CALAVERAS COUNTY PLANNING DEPARTMENT
891 Mountain Ranch Road,
San Andreas, California 95249
(209) 754-6394

Planning Commission Staff Report

Hearing Date	August 24, 2023
Project Number/Name	Greenhouse Gas Emissions Inventory and Reduction Plan
Supervisorial District Number	County-wide
Assessor's Parcel Number(s)	N/A
Planner	Gabriel Elliott, Director of Planning

Date: August 24, 2023

BACKGROUND:

Planning Commission Meeting of August 10, 2023

At their meeting of August 10, 2023, the Planning Commission reviewed, commented on, suggested revisions to the GHGRP Measures Summary, and directed Planning Staff to consolidate the specific changes recommended by them, and bring them back to the meeting of August 24, 2023.

Updates to the GHGRP, consisting of recommended changes by the Planning Commission, will be presented at the meeting for discussion.

RECOMMENDATION:

Staff recommends that the Planning Commission take the following action:

1. Open public hearing
2. Discuss the results of the consultant's findings on the county's level of compliance with SB 32

ATTACHMENTS:

(1) Planning Commission staff report of August 10, 2023, and attachments
(2) Recommended revisions to the GHGRP Measures Summary
(3) Commissioner Laddish's recommended revisions

AUGUST 10, 2023, STAFF REPORT WITH ATTACHMENTS

CALAVERAS COUNTY PLANNING DEPARTMENT
891 Mountain Ranch Road,
San Andreas, California 95249
(209) 754-6394

Planning Commission Staff Report

Hearing Date	August 10, 2023
Project Number/Name	Greenhouse Gas Emissions Inventory and Reduction Plan
Supervisorial District Number	County-wide
Assessor's Parcel Number(s)	N/A
Planner	Gabriel Elliott, Director of Planning

Date: July 26, 2023

BACKGROUND:

Planning Commission Meeting of November 3, 2022

Upon receipt of an October 26, 2022, memorandum, the Planning Commission, at their meeting of November 3, 2022, provided specific directions to the SBC group regarding the methodology, the GHG inventory, and other aspects of the October 26, 2022, memorandum. The Commission was interested in how the County could close the 56,000+ metric tons of CO_2 deficiency and achieve the County's goal of reaching its General Plan SB 32 target. Planning Commission's comments were conveyed to the consultants in November 2022.

Update:

On July 17, 2023, Rincon Consultants presented a memorandum summarizing the County's Greenhouse Gas Reduction Plan Measures. The memorandum included: 1) the Greenhouse Gas (GHG) emission inventory, forecast, and reference year that provide the basis for the Calaveras County (County) Greenhouse Gas Reduction Plan (GHGRP), and 2) the GHG emission reduction measures, including quantification, that are proposed to be included in the County GHGRP and comparison to GHG emissions reduction targets.

The respective GHG emissions reduction impacts were summarized by sector and then aggregated for comparison to the GHG emissions reduction targets for each target year. According to the consultants, full implementation of the presented measures would allow the County to reach the 2030 GHG emission reduction target and make substantial progress towards achieving the 2045 GHG emission reduction target. Future GHGRP measure updates will be required to allow the County to reach the 2045 GHG emission reduction target.

The GHG emissions reduction measures, developed and quantified based on these GHG emissions metrics, summarizes the results of the joint work effort led by the Sierra Business Council and supported by Harris and Associates and Rincon Consultants, Inc,.

Measures and their associated GHG emissions reduction impacts for target years 2030 and 2045 focuses on energy, transportation, agriculture, solid waste, water, wastewater, and carbon sequestration sectors.

2018 GHG Emissions Inventory
The inventory reported GHG emissions for 2018 by source sector, including energy, transportation, agriculture, solid waste, and water/ wastewater, and indicates that the County emitted **347,311 metric tons** of carbon dioxide equivalent (MT CO_2e).

GHG Emissions Forecast between 2018 and 2045
A GHG emissions forecast through 2045 provides a projection of how GHG emissions are expected to change for the County based on two scenarios. (1) The business-as-usual scenario forecasts GHG emissions based on changes in population, employment, and other growth indicators, with all other potential changes (e.g., emission factors, fuel efficiencies) held constant. (2) The adjusted scenario forecasts GHG emissions based on the same growth indicators as the business-as-usual forecast and also adjusts the GHG emissions to take into account assumed implementation of adopted State and federal legislation aimed at reducing GHG emissions through 2045. The adjusted forecast for 2030 totals **306,545 MT CO_2e** and **276,780 MT CO_2e** for 2045.

1990 GHG Emissions Reference Year
Because there is no County-specific 1990 GHG emissions inventory that can be used as a reference year from which County GHG emissions can be compared to the State goals, the County's 1990 reference year GHG emissions were calculated using the 2018 GHG emissions inventory as compared to the known magnitude change in statewide GHG emissions between 2018 and 1990. The estimated total was **356,163 MT CO_2e**. As part of the County's GHGRP, and consistent with State goals, the County aimed to reduce GHG emissions 40 percent below 1990 levels by year 2030 and show substantial progress toward achieving carbon neutrality by 2045. These reduction pathway targets translate to a GHG emissions reduction target of **213,698 MT CO_2e by 2030** and net zero MT CO2e by 2045.

GHG Emissions Reduction Measures
GHG emissions reduction measures were developed to allow the County to meet the 2030 GHG emissions target and make substantial progress toward the 2045 GHG emissions target. As indicated earlier, measures are included for energy, transportation, agriculture, solid waste, water, wastewater, and carbon sequestration.

There were two categories of measures created: (a) quantitative, and (b) supportive. **Quantitative** measures result in direct GHG emissions reductions that can be quantified and summed up to show how the County will make progress towards and meet its GHG emission reduction targets when implemented. **Supportive** measures provide support to the quantitative measures to successfully implement them.

An example of a quantitative measure is **Measure RE-1: Community Energy**, under the Energy GHG Emission Reduction Measures. Measure RE-1 requires the County to convert

14% of existing residential grid electricity and 18% of existing commercial grid electricity to renewable electricity by 2030. If implemented, the resulting Greenhouse Gas Reduction Impact for year 2030 will be **1,418 metric tons of CO_2** per year.

On the other hand, **Measure RE-2: Promote On-Site Renewable Energy Generation (Government Operations)** is a supportive measure to Measure RE-1. Measure RE - 2 requires the County to support efforts on available government-owned land or buildings to increase renewable and carbon-free energy generation, including wind, solar, hydro, and biomass. Promote on-site renewable energy generation and energy storage. Evaluate the renewable energy potential and assess barriers to increased renewable energy generation. Because this is a supportive measure, the GHG reduction value is tied into the GHG reduction value for Measure RE:1.

Another example of a quantitative measure is **Measure EB-3: Facilitate Energy Efficiency Retrofits**. This measure requests that the County reduce existing residential and commercial energy use (all sources) by 10% and 15% in 2030 and 25% and 30% in 2045, respectively, through energy efficiency retrofits. With this type of measure, the County can pursue funding to help facilitate (i.e., incentivize) energy-efficient upgrades for homes and businesses. Energy efficiency retrofits can include upgrades to lighting, heating, ventilation and air conditioning, appliances, water efficiency, and building envelopes (insulation, windows). Consistent with COS-5G of the County's General Plan, cooperate with the CCAPCD to implement emissions reductions programs such as the Carl Moyer Program, and to find methods of incentivizing the replacement or retrofit of small emissions sources throughout the County, such as the replacement of existing wood stoves. Implementation of this measure will result in a GHG reduction impact of **3,868 metric tons of CO_2e** emissions per year for year 2030 and **1,727 metric tons of CO_2e** emissions **per year for year 2045.**

Measures Comparisons

The GHG Reduction Measures with the highest reduction impacts is from the Transportation Sector (TR-1 through TR-5) with **58,850 metric tons of CO_2e by 2030**, and **103,162 metric tons of CO_2e by 2045**. The next category of reducing impacts is from energy with 19,372 **GHG emission reduction impact by 2030** and **30,528 GHG emission reduction impact by 2045.** On the other hand, the impacts with the lowest reducing values are Water and Wastewater with **159 metric tons of CO_2e by 2030, and 166 metric tons of CO_2e by 2045.** The second lowest reduction values are Carbon Sequestration with 863 **metric tons of CO_2e by 2030,** and **888 metric tons of CO_2e by 2045**.

Conclusion

There have been speculation as to the type and nature of the mitigation measures the County would have to implement to meet its adopted target of SB 32 requirements. The information presented in the July 17, 2023, memorandum indicates that reduction can be accomplished through supportive measures of the quantifiable measures.

Rincon Consultants will be present via zoom at the Planning Commission meeting to answer specific questions regarding the report's methodology and provide a road map to

achieving the County's target of SB 32 goals.

RECOMMENDATION:

Staff recommends that the Planning Commission take the following action:

1. Open public hearing
2. Discuss the results of the consultant's findings on the county's level of compliance with SB 32

ATTACHMENTS:

(1) July 17, 2023, memorandum from Rincon Consultants
(2) April 21, 2023, Memorandum from Harris & Associates
(3) April 6, 2023, response from SBC, Rincon Consultants, and Harris & Associates response to the November 3, 2022, policy direction
(4) November 3, 2022, Policy Direction to consultants after the October 26, 2022, memorandum
(5) October 26, 2022, Memorandum from Harris & Associates

Rincon Consultants, Inc.
4825 J Street, Suite 200
Sacramento, California 95819
916-706-1374

July 17, 2023
Project No: 23-14836

Gabriel Elliott
Calaveras County
891 Mountain Ranch Road
San Andreas, California 95249
Via email: gelliott@co.calaveras.ca.us

Subject: Calaveras County Greenhouse Gas Reduction Plan (GHGRP) Measures Summary

Dear Mr. Elliott:

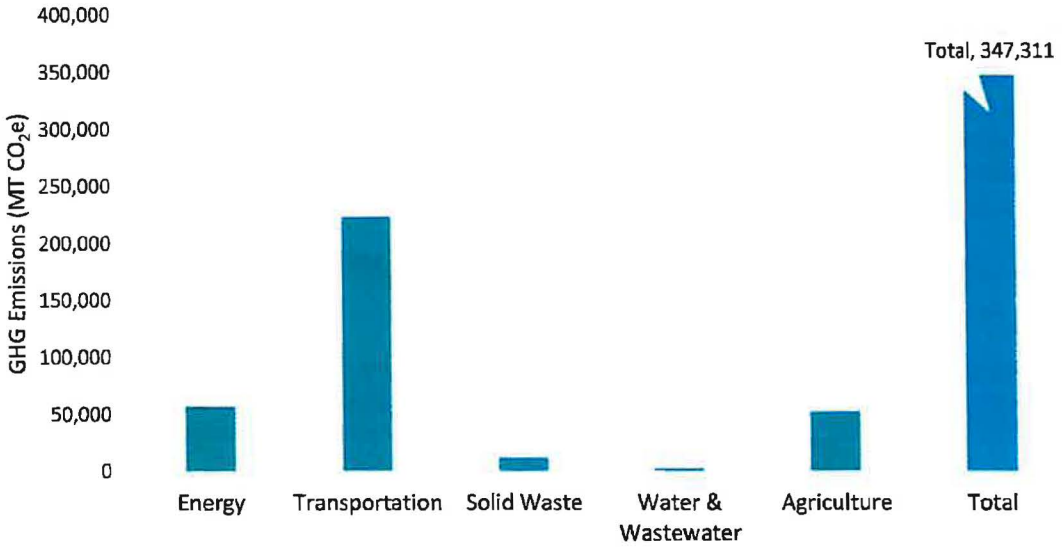
The following memorandum presents a summary of 1) the greenhouse gas (GHG) emission inventory, forecast, and reference year that provide the basis for the Calaveras County (County) Greenhouse Gas Reduction Plan (GHGRP) and 2) the GHG emission reduction measures, including quantification, that are proposed to be included in the County GHGRP and comparison to GHG emissions reduction targets. This document summarizes the results of the joint work effort led by the Sierra Business Council and supported by Harris and Associates and Rincon Consultants, Inc. The results of the County 2018 GHG emissions inventory, 2030 and 2045 forecast, and 1990 reference year are summarized below. GHG emissions reduction measures were developed and quantified based on these GHG emissions metrics. Measures and their associated GHG emissions reduction impact for target years 2030 and 2045 are included below for the energy, transportation, agriculture, solid waste, water, wastewater, and carbon sequestration sectors.[1] The respective GHG emissions reduction impacts are summarized by sector and then aggregated for comparison to the GHG emissions reduction targets for each target year. Full implementation of the presented measures would allow the County to reach the 2030 GHG emission reduction target and make substantial progress towards achieving the 2045 GHG emission reduction target. Future GHGRP measure updates will be required to allow the County to reach the 2045 GHG emission reduction target.

2018 GHG Emissions Inventory

The County 2018 GHG emission inventory includes GHG emissions associated with activities that were estimated to occur within the County jurisdictional boundaries during 2018.[2] The inventory reported GHG emissions by source sector, including energy, transportation, agriculture, solid waste, and water/ wastewater. The results indicate that the County emitted 347,311 metric tons of carbon dioxide equivalent (MT CO_2e) in 2018. Figure 1 presents the results by source sector.

[1] Carbon sequestration refers to the process of capturing, removing, and storing atmosphere carbon dioxide.
[2] A GHG emissions inventory is not a census of emissions but rather an estimated calculation of emissions based on activity units during the identified timeframe and relevant emission factors by sector.

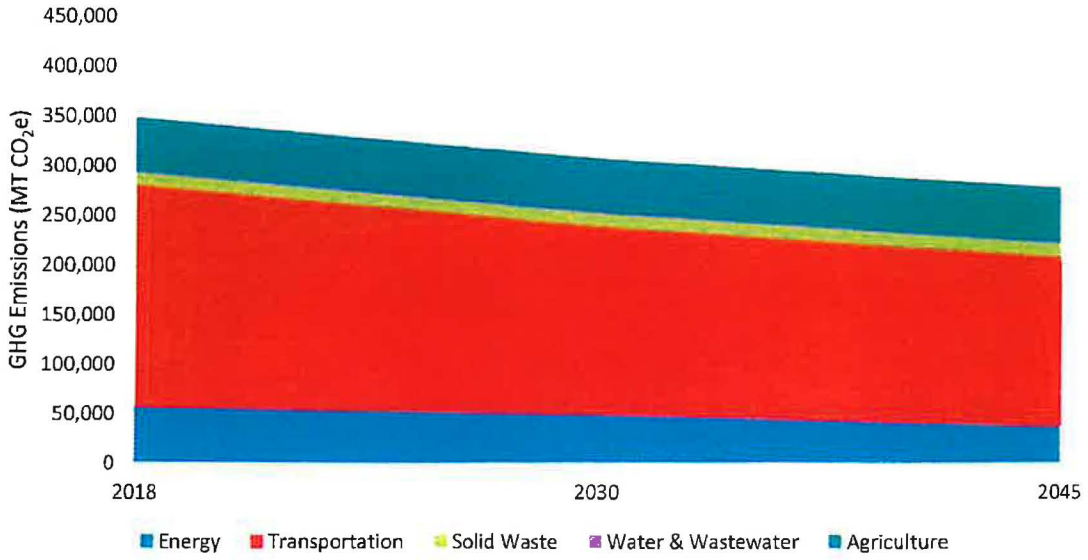
Figure 1 2018 GHG Emissions by Source Sector



GHG Emissions Forecast between 2018 and 2045

A GHG emissions forecast through 2045 was also developed. The forecast provides a projection of how GHG emissions are expected to change for the County based on two scenarios. The business-as-usual scenario forecasts GHG emissions based on changes in population, employment, and other growth indicators, with all other potential changes (e.g., emission factors, fuel efficiencies) held constant. The adjusted scenario forecasts GHG emissions based on the same growth indicators as the business-as-usual forecast and also adjusts the GHG emissions to take into account assumed implementation of adopted State and federal legislation aimed at reducing GHG emissions through 2045. The adjusted forecast for 2030 totals 306,545 MT CO_2e and for 2045 totals 276,780 MT CO_2e. Figure 2 details the trajectory of County GHG emissions by sector through 2045 and represents the adjusted GHG emission forecast.

Figure 2 Adjusted GHG Emissions Forecast



1990 GHG Emissions Reference Year

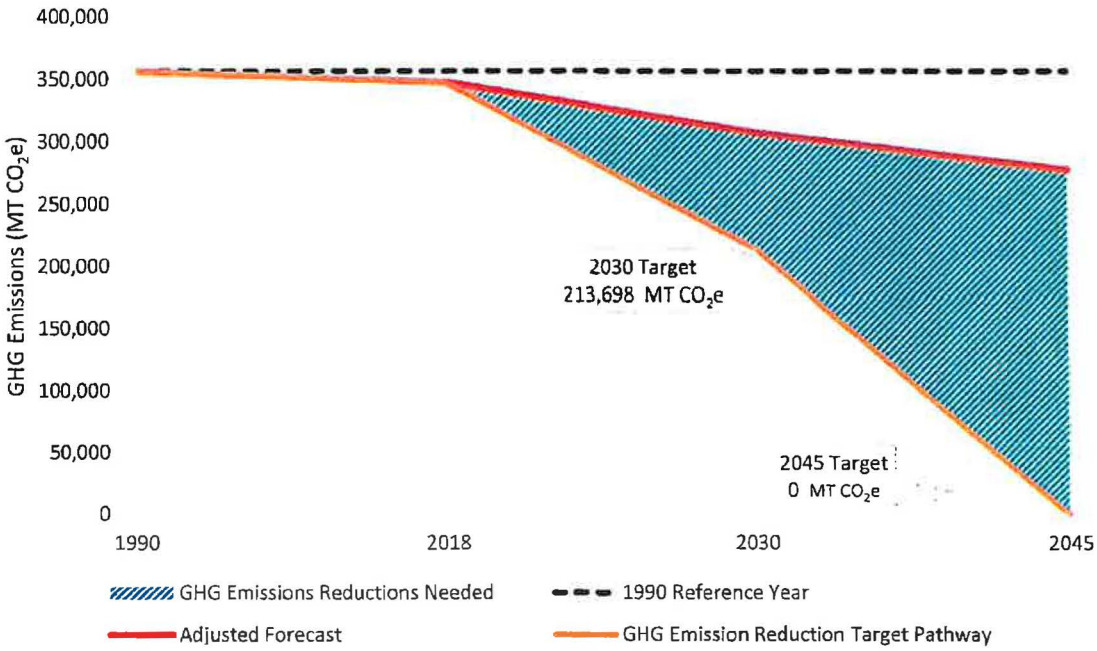
Applicable State legislation refers to GHG emission reduction targets compared to 1990 as a reference year for comparison against which to reduce GHG emissions.[3] There is not a County-specific 1990 GHG emissions inventory that can be used as a reference year from which County GHG emissions can be compared to the State goals. Therefore, County 1990 GHG emissions were estimated using the County 2018 GHG emissions inventory as compared to the known magnitude change in statewide GHG emissions between 2018 and 1990. The County's 1990 reference year GHG emissions were calculated using this methodology and are estimated to total 356,163 MT CO_2e.

GHG Emissions Reduction Pathway Goal

Based on the County 1990 GHG emission estimate, GHG emission reduction targets consistent with State goals established in Senate Bill (SB) 32 and Assembly Bill (AB) 1279 were developed for the County. Specifically, as part of the County GHGRP, the County will aim to reduce GHG emissions 40 percent below 1990 levels by 2030 and show substantial progress toward achieving carbon neutrality by 2045, consistent with State goals. These reduction pathway targets translate to a GHG emissions reduction target of 213,698 MT CO_2e by 2030 and net zero MT CO_2e by 2045. Figure 3 presents the GHG emissions reduction targets relative to the 1990 reference year and adjusted forecast through 2045. The gap between the reduction pathway goal line and adjusted forecast line represents the remaining amount of GHG emissions that the County would need to reduce through local measures to achieve the targets.

[3] Applicable state legislation refers to Senate Bill (SB) 32 and Assembly Bill (AB) 1279, both of which establish GHG targets in comparison to 1990 emissions levels.

Figure 3 GHG Emissions Reduction Pathway Goal Compared to Adjusted Forecast



GHG Emissions Reduction Measures

GHG emissions reduction measures have been developed to allow the County to meet the 2030 GHG emissions target and make substantial progress toward the 2045 GHG emissions target. The following subsections present the measures and their associated GHG emission reduction impact for target years 2030 and 2045. Measures are included for energy, transportation, agriculture, solid waste, water, wastewater, and carbon sequestration. In each sector, measures are either quantitative or supportive defined as:

- **Quantitative:** Quantitative measures result in direct GHG emissions reductions that can be quantified and summed to show how the County will make progress towards and meet its GHG emission reduction targets when implemented.
- **Supportive:** Supportive measures provide support so that the quantitative measures will be successfully implemented. Though these measures could be quantifiable, they are not quantified for one of several factors—including a low GHG emission reduction impact, indirect GHG emission reductions, or potential for double-counting—and do not contribute directly to the GHG emission reduction targets.

The last subsection presents the overall GHG emission reduction impact of the measures summarized by sector.

Energy GHG Emission Reduction Measures[4]

Measure RE-1: Increase Community Energy

Convert 14% of existing residential grid electricity and 18% of existing commercial grid electricity to renewable electricity by 2030.

Increase the use of renewable energy in the community and support efforts to increase renewable and carbon-free energy generation, including wind, solar, hydro, and biomass, and to ensure customer access to this renewable energy. Encourage on-site renewable energy generation and storage systems for residents and businesses. Develop a robust renewable energy program that provides outreach, financing opportunities, and technical assistance to residents and businesses. Pursue community solar projects. Work with large energy users to transition towards renewable and zero net energy projects. Pursue distributed energy resources (DERs), microgrids, energy storage opportunities, and grid optimization projects.

Measure RE-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[5]

	2030	2045
Total	1,418	0

Measure RE-2: Promote On-Site Renewable Energy Generation (Government Operations)

Support efforts on available government-owned land or buildings to increase renewable and carbon-free energy generation, including, wind, solar, hydro, and biomass. Promote on-site renewable energy generation and energy storage. Evaluate the renewable energy potential and assess barriers to increased renewable energy generation.

Measure RE-2 Not Quantified[6]

(Supportive of Measure RE-1)

Measure RE-3: Incentives for Alternative Energy

Consistent with Implementation Measures COS-5E and PF-3F of the County's General Plan, provide incentives to facilitate alternative energy projects. Modify the County's development standards and zoning ordinance to provide incentives for providing alternative energy producing facilities compatible with surrounding uses, such as solar arrays in parking lots that serve to provide shade and energy production. Cooperate with and support state and federal programs that assist landowners in energy conservation and production. Support programs that provide incentives for property owners to install alternative energy facilities such as solar arrays, small windmills, and other energy systems.

---

[4] County GHGRP energy GHG reduction measures and respective quantification was prepared in 2023 by Sierra Business Council.

[5] Quantification accounts for the impacts of EB-4, EB-3, EB-1, and EO-1, in order of operations. Measures RE-2, RE-3, and RE-4 are supportive of RE-1, and while they could not be quantified separately, they support the reductions associated with RE-1. RE-1 does not contribute to 2045 emissions reductions due to California's Renewable Portfolio Standard, which requires that all of the State's electricity will come from carbon-free sources by 2045.

[6] Measure not quantified because the municipal emissions of Measure RE-2 are a subset of community (i.e., commercial) emissions in Measure RE-1.

Measure RE-3 Not Quantified

(Supportive of Measure RE-1)

Measure RE-4: Codes and Standards for Alternative Energy

Consistent with Implementation Measures PF-3A, RP-5A, and RP-2A of the County's General Plan, amend codes to facilitate alternative energy projects .Amend the zoning code to encourage the incorporation of solar, wind, and other alternative energy infrastructure in project design to establish standards for locating and permitting solar farms, wind farms, and other alternative energy facilities to ensure land use compatibility; addressing the potential visual impacts of alternative energy infrastructure to the extent permitted by law. Amend the Calaveras County Code to recognize the development of geothermal resources and their related land uses and refer proposals involving or affecting geothermal resources to the California Department of Conservation Division of Oil, Gas and Geothermal Resources. Amend the County Code to incorporate required findings and procedures for implementing state legislation and Department of Conservation requirements relative to solar-use easements and installations affecting Williamson Act Contracts.

Measure RE-4 Not Quantified

(Supportive of Measure RE-1)

Measure EO-1: Conduct Energy Conservation Outreach and Education

Reduce existing and new residential and commercial energy use (all sources) by 12% in 2030 and 2045 through robust energy conservation outreach and education.

Conduct energy conservation and efficiency education and outreach to residents and businesses. Support and promote programs for lower-income and disadvantaged populations. Increase awareness of resources and financing opportunities for homes and businesses to (1) replace old appliances with energy-efficient models, (2) conduct retrofits to HVAC systems and building envelope, (3) upgrade to efficient lighting, (4) replace old and inefficient wood- and propane-burning heaters, and (5) add smart controls and sensors. This includes property owners (primary, vacation, and second homeowners), property management groups, and landlords. Through education and outreach, increase participation in voluntary residential and commercial energy efficiency programs. Educate citizens about low-income home weatherization programs (DOE Weatherization Assistance Program, California's Low-Income Weatherization Program, utility-offered Energy Savings Assistance Program, local program). Educate about existing housing rehabilitation loan programs. Partner with the local utilities (PG&E and Calaveras Public Power Agency) to promote existing energy programs for residents and businesses.

Measure EO-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[7]

	2030	2045
Total	4,147	911

[7] The EO-1 quantification accounts for the impacts of EB-4 and EB-3 on existing energy use, and NC-4, NC-1, and NC-2 on new energy use, in order of operations.

Measure EB-1: Establish a Green Business Program

Achieve participation of 5% of businesses in 2030 and 2045 within a Green Business Program. Reduce existing and new commercial energy use (all sources) by 10% in 2030 and 2045.

Establish a green business program that certifies businesses based on criteria such as energy efficiency, employee wellness, water and waste reduction, etc. Benefits to employee wellness could include active transportation, cleaner air, etc.

Measure EB-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[8]

	2030	2045
Total	23	6

Measure EB-2: Improve Building Energy Efficiency of Government Operations

Pursue grants to improve the energy efficiency of existing county buildings and infrastructure whenever a project is undertaken to improve or maintain them. This includes maintenance or improvement of both interior and exterior (streetlight, parking lot lighting, traffic signals, and other outdoor area lighting) operations. Energy efficiency improvements include retrofits or commissioning/retrocommissioning to HVAC, lighting, controls, sensors, building envelope, and any other energy loads.

Measure EB-2 Not Quantified

(Supportive of Measure EB-3)

Measure EB-3: Facilitate Energy Efficiency Retrofits

Reduce existing residential and commercial energy use (all sources) by 10% and 15% in 2030 and 25% and 30% in 2045, respectively, through energy efficiency retrofits.

The County will pursue funding to help facilitate (i.e., incentivize) energy-efficient upgrades for homes and businesses. Energy efficiency retrofits can include upgrades to lighting, heating, ventilation and air conditioning, appliances, water efficiency, and building envelope (insulation, windows). Consistent with COS-5G of the County's General Plan, cooperate with the CCAPCD to implement emissions reductions programs such as the Carl Moyer Program, and to find methods of incentivizing the replacement or retrofit of small emissions sources throughout the County, such as the replacement of existing wood stoves.

Measure EB-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[9]

	2030	2045
Total	3,868	1,727

Measure EB-4: Implement an Equipment Time-of-Replacement Ordinance

At equipment end of life, replace 45% of existing residential and commercial natural gas and propane water heaters with electric alternatives by 2030 and 90% by 2045 (based on 10-year life and 10%

[8] The EB-1 quantification accounts for the impacts of EB-4 and EB-3 on existing energy use, and NC-1 and NC-2 on new energy use, in order of operations.
[9] The EB-3 quantification accounts for the impact of EB-4, in order of operations.

non-compliance). At equipment end of life, replace 23% of natural gas, propane, and wood space heaters with electric alternatives by 2030 and 90% by 2045 (based on 20-year life and 10% non-compliance).

By 2025, adopt an ordinance that requires residential and commercial fossil fuel-powered space and water heating appliances be replaced with electric alternatives at time of replacement.

Measure EB-4 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	9,748	27,531

Measure NC-1: Incentivize Highly Efficient New Development

Achieve participation from 10% of new residential buildings starting from 2025 through 2045. Reduce new residential energy use (all sources) by 53%). Achieve participation from 10% of new commercial buildings between 2025 and 2045. Reduce new commercial energy use (all sources) by 30%).

Provide incentives (e.g., easing permitting requirements) to new residential and nonresidential development projects for going beyond Title 24 compliance.

Measure NC-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[10]

	2030	2045
Total	58	98

Measure NC-2: Incentivize Zero Net Energy New Construction

Achieve participation by 10% of new residential and commercial buildings from 2025 through 2045.

Incentivize new residential and nonresidential buildings to be built all-electric and highly energy efficiency and install renewable energy generation and energy storage systems that can fully offset energy needs.

Measure NC-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[11]

	2030	2045
Total	81	192

Measure NC-3: Reduce Criteria Air Pollutants and Emissions from New Development

Consistent with Implementation Measures COS-5F and COS-5H of the County's General Plan, reduce criteria air pollutants, including GHG emissions, from new developments. Evaluate proposed discretionary developments subject to CEQA evaluation to determine whether they will emit criteria air pollutants, including greenhouse gases, exceeding CCAPCD's standards. Should proposed developments within the County be anticipated to result in significant impacts related to the emission of criteria air pollutants, the County shall require the applicable mitigation measures provided in the CCAPCD's Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects.

Measure NC-3 Not Quantified

[10] The NC-1 quantification accounts for the impact of NC-4, in order of operations.
[11] The NC-2 quantification accounts for the impacts of NC-4 and NC-1, in order of operations.

(Supportive of Measures NC-1 and NC-2)

Measure NC-4: Increase Clean Wood-Burning Appliances

Achieve use of EPA-rated woodstoves in all new residential buildings from 2025 through 2045.

In alignment with Implementation Measure COS-5N of the County's General Plan, require all wood burning appliances, including fireplaces, in new residential construction to be EPA rated appliances, except as may be provided in the Housing Element or for off-grid construction. EPA rated woodstoves produce 30% less emissions compared to non-EPA-rated woodstoves.

Measure NC-4 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	**28**	**62**

Transportation GHG Emission Reduction Measures[12]

Measure TR-1: Increase EV/ZEV Adoption

Install 99 new publicly accessible plug-in electric vehicle (PEV) charging ports by 2025 to support the resident and visitor demand projected in the Central Sierra Zero Emission Vehicle Readiness Plan (CSZEVRP) and install 652 new publicly accessible PEV charging ports by 2030 to accelerate electric vehicle (EV)/zero-emission vehicle (ZEV) adoption in Calaveras County.

1. Develop and adopt an EV charging infrastructure reach code to require 30% of total parking spaces in new or remodeled commercial development to install Level 2 EV chargers exceeding the 2022 California Green Building Standards Code Tier 2 requirements.
2. Develop the Electric Vehicle Infrastructure Implementation Plan with a list of prioritized locations for the 751 new PEV charging port installations across the County by 2030. Include locations recommended in the CSZEVRP, including EV charging infrastructure for visitors at the recommended resorts/lodging locations, DC fast chargers at the recommended highway corridor locations, and EV charging stations (EVCS) at the other recommended destinations.
3. As part of the Electric Vehicle Infrastructure Implementation Plan, conduct specific ZEV demand and infrastructure needs assessments for Murphys, San Andreas, and Valley Springs as recommended by the CSZEVRP. From the assessments, develop prioritized locations to provide electric vehicle/alternative fueling infrastructure in these areas to be included in the Plan.
4. Consistent with the Calaveras Streamlined Permitting Guidebook of the CSZEVRP and Calaveras County General Plan Implementation Measure PF-3B, develop and maintain an expedited, streamlined permitting process for EVCS in accordance with AB 1236 and employ the example Plug-in EV Infrastructure Permitting Checklist in the Guidebook to assess installation projects for expedited review. Also, amend the Calaveras County zoning code to provide ZEV incentives to encourage adoption and use.

[12] County GHGRP transportation GHG reduction measures and respective quantification was prepared in 2023 by Rincon.

5. Develop and hire Calaveras County "grant team" staff to pursue significant funding from Measures TR-9 and TR-10 to upgrade the EV charging and alternative fueling infrastructure to facilitate a robust ZEV network throughout the County.
6. Engage the local business community to site EV infrastructure (especially businesses that rely on tourism and business travelers) and to develop and implement a plan for County-supported accelerated business fleet electrification in partnership with the PG&E EV Fleet program.
7. Support and partner with ZEV car share companies in coming to the County.
8. Support the regional transportation planning agency in creating a Regional Electric Vehicle Infrastructure Collaborative. Participate in the program to collaborate on infrastructure deployment and to increase buying/negotiation power.
9. Coordinate with County communities-based organizations, agencies, and nonprofits to conduct zero-emission vehicle (ZEV) education events for residents and business owners to promote benefits and programs such as the Clean Vehicle Rebate Program.
10. Work with the CCAPCD to develop a passenger clean vehicle rebate program for low-income residents of Calaveras County to assist low-income residents in purchasing EVs.

Measure TR-1 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Passenger EV/ZEV	25,403	45,546
Commercial EV/ZEV	14,097	13,058
Total	**39,500**	**58,604**

Measure TR-2: Decarbonize the County Municipal Fleet and Employee Commute

Lead by example by decarbonizing the Calaveras County municipal fleet and related commuter vehicles to achieve a 40% ZEV fleet by 2030.

1. Adopt a County requirement that requires that new and replacement County municipal fleet vehicle purchases are EVs or ZEVs where feasible.
2. Conduct a study to determine total turnover time frame of County municipal fleet vehicles to EVs or ZEVs.
3. Secure funding from programs such as the California Air Resources Board's Clean Vehicle Rebate Project, Clean Cars 4 All Program, and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at County facilities.
4. Coordinate with local agencies and community-based organizations to develop EV/ZEV educational materials that inform residents on costs/benefits of owning EVs/ZEVs and guidance on receiving funding for EVs/ZEVs.
5. Allow eligible County employees to telecommute, with a target rate of 25% of eligible staff time telecommuting by 2030.

Measure TR-2 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045

Municipal Fleet	790	1,974
Employee Commute	696	1,770
Total	**1,486**	**3,744**

Measure TR-3: Increase Public Transit Mode Share

Develop a robust public transportation network consistent with Pitkin County's (CO) Roaring Fork Transportation Authority that employs ZEV buses, demand-responsive transport options, and ZEV ridesharing to increase Calaveras County public transit mode share to 6% by 2030.

1. Conduct a study to identify specific and systematic gaps and barriers to mobility and access in the current public transit system. Include direct outreach to members of disadvantaged communities, commuters, tourist destinations, and other underserved groups.
2. Establish a regional transportation system that uses Pitkin County's Roaring Fork Transportation Authority's services as a model to serve all Calaveras County residents and visitors through a connected network of express and local fixed-route bus services, regional commuter services, public tourist shuttles, on-demand shuttles/microtransit, consistent active transportation connections (e.g., bike racks) and coordinated first-last mile commuting options that may include micromobility options.
3. Establish an EV rideshare program (similar to "Green Raiteros") that allows for people with limited mobility options to rent a vehicle or request a ride in an electric vehicle for low cost.
4. In accordance with Calaveras County General Plan Implementation Measure C-3A, establish Park and Ride facilities at locations convenient for commuters, residents, and visitors to transfer from a single occupancy vehicle to a transit buses, commuter services, shuttles, or EV rideshare vehicles. Incorporate planned Park and Ride facilities into the Electric Vehicle Infrastructure Implementation Plan to outfit the facilities with sufficient EV/alternate fueling infrastructure.
5. Rely on significant funding from Measures TR-6 through TR-10 to fund a regional transportation system that is consistent with Pitkin County's RFTA services and build an EV charging infrastructure network to support the EV rideshare program.
6. Expand the Calaveras Transit Agency to plan for, develop and operate the regional transportation system. Employ technical assistance from the National Rural Transit Assistance Program and create a public transportation working group to provide the County expertise and community input.
7. Identify partners such as CCOG to develop, oversee, and manage the transit and EV rideshare program.
8. Implement a promotion and education campaign to inform the community of the availability of the EV rideshare program and available transit routes and options. This may include but is not limited to: tabling at community events, bilingual mailers, social media posts, direct engagement with employers, and partnerships with Google Transit or a mobile application developer to bring real-time maps and schedules to residents and visitors.
9. Prioritize EV rideshare program implementation in low-income communities and develop pricing plans that make the public transportation system and EV rideshare program affordable for low-income residents.

Measure TR-3 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	**11,376**	**26,769**

Measure TR-4: Increase Active Transportation Mode Share

Increase active transportation mode share within Calaveras County 1% by 2030.

1. In accordance with Calaveras County General Plan Implementation Measure COS-7E, support and participate in efforts (such as an annual collision review) to update the bicycle and pedestrian master plan for biking, walking, riding, hiking/non-motorized and motorized transportation. The updated plan(s) shall identify existing and proposed facilities to assist in integrating future development into regional trail networks, tie trail systems to commercial centers and tourist destinations, identify locations for new trailheads and trail access points, and connect trail heads with public transportation systems.
2. In accordance with Calaveras County General Plan Implementation Measure C-5A, implement priority projects of the updated bicycle and pedestrian master plan as funding allows and prioritize the development of projects in disadvantaged communities within the County.
3. Construct bikeway and pedestrian system connections within Calaveras County and connecting to City of Angels Camp, nearby counties, state, and federal infrastructure through integration of bicycle facilities as part of other roadway construction projects.
4. In accordance with Calaveras County General Plan Implementation Measure COS-7B, establish standards for when and how new residential subdivisions shall provide bicycle and pedestrian facilities and amend the Calaveras County Code accordingly.
5. Rely on funding from Measures TR-6 through TR-10 to implement projects from the updated bicycle and pedestrian master plan.
6. Work and collaborate with local organizations and agencies, such as CCOG and City of Angels Camp, to promote bicycle and pedestrian travel as well as the updated bicycle and pedestrian master plan.
7. Coordinate with County community-based organizations, agencies, and nonprofits to conduct bicycle and pedestrian education events for residents and business owners.
8. Establish a Calaveras County Green Streets Program to improve the walkability of streets by providing increased shade cover and increased carbon sequestration potential.
9. In accordance with Calaveras County General Plan Implementation Measure C-1B, favorably consider projects which minimize greenhouse gas impacts and are appropriate to the rural nature of the County, including transit programs, ridesharing programs, and bicycle and pedestrian improvements.
10. In accordance with Calaveras County General Plan Implementation Measure C-1C, consider transit capital improvements and non-auto travel improvements necessary to serve new development in impact fee programs to fund public transportation infrastructure, park-and-ride lots, and bicycle and pedestrian facilities associated with the new development.

Measure TR-4 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	**187**	**428**

Measure TR-5: Decarbonize Off-road Equipment and Vehicles

Decarbonize 30% of the off-road equipment and vehicles in Calaveras County by 2030.

1. Create a phased ordinance by 2024 to ban the local operation of gasoline and diesel-powered off-road equipment by type, including banning local operation of gasoline and diesel-powered small off-road equipment (SORE) by 2029. For those equipment types that cannot be decarbonized (i.e., electrified or converted to biofuel) in the short-term, include a requirement for the use renewable diesel (e.g., RD99, which is a drop-in renewable fuel and readily available on West Coast).
2. Establish an enforcement and implementation program to track transition of off-road equipment across the County.
3. Conduct an assessment of off-road equipment and vehicles in the County to determine feasible phases for the ordinance, identify fleets with high decarbonization potential and fleets that will require targeted support to decarbonize, and identify available electric/biofuel options for each type. The assessment shall include direct outreach to fleet operators including those with recreational boats and agricultural/forestry equipment and vehicles.
4. Procure funding to create an Off-road Equipment Replacement Program to work directly with fleets identified in Action TR-5.3 to decarbonize their off-road equipment and vehicles. The program shall include free consultations with fleet operators to identify equivalent alternatives to fossil-fueled off-road equipment, direct support to obtain rebates and incentives, and connect them with qualified local repair services to maintain the replaced equipment.
5. In accordance with Calaveras County General Plan Implementation Measure COS-5G, work with the CCAPCD to pursue funding from the Carl Moyer Program and rely on funding from Measures TR-6 through TR-10 to support off-road decarbonization efforts via purchase of all-electric and/or bio-fuel off-road equipment and vehicles.
6. Work with the CCAPCD to develop a rebate and incentive program for upgrading off-road equipment and vehicles and switching to electric or biofuels. Develop the program with a focus on procedural equity and prioritize funding distribution to members of disadvantaged communities.
7. Develop a multi-lingual Off-road Equipment Replacement Outreach Campaign that educates fleet operators on the public health and safety benefits of alternative equipment technology and connects them with the Off-road Equipment Replacement Program.
8. Work with electric off-road equipment manufacturers (such as Solectrac and Monarch) to host workforce development workshops to train local agricultural equipment repair shops to service electric off-road equipment and off-road equipment utilizing biofuels and renewable diesel.
9. Partner with the CCAPCD to establish the enforcement and implementation program, create the Off-road Equipment Replacement Program, pursue funding, and develop the rebate and incentive program.

Measure TR-5 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	7,787	17,362

Measure TR-6: Create a Tourism Economy

Work to develop a tourism economy within Calaveras County to help fund the decarbonization of the transportation sector.

1. Establish a tourism/hotel tax with revenue earmarked for the decarbonization of transportation within Calaveras County.
2. Develop a plan to help brand and market Calaveras County as a sustainable tourist destination and conduct a study to determine the price options and applicability for the tax.
3. Secure funding from the Visit California's Rural Marketing Program to market Calaveras County as a sustainable tourist destination.
4. Partner with the Calaveras Visitors Bureau to secure funding from Visit California's Rural Marketing Program and partner with both the Calaveras Visitors Bureau and existing members of the County tourism industry to develop the plan, develop the tax, and implement the marketing efforts.
5. Work with partners and businesses to implement the plan/marketing campaigns to market Calaveras County and appropriate local businesses as sustainable tourist destinations.
6. Directly engage members of disadvantaged communities in the development of the plan and tax to understand and plan for equity concerns.

Measure TR-6 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Measure TR-7: Establish Calaveras County as a Pilot Program

Partner with the Rural County Representatives of California (RCRC) to establish Calaveras County as a pilot program for the decarbonization of the transportation sector in rural communities.

1. Establish a regional community foundation with neighboring rural communities to fund the decarbonization of the transportation sector in rural California.
2. Develop a vision and strategy for the regional community foundation to serve as a first-mover/pilot in the State in the decarbonization of America's rural transportation systems.
3. As a first-mover in rural America, pursue funding from large philanthropy such as the Bezos Earth Fund, Rockefeller Foundation, Bill & Melinda Gates Foundation, etc. to fund the development of a Calaveras County decarbonized rural transportation system.
4. Advocate for and promote the regional community foundation as a first-mover in the decarbonization of America's rural transportation systems to the Federal Government and state and regional governments and philanthropic organizations.
5. Directly engage members of disadvantaged communities in the development of the vision and strategy to convey a clear vision that aims to benefit all members of rural communities.

6. Partner with the Rural County Representatives of California (RCRC) and/or other regional organizations to develop the foundation, advocate for the foundation, lobby state and federal agencies for funding, and establish a network of private and public partners/members.

Measure TR-7 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Measure TR-8: Develop a Biofuel Industry

Partner with local utilities and state agencies to develop a biofuel industry throughout Calaveras County to fund decarbonization of the transportation sector.

1. Establish a memorandum of understanding with PG&E, CARB, CAL FIRE, the California Department of Agriculture, forest owners, and waste management companies to establish a plan to manage biomass and organic waste through the development of biofuel infrastructure in the County to position Calaveras County as a first mover in active forest management to support a carbon-free future for California.
2. Pre-zone and clear specific areas throughout the County for development of biofuel generation facilities.
3. Partner with PG&E and state agencies to develop a green bond to help fund the development of biofuel infrastructure in Calaveras County and explore revenue options through the Low Carbon Fuel Standard.
4. Work with local utilities and state agencies to pursue grants earmarked for biofuel infrastructure from the Inflation Reduction Act.
5. Establish partnerships with organic waste haulers to collect biomass from forests and biowaste from residential and agricultural sources, and partnerships with forest service businesses/property owners to sustainably clear fuel from forests.
6. Establish a campaign to educate the forestry services, waste haulers, and the community on the economic and wildfire risk benefits of active forest management for bioenergy and establish a working group/committee to involve local community members and businesses in the planning process.
7. Create workforce development programs to train the County local workforce for biofuel jobs. Specifically target training towards members of disadvantaged communities and establish criteria in the planning process that prioritizes/requires the employment of County residents and businesses in the industry.
8. Establish a biofuel tax with revenue earmarked for the decarbonization of transportation or earmarked to provide incentives to purchase biofuel or carbon-neutral vehicles within the County.

Measure TR-8 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Measure TR-9: Obtain State Funding

Establish Calaveras County as a pilot program for a rural carbon-free transportation system through state investment and grants such as California Climate Investments.

1. Develop a report highlighting the unique opportunity for Calaveras County to become a pilot for the decarbonization of rural transportation systems in California.
2. Secure funding from California Climate Investments (CCI) and develop an investment program with private partners, including local utilities and local employers, to secure local match funding for the grants.
3. Partner with local agencies such as the Calaveras County Air Pollution Control District (CCAPCD) and Calaveras Connect to plan for, secure, and implement CCI grant funding.
4. Directly engage members of disadvantaged communities to analyze and convey transportation barriers in the report development.

Measure TR-9 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Measure TR-10: Obtain Federal Funding

Secure federal funding from the Charging and Fueling Infrastructure Discretionary Grant Program to decarbonize the transportation sector.

1. Develop the Electric Vehicle Infrastructure Implementation Plan with a focus on expanding access to EV infrastructure disadvantaged communities, in low- and moderate-income neighborhoods, and in communities with a low ratio of private parking spaces to households or a high ratio of multiunit dwellings to single family homes.
2. Secure significant funding from the Charging and Fueling Infrastructure Discretionary Grant Program community grants by leveraging the Electric Vehicle Infrastructure Implementation Plan and County ability to expand access to EV infrastructure within rural areas, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces to households or a high ratio of multi-unit dwellings to single-family homes.
3. Partner with the Federal Highway Administration (FHWA) California Division, California Local Technical Assistance Program (CA LTAP), and/or the Governor's Office of Planning and Research (OPR) to obtain technical support and train staff to develop a successful federal grant application.
4. Develop an Equity First Program to provide early funding opportunities for members of disadvantaged communities, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces to households or a high ratio of multi-unit dwellings to single-family homes.

Measure TR-10 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Agriculture GHG Emission Reduction Measures[13]

Measure AG-1: Increase Crop Production Efficiency and Soil Health

Increase crop production efficiency and soil health to reduce associated GHG emissions 30% by 2030.

1. Improve fertilizer efficiency (increase in harvest yield per unit of nutrient supplied by fertilizer and liming material) across the County and monitor via soil test and soil pH reporting to understand which County crop fields are the most productive.
2. Prepare and adopt County Prescribed Grazing Practices that result in enhanced soil nutrition and increased carbon sequestration.
3. Stop or limit the loss of nutrients from the planted areas during top watering in an open system, including by containing irrigation effluent.
4. Conduct a study regarding which agroforestry methods (riparian forested buffers, silvopasture [planting of shrubs and tree], oak woodland establishment) would work best for County farmers in terms of climate mitigation practices.
5. Work with the California Air Resources Board (CARB) regarding its proposed crop-based carbon offset protocol to allow County farmers to earn additional revenue for reducing GHG emissions associated with cultivation.
6. Partner with the University of California Cooperative Extension (UCCE) Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers to implement best practices in fertilizer efficiency and pest management detailed in the University of California Agriculture and Natural Resources (UC ANR) Nutrient Management Resources and Knowledge Sharing Tools for the California Agricultural Community.
7. Develop an educational campaign to share the most recent research and best practices with County farmers regarding most efficient fertilizers and technologies and how to match fertilizer application with plant nutrient needs as the plant grows.
8. Provide assistance to smaller farmers for developing applications to soil and fertilizer grant programs such as the California Department of Agriculture Healthy Soils Program Incentive Program.

Measure AG-1 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	2,483	5,444

Measure AG-2: Implement Livestock Manure Management Strategies

Implement livestock manure management strategies to reduce associated GHG emissions by 10% by 2030.

[13] County GHGRP agriculture GHG reduction measures and respective quantification was prepared in 2023 by Rincon.

1. Conduct a detailed countywide inventory of livestock and manure management practices to better understand and track GHG emissions from livestock and manure management practices.
2. Develop and implement a program for local farmers to purchase poultry manure and used bedding for use in fertilizing pasture and crops.
3. Utilize available state and federal energy efficiency grants to develop a revolving low-interest loan program that will provide funding for the construction of methane digesters where feasible.
4. Investigate and apply for funding sources, such as California Department of Food and Agriculture's Healthy Soils Initiative, to increase the application of livestock manure compost on rangelands, which in turn will increase carbon capture and storage in soil.
5. Provide assistance to Calaveras County farmers regarding how to apply for financial assistance through the Alternative Manure Management Program (AMMP) from the California Department of Food and Agriculture (CDFA), which provides funding to farmers implementing non-digest manure management techniques.
6. Utilizing CDFA guidance, develop education and outreach materials around grazing practices that sequester carbon.
7. Partner with the University of California Cooperative Extension Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers on understanding and implementing manure management best practices and reduction of the associated GHG emissions as detailed in the EPA's AgSTAR Practices to Reduce Methane Emissions from Livestock Manure Management.

Measure AG-2 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	629	2,514

Measure AG-3: Reduce Methane Emissions from Livestock

Reduce methane emissions from livestock enteric fermentation 20% by 2030.

1. Implement grassland management strategies to provide feed digestibility alternatives and improving feed quality.
2. Work with the University of California Cooperative Extension to conduct a study regarding balancing and fine-tuning livestock feed rations within the County, which in turn leads to less livestock enteric fermentation.
3. Annually conduct research on any upcoming grant funding opportunities to reduce enteric fermentation emissions.
4. Provide information and resources on the County Agricultural Commissioner website to inform farmers on optimizing feed digestibility/availability and pasture management practices, and how that translates into less livestock enteric fermentation emissions.
5. Partner with the University of California Cooperative Extension Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers to understand

the beneficial nature of food additives on enteric fermentation and help implement food additive techniques to reduce enteric fermentation emissions.

Measure AG-3 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	7,721	13,512

Solid Waste GHG Emission Reduction Measures[14]

Measure SW-1: Organic Waste Diversion

In accordance with General Plan Conservation and Open Space Element Air Quality/Greenhouse Gases Measures COS-5D and COS-5E, the County will implement waste management practices to support organics diversion. Programs will include: (1) providing green waste collection programs at County operated landfill and transfer stations when feasible (COS-5D); (2) utilizing public/private partnerships to utilize green waste in alternative uses and waste to energy facilities (COS-5D); and (3) including a review of the zoning ordinance and Air Pollution Control District regulations and amendment as necessary to facilitate the development of green waste to energy projects and other projects that convert green waste to products (COS-2E). Programs may also include investigating and incentivizing community composting. In addition, the County will coordinate with individuals, community groups, and publicly funded and privately managed recycling and composting providers to educate the public about the benefits of composting. Through a combination of these programs, the County will divert 75 percent of food and green yard waste from landfills to home & community-based composting facilities, bio-mass plants, & other local facilities to reduce short-lived climate pollutants and minimize transportation-related emissions compared to existing conditions.

Measure SW-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	2,924	3,007

Measure SW-2: Divert from Forward to Rock Creek Landfill

The County will divert an additional 5 percent of total Calaveras County solid waste disposal from other landfills to Rock Creek Landfill, to the extent Rock Creek Landfill has the capacity to receive this diverted material.

Measure SW-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	7	8

Measure SW-3: Methane Capture

The County will continue to manage Rock Creek Landfill to limit methane release and achieve an average increase in methane capture of 1 percent for all waste types by 2030.

[14] County GHGRP solid waste GHG reduction measures and respective quantification was prepared in 2023 by Harris and Associates.

Measure SW-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	67	69

Water and Wastewater GHG Emission Reduction Measures[15]

Measure W-1: Use of Reclaimed (Non-Potable) Water

In accordance with General Plan Public Facilities and Services Element Water and Wastewater Measures PF-2H and PF-2I, amend the County Code to recognize appropriate uses for reclaimed water as an alternative for various land uses and keep apprised of the latest developments in the use of reclaimed water. Revise the County's landscaping standards and incorporate those standards as conditions of project approval to facilitate the use of gray water and reclaimed water systems for landscape irrigation. Additionally, the County will work with wastewater service providers to expand the use of recycled wastewater for agricultural uses. The County will work with local/regional agencies to create incentives and rebates for greywater systems, composting toilets, or other residential retrofits. Through a combination of efforts, the County will achieve a 10 percent reduction in total potable water use.

Measure W-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	92	97

Measure W-2: Require Low-Flow Water Use Fixtures

The County will adopt a reach code to exceed state-level requirements by 5 percent for the installation of water-conserving appliances in all new residential and non-residential buildings, and the County will require design plans of new development projects to include water-saving features.

Measure W-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	67	68

Carbon Sequestration GHG Emission Reduction Measures[16]

Measure CS-1: Conserve and Preserve Natural Lands

Explore carbon sequestration opportunities within the County and continue to conserve and preserve natural lands.

1. Conduct a carbon sequestration feasibility study by 2030 to identify natural working lands opportunities and emergent technology for carbon sequestration within the County.

[15] County GHGRP water and wastewater GHG reduction measures and respective quantification was prepared in 2023 by Harris and Associates.
[16] County GHGRP carbon sequestration GHG reduction measures and respective quantification was prepared in 2023 by Rincon.

2. Collaborate with the Calaveras County Resource Conservation District and local property owners (such as the California Rangeland Trust and U.S. Forest Service) to identify carbon farming, forest management, and rangeland management opportunities to sequester carbon within the County.

3. In accordance with Calaveras County General Plan Implementation Measure RP-1F, establish mitigation program guidelines for the impacts caused by conversion of land designated Resource Production on the General Plan Land Use Map to another non-resource production land use. The guidelines shall include, at a minimum, the following alternatives:

    - Acquisition of a conservation easement located within Calaveras County at a 1:1 ratio
    - Purchase of banked mitigation credits for use by a land bank operating in Calaveras County for use within the county
    - Payment into a fund to restore, enhance and improve Resource Production designated land. The fund would be managed by the County Agricultural Department. Use of the fund would be determined by the Board of Supervisors with input from the Agriculture Department, the Calaveras County Resource Conservation District, the University of California Cooperative Extension Office, the Agricultural Advisory Committee, and local landowners.
    - On-site mitigation
    - Other mitigation measures developed and/or approved by the County.

4. In accordance with Calaveras County General Plan Implementation Measure RP-2F, continue to maintain an Agricultural Advisory Committee to review and recommend action to the Board of Supervisors concerning California Land Conservation Contracts (Williamson Act) and to promote a compatible relationship between agricultural and non-agricultural activities and to ensure that appropriate provisions are incorporated as necessary into new land use proposals to preserve ongoing agricultural operations.

5. In accordance with Calaveras County General Plan Implementation Measure COS-5-M, apply the following measures to residential projects requiring discretionary approval and subject to CEQA review and to all new County construction projects:

    - Where feasible, residential subdivisions shall include parks and open space with landscaping and/or native vegetation capable of carbon sequestration.
    - Where residential subdivisions are located within walking distance of facilities such as schools, parks, banks, grocery stores and restaurants, they shall be designed to include pedestrian access to such facilities to the extent practicable.
    - Where feasible, residential subdivisions shall be designed to encourage alternate forms of transportation, including but not limited to sidewalks, trail systems, bike paths, and other measures connecting to existing development.
    - New and renovated County facilities shall be designed to exceed the requirements of the currently adopted California State Energy and Green Building Codes at the time of project approval. Buildings shall be a minimum of 5% more efficient than required and shall eliminate the use of fossil fuels to the extent feasible.

6. In accordance with Calaveras County General Plan Implementation Measure RP-2C, update the County Code relative to Agricultural Preserves for consistency with County needs and state Williamson Act requirements and include provisions for open space and recreational use contracts.

Measure CS-1 Not Quantified

Measure CS-2: Apply Compost

Meet SB1383 compost or organics procurement targets by applying 863 tons of compost to land areas throughout the County by 2030.

1. Require County agencies to procure and apply compost generated from municipal organic waste to the exterior of suitable facilities as part of their operations.
2. Build partnerships with local growers, rangelands, and community green spaces to distribute compost and procure at scale, allowing for reduced procurement costs.
3. In collaboration with local organizations, conduct a study to determine areas in the County with the highest carbon sequestration potential for compost application.
4. Work with local organizations and academic institutions to conduct ongoing outreach to procurers of compost to monitor soil carbon sequestration.
5. Explore partnerships with accredited carbon credit verifiers and technology providers who can quantify and monetize compost application credits.

Measure CS-2 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	863	888

Overall GHGRP Measures Summary

Table 1 below presents the GHG emission reduction impact of each quantitative measure and the GHG emission reduction impacts aggregated by sector for each target year.

Table 1 GHG Emission Reduction Impact of Quantitative Measures

Sector or Measure ID	2030 GHG Emission Reduction Impact (MT CO_2e)	2045 GHG Emission Reduction Impact (MT CO_2e)
Energy		
RE-1: Community Energy	1,418	0
EO-1: Energy Conservation Outreach and Education	4,147	911
EB-1: Green Business Program	23	6
EB-3: Energy Efficiency Retrofits	3,868	1,727
EB-4: Time-of-Replacement Ordinance	9,748	27,531
NC-1: Highly Efficient New Development	58	98
NC-2: Zero Net Energy New Construction	81	192
NC-4: Clean Wood-Burning Appliances	28	62
Energy Sector Total:	***19,372***	***30,528***

Sector or Measure ID	2030 GHG Emission Reduction Impact (MT CO_2e)	2045 GHG Emission Reduction Impact (MT CO_2e)
Transportation		
TR-1: EV/ZEV Adoption	39,500	58,604
TR-2: County Fleet Decarbonization*	1,486	3,744
TR-3: Public Transit Mode Share	11,376	26,769
TR-4: Active Transportation Mode Share	187	428
TR-5: Off-road Equipment and Vehicles	7,787	17,362
Transportation Sector Total:	***58,850***	***103,162***
Agriculture		
AG-1: Crop Production Efficiency	2,483	5,444
AG-2: Livestock Manure Management	629	2,514
AG-3: Livestock Methane Emissions	7,721	13,512
Agriculture Sector Total:	***10,833***	***21,471***
Solid Waste		
SW-1: Organic Waste Diversion	2,924	3,007
SW-2: Divert Waste to Rock Creek Landfill	7	8
SW-3: Methane Capture	67	69
Solid Waste Sector Total:	***2,982***	***3,007***
Water and Wastewater		
W-1: Reclaimed Water	92	97
W-2: Low-Flow Water Use Fixtures	67	68
Water and Wastewater Sector Total:	***159***	***166***
Carbon Sequestration		
CS-2: Compost Application	863	888
Carbon Sequestration Sector Total:	***863***	***888***
Total Reductions	**93,059**	**159,221**

*Not included in sector or overall total.

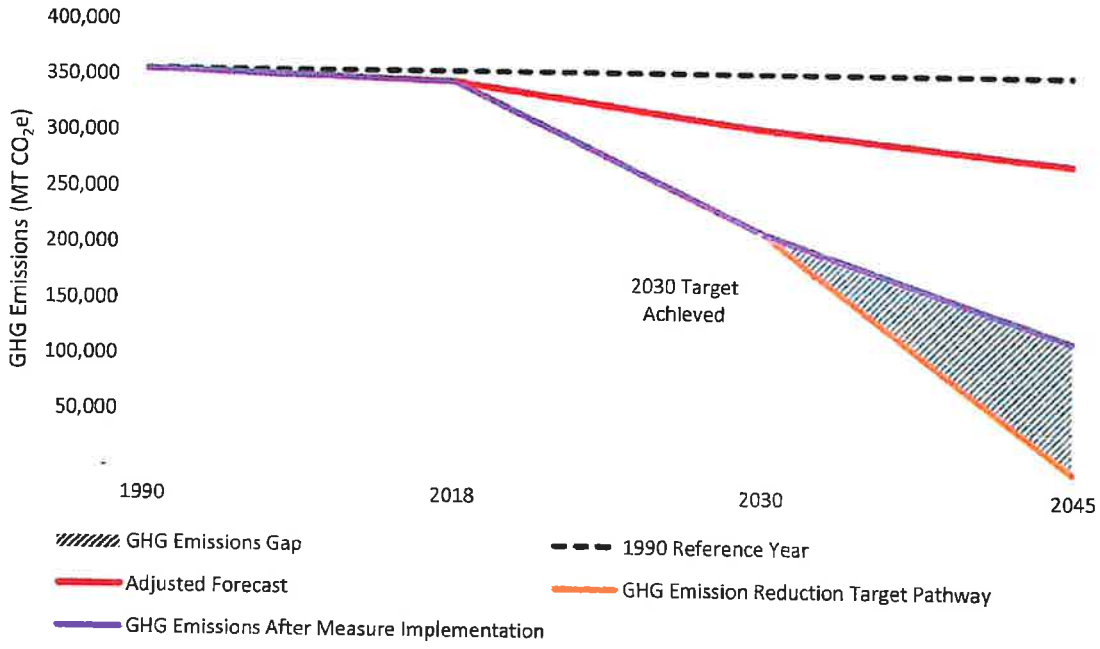
Meeting GHG Emission Reduction Targets

As shown in Table 2 and Figure 4, full implementation of the County GHG reduction measures would allow the County to reach the County and State 2030 GHG emission reduction target. Full implementation of these measures would also allow the County to make substantial progress towards meeting the State 2045 GHG emission reduction target, but currently a projected gap of 117,558 MT CO_2e (i.e., approximately 33 percent) remains in 2045. Therefore, future GHGRP updates will be required for the County to establish a complete pathway for reaching the 2045 State GHG emissions target.

Table 2 GHG Emission Reduction Measures Analysis

Sector or Measure ID	2030 GHG Emissions (MT CO_2e)	2045 GHG Emissions (MT CO_2e)
Adjusted Forecast	306,545	276,780
GHG Emission Reduction Targets	213,698	0
GHG Emissions After Measure Implementation	213,485	117,558
GHG Emissions Gap	-212	117,558
Target Met?	Yes	No

Figure 4 GHG Emissions Levels After GHGRP Measures Implementation



11/3/22 PC POLICY DIRECTION FOR CONSULTANTS AFTER RECEIVING 10/26/22 GHG REPORT

4/6/23 RESPONSES FROM SBC, RINCON, and HARRIS

- General Comments & Policy Direction in the Wake of the Harris & Co. 10/26/22 Report
    - The methodology used to determine the percentages of reduction we're striving for in each category is unclear from the report. Can you briefly explain how these percentages were determined?
        - SBC - The energy measure reduction percentages are based on substantial evidence from a variety of sources, including but not limited to, County data and discussions with County staff, leading research, and other climate planning documents. The sources and methodology for each measure are explained further in the responses to the next question.
        - Rincon - The percentages and numeric goals in the updated TR, AG, and CS measures (e.g., increase public transit mode share to 10%, apply 863 tons of compost) were chosen to maximize emission reductions from each measure while remaining at a level that can be achievable for the County and backed by substantial evidence.
        - Harris - The target for SW-1 was based on discussion on our monthly calls for a reasonable target that reflected the rural waiver for SB 1383. The targets for SW-2, SW-3, W-1, and W-2 were intended to be conservative, feasible targets that still achieved a meaningful CO2e reduction and were based on our monthly discussions and assumptions from other CAPs.

    - The methodology used to determine the actual metric ton reduction values amount for each category and subcategory is unclear. Please explain, and please state a separate reduction amount for each subcategory (e.g., each bullet point under TR-1).
        - SBC
            - RE-1 - Reductions were estimated using existing (2018) residential and commercial electricity usage combined with a residential solar install rate of 2.7% per year through 2045, which is based on County data, and a commercial solar install rate of 2% per year through 2045.
            - RE-2 - Not quantified. The reductions associated with this measure are accounted for in the quantification of RE-1, as municipal emissions are a subset of community emissions.
            - RE-3 - Not quantified. This measure is supportive of RE-1.
            - RE-5 - Not quantified. This measure is supportive of RE-1.
            - EO-1 - Reductions were estimated using existing (2018) residential and commercial energy usage and an assumption of a 10% reduction in energy use in 2030, resulting from comprehensive energy conservation and outreach programs. Reductions from new residential and commercial energy use between 2025 and 2030 were also estimated, using a 10% reduction assumption, after accounting for the impacts of measures NC-1, NC-2, and NC-4.

- EB-1 - Reductions were estimated using existing (2018) commercial energy usage, combined with an assumed green business program participation rate of 5% and energy reduction of 10%. Reductions were also estimated using new commercial energy usage between 2025 and 2030 and the participation rate and energy reduction assumptions, after accounting for the impacts of measures NC-1 and NC-2.
- EB-2 - Not quantified. The reductions associated with this measure are accounted for in the quantification of EB-3 and EB-4, as municipal sector is a subset of community emissions.
- EB-3 - Reductions were estimated using existing (2018) residential and commercial energy use and an assumed 10% and 15% reduction in residential and commercial buildings, respectively, associated with a comprehensive energy efficiency retrofits program (including incentives facilitated by the County).
- EB-4 - This measure assumes that a "time-of-replacement" ordinance will be adopted by 2025. The ordinance will require new space heating and water heating appliances to be electric, replacing natural gas, propane, and wood appliances. Reductions were estimated using existing (2018) residential natural gas, propane, and wood use, as well as commercial natural gas and propane. This measure uses an average lifespan of 10 years and 20 years for water heaters and space heaters, respectively. It assumes that 59% of natural gas and propane use in homes is used for water heating and 32% is used for space heating, while 100% of wood use is for space heating. The measures assumes 32% of natural gas and propane use in businesses is used for water heating and 36% is used for space heating.
- NC-1 - This measure assumes that incentives would be offered to new residential and nonresidential developments for going beyond Title 24 standards starting in 2025. Reductions were estimated using new residential and commercial energy use between 2025 and 2030 and an assumed energy reduction of 53% and 30%, respectively, along with an assumed participation rate of 10%. This measure accounts for the impact of measure NC-4 on new residential wood use.
- NC-2 - This measure assumes that, starting in 2025, incentives would be offered to new residential and nonresidential developments that build all-electric and fully offset energy needs through onsite renewables and storage systems. Reductions were estimated using new residential and commercial non-electricity energy use between 2025 and 2030 and an assumed participation rate of 10%. This measure accounts for the impacts of measures NC-1 and NC-4.
- NC-3 - Not quantified. This measure is supportive of NC-1 and NC-2.
- NC-4 - Reductions were estimated using new residential wood use between 2025 and 2030 and an assumed emissions reduction of 30% associated with EPA-rated wood stoves. It also accounts for an assumed 10% exemption rate.

- Rincon
  - TR-1 reduction value is calculated by converting 31% of passenger VMT (after VMT reductions from public transit and active transportation measures TR-3 and TR-4) and 34% of commercial VMT to zero emission vehicles. Emission reductions from these conversions are calculated using EMFAC2021 emission factors from the ABAU forecast. Additional emissions from the electricity used for these new zero-emission vehicles are excluded from the values.
  - TR-2 reduction values are for municipal emissions (which is a subset of the community emissions) and are not added to the total reduction value for the sector.
  - TR-3 was previously unquantified; now quantified to increase emission reductions by adding/strengthening measure language and bullets to make it quantifiable. The reduction value is calculated by increasing the County's commuter public transit mode share to 10% (from 0.3%). The mode share represents an increase in commuter trips taken via public transit instead of single occupancy vehicles. Trips are converted to VMT using average bus trip length for California. VMT reduced is converted to emission reductions using EMFAC2021 emission factors from the ABAU forecast.
  - TR-4 reduction value is calculated by increasing the County's commuter active transportation mode share to 4% (from 3%). The mode share represents an increase in commuter trips taken via bicycles (walking is assumed constant) instead of single occupancy vehicles. Trips are converted to VMT using average bicycle trip length for California. VMT reduced is converted to emission reductions using EMFAC2021 emission factors from the ABAU forecast.
  - TR-5 is a new measure added by Rincon to increase reductions. The reduction value is calculated by reducing off-road equipment and vehicle fuel use in the County 40%.
  - Quantification is done at the measure level rather than for each bullet. The bullets support the success of the measure and provide connections to substantial evidence to support the emission reductions of the measure. Thus, emission reductions for each bullet cannot be provided.
- Harris
  - SW-1 – We calculated how much of total baseline waste was food and green waste that could be diverted under SB 1383 to isolate tons of waste from these sectors. We then assumed 50% of these tons would be diverted. We then calculated what percent reduction the diverted waste would achieve from total BAU waste, and associated GHG reduction.
  - SW-2 – We calculated the reduction in VMT that would be achieved from each trip to Rock Creek instead of Forward. Then we assumed 5% of total waste would be affected and calculated 5% of BAU waste that would be diverted. We use the diverted waste and a CO2e/ton/mile conversion factor to calculate associated CO2e reduction.

- SW-3 – Waste emissions calculations from the inventory provided an average methane capture rate and the US Protocol Equation SW4.1 for methane emissions using this rate. We adjusted the methane recovery rate by 1% and used equation SW4.1 to recalculate emissions with this rate.
- W-1 – We calculated what portion of BAU water emissions were attributable to households using the default ClearPath commercial/industrial multiplied. Total households were divided into existing and future based on the existing housing estimate. A U.S. Department of Energy statistic was used to estimate that 50% of total water use could use grey water. The assumption for total households, households using grey water, and water that could be converted to grey water were multiplied to calculate total water use converted to grey water.
- W-2 – The assumed percent increase in water efficiency was applied directly for forecast BAU emissions to estimate reduction in water demand.

- The methodology used to derive the 1990 emissions is not clear from the report, specifically:
  - 1) How the 1990 GHG values were derived from the 2018 GHG inventory,
    - SBC - The 1990 GHG backcast values were calculated by applying historic population, employment, and agricultural data to emissions levels in the 2018 inventory for each sector.
  - 2) Whether the methodology used to derive them was consistent with that used to create the 2018 GHG Inventory, or
    - SBC - These methods are consistent with what was used to create the 2018 GHG inventory and forecasts, in that population and employment projections through 2045 were used to forecast trends (unless there was a better data source available - e.g. projected vehicle miles traveled, aviation data, local crop reports, etc.)
  - 3) To what extent (if at all) adjustments were made as requested to capture any Calaveras-specific information reported to the consultants (e.g., the fact that Calaveras County does not have feed lots or dairy farms and did not have these back in 1990 either)
    - Rincon - This was previously discussed and resolved. See notes in Tables 1, 4, 5, 6, and 7 of the Ag GHG Inventory Report submitted January 20, 2022. The notes were updated to state "Beef Cows, Milk Cows, Other Cattle, Sheep, Goats, Horses, and Swine populations were obtained from the USDA 2017 NASS Census; however, feedlots and other livestock production practices listed here may not exist in Calaveras County." This methodology is considered conservative for the County.

  Can you provide a brief response to each of these concerns?

  - Responses are above.
- There are numerous Implementation Measures that Calaveras County has already committed to as part of its 2019 General Plan adoption that 1) should have the effect of

reducing GHG emissions, and 2) are tailored specifically to Calaveras County. These were recommended to the consultants for inclusion in the reduction measures, but they are not mentioned in the report. The Commission therefore wishes to have numerous General Plan Implementation measures added to existing GHG reduction measures or added as new measures as more fully described below in **STEP TWO**. We will need new calculations that incorporate these measures, and we will need the measures in the Harris report edited to ensure they are consistent with any relevant General Plan Implementation Measures. The specific relevant Implementation Measures are discussed below in "**STEP TWO.**" A copy of the General Plan Implementation Measures is attached hereto as an exhibit, but the General Plan can also be found at https://planning.calaverasgov.us/General-Plan.

- SBC - The General Plan measures identified in Step 2 have been incorporated into the GHGRP measures and quantified accordingly, wherever reasonable and established methodology and data allowed. Measures that were not included due to lack of available methods and/or data, and measures that were switched between sectors, are noted below in Step 2.
- Rincon - Added each of the requested transportation and land use General Plan Implementation Measures. These additions support the GHGRP measures but do not provide direct GHG emission reductions themselves and are not quantifiable. Thus, the quantification was not updated for these measures. The quantification was increased as the result of new bullets and language added by Rincon.
- Harris - Please see responses below in Step Two.

- On its face, the Harris report implements the recommendations of the 2019 Central Sierra Zero Emission Vehicle Readiness Plan (CSZEVRP), which is attached hereto as an exhibit but can also be found at https://www.calacog.org/wp-content/uploads/2019/09/Central-Sierra-ZEV-Plan-FINAL.pdf . The Commission is concerned that the Harris report does not give full weight to all the measures of the CSZEVRP that could be adopted as GHG reduction measures. After the Harris report's reference to CSZEVRP (which is highly detailed and includes an Appendix providing a streamlined permitting guidebook specific to Calaveras County) the Harris report has some bullet points that mirror measures contained in it, but there are other bullet points that appear to contradict it. We would like the consultants to please select all those CSZEVP recommendations that could be applied in Calaveras County as GHG Reduction measures and to either calculate a corresponding GHG reduction amount—or to at least list them in descending order of their GHG reduction value. The Commission strongly encourages inclusion of additional feasible GHG reduction measures pertaining to zero emission vehicles that are also consistent with the CSZEVRP. Comments pertaining to the CSZEVRP also are included below in **STEP ONE** under "TRANSPORTATION."
  - Rincon - Added/revised actions TR-1.2, TR-1.3, TR-1.4, TR-1.6, and TR-1.8 to align with and implement recommendations from the CSZEVRP. TR-1.5 incorporates the example streamlined permitting guidebook.

- Inconsistencies between various measures that were pointed out by the Commission were not corrected in the report. The Commission would like the consultants to ensure that the Reduction Plan is internally consistent between measures.

- The consultant team requested clarification on what these inconsistencies are, but the County was unable to provide them. We assume they may be in reference to the changes in the measures from previous versions, and those changes are primarily due to the measure having been merged with and captured under another measure in order to account for the quantification.

- There appears to be an error in TR-2A and TR-2b with bullet points duplicated in a way that is unclear or erroneous. One section apparently intends to require education and another apparently intends to require changes to the county fleet, but not every entry appears to fit within its assigned section, so the Commission questions whether this duplication was deliberate and would like the bullets clarified.
  - Rincon - Corrected in updated version.

- The Commission is disappointed that additional examples of GHG measures that have been adopted for other similar jurisdictions were not provided as promised, and we are still looking for more examples of various measures that have been adopted in other similar cities and counties. The Commission understands that the policy decision around measures is ours but does not have the expertise to know what may be possible to do and would like to see a variety of measures used elsewhere.
  - SBC - Energy measures from other Sierra Nevada jurisdictions were included in the first draft of the energy measures and have since been edited and/or deleted from the current list to better suit Calaveras County. The measures that were included in the original list came from Climate Action Plans, Energy Action Plans, and other sustainability-related planning documents from jurisdictions including South Lake Tahoe, Nevada City, Sonora, Nevada County, Amador County, and Grass Valley.
  - Rincon - Similar cities and counties have not adopted aggressive policies that will allow them to align with SB 32. Calaveras County will be a leader for the state as a rural community. Rincon has identified a couple of similar jurisdictions that provide good examples for Calaveras County. TR-3 provides consistency with Pitkin County, CO – a rural area that has achieved 19% public transit mode share. TR-3.3 provides consistency with Huron, CA's EV rideshare program called Green Raiteros.
  - Harris - These measures were considered but rejected because insufficient information is available to quantify a reduction:
    - Programs that reduce plastic in agriculture or eliminated single use plastics in food preparation and sale
    - Use of reclaimed water to irrigate public lands or for agricultural use

- We would also like to clarify that, while the Commission remains wary of "reach codes" that apply broadly and expensively to all new or existing development, it appears that this term may mean different things to different people, and we do not wish to be hamstrung by terminology. If there are measures that the consultants might characterize as "reach codes" but which may be more focused or narrow in scope—or perhaps which are incentive-based-- we would like to see examples of these with reduction values assigned to them (or at least presented in descending order of their GHG reduction value)...to the extent that application

of the Commission's recommendations in this memo is not adequate by itself to get us to our target.

- SBC - Incentive-based measures for energy efficiency and electrification have been added per the Commission's request. In addition, a mandatory "time-of-replacement" ordinance has also been added as a measure to address the electrification of appliances upon end of life. The ordinance would require natural gas, propane, and wood-burning space heating equipment, and natural gas and propane water heating equipment, to be replaced with electric alternatives upon end of life. Space heating and water heating appliances were chosen specifically (rather than other, or all, gas-powered appliances) as they contribute significantly to emissions and also have cost-effective alternatives.

- The Commission would also like to receive a copy of a full, completed CEQA-qualified Reduction Plan, preferably one developed for small rural county (other than Tuolumne County, which we have).
  - Humboldt County Regional 2022 Climate Action Plan
  - Napa County 2011 Climate Action Plan
  - Monterey County Community Climate Action and Adaptation Plan Project Website
  - Yolo County 2011 Climate Action Plan

- The Commission has authorized the consultants to review and consider all of the attached Commissioner comments and would like these comments to be considered when developing the next draft of the measures. Suggestions in some of these comments (most particularly those in the second and third sets of Laddish comments) have already been incorporated in this Policy Direction memo.
  - SBC - Energy measures have been addressed. Please see responses in Steps 1 and 2.
  - Rincon - All transportation, agriculture, and land use comments have been addressed.
  - Harris - Please see revised measures and responses to comments below in Step 1 and Step 2.

- The Commission has requested clarification of your bullet points for EO-1 and EB-1 where you say they will be "voluntary" programs that do not meet "CEQA quantification requirements".
  - Do you mean that these programs would be "voluntary" for us to include since they won't qualify for CEQA tiering under Guideline 15183.5? If so, could they not still count toward the meeting of our SB 32 target given that reduction calculations were provided for them?
    - Quantified measures that are voluntary (i.e., not implemented directly by the local government and/or aren't mandates/regulations) but rely on substantial evidence will be accounted for in total reductions and applied towards the SB 32 target.

- In light of the footnote on the third page of the consultants' (multicolored) draft plan, please clarify which measures—after applying the Commission's recommendations in this memo--will "count" toward our GHG Reduction target and which will not. If some of the measures that don't "count" could be redrafted in a manner that allows them to count, please clarify to the Commission how the wording would have to change.
  - Measures have been redrafted in a way that allows as many measures as possible to be quantified. Revised measures will note whether or not they are quantifiable. Supportive measures (i.e., those that were not quantifiable due to lack of established methods and/or data) will also be noted. Quantified measures are based on substantial evidence.

- The County Administrative Officer has also asked to ensure that the consultants are aware that the County is seeking a customized GHG Reduction Plan for its own purposes; we do not want our Plan to be tied to the Angels Camp plan, as the needs and desires of the county and city are distinct. Nothing contrary to this direction came out of the Commission meeting.
  - Yes, the consultants are aware. The County's plan will not be tied to Angels Camp's plan. Some of the measures may be similar, however, we have gone through the revision process separately with each agency, so the measures will be unique to each jurisdiction's needs.

- **STEP ONE: Comments, Questions, and Requested Changes to the Reduction Measures as Presented in the Report**

  (NOTE: Unless otherwise stated, the letter/number combos cited here refer to those in the Harris report. If a letter/number item is preceded by the word "original," the reference is to an item in the multi-colored draft GHG Reduction Plan submitted earlier this year. See **"STEP TWO"** below for the proposed addition of measures that are based upon General Plan implementation measures.)
  - **ENERGY**
    - RE-1: Please comment briefly on whether the 5% reduction goal can reasonably be increased; the Commission is concerned this might be artificially low
      - SBC - The reduction goal has been increased from 5% to 14% for residential buildings and from 5% to 10% for commercial buildings in 2030. This is based on County permit data for solar installations.
    - RE-2: OK
      - SBC - This measure is no longer quantified as a separate measure, as it is a supportive measure of RE-1. Reductions associated with RE-2 are accounted for under RE-1.
    - RE-3: OK
      - SBC - This is now RE-2.
    - RE-3: OK
      - SBC - This is now RE-3.
  - **EDUCATION AND OUTREACH**
    - EO-1: OK but eliminate typo error "of" in second sentence.

        - SBC - Text was revised.
- **EXISTING BUILDINGS**
    - EB-1: OK
    - EB-2: REMOVE THIS MEASURE AS WRITTEN IN THE HARRIS REPORT
        - SBC - Measure was removed.
    - EB-3: EDIT AS FOLLOWS:
        - Change first sentence and beginning of second sentence to read, "Pursue grants to improve the energy efficiency of existing county buildings and infrastructure whenever a project is undertaken to improve or maintain them. This includes maintenance or improvement of both interior and exterior ..."
            - SBC - Text was revised. This measure is now labeled EB-2, due to the removal of the previous EB-2 measure.
        - Please comment briefly on whether the 10% reduction goal can be reasonably increased; the Commission is concerned this might be artificially low
            - SBC - This measure is no longer quantified because the reductions associated with this measure are accounted for in the quantification of the new EB-3 and EB-4 measures, as municipal emissions are a subset of community emissions.
    - **RESTORE** THE FOLLOWING MEASURES THAT WERE REMOVED FROM THE PRIOR DRAFT MEASURES (AND RE-NUMBER THEM ACCORDINGLY)
        - Original EB-2 (not new EB-2, which we're removing)
            - SBC - Integrated into current EO-1, which is an aggregation of multiple measures.
        - Original EB-3, with the following revisions: in first sentence, replace "Promote and support" with "Educate citizens about;" in second sentence, replace "Offer" with "Educate about existing."
            - SBC - Integrated into current EO-1, which is an aggregation of multiple measures. Text was revised.
        - Original EB-4, with the following revisions: insert "of" between "awareness" and "resources;" insert "(1)" between "to" and "replace," insert "(2)" between "models," and "conduct," insert "(3)" between "envelope," and "upgrade," and insert "(4)" between "and" and "add."
            - SBC - Integrated into current EO-1, which is an aggregation of multiple measures. Text was revised (including moving the (4) and adding a (5), as there was one more item in the list).
    - ADD an EB-5 that reads, "County will pursue funding to help facilitate the energy-efficient upgrades discussed in EB-3 and EB-4 for homes and businesses." (Note: This will refer to the original EB-3 and EB-4 that we're restoring per the above.)
        - SBC - Text was revised. Added as EB-3 (now that EB-2 was removed). Refers to EO-1, which includes Original EB-3 and EB-4.
- **NEW CONSTRUCTION & ZERO NET ENERGY STANDARDS**
    - SBC - "ZNE" was replaced by "NC"

- ZNE-1: EDIT AS FOLLOWS:
  - Replace the word "Partner" with the words "Support and encourage" (or, if you deem this inadequately quantifiable, with the words "work with")
    - SBC - This measure was incorporated into RE-1, as it focuses on existing energy use and supports the overall goal of RE-1.
  - Please comment briefly on whether the 5% reduction goal can be reasonably increased; the Commission is concerned this might be artificially low given the number of grants available to public agencies to implement through utility districts and companies.
    - SBC - While this measure was incorporated into RE-1, and therefore there are no reductions associated solely with this measure, the reduction estimate in RE-1 was increased from 5% to 14% and from 5% to 10% for new residential and commercial buildings, respectively.
- ZNE-2: EDIT AS FOLLOWS:
  - Remove "financial based" from the examples in parentheses
    - SBC - This language was removed from the measure, and the measure was revised to focus on incentivizing new developments to go beyond Title 24. Now NC-1.
  - Please comment briefly on whether the 5% reduction goal can be reasonably increased; the Commission is concerned this might be artificially low
    - SBC - NC-1 (previous ZNE-2) has been increased to a 53% reduction for new residential and a 30% reduction for new commercial buildings. The measure assumes 10% of new residential and commercial buildings participate.
- ZNE-3: EDIT AS FOLLOWS:
  - Remove the sentence that says, "Encourage LEED certification in new buildings"
    - SBC - Text was revised. Now NC-2.
  - In the bullet point, where it says "10% of new developments", replace with "10% of new construction" unless there is a reason this cannot be done
    - SBC - This language was removed from the measure, and the measure was revised to focus on incentivizing new developments to build all-electric and fully offset onsite energy needs through renewables and storage systems. Now NC-2.

- **TRANSPORTATION**
  - TR-1: EDIT AS FOLLOWS:
    - Correct typo in goal: replace "elective" with "electric."
      - Rincon - Corrected in updated version.
    - Review CSZEVRP and re-draft this measure to make sure that all resulting measures dovetail with the language in this plan, and that all of the Plan's recommendations applicable to Calaveras County are given full weight in calculation of GHG reductions.

        - Rincon - Added/revised actions TR-1.2, TR-1.3, TR-1.4, TR-1.6, and TR-1.8 to align with the language and implement recommendations from the CSZEVRP specific to Calaveras County. These additions, along with new bullets and language added by Rincon support the higher ZEV adoption goals proposed (i.e., 37% passenger ZEV adoption and 38% commercial adoption) and the higher emission reductions resulting from these goals.
    - Either assign specific reduction values to the bullets provided for this section or at least list them in descending order of GHG reduction value.
        - Rincon - Quantification is done at the measure level rather than for each bullet. The bullets support the success of the measure and provide connections to substantial evidence to support the emission reductions of the measure. Thus, emission reductions for each bullet cannot be provided.
    - Add each applicable measure from the CSZEVRP that will help us reach our target
        - Rincon - Added/revised actions TR-1.2, TR-1.3, TR-1.4, TR-1.6, and TR-1.8 to align with and implement recommendations from the CSZEVRP.
    - Instead of saying "implement" in first bullet, say "Pursue grant funding to implement..."
        - Rincon - Focused this bullet on installing the charging stations recommended by the CSZEVRP and converted it to be the measure rather than a bullet. As a measure, it is now supported by and dependent on the funding bullet (i.e., obtaining grant funding).
    - Remove the reach code that would require 50% of all parking spaces (which sounds like it includes both existing and new parking spaces)—which the Commission said was too high before—and instead adopt the applicable requirements of the CSZEVRD for new or remodeled development
        - Rincon - Removed action. Did not replace with CSZEVRD recommendations for new construction because those are based on the 2016 Green Building Standards Code (CalGreen). The 2022 CalGreen is now in effect and action TR-1.1 addresses it.
- TR-2a & TR-2b: EDIT AS FOLLOWS:
    - Clean up the duplicative bullets under these sections and ensure the various bullets are under the correct headers.
        - Rincon - Bullets are fixed.
- TR-4: EDIT AS FOLLOWS:
    - Replace "Expand and enhance" in the last bullet with "Establish", since the County does not have a "Green Streets Program"
        - Rincon - Revised action TR-4.8 as requested.

- **AGRICULTURE**
    - AG-1: EDIT AS FOLLOWS:

        - Restore the edits to this measure that were made by the Planning Commission at its previous meeting
        - For example, the word "fertilizer" was removed from the goal, and the word "prescribed" was also removed from the second bullet point.
            - Rincon - Changed Measure AG-1 language to "increase crop production efficiency and soil health"; however left "prescribed" in for Action AG-1.2 because it refers to a specific type of grazing, which is the controlled harvest of vegetation, with grazing or browsing animals, managed with the intent to improve/ maintain the health and vigor of selected plant(s) and maintain a stable and desired plant.
    - AG-2: OK
    - AG-3: OK
- **SOLID WASTE**
    - SW-1: EDIT AS FOLLOWS:
        - Replace the fourth sentence of SW-1 to read: "The County will coordinate with individuals, community groups, and publicly funded and privately managed recycling and composting providers to educate the public about the benefits of composting; and the County will divert 50% of food and green waste from landfills to home & community-based composting facilities, bio-mass plants, & other local facilities to reduce short-lived climate pollutants and minimize transportation-related emissions."
        - Add the following sentence after that 4th sentence: "Investigate and incentivize community composting."
        - Please consider whether additional language or additional reduction value given the enhanced feasibility and popularity of household and farm/ranch composting in our County, the popularity of self-hauling to waste disposal facilities, and our proportionately reduced reliance on per capita trash collection services using high emissions vehicles.
        - Harris - The measure language has been revised as requested. However, additional reductions from existing programs cannot be incorporated. The GHG emissions inventory for solid waste only reflects waste that was transported to landfills, so these existing activities are already reflected in the inventory and forecast. The measure target was revised to 75%, which may be met through a combination of measures, as noted in the revised measure.
    - SW-2: EDIT AS FOLLOWS:
        - Replace with the following language: "The County will divert an additional 5 percent of total Calaveras County solid waste disposal from other landfills to Rock Creek Landfill, to the extent Rock Creek Landfill has the capacity to receive this diverted material."
        - Harris - The measure language has been revised as requested.
    - SW-3: EDIT AS FOLLOWS:

        - Replace with the following language: "Continue to manage landfill to limit methane release."
        - Harris - This language was incorporated into the measure; however, for this measure to be quantifiable and enforceable, it must include a target. The language was incorporated into the 1% target.
    - **WATER/WASTEWATER** (HARRIS MEMO MEASURES HERE SHOULD BE REPLACED W/GENERAL PLAN IMs—see **STEP TWO**)
        - W-1: REMOVE
        - W-2: REMOVE
        - Consider whether measures or additional reduction values can be added given our County's high reliance on septic systems in lieu of transporting treated water
        - Harris - For water and wastewater measures to be quantifiable and enforceable, they must include a target. The General Plan measures have been incorporated into these measures, but the measure targets were not replaced. Like solid waste, the inventory reflects the existing reliance on septic systems because only treated water is included in the inventory. Additional reductions are not available for current conditions. However, because this measure was revised to reflect County-wide water use, the County-wide goal was increased to a total of 10% reduction in water use County-wide, which may be met through a combination of measures as noted in the revised measure text.
    - **ADD A "LAND USE" (LU) GHG REDUCTION SECTOR** (which appears to have been inadvertently excluded)
        - Include the following paragraph as an LU measure: "Apply for grants from the California Strategic Growth Council and others for a planning grant regarding agricultural land strategy plans and other mechanisms that promote GHG reductions and carbon sequestration through preservation of such assets as grasslands and oak woodlands". [Note: This paragraph was proposed to and approved as amended by the Commission at the May 12 meeting, and was again included, as amended, in Commissioner Laddish's second set of comments.]
            - Rincon - Added a Carbon Sequestration sector with new measures rather than a land use sector to be consistent with the CARB 2022 Scoping Plan.

- **STEP TWO: Incorporation of Specific General Plan Implementation Measures into GHG Reduction Measures**

  (NOTE: The letters/numbers refer to the designations of the various General Plan Implementation Measures. PLEASE ADD CITATIONS TO THE IMPLEMENTATION MEASURES USING THESE DESIGNATIONS WHEN ADDING THEM AS GHG REDUCTION MEASURES.
    - **ENERGY**
        - Add COS-5E as an RE measure
            - SBC - Added as a new measure, RE-4: Incentives for Alternative Energy, combined with PF-3F
        - Add PF-3A as an RE measure

        - SBC - Added as a new measure, RE-5: Codes and Standards for Alternative Energy, combined with RP-5A and RP-2A
    - Add PF-3F as an RE measure
        - SBC - Added as a new measure, RE-4: Incentives for Alternative Energy, combined with COS-5E
    - Add RP-5A as an RE measure
        - SBC - Added as a new measure, RE-5: Codes and Standards for Alternative Energy, combined with PF-3A and RP-2A
    - Add RP-2a as an RE measure
        - SBC - Added as a new measure, RE-5: Codes and Standards for Alternative Energy, combined with PF-3A and RP-5A

- **EXISTING BUILDINGS**
    - Add COS-5G to the end of restored original EB-4
        - SBC - This measure was not added to the original EB-4 (now EO-1). Because the measure was also included in TR 5.5 below, the language was revised to only include the wood stove portion and was added to current EB-3.

- **TRANSPORTATION**
    - Add PF-3B as a T-1 measure
        - Rincon - Incorporated into Actions TR-1.4 and TR 5.5
        - Rincon - Question for County: what are the "incentives provided in the zoning code" that you are referring to?
    - Restore original TR-3.3 (in the draft GHG Reduction Plan) and replace its language with COS-5G
        - Rincon - Updated action to incorporate the new transportation funding measures for countywide public transit improvements (TR-6 through TR-10). Did not restore original TR-3.3 because that only focused on improvements for Angeles Camp. This did not provide enough defensibility to quantify the measure (which was not quantified). Incorporated COS-5G language instead (i.e., Carl Moyer program) into TR-5.5 (off-road emissions) because it provides funding for more types of off-road equipment than on-road vehicles.
    - Incorporate COS-7E into TR-4 (replacing the second bullet of TR-4)
        - Rincon - Replaced second bullet with COS-7E (now action TR-4.1) and added collision review as possible effort to be implemented
    - Incorporate C-3A into TR-4
        - Rincon - Incorporated instead into Measure TR-3 as Action T-3.4
    - Incorporate C-5A into TR-4
        - Rincon - Incorporated into Measure TR-4 as Action TR-4.2 and TR-4.5
    - Incorporate COS-7B into TR-4
        - Rincon - Incorporated into Measure TR-4 as Action TR-4.4

- **SOLID WASTE**
  - Replace the third sentence of SW-1 to include requirements of COS-5D and COS-2D as follows: "Waste management practices to support organics diversion: A. (1) Shall include providing green waste collection programs at County operated landfill and transfer stations when feasible (COS-5D); (2) Shall utilize public/private partnerships to utilize green waste in alternative uses and waste to energy facilities (COS-5D); (3) Shall include a review of the zoning ordinance and Air Pollution Control District regulations and amendment as necessary to facilitate the development of green waste to energy projects and other projects that convert green waste to products(COS-2E); B. May include (1) constructing and managing a composting . . . [rest of sentence stays the same].
  - Harris - This measure was revised to include references to these General Plan policies, as well as incorporate the requested revisions in Step 1. The specific target must be maintained to have a quantifiable and enforceable measure, so this language was incorporated rather than replacing existing SW-1 entirely.
- **WATER/WASTEWATER**
  - Replace original WW-1 with PF-2G and add the following statement to the end of the sentence: "including strategies for increasing energy efficiency".
    - Harris - Based on the following comments and associated numbering, we are assuming that this comment references Angels Camp Measure WW-1 related to wastewater treatment plant energy efficiency. Because this plan is city-operated, this measure was not included for the County, and no revision was made to County Measure WW-1 (Greywater) in response to this comment.
  - Replace original WW-2 (deemed inappropriate for Calaveras County) with the first sentence of PF-2H and add PF-2I.
    - Harris - Similar to comments on WW-1, it is assumed that this comment references WW-2 for Angels Camp (Greywater), which is WW-1 for the County. This measure was revised to incorporate PF-2H and PF-21, and the composting toilets suggested below. The target was converted to a total potable water use reduction rather than a residential retrofit target. The reference to greywater is left in as an option to meet the target.
  - Replace original WW-3 (deemed inappropriate for Calaveras County) with the 2nd sentence of PF-2H.
    - Harris - As with the above, this appears to be a reference to Angels Camp WW-3, which was not included for the County. This portion of PF-2H was incorporated into WW-1, which sets a target for total recycled water use across all sectors in the County.
  - Are there other alternative measures such as composting toilets and other on-site wastewater options that etc. that can be suggested here?
    - Harris - This was added to measure WW-1.
  - Examples of targeted measures for this sector (e.g., "reach codes")?
    - Harris - Tuolumne County included reducing water consumption as a measure, including the potential for establishing and promoting

conservation practices and standards. The City of Piedmont adopted a reach code that included water use reduction as part of its 2018 CAP.

- **NEW CONSTRUCTION**
  - Add C-1B as a ZNE measure
    - SBC - This should be included with Land Use and/or Transportation.
    - Rincon - Added as TR-4.9
  - Add C-1C as a ZNE measure
    - SBC - This should be included with Land Use and/or Transportation.
    - Rincon - Added as TR-4.10
  - Add COS-5F as a ZNE measure
    - SBC - Added new NC-3 Reduce Criteria Air Pollutants and Emissions from New Development (combined with COS-5H).
  - Add COS-5H as a ZNE measure
    - SBC - Added new NC-3 Reduce Criteria Air Pollutants and Emissions from New Development (combined with COS-5F).
  - Add COS-5N as a ZNE measure
    - SBC - Added as new NC-4 Increase Clean Wood-Burning Appliances, but in order to quantify this measure and contribute towards the achievement of the SB 32 reduction target, the generic exception for one non-EPA rated appliance was removed. However, the quantification assumes a 10% exemption rate (e.g., for off-grid construction).

- **"LAND USE" (LU) GHG REDUCTION**, as added above in **STEP ONE.**
  - Add RP-1F as a LU measure
    - Rincon - Added as CS-1.3
  - Add RP-2F as a LU measure
    - Rincon - Added as CS-1.4
  - Add the bullet points of COS-5-M as LU measures
    - Rincon - Added as CS-1.5
  - Add RP-2C as a LU measure.
    - Rincon - Added as CS-1.6

Harris & Associates

MEMORANDUM

To: Sherry Hao, Energy Services Program Director, Sierra Business Council
From: Sharon Toland, Senior Technical Specialist, Harris & Associates
RE: Calaveras County Greenhouse Gas Reduction Plan (GHGRP) – Reduction Measures Summary: Solid Waste, Water and Wastewater
Date: April 21, 2022
CC: Meredith Anderson, Sierra Business Council; Darin Neufeld, Michael Rupić, Harris & Associates

---

Dear Sherry,

The following presents Harris & Associates' greenhouse gas (GHG) reduction measures that will be included in the County of Calaveras (County) Greenhouse Gas Reduction Plan (GHGRP), revised in accordance with comments received from the Planning Commission. Measures to reduce GHG emissions associated with energy, transportation, agriculture, solid waste, and water and wastewater are included below. The GHG reduction impacts for each measure are included for target years 2030 and 2045.

Sector: Solid Waste

Measure SW-1: Organic Waste Diversion

In accordance with General Plan Conservation and Open Space Element Air Quality/Greenhouse Gases Measures COS-5D and COS-5E, the County will implement waste management practices to support organics diversion. Programs will include: (1) providing green waste collection programs at County operated landfill and transfer stations when feasible (COS-5D); (2) utilizing public/private partnerships to utilize green waste in alternative uses and waste to energy facilities (COS-5D); and (3) including a review of the zoning ordinance and Air Pollution Control District regulations and amendment as necessary to facilitate the development of green waste to energy projects and other projects that convert green waste to products (COS-2E). Programs may also include investigating and incentivizing community composting. In addition, the County will coordinate with individuals, community groups, and publicly funded and privately managed recycling and composting providers to educate the public about the benefits of composting. Through a combination of the these programs, the County will divert 75 percent of food and green yard waste from landfills to home & community-based composting facilities, bio-mass plants, & other local facilities to reduce short-lived climate pollutants and minimize transportation-related emissions.

Measure SW-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	2,291	2,357

Measure SW-2: Divert from Forward to Rock Creek Landfill

The County will divert an additional 5 percent of total Calaveras County solid waste disposal from other landfills to Rock Creek Landfill, to the extent Rock Creek Landfill has the capacity to receive this diverted material.

Measure SW-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	7.32	7.53

Measure SW-3: Methane Capture

The County will continue to manage Rock Creek Landfill to limit methane release and achieve an average increase in methane capture of 1 percent for all waste types by 2030.

Measure SW-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	67.43	69.35

Sector: Water and Wastewater

Measure W-1: Use of Reclaimed (Non-Potable) Water

In accordance with General Plan Public Facilities and Services Element Water and Wastewater Measures PF-2H and PF-2I, amend the County Code to recognize appropriate uses for reclaimed water as an alternative for various land uses and keep apprised of the latest developments in the use of reclaimed water. Revise the County's landscaping standards and incorporate those standards as conditions of project approval to facilitate the use of gray water and reclaimed water systems for landscape irrigation. Additionally, the County will work with wastewater service providers to expand the use of recycled wastewater for agricultural uses. The County will work with local/regional agencies to create incentives and rebates for greywater systems, composting toilets, or other residential retrofits. Through a combination of efforts, the County will achieve a 10 percent reduction in total potable water use.

Measure W-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	92	97

Measure W-2: Require Low-Flow Water Use Fixtures

The County will adopt a reach code to exceed state-level requirements by 5 percent for the installation of water-conserving appliances in all new residential and non-residential buildings, and the County will require design plans of new development projects to include water-saving features.

Measure W-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	66	68

Summary

Table 1 summarizes the impacts of the GHG reduction measures detailed above on the County's GHG emissions. The tables provide a quantification of the reduction (i.e., savings) of GHG emissions that will be achieved by the target years through the implementation of these measures.

Table 1. GHG Reduction (MT CO_2e)

Measure	Summary	2030	2045
Solid Waste			
SW-1	Waste Diversion	2,291.4	2,356.6
SW-2	Waste Transport	7.32	7.53
SW-3	Methane Capture	67.43	69.35
Solid Waste Sector Total:		*2,398.4*	*2,466.7*
Water and Wastewater			
W-1	Reduce Water Use	92.1	97.1
W-2	Building Water Efficiency	66.49	68.39
Water and Wastewater Sector Total:		*158.6*	*165.5*

CALAVERAS COUNTY MEASURES

Sector: Energy

Measure RE-1: Increase Community Energy

Convert 14% of existing residential grid electricity and 18% of existing commercial grid electricity to renewable electricity by 2030. As

Increase the use of renewable energy in the community and support efforts to increase renewable and carbon-free energy generation, including wind, solar, hydro, and biomass, and to ensure customer access to this renewable energy. Encourage on-site renewable energy generation and storage systems for residents and businesses. Develop a robust renewable energy program that provides outreach, financing opportunities, and technical assistance to residents and businesses. Pursue community solar projects. Work with large energy users to transition towards renewable and zero net energy projects. Pursue distributed energy resources (DERs), microgrids, energy storage opportunities, and grid optimization projects.

Quantification accounts for the impacts of EB-4, EB-3, EB-1, and EO-1, in order of operations. Measures RE-2, RE-3, and RE-4 are supportive of RE-1, and while they could not be quantified separately, they support the reductions associated with RE-1. RE-1 does not contribute to 2045 emissions reductions due to California's Renewable Portfolio Standard, which requires that all of the state's electricity will come from carbon-free sources by 2045.

Measure RE-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	1,418	-

Measure RE-2: Promote On-Site Renewable Energy Generation (Government Operations)

Support efforts on available government-owned land or buildings to increase renewable and carbon-free energy generation, including, wind, solar, hydro, and biomass. Promote on-site renewable energy generation and energy storage. Evaluate the renewable energy potential and assess barriers to increased renewable energy generation.

As a supportive measure, emissions for RE-2 have been included within the quantification of RE-1. The municipal emissions of RE-2 are a subset of community (commercial) emissions.

Measure RE-3: Incentives for Alternative Energy

Consistent with Implementation Measures COS-5E and PF-3F of the County's General Plan, provide incentives to facilitate alternative energy projects. Modify the County's development standards and zoning ordinance to provide incentives for providing alternative energy producing facilities compatible with surrounding uses, such as solar arrays in parking lots that serve to provide shade and energy

production. Cooperate with and support state and federal programs that assist landowners in energy conservation and production. Support programs that provide incentives for property owners to install alternative energy facilities such as solar arrays, small windmills, and other energy systems.

As a supportive measure, emissions for RE-3 have been included within the quantification of RE-1.

Measure RE-4: Codes and Standards for Alternative Energy

Consistent with Implementation Measures PF-3A, RP-5A, and RP-2A of the County's General Plan, amend codes to facilitate alternative energy projects .Amend the zoning code to encourage the incorporation of solar, wind, and other alternative energy infrastructure in project design to establish standards for locating and permitting solar farms, wind farms, and other alternative energy facilities to ensure land use compatibility; addressing the potential visual impacts of alternative energy infrastructure to the extent permitted by law. Amend the Calaveras County Code to recognize the development of geothermal resources and their related land uses and refer proposals involving or affecting geothermal resources to the California Department of Conservation Division of Oil, Gas and Geothermal Resources. Amend the County Code to incorporate required findings and procedures for implementing state legislation and Department of Conservation requirements relative to solar-use easements and installations affecting Williamson Act Contracts.

As a supportive measure, emissions for RE-4 have been included within the quantification of RE-1.

Measure EO-1: Conduct Energy Efficiency Conservation Outreach and Education

Reduce existing and new residential and commercial energy use (all sources) by 12% in 2030 and 2045 through robust energy conservation outreach and education.

Conduct energy conservation and efficiency education and outreach to residents and businesses. Support and promote programs for lower-income and disadvantaged populations. Increase awareness of resources and financing opportunities for homes and businesses to (1) replace old appliances with energy-efficient models, (2) conduct retrofits to HVAC systems and building envelope, (3) upgrade to efficient lighting, (4) replace old and inefficient wood- and propane-burning heaters, and (5) add smart controls and sensors. This includes property owners (primary, vacation, and second homeowners), property management groups, and landlords. Through education and outreach, increase participation in voluntary residential and commercial energy efficiency programs. Educate citizens about low income home weatherization programs (DOE Weatherization Assistance Program, California's Low-Income Weatherization Program, utility-offered Energy Savings Assistance Program, local program). Educate about existing housing rehabilitation loan programs. Partner with the local utilities (PG&E and Calaveras Public Power Agency) to promote existing energy programs for residents and businesses.

The EO-1 quantification accounts for the impacts of EB-4 and EB-3 on existing energy use, and NC-4, NC-1, and NC-2 on new energy use, in order of operations.

Measure EO-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	4,089	814

Measure EB-1: Establish a Green Business Program

Achieve participation of 5% of businesses in 2030 and 2045 within a Green Business Program. Reduce existing and new commercial energy use (all sources) by 10% in 2030 and 2045.

Establish a green business program that certifies businesses based on criteria such as energy efficiency, employee wellness, water and waste reduction, etc. Benefits to employee wellness could include active transportation, cleaner air, etc.

The EB-1 quantification accounts for the impacts of EB-4 and EB-3 on existing energy use, and NC-1 and NC-2 on new energy use, in order of operations.

Measure EB-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	23	6

Measure EB-2: Improve Building Energy Efficiency of Government Operations

Pursue grants to improve the energy efficiency of existing county buildings and infrastructure whenever a project is undertaken to improve or maintain them. This includes maintenance or improvement of both interior and exterior (streetlight, parking lot lighting, traffic signals, and other outdoor area lighting) operations. Energy efficiency improvements include retrofits or commissioning/retrocommissioning to HVAC, lighting, controls, sensors, building envelope, and any other energy loads.

As a supportive measure, emissions for EB-2 have been included within the quantification of EB-3.

Measure EB-3: Facilitate Energy Efficiency Retrofits

Reduce existing residential and commercial energy use (all sources) by 10% and 15% in 2030 and 25% and 30% in 2045, respectively, through energy efficiency retrofits.

The County will pursue funding to help facilitate (i.e., incentivize) energy-efficient upgrades for homes and businesses. Energy efficiency retrofits can include upgrades to lighting, heating, ventilation and air conditioning, appliances, water efficiency, and building envelope (insulation, windows). Consistent with COS-5G of the County's General Plan, cooperate with the CCAPCD to implement emissions reductions programs such as the Carl Moyer Program, and to find methods of incentivizing the replacement or retrofit of small emissions sources throughout the County, such as the replacement of existing wood stoves.

The EB-3 quantification accounts for the impact of EB-4, in order of operations.

Measure EB-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	3,868	1,727

Measure EB-4: Implement an Equipment Time-of-Replacement Ordinance

At equipment end of life, replace 45% of existing residential and commercial natural gas and propane water heaters with electric alternatives by 2030 and 90% by 2045 (based on 10-year life and 10% non-compliance). At equipment end of life, replace 23% of natural gas, propane, and wood space heaters with electric alternatives by 2030 and 90% by 2045 (based on 20-year life and 10% non-compliance).

By 2025, adopt an ordinance that requires residential and commercial fossil fuel-powered space and water heating appliances be replaced with electric alternatives at time of replacement.

Measure EB-4 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	9,748	27,531

Measure NC-1: Incentivize Highly Efficient New Development

Achieve participation from 10% of new residential buildings starting from 2025 through 2045. Reduce new residential energy use (all sources) by 53%). Achieve participation from 10% of new commercial buildings between 2025 and 2045. Reduce new commercial energy use (all sources) by 30%).

Provide incentives (e.g., easing permitting requirements) to new residential and nonresidential development projects for going beyond Title 24 compliance.

The NC-1 quantification accounts for the impact of NC-4, in order of operations.

Measure NC-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	576	984

Measure NC-2: Incentivize Zero Net Energy New Construction

Achieve participation by 10% of new residential and commercial buildings from 2025 through 2045.

Incentivize new residential and nonresidential buildings to be built all-electric and highly energy efficieny and install renewable energy generation and energy storage systems that can fully offset energy needs.

The NC-2 quantification accounts for the impacts of NC-4 and NC-1, in order of operations.

Measure NC-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	43	104

Measure NC-3: Reduce Criteria Air Pollutants and Emissions from New Development

Consistent with Implementation Measures COS-5F and COS-5H of the County's General Plan, reduce criteria air pollutants, including GHG emissions, from new developments. Evaluate proposed discretionary developments subject to CEQA evaluation to determine whether they will emit criteria air pollutants, including greenhouse gasses, exceeding CCAPCD's standards. Should proposed developments within the County be anticipated to result in significant impacts related to the emission of criteria air pollutants, the County shall require the applicable mitigation measures provided in the CCAPCD's Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects.

As a supportive measure, emissions for NC-3 have been included within the quantification of NC-1 and NC-2.

Measure NC-4: Increase Clean Wood-Burning Appliances

Achieve use of EPA-rated woodstoves in all new residential buildings from 2025 through 2045.

In alignment with Implementation Measure COS-5N of the County's General Plan, require all wood burning appliances, including fireplaces, in new residential construction to be EPA rated appliances, except as may be provided in the Housing Element or for off-grid construction. EPA rated woodstoves produce 30% less emissions compared to non-EPA-rated woodstoves.

Measure NC-4 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	28	62

CALAVERAS COUNTY MEASURES

Sector: Transportation

Measure TR-1: Increase EV/ZEV Adoption

Install 99 new publicly accessible plug-in electric vehicle (PEV) charging ports by 2025 to support the resident and visitor demand projected in the Central Sierra Zero Emission Vehicle Readiness Plan (CSZEVRP) and install 652 new publicly accessible PEV charging ports by 2030 to accelerate electric vehicle (EV)/zero-emission vehicle (ZEV) adoption in Calaveras County.

1. Develop and adopt an EV charging infrastructure reach code to require 30% of total parking spaces in new or remodeled commercial development to install Level 2 EV chargers exceeding the 2022 California Green Building Standards Code Tier 2 requirements.
2. Develop the Electric Vehicle Infrastructure Implementation Plan with a list of prioritized locations for the 751 new PEV charging port installations across the County by 2030. Include locations recommended in the CSZEVRP, including EV charging infrastructure for visitors at the recommended resorts/lodging locations, DC fast chargers at the recommended highway corridor locations, and EV charging stations (EVCS) at the other recommended destinations.
3. As part of the Electric Vehicle Infrastructure Implementation Plan, conduct specific ZEV demand and infrastructure needs assessments for Murphys, San Andreas, and Valley Springs as recommended by the CSZEVRP. From the assessments, develop prioritized locations to provide electric vehicle/alternative fueling infrastructure in these areas to be included in the Plan.
4. Consistent with the Calaveras Streamlined Permitting Guidebook of the CSZEVRP and Calaveras County General Plan Implementation Measure PF-3B, develop and maintain an expedited, streamlined permitting process for EVCS in accordance with AB 1236 and employ the example Plug-in EV Infrastructure Permitting Checklist in the Guidebook to assess installation projects for expedited review. Also, amend the Calaveras County zoning code to provide ZEV incentives to encourage adoption and use.
5. Develop and hire Calaveras County "grant team" staff to pursue significant funding from Measures TR-9 and TR-10 to upgrade the EV charging and alternative fueling infrastructure to facilitate a robust ZEV network throughout the County.
6. Engage the local business community to site EV infrastructure (especially businesses that rely on tourism and business travelers) and to develop and implement a plan for County-supported accelerated business fleet electrification in partnership with the PG&E EV Fleet program.
7. Support and partner with ZEV car share companies in coming to the County.
8. Support the regional transportation planning agency in creating a Regional Electric Vehicle Infrastructure Collaborative. Participate in the program to collaborate on infrastructure deployment and to increase buying/negotiation power.
9. Coordinate with County communities-based organizations, agencies, and nonprofits to conduct zero-emission vehicle (ZEV) education events for residents and business owners to promote benefits and programs such as the Clean Vehicle Rebate Program.
10. Work with the CCAPCD to develop a passenger clean vehicle rebate program for low-income residents of Calaveras County to assist low-income residents in purchasing EVs.

Measure TR-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Passenger EV/ZEV	25,403	45,546
Commercial EV/ZEV	14,097	13,058
Total	**39,500**	**58,604**

Measure TR-2: Decarbonize the County Municipal Fleet and Employee Commute

Lead by example by decarbonizing the Calaveras County municipal fleet and related commuter vehicles to achieve a 40% ZEV fleet by 2030.

1. Adopt a County requirement that requires that new and replacement County municipal fleet vehicle purchases are EVs or ZEVs where feasible.
2. Conduct a study to determine total turnover time frame of County municipal fleet vehicles to EVs or ZEVs.
3. Secure funding from programs such as the California Air Resources Board's Clean Vehicle Rebate Project, Clean Cars 4 All Program, and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at County facilities.
4. Coordinate with local agencies and community-based organizations to develop EV/ZEV educational materials that inform residents on costs/benefits of owning EVs/ZEVs and guidance on receiving funding for EVs/ZEVs.
5. Allow eligible County employees to telecommute, with a target rate of 25% of eligible staff time utilizing telecommute by 2030.

Measure TR-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	**2045**
Municipal Fleet	790	1,974
Employee Commute	696	1,770
Total	**1,486**	**3,744**

Measure TR-3: Increase Public Transit Mode Share

Develop a robust public transportation network consistent with Pitkin County's (CO) Roaring Fork Transportation Authority that employs ZEV buses, demand-responsive transport options, and ZEV ridesharing to increase Calaveras County public transit mode share to 6% by 2030.

1. Conduct a study to identify specific and systematic gaps and barriers to mobility and access in the current public transit system. Include direct outreach to members of disadvantaged communities, commuters, tourist destinations, and other underserved groups.
2. Establish a regional transportation system that uses Pitkin County's Roaring Fork Transportation Authority's services as a model to serve all Calaveras County residents and visitors through a connected network of express and local fixed-route bus services, regional commuter services, public tourist shuttles, on-demand shuttles/microtransit, consistent active transportation connections (e.g., bike racks) and coordinated first-last mile commuting options that may include micromobility options.
3. Establish an EV rideshare program (similar to "Green Raiteros") that allows for people with limited mobility options to rent a vehicle or request a ride in an electric vehicle for low cost.
4. In accordance with Calaveras County General Plan Implementation Measure C-3A, establish Park and Ride facilities at locations convenient for commuters, residents, and visitors to transfer from a single occupancy vehicle to a transit buses, commuter services, shuttles, or EV rideshare vehicles. Incorporate planned Park and Ride facilities into the Electric Vehicle Infrastructure Implementation Plan to outfit the facilities with sufficient EV/alternate fueling infrastructure.
5. Rely on significant funding from Measures TR-6 through TR-10 to fund a regional transportation system that is consistent with Pitkin County's RFTA services and build an EV charging infrastructure network to support the EV rideshare program.
6. Expand the Calaveras Transit Agency to plan for, develop and operate the regional transportation system. Employ technical assistance from the National Rural Transit Assistance Program and create a public transportation working group to provide the County expertise and community input.
7. Identify partners such as CCOG to develop, oversee, and manage the transit and EV rideshare program.
8. Implement a promotion and education campaign to inform the community of the availability of the EV rideshare program and available transit routes and options. This may include but is not limited to: tabling at community events, bilingual mailers, social media posts, direct engagement with employers, and partnerships with Google Transit or a mobile application developer to bring real-time maps and schedules to residents and visitors.
9. Prioritize EV rideshare program implementation in low-income communities and develop pricing plans that make the public transportation system and EV rideshare program affordable for low-income residents.

Measure TR-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	11,376	26,769

Measure TR-4: Increase Active Transportation Mode Share

Increase active transportation mode share within Calaveras County 1% by 2030.

1. In accordance with Calaveras County General Plan Implementation Measure COS-7E, support and participate in efforts (such as an annual collision review) to update the bicycle and pedestrian master plan for biking, walking, riding, hiking/non-motorized and motorized transportation. The updated plan(s) shall identify existing and proposed facilities to assist in integrating future development into regional trail networks, tie trail systems to commercial centers and tourist destinations, identify locations for new trailheads and trail access points, and connect trail heads with public transportation systems.
2. In accordance with Calaveras County General Plan Implementation Measure C-5A, implement priority projects of the updated bicycle and pedestrian master plan as funding allows and prioritize the development of projects in disadvantaged communities within the County.
3. Construct bikeway and pedestrian system connections within Calaveras County and connecting to City of Angels Camp, nearby counties, State, and federal infrastructure through integration of bicycle facilities as part of other roadway construction projects.
4. In accordance with Calaveras County General Plan Implementation Measure COS-7B, establish standards for when and how new residential subdivisions shall provide bicycle and pedestrian facilities and amend the Calaveras County Code accordingly.
5. Rely on funding from Measures TR-6 through TR-10 to implement projects from the updated bicycle and pedestrian master plan.
6. Work and collaborate with local organizations and agencies, such as CCOG and City of Angels Camp, to promote bicycle and pedestrian travel as well as the updated bicycle and pedestrian master plan.
7. Coordinate with County community-based organizations, agencies, and nonprofits to conduct bicycle and pedestrian education events for residents and business owners.
8. Establish a Calaveras County Green Streets Program to improve the walkability of streets by providing increased shade cover and increased carbon sequestration potential.
9. In accordance with Calaveras County General Plan Implementation Measure C-1B, favorably consider projects which minimize greenhouse gas impacts and are appropriate to the rural nature of the County, including transit programs, ridesharing programs, and bicycle and pedestrian improvements.
10. In accordance with Calaveras County General Plan Implementation Measure C-1C, consider transit capital improvements and non-auto travel improvements necessary to serve new development in impact fee programs to fund public transportation infrastructure, park-and-ride lots, and bicycle and pedestrian facilities associated with the new development.

Measure TR-4 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	187	428

Measure TR-5: Decarbonize Off-road Equipment and Vehicles

Decarbonize 30% of the off-road equipment and vehicles in Calaveras County by 2030.

1. Create a phased ordinance by 2024 to ban the local operation of gasoline and diesel-powered off-road equipment by type, including banning local operation of gasoline and diesel-powered small off-road equipment (SORE) by 2029. For those equipment types that cannot be decarbonized (i.e., electrified or converted to biofuel) in the short-term, include a requirement for the use renewable diesel (e.g., RD99, which is a drop-in renewable fuel and readily available on West Coast).
2. Establish an enforcement and implementation program to track transition of off-road equipment across the County.
3. Conduct an assessment of off-road equipment and vehicles in the County to determine feasible phases for the ordinance, identify fleets with high decarbonization potential and fleets that will require targeted support to decarbonize, and identify available electric/biofuel options for each type. The assessment shall include direct outreach to fleet operators including those with recreational boats and agricultural/forestry equipment and vehicles.
4. Procure funding to create an Off-road Equipment Replacement Program to work directly with fleets identified in Action TR-5.3 to decarbonize their off-road equipment and vehicles. The program shall include free consultations with fleet operators to identify equivalent alternatives to fossil-fueled off-road equipment, direct support to obtain rebates and incentives, and connect them with qualified local repair services to maintain the replaced equipment.
5. In accordance with Calaveras County General Plan Implementation Measure COS-5G, work with the CCAPCD to pursue funding from the Carl Moyer Program and rely on funding from Measures TR-6 through TR-10 to support off-road decarbonization efforts via purchase of all-electric and/or bio-fuel off-road equipment and vehicles.
6. Work with the CCAPCD to develop a rebate and incentive program for upgrading off-road equipment and vehicles and switching to electric or biofuels. Develop the program with a focus on procedural equity and prioritize funding distribution to members of disadvantaged communities.
7. Develop a multi-lingual Off-road Equipment Replacement Outreach Campaign that educates fleet operators on the public health and safety benefits of alternative equipment technology and connects them with the Off-road Equipment Replacement Program.
8. Work with electric off-road equipment manufacturers (such as Solectrac and Monarch) to host workforce development workshops to train local agricultural equipment repair shops to service electric off-road equipment and off-road equipment utilizing biofuels and renewable diesel.
9. Partner with the CCAPCD to establish the enforcement and implementation program, create the Off-road Equipment Replacement Program, pursue funding, and develop the rebate and incentive program.

Measure TR-5 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	7,787	17,362

Measure TR-6: Create a Tourism Economy

Work to develop a tourism economy within Calaveras County to help fund the decarbonization of the transportation sector.

1. Establish a tourism/hotel tax with revenue earmarked for the decarbonization of transportation within Calaveras County.
2. Develop a plan to help brand and market Calaveras County as a sustainable tourist destination and conduct a study to determine the price options and applicability for the tax.
3. Secure funding from the Visit California's Rural Marketing Program to market Calaveras County as a sustainable tourist destination.
4. Partner with the Calaveras Visitors Bureau to secure funding from Visit California's Rural Marketing Program and partner with both the Calaveras Visitors Bureau and existing members of the County tourism industry to develop the plan, develop the tax, and implement the marketing efforts.
5. Work with partners and businesses to implement the plan/marketing campaigns to market Calaveras County and appropriate local businesses as sustainable tourist destinations.
6. Directly engage members of disadvantaged communities in the development of the plan and tax to understand and plan for equity concerns.

Measure TR-6 Not Quantified
(Supportive of Measures TR-1 through TR-5)

Measure TR-7: Establish Calaveras County as a Pilot Program

Partner with the Rural County Representatives of California (RCRC) to establish Calaveras County as a pilot program for the decarbonization of the transportation sector in rural communities.

1. Establish a regional community foundation with neighboring rural communities to fund the decarbonization of the transportation sector in rural California.
2. Develop a vision and strategy for the regional community foundation to serve as a first-mover/pilot in the State in the decarbonization of America's rural transportation systems.
3. As a first-mover in rural America, pursue funding from large philanthropy such as the Bezos Earth Fund, Rockefeller Foundation, Bill & Melinda Gates Foundation, etc. to fund the development of a Calaveras County decarbonized rural transportation system.
4. Advocate for and promote the regional community foundation as a first-mover in the decarbonization of America's rural transportation systems to the Federal Government and state and regional governments and philanthropic organizations.
5. Directly engage members of disadvantaged communities in the development of the vision and strategy to convey a clear vision that aims to benefit all members of rural communities.
6. Partner with the Rural County Representatives of California (RCRC) and/or other regional organizations to develop the foundation, advocate for the foundation, lobby State and federal agencies for funding, and establish a network of private and public partners/members.

Measure TR-7 Not Quantified
(Supportive of Measures TR-1 through TR-5)

Measure TR-8: Develop a Biofuel Industry

Partner with local utilities and State agencies to develop a biofuel industry throughout Calaveras County to fund decarbonization of the transportation sector.

1. Establish a memorandum of understanding with PG&E, CARB, CAL FIRE, the California Department of Agriculture, forest owners, and waste management companies to establish a plan to manage biomass and organic waste through the development of biofuel infrastructure in the County to position Calaveras County as a first mover in active forest management to support a carbon-free future for California.
2. Pre-zone and clear specific areas throughout the County for development of biofuel generation facilities.
3. Partner with PG&E and State agencies to develop a green bond to help fund the development of biofuel infrastructure in Calaveras County and explore revenue options through the Low Carbon Fuel Standard.
4. Work with local utilities and State agencies to pursue grants earmarked for biofuel infrastructure from the Inflation Reduction Act.
5. Establish partnerships with organic waste haulers to collect biomass from forests and biowaste from residential and agricultural sources, and partnerships with forest service businesses/property owners to sustainably clear fuel from forests.
6. Establish a campaign to educate the forestry services, waste haulers, and the community on the economic and wildfire risk benefits of active forest management for bioenergy and establish a working group/committee to involve local community members and businesses in the planning process.
7. Create workforce development programs to train the County local workforce for biofuel jobs. Specifically target training towards members of disadvantaged communities and establish criteria in the planning process that prioritizes/requires the employment of County residents and businesses in the industry.
8. Establish a biofuel tax with revenue earmarked for the decarbonization of transportation or earmarked to provide incentives to purchase biofuel or carbon-neutral vehicles within the County.

Measure TR-8 Not Quantified
(Supportive of Measures TR-1 through TR-5)

Measure TR-9: Obtain State Funding

Establish Calaveras County as a pilot program for a rural carbon-free transportation system through State investment and grants such as California Climate Investments.

1. Develop a report highlighting the unique opportunity for Calaveras County to become a pilot for the decarbonization of rural transportation systems in California.
2. Secure funding from California Climate Investments (CCI) and develop an investment program with private partners, including local utilities and local employers, to secure local match funding for the grants.
3. Partner with local agencies such as the Calaveras County Air Pollution Control District (CCAPCD) and Calaveras Connect to plan for, secure, and implement CCI grant funding.
4. Directly engage members of disadvantaged communities to analyze and convey transportation barriers in the report development.

Measure TR-9 Not Quantified
(Supportive of Measures TR-1 through TR-5)

Measure TR-10: Obtain Federal Funding

Secure federal funding from the Charging and Fueling Infrastructure Discretionary Grant Program to decarbonize the transportation sector.

1. Develop the Electric Vehicle Infrastructure Implementation Plan with a focus on expanding access to EV infrastructure disadvantaged communities, in low- and moderate-income neighborhoods, and in communities with a low ratio of private parking spaces to households or a high ratio of multiunit dwellings to single family homes.
2. Secure significant funding from the Charging and Fueling Infrastructure Discretionary Grant Program community grants by leveraging the Electric Vehicle Infrastructure Implementation Plan and County ability to expand access to EV infrastructure within rural areas, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces to households or a high ratio of multi-unit dwellings to single-family homes.
3. Partner with the Federal Highway Administration (FHWA) California Division, California Local Technical Assistance Program (CA LTAP), and/or the Governor's Office of Planning and Research (OPR) to obtain technical support and train staff to develop a successful federal grant application.
4. Develop an Equity First Program to provide early funding opportunities for members of disadvantaged communities, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces to households or a high ratio of multi-unit dwellings to single-family homes.

Measure TR-10 Not Quantified
(Supportive of Measures TR-1 through TR-5)

Sector: Agriculture

Measure AG-1: Increase Crop Production Efficiency and Soil Health

Increase crop production efficiency and soil health to reduce associated GHG emissions 30% by 2030.

1. Improve fertilizer efficiency (increase in harvest yield per unit of nutrient supplied by fertilizer and liming material) across the County and monitor via soil test and soil pH reporting to understand which County crop fields are the most productive.
2. Prepare and adopt County Prescribed Grazing Practices that result in enhanced soil nutrition and increased carbon sequestration.
3. Stop or limit the loss of nutrients from the planted areas during top watering in an open system, including by containing irrigation effluent.
4. Conduct a study regarding which agroforestry methods (riparian forested buffers, silvopasture [planting of shrubs and tree], oak woodland establishment) would work best for County farmers in terms of climate mitigation practices.
5. Work with the California Air Resources Board (CARB) regarding its proposed crop-based carbon offset protocol to allow County farmers to earn additional revenue for reducing GHG emissions associated with cultivation.
6. Partner with the University of California Cooperative Extension (UCCE) Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers to implement best practices in fertilizer efficiency and pest management detailed in the University of California Agriculture and Natural Resources (UC ANR) Nutrient Management Resources and Knowledge Sharing Tools for the California Agricultural Community.
7. Develop an educational campaign to share the most recent research and best practices with County farmers regarding most efficient fertilizers and technologies and how to match fertilizer application with plant nutrient needs as the plant grows.
8. Provide assistance to smaller farmers for developing applications to soil and fertilizer grant programs such as the California Department of Agriculture Healthy Soils Program Incentive Program.

Measure AG-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	2,483	5,444

Measure AG-2: Implement Livestock Manure Management Strategies

Implement livestock manure management strategies to reduce associated GHG emissions 10% by 2030.

1. Conduct a detailed countywide inventory of livestock and manure management practices to better understand and track GHG emissions from livestock and manure management practices.
2. Develop and implement a program for local farmers to purchase poultry manure and used bedding for use in fertilizing pasture and crops.
3. Utilize available State and federal energy efficiency grants to develop a revolving low-interest loan program that will provide funding for the construction of methane digesters where feasible.
4. Investigate and apply for funding sources, such as California Department of Food and Agriculture's Healthy Soils Initiative, to increase the application of livestock manure compost on rangelands, which in turn will increase carbon capture and storage in soil.
5. Provide assistance to Calaveras County farmers regarding how to apply for financial assistance through the Alternative Manure Management Program (AMMP) from the California Department of Food and Agriculture (CDFA), which provides funding to farmers implementing non-digest manure management techniques.
6. Utilizing CDFA guidance, develop education and outreach materials around grazing practices that sequester carbon.
7. Partner with the University of California Cooperative Extension Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers on understanding and implementing manure management best practices and reduction of the associated GHG emissions as detailed in the EPA's AgSTAR Practices to Reduce Methane Emissions from Livestock Manure Management.

Measure AG-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	629	2,514

Measure AG-3: Reduce Methane Emissions from Livestock

Reduce methane emissions from livestock enteric fermentation 20% by 2030.

1. Implement grassland management strategies to provide feed digestibility alternatives and improving feed quality.
2. Work with the University of California Cooperative Extension to conduct a study regarding balancing and fine-tuning livestock feed rations within the County, which in turn leads to less livestock enteric fermentation.
3. Annually conduct research on any upcoming grant funding opportunities to reduce enteric fermentation emissions.
4. Provide information and resources on the County Agricultural Commissioner website to inform farmers on optimizing feed digestibility/availability and pasture management practices, and how that translates into less livestock enteric fermentation emissions.
5. Partner with the University of California Cooperative Extension Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers to understand the beneficial nature of food additives on enteric fermentation and help implement food additive techniques to reduce enteric fermentation emissions.

Measure AG-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	7,721	13,512

Sector: Carbon Sequestration

Measure CS-1: Conserve and Preserve Natural Lands

Explore carbon sequestration opportunities within the County and continue to conserve and preserve natural lands.

1. Conduct a carbon sequestration feasibility study by 2030 to identify natural working lands opportunities and emergent technology for carbon sequestration within the County.
2. Collaborate with the Calaveras County Resource Conservation District and local property owners (such as the California Rangeland Trust and U.S. Forest Service) to identify carbon farming, forest management, and rangeland management opportunities to sequester carbon within the County.
3. In accordance with Calaveras County General Plan Implementation Measure RP-1F, establish mitigation program guidelines for the impacts caused by conversion of land designated Resource Production on the General Plan Land Use Map to another non-resource production land use. The guidelines shall include, at a minimum, the following alternatives:
    - Acquisition of a conservation easement located within Calaveras County at a 1:1 ratio
    - Purchase of banked mitigation credits for use by a land bank operating in Calaveras County for use within the county
    - Payment into a fund to restore, enhance and improve Resource Production designated land. The fund would be managed by the County Agricultural Department. Use of the fund would be determined by the Board of Supervisors with input from the Agriculture Department, the Calaveras County Resource Conservation District, the University of California Cooperative Extension Office, the Agricultural Advisory Committee, and local landowners.
    - On-site mitigation
    - Other mitigation measures developed and/or approved by the County.
4. In accordance with Calaveras County General Plan Implementation Measure RP-2F, continue to maintain an Agricultural Advisory Committee to review and recommend action to the Board of Supervisors concerning California Land Conservation Contracts (Williamson Act) and to promote a compatible relationship between agricultural and non-agricultural activities and to ensure that appropriate provisions are incorporated as necessary into new land use proposals to preserve ongoing agricultural operations.
5. In accordance with Calaveras County General Plan Implementation Measure COS-5-M, apply the following measures to residential projects requiring discretionary approval and subject to CEQA review and to all new County construction projects:
    - Where feasible, residential subdivisions shall include parks and open space with landscaping and/or native vegetation capable of carbon sequestration.
    - Where residential subdivisions are located within walking distance of facilities such as schools, parks, banks, grocery stores and restaurants, they shall be designed to include pedestrian access to such facilities to the extent practicable.
    - Where feasible, residential subdivisions shall be designed to encourage alternate forms of transportation, including but not limited to sidewalks, trail systems, bike paths, and other measures connecting to existing development.
    - New and renovated County facilities shall be designed to exceed the requirements of the currently adopted California State Energy and Green Building Codes at the time of project approval. Buildings shall be a minimum of 5% more efficient than required and shall eliminate the use of fossil fuels to the extent feasible.
6. In accordance with Calaveras County General Plan Implementation Measure RP-2C, update the County Code relative to Agricultural Preserves for consistency with County needs and state Williamson Act requirements and include provisions for open space and recreational use contracts.

Measure CS-1 Not Quantified

Measure CS-2: Apply Compost

Meet SB1383 compost or organics procurement targets by applying 863 tons of compost to land areas throughout the County by 2030.

1. Require County agencies to procure and apply compost generated from municipal organic waste to the exterior of suitable facilities as part of their operations.
2. Build partnerships with local growers, rangelands, and community green spaces to distribute compost and procure at scale, allowing for reduced procurement costs.
3. In collaboration with local organizations, conduct a study to determine areas in the County with the highest carbon sequestration potential for compost application.
4. Work with local organizations and academic institutions to conduct ongoing outreach to procurers of compost to monitor soil carbon sequestration.
5. Explore partnerships with accredited carbon credit verifiers and technology providers who can quantify and monetize compost application credits.

Measure CS-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	**863**	**888**

Table 1, GHG Reduction (MT CO_2e)

Table 1. GHG Reduction (MT CO_2e)

Measure	Summary	2030	2045
Transportation			
TR-1	EV/ZEV Adoption	39,500	58,604
TR-2*	Decarbonization: County Fleet	1,486	3,744
TR-3	Decarbonization: Commuter Vehicles	11,376	26,769
TR-4	VMT Reduction: Active Transportation	187	428
TR-5	Off-road Decarbonization	7,787	17,362
Transportation Sector Total:		***58,850***	***103,162***
Agriculture			
AG-1	Crop Production Fertilizer Efficiency	2,483	5,444
AG-2	Livestock Manure Management	629	2,514
AG-3	Livestock Methane Emissions Reduction	7,721	13,512
Agriculture Sector Total:		***10,833***	***21,471***
Carbon Sequestration			
CS-2	Compost Application	863	888
Carbon Sequestration Sector Total:		***863***	***888***
**Not included in sector total to avoid double counting*			

Table 2, Emissions (MT CO_2e)

Table 2. Emissions (MT CO_2e)

	2030		2045	
Sector	**ABAU Total***	**Reduced Total (With Plan Implementation)**	**ABAU Total***	**Reduced Total (With Plan Implementation)**
Transportation	188,994	130,145	170,123	66,960
Agriculture	53,249	42,416	54,053	32,582
Carbon Sequestration	N/A	-863	N/A	-888

Harris & Associates

MEMORANDUM

To:	Sherry Hao, Energy Services Program Director, Sierra Business Council
From:	Sharon Toland, Senior Technical Specialist, Harris & Associates
RE:	Calaveras County Greenhouse Gas Reduction Plan (GHGRP) – Reduction Measures Summary: Energy, Transportation, Agriculture, Solid Waste, Water and Wastewater
Date:	October 26, 2022
CC:	Meredith Anderson, Sierra Business Council; Darin Neufeld, Michael Rupić, Harris & Associates

Dear Sherry,

The following presents Harris & Associates' compilation of the greenhouse gas (GHG) reduction measures that will be included in the County of Calaveras (County) Greenhouse Gas Reduction Plan (GHGRP). Measures to reduce GHG emissions associated with energy, transportation, agriculture, solid waste, and water and wastewater are included below. The GHG reduction impacts for each measure are included for target year 2030. The emissions reduction target is provided in the figure below. GHG reduction impacts are summarized by sector, then totaled to calculate the total reduction (i.e., savings) of GHG emissions via the GHGRP. The reduced total GHG emissions with plan implementation are then compared to the emissions reduction goals for the target year. As shown in Table 2, Emissions (MT CO_2e) at the end of this compilation, there is currently an emissions gap for 2030, and discussion of additional measures will be required.

Emissions Gap & Target Setting

Sector: Energy

Measure RE-1: Increase Community Renewable Energy

Increase the use of renewable energy in the community and support efforts to increase renewable and carbon-free energy generation, including wind, solar, hydro, and biomass, and to ensure customer access to this renewable energy. Encourage on-site renewable energy generation and storage systems for residents and businesses. Develop a robust renewable energy program that provides outreach, financing opportunities, and technical assistance to residents and businesses. Pursue community solar projects. This measure has the following measurable goal:

- Convert 5% of existing PG&E electricity community energy use to renewable, 100% carbon free energy by 2030.

Measure RE-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	1,216
Propane	-
Total	1,216

Measure RE-2: Pursue DERs, Storage, and Grid Optimization

Pursue distributed energy resources, microgrids, energy storage opportunities, and grid optimization projects. This measure has the following measurable goal:

- Provide 25% of energy demand from carbon-free sources by 2030.

Measure RE-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	6,082
Propane	-
Total	6,082

Measure RE-3: Promote On-Site Renewable Energy Generation (Government Operations)

Support efforts on available government-owned land or buildings to increase renewable and carbon-free energy generation, including, wind, solar, hydro, and biomass. Promote on-site renewable energy generation and energy storage. Evaluate the renewable energy potential and assess barriers to increased renewable energy generation. This measure has the following measurable goal:

- Implement renewable and carbon-free energy generation on County-owned land to reduce 25% of Government Operations emissions by 2030.

Measure RE-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	5
Propane	-
Total	5

Measure EO-1: Conduct Energy Conservation Outreach and Education[1]

Conduct energy conservation and efficiency education and outreach to residents and businesses. Support and promote of programs for lower-income and disadvantaged populations. The County Building Department will provide public outreach in conjunction with the triennial adoption of the California Building Code, which includes the California Energy Code and Green Building Standards. This measure has the following measurable goal:

- Through energy efficiency education and outreach, including promoting utility, state, and federal EE programs and financing opportunities, with a goal to achieve 5% energy savings by 2030.

Measure EO-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	1,216
Propane	1,715
Total	2,931

Measure EB-1: Establish a Green Business Program[2]

Establish a green business program that certifies businesses based on criteria such as energy efficiency, employee wellness, water and waste reduction, etc. Benefits to employee wellness could include active transportation, cleaner air, etc. This measure has the following measurable goal:

- Establish a green business program with a goal of 10% reduction in non-residential emissions by 2030.

Measure EB-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	140
Propane	40
Total	180

Measure EB-2: Implement Energy Conservation Ordinances

Implement Residential and Commercial Energy Conservation Ordinances (RECO) that require energy and water efficiency upgrades at the point-of-sale, prior to selling the home or building. This measure has the following measurable goal:

- Implement Residential and Commercial Energy Conservation Ordinances with a target goal to reduce emissions by 10% from ECOs.

Measure EB-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	760
Propane	1,072
Total	1,832

[1] Measure EO-1: Conduct Energy Conservation Outreach and Education has been identified as a Voluntary Program since this measure will not meet CEQA quantification requirements.

[2] Measure EB-1: Establish a Green Business Program has been identified as a Voluntary Program since this measure will not meet CEQA quantification requirements.

Measure EB-3: Improve Government Operations

Improve the energy efficiency of existing municipal buildings and infrastructure, including both interior and exterior (streetlight, parking lot lighting, traffic signals, and other outdoor area lighting) operations. Energy efficiency improvements include retrofits or commissioning/retrocommissioning to HVAC, lighting, controls, sensors, building envelope, and any other energy loads. This measure has the following measurable goal:

- Improve the energy efficiency of existing municipal buildings and infrastructure, with a target goal to reduce energy use in government buildings by 10% by 2030.

Measure EB-4 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	2
Propane	49
Total	**51**

Measure ZNE-1: Partner with Large Energy Users

Partner with large energy users to transition towards renewable and zero net energy projects. This measure has the following measurable goal:

- Partner with large energy users to transition towards renewable and zero net energy projects, with target goal energy reductions of 5% by 2030.

Measure ZNE-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	70
Propane	20
Total	**90**

Measure ZNE-2: Improve Code Compliance

Improve Title 24 compliance and provide incentives (e.g., financial based or easing permitting requirements) for going beyond Title 24 compliance. This measure has the following measurable goal:

- Increase Title 24 energy code compliance of residential and non-residential buildings, with target goal energy reductions of 5% by 2030.

Measure ZNE-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	1,216
Propane	1,715
Total	2,931

Measure ZNE-3: Incentivize New Construction[3]

Incentivize new buildings to install renewable energy generation and energy storage systems that can fully offset energy needs. Create incentives to construct new nonresidential buildings to ZNE standards. Encourage new development projects to meet 70%(+) of their energy needs from renewable resources. Encourage LEED certification in new buildings. This measure has the following measurable goal:

- Offer an incentive program to construct new buildings to zero net energy standards. Target: 10% of new developments meet state required zero-net-energy goals.

Measure ZNE-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Electricity	61
Propane	86
Total	147

[3] Measure ZNE-3: Incentivize New Construction has been identified as a Voluntary Program since this measure will not meet CEQA quantification requirements.

Sector: Transportation

Measure TR-1: Increase EV/ZEV Adoption

Increase elective vehicle (EV)/zero-emission vehicle (ZEV) adoption through a combination of the following measures:

- Implement recommendations of the Central Sierra Zero Emission Vehicle Readiness Plan to increase availability of ZEV fueling/charging infrastructure.
- Develop and adopt an electric vehicle charging infrastructure reach code to require 50% of total parking spaces in new or remodeled commercial development to install Level 2 EV chargers exceeding the 2022 California Green Building Standards Code Tier 2 requirements.
- Develop a list of prioritized locations for new EV charging stations within the County for inclusion in the EV/ZEV readiness plan.
- Develop and maintain a streamlined commercial EV infrastructure permitting process in accordance with SB 1236.
- Investigate the feasibility of developing and adopting an electric vehicle charging infrastructure reach code for existing development, which requires existing buildings over 10,000 square feet to install X% of EV Capable charging spaces during major renovations.
- Pursue grant funding sources such as the California Energy Commission's Clean Transportation Program Rural Electric Vehicle (REV) Charging solicitation and PG&E's EV Fleet program to develop a robust EV charging network in the County.
- Work and collaborate with local businesses/employers to develop and implement a plan for County-supported accelerated business fleet electrification.
- Support ZEV car share companies in coming to the County.
- Coordinate with County communities-based organizations, agencies, and nonprofits to conduct zero-emission vehicle ZEV education events for residents and business owners.
- Work with the County Air Pollution Control District to pursue funding through the State's Cap and Trade Program to develop a passenger clean vehicle rebate program for low-income residents of Calaveras County to assist low-income residents in purchasing EVs.

Measure TR-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Passenger EV	31,563
Commercial EV	11,104
Total	**42,667**

Measure TR-2a: Decarbonize the County Municipal Fleet

Decarbonize the County municipal fleet through a combination of the following measures:

- Require that new and replacement County municipal fleet vehicle purchases are EVs or ZEVs where feasible.
- Conduct a study to determine total turnover time frame of County municipal fleet vehicles to EVs or ZEVs.
- Secure funding from programs such as the California Air Resources Board's Clean Vehicle Rebate Project, Clean Cars 4 All Program, and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at County facilities.
- Coordinate with local agencies and community-based organizations to develop EV/ZEV educational materials that inform residents on costs/benefits of owning EVs/ZEVs and guidance on receiving funding for EVs/ZEVs.
- Allow eligible County employees to telecommute, with a target rate of 25% of eligible staff time utilizing telecommute by 2030.

Measure TR-2a Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	790

Measure TR-2b: Decarbonize the County Commuter Vehicles

Decarbonize the County commuter vehicles to achieve a 40 percent ZEV fleet by 2030 through a combination of the following measures:

- Secure funding from programs such as the California Air Resources Board's Clean Vehicle Rebate Project, Clean Cars 4 All Program, and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at County facilities.
- Coordinate with local agencies and community-based organizations to develop EV/ZEV educational materials that inform residents on costs/benefits of owning EVs/ZEVs and guidance on receiving funding for EVs/ZEVs.
- Allow eligible County employees to telecommute, with a target rate of 25% of eligible staff time utilizing telecommute by 2030.

Measure TR-2b Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	696

Measure TR-4: Increase Active Transportation Mode Share (Develop and Implement Programs for Active Transportation that Reduce VMT)

Increase active transportation mode share (i.e., reduce vehicle miles traveled) through a combination of the following measures:

- Construct bikeway and pedestrian system connections within Calaveras County and connecting to the City of Angels Camp, state, and federal infrastructure through integration of bicycle facilities as part of other roadway construction projects.
- Conduct an annual review of collisions in order to identify and implement bicyclist and pedestrian infrastructure and safety improvements needed for the active transportation network.
- Pursue grant funding through programs such as the California Transportation Commission's Active Transportation Program, to implement projects from the Calaveras County Regional Bicycle, Pedestrian, and Safe Routes to School Master Plan.
- Work and collaborate with local organizations and agencies, such as CCOG and the City of Angels Camp, to promote bicycle and pedestrian travel as well as the Calaveras County Regional Bicycle, Pedestrian, and Safe Routes to School Master Plan.
- Coordinate with County communities-based organizations, agencies, and nonprofits to conduct bicycle and pedestrian education events for residents and business owners.
- Expand and enhance the County's Green Streets Program to improve the walkability of streets by providing increased shade cover and increased carbon sequestration potential.

Measure TR-4 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	211.08

Sector: Agriculture

Measure AG-1: Increase Crop Production Fertilizer Efficiency

Increase crop production fertilizer efficiency through a combination of the following measures:

- Improve fertilizer efficiency (increase in harvest yield per unit of nutrient supplied by fertilizer and liming material) across the County and monitor via soil test and soil pH reporting to understand which County crop fields are the most productive.
- Prepare and adopt prescribed County grazing practices that result in enhanced soil nutrition and increased carbon sequestration.
- Stop or limit the loss of nutrients from the planted areas during top watering in an open system, including by containing irrigation effluent.
- Conduct a study regarding which agroforestry methods (riparian forested buffers, silvopasture [planting of shrubs and tree], oak woodland establishment) would work best for County farmers in terms of climate mitigation practices.
- Work with the California Air Resources Board (CARB) regarding its proposed crop-based carbon offset protocol to allow County farmers to earn additional revenue for reducing GHG emissions associated with cultivation.
- Partner with the University of California Cooperative Extension Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers to implement best practices in fertilizer efficiency and pest management.
- Develop an educational campaign to share the most recent research and best practices with County farmers regarding most efficient fertilizers and technologies and how to match fertilizer application with plant nutrient needs as the plant grows.
- Provide assistance to smaller farmers for developing applications to soil and fertilizer grant programs such as the California Department of Agriculture Healthy Soils Program Incentive Program.

Measure AG-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	2,483

Measure AG-2: Implement Livestock Manure Management Strategies

Implement livestock manure management strategies through a combination of the following measures:

- Conduct a detailed countywide inventory of livestock and manure management practices to better understand and track GHG emissions from livestock and manure management practices.
- Develop and implement a program for local farmers to purchase poultry manure and used bedding for use in fertilizing pasture and crops.
- Utilize available State and federal energy efficiency grants to develop a revolving low-interest loan program that will provide funding for the construction of methane digesters where feasible.
- Investigate and apply for funding sources, such as California Department of Food and Agriculture's Healthy Soils Initiative, to increase the application of livestock manure compost on rangelands, which in turn will increase carbon capture and storage in soil.
- Provide assistance to Calaveras County farmers regarding how to apply for financial assistance through the Alternative Manure Management Program (AMMP) from the California Department of Food and Agriculture (CDFA), which provides funding to farmers implementing non-digest manure management techniques.
- Utilizing CDFA guidance, develop education and outreach materials around grazing practices that sequester carbon.
- Partner with the University of California Cooperative Extension Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers on understanding manure management best practices and reduction of the associated GHG emissions.

Measure AG-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	629

Measure AG-3: Reduce Methane Emissions from Livestock

Reduce methane emission from livestock enteric fermentation through a combination of the following measures:

- Implement grassland management strategies to provide feed digestibility alternatives and improve feed quality.
- Work with the University of California Cooperative Extension to conduct a study regarding balancing and fine-tuning livestock feed rations within the County, which in turn leads to less livestock enteric fermentation.
- Annually conduct research on any upcoming grant funding opportunities to reduce enteric fermentation emissions.
- Provide information and resources on the County Agricultural Commissioner website to inform farmers on optimizing feed digestibility/availability and pasture management practices, and how that translates into less livestock enteric fermentation emissions.

Measure AG-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	7,721

Sector: Solid Waste

Measure SW-1: Organic Waste Diversion

The County will coordinate with government-funded and privately sponsored recycling and composting programs to divert 50 percent of food and green yard waste from landfills and reduce short-lived climate pollutants in accordance with Senate Bill (SB) 1383.

Measure SW-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	1,527

Measure SW-2: Divert from Forward to Rock Creek Landfill

The County will divert an additional 5 percent of total County solid waste disposal from Forward Landfill to Rock Creek Landfill.

Measure SW-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	7.32

Measure SW-3: Methane Capture

The County will increase methane capture by an average of 1 percent for all waste types at Rock Creek Landfill by 2035.

Measure SW-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	67.43

Sector: Water and Wastewater

Measure W-1: Use of Reclaimed (Non-Potable) Water

The County will work with local/regional agencies to create incentives and rebates for greywater systems to achieve retrofits for 10 percent of existing homes, and grey water systems in 50 percent of new homes.

Measure W-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	42

Measure W-2: Require Low-Flow Water Use Fixtures

The County will adopt a reach code to exceed state-level requirements by 5 percent for the installation of water-conserving appliances in all new residential and non-residential buildings, and the County will require design plans of new development projects to include water-saving features.

Measure W-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030
Total	66

Summary

The County's GHGRP will include measures to reduce GHG emissions associated with the following sectors: Energy, Transportation, Agriculture, Solid Waste, Water and Wastewater. Table 1 and Table 2 summarize the impacts of the GHG reduction measures detailed above on the County's GHG emissions. The tables provide a quantification of the reduction (i.e., savings) of GHG emissions that will be achieved by the target year through the implementation of these measures.

Table 1, GHG Reduction (MT CO_2e), summarizes the impact of each GHG reduction measure by sector and calculates the amount of GHG emissions that will be reduced by the target year: 2030.

Table 1. GHG Reduction (MT CO_2e)

Measure	Summary	2030
Energy		
RE-1	Community Renewable Energy	1,216
RE-2	100% Renewable Energy	6,082
RE-3	On-Site Renewable Energy Generation: Government Operations	5
EO-1	Energy Conservation Outreach and Education	2,931
EB-1	Green Business Program	180
EB-2	Energy Conservation Ordinances	1,832
EB-3	Energy Efficiency: Government Operations	51
ZNE-1	Partnerships with Large Energy Users	90
ZNE-2	Code Compliance: Title 24	2,931
ZNE-3	New Construction Incentivization	147
Energy Sector Total:		*15,465*
Transportation		
TR-1	EV/ZEV Adoption	42,667
TR-2a	Decarbonization: County Fleet	790
TR-2b	Decarbonization: Commuter Vehicles	696
TR-4	VMT Reduction: Active Transportation	211.08

Measure	Summary	2030
Transportation Sector Total:		*44,364.08*
Agriculture		
AG-1	Crop Production Fertilizer Efficiency	2,483
AG-2	Livestock Manure Management	629
AG-3	Livestock Methane Emissions Reduction	7,721
Agriculture Sector Total:		*10,833*
Solid Waste		
SW-1	Waste Diversion	1,527.6
SW-2	Waste Transport	7.32
SW-3	Methane Capture	67.43
Solid Waste Sector Total:		*1,602.35*
Water and Wastewater		
W-1	Grey Water	41.84
W-2	Building Water Efficiency	66.49
Water and Wastewater Sector Total:		*108.33*
All Sectors Total:		*72,372.76*

Table 2, Emissions (MT CO_2e), summarizes the total emissions under an adjusted business-as-usual (ABAU) scenario, the reduced total emissions with the implementation of the GHG reduction measures, and the emissions gap between the reduced total emissions from the GHGRP and the emissions reduction goal for the target year. The emissions gap represents the difference between where GHG emissions are predicted to be with plan implementation and where GHG emissions should be based on the County's target setting. For example, a positive (greater than zero) value for the emissions gap means that the reduced total emissions will still exceed the emissions reduction goal; in other words, the emissions gap is the amount of reduction that is still needed to meet the target. Based on the total reductions provided by the GHGRP, the County would not achieve its adopted target with the above measures. Additional measure discussion is required.

Table 2. Emissions (MT CO_2e)

	2030	
Sector	**ABAU Total***	**Reduced Total (With Plan Implementation)**
Energy	43,762	28,297
Transportation	214,075	169,710.92
Agriculture	53,249	42,416
Solid Waste	12,655	11,052.65
Water and Wastewater	2,209	2,100.67
Total:	325,950	253,577.24
Emissions Reduction Goal[4]	197,348	
Emissions Gap	56,229.24	

*ABAU = Adjusted Business-As-Usual: ABAU is business-as-usual impacts (BAU) with State programs in place.

[4] **Target Setting**
California Statewide Targets
- Senate Bill (SB) 32 Target (40% below 1990 levels by 2030): 197,348 MT CO_2e

Table 2, Emissions (MT CO_2e), summarizes the total emissions under an adjusted business-as-usual (ABAU) scenario, the reduced total emissions with the implementation of the GHG reduction measures, and the emissions gap between the reduced total emissions from the GHGRP and the emissions reduction goal for the target year. The emissions gap represents the difference between where GHG emissions are predicted to be with plan implementation and where GHG emissions should be based on the County's target setting. For example, a positive (greater than zero) value for the emissions gap means that the reduced total emissions will still exceed the emissions reduction goal; in other words, the emissions gap is the amount of reduction that is still needed to meet the target. Based on the total reductions provided by the GHGRP, the County would not achieve its adopted target with the above measures. Additional measure discussion is required.

Table 2. Emissions (MT CO_2e)

	2030	
Sector	**ABAU Total***	**Reduced Total (With Plan Implementation)**
Energy	43,762	28,297
Transportation	214,075	169,710.92
Agriculture	53,249	42,416
Solid Waste	12,655	11,052.65
Water and Wastewater	2,209	2,100.67
Total:	325,950	253,577.24
Emissions Reduction Goal[4]	197,348	
Emissions Gap	56,229.24	

*ABAU = Adjusted Business-As-Usual: ABAU is business-as-usual impacts (BAU) with State programs in place.

[4] **Target Setting**
California Statewide Targets
- Senate Bill (SB) 32 Target (40% below 1990 levels by 2030): 197,348 MT CO_2e

11/3/22 PC POLICY DIRECTION FOR CONSULTANTS AFTER RECEIVING 10/26/22 GHG REPORT

- General Comments & Policy Direction in the Wake of the Harris & Co. 10/26/22 Report
    - The methodology used to determine the percentages of reduction we're striving for in each category is unclear from the report. Can you briefly explain how these percentages were determined?

    - The methodology used to determine the actual metric ton reduction values amount for each category and subcategory is unclear. Please explain, and please state a separate reduction amount for each subcategory (e.g., each bullet point under TR-1).

    - The methodology used to derive the 1990 emissions is not clear from the report, specifically:
        - 1) how the 1990 GHG values were derived from the 2018 GHG inventory,
        - 2)whether the methodology used to derive them was consistent with that used to create the 2018 GHG Inventory, or
        - 3) to what extent (if at all) adjustments were made as requested to capture any Calaveras-specific information reported to the consultants (e.g., the fact that Calaveras County does not have feed lots or dairy farms and did not have these back in 1990 either)

      Can you provide a brief response to each of these concerns?

    - There are numerous Implementation Measures that Calaveras County has already committed to as part of its 2019 General Plan adoption that 1) should have the effect of reducing GHG emissions, and 2) are tailored specifically to Calaveras County. These were recommended to the consultants for inclusion in the reduction measures, but they are not mentioned in the report. The Commission therefore wishes to have numerous General Plan Implementation measures added to existing GHG reduction measures or added as new measures as more fully described below in **STEP TWO**. We will need new calculations that incorporate these measures, and we will need the measures in the Harris report edited to ensure they are consistent with any relevant General Plan Implementation Measures. The specific relevant Implementation Measures are discussed below in "**STEP TWO**." A copy of the General Plan Implementation Measures is attached hereto as an exhibit, but the General Plan can also be found at https://planning.calaverasgov.us/General-Plan .

    - On its face, the Harris report implements the recommendations of the 2019 Central Sierra Zero Emission Vehicle Readiness Plan (CSZEVRP), which is attached hereto as an exhibit but can also be found at https://www.calacog.org/wp-content/uploads/2019/09/Central-Sierra-ZEV-Plan-FINAL.pdf . The Commission is concerned that the Harris report does not give full weight to all the measures of the CSZEVRP that could be adopted as GHG reduction measures. After the Harris report's reference to CSZEVRP (which is highly detailed and includes an Appendix providing a streamlined permitting guidebook specific to Calaveras County) the Harris report has some bullet points that mirror measures contained in it, but there are other bullet points that appear to contradict it. We would like the consultants to

please select *all* those CSZEVP recommendations that could be applied in Calaveras County as GHG Reduction measures and to either calculate a corresponding GHG reduction amount—or to at least list them in descending order of their GHG reduction value. The Commission strongly encourages inclusion of additional feasible GHG reduction measures pertaining to zero emission vehicles that are also consistent with the CSZEVRP. Comments pertaining to the CSZEVRP also are included below in **STEP ONE** under "TRANSPORTATION."

- Inconsistencies *between* various measures that were pointed out by the Commission were not corrected in the report. The Commission would like the consultants to ensure that the Reduction Plan is internally consistent between measures.

- There appears to be an error in TR-2A and TR-2b with bullet points duplicated in a way that is unclear or erroneous. One section apparently intends to require education and another apparently intends to require changes to the county fleet, but not every entry appears to fit within its assigned section, so the Commission questions whether this duplication was deliberate and would like the bullets clarified.

- The Commission is disappointed that additional examples of GHG measures that have been adopted for other similar jurisdictions were not provided as promised, and we are still looking for more examples of various measures that have been adopted in other similar cities and counties. The Commission understands that the policy decision around measures is ours but does not have the expertise to know what may be possible to do and would like to see a variety of measures used elsewhere.

- We would also like to clarify that, while the Commission remains wary of "reach codes" that apply broadly and expensively to all new or existing development, it appears that this term may mean different things to different people, and we do not wish to be hamstrung by terminology. If there are measures that the consultants might characterize as "reach codes" but which may be more focused or narrow in scope—or perhaps which are incentive-based--we would like to see examples of these with reduction values assigned to them (or at least presented in descending order of their GHG reduction value)...to the extent that application of the Commission's recommendations in this memo is not adequate by itself to get us to our target.

- The Commission would also like to receive a copy of a full, completed CEQA-qualified Reduction Plan, preferably one developed for small rural county *(other than Tuolumne County, which we have)*.

- The Commission has authorized the consultants to review and consider all of the attached Commissioner comments and would like these comments to be considered when developing the next draft of the measures. Suggestions in some of these comments (most particularly those in the second and third sets of Laddish comments) have already been incorporated in this Policy Direction memo.

- The Commission has requested clarification of your bullet points for EO-1 and EB-1 where you say they will be "voluntary" programs that do not meet "CEQA quantification requirements".

    - Do you mean that these programs would be "voluntary" for us to include since they won't qualify for CEQA tiering under Guideline 15183.5? If so, could they not still count toward the meeting of our SB 32 target given that reduction calculations were provided for them?

- In light of the footnote on the third page of the consultants' (multicolored) draft plan, please clarify which measures—after applying the Commission's recommendations in this memo--will "count" toward our GHG Reduction target and which will not. If some of the measures that don't "count" could be redrafted in a manner that allows them to count, please clarify to the Commission how the wording would have to change.

- The County Administrative Officer has also asked to ensure that the consultants are aware that the County is seeking a customized GHG Reduction Plan for its own purposes; we do not want our Plan to be tied to the Angels Camp plan, as the needs and desires of the county and city are distinct. Nothing contrary to this direction came out of the Commission meeting.

- **STEP ONE: Comments, Questions, and Requested Changes to the Reduction Measures as Presented in the Report**

  (NOTE: Unless otherwise stated, the letter/number combos cited here refer to those in the Harris report. If a letter/number item is preceded by the word "original," the reference is to an item in the multi-colored draft GHG Reduction Plan submitted earlier this year. See **"STEP TWO"** below for the proposed addition of measures that are based upon General Plan implementation measures.)

  - **ENERGY**
    - RE-1: Please comment briefly on whether the 5% reduction goal can reasonably be increased; the Commission is concerned this might be artificially low
    - RE-2: OK
    - RE-3: OK
    - *RE-3: OK*
  - **EDUCATION AND OUTREACH**
    - EO-1: OK but eliminate typo error "of" in second sentence.
  - **EXISTING BUILDINGS**
    - EB-1: OK
    - EB-2: REMOVE THIS MEASURE AS WRITTEN IN THE *HARRIS* REPORT
    - EB-3: EDIT AS FOLLOWS:
      - Change first sentence and beginning of second sentence to read, *"Pursue grants to improve the energy efficiency of existing county buildings and infrastructure whenever a project is undertaken to improve or maintain them. This includes maintenance or improvement of both interior and exterior ..."*

        - Please comment briefly on whether the 10% reduction goal can be reasonably increased; the Commission is concerned this might be artificially low
    - **RESTORE** THE FOLLOWING MEASURES THAT WERE REMOVED FROM THE PRIOR DRAFT MEASURES (AND RE-NUMBER THEM ACCORDINGLY)
        - *Original* EB-2 (not new EB-2, which we're removing)
        - *Original* EB-3, with the following revisions: in first sentence, replace "Promote and support" with "Educate citizens about;" in second sentence, replace "Offer" with "Educate about existing."
        - *Original* EB-4, with the following revisions: insert "of" between "awareness" and "resources;" insert "(1)" between "to" and "replace," insert "(2)" between "models," and "conduct," insert "(3)" between *"envelope," and* "upgrade," and insert "(4)" between "and" and "add."
    - ADD an EB-5 that reads, "County will pursue funding to help facilitate the energy-efficient upgrades discussed in EB-3 and EB-4 for homes and businesses." (Note: This will refer to the *original* EB-3 and EB-4 that we're restoring per the above.)
- **NEW CONSTRUCTION & ZERO NET ENERGY STANDARDS**
    - ZNE-1: EDIT AS FOLLOWS:
        - Replace the word "Partner" with the words "Support and encourage" (or, if you deem this inadequately quantifiable, with the words "work with")
        - Please comment briefly on whether the 5% reduction goal can be reasonably increased; the Commission is concerned this might be artificially low given the number of grants available to public agencies to implement through utility districts and companies.
    - ZNE-2: EDIT AS FOLLOWS:
        - Remove "financial based" from the examples in parentheses
        - Please comment briefly on whether the 5% reduction goal can be reasonably increased; the Commission is concerned this might be artificially low
    - ZNE-3: EDIT AS FOLLOWS:
        - Remove the sentence that says, "Encourage LEED certification in new buildings"
        - In the bullet point, where it says "10% of new developments", replace with "10% of new construction" unless there is a reason this cannot be done
- **TRANSPORTATION**
    - TR-1: EDIT AS FOLLOWS:
        - Correct typo in goal: replace "elective" with "electric."
        - Review CSZEVRP and re-draft this measure to make sure that all resulting measures dovetail with the language in this plan, and that all of the Plan's recommendations applicable to Calaveras County are given full weight in calculation of GHG reductions.
        - Either assign specific reduction values to the bullets provided for this section or at least list them in descending order of GHG reduction value.

        - Add each applicable measure from the CSZEVRP that will help us reach our target
        - Instead of saying "implement" in first bullet, say "Pursue grant funding to implement..."
        - Remove the reach code that would require 50% of all parking spaces (which sounds like it includes both existing and new parking spaces)—which the Commission said was too high before—and instead adopt the applicable requirements of the CSZEVRD for new or remodeled development
    - TR-2a & TR-2b: EDIT AS FOLLOWS:
        - Clean up the duplicative bullets under these sections and ensure the various bullets are under the correct headers.
    - TR-4: EDIT AS FOLLOWS:
        - Replace "Expand and enhance" in the last bullet with "Establish", since the County does not have a "Green Streets Program"
- **AGRICULTURE**
    - AG-1: EDIT AS FOLLOWS:
        - Restore the edits to this measure that were made by the Planning Commission at its previous meeting
        - For example, the word "fertilizer" was removed from the goal, and the word "prescribed" was also removed from the second bullet point.
    - AG-2: OK
    - AG-3: OK
- **SOLID WASTE**
    - SW-1: EDIT AS FOLLOWS:
        - Replace the fourth sentence of SW-1 to read: *"The County will coordinate with individuals, community groups, and publicly funded and privately managed recycling and composting providers to educate the public about the benefits of composting; and the County will divert 50% of food and green waste from landfills to home & community-based composting facilities, bio-mass plants, & other local facilities to reduce short-lived climate pollutants and minimize transportation-related emissions."*
        - Add the following sentence after that 4th sentence: "Investigate and incentivize community composting."
        - Please consider whether additional language or additional reduction value given the enhanced feasibility and popularity of household and farm/ranch composting in our County, the popularity of self-hauling to waste disposal facilities, and our proportionately reduced reliance on per capita trash collection services using high emissions vehicles.
    - SW-2: EDIT AS FOLLOWS:
        - Replace with the following language: "The County will divert an additional 5 percent of total Calaveras County solid waste disposal from other landfills to Rock Creek Landfill, to the extent Rock Creek Landfill has the capacity to receive this diverted material."
    - SW-3: EDIT AS FOLLOWS:

- Replace with the following language: "Continue to manage landfill to limit methane release."

- **WATER/WASTEWATER** (HARRIS MEMO MEASURES HERE SHOULD BE REPLACED W/GENERAL PLAN IMs—see **STEP TWO**)
  - W-1: REMOVE
  - W-2: REMOVE
  - Consider whether measures or additional reduction values can be added given our County's high reliance on septic systems in lieu of transporting treated water
- **ADD A "LAND USE" (LU) GHG REDUCTION SECTOR** (which appears to have been inadvertently excluded)
  - Include the following paragraph as an LU measure: *"Apply for grants from the California Strategic Growth Council and others for a planning grant regarding agricultural land strategy plans and other mechanisms that promote GHG reductions and carbon sequestration through preservation of such assets as grasslands and oak woodlands".* [Note: This paragraph was proposed to and approved as amended by the Commission at the May 12 meeting, and was again included, as amended, in Commissioner Laddish's second set of comments.]

- **STEP TWO: Incorporation of Specific General Plan Implementation Measures into GHG Reduction Measures**

  (NOTE: The letters/numbers refer to the designations of the various General Plan Implementation Measures. *PLEASE ADD CITATIONS TO THE IMPLEMENTATION MEASURES USING THESE DESIGNATIONS WHEN ADDING THEM AS GHG REDUCTION MEASURES.*

  - **ENERGY**
    - Add COS-5E as an RE measure
    - Add PF-3A as an RE measure
    - Add PF-3F as an RE measure
    - Add RP-5A as an RE measure
    - Add RP-2a as an RE measure
  - **EXISTING BUILDINGS**
    - Add COS-5G to the end of restored original EB-4
  - **TRANSPORTATION**
    - Add PF-3B as a T-1 measure
    - Restore original TR-3.3 (in the draft GHG Reduction Plan) and replace its language with COS-5G
    - Incorporate COS-7E into TR-4 (replacing the second bullet of TR-4)
    - Incorporate C-3A into TR-4
    - Incorporate C-5A into TR-4
    - Incorporate COS-7B into TR-4

  - **SOLID WASTE**
    - Replace the third sentence of SW-1 to include requirements of COS-5D and COS-2D as follows: *"Waste management practices to support organics diversion: A. (1) Shall*

include providing green waste collection programs at County operated landfill and transfer stations when feasible (COS-5D); (2) Shall utilize public/private partnerships to utilize green waste in alternative uses and waste to energy facilities (COS-5D); (3) Shall include a review of the zoning ordinance and Air Pollution Control District regulations and amendment as necessary to facilitate the development of green waste to energy projects and other projects that convert green waste to products(COS-2E); B. May include (1) constructing and managing a composting . . . [rest of sentence stays the same].

- **WATER/WASTEWATER**
  - Replace original WW-1 with PF-2G and add the following statement to the end of the sentence: "including strategies for increasing energy efficiency".
  - Replace original WW-2 (deemed inappropriate for Calaveras County) with the first sentence of PF-2H and add PF-2I.
  - Replace original WW-3 (deemed inappropriate for Calaveras County) with the 2nd sentence of PF-2H.
  - Are there other alternative measures such as composting toilets and other on-site wastewater options that etc. that can be suggested here?
  - Examples of targeted measures for this sector (e.g., "reach codes")?
- **NEW CONSTRUCTION**
  - Add C-1B as a ZNE measure
  - Add C-1C as a ZNE measure
  - Add COS-5F as a ZNE measure
  - Add COS-5H as a ZNE measure
  - Add COS-5N as a ZNE measure
- **"LAND USE" (LU) GHG REDUCTION**, as added above in **STEP ONE.**
  - Add RP-1F as a LU measure
  - Add RP-2F as a LU measure
  - Add the bullet points of COS-5-M as LU measures
  - Add RP-2C as a LU measure.

RECOMMENDED REVISIONS TO THE GHGRP MEASURES SUMMARY

Rincon Consultants, Inc.
4825 J Street, Suite 200
Sacramento, California 95819
916-706-1374

July 17, 2023
Project No: 23-14836

Gabriel Elliott
Calaveras County
891 Mountain Ranch Road
San Andreas, California 95249
Via email: gelliott@co.calaveras.ca.us

Subject: Calaveras County Greenhouse Gas Reduction Plan (GHGRP) Measures Summary

Dear Mr. Elliott:

The following memorandum presents a summary of 1) the greenhouse gas (GHG) emission inventory, forecast, and reference year that provide the basis for the Calaveras County (County) Greenhouse Gas Reduction Plan (GHGRP) and 2) the GHG emission reduction measures, including quantification, that are proposed to be included in the County GHGRP and comparison to GHG emissions reduction targets. This document summarizes the results of the joint work effort led by the Sierra Business Council and supported by Harris and Associates and Rincon Consultants, Inc. The results of the County 2018 GHG emissions inventory, 2030 and 2045 forecast, and 1990 reference year are summarized below. GHG emissions reduction measures were developed and quantified based on these GHG emissions metrics. Measures and their associated GHG emissions reduction impact for target years 2030 and 2045 are included below for the energy, transportation, agriculture, solid waste, water, wastewater, and carbon sequestration sectors.[1] The respective GHG emissions reduction impacts are summarized by sector and then aggregated for comparison to the GHG emissions reduction targets for each target year. Full implementation of the presented measures would allow the County to reach the 2030 GHG emission reduction target and make substantial progress towards achieving the 2045 GHG emission reduction target. Future GHGRP measure updates will be required to allow the County to reach the 2045 GHG emission reduction target.

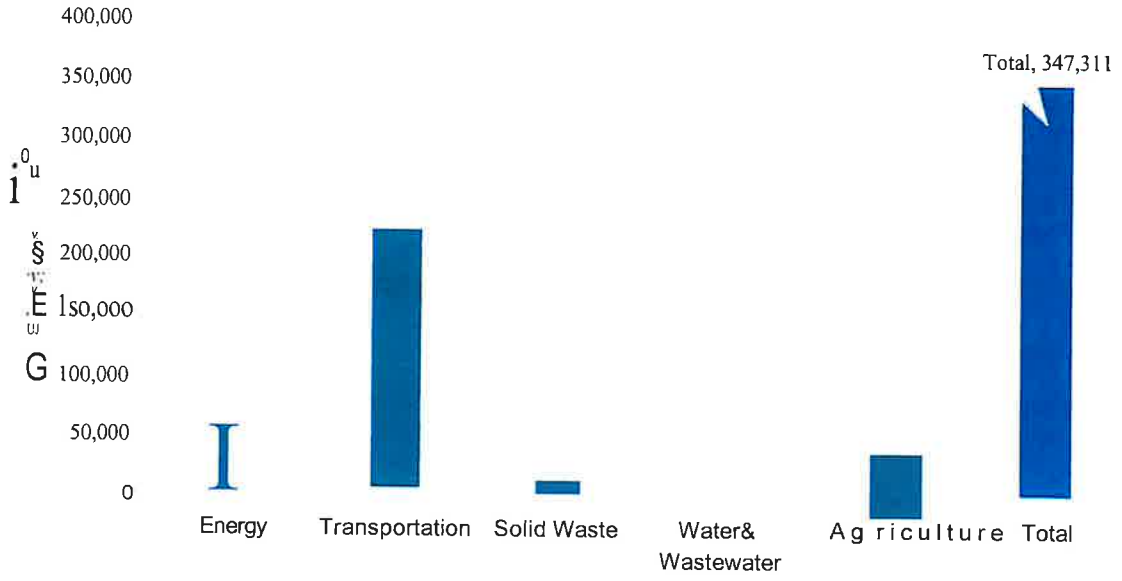
2018 GHG Emissions Inventory

The County 2018 GHG emission inventory includes GHG emissions associated with activities that were estimated to occur within the County jurisdictional boundaries during 2018.[2] The inventory reported GHG emissions by source sector, including energy, transportation, agriculture, solid waste, and water/ wastewater. The results indicate that the County emitted 347,311 metric tons of carbon dioxide equivalent (MT C02e) in 2018. Figure 1 presents the results by source sector.

[1] Carbon sequestration refers to the process of capturing, removing, and storing atmosphere carbon dioxide.

[2] A GHG emissions inventory is not a census of emissions but rather an estimated calculation of emissions based on activity units during the identified timeframe and relevant emission factors by sector.

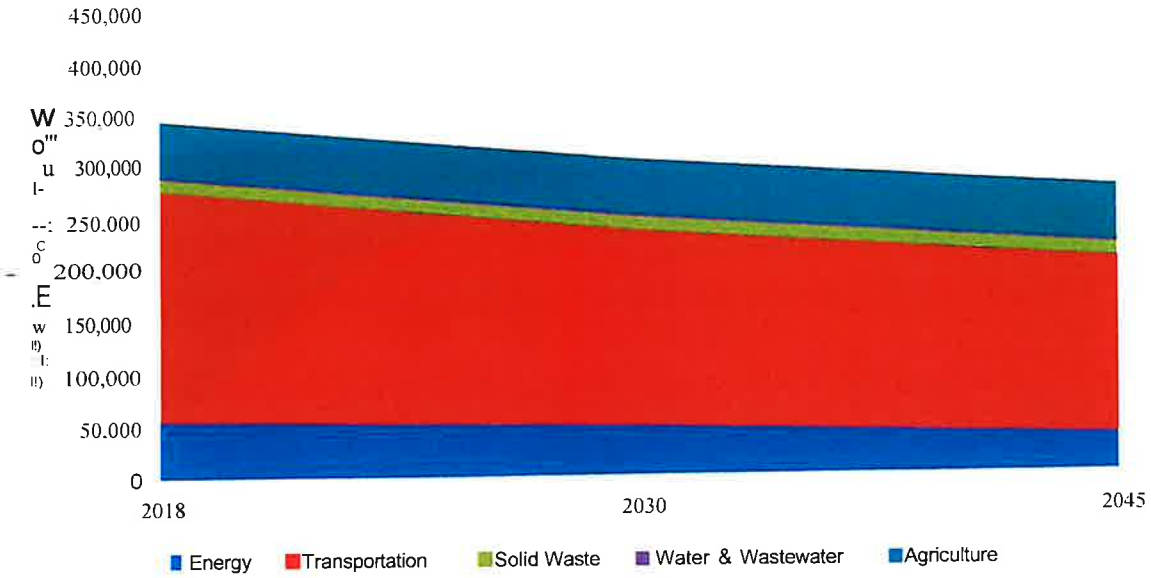
Figure 1 2018 GHG Emissions by Source Sector



GHG Emissions Forecast between 2018 and 2045

A GHG emissions forecast through 2045 was also developed. The forecast provides a projection of how GHG emissions are expected to change for the County based on two scenarios. The business-as-usual scenario forecasts GHG emissions based on changes in population, employment, and other growth indicators, with all other potential changes (e.g., emission factors, fuel efficiencies) held constant. The adjusted scenario forecasts GHG emissions based on the same growth indicators as the business-as-usual forecast and also adjusts the GHG emissions to take into account assumed implementation of adopted State and federal legislation aimed at reducing GHG emissions through 2045. The adjusted forecast for 2030 totals 306,545 MT C02e and for 2045 totals 276,780 MT C02e. Figure 2 details the trajectory of County GHG emissions by sector through 2045 and represents the adjusted GHG emission forecast.

Figure 2 Adjusted GHG Emissions Forecast



1990 GHG Emissions Reference Year

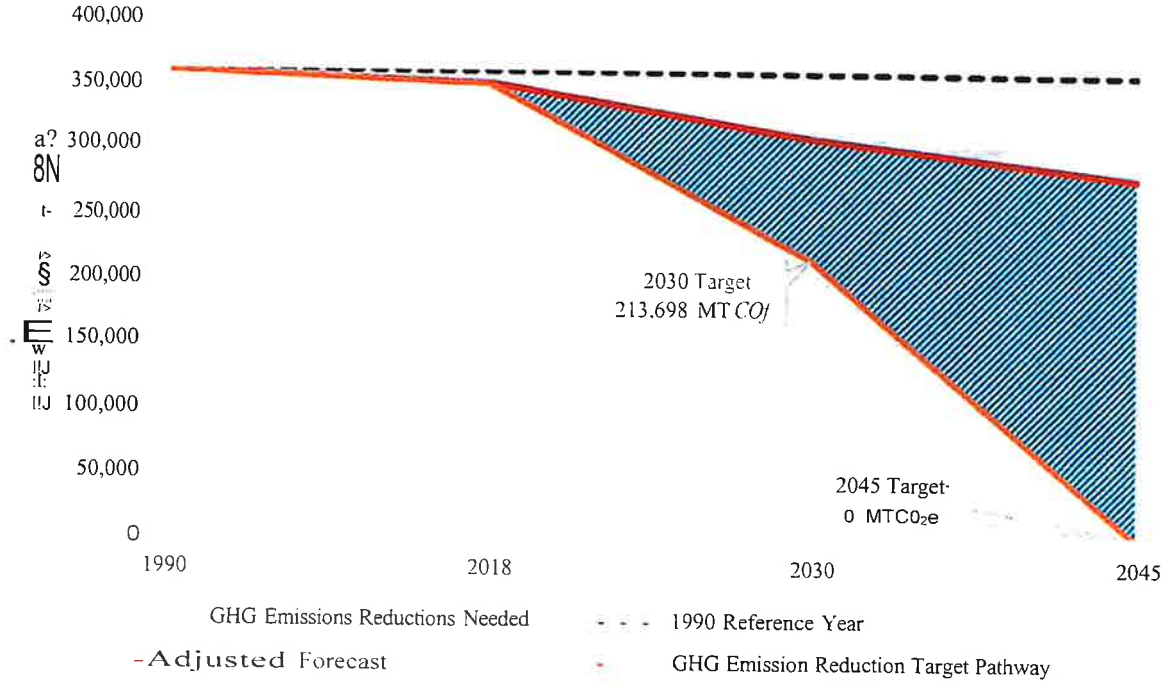
Applicable State legislation refers to GHG emission reduction targets compared to 1990 as a reference year for comparison against which to reduce GHG emissions.[3] There is not a County-specific 1990 GHG emissions inventory that can be used as a reference year from which County GHG emissions can be compared to the State goals. Therefore, County 1990 GHG emissions were estimated using the County 2018 GHG emissions inventory as compared to the known magnitude change in statewide GHG emissions between 2018 and 1990. The County's 1990 reference year GHG emissions were calculated using this methodology and are estimated to total 356,163 MT C02e.

GHG Emissions Reduction Pathway Goal

Based on the County 1990 GHG emission estimate, GHG emission reduction targets consistent with State goals established in Senate Bill (SB) 32 and Assembly Bill (AB) 1279 were developed for the County. Specifically, as part of the County GHGRP, the County will aim to reduce GHG emissions 40 percent below 1990 levels by 2030 and show substantial progress toward achieving carbon neutrality by 2045, consistent with State goals. These reduction pathway targets translate to a GHG emissions reduction target of 213,698 MT C02e by 2030 and net zero MT C02e by 2045. Figure 3 presents the GHG emissions reduction targets relative to the 1990 reference year and adjusted forecast through 2045. The gap between the reduction pathway goal line and adjusted forecast line represents the remaining amount of GHG emissions that the County would need to reduce through local measures to achieve the targets.

[3] Applicable state legislation refers to Senate Bill (SB) 32 and Assembly Bill (AB) 1279, both of which establish GHG targets in comparison to 1990 emissions levels.

Figure 3 GHG Emissions Reduction Pathway Goal Compared to Adjusted Forecast



GHG Emissions Reduction Measures

GHG emissions reduction measures have been developed to allow the County to meet the 2030 GHG emissions target and make substantial progress toward the 2045 GHG emissions target. The following subsections present the measures and their associated GHG emission reduction impact for target years 2030 and 2045. Measures are included for energy, transportation, agriculture, solid waste, water, wastewater, and carbon sequestration. In each sector, measures are either quantitative or supportive defined as:

- **Quantitative:** Quantitative measures result in direct GHG emissions reductions that can be quantified and summed to show how the County will make progress towards and meet its GHG emission reduction targets when implemented.
- **Supportive:** Supportive measures provide support so that the quantitative measures will be successfully implemented. Though these measures could be quantifiable, they are not quantified for one of several factors-including a low GHG emission reduction impact, indirect GHG emission reductions, or potential for double-counting-and do not contribute directly to the GHG emission reduction targets.

The last subsection presents the overall GHG emission reduction impact of the measures summarized by sector.

Energy GHG Emission Reduction Measures[4]

Measure RE-1: Increase Community Energy

Convert 14% of existing residential grid electricity and 18% of existing commercial grid electricity to renewable electricity by 2030.

Increase the use of renewable energy in the community and support efforts to increase renewable and carbon-free energy generation, including wind, solar, hydro, and biomass, and to ensure customer access to this renewable energy. Encourage on-site renewable energy generation and storage systems for residents and businesses. Pursue funding to dDevelop a robust renewable energy program that provides outreach, financing opportunities, and technical assistance to residents and businesses. Pursue community solar projects. Work with large energy users to transition towards renewable and zero net energy projects. Pursue distributed energy resources (DERs), microgrids, energy storage opportunities, and grid optimization projects.

Measure RE-1Greenhouse Gas Reduction Impact (MT C02e/Year)[5]

	2030	2045
Total	1,418	0

Measure RE-2: Promote On-Site Renewable Energy Generation (Government Operations)

Support efforts on available government-owned land or buildings to increase renewable and carbon-free energy generation, including, wind, solar, hydro, and biomass, and others. Promote on-site renewable energy generation and energy storage. Evaluate the renewable energy potential and assess barriers to increased renewable energy generation.

Measure RE-2 Not Quantified[6]

(Supportive of Measure RE-1)

Measure RE-3: Incentives for Alternative Energy

Consistent with Implementation Measures COS-5E and PF-3F of the County's General Plan, pursue funding to provide incentives to facilitate alternative energy projects. Modify the County's development standards and zoning ordinance to provide incentives for providing alternative energy producing facilities compatible with surrounding uses, such as solar arrays in parking lots that serve to provide shade and energy production. Cooperate with and support state and federal programs that assist landowners in energy conservation and production. Support programs that provide incentives for property owners to install alternative energy facilities such as solar arrays, small windmills, and other energy systems.

---

[4] County GHGRP energy GHG reduction measures and respective quantification was prepared in 2023 by Sierra Business Council.

[5] Quantification accounts for the impacts of EB-4, EB-3, EB-1, and EO-1, in order of operations. Measures RE-2, RE-3, and RE-4 are supportive of RE-1, and while they could not be quantified separately, they support the reductions associated with RE-1. RE-1 does not contribute to 2045 emissions reductions due to California's Renewable Portfolio Standard, which requires that all of the State's electricity will come from carbon-free sources by 2045.

[6] Measure not quantified because the ~~municipal~~ county government emissions of Measure RE-2 are a subset of community (i.e., commercial) emissions in Measure RE-1.

Measure RE-3 Not Quantified

(Supportive of Measure RE-1)

Measure RE-4: Codes and Standards for Alternative Energy

Consistent with Implementation Measures PF-3A, RP-5A, and RP-2A of the County's General Plan, amend codes to facilitate alternative energy projects .Amend the zoning code to encourage the incorporation of solar, wind, and other alternative energy infrastructure in project design to establish standards for locating and permitting solar farms, wind farms, and other alternative energy facilities to ensure land use compatibility; addressing the potential visual impacts of alternative energy infrastructure to the extent permitted by law. Amend the Calaveras County Code to recognize the development of geothermal resources and their related land uses and refer proposals involving or affecting geothermal resources to the California Department of Conservation Division of Oil, Gas and Geothermal Resources. Amend the County Code to incorporate required findings and procedures for implementing state legislation and Department of Conservation requirements relative to solar-use easements and installations affecting Williamson Act Contracts.

Measure RE-4 Not Quantified

(Supportive of Measure RE-1)

Measure E0-1: Conduct Energy Conservation Outreach and Education

Reduce existing and new residential and commercial energy use (all sources) by 12% in 2030 and 2045 through robust energy conservation outreach and education.

Pursue funding and add staff to c~~C~~onduct energy conservation and efficiency education and outreach to residents and businesses. Support and promote programs for lower-income and disadvantaged populations. Increase awareness of resources and financing opportunities for homes and businesses to (1) replace old appliances with energy-efficient models, (2) conduct retrofits to HVAC systems and building envelope, (3) upgrade to efficient lighting, (4) replace old and inefficient wood- and propane-burning heaters, and (5) add smart controls and sensors. This includes property owners (primary, vacation, and second homeowners), property management groups, and landlords. Through education and outreach, increase participation in voluntary residential and commercial energy efficiency programs. Educate citizens about low- income home weatherization programs (DOE Weatherization Assistance Program, California's Low- Income Weatherization Program, utility-offered Energy Savings Assistance Program, local program). Educate about existing housing rehabilitation loan programs. Partner with the local utilities (PG&E and Calaveras Public Power Agency) to promote existing energy programs for residents and businesses.

Measure E0-1Greenhouse Gas Reduction Impact (MT C02e/Year)[7]

	2030	2045
Total	4,147	911

[7] The E0-1 quantification accounts for the impacts of EB-4 and EB-3 on existing energy use, and NC-4, NC-1, and NC-2 on new energy use, in order of operations.

Measure EB-1: Establish a Green Business Program

Achieve participation of 5% of businesses in 2030 and 2045 within a Green Business Program. Reduce existing and new commercial energy use (all sources) by 10% in 2030 and 2045.

Establish a green business program that certifies businesses based on criteria such as energy efficiency, employee wellness, water and waste reduction, etc. Benefits to employee wellness could include active transportation, cleaner air, etc.

Measure EB-1 Greenhouse Gas Reduction Impact (MT C028/Year)[8]

	2030	2045
Total	23	6

Measure EB-2: Improve Building Energy Efficiency of Government Operations

Pursue grants to improve the energy efficiency of existing county buildings and infrastructure whenever a project is undertaken to improve or maintain them. This includes maintenance or improvement of both interior and exterior (streetlight, parking lot lighting, traffic signals, and other outdoor area lighting) operations. Energy efficiency improvements include retrofits or commissioning/retrocommissioning to HVAC, lighting, controls, sensors, building envelope, and any other energy loads.

Measure EB-2 Not Quantified

(Supportive of Measure EB-3)

Measure EB-3: Facilitate Energy Efficiency Retrofits

Reduce existing residential and commercial energy use (all sources) by 10% and 15%, respectively, in 2030 and 25% and 30% in 2045, respectively, through energy efficiency retrofits.

The County will pursue funding to help facilitate (i.e., incentivize) energy-efficient upgrades for homes and businesses. Energy efficiency retrofits can include upgrades to lighting, heating, ventilation and air conditioning, appliances, water efficiency, and building envelope (insulation, windows). Consistent with COS-5G of the County's General Plan, cooperate with the CCAPCD to implement emissions reductions programs such as the Carl Moyer Program, and to find methods of incentivizing the replacement or retrofit of small emissions sources throughout the County, such as the replacement of existing wood stoves.

Measure EB-3 Greenhouse Gas Reduction Impact (MT C028/Year)[9]

	2030	2045
Total	3,868	1,727

Measure EB-4: Implement an Equipment Time-of-Replacement Ordinance

By 2025, adopt an ordinance that requires at equipmkent end of life residential and commercial fossil fuel-powered space and water heating appliances be replaced with electric alternatives at time of replacement, exdept at higher elevations or where electrical utilities are not readily available.

At equipment end of life, replace 45% of existing residential and commercial natural gas and propane water heaters with electric alternatives by 2030 and 90% by 2045 (based on 10-year life and 10%

8 The EB-1 quantification accounts for the impacts of EB-4 and EB-3 on existing energy use, and NC-1 and NC-2 on new energy use, in order of operations.
9 The EB-3 quantification accounts for the impact of EB-4, in order of operations.

non-compliance). At equipment end of life, replace 23% of natural gas, propane, and wood space heaters with electric alternatives by 2030 and 90% by 2045 (based on 20-year life and 10% non-compliance).

~~By 2025, adopt an ordinance that requires residential and commercial fossil fuel-powered space and water heating appliances be replaced with electric alternatives at time of replacement.~~

Measure EB-4 Greenhouse Gas Reduction Impact (MT C02e/Year)

	2030	2045
Total	9,748	27,531

Measure NC-1: Incentivize Highly Efficient New Development

Pursue funding to provide incentives (e.g., easing permitting requirements) to new residential and nonresidential development projects for going beyond Title 24 compliance

Through incentives, aAchieve participation from 10% of new residential buildings starting from 2025 through 2045. Reduce new residential energy use (all sources) by 53%). Achieve participation from 10% of new commercial buildings between 2025 and 2045. Reduce new commercial energy use (all sources) by 30%).

~~Provide incentives (e.g., easing permitting requirements) to new residential and nonresidential development projects for going beyond Title 24 compliance~~.

Measure NC-1Greenhouse Gas Reduction Impact (MT C02e/Year)[10]

	2030	2045
Total	58	98

Measure NC-2: Incentivize Zero Net Energy New Construction

incentivize new residential and nonresidential buildings to be built all-electric and highly energy efficiency and install renewable energy generation and energy storage systems that can fully offset energy needs.

Achieve participation by 10% of new residential and commercial buildings from 2025 through 2045.

~~Incentivize new residential and nonresidential buildings to be built all-electric and highly energy efficiency and install renewable energy generation and energy storage systems that can fully offset energy needs.~~

Measure NC-2 Greenhouse Gas Reduction Impact (MT C02ejYear)[11]

	2030	2045
Total	81	192

Measure NC-3: Reduce Criteria Air Pollutants and Emissions from New Development

Consistent with Implementation Measures COS-5F and COS-5H of the County's General Plan, reduce criteria air pollutants, including GHG emissions, from new developments. Evaluate proposed discretionary developments subject to CEQA evaluation to determine whether they will emit criteria air pollutants, including greenhouse gases, exceeding CCAPCD's standards. Should proposed developments within the County be anticipated to result in significant impacts related to the emission of criteria air pollutants, the County shall require the applicable mitigation measures provided in the CCAPCD's Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects.

Measure NC-3 Not Quantified

[10] The NC-1 quantification accounts for the impact of NC-4, in order of operations.
[11] The NC-2 quantification accounts for the impacts of NC-4 and NC-1, in order of operations

(Supportive of Measures NC-1 and NC-2)

Measure NC-4: Increase Clean Wood-Burning Appliances

Require any installed woodstoves to be EPA-rated in all residential buildings from 2025 through 2045, except lower density owner built construction. ~~Achieve use of EPA-rated woodstoves in all new residential buildings from 2025 through 2045.~~

In alignment with Implementation Measure COS-5N of the County's General Plan, require all wood burning appliances, including fireplaces, in new residential construction to be EPA rated appliances, except as may be provided in the Housing Element or for off-grid construction, or the lower density minimum built.. EPA rated woodstoves produce 30% less emissions compared to non-EPA-rated woodstoves.

Measure NC-4 Greenhouse Gas Reduction Impact (MT C02ejYear)

	2030	2045
Total	28	62

Transportation GHG Emission Reduction Measures[12]

Measure TR-1: Increase EV/ZEV Adoption

Install 99 new publicly accessible plug-in electric vehicle (PEV) charging ports by 2025 to support the resident and visitor demand projected in the Central Sierra Zero Emission Vehicle Readiness Plan (CSZEVRP) and install 652 new publicly accessible PEV charging ports by 2030 to accelerate electric vehicle (EV)/zero-emission vehicle (ZEV) adoption in Calaveras County.

1. Develop and adopt an EV charging infrastructure reach code to require 30% of total parking spaces in new or remodeled commercial development to install Level 2 EV chargers exceeding the 2022 California Green Building Standards Code Tier 2 requirements.
2. Develop the Electric Vehicle Infrastructure Implementation Plan with a list of prioritized locations for the 751 new PEV charging port installations across the County by 2030. Include locations recommended in the CSZEVRP, including EV charging infrastructure for visitors at the recommended resorts/lodging locations, DC fast chargers at the recommended highway corridor locations, and EV charging stations (EVCS) at the other recommended destinations.
3. As part of the Electric Vehicle Infrastructure Implementation Plan, conduct specific ZEV demand and infrastructure needs assessments for Murphys, San Andreas, and Valley Springs as recommended by the CSZEVRP. From the assessments, develop prioritized locations to provide electric vehicle/alternative fueling infrastructure in these areas to be included in the Plan.
4. Consistent with the Calaveras Streamlined Permitting Guidebook of the CSZEVRP and Calaveras County General Plan Implementation Measure PF-3B, develop and maintain an expedited, streamlined permitting process for EVCS in accordance with AB 1236 and employ the example Plug-in EV Infrastructure Permitting Checklist in the Guidebook to assess installation projects for expedited review. Also, amend the Calaveras County zoning code to provide ZEV incentives to encourage adoption and use.

f ty GHGRP transportation GHG reduction measures and respective quantification was prepared in 2023 by R con.

5. Develop and hire Calaveras County "grant team" staff to pursue significant funding from Measures TR-9 and TR-10 to upgrade the EV charging and alternative fueling infrastructure to facilitate a robust ZEV network throughout the County.
6. Engage the local business community to site EV infrastructure (especially businesses that rely on tourism and business travelers) and to develop and implement a plan for County-supported accelerated business fleet electrification in partnership with the PG&E EV Fleet program.
7. Support and partner with ZEV car share companies in coming to the County.
8. Support the regional transportation planning agency in creating a Regional Electric Vehicle Infrastructure Collaborative. Participate in the program to collaborate on infrastructure deployment and to increase buying/negotiation power.
9. Coordinate with County communities-based organizations, agencies, and nonprofits to conduct zero-emission vehicle (ZEV) education events for residents and business owners to promote benefits and programs such as the Clean Vehicle Rebate Program.
10. Work with the CCAPCD to develop a passenger clean vehicle rebate program for low-income residents of Calaveras County to assist low-income residents in purchasing EVs.

Measure TR-1Greenhouse Gas Reduction Impact (MT C02e/Year)

	2030	2045
Passenger EV/ZEV	25,403	45,546
Commercial EV/ZEV	14,097	13,058
Total	**39,500**	**58,604**

Measure TR-2: Decarbonize the County Municipal Fleet and Employee Commute

Lead by example by decarbonizing the Calaveras County municipal fleet and related commuter vehicles to achieve a 40% ZEV fleet by 2030.

1. Adopt a County requirement that requires that new and replacement County municipal fleet vehicle purchases are EVs or ZEVs where feasible.
2. Conduct a study to determine total turnover time frame of County municipal fleet vehicles to EVs or ZEVs.
3. Secure funding from programs such as the California Air Resources Board's Clean Vehicle Rebate Project, Clean Cars 4 All Program, and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at County facilities.
4. Coordinate with local agencies and community-based organizations to develop EV/ZEV educational materials that inform residents on costs/benefits of owning EVs/ZEVs and guidance on receiving funding for EVs/ZEVs.
5. Allow eligible County employees to telecommute, with a target rate of 25% of eligible staff time telecommuting by 2030.

Measure TR-2 Greenhouse Gas Reduction Impact (MT C02e/Year)

	2030	2045

Municipal Fleet	790	1,974
Employee Commute	696	1,770
Total	**1,486**	**3,744**

Measure TR-3: Increase Public Transit Mode Share

Pursue funding to dDevelop a robust public transportation network consistent with Pitkin County's (CO) Roaring Fork Transportation Authority that employs ZEV buses, demand-responsive transport options, and ZEV ridesharing to increase Calaveras County public transit mode share to 6% by 2030.

1. Conduct a study to identify specific and systematic gaps and barriers to mobility and access in the current public transit system. Include direct outreach to members of disadvantaged communities, commuters, tourist destinations, and other underserved groups.
2. Establish a regional transportation system that uses Pitkin County's Roaring Fork Transportation Authority's services as a model to serve all Calaveras County residents and visitors through a connected network of express and local fixed-route bus services, regional commuter services, public tourist shuttles, on-demand shuttles/microtransit, consistent active transportation connections (e.g., bike racks) and coordinated first-last mile commuting options that may include micromobility options.
3. Establish an EV rideshare program (similar to "Green Raiteros") that allows for people with limited mobility options to rent a vehicle or request a ride in an electric vehicle for low cost.
4. In accordance with Calaveras County General Plan Implementation Measure C-3A, establish Park and Ride facilities at locations convenient for commuters, residents, and visitors to transfer from a single occupancy vehicle to a transit buses, commuter services, shuttles, or EV rideshare vehicles. Incorporate planned Park and Ride facilities into the Electric Vehicle Infrastructure Implementation Plan to outfit the facilities with sufficient EV/alternate fueling infrastructure.
5. Rely on significant funding from Measures TR-6 through TR-10 to fund a regional transportation system that is consistent with Pitkin County's RFTA services and build an EV charging infrastructure network to support the EV rideshare program.
6. Expand the Calaveras Transit Agency to plan for, develop and operate the regional transportation system. Employ technical assistance from the National Rural Transit Assistance Program and create a public transportation working group to provide the County expertise and community input.
7. Identify partners such as CCOG to develop, oversee, and manage the transit and EV rideshare program.
8. Implement a promotion and education campaign to inform the community of the availability of the EV rideshare program and available transit routes and options. This may include but is not limited to: tabling at community events, bilingual mailers, social media posts, direct engagement with employers, and partnerships with Google Transit or a mobile application developer to bring real-time maps and schedules to residents and visitors.
9. Prioritize EV rideshare program implementation in low-income communities and develop pricing plans that make the public transportation system and EV rideshare program affordable for low-income residents.

Measure TR-3 Greenhouse Gas Reduction Impact (MT C02ejYear)

	2030	2045
Total	11,376	26,769

Measure TR-4: Increase Active Transportation Mode Share

Increase active transportation mode share within Calaveras County 1% by 2030.

1. In accordance with Calaveras County General Plan Implementation Measure COS-7E, support and participate in efforts (such as an annual collision review) to update the bicycle and pedestrian master plan for biking, walking, riding, hiking/non-motorized and motorized transportation. The updated plan(s) shall identify existing and proposed facilities to assist in integrating future development into regional trail networks, tie trail systems to commercial centers and tourist destinations, identify locations for new trailheads and trail access points, and connect trail heads with public transportation systems.
2. In accordance with Calaveras County General Plan Implementation Measure C-5A, implement priority projects of the updated bicycle and pedestrian master plan as funding allows and prioritize the development of projects in disadvantaged communities within the County.
3. Pursue funding to cConstruct bikeway and pedestrian system connections within Calaveras County and connecting to City of Angels Camp, nearby counties, state, and federal infrastructure through integration of bicycle facilities as part of other roadway construction projects.
4. In accordance with Calaveras County General Plan Implementation Measure COS-78, establish standards for when and how new residential subdivisions shall provide bicycle and pedestrian facilities and amend the Calaveras County Code accordingly.
5. Rely on funding from Measures TR-6 through TR-10 to implement projects from the updated bicycle and pedestrian master plan.
6. Work and collaborate with local organizations and agencies, such as CCOG and City of Angels Camp, to promote bicycle and pedestrian travel as well as the updated bicycle and pedestrian master plan.
7. Coordinate with County community-based organizations, agencies, and nonprofits to conduct bicycle and pedestrian education events for residents and business owners.
8. Establish a Calaveras County Green Streets Program to improve the walkability of streets by providing increased shade cover and increased carbon sequestration potential.
9. In accordance with Calaveras County General Plan Implementation Measure C-18, favorably consider projects which minimize greenhouse gas impacts and are appropriate to the rural nature of the County, including transit programs, ridesharing programs, and bicycle and pedestrian improvements.
10. In accordance with Calaveras County General Plan Implementation Measure C-1C, consider transit capital improvements and non-auto travel improvements necessary to serve new development in impact fee programs to fund public transportation infrastructure, park-and-ride lots, and bicycle and pedestrian facilities associated with the new development.

Measure TR-4 Greenhouse Gas Reduction Impact (MT C02ejYear)

	2030	2045
Total	187	428

Measure TR-5: Decarbonize Off-road Equipment and Vehicles

Decarbonize 30% of the off-road equipment and vehicles in Calaveras County by 2030.

1. Create a phased ordinance by 2024 to ~~ban~~ reduce the local operation of gasoline and diesel- powered off-road equipment by type, including ~~banning~~ limiting local operation of gasoline and diesel-powered small off-road equipment (SORE) by 2029. For those equipment types that cannot be decarbonized (i.e., electrified or converted to biofuel) in the short-term, include a requirement for the use renewable diesel (e.g., RD99, which is a drop-in renewable fuel and readily available on West Coast).
2. Establish an enforcement and implementation program to track transition of off-road equipment across the County.
3. Conduct an assessment of off-road equipment and vehicles in the County to determine feasible phases for the ordinance, identify fleets with high decarbonization potential and fleets that will require targeted support to decarbonize, and identify available electric/biofuel options for each type. The assessment shall include direct outreach to fleet operators including those with recreational boats and agricultural/forestry equipment and vehicles.
4. Procure funding to create an Off-road Equipment Replacement Program to work directly with fleets identified in Action TR-5.3 to decarbonize their off-road equipment and vehicles. The program shall include free consultations with fleet operators to identify equivalent alternatives to fossil-fueled off-road equipment, direct support to obtain rebates and incentives, and connect them with qualified local repair services to maintain the replaced equipment.
5. In accordance with Calaveras County General Plan Implementation Measure COS-5G, work with the CCAPCD to pursue funding from the Carl Moyer Program and rely on funding from Measures TR-6 through TR-10 to support off-road decarbonization efforts via purchase of all-electric and/or bio-fuel off-road equipment and vehicles.
6. Work with the CCAPCD to develop a rebate and incentive program for upgrading off-road equipment and vehicles and switching to electric or biofuels. Develop the program with a focus on procedural equity and prioritize funding distribution to members of disadvantaged communities.
7. Develop a multi-lingual Off-road Equipment Replacement Outreach Campaign that educates fleet operators on the public health and safety benefits of alternative equipment technology and connects them with the Off-road Equipment Replacement Program.
8. Work with electric off-road equipment manufacturers (such as Solectrac and Monarch) to host workforce development workshops to train local agricultural equipment repair shops to service electric off-road equipment and off-road equipment utilizing biofuels and renewable diesel.
9. Partner with the CCAPCD to establish the enforcement and implementation program, create the Off-road Equipment Replacement Program, pursue funding, and develop the rebate and incentive program.

Measure TR-5 Greenhouse Gas Reduction Impact (MT C02ejYear}

	2030	2045
Total	7,787	17,362

Measure TR-6: Create a Tourism Economy

Work to develop a tourism economy within Calaveras County to help fund the decarbonization of the transportation sector.

1. ~~Establish~~ Reallocate a tourism/hotel tax with revenue earmarked for the decarbonization of transportation within Calaveras County.
2. Develop a plan to help brand and market Calaveras County as a sustainable tourist destination and conduct a study to determine the price options and applicability for the tax.
3. Secure funding from the Visit California's Rural Marketing Program to market Calaveras County as a sustainable tourist destination.
4. Partner with the Calaveras Visitors Bureau to secure funding from Visit California's Rural Marketing Program and partner with both the Calaveras Visitors Bureau and existing members of the County tourism industry to develop the plan, develop the tax, and implement the marketing efforts.
5. Work with partners and businesses to implement the plan/marketingcampaigns to market Calaveras County and appropriate local businesses as sustainable tourist destinations.
6. Directly engage members of disadvantaged communities in the development of the plan and tax to understand and plan for equity concerns.

Measure TR-6 Not Quantified

(Supportive of Measures TR-1through TR-5}

Measure TR-7: Establish Calaveras County as a Pilot Program

Partner with the Rural County Representatives of California (RCRC) to establish Calaveras County as a pilot program for the decarbonization of the transportation sector in rural communities.

1. Establish a regional community foundation with neighboring rural communities to fund the decarbonization of the transportation sector in rural California.
2. Develop a vision and strategy for the regional community foundation to serve as a first-mover/pilot in the State in the decarbonization of America's rural transportation systems.
3. As a first-mover in rural America, pursue funding from large philanthropy such as the Bezos Earth Fund, Rockefeller Foundation, Bill & Melinda Gates Foundation, etc. to fund the development of a Calaveras County decarbonized rural transportation system.
4. Advocate for and promote the regional community foundation as a first-mover in the decarbonization of America's rural transportation systems to the Federal Government and state and regional governments and philanthropic organizations.
5. Directly engage members of disadvantaged communities in the development of the vision and strategy to convey a clear vision that aims to benefit all members of rural communities.

6. Partner with the Rural County Representatives of California (RCRC) and/or other regional organizations to develop the foundation, advocate for the foundation, lobby state and federal agencies for funding, and establish a network of private and public partners/members.

Measure TR-7 Not Quantified

(Supportive of Measures TR-1through TR-5)

Measure TR-8: Develop a Biofuel Industry

Partner with local utilities and state agencies to develop a biofuel industry throughout Calaveras County to fund decarbonization of the transportation sector.

1. Establish a memorandum of understanding with PG&E, CARB, CAL FIRE, the California Department of Agriculture, forest owners, and waste management companies to establish a plan to manage biomass and organic waste through the development of biofuel infrastructure in the County to position Calaveras County as a first mover in active forest management to support a carbon-free future for California.
2. ~~Pre-zone~~Identify and recognize and clear specific areas throughout the County for development of biofuel generation facilities.
3. Partner with PG&E and state agencies to develop a green bond to help fund the development of biofuel infrastructure in Calaveras County and explore revenue options through the Low Carbon Fuel Standard.
4. Work with local utilities and state agencies to pursue grants earmarked for biofuel infrastructure from the Inflation Reduction Act.
5. Establish partnerships with organic waste haulers to collect biomass from forests and biowaste from residential and agricultural sources, and partnerships with forest service businesses/property owners to sustainably clear fuel from forests.
6. Establish a campaign to educate the forestry services, waste haulers, and the community on the economic and wildfire risk benefits of active forest management for bioenergy and establish a working group/committee to involve local community members and businesses in the planning process.
7. Pursue funding to c~~C~~reate workforce development programs to train the County local workforce for biofuel jobs. Specifically target training towards members of disadvantaged communities and establish criteria in the planning process that prioritizes/requires the employment of County residents and businesses in the industry.
8. ~~Establish a biofuel tax with revenue earmarked for the decarbonization of transportation or earmarked to provide incentives to purchase biofuel or carbon-neutral vehicles within the County.~~

Measure TR-8 Not Quantified

(Supportive of Measures TR-1through TR-5)

Measure TR-9: ~~Obtain~~ Pursue State Funding

Establish Calaveras County as a pilot program for a rural carbon-free transportation system through state investment and grants such as California Climate Investments.

1. Develop a report highlighting the unique opportunity for Calaveras County to become a pilot for the decarbonization of rural transportation systems in California.
2. ~~Secure~~ Pursue funding from California Climate Investments (CCI) and develop an investment program with private partners, including local utilities and local employers, to secure local match funding for the grants.
3. Partner with local agencies such as the Calaveras County Air Pollution Control District (CCAPCD) and Calaveras Connect to plan for, secure, and implement CCI grant funding.
4. Directly engage members of disadvantaged communities to analyze and convey transportation barriers in the report development.

Measure TR-9 Not Quantified

(Supportive of Measures TR-1through TR-5)

Measure TR-1O: ~~Obtain~~ Pursue Federal Funding

~~Secure~~ Pursue federal funding from the Charging and Fueling Infrastructure Discretionary Grant Program to decarbonize the transportation sector.

1. Develop the Electric Vehicle Infrastructure Implementation Plan with a focus on expanding access to EV infrastructure disadvantaged communities, in low- and moderate-income neighborhoods, and in communities with a low ratio of private parking spaces to households or a high ratio of multiunit dwellings to single family homes.
2. Secure significant funding from the Charging and Fueling Infrastructure Discretionary Grant Program community grants by leveraging the Electric Vehicle Infrastructure Implementation Plan and County ability to expand access to EV infrastructure within rural areas, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces to households or a high ratio of multi-unit dwellings to single-family homes.
3. Partner with the Federal Highway Administration (FHWA) California Division, California Local Technical Assistance Program (CA LTAP), and/or the Governor's Office of Planning and Research (OPR) to obtain technical support and train staff to develop a successful federal grant application.
4. Develop an Equity First Program to provide early funding opportunities for members of disadvantaged communities, low- and moderate-income neighborhoods, and communities with a low ratio of private parking spaces to households or a high ratio of multi-unit dwellings to single-family homes.

Measure TR-10 Not Quantified

(Supportive of Measures TR-1through TR-5)

Agriculture GHG Emission Reduction Measures[13]

Measure AG-1: Increase Crop Production Efficiency and Soil Health

Increase crop production efficiency and soil health to reduce associated GHG emissions 30% by 2030.

1. Improve fertilizer efficiency (increase in harvest yield per unit of nutrient supplied by fertilizer and liming material) across the County and monitor via soil test and soil pH reporting to understand which County crop fields are the most productive.
2. Prepare and adopt County Prescribed Grazing Practices that result in enhanced soil nutrition and increased carbon sequestration.
3. Stop or limit the loss of nutrients from the planted areas during top watering in an open system, including by containing irrigation effluent.
4. Conduct a study regarding which agroforestry methods (riparian forested buffers, silvopasture [planting of shrubs and tree], oak woodland establishment) would work best for County farmers in terms of climate mitigation practices.
5. Work with the California Air Resources Board (GARB) regarding its proposed crop-based carbon offset protocol to allow County farmers to earn additional revenue for reducing GHG emissions associated with cultivation.
6. Partner with the University of California Cooperative Extension (UCCE) Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers to implement best practices in fertilizer efficiency and pest management detailed in the University of California Agriculture and Natural Resources (UC ANR) Nutrient Management Resources and Knowledge Sharing Tools for the California Agricultural Community.
7. Develop an educational campaign to share the most recent research and best practices with County farmers regarding most efficient fertilizers and technologies and how to match fertilizer application with plant nutrient needs as the plant grows.
8. Provide assistance to smaller farmers for developing applications to soil and fertilizer grant programs such as the California Department of Agriculture Healthy Soils Program Incentive Program.

Measure AG-1 Greenhouse Gas Reduction Impact (MT C02ejYear)

	2030	2045
Total	2,483	5,444

Measure AG-2: Implement Livestock Manure Management Strategies

Implement livestock manure management strategies to reduce associated GHG emissions by 10% by 2030.

[13] County GHGRP agriculture GHG reduction measures and respective quantification was prepared in 2023 by Rincon.

1. Conduct a detailed countywide inventory of livestock and manure management practices to better understand and track GHG emissions from livestock and manure management practices.
2. Develop and implement a program for local farmers to purchase poultry manure and used bedding for use in fertilizing pasture and crops.
3. Utilize available state and federal energy efficiency grants to develop a revolving low-interest loan program that will provide funding for the construction of methane digesters where feasible.
4. Investigate and ~~apply for~~investigate and pursue funding sources, such as California Department of Food and Agriculture's Healthy Soils Initiative, to increase the application of livestock manure compost on rangelands, which in turn will increase carbon capture and storage in soil.
5. Provide assistance to Calaveras County farmers regarding how to apply for financial assistance through the Alternative Manure Management Program (AMMP) from the California Department of Food and Agriculture (CDFA), which provides funding to farmers implementing non-digest manure management techniques.
6. Utilizing CDFA guidance, develop education and outreach materials around grazing practices that sequester carbon.
7. Partner with the University of California Cooperative Extension Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers on understanding and implementing manure management best practices and reduction of the associated GHG emissions as detailed in the EPA's AgSTAR Practices to Reduce Methane Emissions from Livestock Manure Management.
8. ~~7.~~ Create an ordinance applying GHG reduction measures to any new feed lot, dairy farm or similar operation.

Measure AG-2 Greenhouse Gas Reduction Impact {MT C02ejYear}

	2030	2045
Total	629	2,514

Measure AG-3: Reduce Methane Emissions from Livestock

Investigate and promulgate r~~R~~eduction of e methane emissions from livestock enteric fermentation 20% by 2030, for Calaveras grazing.

1. ~~Implement~~ Explore grassland management strategies to provide feed digestibility alternatives and improving feed quality.
2. Work with the University of California Cooperative Extension to conduct a study regarding balancing and fine-tuning livestock feed rations within the County, which in turn leads to less livestock enteric fermentation.
3. Annually conduct research on any upcoming grant funding opportunities to reduce enteric fermentation emissions.
4. Provide information and resources on the County Agricultural Commissioner website to inform farmers on optimizing feed digestibility/availability and pasture management practices, and how that translates into less livestock enteric fermentation emissions.
5. Partner with the University of California Cooperative Extension Central Sierra and the

Calaveras County Agricultural Commissioner to work directly with farmers to understand

the beneficial nature of food additives on enteric fermentation and help implement food additive techniques to reduce enteric fermentation emissions.

Measure AG-3 Greenhouse Gas Reduction Impact (MT C02ejYear)

	2030	2045
Total	7,721	13,512

Solid Waste GHG Emission Reduction Measures[14]

Measure SW-1: Organic Waste Diversion

In accordance with General Plan Conservation and Open Space Element Air Quality/Greenhouse Gases Measures COS-5D and COS-5E, the County will implement waste management practices to support organics diversion. Programs will include: (1) providing green waste collection programs at County operated landfill and transfer stations when feasible (COS-5D); (2) utilizing public/private partnerships to utilize green waste in alternative uses and waste to energy facilities (COS-5D); and (3) including a review of the zoning ordinance and Air Pollution Control District regulations and amendment as necessary to facilitate the development of green waste to energy projects and other projects that convert green waste to products (COS-2E). Programs may also include investigating and incentivizing community composting. In addition, the County will coordinate with individuals, community groups, and publicly funded and privately managed recycling and composting providers to educate the public about the benefits of composting. Through a combination of these programs, the County will divert 75 percent of food and green yard waste from landfills to home & community-based composting facilities, bio-mass plants, & other local facilities to reduce short-lived climate pollutants and minimize transportation-related emissions compared to existing conditions.

Measure SW-1 Greenhouse Gas Reduction Impact (MT C02ejYear)

	2030	2045
Total	2,924	3,007

Measure SW-2: ~~Divert from Forward~~Diversion to Rock Creek Landfill

The County will divert an additional 5 percent of total Calaveras County solid waste disposal from other landfills to Rock Creek Landfill, to the extent Rock Creek Landfill has the capacity to receive this diverted material.

Measure SW-2 Greenhouse Gas Reduction Impact (MT C02e/Year)

	2030	2045
Total	7	8

Measure SW-3: Methane Capture

The County will ~~continue~~ pursue funding to manage Rock Creek Landfill to limit methane release and achieve an average increase in methane capture of 1 percent for all waste types by 2030.

[14] County GHGRP solid waste GHG reduction measures and respective quantification was prepared in 2023 by Harris and Associates.

Measure SW-3 Greenhouse Gas Reduction Impact (MT C02e/Year)

	2030	2045
Total	67	69

Water and Wastewater GHG Emission Reduction Measures[15]

Measure W-1: Use of Reclaimed (Non-Potable) Water

In accordance with General Plan Public Facilities and Services Element Water and Wastewater Measures PF-2H and PF-2I, amend the County Code to recognize appropriate uses for reclaimed water as an alternative for various land uses and keep apprised of the latest developments in the use of reclaimed water. Revise the County's landscaping standards and incorporate those standards as conditions of project approval to facilitate the use of gray water and reclaimed water systems for landscape irrigation. Additionally, the County will work with wastewater service providers to expand the use of recycled wastewater for agricultural uses. The County will work with localjregional agencies to create incentives and rebates for greywater systems, composting toilets, or other residential retrofits. Through a combination of efforts, the County will achieve a 10 percent reduction in total potable water use.

Measure W-1Greenhouse Gas Reduction Impact (MT C02e/Year)

	2030	2045
Total	92	97

Measure W-2: Require Low-Flow Water Use Fixtures- Michelle will look at replacement measure.

The County will adopt a plumbing-related reach code to exceed state-level requirements by 5 percent for the installation of water-~~conservingappliances~~conserving appliances in all new residential and non-residential buildings, and the County will require design plans of new development projects to include water-saving features.

Measure W-2 Greenhouse Gas Reduction Impact (MT C02e/Year)

	2030	2045
Total	67	68

Carbon Sequestration GHG Emission Reduction Measures[16]

Measure CS-1: Conserve and Preserve Natural Lands

Explore carbon sequestration opportunities within the County and continue to conserve and preserve natural lands.

1. Pursue funding to c~~C~~onduct a carbon sequestration feasibility study by 2030 to identify natural working lands opportunities and emergent technology for carbon sequestration within the County.

[15] County GHGRP water and wastewater GHG reduction measures and respective quantification was prepared in 2023 by Harris and Associates.

1 County GHGRP carbon sequestration GHG reduction measures and respective quantification was prepared in 2023 by Rincon.

2. Collaborate with the Calaveras County Resource Conservation District and local property owners (such as the California Rangeland Trust and U.S. Forest Service) to identify carbon farming, forest management, and rangeland management opportunities to sequester carbon within the County.

3. In accordance with Calaveras County General Plan Implementation Measure RP-1F, establish mitigation program guidelines for the impacts caused by conversion of land designated Resource Production on the General Plan Land Use Map to another non-resource production land use. The guidelines shall include, at a minimum, the following alternatives:

   - Acquisition of a conservation easement located within Calaveras County at a 1:1 ratio
   - Purchase of banked mitigation credits for use by a land bank operating in Calaveras County for use within the county
   - Payment into a fund to restore, enhance and improve Resource Production designated land. The fund would be managed by the County Agricultural Department. Use of the fund would be determined by the Board of Supervisors with input from the Agriculture Department, the Calaveras County Resource Conservation District, the University of California Cooperative Extension Office, the Agricultural Advisory Committee, and local landowners.
   - On-site mitigation
   - Other mitigation measures developed and/or approved by the County.

4. In accordance with Calaveras County General Plan Implementation Measure RP-2F, continue to maintain an Agricultural Advisory Committee to review and recommend action to the Board of Supervisors concerning California Land Conservation Contracts (Williamson Act) and to promote a compatible relationship between agricultural and non-agricultural activities and to ensure that appropriate provisions are incorporated as necessary into new land use proposals to preserve ongoing agricultural operations.

5. In accordance with Calaveras County General Plan Implementation Measure COS-5-M, apply the following measures to residential projects requiring discretionary approval and subject to CEQA review ~~and to all new County construction projects~~:

   - Where feasible, residential subdivisions shall include parks and open space with landscaping and/or native vegetation capable of carbon sequestration.
   - Where residential subdivisions are located within walking distance of facilities such as schools, parks, banks, grocery stores and restaurants, they shall be designed to include pedestrian access to such facilities to the extent practicable.
   - Where feasible, residential subdivisions shall be designed to encourage alternate forms of transportation, including but not limited to sidewalks, trail systems, bike paths, and other measures connecting to existing development. ~~Move to~~ Transportation
   - New and renovated County facilities shall be designed to exceed the requirements of the currently adopted California State Energy and Green Building Codes at the time of project approval. Buildings shall be a minimum of 5% more efficient than required and shall eliminate the use of fossil fuels to the extent feasible. Move to Energy.

6. In accordance with Calaveras County General Plan Implementation Measure RP-2C, update the County Code relative to Agricultural Preserves for consistency with County needs and state Williamson Act requirements and include provisions for open space and recreational use contracts.

7. Apply for grants-

~~6.~~8. Adopt an Oak Woodlands ordinance in conformance with GP Implementation Measures.

Measure CS-1Not Quantified

Measure CS-2: Apply Compost

Meet S81383 compost or organics procurement targets by applying ~~863~~ 863 tons of compost to land areas throughout the County by 2030.

1. Require County agencies to procure and apply compost generated from municipal organic waste to the exterior of suitable facilities as part of their operations.
2. Build partnerships with local growers, rangelands, and community green spaces to distribute compost and procure at scale, allowing for reduced procurement costs.
3. ~~In collaboration with local organizations~~Procure funds to, conduct a study to determine areas in the County with the highest carbon sequestration potential for compost application.
4. Work with local organizations and academic institutions to conduct ongoing outreach to ~~procurers~~ users of compost to monitor soil carbon sequestration.
5. Explore partnerships with accredited carbon credit verifiers and technology providers who can quantify and monetize compost application credits.

Measure CS-2 Greenhouse Gas Reduction Impact (MT C02e/Year)

	2030	2045
Total	863	888

Overall GHGRP Measures Summary

Table 1 below presents the GHG emission reduction impact of each quantitative measure and the GHG emission reduction impacts aggregated by sector for each target year.

Table 1 GHG Emission Reduction Impact of Quantitative Measures

Sector or Measure ID	2030 GHG Emission Reduction Impact (MT C02e)	2045 GHG Emission Reduction Impact (MT C02e)
Energy		
RE-1: Community Energy	1,418	0
E0-1: Energy Conservation Outreach and Education	4,147	911
EB-1: Green Business Program	23	6
EB-3: Energy Efficiency Retrofits	3,868	1,727
EB-4: Time-of-Replacement Ordinance	9,748	27,531

		Calaveras County
NC-1: Highly Efficient New Development	58	98
NC-2: Zero Net Energy New Construction	81	192
NC-4: Clean Wood-Burning Appliances	28	62
Energy Sector Total:	***19,372***	***30,528***

Sector or Measure ID	2030 GHG Emission Reduction Impact (MT C02e)	2045 GHG Emission Reduction Impact (MT C02e)
Transportation		
TR-1: EV/ZEV Adoption	39,500	58,604
TR-2: County Fleet Decarbonization*	1,486	3,744
TR-3: Public Transit Mode Share	11,376	26,769
TR-4: Active Transportation Mode Share	187	428
TR-5: Off-road Equipment and Vehicles	7,787	17,362
Transportation Sector Tota/;·	***58,850***	***103,162***
Agriculture		
AG-1: Crop Production Efficiency	2,483	5,444
AG-2: Livestock Manure Management	629	2,514
AG-3: Livestock Methane Emissions	7,721	13,512
Agriculture Sector Total:	***10,833***	***21,471***
Solid Waste		
SW-1: Organic Waste Diversion	2,924	3,007
SW-2: Divert Waste to Rock Creek Landfill	7	8
SW-3: Methane Capture	67	69
Solid Waste Sector Total:	***2,982***	***3,007***
Water and Wastewater		
W-1: Reclaimed Water	92	97
W-2: Low-Flow Water Use Fixtures	67	68
Water and Wastewater Sector Tota/;·	***159***	***166***
Carbon Sequestration		
CS-2: Compost Application	863	**888**
Carbon Sequestration Sector Total:	***863***	***888***
Total Reductions	**93,059**	**159,2:21**

*Not included in sector or overall total.

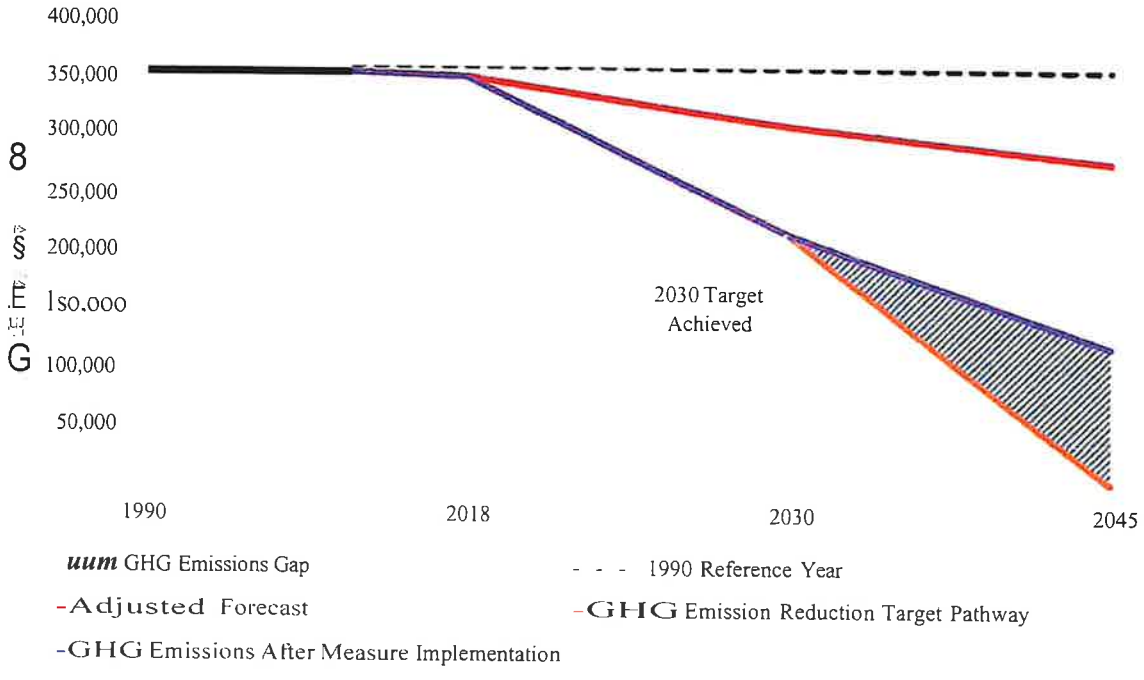
Meeting GHG Emission Reduction Targets

As shown in Table 2 and Figure 4, full implementation of the County GHG reduction measures would allow the County to reach the County and State 2030 GHG emission reduction target. Full implementation of these measures would also allow the County to make substantial progress towards meeting the State 2045 GHG emission reduction target, but currently a projected gap of 117,558 MT C02e (i.e., approximately 33 percent) remains in 2045. Therefore, future GHGRP updates will be required for the County to establish a complete pathway for reaching the 2045 State GHG emissions target.

Table 2 GHG Emission Reduction Measures Analysis

Sector or Measure ID	2030 GHG Emissions (MT C02e)	2045 GHG Emissions (MT C02e)
Adjusted Forecast	306,545	276,780
GHG Emission Reduction Targets	213,698	0
GHG Emissions After Measure Implementation	213.485	117,558
GHG Emissions Gap	-212	117,558
Target Met?	Yes	No

Figure 4 GHG Emissions Levels After GHGRP Measures Implementation



COMMISSIONER LADDISH'S COMMENTS

Rincon Consultants, Inc.
4825 J Street, Suite 200
Sacramento, California 95819
916-706-1374

July 17, 2023
Project No: 23-14836

Gabriel Elliott
Calaveras County
891 Mountain Ranch Road
San Andreas, California 95249
Via email: gelliott@co.calaveras.ca.us

Subject: Calaveras County Greenhouse Gas Reduction Plan (GHGRP) Measures Summary

Dear Mr. Elliott:

The following memorandum presents a summary of 1) the greenhouse gas (GHG) emission inventory, forecast, and reference year that provide the basis for the Calaveras County (County) Greenhouse Gas Reduction Plan (GHGRP) and 2) the GHG emission reduction measures, including quantification, that are proposed to be included in the County GHGRP and comparison to GHG emissions reduction targets. This document summarizes the results of the joint work effort led by the Sierra Business Council and supported by Harris and Associates and Rincon Consultants, Inc. The results of the County 2018 GHG emissions inventory, 2030 and 2045 forecast, and 1990 reference year are summarized below. GHG emissions reduction measures were developed and quantified based on these GHG emissions metrics. Measures and their associated GHG emissions reduction impact for target years 2030 and 2045 are included below for the energy, transportation, agriculture, solid waste, water, wastewater, and carbon sequestration sectors.[1] The respective GHG emissions reduction impacts are summarized by sector and then aggregated for comparison to the GHG emissions reduction targets for each target year. Full implementation of the presented measures would allow the County to reach the 2030 GHG emission reduction target and make substantial progress towards achieving the 2045 GHG emission reduction target. Future GHGRP measure updates will be required to allow the County to reach the 2045 GHG emission reduction target.

Commented [TL1]: Our General Plan does not set a goal for 2045. Why have consultants spent time to arrive at 2045 figures?

2018 GHG Emissions Inventory

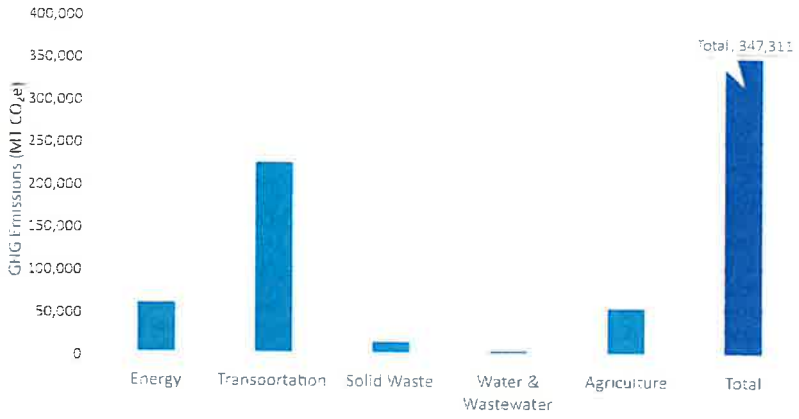
The County 2018 GHG emission inventory includes GHG emissions associated with activities that were estimated to occur within the County jurisdictional boundaries during 2018.[2] The inventory reported GHG emissions by source sector, including energy, transportation, agriculture, solid waste, and water/

[1] Carbon sequestration refers to the process of capturing, removing, and storing atmosphere carbon dioxide. [2] A GHG emissions inventory is not a census of emissions but rather an estimated calculation of emissions based on activity units during the identified timeframe and relevant emission factors by sector.

Figure
wastewater. The results indicate that the County emitted 347,311 metric tons of carbon dioxide equivalent (MT CO_2e) in 2018. Figure 1 presents the results by source sector.

Commented [TL2]: Pages 8 & 9 of 2018 GHG Inventory indicates 2018 emissions of 368,569 MT– Why the difference now?

1 2018 GHG Emissions by Source Sector



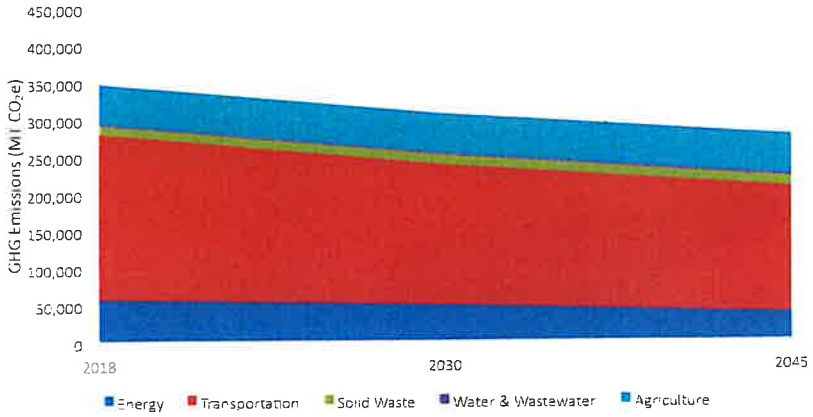
GHG Emissions Forecast between 2018 and 2045

A GHG emissions forecast through 2045 was also developed. The forecast provides a projection of how GHG emissions are expected to change for the County based on two scenarios. The business-asusual scenario forecasts GHG emissions based on changes in population, employment, and other growth indicators, with all other potential changes (e.g., emission factors, fuel efficiencies) held constant. The adjusted scenario forecasts GHG emissions based on the same growth indicators as the business-as-usual forecast and also adjusts the GHG emissions to take into account assumed implementation of adopted State and federal legislation aimed at reducing GHG emissions through 2045. The adjusted forecast for 2030 totals 306,545 MT CO_2e and for 2045 totals 276,780 MT CO_2e. Figure 2 details the trajectory of County GHG emissions by sector through 2045 and represents the adjusted GHG emission forecast.

Commented [TL3]: Inadvertent deletion of "t."

Commented [TL4]: 10/26/22 Harris memo forecasts 325,950 MT ABAU for 2030. Why the difference now?

Figure
2 Adjusted GHG Emissions Forecast



1990 GHG Emissions Reference Year

Applicable State legislation refers to GHG emission reduction targets compared to 1990 as a reference year for comparison against which to reduce GHG emissions.[2] There is not a County-specific 1990 GHG emissions inventory that can be used as a reference year from which County GHG emissions can be compared to the State goals. Therefore, County 1990 GHG emissions were estimated using the County 2018 GHG emissions inventory as compared to the known magnitude change in statewide GHG emissions between 2018 and 1990. The County's 1990 reference year GHG emissions were calculated using this methodology and are estimated to total 356,163 MT CO_2e.

Commented [TLS]: In a table presented to the Commission on 11/3/22, consultants calculated 1990 GHG emissions at 328,914 MT. Why the difference now?

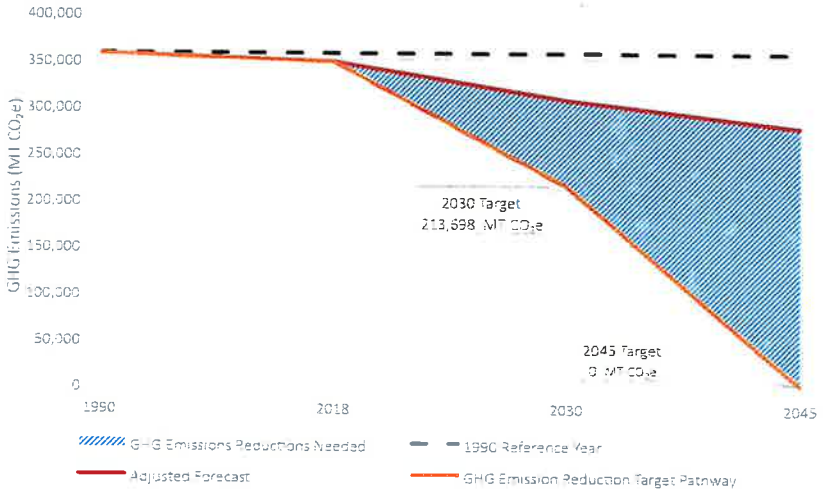
GHG Emissions Reduction Pathway Goal

Based on the County 1990 GHG emission estimate, GHG emission reduction targets consistent with State goals established in Senate Bill (SB) 32 and Assembly Bill (AB) 1279 were developed for the County. Specifically, as part of the County GHGRP, the County will aim to reduce GHG emissions 40 percent below 1990 levels by 2030 and show substantial progress toward achieving carbon neutrality by 2045, consistent with State goals. These reduction pathway targets translate to a GHG emissions reduction target of 213,698 MT CO_2e by 2030 and net zero MT CO_2e by 2045. Figure 3 presents the GHG emissions reduction targets relative to the 1990 reference year and adjusted forecast through 2045. The gap between the reduction pathway goal line and adjusted forecast line represents the

[2] Applicable state legislation refers to Senate Bill (SB) 32 and Assembly Bill (AB) 1279, both of which establish GHG targets in comparison to 1990 emissions levels.

Figure
remaining amount of GHG emissions that the County would need to reduce through local measures to achieve the targets.

3 GHG Emissions Reduction Pathway Goal Compared to Adjusted Forecast



GHG Emissions Reduction Measures

GHG emissions reduction measures have been developed to allow the County to meet the 2030 GHG emissions target and make substantial progress toward the 2045 GHG emissions target. The following subsections present the measures and their associated GHG emission reduction impact for target years 2030 and 2045. Measures are included for energy, transportation, agriculture, solid waste, water, wastewater, and carbon sequestration. In each sector, measures are either quantitative or supportive defined as:

- Quantitative: Quantitative measures result in direct GHG emissions reductions that can be quantified and summed to show how the County will make progress towards and meet its GHG emission reduction targets when implemented.
- Supportive: Supportive measures provide support so that the quantitative measures will be successfully implemented. Though these measures could be quantifiable, they are not quantified for one of several factors—including a low GHG emission reduction impact, indirect GHG emission reductions, or potential for double-counting—and do not contribute directly to the GHG emission reduction targets.

Commented [TL6]: Every General Plan implementation measure included in the GHG Reduction Plan should be quantified. On page 5 of consultants' 4/6/23 responses: (1) SBC indicates that it has quantified the reduction effects of included General Plan implementation measures; (2) Rincon indicates that it has not done such quantification; (3) Harris just refers to its "Step Two" responses (specifically involving inclusion of GP implementation measures), but Harris does not indicate in those responses whether it has quantified reductions attributable to the implementation measures. Please ensure that all such quantifications have been made.

Figure
The last subsection presents the overall GHG emission reduction impact of the measures summarized by sector.

Energy GHG Emission Reduction Measures[3]

Renewable Energy

Measure RE-1: Increase Community Energy

Convert 14% of existing residential grid electricity and 18% of existing commercial grid electricity to renewable electricity by 2030.

When funding is obtained, Increase the use of renewable energy in the community and support efforts to increase renewable and carbon-free energy generation, including wind, solar, hydro, and biomass, and to ensure customer access to this renewable energy. Encourage on-site renewable energy generation and storage systems for residents and businesses. Develop a robust renewable energy program that provides outreach, financing opportunities, and technical assistance to residents and businesses. Pursue community solar projects. Work with large energy users to transition towards renewable and zero net energy projects. Pursue distributed energy resources (DERs), microgrids, energy storage opportunities, and grid optimization projects.

Commented [TL7]: What constitutes the "community"?

Commented [TL8]: Meaning of "community" in this context? Does it refer to where solar projects will occur, or who will do them?

Measure RE-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[4]

	2030	2045
Total	1,418	0

Measure RE-2: Promote On-Site Renewable Energy Generation (Government Operations)

Support efforts on available government-owned land or buildings to increase renewable and carbonfree energy generation, including, wind, solar, hydro, and biomass. Promote on-site renewable energy generation and energy storage. Evaluate the renewable energy potential and assess barriers to increased renewable energy generation.

Measure RE-2 Not Quantified[5] *4*

(Supportive of Measure RE-1)

Commented [TL9]: In footnote 4 (in the text misdesignated as 6), what are the meanings of "municipal" and "community" as used in the last sentence? Is "community" here synonymous with "commercial"?

Measure RE-3: Incentives for Alternative Energy

Consistent with Implementation Measures COS-5E and PF-3F of the County's General Plan, *obtain funding to* provide incentives to facilitate alternative energy projects. Modify the County's development standards and zoning ordinance to provide incentives for providing alternative energy producing facilities compatible with surrounding uses, such as solar arrays in parking lots that serve to provide shade and energy production. Cooperate with and support state and federal programs that assist

[3] County GHGRP energy GHG reduction measures and respective quantification was prepared in 2023 by Sierra Business Council.

[4] Quantification accounts for the impacts of EB-4, EB-3, EB-1, and EO-1, in order of operations. Measures RE-2, RE3, and RE-4 are supportive of RE-1, and while they could not be quantified separately, they support the reductions associated with RE-1. RE-1 does not contribute to 2045 emissions reductions due to California's Renewable Portfolio Standard, which requires that all of the State's electricity will come from carbon-free sources by 2045. [6] Measure not quantified because the municipal emissions of Measure RE-2 are a subset of community (i.e., commercial) emissions in Measure RE-1.

landowners in energy conservation and production. Support programs that provide incentives for property owners to install alternative energy facilities such as solar arrays, small windmills, and other energy systems.

Measure RE-3 Not Quantified

(Supportive of Measure RE-1)

Measure RE-4: Codes and Standards for Alternative Energy

Consistent with Implementation Measures PF-3A, RP-5A, and RP-2A of the County's General Plan, amend codes to facilitate alternative energy projects .Amend the zoning code to encourage the incorporation of solar, wind, and other alternative energy infrastructure in project design to establish standards for locating and permitting solar farms, wind farms, and other alternative energy facilities to ensure land use compatibility; addressing the potential visual impacts of alternative energy infrastructure to the extent permitted by law. Amend the Calaveras County Code to recognize the development of geothermal resources and their related land uses and refer proposals involving or affecting geothermal resources to the California Department of Conservation Division of Oil, Gas and Geothermal Resources. Amend the County Code to incorporate required findings and procedures for implementing state legislation and Department of Conservation requirements relative to solar-use easements and installations affecting Williamson Act Contracts.

Measure RE-4 Not Quantified

(Supportive of Measure RE-1)

Energy Outreach

Measure EO-1: Conduct Energy Conservation Outreach and Education

Reduce existing and new residential and commercial energy use (all sources *except renewables*) by 12% in 2030 and 2045 through robust energy conservation outreach and education.

Conduct energy conservation and efficiency education and outreach to residents and businesses. Support and promote programs for lower-income and disadvantaged populations. Increase awareness of resources and financing opportunities for homes and businesses to (1) replace old appliances with energy-efficient models, (2) conduct retrofits to HVAC systems and building envelope, (3) upgrade to efficient lighting, (4) replace old and inefficient wood- and propane-burning heaters, and (5) add smart controls and sensors. This includes property owners (primary, vacation, and second homeowners), property management groups, and landlords. Through education and outreach, increase participation in voluntary residential and commercial energy efficiency programs. Educate citizens about lowincome home weatherization programs (DOE Weatherization Assistance Program, California's LowIncome Weatherization Program, utility-offered Energy Savings Assistance Program, local program). Educate about existing housing rehabilitation loan programs. Partner with the local utilities (PG&E and Calaveras Public Power Agency) to promote existing energy programs for residents and businesses.

Measure EO-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[5]

	2030	2045
Total	4,147	911

Existing Buildings

Measure EB-1: Establish a Green Business Program

Achieve participation of 5% of businesses in 2030 and 2045 within a Green Business Program. Reduce existing and new commercial energy use (all sources *except renewables*) by 10% in 2030 and 2045.

Establish a green business program that certifies businesses based on criteria such as energy efficiency, employee wellness, water and waste reduction, etc. Benefits to employee wellness could include active transportation, cleaner air, etc.

Measure EB-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[6]

	2030	2045
Total	23	6

Measure EB-2: Improve Building Energy Efficiency of Government Operations

Pursue grants to improve the energy efficiency of existing county buildings and infrastructure whenever a project is undertaken to improve or maintain them. This includes maintenance or improvement of both interior and exterior (streetlight, parking lot lighting, traffic signals, and other outdoor area lighting) operations. Energy efficiency improvements include retrofits or commissioning/retrocommissioning to HVAC, lighting, controls, sensors, building envelope, and any other energy loads.

Measure EB-2 Not Quantified

(Supportive of Measure EB-3)

Measure EB-3: Facilitate Energy Efficiency Retrofits

Reduce existing residential and commercial energy use (all sources *except renewables*) by 10% and 15%, *respectively*, in 2030 and 25% and 30% in 2045, respectively, through energy efficiency retrofits.

[5] The EO-1 quantification accounts for the impacts of EB-4 and EB-3 on existing energy use, and NC-4, NC-1, and NC-2 on new energy use, in order of operations.

[6] The EB-1 quantification accounts for the impacts of EB-4 and EB-3 on existing energy use, and NC-1 and NC-2 on new energy use, in order of operations.

The County will pursue funding to help facilitate (i.e., incentivize) energy-efficient upgrades for homes and businesses. Energy efficiency retrofits can include upgrades to lighting, heating, ventilation and air conditioning, appliances, water efficiency, and building envelope (insulation, windows). Consistent with COS-5G of the County's General Plan, cooperate with the CCAPCD to implement emissions reductions programs such as the Carl Moyer Program, and to find methods of incentivizing the replacement or retrofit of small emissions sources throughout the County, such as the replacement of existing wood stoves.

Measure EB-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[7]

	2030	2045
Total	3,868	1,727

Measure EB-4: Implement an Equipment Time-of-Replacement Ordinance

Require, ~~a~~At equipment end of life, replace*ment of* 45% ~~of~~ existing residential and commercial natural gas and propane water heaters with electric alternatives by 2030 and 90% by 2045 (based on 10-year life and 10%

Commented [TL10]: Is this an estimate that 45% of all existing natural gas and propane water heaters will reach end of lives before 2030? If so, clarify.

non-compliance). *Require,* ~~a~~At equipment end of life, replace*ment of* 23% of natural gas, propane, and wood space heaters with electric alternatives by 2030 and 90% by 2045 (based on 20-year life and 10% noncompliance).

Commented [TL11]: See last comment above regarding water heaters. Same question as to space heaters. If so, clarify.

By 2025, adopt an ordinance that requires, at equipment end of life in areas with electricity utility service, residential and commercial fossil fuel-powered space and water heating appliances be replaced with electric alternatives at time of replacement.

Commented [TL12]: Move this sentence so that it becomes the first sentence in EB-4.

Measure EB-4 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	9,748	27,531

New Construction

Measure NC-1: Incentivize Highly Efficient New Development

Through incentives, A achieve participation from 10% of new residential buildings starting from 2025 through 2045. Reduce new residential energy use (all sources *except renewables*) by 53%). Achieve participation from 10% of new commercial buildings between 2025 and 2045. Reduce new commercial energy use (all sources *except renewables*) by 30%).

Provide incentives (e.g., easing permitting requirements) to new residential and nonresidential development projects for going beyond Title 24 compliance.

Commented [TL13]: Reverse the order of the paragraphs in NC-1

Measure NC-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[8]

[7] The EB-3 quantification accounts for the impact of EB-4, in order of operations.
[8] The NC-1 quantification accounts for the impact of NC-4, in order of operations.

	2030	2045
Total	58	98

Measure NC-2: Incentivize Zero Net Energy New Construction

Achieve participation by 10% of new residential and commercial buildings from 2025 through 2045.

Incentivize new residential and nonresidential buildings to be built all-electric and highly energy efficiency and install renewable energy generation and energy storage systems that can fully offset energy needs.

Commented [TL14]: Reverse the order of the paragraphs in NC-2.

Measure NC-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)[9]

	2030	2045
Total	81	192

Measure NC-3: Reduce Criteria Air Pollutants and Emissions from New Development

Consistent with Implementation Measures COS-5F and COS-5H of the County's General Plan, reduce criteria air pollutants, including GHG emissions, from new developments. Evaluate proposed discretionary developments subject to CEQA evaluation to determine whether they will emit criteria air pollutants, including greenhouse gases, exceeding CCAPCD's standards. Should proposed developments within the County be anticipated to result in significant impacts related to the emission of criteria air pollutants, the County shall require the applicable mitigation measures provided in the CCAPCD's Guidelines for Assessing and Mitigating Air Quality Impacts of Land Use Projects. **Measure NC-3 Not Quantified**

(Supportive of Measures NC-1 and NC-2)

Measure NC-4: Increase Clean Wood-Burning Appliances

Achieve use of EPA-rated woodstoves in all new residential buildings from 2025 through 2045.

In alignment with Implementation Measure COS-5N of the County's General Plan, require all wood burning appliances, including fireplaces, in new residential construction to be EPA rated appliances, except as may be provided in the Housing Element or for off-grid construction. EPA rated woodstoves produce 30% less emissions compared to non-EPA-rated woodstoves.

Measure NC-4 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	28	62

[9] The NC-2 quantification accounts for the impacts of NC-4 and NC-1, in order of operations.

Transportation GHG Emission Reduction Measures[10]

Measure TR-1: Increase EV/ZEV Adoption

~~Install 99 new publicly accessible plug-in electric vehicle (PEV) charging ports by 2025 to support the resident and visitor demand projected in the Central Sierra Zero Emission Vehicle Readiness Plan (CSZEVRP) and install 652 new publicly accessible PEV charging ports by 2030 to accelerate electric vehicle (EV)/zero emission vehicle (ZEV) adoption in Calaveras County.~~

1. ~~Develop and adopt an EV charging infrastructure reach code to require 30% of total parking spaces in new or remodeled commercial development to install Level 2 EV chargers exceeding the 2022 California Green Building Standards Code Tier 2 requirements.~~
2. ~~Develop the Electric Vehicle Infrastructure Implementation Plan with a list of prioritized locations for the 751 new PEV charging port installations across the County by 2030. Include locations recommended in the CSZEVRP, including EV charging infrastructure for visitors at the recommended resorts/lodging locations, DC fast chargers at the recommended highway corridor locations, and EV charging stations (EVCS) at the other recommended destinations.~~
3. ~~As part of the Electric Vehicle Infrastructure Implementation Plan, conduct specific ZEV demand and infrastructure needs assessments for Murphys, San Andreas, and Valley Springs as recommended by the CSZEVRP. From the assessments, develop prioritized locations to provide electric vehicle/alternative fueling infrastructure in these areas to be included in the Plan.~~
4. ~~Consistent with the Calaveras Streamlined Permitting Guidebook of the CSZEVRP and Calaveras County General Plan Implementation Measure PF-3B, develop and maintain an expedited, streamlined permitting process for EVCS in accordance with AB 1236 and employ the example Plug-in EV Infrastructure Permitting Checklist in the Guidebook to assess installation projects for expedited review. Also, amend the Calaveras County zoning code to provide ZEV incentives to encourage adoption and use.~~

5. ~~Develop and hire Calaveras County "grant team" staff to pursue significant funding from Measures TR-9 and TR-10 to upgrade the EV charging and alternative fueling infrastructure to facilitate a robust ZEV network throughout the County.~~

By planning, incentives, grants, and public and private funding, accelerate growth in numbers of ZEVs (Zero Emissions Vehicles), including EVs (Electric Vehicles), in the unincorporated areas of Calaveras County.

Commented [TL15]: This strikeout is not a rejection of all that was contained in TR-1 through TR-1.5. Following this strikeout is a proposed substitute, which is a reorganized and, in part, reworded version. The substitute comes with explanatory comments.

Commented [TL16]: This is a new topic sentence that reflects the breadth of TR-1, which includes more than just the charging ports covered in the consultants' topic sentence.

[10] County GHGRP transportation GHG reduction measures and respective quantification was prepared in 2023 by Rincon.

1. *Develop and maintain Calaveras County "grant team" staff to pursue significant funding from public and private sources, including those covered in Measures TR-6 through TR-10, to upgrade the EV charging and alternative fueling infrastructure to facilitate a robust ZEV network in the County and to assist in and accelerate acquisition of ZEVs.*
2. *As funding is secured, install 99 new publicly accessible plug-in electric vehicle (PEV) charging ports by the end of 2025 to support the resident and visitor demand projected in the Central Sierra Zero Emission Vehicle Readiness plan (CSZEVRP).*

3. *Pursue funding to develop and carry out an Electric Vehicle Infrastructure Implementation Plan to determine the number and location of additional publicly available Level 2 (240V) EV chargers and DC fast chargers, in a manner that would be feasible and most effective in accelerating EV adoption and use in unincorporated areas of Calaveras County so as to reach the 2030 GHG reduction goal. In developing that plan, consider the EV charging locations recommended in the CSZEVRP, including EV charging infrastructure for visitors at the recommended resorts/lodging locations, DC fast chargers at the recommended highway corridor locations, and EV charging stations (EVCS) at other recommended locations.*

Commented [TL17]: My proposed TR-1.1 is a restatement of the consultants' TR-1.5. The purpose of its placement is to emphasize the primary need for grants to realize the goals of TR-1.

Commented [TL18]: See the consultants' proposed topic sentence for TR-1.

Commented [TL19]: See consultants' proposed TR-1.2 and TR-1.3. It makes sense to me for the EV Infrastructure Plan to study and propose the number, type and locations of the charging stations that will follow the 99 stations provided in my TR-1.2. Without further study, the consultants' suggested number of 751 new PEV charging port installations (including the 99 in new TR-1.2) may well be excessive. It would result in approximately one charging station for every 1.3 square miles of Calaveras County land area, without apparent consideration of how much of that land area consists of unoccupied forests, mountain canyons and ravines, etc. With further study, the Plan might result in a smaller number of ports, but with a negligible effect on carbon reduction.

Commented [TL20]: I propose elimination of the consultants' TR-1.3, since the actions described therein would naturally fall within the purview of the Electric Vehicle Infrastructure Implementation Plan. Also, the consultants' proposed TR-1.3 could lead to controversy regarding inclusion or exclusion of other communities, such as Avery/Arnold, Mountain Ranch and West Point.

4. *Amend the Calaveras County Zoning Code to provide ZEV incentives to encourage adoption and use of ZEVs. PF-3B.*
5. *Develop and adopt an EV charging infrastructure reach code to require 30% of total parking spaces in new or remodeled commercial development with 10 or more parking spaces to install Level 2 EV chargers.*
6. *Consistent with the Calaveras Streamlined Permitting Guidebook of the CSZEVRP, develop and maintain an expedited, streamlined permitting process for electric vehicle charging stations in accordance with AB 1236 and employ the example Plug-in EV Infrastructure Permitting Checklist in the Guidebook to assess installation projects for expedited review.*

~~6~~7. Engage the local business community to site EV infrastructure (especially businesses that rely on tourism and business travelers) and to develop and implement a plan for Countysupported accelerated business fleet electrification in partnership with the PG&E EV Fleet program.

~~7~~8. Support and partner with ZEV car share companies in coming to the County.

~~8~~9. Support the regional transportation planning agency in creating a Regional Electric Vehicle Infrastructure Collaborative. Participate in the program to collaborate on infrastructure deployment and to increase buying/negotiation power.

~~9~~10. Coordinate with County communities-based organizations, agencies, and nonprofits to conduct ~~EV~~/ZEV *zero-emission vehicle (ZEV)* education events for residents, ~~and~~ business owners *and all county employees* to promote benefits and programs such as the Clean Vehicle Rebate Program.

Commented [TL21]: This reference to PF-3B was formerly in the consultants' proposed TR-1.4 (see my proposed TR-1.6); since it involves zoning, not permitting, I believe it should stand by itself.

Commented [TL22]: I've proposed amending the reach code provision (formerly proposed TR-1.1) to limit its application to commercial developments with 10 or more parking spaces, to avoid heavy burdens on small businesses. I also propose taking out "exceeding the 2022 California Green Building Code Tier 2 requirements"; to make Tier 2 applicable, it would have to be adopted by ordinance, and it would cover much more than GHG; it might also be inconsistent with my proposed TR-1.6 (former TR-1.4).

Commented [TL23]: See the consultants' proposed TR-1.4. The references to zoning provisions of PF-3B are in my proposed TR-1.4.

Commented [TL24]: I've put the reference to County employees into my proposed TR-1.10 (formerly TR-1.9) to avoid the duplicative language of TR-2.4, which I propose deleting.

~~10~~11. Work with the CCAPCD *to secure funding* to develop a passenger clean vehicle rebate program for low income residents of Calaveras County to assist low-income residents in purchasing EVs.

Measure TR-1 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Passenger EV/ZEV	25,403	45,546
Commercial EV/ZEV	14,097	13,058
Total	**39,500**	**58,604**

Measure TR-2: Decarbonize the County Municipal Fleet and Employee Commute

Lead by example by *pursuing funding to* decarbonizing~~ge~~ the Calaveras County municipal fleet and related commuter vehicles to achieve a 40% ZEV fleet by 2030.

1. Adopt a County requirement that requires that new and replacement County municipal fleet vehicle purchases are EVs or ZEVs where feasible.
2. Conduct a study to determine total turnover time frame of County municipal fleet vehicles to EVs or ZEVs.
3. Secure funding from programs such as the California Air Resources Board's Clean Vehicle Rebate Project, Clean Cars 4 All Program, and the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at County facilities.

~~4.Coordinate with local agencies and community-based organizations to develop EV/ZEV educational materials that inform residents on costs/benefits of owning EVs/ZEVs and guidance on receiving funding for EVs/ZEVs.~~

~~5~~ *4.* Allow eligible County employees to telecommute, with a target rate of 25% of eligible staff time telecommuting by 2030.

Commented [TL25]: See comments with my proposed TR-1.10, above.

Measure TR-2 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Municipal Fleet	790	1,974
Employee Commute	696	1,770
Total	**1,486**	**3,744**

Measure TR-3: Increase Public Transit Mode Share

Pursue private and public funding (see TR-6, TR-9 and TR-10 below) to ~~D~~develop a robust public transportation network consistent with Pitkin County's (CO) Roaring Fork Transportation Authority that

Commented [TL26]: Since Pitkin County has one of the highest per capita income levels in the country, Calaveras County can only reach this goal if it can get massive outside funding.

employs ZEV buses, demand-responsive transport options, and ZEV ridesharing to increase Calaveras County public transit mode share to 6% by 2030.

Commented [TL27]: According to the consultants' 4/6/23 comments (pp. 1 and 3), 10% was used in the quantifications. Which should it be, 6% or 10%?

1. Conduct a study to identify specific and systematic gaps and barriers to mobility and access in the current public transit system. Include direct outreach to members of disadvantaged communities, commuters, tourist destinations, and other underserved groups.
2. Establish a regional transportation system that uses Pitkin County's Roaring Fork Transportation Authority's services as a model to serve all Calaveras County residents and visitors through a connected network of express and local fixed-route bus services, regional commuter services, public tourist shuttles, on-demand shuttles/microtransit, consistent active transportation connections (e.g., bike racks) and coordinated first-last mile commuting options that may include micromobility options.
3. Establish an EV rideshare program (similar to "Green Raiteros" *in Huron, CA*) that allows for people with limited mobility options to rent a vehicle or request a ride in an electric vehicle for low cost.
4. In accordance with Calaveras County General Plan Implementation Measure C-3A, establish Park and Ride facilities at locations convenient for commuters, residents, and visitors to transfer from a single occupancy vehicle to a transit buses, commuter services, shuttles, or EV rideshare vehicles. Incorporate planned Park and Ride facilities into the Electric Vehicle Infrastructure Implementation Plan to outfit the facilities with sufficient EV/alternate fueling infrastructure.
5. Rely on significant funding from Measures TR-6 through TR-10 to fund a regional transportation system that is consistent with Pitkin County's RFTA services and build an EV charging infrastructure network *(see TR-1 above)* to support the EV rideshare program.
6. Expand the Calaveras Transit Agency to plan for, develop and operate the regional transportation system. Employ technical assistance from the National Rural Transit Assistance Program and create a public transportation working group to provide the County expertise and community input.
7. Identify partners such as CCOG to develop, oversee, and manage the transit and EV rideshare program.
8. Implement a promotion and education campaign to inform the community of the availability of the EV rideshare program and available transit routes and options. This may include but is not limited to: tabling at community events, bilingual mailers, social media posts, direct engagement with employers, and partnerships with Google Transit or a mobile application developer to bring real-time maps and schedules to residents and visitors.
9. Prioritize EV rideshare program implementation in low-income communities and develop pricing plans that make the public transportation system and EV rideshare program affordable for low-income residents.

Measure TR-3 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	11,376	26,769

Measure TR-4: Increase Active Transportation Mode Share

Increase active transportation mode share within Calaveras County 1% by 2030.

1. In accordance with Calaveras County General Plan Implementation Measure COS-7E, support and participate in efforts (such as an annual collision review) to update the bicycle and pedestrian master plan for biking, walking, riding, hiking/non-motorized and motorized transportation. The updated plan(s) shall identify existing and proposed facilities to assist in integrating future development into regional trail networks, tie trail systems to commercial centers and tourist destinations, identify locations for new trailheads and trail access points, and connect trail heads with public transportation systems.
2. In accordance with Calaveras County General Plan Implementation Measure C-5A, implement priority projects of the updated bicycle and pedestrian master plan as funding allows and prioritize the development of projects in disadvantaged communities within the County.
3. Construct bikeway and pedestrian system connections within Calaveras County and connecting to City of Angels Camp, nearby counties, state, and federal infrastructure through integration of bicycle facilities as part of other roadway construction projects.
4. In accordance with Calaveras County General Plan Implementation Measure COS-7B, establish standards for when and how new residential subdivisions shall provide bicycle and pedestrian facilities and amend the Calaveras County Code accordingly.
5. Rely on funding from Measures TR-6 through TR-10 to implement projects from the updated bicycle and pedestrian master plan.
6. Work and collaborate with local organizations and agencies, such as CCOG and City of Angels Camp, to promote bicycle and pedestrian travel as well as the updated bicycle and pedestrian master plan.
7. Coordinate with County community-based organizations, agencies, and nonprofits to conduct bicycle and pedestrian education events for residents and business owners.
8. Establish a Calaveras County Green Streets Program to improve the walkability of streets by providing increased shade cover and increased carbon sequestration potential.
9. In accordance with Calaveras County General Plan Implementation Measure C-1B, favorably consider projects which minimize greenhouse gas impacts and are appropriate to the rural nature of the County, including transit programs, ridesharing programs, and bicycle and pedestrian improvements.
10. In accordance with Calaveras County General Plan Implementation Measure C-1C, consider transit capital improvements and non-auto travel improvements necessary to serve new development in impact fee programs to fund public transportation infrastructure, park-and-ride lots, and bicycle and pedestrian facilities associated with the new development.

Measure TR-4 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	187	428

Commented [TL28]: Rincon said on p. 3 of 4/6/23 responses that the reduction value calculation was based on an increase of 4%. Which should it be, 1% or 4%?

Measure TR-5: Decarbonize Off-road Equipment and Vehicles

Decarbonize *(i.e. electrify or convert to biofuel)* ~~30% of the~~ *sufficient* off-road equipment and vehicles in Calaveras County *to reduce their combined carbon fuel use by* 30% by 2030.

1. Create a phased ordinance by 2024 to ban the local operation of gasoline and diesel powered off-road equipment by type, including banning local operation of gasoline and diesel-powered small off-road equipment (SORE) by 2029. For those *diesel* equipment types that cannot be decarbonized (i.e., electrified or converted to biofuel) in the short-term, include a requirement for the use *of* renewable diesel (e.g., RD99, which is a drop-in renewable fuel and readily available on West Coast).
2. Pursue funding to ~~E~~ establish *and carry out* an enforcement and implementation program to track transition of off-road equipment across the County.
3. *Pursue funding to* ~~C~~ conduct an assessment of off-road equipment and vehicles in the County to determine feasible phases for the ordinance, identify ~~fleets~~ *operators* with high decarbonization potential and ~~fleets~~ *operators* that will require targeted support to decarbonize, and identify available electric/biofuel options for each type. The assessment shall include direct outreach to ~~fleet~~ operators including those with recreational boats and agricultural/forestry equipment and vehicles.
4. *Pursue* ~~Procure~~ funding to create an Off-road Equipment Replacement Program to work directly with ~~fleets~~ *operators* identified in Action TR-5.3 to decarbonize their off-road equipment and vehicles. The program shall include free consultations with operators to identify equivalent alternatives to fossil-fueled off-road equipment, direct support to obtain rebates and incentives, and connect them with qualified local repair services to maintain the replaced equipment.
5. In accordance with Calaveras County General Plan Implementation Measure COS-5G, work with the CCAPCD to pursue funding from the Carl Moyer Program and rely on funding from Measures TR-6 through TR-10 to support off-road decarbonization efforts via purchase of all-electric and/or bio-fuel off-road equipment and vehicles.
6. *Pursue funding to* ~~W~~ work with the CCAPCD to develop *and conduct* a rebate and incentive program for upgrading off-road equipment and vehicles and switching to electric or biofuels. Develop the program with a focus on procedural equity and prioritize funding distribution to members of disadvantaged communities.
7. Develop a multi-lingual Off-road Equipment Replacement Outreach Campaign that educates ~~fleet~~ operators on the public health and safety benefits of alternative equipment technology and connects them with the Off-road Equipment Replacement Program.
8. Work with electric off-road equipment manufacturers (such as Solectrac and Monarch) to host workforce development workshops to train local agricultural equipment repair shops to service electric off-road equipment and off-road equipment utilizing biofuels and renewable diesel.
9. Partner with the CCAPCD to establish the enforcement and implementation program, create the Off-road Equipment Replacement Program, pursue funding, and develop the rebate and incentive program.

Measure TR-5 Greenhouse Gas Reduction Impact (MT CO2e/Year)

Commented [TL29]: On page 3 of the 4/6/23 comments, Rincon indicated the figure was 40%. Even 30% seems high; if a lower percentage were specified, the reductions that are currently non-quantified from other measures could make up the difference. I may have further suggestions for TR-5 at the upcoming meeting.

Commented [TL30]: Clarify scope of SORE equipment—what is small? Leaf blowers and chainsaws, or does it include bigger equipment than those? Is the 2029 total ban to be for all gasoline or diesel powered off-road equipment, or just SORE? If all, this appears to be unrealistic.

Commented [TL31]: Why provide benefits to fleet operators and not operators with singular equipment? As currently proposed, the ban would apply to all operators, not just fleet operators, yet the benefits primarily flow to fleet operators. I propose taking "fleet" out of TR-5 wherever it appears. If it stays in, define "fleet."

Commented [TL32]: Who would be the purchaser under this provision? The County?

	2030	2045
Total	7,787	17,362

Measure TR-6: Create a Tourism Economy

Work to develop a tourism economy within Calaveras County to help fund the decarbonization of the transportation sector.

1. ~~Establish a~~ *Revise the* tourism/hotel tax ~~with~~ *to provide for* revenue earmarked for the decarbonization of transportation within Calaveras County.
2. Develop a plan to help brand and market Calaveras County as a sustainable tourist destination and conduct a study to determine the price options and applicability for the tax.
3. Secure funding from the Visit California's Rural Marketing Program to market Calaveras County as a sustainable tourist destination.
4. Partner with the Calaveras Visitors Bureau to secure funding from Visit California's Rural Marketing Program and partner with both the Calaveras Visitors Bureau and existing members of the County tourism industry to develop the plan, develop the tax, and implement the marketing efforts.
5. Work with partners and businesses to implement the plan/marketing campaigns to market Calaveras County and appropriate local businesses as sustainable tourist destinations.
6. Directly engage members of disadvantaged communities in the development of the plan and tax to understand and plan for equity concerns.

Measure TR-6 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Commented [TL33]: I personally am unclear as to how much of the actions proposed in this measure and the next measure are already being done.

Measure TR-7: Establish Calaveras County as a Pilot Program

Partner with the Rural County Representatives of California (RCRC) to establish Calaveras County as a pilot program for the decarbonization of the transportation sector in rural communities.

1. Establish a regional community foundation with neighboring rural communities to fund the decarbonization of the transportation sector in rural California.
2. Develop a vision and strategy for the regional community foundation to serve as a firstmover/pilot in the State in the decarbonization of America's rural transportation systems.
3. As a first-mover in rural America, pursue funding from large philanthropy such as the Bezos Earth Fund, Rockefeller Foundation, Bill & Melinda Gates Foundation, etc. to fund the development of a Calaveras County decarbonized rural transportation system.
4. Advocate for and promote the regional community foundation as a first-mover in the decarbonization of America's rural transportation systems to the Federal Government and state and regional governments and philanthropic organizations.
5. Directly engage members of disadvantaged communities in the development of the vision and strategy to convey a clear vision that aims to benefit all members of rural communities.

6. Partner with the Rural County Representatives of California (RCRC) and/or other regional organizations to develop the foundation, advocate for the foundation, lobby state and federal agencies for funding, and establish a network of private and public partners/members.

Measure TR-7 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Measure TR-8: Develop a Biofuel Industry

Partner with local utilities and state agencies to develop a biofuel industry throughout Calaveras County to fund decarbonization of the transportation sector.

1. Establish a memorandum of understanding with *CHIPS (Calaveras Healthy Impacts Product Solutions Group)*, PG&E, CARB, CAL FIRE, the California Department of Agriculture, forest owners, and waste management companies to establish a plan to manage biomass and organic waste through the development of biofuel infrastructure in the County to position Calaveras County as a first mover in active forest management to support a carbon-free future for California.
2. Pre-zone ~~and clear~~ specific areas throughout the County for development of biofuel generation facilities, *drawing upon the experience of CHIPS with its Wilseyville site*.
3. Partner with PG&E and state agencies to develop a green bond to help fund the development of biofuel infrastructure in Calaveras County and explore revenue options through the Low Carbon Fuel Standard.
4. Work with local utilities and state agencies to pursue grants earmarked for biofuel infrastructure from the Inflation Reduction Act.
5. Establish partnerships with organic waste haulers to collect biomass from forests and biowaste from residential and agricultural sources, and partnerships with forest service businesses/property owners to sustainably clear fuel from forests.
6. Establish a campaign to educate the forestry services, waste haulers, and the community on the economic and wildfire risk benefits of active forest management for bioenergy and establish a working group/committee to involve local community members and businesses in the planning process.
7. Create workforce development programs to train the County local workforce for biofuel jobs. Specifically target training towards members of disadvantaged communities and establish criteria in the planning process that prioritizes/requires the employment of County residents and businesses in the industry.
8. Establish a biofuel tax with revenue earmarked for the decarbonization of transportation or earmarked to provide incentives to purchase biofuel or carbon-neutral vehicles within the County.

Measure TR-8 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Commented [TL34]: Should the County itself clear the sites? If so, it would need funding to do so.

Commented [TL35]: What taxes currently apply to biofuels? Does the County have the power to impose such a tax? It seems counterproductive to increase taxes on a type of fuel whose development and use we are encouraging.

Measure TR-9: ~~Obtain~~ *Pursue* State Funding

Establish Calaveras County as a pilot program for a rural carbon-free transportation system *funded* through state investment and grants such as California Climate Investments.

1. Develop a report highlighting the unique opportunity for Calaveras County to become a pilot for the decarbonization of rural transportation systems in California.
2. ~~Secure~~ *Pursue* funding from California Climate Investments (CCI) and develop an investment program with private partners, including local utilities and local employers, to secure local match funding for the grants.
3. Partner with local agencies such as the Calaveras County Air Pollution Control District (CCAPCD) and Calaveras Connect to plan for, secure, and implement CCI grant funding.
4. Directly engage members of disadvantaged communities to analyze and convey transportation barriers in the report development.

Measure TR-9 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Measure TR-10: ~~Obtain~~ *Pursue* Federal Funding

~~Secure~~ *Pursue* federal funding from *federal programs, such as* the Charging and Fueling Infrastructure Discretionary Grant Program to decarbonize the transportation sector.

1. ~~D~~ *With such funding, d*evelop the Electric Vehicle Infrastructure Implementation Plan with a focus on expanding access to EV infrastructure disadvantaged communities~~,~~ *and* in low- and moderate-income neighborhoods~~, and in communities with a low ratio of private parking spaces to households or a high ratio of multiunit dwellings to single family homes~~.
2. ~~Secure~~ *Pursue* significant *federal* funding ~~from the Charging and Fueling Infrastructure Discretionary Grant Program community grants~~ by leveraging the Electric Vehicle Infrastructure Implementation Plan and County ability to expand access to EV infrastructure within rural areas, *and* low- and moderate-income neighborhoods~~, and communities with a low ratio of private parking spaces to households or a high ratio of multi unit dwellings to single family homes~~.
3. Partner with the Federal Highway Administration (FHWA) California Division, California Local Technical Assistance Program (CA LTAP), and/or the Governor's Office of Planning and Research (OPR) to obtain technical support and train staff to develop a successful federal grant application.
4. Develop an Equity First Program to provide early funding opportunities for members of disadvantaged communities, *and* low- and moderate-income neighborhoods~~, and communities with a low ratio of private parking spaces to households or a high ratio of multi unit dwellings to single family homes~~.

Measure TR-10 Not Quantified

(Supportive of Measures TR-1 through TR-5)

Commented [TL36]: As far as I can tell, the application deadline for this program was 6/13/23.

Commented [TL37]: What communities within Calaveras County meet this description?

Commented [TL38]: See comment above regarding this program's application deadline.

Commented [TL39]: See comments above.

Commented [TL40]: See comments above.

Agriculture GHG Emission Reduction Measures[11]

Measure AG-1: Increase Crop Production Efficiency and Soil Health

Pursue funding to i Increase crop production efficiency and soil health to reduce associated GHG emissions 30% by 2030.

1. Improve fertilizer efficiency (increase in harvest yield per unit of nutrient supplied by fertilizer and liming material) across the County and monitor via soil test and soil pH reporting to understand which County crop fields are the most productive.
2. Prepare and adopt County Prescribed Grazing Practices that result in enhanced soil nutrition and increased carbon sequestration.
3. Stop or limit the loss of nutrients from the planted areas during top watering in an open system, including by containing irrigation effluent.
4. Conduct a study regarding which agroforestry methods (riparian forested buffers, silvopasture [planting of shrubs and trees], oak woodland establishment) would work best for County farmers in terms of climate mitigation practices.
5. Work with the California Air Resources Board (CARB) regarding its proposed crop-based carbon offset protocol to allow County farmers to earn additional revenue for reducing GHG emissions associated with cultivation.
6. Partner with the University of California Cooperative Extension (UCCE) Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers to implement best practices in fertilizer efficiency and pest management detailed in the University of California Agriculture and Natural Resources (UC ANR) Nutrient Management Resources and Knowledge Sharing Tools for the California Agricultural Community.
7. Develop an educational campaign to share the most recent research and best practices with County farmers regarding most efficient fertilizers and technologies and how to match fertilizer application with plant nutrient needs as the plant grows.
8. In coordination with UCCE (see AG-1.6 above) and the County Agricultural Commissioner, P provide assistance to smaller farmers for developing applications to soil and fertilizer grant programs such as the California Department of Agriculture Healthy Soils Program Incentive Program.

Measure AG-1 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	2,483	5,444

[11] County GHGRP agriculture GHG reduction measures and respective quantification was prepared in 2023 by Rincon.

Measure AG-2: Implement Livestock Manure Management Strategies

In coordination with appropriate agencies and officials, pursue funding to i ł mplement livestock manure management strategies to reduce associated GHG emsions by 10% by 2030.

1. Conduct a detailed countywide inventory of livestock and manure management practices to better understand and track GHG emissions from livestock and manure management practices. *In this tracking, ensure that no GHG emissions are attributed currently to non-existent dairy farms and feedlots.*
2. Develop and implement a program for local farmers to purchase poultry manure and used bedding for use in fertilizing pasture and crops.
3. Utilize available state and federal energy efficiency grants to develop a revolving lowinterest loan program that will provide funding for the construction of methane digesters where feasible.
4. Investigate and apply for funding sources, such as California Department of Food and Agriculture's Healthy Soils Initiative, to increase the application of livestock manure compost on rangelands, which in turn will increase carbon capture and storage in soil.
5. Provide assistance to Calaveras County farmers regarding how to apply for financial assistance through the Alternative Manure Management Program (AMMP) from the California Department of Food and Agriculture (CDFA), which provides funding to farmers implementing non-digest manure management techniques.
6. Utilizing CDFA guidance, develop education and outreach materials around grazing practices that sequester carbon.
7. Partner with the University of California Cooperative Extension Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers on understanding and implementing manure management best practices and reduction of the associated GHG emissions as detailed in the EPA's AgSTAR Practices to Reduce Methane Emissions from Livestock Manure Management.

Measure AG-2 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	629	2,514

Commented [TL41]: In 2018 and the present, there were and are no dairy farms or feed lots in the County; however, with Table 4 of its Agricultural Sector GHG Inventory, submitted 1/20/2022, Rincon reported 136 dairy cows and calves and 6,143 feedlot heifers and steer. When questioned about dairy farms and feedlots, Rincon's 4/6/23 responses indicated that the matter had been "previously discussed and resolved." I have yet to understand how Calaveras County is not being penalized for GHG emissions from dairy and feedlot animals that do not exist in Calaveras County. Through this proposed provision, the matter could be settled with clarity and accuracy.

Measure AG-3: Reduce Methane Emissions from Livestock

Reduce methane emissions from livestock enteric fermentation 20% by 2030.

1. Implement grassland management strategies to provide feed digestibility alternatives and improving feed quality.

2. Work with the University of California Cooperative Extension to conduct a study regarding balancing and fine-tuning livestock feed rations within the County, which in turn leads to less livestock enteric fermentation.
3. Annually conduct research on any upcoming grant funding opportunities to reduce enteric fermentation emissions.
4. Provide information and resources on the County Agricultural Commissioner website to inform farmers on optimizing feed digestibility/availability and pasture management practices, and how that translates into less livestock enteric fermentation emissions.
5. Partner with the University of California Cooperative Extension Central Sierra and the Calaveras County Agricultural Commissioner to work directly with farmers to understand

   the beneficial nature of food additives on enteric fermentation and help implement food additive techniques to reduce enteric fermentation emissions.

Measure AG-3 Greenhouse Gas Reduction Impact (MT CO2e/Year)		
Total	**7,721**	**13,512**

Solid Waste GHG Emission Reduction Measures[12]

Measure SW-1: Organic Waste Diversion

In accordance with General Plan Conservation and Open Space Element Air Quality/Greenhouse Gases Measures COS-5D and COS-5E, the County will implement waste management practices to support organics diversion. Programs will include: (1) providing green waste collection programs at County operated landfill and transfer stations when feasible (COS-5D); (2) utilizing public/private partnerships to utilize green waste in alternative uses and waste to energy facilities (COS-5D); and (3) including a review of the zoning ordinance and Air Pollution Control District regulations and amendment as necessary to facilitate the development of green waste to energy projects and other projects that convert green waste to products (COS-2E). Programs may also include investigating and incentivizing community composting. In addition, the County will coordinate with individuals, community groups, and publicly funded and privately managed recycling and composting providers to educate the public about the benefits of composting. Through a combination of these programs, the County will divert 75 percent of food and green yard waste from landfills to home & community-based composting facilities, bio-mass plants, & other local facilities to reduce short-lived climate pollutants and minimize transportation-related emissions compared to existing conditions.

Commented [TL42]: Definition of "community" in this context? Are we talking about individuals in the area, groups of individuals, or formal entities, keeping in mind that Angels Camp is the only formal city in the County and is not part of this plan.

Measure SW-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)		
Total	**2,924**	**3,007**

[12] County GHGRP solid waste GHG reduction measures and respective quantification was prepared in 2023 by Harris and Associates.

Measure SW-2: Diverts*ions* ~~from Forward~~ to Rock Creek Landfill

The County will divert an additional 5 percent of total Calaveras County solid waste disposal from other landfills to Rock Creek Landfill, to the extent Rock Creek Landfill has the capacity to receive this diverted material.

Measure SW-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	7	8

Measure SW-3: Methane Capture

The County will pursue funding to continue to manage Rock Creek Landfill to limit methane release and achieve an average increase in methane capture of 1 percent for all waste types by 2030.

Measure SW-3 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	67	69

Water and Wastewater GHG Emission Reduction Measures[13]

Measure W-1: Use of Reclaimed (Non-Potable) Water

In accordance with General Plan Public Facilities and Services Element Water and Wastewater Measures PF-2G, PF-2H and PF-2I, *the County will (1) work with local water and wastewater agencies and provide land use or other data in the County's possession where such data will provide information necessary to prepare and update water and wastewater master plans, agency master plans and similar water and wastewater planning documents, including strategies for increasing energy efficiency (PF-2G); (2)* amend the County Code to recognize appropriate uses for reclaimed water as an alternative for various land uses and keep apprised of the latest developments in the use of reclaimed water. Revise the County's landscaping standards and incorporate those standards as conditions of project approval to facilitate the use of gray water and reclaimed water systems for landscape irrigation *(PF-2H)*. ~~Additionally, the County will~~ *(3)* work with wastewater service providers to expand the use of recycled wastewater for agricultural uses *(PF-2I). With funding, t* ~~T~~he County will work with local/regional agencies to create incentives and rebates for greywater systems, composting toilets, or other residential retrofits. Through a combination of efforts, the County will achieve a 10 percent reduction in total potable water use.

Commented [TL43]: The Planning Commission's 11/3/22 policy direction stated that PF-2G, with an additional last phrase, should be included. Harris' response was to not include it, on the assumption that PF-2G applied to Angels Camp. The Calaveras General Plan does not cover Angels Camp, so PF-2G does not apply to Angels Camp. It does refer to water and wastewater agencies serving unincorporated areas of Calaveras County.

Measure W-1 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045

[13] County GHGRP water and wastewater GHG reduction measures and respective quantification was prepared in 2023 by Harris and Associates.

Total	**92**	**97**

Measure W-2: Require Low-Flow Water Use Fixtures

~~The County will adopt a reach code to exceed state level requirements by 5 percent for the installation of water conserving appliances in all new residential and non-residential buildings, and t~~ The County will require design plans of new development projects to include water-saving features.

Commented [TL44]: Given the often-changing strictness of state-level requirements, given the fact that there may be no appliances available that would exceed California requirements, and given the relatively low GHG reduction figure, I question the desirability of the proposed reach code. The design plans requirement seems reasonable.

Measure W-2 Greenhouse Gas Reduction Impact (MT CO_2e/Year)

	2030	2045
Total	**67**	**68**

Carbon Sequestration GHG Emission Reduction Measures[14]

Measure CS-1: Conserve and Preserve Natural Lands

Explore carbon sequestration opportunities within the County and continue to conserve and preserve natural lands.

1. *Pursue funding to c*~~C~~onduct a carbon sequestration feasibility study by 2030 to identify natural working lands opportunities and emergent technology for carbon sequestration within the County.

2. Collaborate with the Calaveras County Resource Conservation District and local property owners (such as the California Rangeland Trust and U.S. Forest Service) to identify carbon farming, forest management, and rangeland management opportunities to sequester carbon within the County.

3. In accordance with Calaveras County General Plan Implementation Measure RP-1F, establish mitigation program guidelines for the impacts caused by conversion of land designated Resource Production on the General Plan Land Use Map to another nonresource production land use. The guidelines shall include, at a minimum, the following alternatives:

   - Acquisition of a conservation easement located within Calaveras County at a 1:1 ratio o Purchase of banked mitigation credits for use by a land bank operating in Calaveras County for use within the county o Payment into a fund to restore, enhance and improve Resource Production designated land. The fund would be managed by the County Agricultural Department. Use of the fund would be determined by the Board of Supervisors with input from the Agriculture Department, the Calaveras County Resource Conservation District, the University of California Cooperative Extension Office, the Agricultural Advisory Committee, and local landowners.

[14] County GHGRP carbon sequestration GHG reduction measures and respective quantification was prepared in 2023 by Rincon.

- On-site mitigation
- Other mitigation measures developed and/or approved by the County.

4. In accordance with Calaveras County General Plan Implementation Measure RP-2F, continue to maintain an Agricultural Advisory Committee to review and recommend action to the Board of Supervisors concerning California Land Conservation Contracts (Williamson Act) and to promote a compatible relationship between agricultural and non-agricultural activities and to ensure that appropriate provisions are incorporated as necessary into new land use proposals to preserve ongoing agricultural operations.

5. In accordance with Calaveras County General Plan Implementation Measure COS-5-M, apply the following measures to residential projects requiring discretionary approval and subject to CEQA review and to all new County construction projects:

   - Where feasible, residential subdivisions shall include parks and open space with landscaping and/or native vegetation capable of carbon sequestration.
   - Where residential subdivisions are located within walking distance of facilities such as schools, parks, banks, grocery stores and restaurants, they shall be designed to include pedestrian access to such facilities to the extent practicable.
   - Where feasible, residential subdivisions shall be designed to encourage alternate forms of transportation, including but not limited to sidewalks, trail systems, bike paths, and other measures connecting to existing development.
   - New and renovated County facilities shall be designed to exceed the requirements of the currently adopted California State Energy and Green Building Codes at the time of project approval. Buildings shall be a minimum of 5% more efficient than required and shall eliminate the use of fossil fuels to the extent feasible.

6. In accordance with Calaveras County General Plan Implementation Measure RP-2C, update the County Code relative to Agricultural Preserves for consistency with County needs and state Williamson Act requirements and include provisions for open space and recreational use contracts.

7. *Apply for grants from the California Strategic Growth Council and others for a planning grant regarding agricultural land strategy plans and other mechanisms that promote GHG reductions and carbon sequestration through preservation of such assets as grasslands and oak woodlands.*

Measure CS-1 Not Quantified

Commented [TL45]: This paragraph was requested in the County's 11/3/22 PC Policy Direction. As noted then, this paragraph had been previously approved by the Planning Commission at a meeting. Consultants apparently inadvertently lost this paragraph in the shuffle to create a separate CS section for carbon sequestration.

Commented [TL46]: Measure CS-1, including all of the General Plan implementation measures referenced therein, must be quantified, as it is a key element in the GHG reduction required by the General Plan. General Plan COS-5C specifically required that its GHG Reduction Plan incorporate applicable measures from "Model Policies for Greenhouse Gases in California," which on page 29 lists "Storing and Offsetting Carbon Emissions" as an action local governments can take in reaching the goals of AB 32; on p. 53 it specifies "Conserve natural lands for carbon sequestration" as a "key opportunity" related to "GHG reductions." To not quantify this key element would be to fail to recognize the importance that the General Plan gives to carbon sequestration related to conservation of natural lands.

Measure CS-2: Apply Compost

Meet SB1383 compost or organics procurement targets by applying 863 tons of compost to land areas throughout the County by 2030.

1. *Pursue funding to support* ~~R~~Require*ing* County agencies to procure and apply compost generated from

2. municipal organic waste to the exterior of suitable facilities as part of their operations. Build partnerships with local growers, rangelands, and community green spaces to distribute compost and procure at scale, allowing for reduced procurement costs.
3. In collaboration with local organizations, conduct a study to determine areas in the County with the highest carbon sequestration potential for compost application.
4. Work with local organizations and academic institutions to conduct ongoing outreach to procurers of compost to monitor soil carbon sequestration.
5. Explore partnerships with accredited carbon credit verifiers and technology providers who can quantify and monetize compost application credits.

Measure CS-2 Greenhouse Gas Reduction Impact (MT CO2e/Year)

	2030	2045
Total	863	888

Commented [TL47]: Definition of "municipal" in this context?

Commented [TL48]: Definition of "community" in this context?

Commented [TL49]: Meaning unclear to me. Exactly who would be monitoring soil carbon sequestration? Please describe who "procurers of compost" are and where they fit in this picture.

Commented [TL50]: Please confirm that spreading 863 tons of compost will result in reduction of 863 metric tons of GHG.

Overall GHGRP Measures Summary

Table 1 below presents the GHG emission reduction impact of each quantitative measure and the GHG emission reduction impacts aggregated by sector for each target year.

Table 1 GHG Emission Reduction Impact of Quantitative Measures

Sector or Measure ID	2030 GHG Emission Reduction Impact (MT CO_2e)	2045 GHG Emission Reduction Impact (MT CO_2e)
Energy		
RE-1: Community Energy	1,418	0
EO-1: Energy Conservation Outreach and Education	4,147	911
EB-1: Green Business Program	23	6
EB-3: Energy Efficiency Retrofits	3,868	1,727
EB-4: Time-of-Replacement Ordinance	9,748	27,531
NC-1: Highly Efficient New Development	58	98
NC-2: Zero Net Energy New Construction	81	192
NC-4: Clean Wood-Burning Appliances	28	62
Energy Sector Total:	***19,372***	***30,528***
Sector or Measure ID	2030 GHG Emission Reduction Impact (MT CO_2e)	2045 GHG Emission Reduction Impact (MT CO_2e)
Transportation		
TR-1: EV/ZEV Adoption	39,500	58,604
TR-2: County Fleet Decarbonization*	1,486	3,744
TR-3: Public Transit Mode Share	11,376	26,769

TR-4: Active Transportation Mode Share	187	428
TR-5: Off-road Equipment and Vehicles	7,787	17,362
Transportation Sector Total:	***58,850***	***103,162***
Agriculture		
AG-1: Crop Production Efficiency	2,483	5,444
AG-2: Livestock Manure Management	629	2,514
AG-3: Livestock Methane Emissions	7,721	13,512
Agriculture Sector Total:	***10,833***	***21,471***
Solid Waste		
SW-1: Organic Waste Diversion	2,924	3,007
SW-2: Divert Waste to Rock Creek Landfill	7	8
SW-3: Methane Capture	67	69
Solid Waste Sector Total:	***2,982***	***3,007***
Water and Wastewater		
W-1: Reclaimed Water	92	97
W-2: Low-Flow Water Use Fixtures	67	68
Water and Wastewater Sector Total:	***159***	***166***
Carbon Sequestration		
CS-2: Compost Application	863	888
Carbon Sequestration Sector Total:	***863***	***888***
Total Reductions	**93,059**	**159,221**

*Not included in sector or overall total.

Meeting GHG Emission Reduction Targets

As shown in Table 2 and Figure 4, full implementation of the County GHG reduction measures would allow the County to reach the County and State 2030 GHG emission reduction target. Full implementation of these measures would also allow the County to make substantial progress towards meeting the State 2045 GHG emission reduction target, but currently a projected gap of 117,558 MT CO_2e (i.e., approximately 33 percent) remains in 2045. Therefore, future GHGRP updates will be required for the County to establish a complete pathway for reaching the 2045 State GHG emissions target.

Table 2 GHG Emission Reduction Measures Analysis

Sector or Measure ID	2030 GHG Emissions (MT CO_2e)	2045 GHG Emissions (MT CO_2e)
Adjusted Forecast	306,545	276,780
GHG Emission Reduction Targets	213,698	0

GHG Emissions After Measure Implementation	213,485	117,558
GHG Emissions Gap	-212	117,558
Target Met?	Yes	No

Figure 4 GHG Emissions Levels After GHGRP Measures Implementation