making it impossible to predict. Ozone is not included, because it does not directly affect radiative forcing. Ozone-depleting substances (CFCs, halons, carbon tetrachloride, methyl chloroform, and hydrochlorofluorocarbons) are not included, because they have been replaced by HFCs and PFCs.

The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere and is essentially a measurement of the radiative forcing of a GHG compared with the reference gas, CO₂. Individual GHG compounds have varying potential for contributing to global warming. For example, CH₄ is 25 times as potent as CO₂, while SF₆ is 22,200 times more potent than CO₂ on a molecule-per-molecule basis. To simplify reporting and analysis, methods have been set forth to describe emissions of GHGs in terms of a single gas. The most commonly accepted method for comparing GHG emissions is the GWP methodology defined in the IPCC reference documents.² The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalents (CO₂e), which compares the gas in question to that of the same mass of CO₂ (by definition, CO₂ has a GWP of 1). The global warming potential of a GHG is a measure of how much a given mass of a GHG is estimated to contribute to global warming. Thus, to describe how much global warming a given type and amount of GHG may cause, the CO₂e is used. A CO₂e is the mass emissions of an individual GHG multiplied by its global warming potential. As such, a high GWP represents high absorption of infrared radiation and a long atmospheric lifetime compared to CO₂. One must also select a time horizon to convert GHG emissions to equivalent CO₂ emissions to account for chemical reactivity and lifetime differences among various GHG species. The standard time horizon for climate change analysis is 100 years. Generally, GHG emissions are quantified in terms of metric tons (MT) of CO₂e emitted per year.

The atmospheric residence time of a gas is equal to the total atmospheric abundance of the gas divided by its rate of removal. The atmospheric residence time of a gas is, in effect, a half-life measurement of the length of time a gas is expected to persist in the atmosphere when accounting for removal mechanisms such as chemical transformation and deposition. Units commonly used to describe the concentration of GHGs in the atmosphere are parts per million (ppm), parts per billion (ppb), and parts per trillion (ppt), referring to the number of molecules of the GHG in a sampling of 1 million, 1 billion, or 1 trillion molecules of air. Collectively, HFCs, PFCs, and SF₆ are referred to as

¹ IPCC. 2007. AR4 Climate Change 2007: The Physical Science Basis. <https://www.ipcc.ch/report/ar4/wg1/> (accessed October 2024)

² IPCC. 2014. Frequently Asked Questions. <https://www.ipcc-nggip.iges.or.jp/faq/FAQ.pdf> (accessed October 2024)

high-GWP gases. CO₂ is by far the largest component of worldwide CO₂e emissions, followed by CH₄, N₂O, and high-GWP gases, in order of decreasing contribution to CO₂e.

The primary human processes that release GHGs include the burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release CH₄, such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of high-GWP gases. Deforestation and land cover conversion have also been identified as contributing to global warming by reducing the Earth's capacity to remove CO₂ from the air and altering the Earth's albedo or surface reflectance, thus allowing more solar radiation to be absorbed. Specifically, CO₂ emissions associated with fossil fuel combustion are the primary contributors to human-induced climate change. CO₂, CH₄, and N₂O emissions associated with human activities are the next largest contributors to climate change. GHGs of California concern are defined by California Assembly Bill (AB) 32 (see the Regulatory Environment subsection below for a description) and include CO₂, CH₄, NO_x, HFCs, PFCs, and SF₆. A seventh GHG, nitrogen trifluoride (NF₃), was also added under the California Health and Safety Code Section 38505(g)(7) as a GHG of concern. These GHGs are described in terms of their physical description and properties, global warming potential, atmospheric residence lifetime, sources, and atmospheric residence lifetime in Table 3.5-1.

Global Climate Change

EXTENT

Climate change is a global problem, because GHGs are global pollutants, unlike criteria air pollutants and hazardous air pollutants (i.e., toxic air contaminants) that are pollutants of regional and local concern. Pollutants with localized air quality effects have relatively short atmospheric lifetimes, approximately one day; by contrast, GHGs have long atmospheric lifetimes, several years to several thousand years. GHGs persist in the atmosphere for enough time to be dispersed around the globe.

Although the exact lifetime of particular GHG molecules depends on multiple variables and cannot be pinpointed, more CO₂ is currently emitted into the atmosphere than is sequestered. CO₂ sinks, or reservoirs, include vegetation and the ocean, which absorb CO₂ through photosynthesis and dissolution, respectively. These are two of the most common processes of CO₂ sequestration. Of the total annual human-caused CO₂ emissions, approximately 54 percent is sequestered through ocean uptake, Northern Hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO₂ emissions is stored in the atmosphere.³

Similarly, effects of GHGs are borne globally, as opposed to the localized air quality effects of criteria air pollutants and hazardous air pollutants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known and cannot be quantified, and no single plan or project would be expected to measurably contribute to a noticeable incremental change in the global average temperature, or to global or local climates or microclimate. However, emissions of GHGs have the potential to adversely affect the environment, because such emissions contribute, on a cumulative basis, to global climate change.

³ Seinfeld, J.H. and Pandis, S.N. 2006. Atmospheric Chemistry and Physics: From Air Pollution to Climate Change, 2nd Edition. New York. John Wiley & Sons.

Table 3.5-1 Description of Greenhouse Gases of California Concern

Greenhouse Gas	Physical Description and Properties	Global Warming Potential (100 years)	Atmospheric Residence Lifetime (years)	Sources
Carbon dioxide (CO ₂)	Odorless, colorless, natural gas.	1	50–200	Burning coal, oil, natural gas, and wood; decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; oceanic evaporation; volcanic outgassing; cement production; land use changes.
Methane (CH ₄)	Flammable gas and is the main component of natural gas.	25	12	Geological deposits (natural gas fields) extraction; landfills; fermentation of manure; and decay of organic matter.
Nitrous oxide (N ₂ O)	N ₂ O (laughing gas) is a colorless GHG.	298	114	Microbial processes in soil and water; fuel combustion; industrial processes.
Chloro-fluoro-carbons (CFCs)	Nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (level of air at the Earth’s surface); formed synthetically by replacing all hydrogen atoms in CH ₄ or ethane with chlorine and/or fluorine atoms.	3,800–8,100	45–640	Refrigerants aerosol propellants; cleaning solvents.
Hydro-fluoro-carbons (HFCs)	Synthetic human-made chemicals used as a substitute for CFCs and contain carbon, chlorine, and at least one hydrogen atom.	140-11,700	1–50,000	Automobile air conditioners; refrigerants.
Per- fluoro-carbons (PFCs)	Stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth’s surface.	6,500-9,200	10,000–50,000	Primary aluminum production; semiconductor manufacturing.
Sulfur hexafluoride (SF ₆)	Human-made, inorganic, odorless, colorless, and nontoxic, nonflammable gas.	22,800	3,200	Electrical power transmission equipment insulation; magnesium industry, semiconductor manufacturing; a tracer gas.
Nitrogen trifluoride (NF ₃)	Inorganic, is used as a replacement for PFCs, and is a powerful oxidizing agent.	17,200	740	Electronics manufacture for semiconductors and liquid crystal displays.

Sources:

IPCC. 2007. AR4 Climate Change 2007: The Physical Science Basis. <https://www.ipcc.ch/report/ar4/wg1/> (accessed October 2024)

IPCC 2007. AR4 Climate Change 2007: Synthesis Report. <https://www.ipcc.ch/report/ar4/syr/> (accessed October 2024)

TRENDS AND EFFECTS

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than was observed during the 20th century. Long-term trends found that each of the past four decades was warmer than all the previous decades in the instrumental record. The observed global mean surface temperature for the decade from 2011 to 2020 was 1.1°C higher than the global mean surface temperature over the period from 1850 to 1900.⁴ Several independently analyzed data records of global and regional Land-Surface Air Temperature obtained from station observations agree that Land-Surface Air Temperature and sea surface temperatures have increased. Due to past and current activities, anthropogenic GHG emissions are increasing global mean surface temperature at a rate of 0.2°C per decade. In addition, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades.^{5,6}

According to California’s Fourth Climate Change Assessment, Statewide temperatures from 1986 to 2016 were approximately 1°F to 2°F higher than those recorded from 1901 to 1960. Potential impacts of climate change in California may include loss in water supply from snowpack, sea level rise, more extreme heat days per year, more large forest fires, and more drought years. While there is growing scientific consensus about the possible effects of climate change at a global and Statewide level, current scientific modeling tools are unable to predict what local impacts may occur with a similar degree of accuracy.⁷

In California, climate change may result in consequences such as the following:

- **Reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the forests, grasslands and chaparral ecosystems of Southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant “fuel” available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today’s conditions. This is more than twice the increase

⁴ World Meteorological Organization. 2023. Rate and impacts of climate change surges dramatically in 2011-2020. <https://wmo.int/news/media-centre/rate-and-impact-of-climate-change-surges-dramatically-2011-2020> (accessed November 2024)

⁵ IPCC. 2014. Summary for Policymakers. In: AR5 Climate Change 2014, Mitigation of Climate Change. <https://www.ipcc.ch/report/ar5/wg3/> (accessed October 2024)

⁶ IPCC. 2018. Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report. <https://www.ipcc.ch/sr15/> (accessed October 2024)

⁷ California, State of. 2018. California Fourth Climate Change Assessment Statewide Summary Report. <http://www.climateassessment.ca.gov/state/> (accessed October 2024)

expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.

- **Rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California’s coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **Increase in temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **Decrease in the health and productivity of California’s forests.** Climate change can cause an increase in wildfires, an enhanced nuisance insect population, and establishment of non-native species.
- **Damage to marine ecosystems and natural environment.** Climate change can cause damage to marine ecosystems, including acidification of the oceans due to increased CO₂ levels (including coral bleaching).

Existing GHG Emissions

GLOBAL

In 2019, worldwide anthropogenic emissions totaled 49,758 billion metric tons (MT) of CO₂e, which is a 53 percent increase from 1990 levels. Specifically, 74.4 percent of CO₂e is from CO₂, 17.3 percent from CH₄, 6.2 percent from N₂O, and 2.1 percent from fluorinated gases were emitted in 2019. The largest source of GHG emissions were energy production and use (including fuels used by vehicles and buildings), which accounted for 73.2 percent of the global GHG emissions. Agriculture uses and industrial processes contributed 18.4 percent and 5.2 percent, respectively. Waste sources contributed to 3.2 percent.⁸

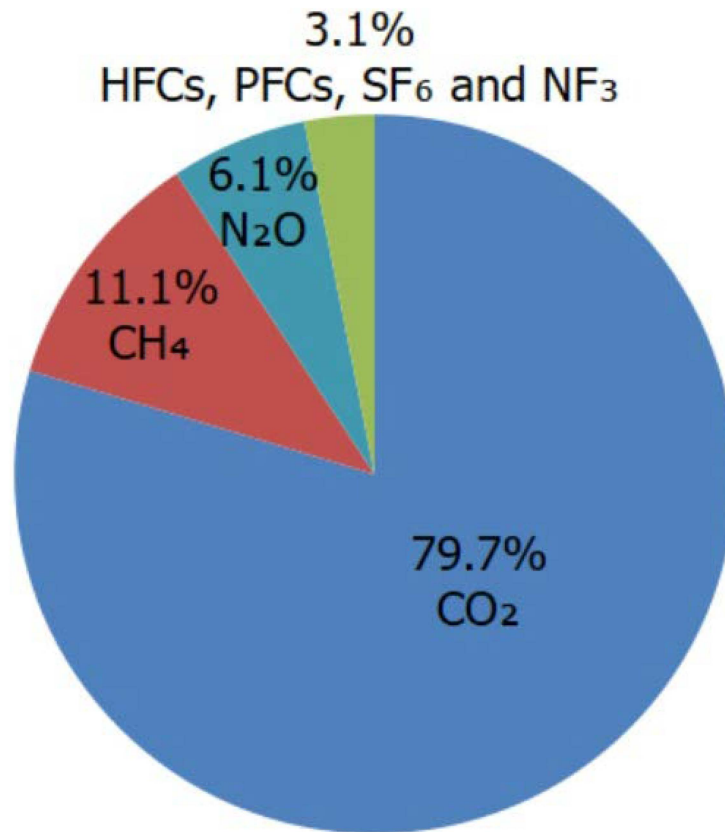
UNITED STATES

In 2021, total U.S. GHG emissions were 6,347.7 million MT of CO₂e, which is a 2 percent decrease from 1990 levels. Net GHG emissions decreased by 16.3 percent from 2005 to 2021 but increased by 6.8 percent from 2020 to 2021. From 2019 to 2020, there was a sharp decline in emissions largely due to the impacts of the COVID-19 pandemic on travel and other economic activity. Between 2020 and 2021, the increase in total GHG emissions was driven largely by an increase in CO₂ emissions from fossil fuel combustion due to economic activity rebounding after the COVID-19 pandemic. In 2022, the largest source of CO₂, and of overall emissions, was fossil fuel combustion, representing approximately 79.7 percent of U.S. GHG emissions. CH₄ accounted for nearly 11.1 percent, N₂O accounted for approximately 6.1 percent, and the remaining 3.1 percent of U.S. GHG emissions were HFCs, PFCs, SF₆, and NF₃.⁹ These numbers are reflected in Figure 3.5-2, below.

⁸ Our World in Data. 2023. Greenhouse Gas Emissions. <https://ourworldindata.org/greenhouse-gas-emissions> (accessed October 2024).

⁹ United States Environmental Protection Agency (USEPA). 2024. "Overview of Greenhouse Gases." Overviews and Factsheets. 2024. <https://www.epa.gov/ghgemissions/overview-greenhouse-gases> (accessed October 2024)

Figure 3.5-2 2022 U.S. GHG Emissions by Gas



Source: The United States Environmental Protection Agency. 2022. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022.

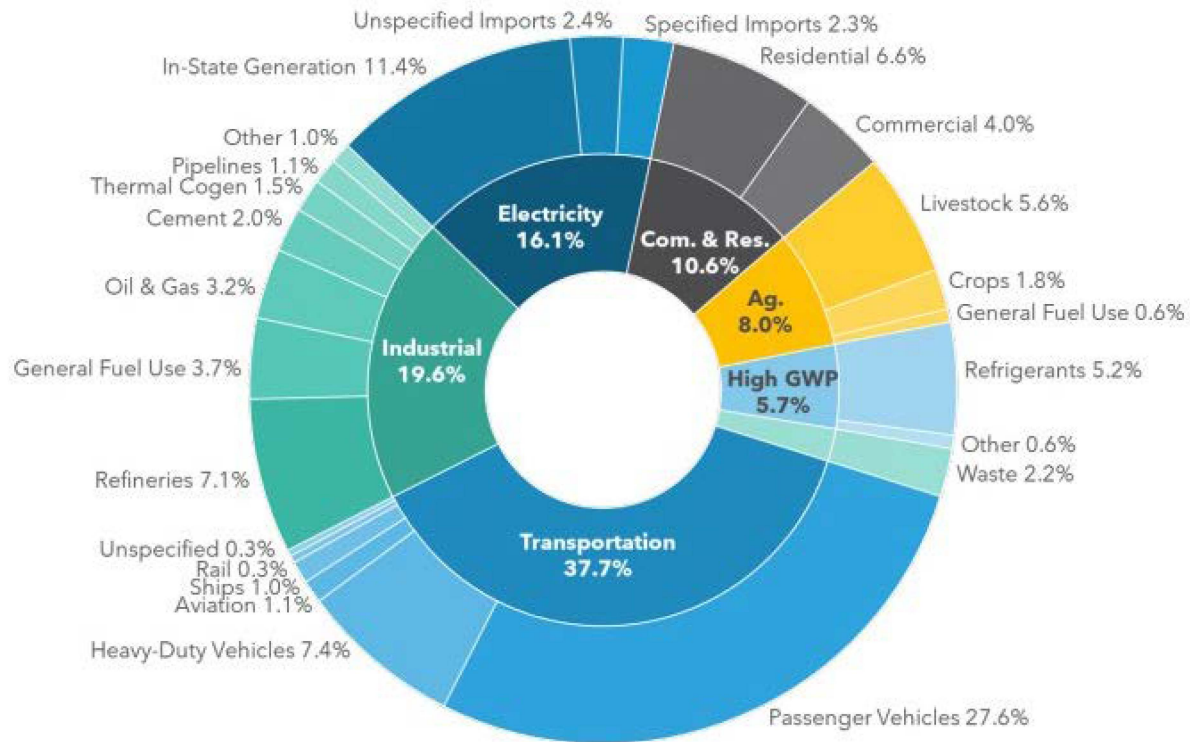
CALIFORNIA

Based on the California Air Resources Board (CARB) California Greenhouse Gas Inventory for 2000-2022, total California GHG emissions were 371.1 million MT of CO₂e in 2022. This is 9.3 million MT of CO₂e (2.4%) lower than in 2021 (380.4 million MT of CO₂e). The major source of GHG emissions in California is associated with transportation, which contributed nearly 38 percent of statewide GHG emissions in 2022. The industrial sector is the second largest source, contributing 19.6 percent of statewide GHG emissions, and the electricity sector accounted for approximately 16 percent.¹⁰ The breakdown of GHG emissions by sector and subsector is reflected in Figure 3.5-3, below. The annual 2030 statewide target emissions level is 260 MT of CO₂e.¹¹

¹⁰ CARB. 2024. California GHG Emissions for 2000 to 2022: Trends of Emissions and Other Indicators. https://ww2.arb.ca.gov/sites/default/files/2024-09/nc-2000_2022_ghg_inventory_trends.pdf (accessed October 2024)

¹¹ CARB. 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed October 2024).

Figure 3.5-3 2022 California GHG Emissions by Scoping Plan Sectors and Sub-Sectors



Note: This figure breaks out 2022 California emissions by sector into an additional level of sub-sector categories. The inner ring shows the broad CARB Climate Change Scoping Plan sectors. The outer ring breaks out the sectors into sub-sectors or emission categories. The transportation sector represents tailpipe emissions from on-road vehicles and direct emissions from other off-road mobile sources; it does not include emissions from petroleum refineries and oil extraction and production, which are included in the industrial sector.

Source: CARB. 2024. California GHG Emissions for 2000 to 2022: Trends of Emissions and Other Indicators. https://ww2.arb.ca.gov/sites/default/files/2024-09/nc-2000_2022_ghg_inventory_trends.pdf (accessed October 2024)

HUMBOLDT COUNTY (RCAP AREA)

Per the 2022 Humboldt GHG emissions inventory that serves as the GHG emissions baseline for the RCAP, approximately 1,531,167 MT of CO₂e was emitted in Humboldt in 2022 for sectors under local jurisdictional control. GHG emissions in the inventory are categorized based on sectors. These sectors include residential and commercial energy use, on- and off-road transportation, water, wastewater, and landfilled waste. The residential and commercial energy sector represents emissions that result from electricity and natural gas used in both private and public sector buildings and facilities, as well as emissions from wood and propane use in residential buildings. The transportation sector includes emissions from on-road passenger and commercial vehicles within the County, as well as off-road vehicles and equipment. Water sector emissions, arising from electricity use in water delivery and treatment, are accounted for under electricity sector emissions as the entirety of water supplied to Humboldt County community members occurs within the County’s geographic and jurisdictional boundaries.¹² Table 3.5-2 provides the Humboldt GHG emissions in 2022 by sector as well as each sector’s percentage of Humboldt’s emissions. The largest sectors of GHG emissions in Humboldt are transportation (on-road transportation) and building energy use (specifically natural gas use).

¹² Water sector operation information is based on feedback provided by the County and water districts that supply water to the regional Humboldt community.

Table 3.5-2 Humboldt 2022 GHG Emissions Inventory (Baseline) Summary

GHG Emissions Sector/Source	CO ₂ e (MT)	Percent of Total Emissions
Energy and Water	248,116	16
Transportation	1,235,883	81
Solid Waste	37,538	2
Wastewater	9,630	1
Total	1,531,167	100

CO₂e = carbon dioxide equivalent; MT = Metric Tons

Source: Humboldt County. 2024. Draft Humboldt Regional Climate Action Plan. August 2024.

Energy

Energy Fundamentals

Energy is generally transmitted either in the form of electricity, measured in kilowatts (kW) or megawatts (MW), or natural gas measured in British thermal units (BTU), cubic feet, or therms. Fuel, such as gasoline or diesel, is measured in gallons or liters.

ELECTRICITY

Electricity is used primarily for lighting, appliances, cooking, HVAC equipment, and other uses associated with building and vehicle operations. Electricity sources include clean, renewable, and fossil fuels. Clean energy is that which produces little to no greenhouse gas emissions, is generated from renewable sources, or is carbon-free. Nuclear power is an example of clean energy. A renewable energy source is defined as a power source other than a conventional power source (i.e., nuclear energy, large hydropower (> 30 MW) or combustion no fossil fuels).¹³ Examples of renewable energy sources include solar, small hydropower, biomass¹⁴, wind and geothermal.

NATURAL GAS

Natural gas is used primarily for heating, water heating, and cooking and is typically associated with building operations.

FUEL

Fuel is used primarily for powering off-road equipment and vehicles (commercial trucks and other vehicles). The typical fuel types used are diesel and gasoline. In addition, propane fuel is used in parts of Humboldt, particularly in rural areas, for heating and powering appliances.

Electricity Supply

CALIFORNIA

Based on the California Energy Commission (CEC) California Energy Demand 2022-2035 Revised Forecast, Pacific Gas and Electric (PG&E) total energy to serve load¹⁵ for 2023 is 97,285-gigawatt

¹³ CEC. 2017. RPS Eligibility Guidebook, Ninth Edition Revised. <https://efiling.energy.ca.gov/getdocument.aspx?tn=217317> (accessed January 2025)

¹⁴ Biomass is considered renewable if a facility is using fuel that results from "biomass conversion" as defined in Public Resources Code Section 40106 according to the *RPS Eligibility Guidebook, Ninth Edition Revised*.

¹⁵ The total energy to serve load is the total electricity demand for a given forecasted year within a utility service area. This forecast is a benchmark for the utility to have enough electricity to serve total demand.

hour (GWh), and by 2035 will be 115,677 GWh of electricity.¹⁶ The amount of California electricity generation is presented in Table 3.5-3. As shown in Table 3.5-3, 36.56 percent of this electricity was sourced from natural gas, 48.56 percent from renewable sources, 9.34 percent from nuclear, and the remaining 5.54 percent was sourced from coal, oil, other and unspecified sources. Specifically, the 48.56 percent of California’s 2022 retail electric sales that were served by renewable resources including wind, solar, geothermal, biomass, small hydroelectric, and large hydroelectric.

Table 3.5-3 California 2023 Total System Electric Generation

Fuel Type	In-State Generation (GWh)	Percent of In-State Generation	Northwest Imports (GWh)	Southwest Imports (GWh)	State Energy Mix (GWh)	State Power Mix
Coal	257	0.12%	163	4,561	4,981	1.77%
Natural Gas	94,192	43.68%	52	8,530	102,774	36.56%
Oil	36	0.02%	0	0	36	0.01%
Other (Waste Heat/Petroleum Coke)	206	0.10%	0	0	206	0.07%
Unspecified	0	0.00%	100	10,273	10,373	3.69%
Total Thermal and Unspecified	94,690	43.91%	316	23,363	118,370	42.10%
Nuclear	17,714	8.22%	196	8,361	26,272	9.34%
Large Hydro	27,066	12.55%	4,712	1,109	32,886	11.70%
Biomass	5,037	2.34%	753	-	5,790	2.06%
Geothermal	10,999	5.10%	221	2,347	13,567	4.83%
Small Hydro	4,853	2.25%	133	2	4,988	1.77%
Solar	41,344	19.17%	417	6,108	47,869	17.03%
Wind	13,920	6.46%	9,177	8,302	31,399	11.17%
Total Non-GHG and Renewable Resources	120,932	56.09%	15,609	26,229	162,771	57.90%
Total Energy	215,623	100.00%	15,925	49,593	281,140	100.00%

GWh = gigawatt-hours

Source: CEC. 2024. California 2023 Total System Electric Generation. <https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2023-total-system-electric-generation> (accessed October 2024).

Electricity is distributed through the various electric load-serving entities (LSEs) in California. These entities include investor-owned utilities, publicly owned LSEs, rural electric cooperatives, community choice aggregators, and electric service providers.¹⁷

HUMBOLDT COUNTY (RCAP AREA)

Two electricity providers serve Humboldt County: Pacific Gas and Electric Company (PG&E) and the Redwood Coast Energy Authority (RCEA). RCEA provides clean energy that is 50 to 100 percent carbon free, either sourced entirely from renewable energy (21.5 percent solar, 20.4 percent

¹⁶ CEC. 2023. California Energy Demand Forecast, 2022 - 2035 Baseline Forecast PGE Planning Area. <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2022-integrated-energy-policy-report-update-2> (accessed November 2024).

¹⁷ CEC. 2024. Electric Load-Serving Entities (LSEs) in California. https://www.energy.ca.gov/almanac/electricity_data/utilities.html (accessed October 2024)

biomass and 7 percent wind) or 100 percent renewable (including hydroelectric, solar, and wind).¹⁸ PG&E's default power mix offers 38.3 percent renewable, and they offer customers options for 67 percent or 96.2 percent renewable power mixes.¹⁹ In conjunction with the utility companies, the California Public Utilities Commission (CPUC) is involved in energy conservation programs.

To establish an accurate estimate of county-wide electricity use, PG&E-provided electricity to these communities was estimated using CEC county-wide data as the basis for total Humboldt electricity usage. CEC county-wide data is reported based on residential and nonresidential consumption and includes all electricity end-uses, which includes PG&E-supplied electricity, RCEA-supplied electricity, and direct access. The CEC 2022 electricity usage for Humboldt was 355,284,200 kWh for residential uses, 419,005,700 kWh for nonresidential uses, for a total of 774,289,900 kWh.²⁰

Natural Gas Distribution

CALIFORNIA

According to the CPUC, natural gas from out-of-state production basins is delivered into California via the interstate natural gas pipeline system. The major interstate pipelines that deliver out-of-state natural gas to California gas utilities are Gas Transmission Northwest Pipeline, Kern River Pipeline, Transwestern Pipeline, El Paso Pipeline, Ruby Pipeline, Mojave Pipeline, and Tuscarora.²¹ Because natural gas is a dispatchable energy resource that provides load when the availability of hydroelectric power generation and/or other energy sources decrease, distribution varies greatly from year to year. The availability and distribution of hydroelectric-sourced energy, increasing renewable-source energy, and overall consumer demand are the variables that shape the need for natural gas.

HUMBOLDT COUNTY (RCAP AREA)

Humboldt consumed approximately 30.4 million therms of natural gas in 2022 in both residential and non-residential uses.²² PG&E is the natural gas provider for the County.

Fuel Distribution

CALIFORNIA

Petroleum Fuels

Distributors of gasoline include companies or individuals who make the first distribution of gasoline in California. Aircraft manufacturers and certificated or licensed carriers by air may be included within the definition of distributor. Distributors can also be "Brokers," which includes every person, other than a distributor or a retailer, who deals in lots of 200 or more gallons of gasoline. Based on the California Transportation of Petroleum Second Northern California Refinery Safety Forum, output from the refineries is usually placed in intermediate tanks before blending finished products.

¹⁸ RCEA. 2024. 2022 Power Content Label Redwood Coast Energy Authority. <https://www.energy.ca.gov/filebrowser/download/6060> (accessed October 2024)

¹⁹ PG&E. 2024. 2022 Power Content Label Pacific Gas and Electric Company. <https://www.energy.ca.gov/filebrowser/download/6048> (accessed October 2024)

²⁰ Humboldt County. 2024. Draft Humboldt Regional Climate Action Plan, Greenhouse Gas Inventory, Forecast and Targets Report.

²¹ CPUC. 2024. Natural Gas and California. <https://www.cpuc.ca.gov/industries-and-topics/natural-gas/natural-gas-and-california> (accessed October 2024)

²² CEC. 2024. Gas Consumption by County. <http://www.ecdms.energy.ca.gov/gasbycounty.aspx> (accessed October 2024)

Most gasoline is shipped from refinery by pipeline, which serves over 60 distribution terminals, which is then transported to retail and nonretail stations by tanker trucks.²³

Alternative Vehicle Fuels

Various Statewide regulations and plans encourage alternative fuel use to reduce GHG emissions and criteria pollutant emissions. These include the Low Carbon Fuel Standard and SB 32, as well as myriad other Statewide and local air district regulations. Conventional gasoline and diesel may be replaced with different alternative fuels, depending on the capability of the vehicle. Descriptions of the most widely used alternative fuels include the following:

- **Electricity** can power electric and plug-in hybrid electric vehicles directly from the power grid. Generally, these vehicles draw from the electricity grid and store the energy in their batteries. According to the CEC, there are a total of 225 Level 2 electric vehicle charging stations and 50 DC Fast electric vehicle charging stations in Humboldt.²⁴
- **Biodiesel** is a renewable alternative fuel that can be manufactured from vegetable oils, animal fats, or recycled restaurant grease. Biodiesel is biodegradable and cleaner-burning than petroleum-based diesel fuel. Generally, biodiesel can run in any diesel engine without alterations, but fueling stations have been slow to make it available. There is one biodiesel refueling stations in Eureka and one in Arcata and a total of six within Humboldt County.²⁵
- **Compressed natural gas (CNG) and liquefied natural gas (LNG)** is currently being used in vehicles. CNG is used in light-, medium-, and heavy-duty vehicles and gets about the same fuel economy. LNG is costly to produce and therefore is used in limited applications, typically in medium- and heavy-duty vehicles. There are no CNG stations and no LNG stations within Humboldt County. The nearest CNG station is in the City of Orland or Santa Rosa and the nearest LNG station is in Sacramento.²⁶
- **Hydrogen** is being explored for use in combustion engines and fuel cell electric vehicles. The interest in hydrogen as an alternative transportation fuel stems from its clean-burning qualities, its potential for domestic production, and the fuel cell vehicle's potential for high efficiency: hydrogen is two to three times more efficient than gasoline. The closest station to Humboldt County is in Sacramento or the City of Mill Valley. Fuel cells are being explored as a way to use electricity generated on-board the vehicle to power electric motors. There are not any hydrogen stations in Humboldt County, though a hydrogen station is anticipated to be completed in late 2026 or early 2027.²⁷

Existing Energy Use

CALIFORNIA

According to the U.S. Energy Information Administration (USEIA), total electricity direct consumption within California in 2022 was 13,052.857 GWh, down 0.004 percent, or 0.55 GWh,

²³ Schremp. 2015. California Transportation of Petroleum: Second Northern California Refinery Safety Forum. <https://calepa.ca.gov/wp-content/uploads/sites/6/2016/10/Refinery-Documents-2015yr-Petroleum.pdf> (accessed October 2024).

²⁴ CEC. 2025. <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/electric> (accessed October 2024).

²⁵ Ibid.

²⁶ Ibid.

²⁷ Humboldt Transit Authority. 2025. Personal Communication with Jerome Qirazi, Transit Planner. Email.

from 2021.²⁸ In 2023, total California natural gas demand for industrial, residential, commercial, and electric power generation was 2,087,461 million cubic feet per year (MCF/year).²⁹

The main category of fuel use in California is transportation fuel, specifically gasoline and diesel. Gasoline is the most used transportation fuel in California: 97 percent of all gasoline sold in California is consumed by light-duty cars, pickup trucks, and sport utility vehicles. In 2022, an estimated 13.6 billion gallons of gasoline were sold (i.e., 37 million gallons of gasoline per day).³⁰ Diesel is the second largest transportation fuel used in California. Many heavy-duty trucks, delivery vehicles, buses, trains, ships, boats and barges, farm, construction, and heavy-duty military vehicles and equipment have diesel engines. According to the California Annual Retail Fuel Outlet Report Results (CEC-A15), in 2023, 2,016 million gallons of diesel annually (i.e., 5.5 million gallons of diesel per day), including off-road diesel, was sold.³¹

HUMBOLDT COUNTY (RCAP AREA)

As shown in Table 3.5-4, approximately 54 million gallons of transportation fuel were consumed in Humboldt in 2023, of which approximately 42 million gallons were gasoline and approximately 12 million gallons were diesel fuel.³² This equates to approximately 0.15 million gallons of fuel per day or 1.11 gallons of fuel per person per day, based on a 2023 Countywide population of 134,597 people.³³

Table 3.5-4 Transportation Energy Consumption in Humboldt

Fuel Type	2023 Annual Fuel Use (million gallons)	2023 Daily Fuel Use (million gallons)
Gasoline (County)	42	0.12
Diesel (County)	12	0.03
Total (County)	54	0.15

Notes: Btu = British thermal units

Source: CEC. 2024. California Retail Fuel Outlet Annual Reporting (CEC-A15) Results. <https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting> (accessed October 2024).

3.5.3 Regulatory Framework

Additional regulatory information related to GHG emissions and energy efficiency standards are included throughout the other resource sections including Section 3.9, *Utilities and Service Systems*, which includes discussion of water use efficiency standards, solid waste standards, and wastewater standards, and Section 3.2, *Air Quality*, which includes discussion of air quality-related regulations.

²⁸ USEIA. 2022. California Electricity Profile 2022. <https://www.eia.gov/electricity/state/archive/2022/california/> (accessed October 2024)

²⁹ USEIA. 2022. Natural Gas Consumption by End Use 2023. https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_sca_a.htm (accessed October 2024)

³⁰ CEC. 2024. California Gasoline, Data, Facts, and Statistics. <https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics> (October 2024)

³¹ CEC. 2024. California Retail Fuel Outlet Annual Reporting (CEC-A15) Results. <https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting> (accessed October 2024)

³² CEC. 2024. 2010-2023 CEC-A15 Results and Analysis – Diesel Sales by County. <https://www.energy.ca.gov/media/3874> (accessed October 2024)

³³ California Department of Finance (DOF). 2024. E-5 Population and Housing Estimates for Cities, Counties, and the State, 2011-2022 with 2010 Census Benchmark. <https://dof.ca.gov/Forecasting/Demographics/Estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2024/> (accessed October 2024)

3.5.3.1

Federal Regulations

Clean Air Act (Regulation of GHGs)

The United States Environmental Protection Agency (USEPA) issued an Endangerment Finding under Section 202(a) of the Clean Air Act, opening the door to federal regulation of GHGs. The Endangerment Finding notes that GHGs threaten public health and welfare and are subject to regulation under the Clean Air Act. To date, the USEPA has not promulgated regulations on GHG emissions, but it has already begun to develop them.

Federal Fuel Efficiency Standards (CAFE)

Under the Clean Air Act, corporate average fuel economy (CAFE) standards have been set for passenger cars and light trucks. The State of California has traditionally had a waiver to set its own more stringent fuel efficiency standards. However, on August 2, 2018, the NHTSA and USEPA proposed the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE Rule). This rule addresses emissions and fuel economy standards for motor vehicles and is separated in two parts as described below.

- Part One, “One National Program” (84 FR 51310) revokes a waiver granted by USEPA to the State of California under Section 209 of the CAA to enforce more stringent emission standards for motor vehicles than those required by USEPA for the explicit purpose of GHG reduction, and indirectly, criteria air pollutants and ozone precursor emission reduction. This revocation became effective on November 26, 2019, potentially restricting the ability of CARB to enforce more stringent GHG emission standards for new vehicles and set zero emission vehicle mandates in California.
- Part Two addresses CAFE standards for passenger cars and light trucks for model years 2021 to 2026. This rulemaking proposes new CAFE standards for model years 2022 through 2026 and would amend existing CAFE standards for model year 2021. The proposal would retain the model year 2020 standards (specifically, the footprint target curves for passenger cars and light trucks) through model year 2026. The proposal addressing CAFE standards was jointly developed by NHTSA and USEPA, with USEPA simultaneously proposing tailpipe CO₂ standards for the same vehicles covered by the same model years.

Construction Equipment Fuel Efficiency Standard

USEPA sets emission standards for construction equipment. The first federal standards (Tier 1) were adopted in 1994 for all off-road engines over 50 horsepower (hp) and were phased in by 2000. A new standard was adopted in 1998 that introduced Tier 1 for all equipment below 50 hp and established the Tier 2 and Tier 3 standards. The Tier 2 and Tier 3 standards were phased in by 2008 for all equipment. The current iteration of emissions standards for construction equipment are the Tier 4 efficiency requirements are contained in 40 Code of Federal Regulations Parts 1039, 1065, and 1068 (originally adopted in 69 Federal Register 38958 [June 29, 2004], and most recently updated in 2014 [79 Federal Register 46356]). Emissions requirements for new off-road Tier 4 vehicles were completely phased in by the end of 2015.

U.S. Consolidated Appropriations Act (Mandatory GHG Reporting)

The Consolidated Appropriations Act, passed in December 2007, required the establishment of mandatory GHG reporting requirements. In September 2009, the USEPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S. and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to USEPA. The first annual reports for the largest emitting facilities, covering calendar year 2010, were submitted to USEPA in 2011.

Energy Policy and Conservation Act

Enacted in 1975, the Energy Policy and Conservation Act established fuel economy standards for new light-duty vehicles sold in the United States. The law placed responsibility on the National Highway Traffic and Safety Administration (NHTSA), a part of the United States Department of Transportation (USDOT), for establishing and regularly updating vehicle standards. USEPA administers the Corporate Average Fuel Economy (CAFE) program, which determines vehicle manufacturers' compliance with existing fuel economy standards. Since the inception of the program, the average fuel economy for new light-duty vehicles steadily increased from 13.1 miles per gallon (mpg) for the 1975 model year to 30.7 mpg for the 2014 model year and can increase to 54.5 by 2025.

National Energy Policy Act of 1992

The National Energy Policy Act of 1992 (EPACT92) calls for programs that promote efficiency and the use of alternative fuels. EPACT92 requires certain federal, state, and local governments and private operators to stock vehicle fleets with a percentage of light duty alternative fuel vehicles each year. In addition, EPACT92 has financial incentives: federal tax deductions will be allowed for businesses and individuals to cover the incremental cost of alternative fuel vehicles. EPACT92 also requires states to consider a variety of incentive programs to help promote alternative fuel vehicles.

Energy Policy Act of 2005

The Energy Policy Act of 2005 provides renewed and expanded tax credits for electricity generated by qualified energy sources, such as landfill gas; provides bond financing, tax incentives, grants, and loan guarantees for clean renewable energy and rural community electrification; and establishes a federal purchase requirement for renewable energy.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act, enacted by Congress in 2007, is designed to improve vehicle fuel economy and help reduce the United States dependence on foreign oil. It expands the production of renewable fuels, reducing dependence on oil, and confronting climate change. Specifically, it does the following:

- Increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard, requiring fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly five-fold increase over current levels

- Reduces United States demand for oil by setting a national fuel economy standard of 35 miles per gallon (mpg) by 2020 – an increase in fuel economy standards of 40 percent

The Energy Independence and Security Act of 2007 also set energy efficiency standards for lighting (specifically light bulbs) and appliances. Development would also be required to install photosensors and energy-efficient lighting fixtures consistent with the requirements of 42 USC Section 17001 et seq.

Energy Star Program

In 1992, USEPA introduced Energy Star® as a voluntary labeling program designed to identify and promote energy-efficient products to reduce GHG emissions. The program applies to major household appliances, lighting, computers, and building components such as windows, doors, roofs, and heating and cooling systems. Under this program, appliances that meet specifications for maximum energy use established under the program are certified to display the Energy Star® label. In 1996, USEPA joined with the Energy Department to expand the program, which now also includes qualifying commercial and industrial buildings, as well as homes.³⁴

State Regulations

Assembly Bill 1493 (Pavley Regulations and Fuel Efficiency Standards)

Assembly Bill (AB) 1493 (2002), California’s Advanced Clean Cars program (referred to as Pavley), requires CARB to develop and adopt regulations to achieve “the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles.” On June 30, 2009, the USEPA granted the waiver of CAA preemption to California for its GHG emission standards for motor vehicles, beginning with the 2009 model year, which allows California to implement more stringent vehicle emission standards than those promulgated by the USEPA. Pavley I regulates model years from 2009 to 2016 and Pavley II, now referred to as “LEV (Low Emission Vehicle) III GHG,” regulates model years from 2017 to 2025. The Advanced Clean Cars program coordinates the goals of the LEV, Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels.

Assembly Bill 32 (Global Warming Solutions Act and Scoping Plan)

California’s major initiative for reducing GHG emissions is outlined in Assembly Bill (AB) 32, the “California Global Warming Solutions Act of 2006,” which was signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 Statewide GHG level and 2020 limit of 427 million MTCO₂e. The Scoping Plan was approved by CARB on December 11, 2008 and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

³⁴ Energy Star. 2024. Our History. <https://www.energystar.gov/about/how-energy-star-works/history> (accessed October 2024).

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan Update defined CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 Statewide goals. The 2013 Scoping Plan Update highlighted California's progress toward meeting the 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the State's longer-term GHG reduction strategies with other State policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use. The State of California achieved its 2020 GHG emission reduction targets in 2016, and emissions have subsequently fallen further in 2018 to 425 MMTCO₂e.

Senate Bill 32 (Global Warming Solutions Act and Scoping Plan Extension)

Senate Bill (SB) 32 signed into law on September 8, 2016, tightens the requirements of AB 32 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies, such as SB 350 and SB 1383. The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, it recommends that local governments adopt policies consistent with statewide per capita goals of 6 MTCO₂e by 2030 and 2 MTCO₂e by 2050. As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level).

AB 1279 (California Climate Crisis Act and Scoping Plan Extension)

The California Climate Crisis Act (AB 1279), signed into law on September 16, 2022, requires the State to achieve and maintain net zero GHG emissions as soon as possible, but not later than 2045. The Climate Crisis Act also requires the State to reduce Statewide anthropogenic GHG emissions to 85 percent below the 1990 levels by 2045. Updates to the scoping plan are required to identify and recommend measures to achieve these goals and identify and implement policies and strategies that enable carbon dioxide removal solutions and carbon capture, utilization, and storage technologies in the State.

On November 16, 2022, CARB also adopted the 2022 Scoping Plan, which provides a framework for achieving targets for carbon neutrality and reducing anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by AB 1279. The 2022 Scoping Plan relies on significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

Senate Bill 375 (Sustainable Communities and Climate Protection Act)

SB 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. In addition, SB 375 directs each of the State's 18 major Metropolitan Planning Organizations (MPOs) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. HCAOG was not assigned regional targets under SB 375.

Senate Bill 1383

Adopted in September 2016, SB 1383 (Lara, Chapter 395, Statutes of 2016) requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. SB 1383 requires the strategy to achieve the following reduction targets by 2030:

- CH₄ – 40 percent below 2013 levels
- HFCs – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

SB 1383 also requires the California Department of Resources Recycling and Recovery, in consultation with the CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills.

California Code of Regulations Title 24 (California Building Code)

Updated every three years, Title 24 of the California Code of Regulations requires California homes and businesses to meet strong energy efficiency measures, thereby lowering their energy use. Title 24 contains numerous subparts, including Part 1 (Administrative Code), Part 2 (Building Code), Part 3 (Electrical Code), Part 4 (Mechanical Code), Part 5 (Plumbing Code), Part 6 (Energy Code), Part 8 (Historical Building Code), Part 9 (Fire Code), Part 10 (Existing Building Code), Part 11 (Green Building Standards Code), Part 12 (Referenced Standards Code). The California Building Code is applicable to all development in California. (Health and Safety Code Sections 17950 and 18938(b).) The regulations receive input from members of industry, as well as the public, with the goal of "[r]educing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy." (Pub. Res. Code Section 25402.) These regulations are scrutinized and analyzed for technological and economic feasibility (Pub. Res. Code Section 25402(d)) and cost effectiveness (Pub. Res. Code § 25402(b)(2) and (b)(3)).

PART 6 – BUILDING ENERGY EFFICIENCY STANDARDS/ENERGY CODE

CCR Title 24, Part 6 is the Building Energy Efficiency Standards or California Energy Code. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings to reduce California's energy demand. New construction and major renovations must demonstrate their compliance with the current Energy Code through submittal and approval of a Title 24 Compliance Report to the local building permit review authority and the CEC. The current iteration is the 2022 Title 24 standards.

The 2022 Standards build on California's technology innovations, encouraging energy efficient approaches to encourage building decarbonization, emphasizing in particular on heat pumps for space heating and water heating. This set of Energy Codes also extends the benefits of photovoltaic and battery storage systems and other demand flexible technology to work in combinations with heat pumps to enable California buildings to be responsive to climate change. This also strengthens ventilation standards to improve indoor air quality. This update provides crucial steps in the state's progress toward 100 percent clean carbon neutrality.

The 2022 Standards are divided into three basic sets. First, there is a basic set of mandatory requirements that apply to all buildings. Second, there is a set of performance standards – the energy budgets – that vary by climate zone (there are 16 in California) and building type; thus, the Energy Code are tailored to local conditions and provide flexibility in how energy efficiency in buildings can be achieved. Finally, the third set constitutes an alternative to the performance

standards, which is a set of prescriptive packages that provide a recipe or a checklist compliance approach.

PART 11 – CALIFORNIA GREEN BUILDING STANDARDS

The California Green Building Standards Code, referred to as CALGreen, was added to Title 24 as Part 11, first in 2009 as a voluntary code, which then became mandatory effective on January 1, 2011 (as part of the 2010 California Building Standards Code). The 2022 CALGreen includes mandatory minimum environmental performance standards for all ground-up new construction of residential and non-residential structures. It also includes voluntary tiers with stricter environmental performance standards for these same categories of residential and non-residential buildings. Local jurisdictions must enforce the minimum mandatory CALGreen standards and may adopt additional amendments for stricter requirements.

The mandatory standards require:

- Minimum 20 percent reduction in indoor water use relative to specified baseline levels;³⁵
- Waste Reduction:
 - Minimum 65 percent non-hazardous construction/demolition waste diverted from landfills;
 - Non-residential and Multifamily dwellings with 5 or more units shall provide readily accessible areas identified for the depositing, storage and collection of nonhazardous materials for recycling including (at a minimum) paper, corrugated cardboard, glass, plastic, organic waste, and metals;
 - Nonresidential: 100 percent of trees, stumps, rocks and associated vegetation soils resulting from primary land clearing shall be reused or recycled.
- Inspections of energy systems to ensure optimal working efficiency;
- Electric Vehicle (EV) Charging for New Construction:³⁶
 - Multifamily dwellings, hotels/motels with less than 20 units/rooms: Designation of at least 10 percent of the total number of parking spaces shall be EV capable and at least 25 percent of the total number of parking spaces shall be EV Ready.
 - Multifamily dwellings, hotels/motels with greater than 20 units/rooms: Designation of at least 10 percent of the total number of parking spaces shall be EV capable, at least 25 percent of the total number of parking spaces shall be EV Ready, and at least 5 percent of the total number of parking spaces shall be equipped with a Level 2 Charging Station.

The CALGreen voluntary standards are only mandatory if a local ordinance requires them. Since the County has not made any of the voluntary measures mandatory, the following voluntary standards may not be applicable to the RCAP³⁷:

- Deconstruct existing buildings and reuse applicable salvaged materials;

³⁵ Similar to the compliance reporting procedure for demonstrating Energy Code compliance in new buildings and major renovations, compliance with the CALGreen water reduction requirements must be demonstrated through completion of water use reporting forms. Buildings must demonstrate a 20 percent reduction in indoor water use by either showing a 20 percent reduction in the overall baseline water use as identified in CALGreen or a reduced per-plumbing-fixture water use rate.

³⁶ EV Capable = a vehicle space with electrical panel space and load capacity to support a branch circuit and necessary raceways to support EV charging. EV Ready = a vehicle space which is provided with a branch circuit and any necessary raceways to accommodate EV charging stations including a receptacle for future installation of a charger. See 2022 California Green Building Standard Code, Title 24 Part 11 for full explanation of mandatory measures including exceptions.

³⁷ The individual cities may require the CALGreen voluntary standards by ordinance.

- Residential Bicycle Parking:
 - Multifamily/hotel/motel short-term parking: Provide permanently anchored bicycle racks within 100 feet of visitor’s entrance for 5 percent of visitor motorized vehicle parking capacity (minimum 1 two-bike capacity rack).

The CALGreen voluntary standards are divided into two tiers. Tier 1 adds additional requirements beyond the mandatory measures, whereas Tier 2 further increases the requirements.

- **Tier I**
 - Stricter energy efficiency requirements;
 - Stricter water conservation requirements for specific fixtures;
 - Minimum 65 percent reduction in construction waste with third-party verification, Minimum 10 percent recycled content for building materials;
 - Minimum 20 percent permeable paving;
 - Minimum 20 percent cement reduction;
 - Multifamily developments/hotels/motels: Minimum 35 percent of total parking spaces shall be EV ready and for projects with 20 or more dwelling units/rooms a minimum of 10 percent of the total number of parking spaces shall be equipped with EV charging stations;
- **Tier II**
 - Stricter energy efficiency requirements,
 - Stricter water conservation requirements for specific fixtures;
 - Minimum 75 percent reduction in construction waste with third-party verification,
 - Minimum 15 percent recycled content for building materials;
 - Minimum 30 percent permeable paving;
 - Minimum 25 percent cement reduction;
 - Multifamily developments/hotels/motels: Minimum 40 percent of total parking spaces shall be EV ready and for projects with 20 or more dwelling units/rooms a minimum of 15 percent of the total number of parking spaces shall be equipped with EV charging stations.

Assembly Bill 341/Assembly Bill 1826 (Mandatory Recycling/Composting)

The California Integrated Waste Management Act of 1989, as modified by AB 341, requires each jurisdiction’s source reduction and recycling element to include an implementation schedule that shows diversion away from landfills of 75 percent of all solid waste by 2020 and annually thereafter. AB 1826 requires recycling of organic waste (i.e., composting). All businesses and public entities that generate four or more cubic yards of solid waste per week and multi-family residential dwellings that have five or more units are required to recycle and compost.

Senate Bills 350 & 100 (Renewable Portfolio/Clean Energy & Pollution Reduction Act)

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. This act also requires doubling of the energy efficiency in existing buildings by 2030.

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the State’s Renewables Portfolio Standard Program, which was last

updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 44 percent by 2024, 60 percent by 2030, and 100 percent by 2045.

Assembly Bill 1007 (State Alternative Fuels Plan)

AB 1007 (Chapter 371, Statutes of 2005) required the CEC to prepare a State plan to increase the use of alternative fuels in California. The CEC prepared the State Alternative Fuels Plan (SAF Plan) in partnership with CARB and in consultation with other federal, State, and local agencies. The SAF Plan presents strategies and actions California must take to increase the use of alternative non-petroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The SAF Plan assessed various alternative fuels and developed fuel portfolios to meet California's goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-State production of biofuels without causing a significant degradation of public health and environmental quality.

CARB In-Use On-Road and Off-Road Diesel Rules

The CARB rule imposes limits on idling, restricts the addition of older vehicles, and requires the retirement or replacement of older engines depending on their fleet size category. This policy indirectly impacts energy consumption. More specifically, CARB is also charged with developing air pollution control regulations based upon the best available control measures and implementing feasible control measures under the State and Federal Clean Air Act. (Health & Saf. Code, Sections 39602.5, 39667, 43013, subds. (a) and (h), 43018, 40600, 40601, 40612(a)(2) and (c)(1)(A).) Pursuant to these statutory authorities, more stringent emission standards were adopted in 2004 for off-road construction equipment (i.e. "Tier 4" standards) (40 Code of Federal Regulations Parts 1039, 1065, and 1068; Cal. Code Regs., tit. 13, Section 2025; AR 2854). CARB also adopted emission standards for on-road heavy duty diesel vehicles (i.e. haul trucks). (Cal. Code Regs., tit. 13, Section 1956.8.) These haul truck regulations mandate fleet turn-over to ensure that by January 1, 2023 nearly all on-road diesel trucks will have 2010 model year engines or equivalent [i.e. Tier 4]. In addition, interim steps are incorporated into the regulations (e.g., vehicles older than 1999 will be replaced with newer engines by 2020).

California Advanced Clean Trucks Program

In June 2020, CARB approved the Advanced Clean Trucks regulation, which requires manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. In addition, the regulation requires company and fleet reporting for large employers and fleet owners with 50 or more trucks. By 2045, all new trucks sold in California must be zero-emission. Implementation of this regulation would reduce consumption of nonrenewable transportation fuels as trucks transition to alternative fuel sources.

California Advanced Clean Fleets Regulation

In April 2023, CARB approved the Advanced Clean Fleets (ACF) regulation. The ACF regulation is part of California's strategy to accelerate the adoption of medium- and heavy-duty zero-emission vehicles (ZEVs). It complements the Advanced Clean Trucks ACT regulation and aims to achieve public health, air quality, and climate goals. The ACF regulation applies to fleets performing drayage operations, those owned by State, local, and federal government agencies, and high priority fleets.

The ACF regulation includes components such as a manufacturer sales mandate, drayage fleet registrations, requirements for drayage fleets to transition to zero-emission vehicles, and mandates for high priority and government fleets to purchase increasing percentages of ZEVs over time. The regulation provides flexibility and exemptions for cases where zero-emission trucks are not yet available. The ACF regulation is expected to significantly increase the number of ZEVs on California roads, leading to emissions reductions and health benefits. The Advanced Clean Trucks and ACF regulations together are expected to result in about 510,000, 1,350,000, and 1,690,000 ZEVs in California in 2035, 2045, and 2050, respectively.

Executive Order B-48-18 (Zero-Emission Vehicles)

On January 26, 2018, Governor Brown signed Executive Order B-48-18 requiring all State entities to work with the private sector to have at least 5 million zero-emission vehicles (ZEVs) on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 electric vehicle (EV) charging stations by 2025. It specifies that 10,000 of the EV charging stations should be direct current fast chargers. This order also requires all State entities to continue to partner with local and regional governments to streamline the installation of ZEV infrastructure. The Governor's Office of Business and Economic Development is required to publish a Plug-in Charging Station Design Guidebook and update the 2015 Hydrogen Station Permitting Guidebook to aid in these efforts. All State entities are required to participate in updating the 2016 Zero-Emissions Vehicle Action Plan, along with the 2018 ZEV Action Plan Priorities Update, which includes and extends the 2016 ZEV Action Plan (Governor's Interagency Working Group on Zero-Emission Vehicles 2016, 2018), to help expand private investment in ZEV infrastructure with a focus on serving low-income and disadvantaged communities.

Executive Order N-79-20 (Zero Emissions Vehicles Sales)

Governor Gavin Newsom signed Executive Order N-79-20 in September 2020, which sets a statewide goal that 100 percent of all new passenger car and truck sales in the State will be zero-emissions by 2035. It also sets a goal that 100 percent of statewide new sales of medium- and heavy-duty vehicles will be zero emissions by 2045, where feasible, and for all new sales of drayage trucks to be zero emissions by 2035. Additionally, the Executive Order targets 100 percent of new off-road vehicle sales in the State to be zero emission by 2035. CARB is responsible for implementing the new vehicle sales regulation.

Senate Bill 1020

Senate Bill 1020 (SB 1020), signed into law on September 16, 2022, requires renewable energy and zero-carbon resources to supply 90 percent of all retail electricity sales by 2035, 95 percent by 2040, and 100 percent by 2045. All State agencies facilities must be served by 100 percent renewable and zero-carbon resources by 2030. SB 1020 also requires the Public Utilities Commission, Energy Commission, and CARB to issue a joint progress report outlining the reliability of the electrical grid with a focus on summer reliability and challenges and gaps. Additionally, SB 1020 requires the Public Utilities Commission to define energy affordability and use energy affordability metrics to develop protections, incentives, discounts, or new programs for residential customers facing hardships due to energy or gas bills.

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the CEC. The Act established a State policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. The CPUC regulates privately owned utilities in the energy, rail, telecommunications, and water fields.

California Energy Plan

The CEC is responsible for preparing the California Energy Plan, which identifies emerging trends related to energy supply, demand, conservation, public health and safety, and the maintenance of a healthy economy. The 2008 California Energy Plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies several strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and addressing their infrastructure needs, as well as encouragement of urban designs that reduce vehicle miles traveled (VMT) and accommodate pedestrian and bicycle access.

CARB Gas Appliances Sales Ban

As part of the 2022 State Implementation Plan, CARB adopted a ban on new sales of natural gas heaters, water heaters, and furnaces by 2030. This new measure is intended to reduce emissions from new residential and commercial space and water heaters sold in the State. An emission standard for space and water heaters will go into effect in 2030. Beginning in 2030, 100 percent of the sales of new natural gas-powered heaters and water heaters would need to comply with the emission standard, such as putting in electric heaters or other zero-emission options.

Assembly Bill 2076 (Reducing Dependence on Petroleum)

Pursuant to AB 2076 (Chapter 936, Statutes of 2000), CEC and CARB prepared and adopted a joint-agency report, *Reducing California's Petroleum Dependence*, in 2003. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita VMT. One of the performance-based goals of AB 2076 is to reduce petroleum demand to 15 percent below 2003 demand. Furthermore, in response to the CEC's 2003 and 2005 *Integrated Energy Policy Reports*, the Governor directed the CEC to take the lead in developing a long-term plan to increase alternative fuel use.

Senate Bill 1389 (Integrated Energy Policy Report)

Senate Bill 1389 (Chapter 568, Statutes of 2002) required the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The CEC uses these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety. The most recent assessment, the *2024 Integrated Energy Policy Report*, highlights the implementation of California's innovative policies and the role they have played in establishing a clean energy economy and provides more detail on

several key energy policies, including decarbonizing buildings, increasing energy efficiency savings, and integrating more renewable energy into the electricity system.³⁸

Regional and Local Regulations

North Coast Unified Air Quality Management District Regulation VII, Greenhouse Gas Mitigation & Control

NCUAQMD Regulation VII includes GHG control measures for methane emissions generated by municipal solid waste landfills, as well as emission of refrigerants from stationary, non-residential refrigeration equipment and from the installation and servicing of stationary refrigeration and air-conditioning appliances.³⁹ NCUAQMD does not recommend any thresholds of significance for evaluating GHG emitted for individual projects (or plan-level analyses). In its brief CEQA guidance, NCUAQMD states that the thresholds used for determining whether NSR and federal Title V permitting applies to a stationary source “should not be used as a [CEQA] threshold of significance for stationary source projects”.⁴⁰

Redwood Coast Energy Authority (RCEA) Repower Humboldt Action Plan for Energy

The RCEA 2019 Update to the Comprehensive Action Plan for Energy (also known as “RePower Humboldt”) is a plan focused on the development and implementation of sustainable energy initiatives in Humboldt. RCEA will help address Humboldt’s supply-side energy needs through its existing Community Choice Energy (CCE) program and development of new programs and initiatives. RePower Humboldt includes the following goals:

- By 2025: 100 percent of RCEA’s power mix will be from a combination of State-designated renewable energy sources (solar, wind, biomass, small hydroelectric, and geothermal) and state-designated net-zero-carbon-emission existing large hydroelectric facilities.
- By 2030: Humboldt County will be a net exporter of renewable electricity and the RCEA power mix will consist of 100 percent net-zero-carbon-emission renewable sources.

Humboldt County General Plan, Air Quality Element

The 2017 Humboldt County General Plan includes policies applicable to GHG emissions and energy use. The policies identified are intended to support the goals of improving air quality, reducing GHG emissions, reducing energy consumption, and increasing the production of renewable energy. Relevant policies include:⁴¹

- **AQ-P1. Reduce Length and Frequency of Vehicle Trips.** Reduce the length and frequency of vehicle trips through land use and transportation policies by encouraging mixed-use development, compact development patterns in areas served by public transit, and active modes of travel.
- **AQ-P8. Reduce Air Quality Impacts from Wildfires.** Support and encourage fire suppression of wildfires that may have an acute air quality health impact on local population centers.

³⁸ California Energy Commission. 2024. 2024 Integrated Energy Policy Report Update. <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2024-integrated-energy-policy-report-update> (accessed October 2024)

³⁹ NCUAQMD. 2024c. Rules & Regulations. <https://ncuaqmd.org/rules-regulations> (accessed October 2024)

⁴⁰ NCUAQMD. 2024b. Planning & CEQA. <https://www.ncuaqmd.org/planning-ceqa> (accessed October 2024)

⁴¹ Humboldt County. 2017. General Plan, Chapter 15 Air Quality Element. <https://humboldt.gov/DocumentCenter/View/61991/Chapter-15-Air-Quality-Element-PDF> (accessed October 2024)

- **AQ-P9. County Climate Action Plan.** Through public input and review, develop and implement a multi-jurisdictional Climate Action Plan to achieve reductions in greenhouse gas emissions consistent with the state Global Warming Solutions Act and subsequent implementing legislation and regulations.
- **AQ-P13. Forest Sequestration and Biomass Energy.** Provide incentives for increased carbon sequestration on forest lands and encourage the reduction of smoke production through the utilization of excess forest biomass for sustainable energy generation and other uses.
- **AQ-P14. Solar Electric System Capacity.** Encourage and provide incentives to increase solar-electric capacity in residential, commercial, and industrial sectors.
- **AQ-P15. Energy Efficient Building Design.** Encourage and provide incentives for construction of buildings and energy saving measures beyond Title 24 requirements for residential and commercial projects.
- **AQ-P16. Electric Vehicle Accommodations.** Encourage and provide incentives for commercial and residential design that supports the charging of electric vehicles.

City of Arcata General Plan

The City of Arcata General Plan includes guiding principles and goals to promote clean air. The Circulation and Mobility Element has policies to support a “car-free lifestyle” with a goal to reduce GHG emissions. Policy AQ-2 under the Air Quality Element has multiple objectives to reduce mobile source emissions, including GHG emissions. Implementation Measure AQ-4 is the adoption of a Climate Action Plan to collaborate regionally. The City of Arcata General Plan also includes goals to reduce energy usage through conservation and efficiency practices, reduce energy costs to the city and its residents, and increase the percentage of energy purchased from renewable sources. The specific relevant policies are as follows:⁴²

- **AQ-2a Implement land use measures to reduce vehicle trips, miles traveled, and air pollutant emissions.** Implement or encourage the land use and development measures which reduce motor vehicle travel as outlined in the Transportation Element. These measures are also effective in reducing mobile sources of air pollutants.
- **AQ-2b Implement transportation measures to reduce vehicle trips, miles traveled, and air pollutant emissions.** Implement or encourage the following measures to reduce vehicle miles traveled and provide alternatives to the single occupant motor vehicle, as outlined in the Circulation & Mobility Element.
- **AQ-3e Greenhouse gas reduction.** Many of the chemicals of concern for air quality are also greenhouse gases. The City shall work locally and regionally to develop plans and programs to reduce or reverse greenhouse gas emissions to meet State and Federal greenhouse gas reduction goals.
- **CM-1j Mobility infrastructure that supports a car-free lifestyle.** Plan and implement the mobility and circulation infrastructure to support a car-free lifestyle, increase pedestrian safety, reduce greenhouse gas emissions, and minimize vehicle miles traveled.
- **CM-2a Land use development patterns.** The City encourages and supports travel demand management efforts. The City shall promote land use and development patterns that encourage walking, bicycling and transit use. In recognition of the link between land use and transportation, the land use plan shall discourage low density, homogenous land-use patterns

⁴² Arcata, City of. 2024. Arcata General Plan 2045. Adopted July 17, 2024.

https://www.cityofarcata.org/DocumentCenter/View/14362/General-Plan-204520240717_CI_WEB (accessed October 2024)

that foster automobile travel and are impractical to serve with transit. Land use planning shall emphasize high density and mixed land-use patterns that translate into higher transit and pedestrian travel in the downtown and neighborhood commercial areas. Infill, redevelopment, and reuse of underutilized property at higher densities shall be encouraged prior to outward expansion of City boundaries.

- **Policy CM-5 Bicycle and Pedestrian Facilities.** Create a complete, interconnected bikeway system and pedestrian network. Increase the percentages of person trips via walking and bicycling, which serves the full range of mobility needs.
- **PF-6f Energy conservation and decarbonization of City facilities.** Continue reducing City facility energy consumption, including conservation and weatherization measures exceeding building code standards, electric only appliances, HVAC, water heating systems and renewable energy sources. Consider Greenhouse Gas Reduction measures in all new facility, renovations, site design and connectivity decisions. Develop and implement City practices to increase electrification equity and affordability for all residents.
- **PS-8a Land use and urban development.** Compact urban development has co-beneficial climatic effects, including reducing greenhouse gases, preserving habitats, producing healthy vibrant communities, and facilitating opportunities for environmental justice. The City shall support land use activities that promote compact, climate-friendly design, such as infill development, densification, and regenerative building design. City projects and private developments shall be designed to consider multi-benefit solutions that mitigate hazard risk and support the City's climate goals. Urban design and development will be informed by the latest climate science to determine how to best protect and modify existing public and private infrastructure and assets and how to design new infrastructure and assets. Urban design and development should also take environmental justice considerations into account, working to eliminate disparities and burdens related to all hazards and the climate crisis for all people in Arcata.
- **PS-8b Greenhouse gas reduction.** City actions shall reduce local contributions towards climate change by mitigating greenhouse gases and increasing carbon sequestration. The City shall update relevant plans and policies periodically to meet State and local climate goals.
 - Encourage reduction in greenhouse gas emissions, by providing alternatives to use of gas-powered vehicles. Such alternatives include public transit, alternatively fueled vehicles, bicycle and pedestrian routes, and bicycle- and pedestrian-friendly development design.
 - Encourage and facilitate investments in renewable energy and green technology.
 - Prioritize nature-based solutions that restore ecosystem function and maximize ecological benefits to plants, animals, and people.
- **PS-8c Regional collaboration.** The City shall continue to participate in regional multi-agency efforts to coordinate climate mitigation and adaptation and ensure Arcata becomes more resilient to the threats of climate change.
- **LU-4g Energy development, production, and use.** The City of Arcata recognizes the national need for the responsible exploration, recovery, and processing of the country's energy resources. The City also recognizes the potential adverse impacts such activities may have. Petroleum extraction is of particular concern on the North Coast. On- or offshore petroleum extraction will result in negative impacts on the climate and our coastal scenic resources, as well as our sensitive land and marine environments. Therefore, the City finds that, in order to minimize adverse impacts to such resources, on- and off-shore petroleum product exploration,

recovery, and processing should be confined to those geographic areas which now accommodate these uses and activities. Consistent with this policy, the City shall prohibit on-shore petroleum exploration, production, and processing within its boundaries, and shall oppose the use of off-shore areas south and west of Arcata and in Humboldt County in general for such uses.

- **RC-8a Encouragement of appropriate energy alternatives.** The City will participate in Redwood Coast Energy Authority's Community Choice Energy (CCE) program, supporting renewable energy purchases over non-renewable sources.
- **RC-8b Encouragement of energy efficiency and conservation.** The City shall disseminate Redwood Coast Energy Authority information to educate residents, property owners, and business operators about the need for and benefits of conserving energy. This includes information about building insulation; energy efficient appliances, lighting, and heating; other conservation measures and materials; and home power alternatives. The City shall continuously seek and implement cost-effective steps to reduce City energy use. The City shall adopt national "Energy Star Program" goals (or its successor programs) for all City construction projects and all construction projects assisted by grants for which the City is an applicant. These goals include achieving a minimum of 15% greater energy efficiency than would a building designed with existing Title 24 standards. Explore and, if appropriate, adopt energy efficiency standards for existing residential and commercial buildings upon substantial remodel. Consider requiring energy efficiency inspections, disclosure, and retrofits at change of ownership based on cost effective and commercially available energy efficiency measures.
- **RC-8c Promotion of energy efficiency in transportation.** Reduce motor vehicle trips within the city and between the city and other destinations and reduce per-trip energy consumption; this policy applies to trips by residents, non-residents, and city staff. Such measures as bike and pedestrian paths, public transportation, shared parking, and alternative-fueled vehicles shall be used to make these reductions.
- **RC-8d Restoration for Greenhouse Gases Absorption.** Foster and restore forests and other terrestrial ecosystems that offer significant carbon mitigation potential, consistent with the Humboldt County Climate Action Plan.
- **RC-8e City Electrification Ordinance.** Prepare and pass an 'all electric' Ordinance that phases out natural gas infrastructure and use.

City of Arcata Community GHG Reduction Plan

The City of Arcata's Community GHG Reduction Plan was developed and adopted in 2006, which identified six action areas to change energy usage to reduce community wide GHG emissions. These six action areas included energy efficiency, renewable energy, sustainable transportation, waste and consumption reduction, carbon sequestration and other methods, and cross-cutting approaches.⁴³ The plan outlined goals and strategies for achieving the 2010 targets identified.

City of Blue Lake General Plan

The City of Blue Lake General Plan includes goals for population density and energy efficiency that may have an effect of reducing GHG emissions and energy use. The only Blue Lake General Plan policy directly relevant to GHG emissions and energy use is as follows:

⁴³ Arcata, City of. 2006. Community GHG Reduction Plan. <https://www.cityofarcata.org/DocumentCenter/View/315/Community-Greenhouse-Gas-Reduction-Plan-PDF?bidId=> (accessed January 2025).

- Policy 6: The provision of energy conserving measures and materials shall be encouraged for all new residential development and rehabilitation.

According to the Blue Lake General Plan, the City encourages energy conservation by:⁴⁴

1. Reviewing site plans and subdivision designs for solar access;
2. Requires compliance with State energy conservation standards; and
3. Suggests and supports "solar design" through the Design Review process.

City of Eureka General Plan

The City of Eureka 2040 General Plan was adopted in 2018 and contains an air quality section with goals that relate to GHG emissions. The GHG emissions policies are as follows:⁴⁵

- **AQ-1.1 Regional Coordination.** Cooperate with the North Coast Unified Air Quality Management District, Redwood Coast Energy Authority, and other agencies to develop a consistent and effective approach to air quality planning and management, as well as to reduce greenhouse gas emissions and air quality impacts in the region.
- **AQ-1.2 GHG Reduction.** Continue to work with Redwood Coast Energy Authority to implement appropriate measures to reduce regional greenhouse gas emissions in Eureka, such as incentivizing the use of alternative energy sources, and periodically update the City's greenhouse gas inventory and reduction plan, consistent with State reduction targets and regulations.
- **AQ-1.3 New Development.** Require new discretionary developments to incorporate mitigation measures that utilize Best Management Practices and reduce emissions from both construction and operational activities, consistent with the North Coast Unified Air Quality Management District requirements and State regulations.
- **AQ-1.4 Off-Street Parking.** Encourage and incentivize premium parking spaces for carpool, vanpool, and alternative energy vehicles, and encourage the development and addition of electric vehicle charging stations in parking lots.
- **AQ-1.7 Large Employers.** Encourage large employers to allow for flexibility in the work schedule that would reduce emissions of air pollutants, such as more alternative schedules and telecommuting, in addition to providing incentives for non-single occupancy vehicle commuting modes including public transit, electric vehicles, carpooling, and non-motorized transportation.
- **AQ-1.9 Transit Funding.** Strive to secure adequate funding for transit, autonomous vehicle, mobility on-demand, and ridesharing services to provide viable transportation alternatives to help reduce greenhouse gas emissions. Require new development to contribute its fair share of the transit service costs to serve new projects.
- **AQ-1.10 Non-Motorized Transportation.** Continue to plan for and secure adequate funding for interjurisdictional non-motorized transportation facilities to help reduce greenhouse gas emissions.
- **AQ-1.11 City Employee Incentives.** Explore incentives for City employees to promote and utilize alternative modes of transportation, such as public transit, carpooling, walking, bicycling, and telecommuting.

⁴⁴ Blue Lake, City of. 1986. General Plan. https://bluelake.ca.gov/wp-content/uploads/2022/05/General-Plan_updated_2009-_10-24-11.pdf (accessed October 2024).

⁴⁵ Eureka, City of. 2018. 2040 General Plan. <https://www.eurekaca.gov/DocumentCenter/View/3253/Final-Draft-2040-General-Plan> (accessed October 2024)

- **AQ-1.12 City Vehicle Fleet.** Continue to purchase low-emission and zero-emission vehicles for the City’s non-emergency fleet and use only clean fuel sources for trucks and heavy equipment, where feasible.
- **AQ-1.13 Reducing the City’s Operation Emissions.** Continue to promote strategies aimed at lowering the City’s operation emissions, including exploring the feasibility of purchasing 100% renewable power through a Community Choice Aggregation program.
- **AQ-1.14 Education and Outreach.** Provide educational opportunities, and assist in engaging with the public regarding air quality, its health impacts, and potential actions that people can take to improve air quality and minimize greenhouse gas emissions.
- **U-2.7 Best Management Practices.** Identify and implement, where feasible, best practices and technologies for wastewater collection and treatment, including strategies that reduce wastewater demand, maintain maximum energy efficiency, and reduce costs and greenhouse gas emissions.
- **U-4.6 Recycling for Residential Uses.** Continue to encourage residential uses to increase the solid waste diversion from landfills through participation in recycling programs and organic waste diversion, consistent with State-mandated diversion goals and the City’s goals to reduce greenhouse gas emissions.
- **U-5.5 Renewable Energy.** Encourage new development to install renewable energy systems and facilities (e.g., solar and wind energies) consistent with the City’s greenhouse gas emission reduction goals.
- **U-5.6 Community Energy Efficiency.** Identify and promote programs, funding opportunities, and rebates from utility providers to increase energy conservation in existing buildings and require new buildings to implement additional energy efficient measures that are consistent with the City’s greenhouse gas emission reduction goals.
- **U-5.8 City Energy Efficiency.** Promote energy conservation for all City-owned facilities, vehicles, and equipment, and implement additional energy efficient measures that are consistent with the City’s goal of reducing greenhouse gas emissions.
- **U-5.11 Energy Education and Outreach.** Encourage a public understanding of the importance of renewable energy and energy efficiency through partnerships with energy-related organizations.

City of Fortuna General Plan

The City of Fortuna General Plan was adopted in October 2010. Goal HS-3 is designed to improve air quality and minimize adverse effects. The General Plan also includes policies to improve energy efficiency. The following policies are intended to help support GHG reductions and energy efficiency:⁴⁶

- **HS-3.5 Restoration for Greenhouse Gases Absorption.** Foster and restore forests and other terrestrial ecosystems that offer significant carbon mitigation potential.
- **HS-3.6 Greenhouse Gas Emissions Reduction from Transportation.** Increase clean-fuel use, promote transit-oriented development and alternative modes of transportation, and reduce travel demand.

⁴⁶ Fortuna, City of. 2010. Fortuna General Plan 2030.

https://cms8.revize.com/revize/fortunaca/Document%20center/Department/Planning%20Division/General%20Plan%20and%20EIR%20Documents/Fortuna%20General%20Plan%202030%20-%20%20Policy%20Document_web.pdf (accessed October 2024).

- **H-5.2** Actively enforce new state construction standards for energy efficiency.
- **H-6.3** Encourage the use of solar energy within the City.
- **NCR-6.1 Site Design Standards.** The City shall strive to incorporate cost-effective, energy-efficient construction techniques and materials.
- **NCR-6.2 New Development Requirements.** The City shall encourage new residential and commercial development to be pre-wired to accept electricity generated on-site from solar panels, wind generators, or other means and plumbed for the future installation of hot water panels.
- **NCR-6.4 Energy Education and Training.** The City shall support the Redwood Coast Energy Authority (RCEA) in its effort to provide community education on energy issues, including the benefits of reduced energy consumption and increased energy efficiency. This includes collaborating with schools and colleges on energy-related research, education, and management practices.
- **NCR-6.5 Solar Access.** The City shall encourage maximized solar access (active and passive) in site planning and design. Where possible, lots and buildings in subdivisions and new development should be oriented and designed to maximize and protect solar exposure.
- **NCR-6.7 Energy Star® Equipment.** The City shall purchase or operate Energy Star® electrical equipment (considering life-cycle costs) to follow principles of energy-efficient source reduction and resource recovery for its own operations and promote these principles in the community.
- **NCR-6.8 Energy Audits.** The City shall coordinate with the RCEA to encourage property owners to conduct energy audits.
- **NCR-6.9 Retrofitting for Energy Efficiency.** The City shall promote retrofitting of existing energy-inefficient buildings to meet or exceed the most-current energy efficiency standards (i.e., LEED certification).
- **NCR-6.10 Energy Recovery Systems.** The City shall require, whenever economically and physically feasible, the use of energy recovery systems in projects greater than one single-family residential unit.
- **NCR-6.13 Public Information and Education.** Continue to provide information, marketing, training, and education to support energy efficiency and energy conservation.
- **NCR-6.14 Explore Energy Efficiency Standards for Existing Buildings.** Explore and, if appropriate, adopt energy efficiency standards for existing residential and commercial buildings upon substantial remodel.
- **PFS-7.1 Energy Conservation.** The City shall require that new construction take advantage of energy conservation techniques and that buildings are oriented and designed to take advantage of solar heating.
- **PFS-7.2 Renewable Energy.** The City shall support the use of renewable energy sources, such as solar, in residential, commercial, and industrial developments and municipal facilities.
- **PFS-7.7 Alternative Energy Sources.** The City shall encourage the use of alternative energy technologies as they become commercially available and demonstrate reduced operating costs throughout the life cycle of the technology.

City of Rio Dell General Plan

The City of Rio Dell 2015 General Plan contains Policies P1.2.3-1 and P1.2.3-2 to establish emissions reductions plans for mobile, point, and area sources in the City. Policies P1.2.5-1 through P1.2.5-3

support energy conservation education and require new construction to comply with energy efficiency codes. Relevant policies are provided below:⁴⁷

- **P1.2.3-1** Establish review procedures for development proposals to ensure that mobile, point, and area sources of air emissions are reduced to the greatest extent possible.
- **P1.2.3-2** Reduce emissions from stationary sources by limiting wood-burning fireplace installations in new construction to low emitting, State and EPA certified fireplace inserts, woodstoves, pellet stoves, or natural gas fire stoves.
- **P1.2.5-1** Coordinate with energy suppliers and agencies to educate residents, property owners, and business operators about the need for and benefits of conserving energy.
- **P1.2.5-2** Maintain and distribute current information about building insulation, energy efficient appliances, lighting, and heating; other conservation measures and materials; and home power alternatives.
- **P1.2.5-3** Require that new construction and retrofits comply with energy efficient construction codes including high-energy windows, water heaters, and furnaces, to reduce energy consumption.

City of Trinidad General Plan

The City of Trinidad General Plan does not contain any policies specific to GHG emissions and energy.

3.5.4 Impacts and Mitigation Measures

3.5.4.1

Significance Criteria

The County utilizes the following 2024 CEQA Guidelines Appendix G significance criteria questions related to GHG Emissions and Energy.

Would the RCAP and CEQA GHG Emissions Thresholds:

- a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?
- c) Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?
- d) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

Approach to Analysis

GHG Emissions

At this time, the pace, location, and duration associated with constructing projects permitted by the proposed plan are not sufficiently detailed to quantify construction emissions, and, thus, it would be

⁴⁷ Rio Dell, City of. 2015. City of Rio Dell General Plan.

https://www.cityofriodell.ca.gov/sites/g/files/vyhlif8526/f/uploads/city_of_rio_dell_2015_general_plan_intro_and_land_use_0.pdf (accessed October 2024)

speculative to do so. Rather, construction GHG emissions impacts for the RCAP are discussed qualitatively. The long-term operational emissions associated with implementation of the proposed plan are also discussed qualitatively. The qualitative discussion of GHG emissions associated with implementation of the RCAP is performed by comparing the proposed plan to the CARB 2022 Scoping Plan. In addition, the proposed plan is qualitatively compared to other applicable plans, policies, and regulations adopted for the purpose of reducing the emissions of GHGs.

Energy

Energy consumption is analyzed herein in terms of construction and operational energy. Construction energy demand accounts for anticipated energy consumption during construction of projects and infrastructure facilitated by the proposed plan, such as fuel consumed by construction equipment and construction workers' vehicles traveling to and from the construction site. Operational energy demand accounts for the anticipated energy consumption during operation of the projects and infrastructure facilitated by the proposed plan, such as fuel consumed by cars, trucks, and public transit; natural gas consumed for on-site power generation; and electricity consumed for renewable energy generation, EV charging/transmission, public transit/active transportation, and other RCAP-related power needs. This analysis considers the equipment and processes employed during construction and operation of projects and infrastructure facilitated under the RCAP to qualitatively determine whether energy consumed during construction and operation would be wasteful, inefficient, or unnecessary. In addition, the proposed plan is qualitatively compared to applicable plans adopted for the purpose of reducing non-renewable and overall energy consumption.

EIR Scoping Comments Consideration

This section also addresses comments received in response to the EIR NOP related to the analysis and impact of GHG emissions with implementation of the RCAP (see Table 1-1 in Chapter 1.0, *Introduction*). Specifically, comments were related to the promotion and implementation of biofuels (like renewable diesel) and the potential resulting GHG emissions (like from new VMT) associated with those types of activities. These topics are addressed under Impacts GHG-1 and GHG-2.

CEQA GHG Thresholds Analysis and RCAP EIR Focus Approach

The CEQA GHG Emissions Thresholds is a guidance document and does not propose development or changes to land use designations and zoning. Thus, implementation of the CEQA GHG Emissions Thresholds would not result in direct construction or operational impacts related to GHG emissions and energy. Therefore, the analysis in this section focuses on the potential for the RCAP to result in impacts related to GHG emissions and energy in Humboldt.

Specific Thresholds of Significance

GHG Emissions Generation

Individual projects do not generate sufficient GHG emissions to influence climate change directly. However, physical changes caused by a project can contribute incrementally to significant cumulative effects, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a plan or project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines Section

15064[h][1]). The NCUAQMD does not have an adopted GHG emissions significance threshold for individual projects or plan-level documents. Therefore, the RCAP is analyzed qualitatively for its ability to result in substantial GHG emissions and for consistency with applicable plans to reduce GHG emissions, with the primary plans being the CARB 2022 Scoping Plan, the Humboldt County General Plan, and the individual City General Plans. If the RCAP is not consistent with these plans, it could be considered to have an incremental significant impact on GHG emissions.

Energy

Humboldt County does not have quantitative thresholds for evaluation of energy; however, the following qualitative thresholds are used to evaluate the significance of energy impacts resulting from implementation of the proposed plan if it would:

- Result in a wasteful, inefficient, and unnecessary consumption of energy during construction and operational activities; or if
- Construction and operation of buildings and appliances would not adhere to the energy-use reduction measures included in CALGreen.

Impact Evaluation

GHG Emissions Generation and GHG Reduction Plans Consistency

Significance Criterion a: Would the proposed plan generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Significance Criterion b: Would the proposed plan conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

Impact GHG-1 IMPLEMENTATION OF THE RCAP WOULD NOT GENERATE GHG EMISSIONS IN A MANNER THAT WOULD HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT. THE RCAP WOULD SUPPORT APPLICABLE PLANS, POLICIES, AND REGULATIONS INTENDED TO REDUCE EMISSIONS OF GHGs. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

GHG Emissions Generation

Construction

Projects and infrastructure facilitated by the RCAP would result in GHG emissions during construction. GHG emissions during construction would result primarily from fuel consumption associated with heavy equipment, light-duty vehicles, machinery, and generators for lighting. Temporary grid power may also be provided to construction trailers or electric construction equipment that may result in indirect GHG emissions from the energy generation. Generally, GHG emissions from construction represent a small portion of a project's lifetime GHG emissions. Projects and infrastructure facilitated by RCAP would also utilize construction contractors that comply with applicable CARB regulations such as accelerated retrofitting, repowering, or replacement of heavy-duty diesel on- and off-road equipment, and restricted idling of heavy-duty diesel motor vehicles. Construction contractors are required to comply with the provisions of CCR Title 13, sections 2449 and 2485, prohibiting diesel-fueled commercial and off-road vehicles from idling for more than five minutes, minimizing unnecessary GHG emissions.

Construction equipment would be subject to the USEPA Construction Equipment Fuel Efficiency Standard, which would minimize inefficient fuel consumption and, thus, emissions of GHGs. These construction equipment standards (i.e., Tier 4 efficiency requirements) are contained in 40 Code of Federal Regulations Parts 1039, 1065, and 1068. Per applicable regulatory requirements of CALGreen, development facilitated by the RCAP would comply with construction waste management practices to divert construction and demolition debris from landfills. These practices would result in efficient use of energy by construction facilitated by the RCAP and, therefore, would minimize unnecessary GHG emissions. Furthermore, in the interest of cost efficiency, construction contractors would not utilize fuel in a manner that is wasteful or unnecessary that in turn would also have the effect of minimizing GHG emissions. Therefore, RCAP construction GHG emissions impacts would be less than significant.

Operation

GHG Emissions Generation

The RCAP is a policy-level document that addresses GHG emissions generated within Humboldt. The RCAP contains strategies, measures, and actions to reduce long-term emissions of GHGs. Projects and infrastructure facilitated by the RCAP are expected to result in overall GHG emissions reductions by reducing natural gas, gasoline, and diesel fuel consumption across several GHG emission sectors. Proposed measures that would result in direct GHG emissions reductions quantified in the RCAP include:

Measure BE-1: By 2030, source 90% of grid-supplied electricity from renewable and carbon-free sources.

Measure BE-3 Urban: Reduce existing residential building natural gas consumption by 4% by 2030 and 74% by 2045.

Measure BE-4: Reduce existing nonresidential building natural gas consumption by 5% by 2030 and 79% by 2045.

Measure BE-5: Decarbonize 95% of new residential building construction by 2027.

Measure BE-6: Decarbonize 95% of new nonresidential building construction by 2027.

Measure T-1 Urban: Implement programs, such as those identified in HCAOG's RTP, to increase the mode share of active transportation in urbanized areas from 9% to 12% by 2030 thereby achieving a regional active transportation mode share of 8%.

Measure T-1 Rural: Implement programs, such as those identified in HCAOG's RTP, that increase access to safe active transportation, to increase the mode share of active transportation in rural areas from 5% to 6% by 2030 thereby achieving a regional active transportation mode share of 9%.

Measure T-2 Urban: Expand the public transit network in support of HCAOG's Regional Transportation Plan to increase public transit mode share from 2% to 20% public transit mode share in urbanized areas to achieve a regional 13% public transit mode share by 2030.

Measure T-2 Rural: Develop a robust public transit network in support of HCAOG's Regional Transportation Plan to increase public transit mode share from 1% to 10% in rural areas and achieve a regional 13% public transit mode share by 2030.

Measure T-6: Decarbonize 15% of passenger vehicle miles traveled by 2030 and 100% by 2045 through increased adoption of low and zero-emission vehicles and development of a regional electric vehicle charging and hydrogen fueling network.

Measure T-7: Increase commercial zero-emission vehicle use and adoption to 10% by 2030 and 100% by 2045 through a regional charging network and development of hydrogen hubs.

Measure T-8: Electrify or otherwise decarbonize 12% of applicable small off-road engines (SOREs) off-road equipment by 2030 and 100% by 2045 and replace fossil diesel consumption with renewable diesel in 55% of applicable large diesel in alignment with EO N-79-20 by 2030.

Measure SW-1: Establish a local waste separation facility and organics management to be able to reduce waste sent to landfills by 75% by 2030. Reduce GHG emissions by limiting truck trips required to ship waste out of the county and import compost from out of the county.

Measure CS-2: Offset fossil-based emissions and increase carbon sequestration in the community by achieving SB 1383 procurement requirements (0.08 tons recovered organic waste per person) by 2030.

Future projects that may be facilitated by the RCAP, such as new renewable energy facilities (Measures BE-1 and BE-2), new or expanded recycled water facilities (Measure WW-2), new or expanded organic waste processing facilities (Measure SW-1), and new green hydrogen and biofuel production and distribution facilities (Measure T-10) could result in new operational GHG emissions from regular maintenance and operational activities including mobile source emissions from worker trips and energy used to run the facilities, some of which may come from fossil fuel sources. New operational sources of emissions from individual projects, including from maintenance trips and activities, would be minimal and would generate negligible quantities of GHG emissions. While energy use at these facilities may result in some indirect GHG emissions, overall, there would be a large magnitude of GHG emissions offset from operation of new renewable energy projects and transportation projects that encourage pedestrian and bike travel resulting in reduced VMT and mobile GHG emissions.⁴⁸ Energy suppliers have targets to lower carbon content and increase renewable-sourced energy, such as from SB 100 requirements or through the RePower Humboldt program. The RCAP would facilitate an increase in renewable projects to support these efforts and further reduce GHG emissions. As such, there would be a net overall reduction in GHG emissions related to operation of projects and infrastructure under the RCAP. Therefore, RCAP operational impacts related to generation of GHG emissions would be less than significant.

⁴⁸ Reference Table 2-3, where the adjusted BAU Forecast demonstrates a reduction from 1,531,167 MT of CO₂e in 2022 to 1,387,943 MT of CO₂e in 2045 due to implementation of the RCAP.

Consistency with State GHG Reduction Plans

The CARB 2022 Climate Change Scoping Plan outlines a pathway to achieving the 2030 reduction target set under California Senate Bill (SB) 32, which is considered an interim target toward meeting the longer-term 2045 carbon neutrality target set under California Assembly Bill (AB) 1279. In addition, the CARB 2022 Scoping Plan outlines a path to achieving carbon neutrality and reduction of anthropogenic GHG emissions by 85 percent below 1990 levels by 2045 set under AB 1279. The RCAP addresses all changes in State law pertaining to climate change and emissions, as well as setting GHG threshold targets for Humboldt.

Future RCAP projects related to renewable energy, transit and active transportation, natural carbon sequestration efforts, building decarbonization, VMT reduction, EV charging and parking, reduced solid waste production, and reduced water consumption would support the goals of the CARB 2022 Scoping Plan related to use of clean technologies and fuels, reductions in short-lived climate pollutants, and increased action on natural and working lands to sequester carbon. For example, RCAP Measures BE-1 and BE-2 promote the use of renewable sources of electricity (such as offshore wind, solar, and biofuels), Measures BE-5, BE-6 and BE-7 encourage and support decarbonization of new and existing buildings in Humboldt, and Measures T-3, T-5 and T-6 through T-11 would reduce VMT while also increasing the percentage of ZEVs on the road and expanding the regional EV charging network. In addition, the RCAP would reduce waste (Measure SW-1), reduce per capita water consumption (Measure WW-2), and increase carbon sequestration (Measure CS-2). These RCAP measures support the CARB 2022 Scoping Plan goals of achieving carbon neutrality and reducing petroleum demand through building decarbonization, VMT reduction, and increasing the EV charging network.

Implementation of the RCAP alongside State laws and programs would reduce regional GHG emissions to approximately 1,241,589 MT of CO₂e by 2030 and 159,815 MT of CO₂e by 2045. The measures included in the RCAP combined with State-wide legislation and initiatives and regional transportation programs would enable Humboldt to meet its emissions reduction target of 40 percent below 1990 levels by 2030 (a maximum total annual emissions of 1,241,589 MT of CO₂e). Humboldt needs to achieve a GHG emissions reduction from 2030 BAU levels of 369,405 MT of CO₂e to meet the SB 32 target. The estimated GHG reductions from 2030 BAU levels that would be achieved by the RCAP along with State-wide legislation and initiatives total 370,842 MT of CO₂e by 2030 and would slightly exceed the SB 32 requirements. Because SB 32 is considered an interim target toward meeting the 2045 State goal of carbon neutrality, implementation of the RCAP would also be considered substantial progress toward meeting the State's long-term 2045 goal. Avoiding interference with and making substantial progress toward these long-term State targets are important, because these targets have been set at levels that achieve California's fair share of international emissions reduction targets that will stabilize global climate change effects and help avoid the associated adverse environmental consequences.

Given the aforementioned, the RCAP would be consistent with the SB 32 GHG reduction target for 2030, the AB 1279 GHG reduction target for 2045, and the 2022 California Climate Change Scoping Plan. Therefore, RCAP operational impacts related to consistency with State GHG reduction plans would be less than significant.

Consistency with Regional and Local GHG Reduction Plans

Policies to reduce GHG emissions and mitigate climate change are included in the Humboldt County General Plan Air Quality Element.⁴⁹ Specifically, Policy AQ-P9 of the Humboldt County General Plan Air Quality Element is to “develop and implement a multi-jurisdictional Climate Action Plan to achieve reductions in greenhouse gas emissions consistent with the State Global Warming Solutions Act and subsequent implementing legislation and regulations.” The purpose of the RCAP is to meet Policy AQ-P9 and support implementation of projects that would help Humboldt achieve State GHG reduction goals.

Furthermore, Humboldt General Plan Policy AQ-P1 aims to reduce length and frequency of vehicle trips. Projects and infrastructure under the RCAP would be consistent with the policy related to reducing length and frequency of vehicle trips. RCAP Measures T-1 and T-2 would target means to reduce vehicle trips through improvements to active transportation and public transit facilities. RCAP Measure T-3 would increase mixed-used developments in infill priority areas to reduce regional VMT. Additionally, RCAP Measure T-5 would help reduce commercial and industrial employee trips.

Humboldt General Plan Policy AQ-P14 encourages and provides incentives to increase solar-electric capacity in residential, commercial and industrial sectors. RCAP Measures BE-1 and BE-2 would increase the development of solar projects, micro-grids, and energy storage across the region to help facilitate electrification of buildings and transportation. In addition, RCAP Measure BE-3 Rural would help homeowners in assessing the viability and permitting of installing off-grid solar and battery alternative energy sources on their homes and finance options.

Humboldt General Plan Policy AQ-P16 encourages and provides incentives for commercial and residential design that supports the charging of electric vehicles. The RCAP incorporates numerous measures to support electrical vehicle accommodations. Measure T-7, for example, aims to increase commercial zero-emission vehicle use and adoption through a regional charging network and development of hydrogen hubs. As such, the RCAP would be consistent with the goals and policies of the Humboldt County General Plan Air Quality Element.

Policies to reduce GHG emissions and mitigate climate change are also included in the General Plans of Arcata, Blue Lake, Eureka, Fortuna, and Rio Dell. Some of the General Plans include goals for developing climate action plans. The RCAP would serve as the Humboldt-wide climate action plan and, thus, would support those goals and objectives, and would further support or expand upon, the other GHG policies and objectives in the individual City General Plans. For example, Arcata General Plan Policies AQ-2a and AQ-2b aim to implement measures that encourage reduction of vehicle trips and miles traveled, and the City of Rio Dell Policy P1.2.3-1 aims to ensure that mobile, point, and area sources of air emissions are reduced to the greatest extent possible. As previously stated, RCAP Measures T-1 and T-2 would help to reduce vehicle trips and encourage residents to utilize more active transportation and public transit resources, while RCAP Measure T-3 would increase mixed-used developments in infill priority areas to reduce regional VMT. These RCAP measures align with the City of Arcata General Plan and City of Rio Dell General Plan policies related to air and GHG emissions.

The City of Eureka has similar goals of reducing VMT under General Plan Policies AQ-1.7, AQ-1.9 and AQ-1.11, for example. There also exists Eureka General Plan Policy AQ-1.12 to help reduce emissions from City vehicle fleets and Policy AQ-1.13 to reduce the City’s operation emissions. RCAP Measure

⁴⁹ Humboldt County. 2017. General Plan, Chapter 15 Air Quality Element.
<https://humboldt.gov/DocumentCenter/View/61991/Chapter-15-Air-Quality-Element-PDF> (accessed October 2024)

T-11 is designed to “lead by example” and electrify or otherwise decarbonize 50 percent of municipal fleets by 2030 in alignment with the State’s Advanced Clean Fleet Rule. RCAP Measure BE-1 seeks to increase grid-supplied renewable energy to 90 percent by 2030, which would reduce operational emissions related to electricity use in municipal buildings. Additionally, RCAP Measure BE-7 targets to decarbonize 30 percent of municipal buildings and facilities by 2030. These RCAP measures align with the City of Eureka General Plan policies related to GHG emissions.

The City of Fortuna General Plan Policy HS-3.6 seeks to reduce GHG emissions from the transportation sector. The RCAP contains a variety of measures and actions supporting GHG emissions reductions from the transportation sector. For example, RCAP Measure T-6 would decarbonize 15 percent of passenger vehicle miles traveled by 2030 and 100 percent by 2045 through increased adoption of low and zero-emission vehicles and development of a regional electric vehicle charging and hydrogen fueling network. RCAP Measure T-3 would promote mixed-use, infill, and transit-oriented development. RCAP Measures T-1 Urban and Rural, T-2 Urban and Rural, T-4, and T-5 would support increased active transportation, public transit, and car sharing use. These RCAP measures align with the City of Fortuna General Plan policies related to GHG emissions.

As such, the RCAP would be consistent with the goals and policies of the General Plans of Arcata, Blue Lake, Eureka, Fortuna, and Rio Dell. Therefore, RCAP operational impacts related to consistency with regional and local GHG reduction plans would be less than significant.

Mitigation Measures

No mitigation is required.

Level of Significance

Less Than Significant without Mitigation

Energy Consumption

Significance Criterion c: Would the proposed plan result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Impact GHG-2 THE RCAP WOULD IMPLEMENT GHG REDUCTION STRATEGIES THAT WOULD ALSO PROMOTE GREATER OVERALL ENERGY EFFICIENCY. WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY WOULD NOT OCCUR. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction

Projects and infrastructure facilitated by the RCAP would require the use of energy during construction. Energy use during construction would be primarily in the form of fuel consumption to operate heavy equipment, light-duty vehicles, machinery, and generators for lighting. Temporary grid power may also be provided to construction trailers or electric construction equipment. Development facilitated by the RCAP would utilize construction contractors that comply with applicable CARB regulations such as accelerated retrofitting, repowering, or replacement of heavy-duty diesel on- and off-road equipment, and restricted idling of heavy-duty diesel motor vehicles. Construction contractors are required to comply with the provisions of CCR Title 13, sections 2449 and 2485, prohibiting diesel-fueled commercial and off-road vehicles from idling for more than five

minutes, minimizing unnecessary fuel consumption. Construction equipment would be subject to the USEPA Construction Equipment Fuel Efficiency Standard, which would minimize inefficient fuel consumption. These construction equipment standards (i.e., Tier 4 efficiency requirements) are contained in 40 Code of Federal Regulations Parts 1039, 1065, and 1068. Electrical power would be consumed during demolition and construction activities, and the demand, to the extent required, would be supplied from existing electrical infrastructure in the area.

Overall, construction activities would not have any adverse impact on available electricity supplies or infrastructure. Demolition and construction activities would utilize fuel-efficient equipment consistent with State and federal regulations and would comply with State measures to reduce the inefficient, wasteful, or unnecessary consumption of energy. Per the applicable regulatory requirements of CALGreen, development facilitated by the RCAP would comply with construction waste management practices to divert construction and demolition debris from landfills. Furthermore, in the interest of cost efficiency, construction contractors would not utilize fuel in a manner that is wasteful or unnecessary. These practices would result in efficient use of energy during construction facilitated by the RCAP.

The RCAP is designed to promulgate renewable energy and transit and active transportation projects in line with the AB 1279 2045 goals. The energy used to construct related projects and infrastructure is necessary, because the RCAP is intended to implement GHG emission reduction strategies to meet Statewide goals, including strategies that promote greater energy efficiency and reduced energy use. As such, construction activities associated with the RCAP would not result in potentially significant environmental effects due to the wasteful, inefficient, or unnecessary consumption of energy and impacts would be less than significant.

Operation

Some projects and infrastructure facilitated by the RCAP would require the use of energy during operation. Daily operation of the regional transportation system, including future transportation projects facilitated by the RCAP, uses energy in the form of fuel consumed by propulsion of passenger vehicles, including automobiles, vans and trucks, and transit vehicles, including buses. In addition, longer-term operation of projects and infrastructure facilitated by the RCAP would require permanent grid connections for electricity service to power renewable energy and battery storage facilities, ZEV charging/transmission, public transit/active transportation facilities, and organic waste processing and recycled water facilities. However, the strategies, measures, and actions of the RCAP would facilitate a range of projects that would result in an increase in Countywide renewable energy production, improved energy efficiency, and reduced overall energy use, as further discussed below.

TRANSPORTATION ENERGY USE

The RCAP would result in reduction of VMT and an increase in the use of ZEVs, thus reducing the use of petroleum fuels by the transportation sector. Measure T-3 addresses this issue by emphasizing mixed-use development in designated infill priority areas, in alignment with HCAOG's VROOM 2022-2042 connectivity goals. Encouraging mixed-use development optimizes land use by integrating residential, commercial, and recreational spaces, which can alleviate traffic congestion, lower transportation GHG emissions, and discourage urban sprawl. This measure promotes walkable neighborhoods that provide easy access to essential services and amenities. By aligning with regional transportation priorities outlined in VROOM 2022-2043, the RCAP would reduce VMT and associated transportation fuel use. In addition, RCAP Measures T-1, T-2, T-4, and T-5 would increase the availability of active transportation, mobility hubs, and public transit infrastructure and require

implementation of transportation demand management plans for large employers, further reducing VMT and transportation fuel use.

The RCAP would also reduce non-renewable energy use from the transportation sector through greater adoption of ZEVs in Humboldt. RCAP Strategy 8 aims to boost commercial ZEV adoption across Humboldt, focusing on EVs and hydrogen-powered vehicles by increasing the availability of EV charging infrastructure and hydrogen hubs, as well as increasing the supply of green hydrogen⁵⁰ and biofuels. Specifically, Measure T-10 aims to establish a biofuel network in Humboldt focusing on green hydrogen, renewable diesel, and renewable natural gas production, contributing to California's goal of establishing 200 hydrogen fueling stations by 2025. This network would support the decarbonization of transportation fuels. Due to challenges with electric infrastructure in Humboldt, biofuels serve as a transitional solution, enabling Humboldt to progress towards decarbonization goals. Biofuels reduce GHG emissions by substituting fossil fuels with renewable organic materials, which absorb CO₂ during growth. When combusted, biofuels release biogenic CO₂, minimizing net atmospheric carbon emissions compared to traditional fuels. Hydrogen is also particularly beneficial in rural areas like Humboldt, providing extended travel range for trucking compared to electric options for trucking. Like the traditional oil and gas industry, alternative fuel producers are subject to stringent environmental laws and regulations to minimize their environmental impact. While biofuels and other low-carbon alternative fuels still involve industrial processes and produce some GHGs, these fuels serve as a critical bridge in the transition towards carbon neutrality. By reducing reliance on fossil fuels, these alternatives enable immediate GHG emissions reductions, especially in sectors where electrification may be challenging in the short term. This approach supports long-term decarbonization goals while allowing time for the development of infrastructure and technologies needed for fully zero-emission solutions, ensuring that the transition does not lead to additional environmental challenges.

Therefore, implementation of the RCAP would result in a reduction of petroleum fuel consumption through VMT reductions and a shift to greater use of renewable energy sources, such as electricity from renewable energy projects facilitated by the RCAP and biofuels, through ZEV adoption and infrastructure deployment.

BUILDING ENERGY USE

The RCAP would support increased building energy efficiency through measures that promote decarbonization of existing and new buildings, including residential, commercial, and municipal land uses. These include RCAP Measures BE-3 Urban, BE-3 Rural, BE-4, BE-5, BE-6, and BE-7. These measures would require new construction to install energy-efficient electrical appliances and lighting and eliminate or reduce reliance on natural gas and would also encourage existing building retrofits to increase energy efficiency and replace natural-gas consuming appliances and heating systems with electric counterparts. These measures would minimize the inefficient, wasteful, and unnecessary consumption of building energy throughout Humboldt. Furthermore, Measure BE-1 states that by 2030 the County shall source 90 percent of grid-supplied electricity from renewable and carbon-free sources. This would promote renewable energy projects like wind, hydroelectric and solar) that would reduce the demand for fossil-fuel energy sources, and further supports the goal of increased energy efficiency. Therefore, the RCAP would result in an overall reduction in building energy use and a shift to greater use of renewable energy sources for building electricity needs.

⁵⁰ Green hydrogen is defined the Inflation Reduction Act as having a carbon intensity score of less than 0.45 kg CO₂e for each kg of hydrogen produced.

WATER- AND WASTE-RELATED ENERGY USE

Implementation of the RCAP would result in reduced energy use associated with the water and solid waste sectors via the water use reductions and solid waste generation reduction. Measure WW-2 focuses on promoting water conservation by reducing per capita potable water consumption and increasing access to and use of recycled water. Measure SW-1 would reduce landfilled waste by 75 percent by 2030. This measure would reduce energy use and GHG emissions by reducing truck trips to haul waste, and by implementing new organic waste processing and composting facilities locally, limiting the need for truck trips required to ship waste out of the County and import compost from outside of the County. In addition, Measure WW-1 focuses on expanding regional opportunities for the implementation of wastewater decarbonization technologies, including anaerobic digesters, throughout Humboldt. This measure aims to generate renewable fuel sources that can be used to decarbonize wastewater facility building energy or provide a supply of decarbonized energy to the community. Therefore, the RCAP would result in an overall reduction in energy use associated with the solid waste and water sectors.

Overall, operation of the RCAP would not result in potentially significant environmental effects from wasteful, inefficient, or unnecessary consumption of energy and impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Level of Significance

Less Than Significant without Mitigation

Renewable Energy or Energy Efficiency Standards Consistency

Significance Criterion d: Would the proposed plan conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

Impact GHG-3 THE RCAP WOULD BE CONSISTENT WITH APPLICABLE ENERGY EFFICIENCY AND RENEWABLE ENERGY GOALS AND REGULATIONS, INCLUDING RELEVANT PROVISIONS OF CALIFORNIA ENERGY CODE TITLE 24 AND CALGREEN. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction

Policy consistency is limited to operational energy use discussion. No RCAP construction impacts related to consistency with an applicable renewable energy or energy efficiency plan would occur.

Operation

CONSISTENCY WITH STATE RENEWABLE ENERGY PLANS

Relevant State plans and policies that aim to increase the production of renewable energy include SB 1020 and the 2022 California Green Building Standards Code (CALGreen or Title 24 Part 11). SB 1020 supports the reduction of GHG emissions from the electricity sector by accelerating the State's Renewables Portfolio Standard Program and requiring that renewable energy and zero-carbon resources supply 90 percent of all retail electricity sales by 2035, 95 percent by 2040, and 100 percent by 2045. CALGreen (Title 24 Part 11) institutes mandatory minimum environmental

performance standards for all ground-up new non-residential and residential structures and major renovations, including requirements for the installation of solar panels on new construction.⁵¹

The RCAP would support the reduced use of nonrenewable energy resources by encouraging consumers to enroll in renewable energy plans through Measure BE-1.⁵² In addition, the RCAP would facilitate increased renewable energy production in Humboldt through RCAP Measures BE-1, BE-2, BE-3 Rural, BE-4, BE-7, and BE-8, including through small-scale rooftop solar projects. Renewable energy projects facilitated by the RCAP, like solar and wind projects, would generate carbon-free electricity that would be provided to the grid and distributed across Humboldt to power regionwide operations. This would support compliance with the SB 1020 requirements for renewable energy and zero-carbon resources to supply 90 percent of all retail electricity sales by 2035, 95 percent by 2040, and 100 percent by 2045. In addition, the increased provisioning of rooftop solar panels encouraged by the RCAP would align with the requirements and goals of CALGreen. The RCAP includes strategies, measures and respective actions to increase production of renewable energy, as discussed above, and would, therefore, align with the overall intent of SB 1020 and be consistent with State renewable energy plans.

CONSISTENCY WITH LOCAL AND REGIONAL RENEWABLE ENERGY PLANS

Relevant local and regional plans and policies that aim to increase the production of renewable energy include RCEA's RePower Humboldt and the General Plans for Humboldt County and the Cities of Arcata, Eureka, and Fortuna. The RCEA RePower Humboldt aims to have 100 percent of RCEA's power mix sourced from a combination of State-designated renewable energy sources (solar, wind, biomass, small hydroelectric, and geothermal) and state-designated net-zero-carbon-emission existing large hydroelectric facilities by 2025. RePower Humboldt also establishes a goal for Humboldt County to be a net exporter of renewable electricity by 2030. Similarly, the County and City General Plans include policies that support increased renewable energy production within Humboldt, including Humboldt County General Plan Policies AQ-P13, AQ-P14, Arcata General Plan Policies PS-8b and RC-8a, Eureka General Plan Policy U-5.5, and Fortuna General Plan Policies H-6.3, NCR-6.2, NCR-6.5, PFS-7.2 and PFS-7.7.

The RCAP would facilitate increased renewable energy production in Humboldt through RCAP Measures BE-1, BE-2, BE-3 Rural, BE-4, BE-7, and BE-8, including through small-scale rooftop solar and utility-scale renewable energy projects. Renewable energy projects facilitated by the RCAP, like solar and wind projects, would generate carbon-free electricity that would be provided to the grid and distributed across Humboldt to power regionwide operations. In addition, RCAP Measure BE-2 calls for the regional enhancement of energy grid capacity by developing micro-grids and energy storage systems, supporting RCEA's goals established in the RePower Humboldt Plan. Micro-grids, which can operate independently from the traditional grid, combined with energy storage, improve grid reliability and resilience by storing excess energy during low demand and supplying it during peak periods. This measure provides increased support to RCEA's goals to facilitate greater energy flexibility, resilience, and allow for future electrification initiatives. Likewise, these measures support policies contained in the County and City General Plans that seek to increase renewable energy production and electrical system reliability within Humboldt. Therefore, through implementation of the RCAP goals and policies, the proposed plan would not conflict with the applicable local and regional plans for renewable energy.

⁵¹ Major renovations are defined as changes to the building envelop or changing equipment, including different components and entire systems.

⁵² Both PG&E and RCEA offer renewable energy plans to customers in Humboldt County.

CONSISTENCY WITH STATE ENERGY EFFICIENCY PLANS

The relevant State plan and policy that aims to increase energy efficiency is the 2022 California Building Energy Efficiency Standards (Title 24 Part 6). The California Building Energy Efficiency Standards (Title 24 Part 6) establish energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. CCR Title 24 (Parts 6 and 11) is updated periodically to incorporate and consider new energy-efficiency technologies and methodologies as they become available. New structures and major renovations must demonstrate their compliance with the current Building Energy Efficiency Standards through submission and approval of a Title 24 Compliance Report to the local building permit review authority and the CEC.

Future infrastructure projects stemming from the RCAP would be designed to comply with the energy efficiency standards of the California Building Energy Efficiency Standards. Future projects would be required to demonstrate compliance with the California Building Energy Efficiency Standards by implementing energy efficiency measures such as high-efficiency lighting and HVAC systems, low-flow water fixtures, dual-paned windows, and water efficient landscaping and irrigation systems. Compliance with these regulations would minimize potential conflicts with State energy efficiency plans. Additionally, the RCAP strategies, measures, and respective actions would further boost the energy efficiency of future projects beyond those captured in the California Building Energy Efficiency Standards. For example, RCAP Measures BE-3 Urban and Rural and BE-4 would reduce existing residential and nonresidential building natural gas consumption and Measures BE-5 through BE-7 would decarbonize 95 percent of new residential and nonresidential buildings as well as 30 percent of municipal buildings. These measures would result in improved energy efficiency in Humboldt and would align with the goals of the California Building Energy Efficiency Standards.

CONSISTENCY WITH LOCAL AND REGIONAL ENERGY EFFICIENCY PLANS

Relevant local and regional plans and policies that aim to increase energy efficiency include RCEA's RePower Humboldt and the General Plans for Humboldt County and the Cities of Arcata, Blue Lake, Eureka, Fortuna, and Rio Dell. RePower Humboldt includes goals and strategies to conserve energy through energy efficient buildings and building decarbonization. Similarly, the County and City General Plans contain policies that emphasize energy efficiency and reduced energy consumption, including Humboldt County General Plan Policy AQ-P15, Arcata General Plan Policies PF-6f, RC-8b, RC-8c and RC-8e, Blue Lake General Plan Policy 6, Eureka General Plan Policies AQ-1.13, U-2.7, U-5.6, U-5.8 and U-5.11, Fortuna General Plan Policies H-5.2, NCR-6.1, NCR-6.4, NCR-6.7 through NCR-6.9, NCR-6.13, NCR-6.14 and PFS-7.1, and Rio Dell General Plan Policies P1.2.5-1 through P1.2.5-3.

As discussed above, the RCAP contains strategies, measures, and respective actions to increase energy efficiency and building decarbonization throughout Humboldt. RCAP Measure BE-1 would promote energy efficiency through educational materials. RCAP Measures BE-3 Urban and Rural and BE-4 would encourage energy efficiency retrofits and building decarbonization for existing residential and nonresidential buildings, while Measures BE-5 through BE-7 seek to decarbonize 95 percent of new residential and nonresidential buildings as well as 30 percent of municipal buildings by 2027. These measures would result in improved energy efficiency in Humboldt and would align with the energy efficiency goals and policies of RePower Humboldt and the County and City General Plans.

OVERALL

The RCAP seeks to encourage the production and storage of local renewable energy, as well as to decrease overall energy consumption via energy-efficiency retrofits, building decarbonization requirements, and energy conservation education programs. As discussed above, these actions are consistent with the goals and policies established by SB 1020, CALGreen, California Building Energy Efficiency Standards, RCEA RePower Humboldt, and County and City General Plans. As such, the RCAP would not conflict with adopted renewable energy or energy efficiency plans or standards. Impacts related to consistency with State and local renewable energy and energy efficiency plans would be less than significant.

Mitigation Measures

No mitigation is required.

Level of Significance

Less Than Significant without Mitigation

3.5.5 Cumulative Impacts

GHG emissions and global climate change represent cumulative impacts. GHG emissions cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the GHG emissions from past, present, and future projects and activities have contributed, currently are contributing, and would contribute to global climate change and its associated environmental impacts. The geographic scope of the cumulative energy analysis is the PG&E and RCEA service areas. The cumulative analysis considers impacts throughout Humboldt that would occur from projected long-term growth identified in Table 3-1 of Section 3.0, *Environmental Impact Analysis*.

3.5.5.1

GHG Emissions

Cumulative development across Humboldt would generate GHG emissions from vehicle trips, electricity and water use, and other sources. The analysis of GHG emissions is cumulative in nature, as emissions affect the accumulation of GHGs in Earth's atmosphere. Individual cumulative projects that fall below thresholds are considered to have a less than significant impact, both individually and cumulatively. As indicated under Impact GHG-1, the RCAP would have a less than significant impact related to GHG emissions and would not conflict with GHG reduction plans. The RCAP involves the development and implementation of a climate action plan, outlining methods and policies to meet the long-term 2030 reduction targets set by SB 32 and the 2045 carbon neutrality goal set by AB 1279. Impacts from the RCAP GHG emissions would be less than significant and not represent a cumulatively considerable impact related to GHG emissions. Therefore, the cumulative impact related to GHG emissions would be less than significant.

Energy

Cumulative development across Humboldt would increase demand for energy resources. However, new iterations of the California Building Energy Efficiency Standards and CALGreen would require

increasingly more energy efficient appliances and building materials that reduce energy consumption in new development. In addition, vehicle fuel efficiency is anticipated to continue improving through implementation of the existing Pavley Bill regulations under AB 1493. Nevertheless, the combined increase in energy consumption from cumulative projects would potentially result in a significant cumulative impact related to the wasteful, inefficient, and unnecessary consumption of energy resources. It is conservatively assumed, therefore, that cumulative development could result in a significant impact related to the wasteful, inefficient, or unnecessary consumption of energy resources. However, as described under Impacts GHG-2 and GHG-3, RCAP development would be constructed in accordance with the California Building Energy Efficiency Standards and CALGreen (and potentially beyond based on the proposed RCAP strategies, measures and respective actions). Policies would emphasize alternative means of transportation, such as bicycles and walking, and would promote development in close proximity to transit stations, thereby reducing VMT and associated transportation energy use. In addition, the RCAP includes measures to reduce energy use in buildings and energy use associated with the solid waste and water sector, as well as increased renewable energy production in Humboldt. As the RCAP would not result in a wasteful, inefficient, or unnecessary consumption of energy, its contribution to a significant cumulative energy impact is not cumulatively considerable.

Plans and projects throughout the State are required to adhere to applicable renewable energy and energy efficiency laws, programs, and policies such as the California RPS, AB 1493, and Title 24 standards. Therefore, the cumulative impact related to consistency with renewable energy and energy reduction plans would be less than significant. As discussed under Impact GHG-3, RCAP development would be consistent with the energy-related goals and policies of the Statewide plans and regulations. Therefore, the RCAP would not contribute to a cumulative impact with respect to consistency with renewable energy and energy efficiency plans. Therefore, the cumulative impact related to energy would be less than significant.

Overall Level of Cumulative Significance

Less Than Significant without Mitigation