

3.13 Climate Change and Greenhouse Gas Emissions

Global climate change refers to alterations in weather features, which occur across the Earth as a whole, such as temperature, wind patterns, precipitation, and storms. Global temperatures are modulated by naturally occurring atmospheric gases, such as water vapor, carbon dioxide, methane, and nitrous oxide. These gases allow sunlight into the Earth's atmosphere, but prevent radiative heat from escaping into outer space, thus altering the Earth's energy balance in a phenomenon called the greenhouse effect.

The global climate is continuously changing, as evidenced by repeated episodes of warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. Scientists have observed, however, an unprecedented increase in the rate of warming in the past 150 years.

This recent warming has coincided with the global Industrial Revolution, which has seen the widespread reduction of forests to accommodate urban centers and agriculture and increase in the use of fossil fuels, primarily burning of coal, oil, and natural gas for energy, which in turn has released substantial amounts of GHGs into the atmosphere. Carbon dioxide accounts for approximately 85 percent of total emissions, and methane and nitrous oxide account for almost 14 percent.

Concentrations of carbon dioxide in the atmosphere have risen approximately 30 percent since the Industrial Revolution. Because GHGs persist and mix in the atmosphere, emissions anywhere in the world impact the climate everywhere. During the past 100 years, average global temperatures have risen by more than one degree Fahrenheit (F). Meteorologists have documented that the past 10 years have been the hottest decade since 1850. Warming has not been uniform, with temperatures at the poles experiencing the greatest increase, with up to a 9-degree increase observed in large areas of the Arctic over the 20th century. In response to warming, the growing season has lengthened and trees are flowering earlier; some animal and plant species ranges have been migrating toward higher latitudes and altitudes; plant and animal species adapted to cold temperatures have declined; and species adapted to warm temperatures have increased.

Some of the potential impacts in California of climate change may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CEC 2012). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. On a global level, the projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC 2007):

- Snow cover is projected to contract, with permafrost areas sustaining thawing.
- Hot extremes, heat waves, and heavy precipitation events are likely to increase in frequency.
- Future tropical cyclones (typhoons and hurricanes) will likely become more intense.
- Non-tropical storm tracks are projected to move poleward, with consequent changes in wind, precipitation, and temperature patterns. Increases in the amount of precipitation are very likely in high-latitudes, while decreases are likely in most subtropical regions.

- Warming is expected to be greatest over land and at most high northern latitudes, and least over the Southern Ocean and parts of the North Atlantic Ocean.

There are also many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

3.13.1 Climate Change and Greenhouse Gas Emissions - Environmental Setting

Climate Change in the County

Given the climate change predictions for California, it is reasonably foreseeable that temperatures locally in Humboldt County will increase over the course of this century by 0.5 to 8.5 degrees Fahrenheit with or without the proposed General Plan Update (IPCC, 2013). This warming could lead to other environmental effects within the unincorporated County including, but not limited to, increased flooding due to increased precipitation and runoff, a decrease in the snowpack (a major water source), habitat modification and loss, and impacts to sensitive plant and animal species. The unincorporated County could also be affected by an increase in sea level. The planning horizon of the proposed General Plan Update is to the year 2040. Studies project global sea level to rise by another 1 to 4 feet by 2100, with an uncertainty range of 0.66 to 6.6 feet (USGCRP, 2014). Interpolating this 100-year sea level rise prediction to the 25-year planning period of the project results in a potential rise of 4 to 16 inches. Predictions of sea level rise can be expected to change in the future, and local factors such as tectonic uplift or subsidence can significantly influence the net rise. Coastal structures need to be designed for the rise that might occur over their project life span, and need to utilize the best available information during siting and design.

Greenhouse Gases

"Greenhouse gases" are so called because of their role in trapping heat near the surface of the earth; they are emitted by human activity and are implicated in global climate change, commonly referred to as "global warming." These GHGs contribute to an increase in the temperature of the earth's atmosphere by preventing the escape of heat in much the same way as glass in a greenhouse. Thus, this condition is often referred to as the "greenhouse effect." In its "natural" condition, the greenhouse effect is responsible for maintaining a habitable climate on earth, but human activity has caused increased concentrations of these gases in the atmosphere, thereby contributing to an increase in global temperatures.

The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Of these gases, carbon dioxide and methane are emitted in the greatest quantities from human activities. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane predominantly results from off-gassing associated with agricultural practices and landfills. Over a 100-year period, methane has a global warming potential 25 times that of carbon dioxide, while nitrous oxide is 298 times that of the same amount of carbon dioxide (IPCC, 2007). Other GHGs – with much greater heat-absorption potential than carbon dioxide, methane and nitrous oxide – include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes.

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming, although there is much uncertainty concerning the magnitude and rate of the warming. GHGs have been identified by the EPA as a regulated pollutant, but there is no established national ambient air quality standard.

Greenhouse Gas Emissions in California

To provide context for the Humboldt County General Plan Update, it is useful to consider the state of California as a whole. California is a substantial producer of GHG emissions. According to ARB and the U.S. EPA, in 2014, total carbon dioxide emissions in California from fossil fuel combustion were 321 million tons, accounting for approximately six percent of U.S. emissions from this source (ARB, 2016d; U.S. EPA, 2016). California is the second largest emitter of greenhouse gases in the U.S. (trailing only Texas) and if considered a country it would be the 15th largest emitter in the world (ARB, 2014a). In 2014, California produced 441 million metric tons of total carbon dioxide-equivalent emissions (ARB, 2016e). California has relatively low carbon emissions intensity, however, ranking sixth lowest of the 50 states in carbon dioxide equivalent emissions per capita in 2012 (ARB, 2014a). California was also the fifth lowest of the 50 states in carbon dioxide equivalent emissions per unit of gross state product in 2012, largely as a result of the State's energy efficiency and renewable energy programs (ARB, 2014a).

The transportation sector is responsible for nearly 37 percent of GHG emissions in California. Industrial emissions and emissions from generating electricity for the commercial and residential sectors follow closely at 24 and 20 percent. In 2015, although only 34 percent of our electricity is produced out-of-state, much of this imported electricity is produced at coal-fired power plants and accounts for over 47 percent of GHG emissions in this sector (ARB, 2016d).

3.13.2 Climate Change and Greenhouse Gas Emissions - Regulatory Setting

Global climate change resulting from GHG emissions is an environmental concern being raised and discussed at the international, national, and statewide levels. At each level, agencies are considering strategies to control emissions of gases that contribute to global warming.

Federal Regulations

The federal Clean Air Act (CAA) requires the U.S. EPA to define national ambient air quality standards to protect public health and welfare in the U.S. The CAA does not specifically regulate GHG emissions. However, a significant legal decision occurred in 2009 through *Massachusetts v. Environmental Protection Agency et al.*, wherein twelve states and cities, including California, together with several environmental organizations, sued to require the U.S. EPA to regulate GHGs as pollutants under the Federal CAA (127 S. Ct. 1438 (2007)). The Supreme Court ruled that GHGs fit within the Federal CAA's definition of a pollutant and the U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the Federal CAA:

- Endangerment Finding: The current and projected concentrations of the six key GHGs—CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆—in the atmosphere threaten the public health and welfare of current and future generations.

- Cause or Contribute Finding: The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

On September 22, 2009, the U.S. EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year (FY) 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161) that required the U.S. EPA to develop "...mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy...." The Reporting Rule will apply to most entities that emit 25,000 metric tons of CO₂e or more per year. Starting in 2010, facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for the U.S. EPA to verify annual GHG emissions reports.

State Regulations

California GHG Targets and Climate Change Scoping Plan

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established **Executive Order S-3-05**, which sets forth a series of target dates by which statewide emissions of GHG would be progressively reduced, as follows:

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

In 2006, California took a leadership role in addressing the trend of increasing GHG emissions, with the passage of the **California Global Warming Solutions Act of 2006** (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq., or **AB 32**). AB 32 requires achievement by 2020 of a statewide GHG emissions limit equivalent to 1990 emissions, and the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions. The Bill required the ARB to adopt regulations by January 1, 2008, require reporting and verification of statewide GHG emissions, and monitor and enforce compliance with that program. AB 32 also directed ARB to begin developing discrete early actions to reduce GHGs while also preparing a Scoping Plan to identify how best to reach the 2020 limit. According to AB 32, the Scoping Plan must be updated at least every five years to ensure that California is on track to meet the targets set out in the legislation.

In June 2007, ARB directed its staff to pursue 37 early actions for inclusion in the Scoping Plan. The broad spectrum of strategies includes a Low Carbon Fuel Standard, regulations for refrigerants with high global warming potentials, guidance and protocols for local governments to facilitate GHG reductions, and green ports. In addition to approving the 37 early actions, ARB directed its staff to further evaluate additional recommendations for early action and subsequently published the *Expanded List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration* (ARB, 2007a), which includes 44 measures in the sectors of fuels, transportation, forestry, agriculture, education, energy efficiency, solid waste, cement, oil and gas, electricity, and fire suppression.

Regarding local government actions, the Scoping Plan says the following:

"California's draft Climate Change Scoping Plan (June 2008) recommends 2 MMTCO₂e reduction in GHG emissions by 2020 from local government actions. The Scoping Plan believes local government can directly influence:

- **Energy.** The energy used in local government buildings, equipment, and infrastructure as well as the amount of energy used by community businesses and residents through building codes, conservation programs and other mechanisms.
- **Waste and Recycling.** Local government's own waste and recycling activities and the carbon footprint of their jurisdiction's waste and recycling operations through collection system adjustments and promotion of waste reduction and recycling.
- **Water and Wastewater Systems.** Water use in municipal operations and through community-wide water conservation and reclamation program efforts.
- **Transportation.** Increases in the carbon efficiency of government fleets and local transportation planning processes to increase the use of transit, carpooling, biking, and walking. Population growth can be planned and distributed in a carbon-efficient way.
- **Design.** Siting and design of new developments in a way that reduces greenhouse gases associated with energy and water use, waste generation, and vehicle travel.

In addition to identifying early actions to reduce GHG, ARB also developed mandatory GHG reporting regulations pursuant to requirements of AB 32. The regulations require reporting for certain types of facilities that make up the bulk of the stationary source emissions in the state. Currently, the regulation identifies major facilities as those that generate more than 25,000 metric tons per year of CO₂e. Cement plants, oil refineries, electric-generating facilities and providers, cogeneration facilities, hydrogen plants, and other stationary combustion sources that emit more than 25,000 metric tons per year of CO₂e make up 94 percent of the point source CO₂e emissions in California (ARB, 2007b).

On December 11, 2008, ARB adopted the first *Climate Change Scoping Plan*, incorporating the early actions and outlining additional measures to meet AB 32's 2020 GHG reduction target (ARB, 2008b). The 2008 Scoping Plan demonstrated that to meet the AB 32 target, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from 2008 levels. According to the 2008 Scoping Plan, meeting the 2020 target requires the reduction of 169 MMT CO₂e, or approximately 28.4 percent, from the state's projected 2020 business-as-usual (BAU) emissions level of 596 MMT CO₂e. In August 2011, the Scoping Plan was re-approved by the Board and includes the *Final Supplement to the Scoping Plan Functional Equivalent Document*, with expanded analysis of project alternatives as well as update to the 2020 emission projection in light of updated economic forecasts. Considering the updated 2020 BAU estimate of 507 MMT CO₂e, a 16 percent reduction below the estimated BAU levels would be necessary to return to 1990 levels by 2020.

The *First Update to the Scoping Plan* (ARB, 2014b), approved by the ARB on May 22, 2014, includes new strategies and recommendations for reducing GHG emissions and sets the groundwork to reach California's post-2020 climate goals. The Scoping Plan Update details progress made towards meeting AB 32's 2020 reduction goal and provides a GHG reduction framework to meet the 80 percent below 1990 levels by 2050. The primary focus areas for GHG reduction identified in the Scoping Plan Update are associated with energy, transportation, agriculture, water, waste management, natural and working lands, short-lived climate pollutants, green buildings, and cap-and-trade. The Scoping Plan contains the main strategies the State intends to use to reduce GHGs.

In April 2015, Governor Edmund G. Brown, Jr. signed **Executive Order B-30-15** that established an interim GHG reduction goal for California of 40 percent below 1990 levels by 2030, to ensure progress toward California's goal of reducing GHG emissions by 80 percent below 1990 levels by 2050.

On September 8, 2016, Governor Jerry Brown signed **Senate Bill 32** (Pavley - Chapter 249, Stats. of 2016), requiring California to reduce GHG emissions to 40 percent below 1990 levels by 2030. SB 32 states that: "In adopting rules and regulations to achieve the maximum technologically feasible and cost effective greenhouse gas emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030." SB 32 codifies the interim target created by EO B-30-15 for 2030.

A draft *2017 Climate Change Scoping Plan Update -The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target* (ARB, January 20, 2017) was released for public comments, due March 6, 2017.

GHG Emissions and CEQA

CEQA requires public agencies to evaluate whether a project that requires discretionary approval may have significant environmental effects and, if so, to impose feasible mitigation measures. In general, when a public agency determines that a project may have a significant effect on the environment it must prepare an Environmental Impact Report (EIR).

In August 2007, then Attorney General Brown announced his office had reached a settlement over a pending lawsuit with San Bernardino County that required the County to amend its General Plan to add a policy that describes its goal to reduce GHG emissions "reasonably attributable to [San Bernardino's] discretionary land use decisions" and internal operations, and that calls for adoption of a "Greenhouse Gas Emissions Reductions Plan" to include the following: (a) a current inventory of sources of GHGs within San Bernardino, and a current baseline inventory of GHG emissions from those sources; (b) an inventory of GHG emissions from the same sources in San Bernardino in 1990; (c) a projection of new GHG emissions in San Bernardino in 2020 from its discretionary land use decisions and governmental operations; and (d) a target for the reduction of those emissions.

The settlement with San Bernardino is significant because it established a precedent for how public agencies that prepare long-term planning documents should address GHG emissions and climate change. The settlement did not, however, resolve or even materially advance the debate over how to judge the significance of a project's GHG emissions.

The Attorney General's press release announcing the settlement with San Bernardino County identifies a number of measures that can be used to minimize GHG emissions. Feasible measures include high-density development to reduce vehicle trips; promotion of carpooling, alternative fuel vehicles, public transportation, and transportation impact fees; energy efficient design for buildings, appliances and lighting; and solar panels, water reuse systems, and on-site renewable energy production. In addition, the California Air Pollution Control Officers Association (CAPCOA) has issued model GHG policies for general plans, which contain similar measures.

Following the San Bernardino County settlement, **Senate Bill (SB) 97** (Chapter 185, 2007) was passed, requiring OPR to prepare, develop, and transmit to the California Natural Resources Agency, guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. On December 30, 2009, the Natural Resources Agency adopted amendments to the CEQA *Guidelines*, as required by SB 97, providing guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

The CEQA Guidelines revisions include a new section (Sec. 15064.4) that specifically addresses the potential significance of GHG emissions. Section 15064.4 calls for a “good-faith effort” to “describe, calculate or estimate” GHG emissions; Section 15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with “regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.” The new Guidelines also state that a project may be found to have a less-than-significant impact on GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Sec. 15064(h)(3)). Importantly, however, the Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

No quantitative significance threshold is included in the Amendments. The CEQA Guidelines afford the customary deference provided to lead agencies in their analysis and methodologies. OPR emphasizes the necessity of having a consistent threshold available to analyze projects, and the analyses should be performed based on the best available information. For example, if a lead agency determines that GHGs may be generated by a proposed project, the agency is responsible for assessing GHG emissions by type and source. The CEQA Guidelines Amendments provide the following recommendations for determining the significance of GHG emissions under Section 15064.4:

- (a) The determination of the significance of GHG emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of GHG emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:
 - (1) Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or
 - (2) Rely on a qualitative analysis or performance based standards.
- (b) A lead agency may consider the following when assessing the significance of impacts from GHG emissions on the environment:
 - (1) The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
 - (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
 - (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still

cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

The Amendments also include a new Subdivision 15064.7(c) which clarifies that in developing thresholds of significance, a lead agency may appropriately review thresholds developed by other public agencies, or recommended by other experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

In addition, the Amendments include a new Section 15183.5 that provides for tiering and streamlining the analysis of GHG emissions. Project-specific environmental documents may rely on an EIR containing a programmatic analysis of GHG emissions in the region over a specified time period.

Finally, the Amendments add a new set of environmental checklist questions (VII. Greenhouse Gas Emissions) to the CEQA Guidelines Appendix G, which are provided below under Thresholds of Significance.

With the passing of SB 32 the state has adopted an aggressive GHG emissions target for 2030 that is 40 percent below 1990 levels. Until the state adopts an updated Scoping Plan to reflect the 2030 target it will be challenging to conduct CEQA analysis of GHG emissions for projects that go beyond 2020. Meanwhile, a recent California Supreme Court decision (*Center for Biological Diversity v. California Department of Fish and Wildlife*) (henceforth referred to as Newhall Ranch decision) raises new concerns and questions about substantiating the use of GHG thresholds in CEQA evaluation, and makes it clear that demonstrating consistency with a local or regional climate action plan will provide the most defensible method, provided the climate action plan uses a GHG target that is consistent with the state's 2030 target and that the plan is "qualified" per CEQA Guidelines Section 15064.4, which stipulates that the plan:

- Establish a GHG emissions baseline and business-as-usual (BAU) forecast for the planning horizon;
- Establish a GHG reduction target consistent with AB 32 (and now, SB 32);
- Include strategies and actions that will achieve the GHG target with a high level of confidence;
- Include an implementation and monitoring plan; and
- Be adopted in a public process following environmental review under CEQA.

The Newhall Ranch decision identified multiple possible paths for evaluating GHG emissions consistent with CEQA depending on the circumstances of a given project. The decision confirmed a need to analyze both near-term (e.g. 2020) and post-2020 emissions stating that an "EIR taking a goal-consistency approach to CEQA significance may in the near future need to consider the project's effects on meeting longer term emissions reduction targets."

To be consistent with state legislation and the Newhall decision, the County will consider project-related impacts in 2020, 2030, and 2040 that are consistent with both AB 32 and SB 32 and make "substantial progress" toward the statewide target of 80 percent below 1990 emissions levels by 2050.¹ The targets will be adopted through the preparation and adoption of a CAP, in accordance with GPU Policy AQ-P9 and AQ-IM3.

¹ The Climate Change Committee of the Association of Environmental Professionals (AEP) recommended in its *Beyond 2020: The Challenges of Greenhouse Gas Reduction Planning by Local Governments in California* white paper that CEQA analyses for the majority of land use development projects can continue

Energy Generation

SB 1078 (Chapter 516, Statutes of 2002) required retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

In November 2008, then-Governor Schwarzenegger signed Executive Order S-14-08, which expanded the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the ARB under its AB 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020.

The 33-percent-by-2020 goal was codified in April 2011 with Senate Bill X1-2, which was signed by Governor Edmund G. Brown, Jr. This new Renewable Portfolio Standard (RPS) preempts the ARB 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state, including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must achieve the new RPS goals of 20 percent of retail sales from renewables by the end of 2016 and 33 percent by the end of 2020.

SB 1368 is the companion bill of AB 32 and was signed by then-Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (CPUC) to establish a GHG emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The California Energy Commission (CEC) was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

Land Use

SB 375 encourages housing and transportation planning on a regional scale, in a manner designed to reduce vehicle use and associated GHG emissions. As required under this law, ARB has assigned regional GHG reduction targets for automobiles and light-duty trucks for 2020 and 2035. The targets apply to the regions in the State covered by the 18 Metropolitan Planning Organizations (MPOs), including the Association of Bay Area Governments (ABAG). If MPOs do not meet the GHG reduction targets, transportation projects will not be eligible for funding programmed after January 1, 2012. ARB adopted regional reduction targets in 2010. For the Bay Area, the adopted reduction targets call for a 10 percent reduction by 2020 and a 16 percent reduction by 2035.

SB 375 also requires each MPO to include a Sustainable Communities Strategy (SCS) in their Regional Transportation Plan. The SCS must set forth a vision for growth for the region while taking into account transportation, housing, environmental, and economic needs. The SCS will be the blueprint by which the region will meet its GHG emissions reductions targets.

to rely on existing thresholds in the immediate future (with the exception of the "business-as-usual" approach), long-term projects should consider "post-2020 emissions consistent with 'substantial progress' along a post-2020 reduction trajectory toward meeting the 2050 target." The white paper recommends that the "significance determination...should be based on consistency with 'substantial progress' along a post-2020 trajectory."

Humboldt County is not part of a MPO, so SB 375 does not apply directly, but regional SCSs adopted by MPOs may provide examples of land use policies that may be incorporated in the Climate Action Plan to be prepared in accordance with GPU Policy AQ-P9 and Implementation Measure AQ-IM3.

California Building Standards

On January 12, 2010, the California Building Standards Commission adopted the 2010 California Green Building Standards Code, otherwise known as CALGreen. The list below identifies the most significant CALGreen requirements. In addition, CALGreen encourages local governments to adopt more stringent voluntary provisions, known as Tier 1 and Tier 2 provisions, to further reduce air pollutant emissions, improve energy efficiency, and conserve natural resources. If a local government adopts one of the tiers, the provisions become mandates for all new construction within that jurisdiction. CALGreen includes the following provisions:

- A 20 percent mandatory reduction in indoor water use, with voluntary goal standards for 30 percent, 35 percent, and 40 percent reductions;
- Separate indoor and outdoor water meters to measure nonresidential buildings' indoor and outdoor water use, with a requirement for moisture-sensing irrigation systems for larger landscape projects;
- Diversion of 50 percent of construction waste from landfills;
- Mandatory periodic inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies; and
- Mandatory use of low-pollutant-emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard.

The State of California also regulates building energy consumption under the state Building Code. The Building Energy Efficiency Standards contained within Part 1 (Administrative Code) and Part 6 (also known as the Title 24 Building Energy Efficiency Standards) of the Building Code, were developed by the CEC and apply to energy consumed for heating, cooling, ventilation, water heating and lighting in new residential and non-residential buildings. The CEC updates these standards periodically, with the most recent update in 2013. The next update is slated for December 2016.

Vehicular Emissions

In 2002, Assembly Bill (AB) 1493 was passed, which required the ARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by the ARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, the ARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty

vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and that is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Executive Order S-1-07, signed by then-Governor Arnold Schwarzenegger in 2007, proclaimed that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. The order established a goal of reducing the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. It also directed the ARB to determine whether this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

Other Greenhouse Gas Legislation

SB 350 (Clean Energy and Pollution Reduction Act of 2015) was signed into law on October 7, 2015, establishing new goals for clean energy, clean air, and GHG reduction goals for 2030 and beyond. SB 350 requires the following:

- Increase California's renewable electricity procurement goal under the RPS from 33 percent by 2020 to 50 percent by 2030.
- Double existing building energy efficiency by 2030.
- Facilitate the growth of renewable energy markets within the western U.S. by reorganizing the California Independent System Operator (CAISO).

AB 197, signed into law on September 8, 2016 along with SB 32, requires ARB to "protect the state's most impacted and disadvantaged communities ... [and] consider the social costs of the emissions of greenhouse gases." AB 197 establishes the Joint Legislative Committee on Climate Change Policies and requires the ARB to provide an annual report on GHG emissions and the Scoping Plan's progress toward meeting the emissions reduction target to the committee. AB 197 also requires ARB to post current information about GHG and air pollutant emissions on its website and protect the state's "most impacted and disadvantaged communities" by considering the social costs of GHG emissions and to "prioritize both of the following: (a) Emission reduction rules and regulations that result in direct emission reductions at large stationary sources of greenhouse gas emissions sources and direct emission reductions from mobile sources. (b) Emission reduction rules and regulations that result in direct emission reductions from sources other than those specified in subdivision (a)."

SB 1383 sets new goals for reducing short-lived climate pollutants (SLCP) to reduce methane by 40 percent, hydrofluorocarbon gases (HFCs) by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030. The bill requires the ARB to prepare a comprehensive strategy by January 1, 2018 to achieve these goals. SB 1383 also aims to reduce organic waste in landfills by requiring a 50 percent reduction from 2014 levels by 2020 and 75 percent reduction from 2014 levels by 2025, and requires a reduction in methane emissions from livestock and dairy manure management operations by up to 40 percent below 2013 levels by 2030.

All of the statewide GHG reduction measures are expected to contribute to reducing GHG emissions below Business As Usual (BAU) projections, and thus assist local jurisdictions in meeting GHG reduction goals in local Climate Action Plans.

Humboldt County's GHG Mitigation Efforts

On December 4, 2007, the Humboldt County Board of Supervisors resolved to join ICLEI – Local Governments for Sustainability USA and participate in the Cities for Climate Protection Campaign. As part of the resolution, the County of Humboldt has undertaken the Cities for Climate Protection Campaign's five milestones to reduce both GHG and air pollution emissions throughout the community, and specifically commits to progress through the following five milestones:

1. Conduct a GHG emission inventory and forecast to determine the sources and quantity of GHG emissions in the County;
2. Establish a CO₂ or GHG emissions reduction target;
3. Develop a climate action plan with both existing and future actions that, when implemented, will help meet the local GHG reduction target;
4. Implement the action plan; and
5. Monitor and report progress.

Although the County is no longer a member of ICLEI, the protocols developed by ICLEI, in conjunction with supplementation by California state agencies and organizations of environmental professionals, are recognized as the standard for the preparation of GHG inventories and projections necessary for compliance with the Global Warming Solutions Act and CEQA, and for the preparation of Climate Action Plans.

In 2008, the Redwood Coast Energy Authority (RCEA) prepared a 1990 GHG inventory for the County using the ICLEI – Local Governments for Sustainability CACP software package available at that time, along with time series estimates of GHG emissions from the unincorporated County for the years 2003-2006. The study concluded that the total GHG emissions in Humboldt County in 1990 was 1,821,532.4 T_MCO_{2e} (tonnes). Importantly, the study noted that the County measured a 439,280 T_MCO_{2e} reduction in industrial emissions between 1990 and 2005, attributed to a steady and significant decline in the lumber industry and closure of major industrial facilities related to timber processing, including numerous lumber mills and several pulp mills. The results were reported in Figure 3.12-1 in the 2012 Draft EIR for the GPU, and is reproduced on the following page.

In January 2012, as part of the 2012 Draft General Plan, Humboldt County prepared a Draft Climate Action Plan (CAP) to reduce GHG emissions in the unincorporated County, which also relied upon the 2008 RCEA report. The target set forth in the 2012 Draft CAP is to reduce county emissions to 1990 levels by 2020, consistent with AB 32. The 2012 Draft CAP also set an additional target to achieve no net increase of CO₂ emissions compared to BAU emissions from the 1984 General Plan for new residential development within the County by the year 2025. To be compliant with SB 32, the draft CAP will need to be revised to include targets for 2030 and to update the calculation of the 1990 GHG Community Emissions inventory in accordance with the current methodology.

In October 2014, RCEA released the Unincorporated Humboldt County 2005 Community Greenhouse Gas Emissions Inventory based on ICLEI's U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1, October 2012² shown below.

Table 3.13-1. Community GHG Emissions 1990 - 2006

1/8/2009	Page 1				
County of Humboldt					
Community Greenhouse Gas Emissions					
Time Series Report					
Year	1990	2003	2004	2005	2006
Residential					
eCO2 (tonnes)	113,269.6	126,030.7	104,661.1	100,523.2	101,794.6
Energy (MMBtu)	1,992,390.3	2,196,928.6	1,741,803.9	1,629,161.4	1,705,746.6
Commercial					
eCO2 (tonnes)	142,355.5	140,688.1	118,714.1	118,461.1	128,404.8
Energy (MMBtu)	2,259,203.0	2,232,386.9	1,915,459.5	2,002,654.6	2,220,796.0
Industrial					
eCO2 (tonnes)	817,364.3	236,365.2	168,817.5	378,084.3	272,233.6
Energy (MMBtu)	42,772.9	38,266.2	40,116.1	41,528.0	59,492.5
Transportation					
eCO2 (tonnes)	641,049.1	623,948.5	646,515.7	643,689.4	711,963.1
Energy (MMBtu)	8,205,263.9	8,011,688.4	8,306,655.3	8,274,638.5	9,158,070.5
Waste					
eCO2 (tonnes)	40,965.6	13,357.7	13,967.1	14,412.8	14,558.9
Other					
eCO2 (tonnes)	66,528.3	84,013.8	77,927.6	81,162.6	81,037.9
Total					
eCO2 (tonnes)	1,821,532.4	1,224,404.1	1,130,603.1	1,336,333.4	1,309,993.0
Energy (MMBtu)	12,499,630.1	12,479,270.1	12,004,034.7	11,947,982.5	13,144,105.7
<small>This report has been generated for County of Humboldt, California using STAPPA/ALAPCO and ICLEI's Clean Air and Climate Protection Software developed by Torrie Smith Associates Inc.</small>					

² The current version is U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, Version 1.1, July 2013.

The GHG Emissions data reported for 2005 in the 2014 report differs from the data reported in 2008, due to changes in methodology and the addition of several categories of emissions in the newer protocol. For example, the inventory protocol used in 2008 did not include breakouts of solid waste and landfill in the waste category or on-road and off-road estimates in the transportation category, or estimates for emissions from water & wastewater, fugitive leakage of refrigerants. Most significantly for Humboldt County, GHG emissions from livestock were not included in the prior protocol, which account for roughly 20% of GHG emissions under the current protocol. A comparison between the two study emission reports for the year 2005 appears below:

Table 3.13-2. Comparison of GHG Report Results for 2005 Emissions (MTCO₂e)

Sector	2008 Report	2014 Report
Residential Energy Use	100,523.2	112,477
Commercial Energy Use	118,461.1	117,436
Industrial Point Sources	378,084.3	197,641
On-road Transportation	643,689.4	346,162
Off-road Transportation		58,177
Solid Waste	14,412.8	39,898
Landfill		41,991
Water & Wastewater		2,984
Fugitive Leakage of Refrigerants		1,532
Livestock		227,025
Other	81,162.6	-
Total Emissions	1,336,333.4	1,145,324

The draft General Plan Update includes policy AQ-P9 and implementation measure AQ-IM3 that requires the development and implementation of a Climate Action Plan to achieve reductions consistent with AB 32 and SB 32. The preparation of a revised GHG inventory for 1990 using the currently accepted methodology is essential so that appropriate targets can be established for the preparation of a Climate Action Plan that complies with the statutory requirements.

The primary sources of the General Plan Update GHG emissions are anticipated to be combustion of fossil fuels from grid-delivered electricity use and from motor vehicles. Additional water and wastewater treatment and distribution facilities, as described in the Capital Improvements and Public Facilities Element, could someday be located in the project area. These plants could generate some amount of GHG emissions associated with operations, pumping and emergency back-up generators. No other significant stationary source generators (e.g. fossil-fuel burning power plants) are anticipated in the project area.

Implementation of the General Plan Update through development anticipated during the planning period would contribute to long-term increases in GHGs as a result of traffic increases (mobile sources) and residential building heating (area sources), as well as indirectly, through electricity generation.

Table 3.13-3 shows the 2005 GHG inventory for unincorporated Humboldt County (RCEA, 2014) along with the “business-as-usual” (BAU) emissions forecasts for the years 2020, 2028, 2030, and

2040, using population, housing, and employment forecasts for the County prepared as part of this Revised DEIR. 2028 is included because it represents peak population and housing over the planning horizon, coinciding with peak passenger vehicle traffic and peak residential energy use under BAU conditions. As a result, 2028 also represents peak total GHG emissions for the unincorporated County expected during the project planning period.

Table 3.13-3. Unincorporated Humboldt County GHG Emissions Inventory for 2005 and BAU Forecasts for 2020, 2028, 2030 and 2040

Sector	Humboldt County GHG Emissions (MTCO ₂ e)				
	2005 ^a	2020	2028	2030	2040
Residential Energy Use	112,477	117,291	119,859	119,417	117,207
Commercial Energy Use	117,436	123,751	127,119	128,452	135,119
Industrial Point Sources	197,641	206,101	210,612	209,836	205,954
On-road Transportation	346,162	333,759	338,138	334,802	324,277
Off-road Transportation	58,177	61,305	62,974	63,634	66,937
Solid Waste	39,898	41,764	42,758	42,821	43,135
Landfill	41,991	28,717	21,192	19,641	13,434
Water & Wastewater	2,984	3,124	3,198	3,203	3,227
Fugitive Leakage of Refrigerants	1,532	1,604	1,642	1,644	1,656
Livestock	227,025	353,718	353,718	353,718	353,718
Total Emissions	1,145,324	1,271,134	1,281,211	1,277,170	1,264,663

Notes: 2005 emissions for all sectors except for On-road transportation are from RCEA, 2014

During the course of the planning period, incremental increases in GHG emissions associated with traffic increases, residential space heating, and increased energy demand would contribute to increases in GHG emissions and associated climate change effects.³ Total emissions in 2005 were approximately 1,145,324 MTCO₂e. By 2028, the year that represents peak population in unincorporated Humboldt County, GHG emissions are forecast to be 1,281,211 MTCO₂e, an increase of approximately 135,887 MTCO₂e (or 12%) over 2005 levels, but comparison to 1990 levels has yet to be established. Total emissions will decrease slightly by 2030 due to the projected population decrease from 2028 to 2030, a trend that is expected to continue through 2040, when anticipated development associated with the project under BAU conditions is expected to produce 1,264,663 MTCO₂e.

³ It should also be noted that the project proposes to accommodate growth within the Urban Study Area of unincorporated Humboldt County. The Urban Study Area, also known as the urban development boundary, is an officially adopted and mapped line that separates an urban area from its surrounding greenbelt of open lands, including farms, watersheds and parks. Growth boundaries are set to discourage speculation at the urban or suburban fringe. As such, it discourages urban sprawl by keeping development contained, and thus limiting vehicle emissions by geographically keeping development within the urban study areas.

State Measures to Reduce GHG Emissions

A number of statewide measures in the current Scoping Plan (First Update to the Scoping Plan, May 2014) are expected to reduce emissions in the County by the year 2020 and beyond:

- Renewables Portfolio Standard
- Title 24 Standards
- Lighting Efficiency and Toxics Reduction Act
- Solar Hot Water Heating
- Pavley fuel efficiency standards
- Advanced Clean Cars (Vehicle Efficiency)
- Low Carbon Fuel Standard
- Various AB 32 vehicle efficiency strategies

Table 3.13-4 presents the estimated GHG reductions expected in the County from the implementation of these state measures for the years 2020, 2028, 2030, and 2040, resulting in an “adjusted BAU” forecast for each year.

Table 3.13-4. Adjusted BAU Forecasts for Unincorporated Humboldt County Accounting for GHG Reductions from State Measures

Category of GHG Reductions from State Measures	2020	2028	2030	2040
Renewables Portfolio Standard	38,668	45,541	55,357	55,971
Title 24 Standards	3,448	4,580	4,778	6,144
Lighting Efficiency and Toxics Reduction Act	5,509	4,297	3,993	3,993
Solar Hot Water Heating	246	224	229	229
Pavley / Advanced Clean Cars	8,172	57,669	65,284	83,721
Low Carbon Fuel Standard	0	0	0	0
AB 32 Vehicle Efficiency Measures	402	402	402	402
<i>Total</i>	<i>56,445</i>	<i>112,711</i>	<i>130,044</i>	<i>150,460</i>
BAU Emissions for the County	1,271,134	1,281,211	1,277,170	1,264,663
Adjusted BAU Emissions with State Measures	1,214,689	1,168,499	1,147,126	1,114,203
Percent Reduction	4%	9%	10%	12%

As noted above, the current ARB Scoping Plan focuses on the year 2020 and does not include the additional measures that will be needed to meet the state's 2030 target represented by SB 32. The next update to the Scoping Plan, currently in draft form, will provide a statewide plan to achieve the 2030 target, and provide more clarity about the role of local governments in meeting that target.

Other Emissions Sources and Sinks

The County's forested lands also sequester carbon. Since sequestration is part of the existing natural carbon cycle and only anthropogenic emissions are included in the County's GHG

inventory per inventory protocol (ICLEI – Local Governments for Sustainability USA. 2013), sequestration is not included in the analysis. However, efforts to reduce GHG emissions and enhance carbon sequestration on natural and working lands do contribute toward GHG emission reductions in the County. Therefore, the net change in sequestration resulting from forest management can help the county meet its future GHG emissions targets. The draft ARB *2017 Climate Change Scoping Plan Update* includes a commitment for development of systems for quantification and inclusion of methods for incorporating sequestration from natural lands, forests and agricultural lands as part of the state plan for meeting 2030 GHG reduction goals, which may be of special significance for Humboldt County because of its extensive area of forest, rangeland, natural open space and wetlands.

For informational purposes, an estimate of the County's potential carbon sequestration was developed. State and national estimates have been prepared for the net flux of CO₂e associated with forest and rangelands. The CEC has identified forests and rangelands as carbon sinks, and estimated the net removal of CO₂e from these lands to be 13.05 million metric tons (MMT) CO₂e per year, or 8.76 MMTCO₂e per year net of emissions for the State (CEC 2006). The ARB has used the 13.05 MMTCO₂e per year estimate and updated the net source emissions estimates to produce statewide net sink estimates ranging between 4.719 and 3.981 MMTCO₂e per year for 2000 - 2008 (ARB 2011). Considering that Humboldt County has 7.6 percent of the state's forestland, it is estimated that between 300,000 to 357,000 metric tons CO₂e are stored by Humboldt forests each year.

Humboldt County is home to two pioneering efforts to account for carbon sequestration of forest lands in conjunction with the state's Cap and Trade Program -- the Fred VanEck Foundation Forest, created with the assistance of the non-profit Pacific Forest Trust, and the city-owned Arcata Community Forest. The potential exists to expand on those programs utilizing the 1,000 acre County-owned McKay Community Forest, and other public or privately owned lands in the County.

Humboldt County GHG Emission Reduction Targets

As discussed above, to comply with AB 32 and SB 32, the County will adopt county-wide GHG emissions targets for the years 2020 and 2030 (and possibly also 2040) as part of a Climate Action Plan that will incorporate an updated 1990 GHG Inventory, to be prepared in accordance with policy AQ-P9 and implementation measure AQ-IM3.

The level of GHG Emissions in 1990 is the statutory baseline established by AB 32 and SB 32 for establishing GHG reduction goals for 2020 and 2030, and is the reference point for the 2050 target set forth in Executive Order S-3-05. What the results of a revised GHG inventory for 1990 using the currently accepted methodology is unknown at present. It is clear however that adding emissions from livestock would likely increase the 1990 total GHG emissions by approximately 220,534 MTCO₂e, based on the livestock data included in the 1990 Crop and Livestock Report published by the Humboldt County Agricultural Commissioner and the methodology used by RCEA in its 2014 report. Utilizing a 2005 baseline or other metric that does not recognize GHG reductions attributable to the decrease in industrial point sources and industrial energy uses that occurred in Humboldt County between 1990 and 2005 would result in setting targets that are much higher than are required by the statutory standard. Said another way, the higher the GHG emissions that existed in 1990 in Humboldt County, the lower the emission reduction targets will need to be in future years.

The figures in the table below illustrate this point.

	2020 Goal = 1990	Reduction needed	2030 Goal = 40% <1990	Reduction needed	2040 Goal = 60% <1990	Reduction needed
1990 baseline*	1,821,532	0	1,092,919	184,250	728,613	536,051
1990 baseline + livestock	2,042,066	0	1,225,239	51,930	816,826	447,837
- State measures		56,445		130,044		150,460
Maximum net local reduction required		0		54,206		385,591

* Source, RCEA, 2008, for illustrative purposes only. Updated 1990 GHG Emissions Inventory compliant with current protocols is required.

3.13.3 Climate Change and Greenhouse Gas Emissions - Standards of Significance

Based on Appendix G of the CEQA Guidelines the proposed County General Plan Update would have a significant impact if it would:

- a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or
- b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHG.

3.13.4 Greenhouse Gas – Impacts and Mitigation Measures

Impact 3.13.4.1. Greenhouse Gas Emissions

Under the thresholds of significance set forth above, evaluation of whether or not GHG emissions generated as a result of implementation of the General Plan Update would have a significant impact on the environment, or would conflict with applicable plans, policies or regulations adopted for the purpose of reducing emissions of GHG, cannot be definitively determined until the inventory of GHG emissions for 1990 has been updated in accordance with currently accepted protocols.

Analysis of Relevant General Plan Update Policies

The General Plan Update contains policies, standards, and implementation measures that potentially pertain to the generation of GHG. These policies include the following:

- AQ-G3 Greenhouse Gas Emissions.** Successful mitigation of greenhouse gas emissions associated with this Plan to levels of non-significance as established by the Global Warming Solutions Act and subsequent implementation of legislation and regulations.

- 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.
- 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-P10. County Government Greenhouse Gas Emission Reductions.** To lead by example, the County of Humboldt shall reduce its 2003 greenhouse gas emissions from governmental operations consistent with the state Global Warming Solutions Act and subsequent implementing legislation and regulations.
- AQ-Px. Review of Projects for Greenhouse Gas Emission Reductions.** The County shall evaluate the GHG emissions of new large scale residential, commercial and industrial projects for compliance with state regulations and require feasible mitigation measures to minimize GHG emissions.
- AQ-P11. 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-P12. Solar Electric System Capacity.** Encourage and provide incentives to increase solar-electric capacity in residential, commercial, and industrial sectors.
- AQ-P13. 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-P14. Electric Vehicle Accommodations.** Encourage and provide incentives for commercial and residential design that supports the charging of electric vehicles.
- AQ-P15. Preservation and Replacement of On-site Trees.** Projects requiring discretionary review should preserve large trees, where possible, and mitigate for carbon storage losses attributable to significant removal of trees.
- AQ-Sx. Evaluate Greenhouse Gas Emission Impacts.** During environmental review of large scale residential, commercial and industrial projects, include an assessment of the project's GHG emissions and require feasible mitigation consistent with best practices documented by the California Air Pollution Control Officers Association in their 2008 white paper "CEQA & Climate Change" or successor documents.
- AQ-S2. Evaluate Air Quality Impacts.** During environmental review of discretionary projects, evaluate new commercial and industrial sources of emissions using

analytical methods and significance criteria used, or recommended by, the NCUAQMD.

- AQ-S4. Preservation and Replacement of On-site Trees.** Large scale residential, commercial and industrial Discretionary review projects which remove a significant number of large trees (for example, more than 50 trees of greater than 12 inches DBH) shall plant replacement trees on-site or provide offsetting carbon mitigations.
- AQ-IM3. County-wide Climate Action Plan.** Develop and implement a Climate Action Plan that effectively mitigates the carbon emissions attributable to this Plan, consistent with the requirements of the state Global Warming Solutions Act and subsequent implementing legislation and regulations.
- AQ-IM4. County Government Greenhouse Gas Emission Reductions.** The County shall prepare a Climate Action Plan for its governmental operations consistent with the Countywide Climate Action Plan that seeks emission reductions in the following areas:
- A. Energy Efficiency and Conservation
 - B. Green Building
 - C. Waste Reduction and Recycling
 - D. Climate-Friendly Purchasing
 - E. Renewable Energy and Low-Carbon Fuels
 - F. Efficient Transportation
 - G. Offsetting Carbon Emissions
 - H. Promoting Community and Individual Action
- AQ-IM5. Greenhouse Gas Emissions.** Update the General Plan and Land Use Ordinances, as appropriate, to reflect the adopted countywide Climate Action Plan and the new state laws and regulations for greenhouse gas emissions when they become available.
- AQ-IMx. Review of Greenhouse Gas Emissions Impacts of New Development.** Modify the Zoning and Subdivision Ordinances to assess GHG emissions of discretionary large scale residential, commercial and industrial projects, and require feasible mitigation.
- AQ-IM6. Programs to Reduce Air Quality Impacts of Wildland Fires.** Support and encourage programs such as fuel reduction, prescribed fires, and vegetation management as recommended in the County's Fire Plan to reduce air quality impacts of wildfires. (Black carbon from wildfires is a GHG).
- AQ-IMx1. Transfer of Development Rights Program.** The County shall develop a voluntary transfer of development rights program which provides incentives to transfer entitlements from resource lands and other rural areas into areas served with public water and sewer to reduce GHG emissions from new development.

The following is excerpted from the General Plan Update Chapter on Air Quality:

“Through this process the County intends to lead by example and reduce GHG emissions in its own operations to 10 percent below 2003 levels by 2020. Through this General Plan and participation in a County-wide Climate Action Plan the County intends to reduce GHG emissions in the unincorporated area resulting from its discretionary land use decisions to 10 percent below 2003 levels by 2020. The County will also partner with the Redwood Coast Energy Authority and local cities to attain this level of reduction for the entire County.

“CEQA requires public agencies to identify the potentially significant effects on the environment of projects they intend to carry out or approve, and to mitigate significant effects whenever it is feasible to do so. AB 32 establishes by law that greenhouse gas emissions cause significant adverse impacts to the environment, so the General Plan must include feasible mitigations to offset the GHG emissions associated with the Plan.

“The Plan includes a range of mitigations for reducing GHG emissions and mitigations to achieve increased carbon storage within the County. Increasing carbon storage on timber and agricultural lands may be the County’s most effective means to combat global warming

“The State’s 2020 target for California’s forest lands is to retain the current carbon storage capacity of California’s forests through sustainable management practices, reducing the risk of wildfire, and the avoidance or mitigation of land-use changes that reduce carbon storage. This equates to 5 MMTCO_{2e} of carbon storage, which is more than 10 percent all of non-transportation reductions planned through 2020, underscoring the role that forest lands will play in California’s efforts to reduce GHG emissions.

“The state’s first forest carbon storage project to be verified through the California Climate Action Registry was located in Humboldt County on 2,100 acres owned by the van Eck Forest Foundation. The project generated more than 500,000 tons of carbon credits that are being sold to interested purchasers. Under AB32, California is planning to implement a cap-and-trade program by 2012 that could increase the demand for verifiable carbon credits. This may create increased financial opportunities for forest and agricultural land owners in Humboldt County willing to manage their lands consistent with accepted carbon storage protocols.”

While timber management is regulated by the State under the Forest Practices Act, the General Plan Update proposes the development of a program that could provide carbon credits to local forest landowners who voluntarily agree to long-term restrictions on land uses that increase GHG emissions. These carbon credits could be registered and potentially sold under a GHG emissions cap-and-trade program to offset GHG emissions from development within the County and provide a financial incentive to maintain lands in resource production.

Land Use and Circulation Elements

The Land Use and Circulation Elements have been designed to reduce VMT and to promote non-auto modes of transportation and thereby reduce GHG emissions. The planned land use intensity/urban-form and an extensive network of transit service, trails, and bike routes encourage non-auto trips. Nonetheless, as described above, the project will generate increased daily vehicle trips at buildout. The mix of land uses, however, encourages a large degree of internalization of trips within the urban study areas, which leads to shorter trip lengths and reduced vehicle emissions for those vehicle trips that start and end in the urban study areas.

The proposed General Plan Update traffic analysis prepared by TJKM provides a base year 2010 daily VMT estimate of 1,940,309 for the unincorporated county using the origin-destination method of traffic modeling. Peak VMT coincides with projected peak population in 2028, when daily VMT is expected to rise to 2,078,296. The daily VMT estimate at project buildout (2040) is 2,051,668, an increase of approximately six percent over 2010 levels.

Despite increasing VMT under the proposed General Plan Update, improvements in vehicle efficiency would result in on-road transportation emissions remaining flat into the future (see table 3.13-5).

Energy Element

As described in the Energy Element, the project encourages solar energy and other non-fossil fuel energy sources. These sources tend to support the energy needs of individual developments; however, during the build-out of the general plan, locally generated "alternative" sources are encouraged.

The policies and implementation measures described in the Energy Element also include Green Building standards to mitigate impacts associated with electricity and natural gas consumption, which would also reduce GHG emissions.

Conclusion Compliance with these policies would help reduce GHG emissions from future development under the proposed General Plan update. Additional reductions would be achieved by CAP actions that the County may develop that encourage the use of alternatively fueled and electrified equipment. However, because specific information about construction projects and yet-to-be developed CAP measures to reduce construction emissions are unknown at this time, it is uncertain what the future intensity the proposed General Plan update would exceed an adopted GHG significance threshold. Consequently, this impact is conservatively determined to be significant. Ensuring that emissions will fall below an adopted GHG emissions threshold is not feasible at this time. Therefore, this impact is considered **significant and unavoidable**.