4. Greenhouse Gases

4.1 BACKGROUND AND CONTEXT

Certain gases in the Earth's atmosphere, classified as *greenhouse gases (GHGs)*, play a critical role in determining the Earth's surface temperature. Solar radiation enters the Earth's atmosphere from space. A portion of the radiation is absorbed by the Earth's surface, and a smaller portion of this radiation is reflected back toward space. This absorbed radiation is then emitted from the Earth as low-frequency infrared radiation. The frequencies at which bodies emit radiation are proportional to temperature. The Earth has a much lower temperature than the sun; therefore, the Earth emits lower frequency radiation. Most solar radiation passes through *GHGs*; however, infrared radiation is absorbed by these gases. As a result, radiation that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on Earth. Prominent *GHGs* contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases (also known as F-gases) that include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Human-caused emissions of these *GHGs* in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the Earth's climate, known as global climate change.

GHGs are global pollutants, unlike *criteria air pollutants* and *toxic air contaminants*, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), *GHGs* have long atmospheric lifetimes (one to several thousand years). *GHGs* persist in the atmosphere for long enough time periods to be dispersed around the globe.

4.1.1 Federal Initiatives

The U.S. government administers a wide array of public-private partnerships to reduce U.S. greenhouse gas intensity. These programs focus on energy efficiency, *renewable energy*, methane, and other non-carbon dioxide (non-CO_2) gases, agricultural practices, and implementation of technologies to achieve greenhouse gas reductions.

In 2015, the U.S Environmental Protection Agency (EPA) issued a final rule establishing emission standards for *GHG* emissions from new fossil fuel-fired utility boilers and natural gas-fired stationary combustion turbines. In 2016, EPA finalized two rules updating both the 1996 New Source Performance Standards for new and modified landfills and the 1996 guidelines for existing landfills to reduce emissions of methane-rich landfill gas.

The American Innovation and Manufacturing (AIM) Act of 2020 directs EPA to address HFCs by providing new authorities to phase down the production and consumption of listed HFCs, manage these HFCs and their substitutes, and facilitate the transition to next-generation technologies that do not rely on HFCs. On September 23, 2021, EPA issued a final rule that will phase down the U.S. production and consumption of HFCs by 85 percent over the next 15 years, as mandated by the AIM Act. A global phasedown of HFCs is expected to avoid up to 0.5°C of global warming by 2100.

On December 20, 2021, EPA finalized federal greenhouse gas emissions standards for passenger cars and light trucks for model years 2023 through 2026. These standards are the strongest vehicle emissions standards ever established for the light-duty vehicle sector and are based on sound science and grounded in a rigorous assessment of current and future technologies. The updated standards will result in avoiding more than 3 billion tons of GHG emissions through 2050.

4.1.2 Statewide Initiatives

Assembly Bill 32 - The California Global Warming Solutions Act of 2006

The enactment of Assembly Bill 32 (AB 32), "The California Global Warming Solutions Act of 2006" (Health & Safety Code §38500 et seq), established a comprehensive program of regulatory and market mechanisms to achieve quantifiable reductions of GHG. The California Air Resources Board (CARB) is the primary state agency responsible for developing and maintaining a statewide inventory of GHG emissions and for formulating plans and action steps to reduce current GHG emissions statewide to 1990 GHG emission levels by the year 2020. The 2020 goal was ultimately achieved in 2016 – four years ahead of schedule. AB 32 defines *GHGs* as CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, and nitrogen trifluoride (NF_3).[3]

On June 30, 2009, California was granted a Clean Air Act waiver (42 U.S.C. §7543(a)) from EPA to regulate automotive tailpipe CO_2 emissions. CARB issued regulations requiring a 17 percent reduction in GHG emissions from light-duty vehicles by 2020, and a 25 percent reduction by 2030. After adopting these initial GHG standards for passenger vehicles, CARB adopted continued standards for future model years.

In December 2009, CARB promulgated low carbon fuel standards in order to reduce the carbon intensity of transportation fuels used in California (i.e., gasoline, compressed natural gas, ethanol, liquefied natural gas, hydrogen, diesel, biodiesel, and electricity). It is expected that the low carbon fuel standards will reduce carbon intensity from the use of such fuels by an average of 10 percent per year. Carbon intensity is a measure of the GHG emissions associated with the combination of all the steps in the "lifecycle" of a transportation fuel.

Senate Bill 97 – CEQA Guidelines for Greenhouse Gas Emissions

The Legislature also adopted Senate Bill (SB) 97 in 2007. Under SB 97, the Governor's Office of Land Use and Climate Innovation (LCI), formerly known as the ~~State~~ Office of Planning and Research ~~(OPR)~~ is required to develop California Environmentally Quality Act (CEQA) guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions as required by this division." (Public Resources Code Section 21083.05(a))

Executive Order B-30-15 – Updated GHG Reduction Target

On April 20, 2015, Governor Brown signed SB 32 and AB 197, which served to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below the AB 32 goal of 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by Executive Order (EO) B-30-15 for 2030, which set the

[3] Nitrogen trifluoride was not listed initially in AB 32 but was subsequently added to the list via legislation. AB 32 Global Warming Solutions Act of 2006.

next interim step in the state's continuing efforts to pursue the long-term target of 80 percent below 1990 emissions levels by 2050.

SB 32 is contingent upon AB 197, which amended Section 9147.10, Section 38562.5, and Section 38562.7 of the Health and Safety Code. Section 9147.10 establishes a six-member Joint Legislative Committee on Climate Change Policies to ascertain facts and make recommendations to the Legislature. CARB is required to appear before this committee annually to present information on GHG emissions, criteria pollutants, and toxic air contaminants from sectors covered by the Scoping Plan prepared by CARB. Section 38562.5 requires that CARB consider social cost when adopting rules and regulations to achieve emissions reductions and prioritize reductions at large *stationary sources* and from *mobile sources*. Section 38562.7 requires that each Scoping Plan update identify the range of projected GHG and air pollution reductions and the cost-effectiveness of each emissions reduction measure.

Executive Order B-55-18 – Carbon Neutrality

EO B-55-18 calls for California to achieve carbon neutrality by 2045 and achieve and maintain net negative GHG emissions thereafter. These targets are in line with the scientifically established levels needed in the United States to limit the rise in global temperature to no more than 2°C, the warming threshold at which major climate disruptions, such as super droughts and rising sea levels, are projected. The Proposed Scenario in the 2022 CARB Scoping Plan lays out a path not just to carbon neutrality by 2045 but also to an ambitious 2030 GHG emissions reduction target. The modeling indicates that, if the plan described in the Proposed Scenario is fully implemented, and done so on schedule, the State ~~is~~ would be on track to reduce emissions to 260 million metric tons by 2030.

Amendments to Section 15064.4 of the CEQA Guidelines for Determining the Significance of Impacts from Greenhouse Gas Emissions (December 2018)

The Natural Resources Agency added Section 15064.4 to the State CEQA Guidelines in 2010 as part of a package of amendments addressing GHG emissions, as directed by SB 97. The purpose of Section 15064.4 is to assist lead agencies in determining the significance of a project's GHG emissions on the environment. Amendments to Section 15064.4 were adopted and became effective on December 28, 2018 (2018 CEQA Guideline amendments). In addition, ~~OPR~~ LCI developed a technical advisory in 2018 entitled "Discussion Draft on CEQA and Climate change Advisory," to address some common issues and topics that arise in greenhouse gas emissions analyses under CEQA in consideration of the 2018 amendments to Section 15064.5 of the CEQA Guidelines. ~~OPR's~~ LCI's 2018 technical advisory includes detailed discussions on establishing an appropriate methodology for project analysis, approaches for determining significance thresholds, impact mitigation, streamlining GHG emissions analysis for transportation related projects, and suggestions for digital tools that could help quantify or analyze GHG emissions. The 2018 technical advisory is available online through the ~~OPR~~ LCI website.

4.1.3 Agencies in Ventura County

Ventura County Air Pollution Control District

Following updates to the ISAGs in 2011, the Ventura County Air Pollution Control District (VCAPCD) published a report entitled "Greenhouse Gas Thresholds of Significance Options for Land Use Development Projects in Ventura County" (VCAPCD Report). The VCAPCD Report explored 14 different programmatic thresholds based on variations of a no threshold approach, a zero-threshold

approach, or a non-zero approach. The VCAPCD Report further concluded that it would continue to explore options for GHG thresholds in Ventura County "with preference for GHG threshold consistency with the South Coast Air Quality Management District (SCAQMD) and the Southern California Association of Governments (SCAG) region" due to it being part of SCAG and SCAQMD being the largest *adjacent* air district.

Ventura County Regional Energy Alliance

The Ventura County Regional Energy Alliance (VCREA) is a joint powers authority with representation from local governments, schools, and special districts. In 2015, VCREA prepared an integrated community inventory of GHG emissions both regionally and for each of its local government member organizations consistent with CARB's approach for evaluating GHG inventories. The most recent version of the community inventory was published by VCREA in December 2015 and reported emissions for calendar years 2010–2012. The VCREA inventory also provided specific community emissions inventories by government jurisdictions in Ventura County. For the unincorporated area of Ventura County, GHG emissions were approximately 1.3 million *metric tons of carbon dioxide equivalent (MTCO$_2$e)* in 2012 and 1.9 million *MTCO$_2$e* in 2015. Details of the VCREA inventory and additional information on statewide, regional, and local initiatives to reduce GHG emissions can be found in Section 12.1 of the Ventura County General Plan Background Report.

4.2 IMPACT ANALYSIS

Guidance on addressing the question from the Initial Study Checklist is provided below. The level of impact shall be evaluated based on the appropriate assessment methodologies as outlined below.

(a) Would the project generate greenhouse gas emissions, either directly or indirectly, which would result in a significant impact on the environment?

Given that climate change from GHG emissions is a global phenomenon, the primary CEQA concern with GHG emissions is the cumulative impact of a project's incremental GHG emissions when viewed in connection to other past, present, and reasonably foreseeable probable future project GHG emissions. In determining the significance of a project's GHG emissions, the *Lead Agency* should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national, or global emissions. The agency's analysis should consider a timeframe that is appropriate for the project. The agency's analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. The *Lead Agency* should consider the following factors, among others, when determining the significance of impacts from GHG emissions on the environment:

- The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting; and
- Whether the project emissions exceed a GHG emissions threshold that the *Lead Agency* determines applies to the project, as explained below.

The County of Ventura has not adopted a GHG emissions threshold for purposes of CEQA. Pursuant to CEQA Guidelines Section 15064.7(c), the *Lead Agency* may consider GHG emissions thresholds previously adopted or recommended by other public agencies or recommended by experts, as long

as the decision of the *Lead Agency* to consider such thresholds with which to evaluate the project is supported by *substantial evidence*.

The VCAPCD currently evaluates project GHG emissions according to the GHG emissions thresholds recommended by the South Coast Air Quality Management District (SCAQMD). The project applicant, in consultation with the *Lead Agency* and VCAPCD, should determine whether the GHG emissions thresholds recommended by the SCAQMD could be applied, including any necessary modifications to consider factors that are unique to Ventura County, to analyze the project's GHG emissions. Should the *Lead Agency*, in consultation with VCAPCD, determine that the emissions thresholds recommended by SCAQMD would not be suitable for evaluating the project, the *Lead Agency* shall provide *substantial evidence* for the use of another agency's emissions thresholds to evaluate the project.

GHG emissions from industrial facilities are considered significant by SCAQMD if they exceed 10,000 $MTCO_2e$ per year. SCAQMD has also recommended a lower numerical threshold of 3,000 $MTCO_2e$ per year for residential and commercial projects, although this threshold has not been adopted.

The County of Ventura developed an integrated approach to addressing climate change in the adopted General Plan by incorporating policies and programs that address climate change throughout the General Plan elements, such that the General Plan serves as the County's Climate Action Plan (CAP). Although the CAP (as adopted in 2020) contains policies and programs aimed at reducing GHG emissions consistent with state reduction goals, the County would fall short of meeting state 2030 reduction targets and beyond. Thus, the CAP is not a qualified plan pursuant to CEQA Guidelines Section 15183.5(b) and project-level analysis of GHG emissions should not be tiered from the CAP.

4.3 RESOURCES & REFERENCES

Source	Managing Agency/Organization	Online Access
Resources		
Ventura County CEQA Implementation Manual	Ventura County Resource Management Agency (RMA) Planning Division	PDF | Website
Ventura County Initial Study Assessment Guidelines: Introduction	Ventura County RMA Planning Division	PDF | Website
Ventura County Initial Study Checklist Template	Ventura County RMA Planning Division	PDF | Website
References		
2022 CARB Scoping Plan	California Air Resources Board	PDF | Website
California Global Warming Solutions Act of 2006 (AB32)	California Air Resources Board	Website
California Global Warming Solutions Act of 2006 (SB32)	California Air Resources Board	Website

Source	Managing Agency/Organization	Online Access
California Environmental Quality Act	California Governor's Office of Land Use and Climate Innovation (LCI), formerly Office of Planning and Research	Website
CEQA Guidelines for Greenhouse Gas Emissions (SB97)	LCI	Website
Executive Order B-55-18	LCI	Website
GHG emissions standards for passenger cars and light trucks	U.S. Environmental Protection Agency	Website
Greenhouse Gas Thresholds of Significance Options for Land Use Development Projects in Ventura County	Ventura County Air Pollution Control District	Website
HFCs and the AIM Act	U.S. Environmental Protection Agency	Website
New Source Performance Standards for GHG emissions for new fossil fuel-fired utility boilers and natural gas-fired stationary combustion turbines (2015)	U.S. Environmental Protection Agency	Website
New Source Performance Standards for Municipal Solid Waste Landfills (2016)	U.S. Environmental Protection Agency	Website
SCAQMD GHG Significance Thresholds	South Coast Air Quality Management District	Website
State Air Resources Board: greenhouse gases: regulations (AB 197)	California Air Resources Board	Website
Ventura County General Plan, Appendix B, Climate Action Plan (CAP)	County of Ventura	PDF | Website
Ventura County General Plan Background Report, Chapter 12	Ventura County RMA Planning Division	PDF | Website