

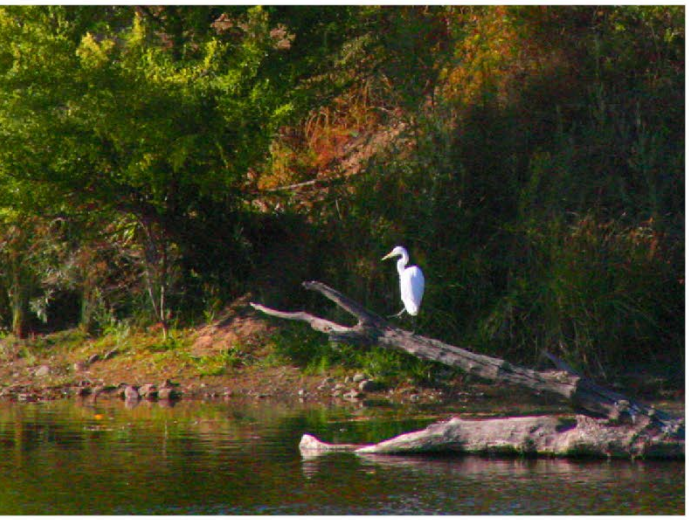
SACRAMENTO COUNTY

COUNTY OF SACRAMENTO

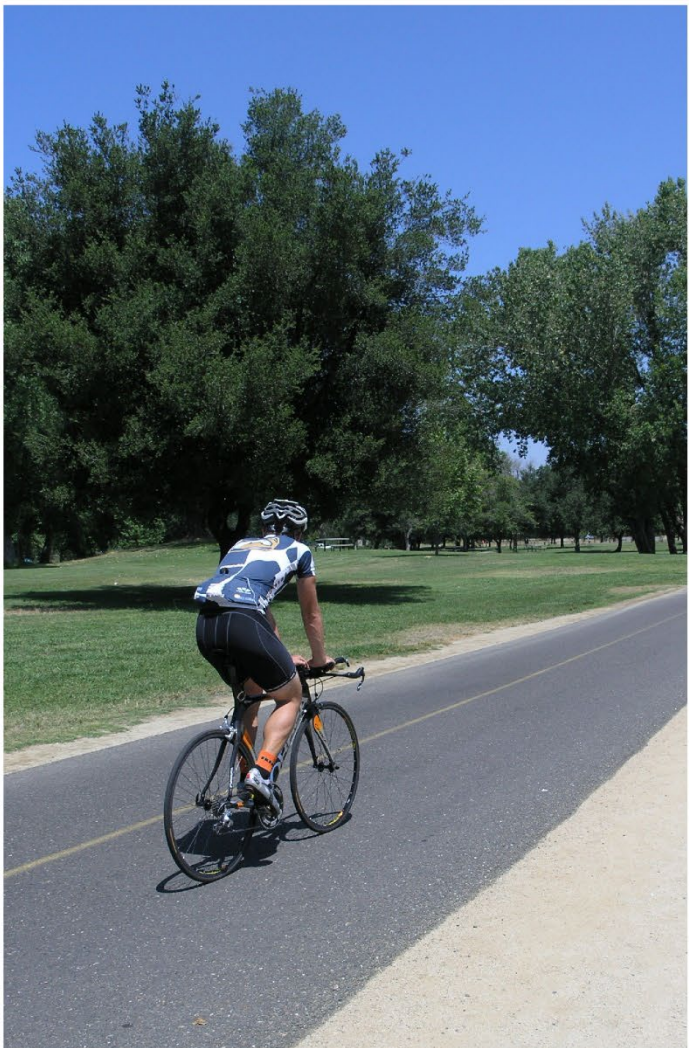
Climate Action Plan

for the Unincorporated Sacramento County and County Operations

FINAL – ADOPTED NOVEMBER 6, 2024







Acknowledgements

County of Sacramento

Board of Supervisors

Phil Serna, Vice Chair – District 1

Patrick Kennedy, Chair – District 2

Rich Desmond – District 3

Sue Frost – District 4

Pat Hume – District 5

County Staff

Todd Smith, Planning Director

John Lundgren, Sustainability Manager

June Powells-Mays, Supervising Deputy County Counsel

Elizabeth Pollock, Deputy County Counsel

Ascent Environmental, Inc. dba Ascent

Honey Walters, Principal/Chief Practices Officer

Amanda Olekszulin, CEQA Principal

Erik de Kok, Director of Interdisciplinary Planning

Andrew Beecher, Senior Climate Action Planner

Jessica Babcock, Senior Environmental Planner

Hannah Kornfeld, Senior Climate Action Planner

Fred Hochberg, Senior Climate Action Planner

Adam Qian, Climate Adaptation Planner

Sonam Sahu, Climate Action Analyst

John Steponick, Climate Adaptation Analyst

Gayiety Lane, Publishing Specialist

Corey Alling, Graphic Publication Specialist

Environmental Science Associates

Brian Schuster, Air Quality, Climate, and Acoustics Director

Jeff Caton, Climate Planning Services Director

All photos used throughout this CAP were either: (1) sourced from Adobe Stock; or (2) provided by the County.

Table of Contents

Chapter/Section		Page
1	**INTRODUCTION**	**1-1**
1.1	Climate Change Overview	1-2
1.2	Plan Development and Details	1-5
1.3	State, Regional, and County Efforts	1-8
1.4	California Environmental Quality Act	1-14
2	**GREENHOUSE GAS REDUCTION STRATEGY**	**2-1**
2.1	Why Prepare a Greenhouse Gas Emissions Inventory?	2-1
2.2	Sacramento County Greenhouse Gas Emissions Inventories	2-1
2.3	Greenhouse Gas Emissions Forecasts	2-8
2.4	Greenhouse Gas Reduction Targets and Goals	2-13
2.5	Greenhouse Gas Emissions "Gap" Analysis	2-15
2.6	GHG Emission Reduction Framework	2-17
2.7	Community Measures	2-19
2.8	Government Operations Measures	2-61
3	**CLIMATE ADAPTATION AND RESILIENCE STRATEGY**	**3-1**
3.1	Why Must We Adapt?	3-1
3.2	Climate Adaptation Planning Process	3-2
3.3	Vulnerability Assessment Summary	3-3
3.4	Adaptation Measures Overview	3-5
	Flooding	3-7
	Increased Temperatures and Extreme Heat	3-23
	Sea Level Rise	3-36
	Wildfire	3-43
	Drought	3-50
	Cross-Cutting	3-57
4	**IMPLEMENTATION, MONITORING, AND REPORTING STRATEGY**	**4-1**
4.1	Implementation Strategy	4-1
4.2	California Environmental Quality Act Streamlining	4-2
4.3	Monitoring and Reporting	4-5
4.4	CAP Updates	4-6
4.5	Ongoing Engagement	4-7
4.6	Implementation Matrices	4-7
4.7	Performance Monitoring Matrices	4-27
5	**WORKS CITED**	**5-1**

Appendices

A Community Engagement Summary

B Preliminary Draft Climate Action Plan Consistency Review Checklist

C 2021 Greenhouse Gas Emissions Inventories

D Greenhouse Gas Emissions Forecasts and Targets Analysis

E Greenhouse Gas Reduction Measures Analysis

F Greenhouse Gas Reduction Measures County Cost Analysis and Potential Funding Sources

Figures

Figure 1.1 The Greenhouse Effect 1-3

Figure 1.2 Climate Change Mitigation vs. Adaptation 1-5

Figure 1.3 Climate Change Mitigation and Adaptation Planning Processes 1-6

Figure 1.4 Climate Action Plan Co-Benefits 1-8

Figure 1.5 County of Sacramento Climate-Related Plans, Policies, and Other Efforts 1-13

Figure 2.1 Climate Change Mitigation Planning Process 2-1

Figure 2.2 Emissions Sources Included and Excluded from Community Inventory 2-3

Figure 2.3 2021 Unincorporated Sacramento County Community GHG Emissions Inventory by Sector 2-5

Figure 2.4 Equivalencies of the 2021 Unincorporated Sacramento County Community GHG Emissions Inventory 2-6

Figure 2.5 2021 County of Sacramento Government Operations GHG Emissions Inventory by Sector 2-8

Figure 2.6 Unincorporated Sacramento County Community BAU and ABAU GHG Emissions Forecasts 2-11

Figure 2.7 County of Sacramento Government Operations BAU and ABAU GHG Emissions Forecasts 2-13

Figure 2.8 Unincorporated Sacramento County Community BAU and ABAU GHG Emissions Forecasts and GHG Reduction Targets 2-16

Figure 2.9 County of Sacramento Government Operations BAU and ABAU GHG Emissions Forecasts and GHG Reduction Targets 2-17

Figure 2.10 Unincorporated Sacramento County Community Measures Effectiveness 2-23

Figure 2.11 Sacramento County Government Operations Measures Effectiveness 2-62

Figure 3.1 Climate Change Adaptation Planning Process 3-3

Figure 3.2 Historical and Projected Annual Average Maximum Temperature in Sacramento County 3-23

Figure 3.3 Maximum Inundation Depth During a 100-Year Storm and 1.41 Meters of Sea Level Rise 3-37

Tables

Table 1.1 California Climate Indicators with Historic and Future Trends 1-4
Table 1.2 California Climate Legislation, Guidance Documents, and Other Efforts 1-9

Table 2.1 Community Inventory Sectors and Descriptions 2-4
Table 2.2 2021 Unincorporated Sacramento County Community GHG Emissions Inventory by Sector 2-5
Table 2.3 Government Operations Inventory Sectors and Descriptions 2-7
Table 2.4 2021 County of Sacramento Government Operations GHG Emissions Inventory by Sector 2-8
Table 2.5 Unincorporated Sacramento County Community BAU GHG Emissions Forecast 2-9
Table 2.6 Unincorporated Sacramento County Community ABAU GHG Emissions Forecast 2-10
Table 2.7 County of Sacramento Government Operations BAU GHG Emissions Forecast 2-12
Table 2.8 County of Sacramento Government Operations ABAU GHG Emissions Forecast 2-12
Table 2.9 Unincorporated Sacramento County Community GHG Emissions Gap Analysis 2-15
Table 2.10 County of Sacramento Government Operations GHG Emissions Gap Analysis 2-16
Table 2.11 Community Measures Summary 2-23
Table 2.12 Government Operations Measures Summary 2-63

Table 3.1 Potential Impact and Adaptive Capacity Scoring Rubric 3-4
Table 3.2 Vulnerability Scoring Rubric 3-4
Table 3.3 Potential Impact, Adaptive Capacity, and Vulnerability Scores 3-5
Table 3.4 Adaptation Measures Summary 3-5
Table 3.5 Changes in Annual Average Precipitation and Extreme Precipitation in Sacramento County 3-7
Table 3.6 Changes in Annual Average Temperature and Extreme Heat in Sacramento County 3-24

Table 4.1 CAP Compliance with Elements of a CEQA Qualified Plan for the Reduction of GHG Emissions 4-3
Table 4.2 CAP Monitoring, Reporting, and Update Schedule 4-7
Table 4.3 Abbreviations for County Departments and Other Organizations Used in Implementation Matrix 4-8
Table 4.4 Community GHG Reduction Measures Implementation Matrix 4-10
Table 4.5 Government Operations GHG Reduction Measures Implementation Matrix 4-22
Table 4.6 Community GHG Reduction Measures Performance Monitoring Matrix 4-26
Table 4.7 Adaptation Measures Performance Monitoring Matrix 4-30
Table 4.8 Government Operations Measures Performance Monitoring Matrix 4-33

List of Abbreviations

°F	degrees Fahrenheit
2022 Scoping Plan	*2022 Scoping Plan for Achieving Carbon Neutrality*
AB	Assembly Bill
ABAU	legislative-adjusted business-as-usual
ADA	American Disabilities Act
APG	*California Adaptation Planning Guide*
BAU	business-as-usual
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Governor's Office of Emergency Services
CalEnviroScreen	California Communities Environmental Health Screening Tool
CAP	Climate Action Plan
CARB	California Air Resources Board
CCUS	carbon capture, utilization, and storage
CDR	carbon dioxide removal
CEQA	California Environmental Quality Act
CH_4	methane
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
Community Protocol	*U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*
County	County of Sacramento government
county	geography of Sacramento County
EJ Communities	Environmental Justice Communities
EJ Element	*Sacramento County Environmental Justice Element*
EPA	United States Environmental Protection Agency
EV	electric vehicle
General Plan	*Sacramento County General Plan of 2005-2030*
GHG	greenhouse gas
GVWR	gross vehicle weight rating
GWP	global warming potential
ICE	internal combustion engine

ICLEI	ICLEI – Local Governments for Sustainability
IPCC	Intergovernmental Panel on Climate Change
LED	light-emitting diode
LGOP	*Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories*
LHM	Sacramento County Local Hazard Mitigation Plan
Metro Fire	Sacramento Metropolitan Fire District
$MTCO_2e$	metric tons of carbon dioxide equivalent
N_2O	nitrous oxide
OPR	California Governor's Office of Planning and Research
PER	County's Office of Planning and Environmental Review
PG&E	Pacific Gas & Electric Company
PV	photovoltaic
SACOG	Sacramento Area Council of Governments
SacRT	Sacramento Regional Transit District
SB	Senate Bill
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SSHCP	South Sacramento Habitat Conservation Plan
state	State of California government
TDM	transportation demand management
TIA	Traffic Impact Analysis
TMA	Transportation Management Association
TSM	Transportation System Management
unincorporated county	unincorporated areas of Sacramento County
WUI	wildland-urban interface
VA	Vulnerability Assessment
VMT	vehicle miles traveled
ZEV	zero-emission vehicle



CHAPTER 1

Introduction

1 Introduction

Sacramento County, located in the heart of California's Central Valley, was incorporated in 1850 as one of the original 27 counties in the state. It covers approximately 990 square miles and is a pivotal hub for government, agriculture, education, information technology, and transportation, among other economic sectors. Sacramento County includes a mix of developed and agricultural lands, seven incorporated cities (i.e., Sacramento, Elk Grove, Citrus Heights, Folsom, Galt, Isleton, Rancho Cordova), and a number of both mature and planned communities in the unincorporated areas of the county (hereinafter referred to as "unincorporated county"). Over the coming years, Sacramento County is projected to experience notable growth, but with this growth, the County of Sacramento government (hereinafter referred to as "County") must take climate change into account and ensure that steps are being taken to build a more sustainable and resilient future.

Throughout California, local governments are developing climate action plans, which serve as strategic planning frameworks that include tailored measures and specific actions that can be taken to address the urgent need to both mitigate and adapt to climate change. Climate change presents new challenges and exacerbates existing challenges, but also serves as an opportunity for the County to invest in policies and infrastructure to address climate related issues. The broader Sacramento region is currently experiencing the effects of climate change, including extreme heat and prolonged drought and wildfire seasons, among other effects. These impacts are already negatively affecting the lives of residents across the county in a variety of ways. In response, the County has developed this Climate Action Plan (CAP) to provide a comprehensive roadmap to achieve the following objectives for the unincorporated county and the County's government operations:

- Implement the County's Final Environmental Impact Report for the *Sacramento County General Plan of 2005-2030* (General Plan), adopted in November 2011, Mitigation Measure CC-2 to prepare and adopt a CAP that will reduce greenhouse gas (GHG) impacts from implementing the General Plan.
- Include reasonably foreseeable projects and population growth in GHG emissions forecasts.
- Identify GHG emission reduction targets tailored to the unincorporated county and the County's government operations that align with State and County climate goals.
- Establish GHG emissions reduction measures and actions to achieve the County's GHG emissions reduction targets for communities in the unincorporated county and County operations.
- Set a framework of sufficiently adaptable long-term strategies that will consider and incorporate, as appropriate, additional GHG reduction strategies that embrace continued innovation, technological advances, and creating high-quality jobs in the county.
- Provide a mechanism for streamlining project-level GHG emissions analysis consistent with Section 15183.5 of the State California Environmental Quality Act (CEQA) Guidelines (see **Section 1.4** for more details).
- Develop climate adaptation measures to guide the County to a more resilient future.

This CAP is organized into five chapters:

- This chapter, **Chapter 1**, serves as the introduction to the CAP, outlines the CAP's objectives, and provides important CAP-specific context and background information.
- **Chapter 2** presents the GHG emissions inventories, forecasts, and reduction targets, along with a suite of GHG reduction measures for both the community and government operations.
- **Chapter 3** serves as the basis for climate adaptation and resilience, presenting a summary of the vulnerability assessment findings along with a suite of adaptation measures.
- **Chapter 4** presents the implementation, monitoring, and reporting strategy of the GHG reduction and climate adaptation measures.
- Lastly, all works cited throughout this CAP are listed in **Chapter 5**.

1.1 Climate Change Overview

To understand the need for this CAP, it is important to understand the basics of climate change, including what it is, the science behind it, how it affects people and ecosystems, and how to address it at the local level. Climate change is a complex issue, but it can be narrowed down to five key two-word facts: (1) scientists agree; (2) it's real; (3) it's us; (4) it's bad; and most importantly (5) there's hope (YPCCC n.d.). The subsections below seek to provide a high-level overview of climate change, emphasizing these key facts.

Climate Change Science

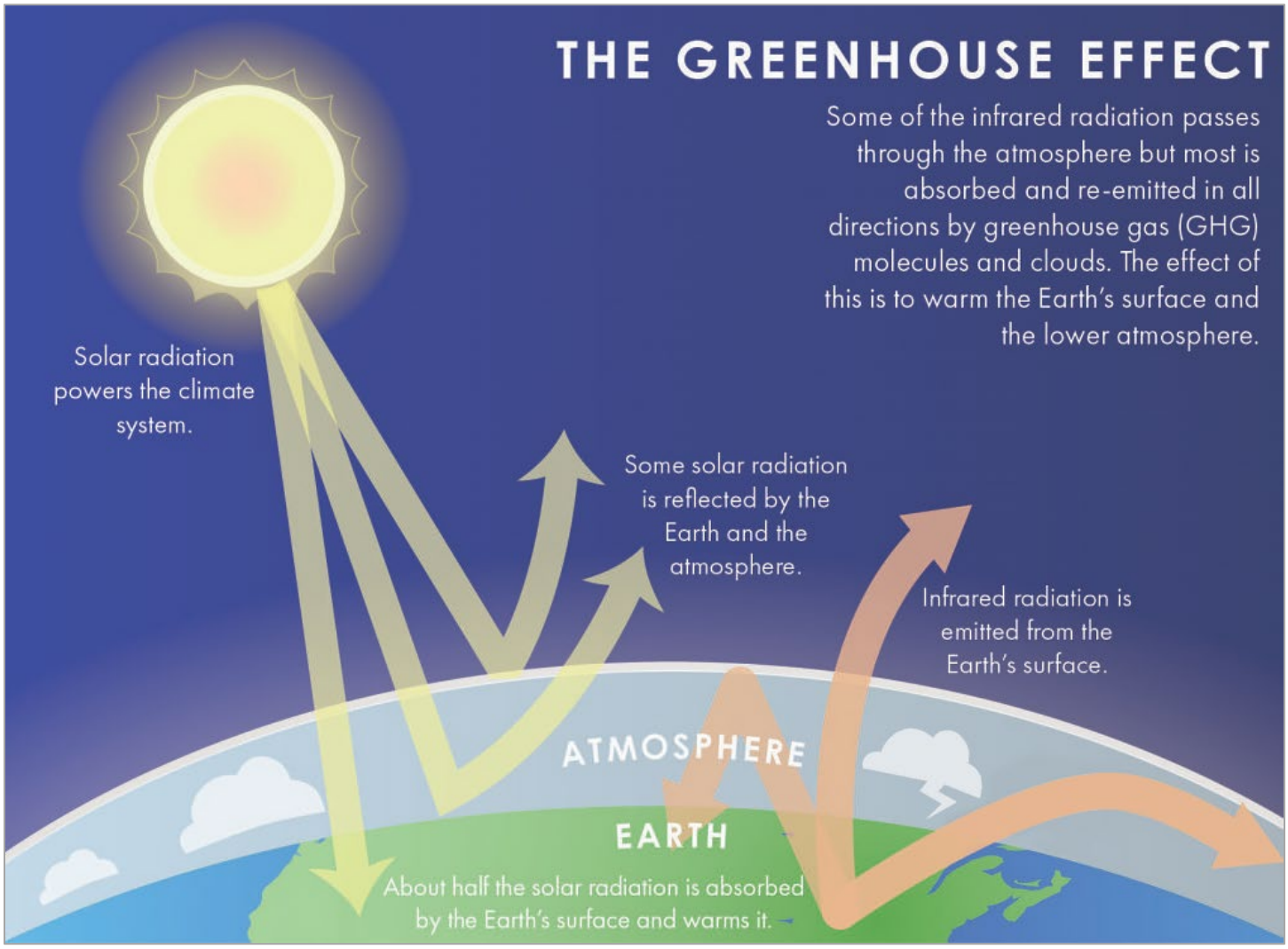
The science behind climate change is rooted in the greenhouse effect. Illustrated in **Figure 1.1**, the greenhouse effect is a natural process that insulates the Earth and helps regulate its temperature. After absorbing sunlight, the Earth emits heat in the form of infrared radiation, which is then absorbed by a collection of naturally occurring atmospheric gases called GHGs. These gases, which consist mainly of water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), act as effective global insulators by absorbing some of the infrared radiation that is emitted by Earth and re-emitting it back towards the planet. This process, where some heat is prevented from escaping the atmosphere, is what keeps temperatures on Earth conducive to life. Without the greenhouse effect, Earth would not be habitable. However, because of human (i.e., anthropogenic) activities, notably the combustion of fossil fuels, excess GHGs have increasingly been released into the atmosphere, causing the greenhouse effect to intensify and the Earth's climate to warm at an unprecedented rate. This is known as climate change and is the primary driver behind changes in more extreme weather patterns, the rapid melting of the polar ice caps, rising sea levels, and other impacts to people, infrastructure, and natural systems.

Due to human activities, the greenhouse effect has intensified and led to an increased and unprecedented rate of warming around the world. It can be likened to being in a car with the windows rolled up on a hot summer day, where the car heats up quickly from the sunlight, but the closed windows prevent the heat from escaping.

There is scientific evidence that observed increases in atmospheric GHG concentrations and the consequential warming of Earth's atmosphere, oceans, and land are linked to human activities and influence. Human activities are estimated to have caused approximately 2 degrees Fahrenheit (°F) of warming across the globe compared to pre-industrial era levels (i.e., prior to the year 1900), and global average temperature is expected to increase

by up to 8 °F by the end of the century unless additional efforts to reduce GHG emissions are made (IPCC 2021). The GHG emissions that have created this warming—those released between the pre-industrial era and the present—will persist for hundreds to thousands of years and create further long-term impacts to the climate system (IPCC 2018).

Figure 1.1 The Greenhouse Effect



Source: **Developed by Ascent in 2024**.

The Climate Emergency

In many conversations within the public realm, the term "climate emergency" is often used interchangeably with climate change. While they both allude to the same phenomenon, the increasingly common use of "climate emergency" underscores the severity and scale of the issue—and the urgent need for action. Climate change can manifest in many ways across the world; **Table 1.1** below presents various climate indicators and a qualitative description of their historic and future projected trends in California (OPR, CEC, and CNRA 2019).

Table 1.1 California Climate Indicators with Historic and Future Trends

Climate Indicator	Historic Trend	Future Trend
Temperature	Warming (last 100+ years)	Warming
Snowpack	Declining (last 60+ years)	Declining
Intensity of Heavy Precipitation Events	No significant trends (last 100+ years)	Increasing
Frequency of Drought	No significant trends (last 100+ years)	Increasing
Sea Level	Rising (last 100+ years)	Rising
Area Burned by Wildfire[1]	Increasing (last 30+ years)	Increasing

Note: The "Future Trend' associated with each "Climate Indicator" presented in this table are all based on Medium-High to Very High confidence, per *California's Fourth Climate Change Assessment: Statewide Summary Report*.

[1] There are many factors that play into the increasing amounts of area burned by wildfire in addition to climate change, including historic fire suppression regimes and inadequate levels of prescribed burning, among others. However, climate change has led to more favorable conditions for wildfire ignition and spread by contributing to a fire season that starts earlier, runs longer, and features conditions that could result in extreme fire behavior.

Source: **OPR, CEC, and CNRA 2019**.

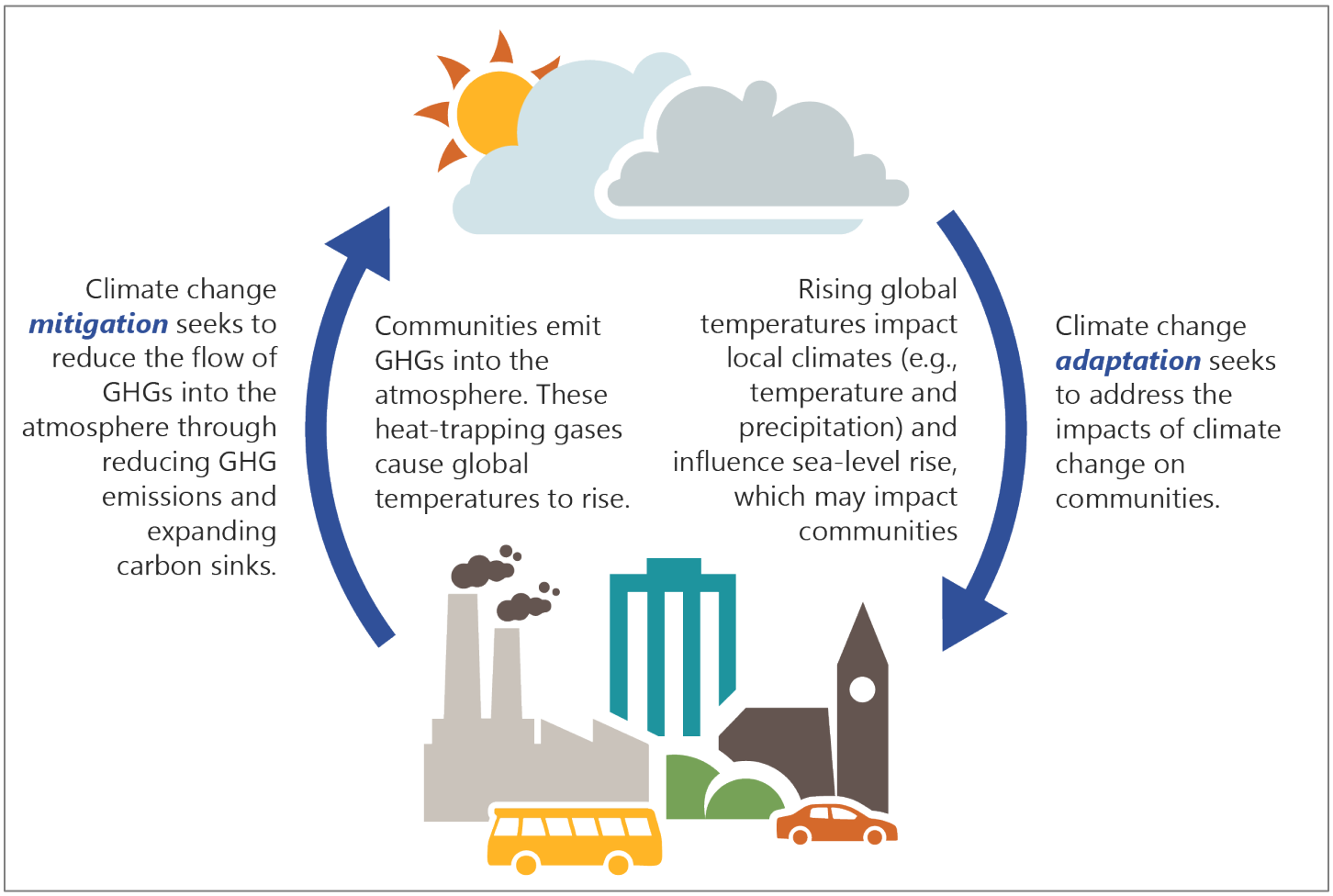
> **"The science that, decades ago, predicted the impacts we are currently experiencing is even stronger today and unambiguously tells us what we must do to limit irreversible damage: we must act with renewed commitment and focus to do more and do it sooner" - *2022 Scoping Plan for Achieving Carbon Neutrality*** (CARB 2022: 13)

The County recognizes that trends towards a changing climate are already holding true and being experienced locally. For example, in September 2022, there was an unprecedented and uninterrupted 10-day stretch of triple-digit heat, which led to hundreds of excess deaths across the state, including residents of the county (CDPH 2023). A few months later, between December 2022 and January 2023, the county (and California as a whole) experienced a series of severe winter storms that brought high winds, heavy rains, and widespread flooding and damage. In general, climate-related hazard events like these can have an array of adverse and cascading impacts on public health, infrastructure, agriculture, local economies, the environment, resource management, and many other aspects of our planet and human society. As California continues to experience rising temperatures, increasingly severe storms, destructive wildfires, and prolonged periods of drought, among other climate-related hazards, it has become more than evident that climate change is already occurring. Without immediate, intentional, large-scale action, climate change has the potential to further harm current and future generations' safety, health, economic opportunity, and quality of life. Through the development and implementation of this CAP, the County is committed to its role in addressing the challenges that climate change presents.

Climate Change Mitigation and Adaptation

While climate change is a global issue, it is felt on a local scale, and thus, local governments have an opportunity and a responsibility to address it on the local level. Addressing climate change requires an integrated approach that targets both its sources and impacts. Targeting its sources is known as climate change mitigation and involves reducing the anthropogenic flow of heat-trapping GHGs into the atmosphere. Targeting its impacts is known as climate change adaptation and involves efforts that are intended to reduce risk and build resilience to climate change. **Figure 1.2** below illustrates this integrated approach to climate change mitigation and adaptation. Although climate change mitigation and adaptation can often be separate planning efforts, it is important to consider both components in climate action planning, which this CAP does.

Figure 1.2 Climate Change Mitigation vs. Adaptation



Note: GHG = greenhouse gas.

Source: **Cal OES 2020**; **adapted by Ascent in 2024**.

1.2 Plan Development and Details

Background and Goals

The County's Final Environmental Impact Report for the General Plan, adopted in November 2011, includes Mitigation Measure CC-2, which directed the County to develop a CAP. In September 2022, County staff presented a proposed Final CAP to the County's Board of Supervisors (hereinafter referred to as "2022 CAP"). At the public hearing, the Board of Supervisors directed staff to further refine the GHG reduction measures proposed in the CAP to look beyond 2030 to 2045. The current CAP serves as an update to the 2022 CAP to make GHG reduction targets consistent with Assembly Bill (AB) 1279, and as a CEQA-qualified GHG reduction plan that provides potential tiering and streamlining of GHG analyses for subsequent projects that are consistent with the County's General Plan and this CAP. The CAP is based on substantial evidence that the GHG measures will enable the County to meet its targets for 2030 and 2045, and the CAP will be monitored and updated over time to ensure that it remains on track to achieve the targets. A key revision included in this CAP (compared to the 2022 CAP) is updated GHG emissions forecasts and targets to account for reasonably foreseeable growth that were not captured in the vehicle miles traveled projections on which the 2022 CAP was based. Another key revision is strengthened GHG reduction measures to provide clear and reasonably achievable success metrics, funding opportunities, and implementation steps, along with a cost and funding

analysis for near-term actions. This CAP is not solely focused on reducing GHG emissions, however, as it also encompasses a climate change adaptation component, including a summary of the county's vulnerability to climate-related hazards and risks and associated adaptation measures.

The CAP includes GHG emissions and emission reduction measures associated with community activities within the unincorporated County only, and County facilities and operations that occur within both the unincorporated area and incorporated city boundaries. The CAP does not include emissions generated within incorporated city boundaries that are not directly associated with County government operations.

In summary, the high-level goals of the CAP are twofold: (1) to reduce GHG emissions from both community sources and County government operations (see **Chapter 2** for details); and (2) to adapt and build resilience to climate change (see **Chapter 3** for details). These goals will be accomplished through the implementation of the CAP's GHG reduction and adaptation measures (see **Chapter 4** for implementation details).

Planning Process

While there are key differences in the technical steps between climate change mitigation planning versus adaptation planning, there are also important similarities and points of alignment at key milestones. These planning processes for the CAP are outlined in **Figure 1.3** below, where the climate change mitigation planning process is shown on top, and the climate change adaptation planning process is shown on the bottom. As shown in the figure, steps 1 through 4 highlight the steps taken to prepare this CAP, while steps 5 and 6 focus on CAP adoption and implementation and monitoring of the plan's progress in the future.

Figure 1.3 Climate Change Mitigation and Adaptation Planning Processes



Note: GHG = greenhouse gas.

Source: **Developed by Ascent in 2024**.

Climate Equity and Environmental Justice

The *Environmental Justice Element* (EJ Element) of the County's General Plan acknowledges that the impacts of climate change can disproportionately affect Environmental Justice Communities (EJ Communities). These

communities are defined in the EJ Element as the four areas that are considered disadvantaged compared to other parts of the unincorporated county, including North Highlands/Foothill Farms, North Vineyard, South Sacramento, and West Arden-Arcade. These four areas were delineated using both the California Communities Environmental Health Screening Tool (CalEnviroScreen) and "Low Income High Minority" areas as defined by the Sacramento Area Council of Governments (SACOG). One example of how climate change can disproportionately impact EJ Communities is that residents in these areas are more susceptible to heat stroke or suffering heat exhaustion during extreme heat events because these areas do not have robust tree canopies. Because EJ Communities have greater vulnerability to climate change, the EJ Element includes a policy specific to the CAP (i.e., Policy EJ-28) that states: *"It is the policy of Sacramento County that programs developed as a part of a Climate Action Plan such as incentive programs, fee mitigation programs, adaptation and resiliency programs, and County-funded programs shall prioritize Environmental Justice Communities."*

This CAP includes specific actions that address and prioritize the needs of EJ Communities. As new programs are developed and implemented following adoption of the CAP, the County will continue to prioritize EJ communities through program development and implementation, consistent with Policy EJ-28. As an example, the Sacramento County Active Transportation Plan (ATP) includes project metrics to prioritize active transportation projects in EJ communities based on the unique needs of the individual communities that were identified during development of the ATP. The County currently reports annually on the implementation of the EJ Element and meets with EJ stakeholders to inform further implementation actions. Implementation of CAP measures that benefit EJ Communities will be integrated into this process as CAP implementation occurs.

Co-Benefits

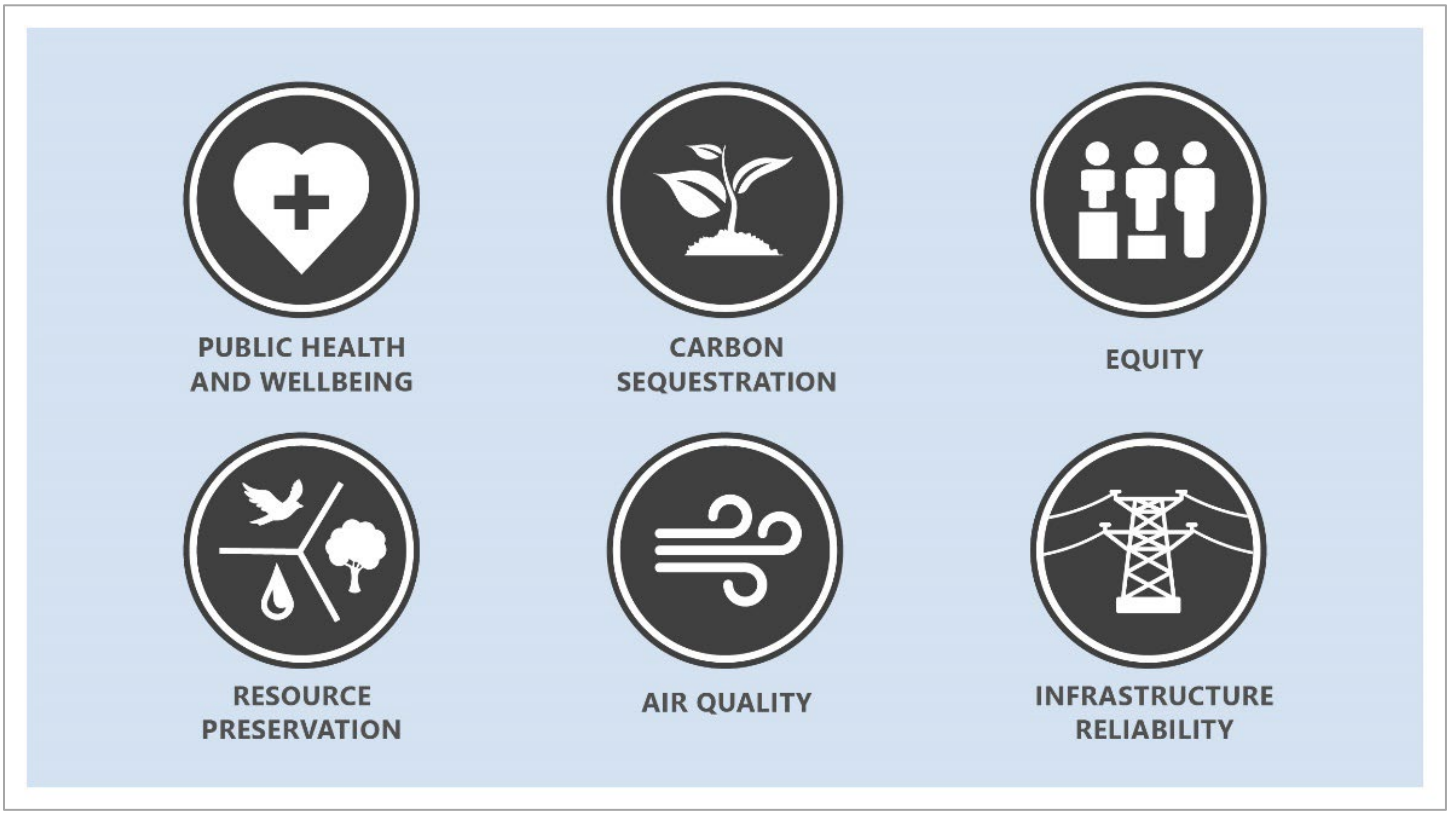
While the CAP is primarily geared toward reducing GHG emissions and adapting to climate change within the unincorporated county, implementation of the measures identified in **Chapter 2** and **Chapter 3** in this CAP will also result in an array of "co-benefits" beyond climate change mitigation and adaptation. The co-benefits identified in this CAP, along with a short description of each, are as follows:

- **Public Health and Wellbeing**: Improve public health and/or general quality of life.
- **Carbon Sequestration**: Promote the capture and storage of atmospheric CO_2, which can help reduce contributions to climate change. This co-benefit is only identified for measures in which carbon sequestration is not the primary benefit. For example, carbon sequestration is the primary benefit of Measure GHG-01 and is therefore not identified as a co-benefit.
- **Equity**: Ensure the benefits of climate action are fairly distributed across all communities, especially those that are most vulnerable to climate change or identified as an EJ Community per the County's EJ Element, consistent with EJ Element Policy EJ-28.
- **Resource Preservation:** Promote the protection, conservation, and sustainability of natural resources, including, but not limited to, water, soil, plants, and animals.
- **Air Quality**: Improve air quality and protect public health by reducing air pollution.
- **Infrastructure Reliability**: Enhance the resilience and reliability of infrastructure systems (e.g., transportation, energy, and water) to withstand various shocks and stressors.

Each measure included in this CAP has one or more of these co-benefits associated with it, and each co-benefit is classified with a unique icon, which can be found in **Figure 1.4** below. However, it should be noted that there are additional co-benefits beyond those that are listed here that will culminate as a result of successful CAP

implementation, such as community cost savings, economic development and job creation, and reduced traffic and congestion, among many others. While these additional co-benefits have not been identified for any individual CAP measure, they are just as important to consider when implementing the CAP.

Figure 1.4 Climate Action Plan Co-Benefits



Source: **Developed by Ascent in 2024**.

Outreach and Engagement

Local outreach and engagement with climate action and adaptation efforts is an essential element of the planning and development process. Local action on climate change cannot be achieved solely by one entity; it requires active and ongoing partnerships between residents, businesses, local and regional governments, utilities, and other organizations and stakeholders. Beginning in August 2016, the County conducted outreach and engagement to: (1) raise awareness of climate change and the need for this CAP; (2) inform stakeholders and the public about the CAP; (3) gather input at various stages of CAP development; and (4) provide meaningful opportunities to influence decision making. Outreach and engagement efforts since the initial project inception have taken many forms, including public workshops, stakeholder meetings, and multilingual outreach materials (e.g., fliers), among others. A more extensive summary of outreach and engagement efforts can be found in **Appendix A**.

1.3 State, Regional, and County Efforts

State Efforts

In response to the increase in anthropogenic GHG emissions and the risks posed by climate change, the state of California government (state) has already taken several steps to reduce GHG emissions and build resilience to climate change impacts, notably through legislation and guidance documents, among other efforts. **Table 1.2**

below serves as a comprehensive, but not exhaustive, snapshot of the most important state-driven climate efforts (dating back to 2005) that provide policy direction and context for this CAP. Note that all items are presented in chronological order and that newer items may supersede or serve to implement older items.

Table 1.2 California Climate Legislation, Guidance Documents, and Other Efforts

Year	Effort	Details
2005	EO S-3-05	▶ Established targets of: (1) reducing statewide GHG emissions to 2000 levels by 2010; (2) reducing statewide GHG emissions to 1990 levels by 2020; and (3) reducing statewide GHG emissions to 80 percent below 1990 levels by 2050.
2006	AB 32	▶ Codified the target of reducing statewide GHG emissions to 1990 levels by 2020, which was officially achieved in 2016. ▶ Also known as the Global Warming Solutions Act of 2006.
2007	EO S-01-07 Low Carbon Fuel Standard	▶ Established the State of California's Low Carbon Fuel Standard and an emissions reduction target of at least 10 percent of the carbon intensity (CI) of the state's transportation fuels by 2020. The carbon intensity benchmark has since been updated to algin with adopted statewide GHG reduction targets. In 2018, the CI target was extended to the year 2030, with a 20 percent reduction in CI. As of 2024, CARB is in the process of updating the LCFS regulation to further increase the 2030 CI benchmark to achieve deeper GHG reductions.
2008	2008 Scoping Plan	▶ Developed by CARB as part of its role in implementing AB 32 and EO S-3-05 and describes the approach California would take to reduce GHG emissions. ▶ The Scoping Plan is updated approximately every 5 years, pursuant to AB 32 requirements. CARB adopted updates in 2013, 2017, and 2022.
2008	SB 375	▶ Directed CARB to set regional targets for GHG emissions reductions from passenger vehicles.
2009	Safeguarding California	▶ California's first statewide climate adaptation strategy.
2011	CALGreen Code (Title 24, Part 11)	▶ Established the first mandatory green building standards code in the country.
2011	AB 341	▶ Required each city, county, and regional agency to develop a source reduction and recycling element of an integrated waste management plan containing specified components, including a source reduction component, a recycling component, and a composting component. ▶ With certain exceptions, the source reduction and recycling element of that plan was required to divert 75 percent of all solid waste from landfill disposal or transformation by 2020, through source reduction, recycling, and composting activities.
2012	Advanced Clean Cars Program	▶ Combined the control of smog-causing pollutants and GHG emissions into a single coordinated package of regulations to guide the development of environmentally advanced cars
2012	SB 535, Greenhouse Gas Reduction Fund and Disadvantaged Communities	▶ Required that 25 percent of all funds allocated pursuant to an investment plan for the use of state monies collected through a Cap-and-Trade program be allocated to projects that benefit disadvantaged communities, and that at least 10 percent of these be spent on projects located in disadvantaged communities.
2014	AB 1826	▶ Required any business, defined as a commercial or public entity that generates more than 4 cubic yards of commercial solid waste per week or is a multifamily residential dwelling of 5 units or more, to arrange for recycling services.
2015	SB 379	▶ Required cities and counties within California to integrate climate change vulnerability, adaptation strategies, and emergency response strategies into the safety element of their general plans. ▶ States that jurisdictions that have adopted a climate action and/or adaptation plan separate from the general plan may incorporate that document by reference to comply (if that document meets the requirements outlined in the legislation).
2015	AB 1482	▶ Required CNRA to update the statewide climate adaptation strategy by July 1, 2017, and every three years thereafter.

Year	Effort	Details
2015	SB 246	▶ Directed OPR to establish the Integrated Climate Adaptation and Resilience Program, which has two components: (1) the State Adaptation Clearinghouse; and (2) the Technical Advisory Council. The goal of these initiatives is to coordinate regional and local efforts with statewide climate adaptation strategies to improve resilience to the impacts of climate change across California. ▶ Required OPR to review and update, as needed, the California Adaptation Planning Guide.
2015	EO B-30-15	▶ Established a statewide GHG emissions reduction target of 40 percent below 1990 levels by 2030.
2016	SB 1383	▶ Codified the targets of: (1) reducing statewide disposal of organic waste to 75 percent below 2014 levels by 2025; and (2) recovering at least 20 percent of the currently disposed surplus of edible food by 2025. ▶ Identified targets for reducing additional pollutants including hydrofluorocarbons and anthropogenic black carbon. ▶ Required CARB to approve and begin implementing the Short-Lived Climate Pollutant Reduction Strategy.
2016	SB 32	▶ Codified EO B-30-15's target of reducing statewide GHG emissions to 40 percent below 1990 levels by 2030, expanding upon AB 32.
2016	Mobile Source Strategy	▶ Described the strategy for transitioning to zero-emission vehicles, or ZEVs, with a goal of 1.5 million ZEVs by 2025 and 4.2 million ZEVs by 2030. The Mobile Source Strategy includes more stringent GHG emissions requirements for light-duty vehicles beyond 2025 and calls for increased deployment of ZEV trucks.
2016	CALGreen Code Update	▶ Affirmed energy standards for newly constructed buildings and additions and alterations to existing buildings. Added requirements for demand reductions during critical peak periods and future solar electric and thermal system installations.
2017	AB 398, California's Cap-and-Trade Program	▶ Extended the state's Cap-and-Trade Program through 2030, a key strategy for reducing GHGs in the state. The Cap-and-Trade Program sets total allowable emissions for facilities and creates carbon offset credits through carbon sequestration projects.
2017	2017 Scoping Plan	▶ Developed by CARB as part of its role in implementing SB 32 and describes the approach California will take to reduce GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. The 2017 Scoping Plan is CARB's second update to the Climate Change Scoping Plan.
2018	AB 2127	▶ Requires the CEC, working with CARB and the CPUC, to prepare and biennially update a statewide assessment of the EV charging infrastructure needed to support the levels of EV adoption required for the state to meet its goals of putting at least 5 million ZEVs on California roads by 2030 and reducing emissions of GHGs to 40 percent below 1990 levels by 2030.
2018	EO B-48-15	▶ Established a statewide goal of at least 5 million ZEVs on state roads by 2030, and installation of 200 hydrogen fueling stations and 250,000 ZEV chargers.
2018	SB 100 California Renewables Portfolio Standard Program	▶ Established a goal of supplying 100 percent of the state's electricity from clean sources by 2045.
2018	SB 606 and AB 1668	▶ Required urban and agricultural water suppliers to enact new urban efficiency standards for indoor use, outdoor use, and water lost to leaks.
2018	EO B-55-18	▶ Established a goal to achieve statewide carbon neutrality (net zero GHG emissions) by 2045.
2020	California Adaptation Planning Guide	▶ The most recent iteration of California's official adaptation planning guidance document.
2020	EO N-82-20	▶ Called for restoring nature and landscape health to deliver on climate change goals and other critical priorities, including improving public health and safety, securing our food and water supplies, and achieving greater equity across California.
2020	EO N-79-20	▶ Established a goal that 100 percent of in-state sales of new passenger cars and trucks be zero-emission by 2035 and that 100 percent of medium- and heavy-duty vehicles in the state be zero-emission by 2045 and by 2035 for drayage trucks.

Year	Effort	Details
2020	EO N-82-20	▶ Sets a statewide goal to conserve at least 30 percent of California's land and coastal waters by 2030. This order instructed the CNRA, in consultation with other state agencies, to develop a Natural and Working Lands Climate Smart Strategy that serves as a framework to advance the state's carbon neutrality goal and build climate resilience.
2021	California Climate Adaptation Strategy	▶ The most recent iteration of California's statewide climate adaptation strategy, which builds on the successes and lessons learned since the initial strategy (i.e., Safeguarding California) was released and integrates key elements of sector-specific considerations.
2021	SB 27	▶ Requires the CNRA, in coordination with other state agencies, to establish the Natural and Working Lands Climate Smart Strategy by July 1, 2023. ▶ Requires CARB to establish specified CO_2 removal targets for 2030 and beyond as part of its 2022 Scoping Plan.
2022	AB 1279	▶ Codified the targets of: (1) reducing statewide anthropogenic GHG emissions to 85 percent below 1990 levels by 2045; and (2) achieving statewide net-zero GHG emissions as soon as possible, but no later than 2045, and to maintain net negative GHG emissions thereafter.
2022	2022 Scoping Plan	▶ Developed by CARB as part of its role in implementing AB 1279 and describes the approach California would take to reduce GHG emissions to 85 percent below 1990 levels by 2045 and achieve net-zero emissions by 2045. The 2022 Scoping Plan is CARB's third update to the Climate Change Scoping Plan.
2022	AB 1757	▶ Directed CNRA, in collaboration with CARB and other entities, to determine an ambitious range of targets for natural carbon sequestration, and for nature-based climate solutions, that reduce GHG emissions for 2030, 2038, and 2045 to support statewide goals of carbon neutrality and to foster climate adaptation and resilience.
2022	Natural and Working Lands Climate Smart Strategy	▶ Developed by CNRA as part of its role in implementing EO N-82-80 and to expand climate action in natural and working lands.
2022	Advanced Clean Cars II Program	▶ Requires that by 2035 all new passenger cars, trucks, and SUVs sold in California will be zero emissions. It amends the Zero-Emission Vehicle Regulation to require an increasing number of ZEVs, and relies on advanced vehicle technologies, including battery-electric, hydrogen fuel cell electric, and plug-in hybrid EVs, to meet air quality and climate change emissions standards. ▶ Amends the Low-Emission Vehicle Regulations to include increasingly stringent standards for gasoline cars and heavier passenger trucks to continue to reduce smog-forming emissions while the sector transitions toward 100 percent electrification by 2035.
2022	SB 1020	▶ Adds interim renewable energy and zero-carbon energy retail sales of electricity targets to California end-use customers set at 90 percent in 2035 and 95 percent in 2040. ▶ Accelerates the timeline required to have 100 percent renewable energy and zero-carbon energy procured to serve state agencies from the original target year of 2045 to 2035. ▶ Requires each state agency to individually achieve the 100 percent goal by 2035, with specified requirements.
2022	SB 905	▶ Requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate carbon capture, utilization, or storage and CO_2 removal projects and technology.
2002	SB 1075	▶ Requires CARB, by June 1, 2024, to prepare an evaluation that includes policy recommendations regarding the use of hydrogen, and specifically the use of green hydrogen, in California; a description of strategies supporting hydrogen infrastructure, including identifying policies that promote the reduction of GHGs and short-lived climate pollutants; a description of other forms of hydrogen to achieve emission reductions; and other required elements.
2022	SB 1206	▶ Mandates a stepped sales prohibition on newly produced high-GWP HFCs to transition California's economy toward recycled and reclaimed HFCs for servicing existing HFC-based equipment. This law also requires CARB to develop regulations to increase the adoption of very low (i.e., GWP<10)-, and no-GWP technologies in sectors that currently rely on higher-GWP HFCs.

Year	Effort	Details
2022	AB 1757	▶ Requires the CNRA, in collaboration with CARB, other state agencies, and an expert advisory committee, to determine by January 1, 2024, a range of targets for natural carbon sequestration, and for nature-based climate solutions, that reduce GHG emissions in 2030, 2038, and 2045. ▶ These targets must support state goals to achieve carbon neutrality and foster climate adaptation and resilience.
2024	Nature-Based Solutions Climate Targets	▶ California's first-ever comprehensive nature-based solutions climate targets, which were established as directed by AB 1757. ▶ Includes targets for wildfire risk reduction, forests, shrublands and chaparral, grasslands, croplands, developed lands, wetlands and seagrasses, and sparsely vegetated lands.

Notes: 2008 Scoping Plan = *Climate Change Scoping Plan: A Framework for Change*; 2013 Scoping Plan = *First Update to the Climate Change Scoping Plan: Building on the Framework Pursuant to AB 32*. 2017 Scoping Plan = *California's 2017 Climate Change Scoping Plan*; 2022 Scoping Plan = *2022 Scoping Plan for Achieving Carbon Neutrality*; AB = Assembly Bill; CARB = California Air Resources Board; CNRA = California Natural Resources Agency; CO_2 = carbon dioxide; CPUC = California Public Utilities Commission; EO = Executive Order; EV = electric vehicle; GHG = greenhouse gas; GWP = global warming potential; HFC = hydrofluorocarbon; LCFS = Low Carbon Fuel Standards; OPR = California Governor's Office of Planning and Research; SB = Senate Bill; ZEV = zero-emission vehicle.

Source: **Compiled by Ascent in 2024**.

Regional Efforts

In addition to state-driven efforts, this CAP is also informed by (or serves to supplement) various climate efforts across the region. These efforts include, but are not limited to the following:

- ***2025 Blueprint*** – This planning effort, which is being led by SACOG and is on track to be finalized in early 2025, is SACOG's plan to build a connected region that includes transportation options for residents, affordable housing for the region's growing population, and equitable investments that give all community members access to a safe and healthy region (SACOG n.d.). It will serve as the next update to the *Metropolitan Transportation Plan/Sustainable Communities Strategy*, which is federally required to be updated every four years. The original plan, completed around 20 years ago, was a revolutionary undertaking and compelled a critical assessment of the relationship between transportation and land use in the region.
- ***2030 Zero Carbon Plan*** – This plan, developed by the Sacramento Municipal Utility District (SMUD), serves as a flexible roadmap to eliminate GHGs from SMUD's power supply by 2030 while also maintaining a reliable and affordable service. This plan includes four focus areas that will help achieve its goals: (1) natural gas generation repurposing; (2) proven clean technologies (e.g., solar energy, wind energy, geothermal energy, battery storage); (3) new technologies and business models; and (4) financial impact and options (SMUD 2021).
- ***Capital Region Climate Priorities Plan*** – This regional plan, developed by the Sacramento Metropolitan Air Quality Management District in March 2024 through the US Environmental Protection Agency Climate Pollution Reduction Grants Program, aims to combat the effects of climate change by reducing GHG emissions and associated co-pollutants that compromise air quality (SMAQMD 2024). The measures presented in this plan are presented in three categories (i.e., built environment, transportation, and natural and working lands) and speak to the most concerning set of climate risks across the seven counties covered by the plan (inclusive of Sacramento County).

County Efforts

Aside from this CAP, the County has a history of climate-related or climate-adjacent policies, plans, and other initiatives focused on promoting sustainability and resilience, which are described in **Figure 1.5**.

Figure 1.5 County of Sacramento Climate-Related Plans, Policies, and Other Efforts

2006

- **Sustainable Business Program** - The County's Business Environmental Resource Center has sponsored the Sustainable Business Program since 2006, where local businesses can take measures to earn sustainability certifications in up to six different categories. Certifications may also result in additional business promotion and cost savings benefits.

2010

- **Recommendations from the Green Building Task Force** - In 2010, the Sacramento Green Building Task Force developed an impressive array of recommendations to help guide the City of Sacramento and the County in their efforts to achieve sustainability objectives in the built environment.

2011

- **General Plan 2030** - In 2011, the County's Board of Supervisors adopted the *Sacramento County General Plan of 2005-2030*, which includes a set of goals, objectives, policies, implementation measures and maps that form a blueprint for physical development in the unincorporated county. This updated General Plan included a planning horizon of 2030. The Environmental Impact Report that evaulated the General Plan included Mitigation Measure CC-2, which directed the County to develop a CAP.
- **Climate Action Plan, Strategy and Framework Document** - In 2011, the County's Board of Supervisors adopted the *Climate Action Plan, Strategy and Framework Document*, which presented a framework for reducing GHG emissions and an overall strategy to address climate change.

2012

- **Climate Action Plan, County Government Operations** - In 2012, the County's Board of Supervisors adopted the *Climate Action Plan, County Government Operations*, which identified GHG emissions from County operations and measures to reduce those GHG emissions.

2016

- **2015 GHG Emissions Inventory and Forecasts** - In 2016, the County updated their 2005 GHG emissions inventory for calendar year 2015 as part of an effort to prepare a comprehensive climate action plan for the unincorporated county and the County's internal operations.

2017

- **Climate Change Vulnerability Assessment** - In 2017, the County prepared a climate change vulnerability assessment that provided an overview of the primary and secondary threats associated with climate change and identified the ones most likely to affect the county. The findings of the vulnerability assessment were used to develop climate change adaptation measures that address these threats, which were included in the County's 2022 CAP and this CAP.
- **Electric Vehicle Readiness and Infrastructure Plan** - The *Electric Vehicle Readiness and Infrastructure Plan* was prepared by the Sacramento County Electric Vehicle Working Group in 2017 to increase the deployment of EVs and related infrastructure. The report outlines the current and forecasted demand for charging infrastructure and prioritizes their locations across Sacramento County.

2020

- **Climate Emergency Resolution** - In 2020, the County's Board of Supervisors approved a resolution to declare climate change an emergency requiring urgent and immediate mobilization of public and private resources to develop and implement a climate and sustainability plan that identifies and integrates current and future actions necessary to achieve an equitable, sustainable, and resilient economy and transition to a countywide carbon neutrality footprint by 2030.

2021

- **Multi-Jurisdictional Local Hazard Mitigation Plan Update** - The County led the preparation of the *Sacramento County Multi-Jurisdictional Local Hazard Mitigation Plan Update* in 2021 to reduce risks from hazards and which serves as a tool to help decision makers direct mitigation activities and resources, as well as continued eligibility for certain federal disaster assistance.
- **Draft Climate Action Plan** - The County released the Draft CAP in March 2021 and the Final Draft CAP in September 2021.

2022

- **Environmentally Preferable Purchasing Policy** - The County revised its Environmentally Preferable Purchasing Policy in 2022 to align with the requirements of SB 1383. The purpose of the policy is to support the purchase of recycled and environmentally preferable products, and reduce waste to minimize environmental impacts of County work.
- **Climate Emergency Mobilization Task Force** - The County's Board of Supervisors approved a resolution in 2022 to seek members for the Climate Emergency Mobilization Task Force. The purpose of the Task Force is to serve as an advisory committee providing input, guidance, and assistance to County staff and the Board of Supervisors in the development and implementation of a comprehensive strategy to address climate change.
- **Active Transportation Plan** - The *Sacramento County Active Transportation Plan*, adopted in June 2022, seeks to promote and encourage people to choose walking, biking, and rolling through the creation of safe, comfortable, connected, and accessible walking, rolling and biking networks, encourage alternatives to single-occupancy vehicle trips, and improve access to transit.
- **Final Climate Action Plan** - In February 2022, the County released the Revised Final Draft CAP, the County's plan to reduce its contribution to climate change while addressing the impacts of climate change on the area. In September 2022, the County released the Final CAP, which was not adopted by the County's Board of Supervisors.

2023

- **Short-Range Transit and Zero-Emission Bus Plan** - In 2023, the County developed the *Short-Range Transit Plan 2023-2027 & Zero-Emission Bus Plan* to reflect the changing mobility landscape and evolving travel patterns and needs of the communities the County serves.

Notes: CAP = Climate Action Plan; County = County of Sacramento government; county = unincorporated Sacramento County; EV = electric vehicle; GHG = greenhouse gas; SB = Senate Bill.

Source: **Compiled by Ascent in 2024**.

1.4 California Environmental Quality Act

This CAP will serve as a resource for CEQA streamlining, per the provisions of Section 15183.5 of the CEQA Guidelines (i.e., Title 14, Division 6, Chapter 3 of the California Code of Regulations). Under these provisions, a project that is subject to discretionary review and is consistent with the County's 2011 General Plan Update and this CAP can streamline its GHG analysis under CEQA by demonstrating consistency with and incorporating applicable GHG reduction measures in the CAP and/or meeting specific performance standards as project-specific mitigation measures. A Subsequent Environmental Impact Report to the County's 2011 General Plan Update serves as the CAP's CEQA analysis.

A "qualified" CAP, or a GHG reduction plan consistent with CEQA Guidelines Section 15183.5 will allow project-specific environmental documents, if eligible, to tier from and/or incorporate by reference the CAP's programmatic review of GHG impacts in their cumulative impact analyses for GHGs. Streamlined projects fulfill the County's strategic approach to environmental sustainability, expediting environmental review while meeting the demand for sustainable development. New development constructed in compliance with the

CAP's GHG reduction measures further supports a variety of General Plan strategies. Strategies that are aligned between the CAP and the General Plan include mixed-use development, higher-density infill development, and energy-efficient development. More information about implementation of the CAP in the context of CEQA can be found in **Section 4.2**.

The County will use a CAP Consistency Checklist as the mechanism by which eligible projects can demonstrate consistency with the CAP and ensure that the specified GHG reduction measures applicable to discretionary projects and associated performance standards are met. A project's incremental contribution to cumulative GHG emissions may be determined not to be cumulatively considerable based on consistency with the County's adopted General Plan and the CAP. A Preliminary Draft CAP Consistency Checklist can be found in **Appendix B**. A final CAP Consistency Checklist that will be used by the County and project applicants is subject to ongoing change based on implementation status of the CAP. A preliminary draft is provided as part of this CAP to provide indication of how the County expects to review CAP consistency and eligibility for streamlined review of GHG emissions.





CHAPTER 2

Greenhouse Gas Reduction Strategy

2 Greenhouse Gas Reduction Strategy

This chapter sets the foundation for the Climate Action Plan (CAP) by describing current and forecasted greenhouse gas (GHG) emissions and reduction targets for both: (1) community sources and activities within the unincorporated areas of Sacramento County (unincorporated county); and (2) County of Sacramento government (County) operations. This chapter also presents the County's policy framework to reduce GHG emissions from both the community and government operations.

2.1 Why Prepare a Greenhouse Gas Emissions Inventory?

The critical first step in the overall climate action planning process (specifically the climate change mitigation planning process) is to prepare a GHG emissions inventory, as shown in **Figure 2.1**. To develop and implement a CAP that will effectively reduce GHG emissions, local governments must first have a comprehensive understanding of the emissions generated by sources and activities within their jurisdictions. GHG emissions inventories serve to provide this knowledge and act as the basis for measuring progress and providing agencies a framework to track emissions over time and assess the effectiveness of CAP implementation. The GHG inventories in this chapter present both community and government operations emissions for the calendar year 2021.

Figure 2.1 Climate Change Mitigation Planning Process



Note: GHG = greenhouse gas.

Source: **Developed by Ascent in 2024.**

The standard GHG emissions inventory in climate action planning processes, known as a "production-based" inventory, estimates GHG emissions generated from sources and activities within a defined geographic boundary during a specified year. It identifies the sources, activities, and sectors that are producing these emissions and the relative contribution of each, while also providing a baseline used to forecast emissions trends into the future. This information is used to set reduction targets consistent with state objectives and then to create solutions for reducing GHG emissions locally through creating a CAP.

2.2 Sacramento County Greenhouse Gas Emissions Inventories

The County has developed several GHG emissions inventories over the past two decades, which provide a detailed accounting of GHG emissions generated from sources and activities within the County's jurisdiction for different years. Three primary GHGs are quantified: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Emissions of these gases are converted to a comparable unit by multiplying each non-CO_2 gas by their

global warming potential (GWP), enabling the reporting of emissions in terms of carbon dioxide equivalent (CO_2e). This conversion allows consideration of all gases in a single unit and makes it easier to communicate how various sources and types of GHG emissions contribute to climate change. Emissions are reported in metric tons of CO_2e ($MTCO_2e$), the standard measurement for the amounts of GHG emissions produced and released into the atmosphere. GWP values for CH_4 and N_2O included in the Intergovernmental Panel on Climate Change's *Fifth Assessment Report* are used for calculating emissions estimates (IPCC 2013).

GHG emissions sources are those that release emissions directly into the atmosphere as a result of any physical process that occurs within an inventory's jurisdictional boundary. GHG emissions activities are those that release emissions into the atmosphere either directly or indirectly as a result of the use of energy, materials, and/or services within a jurisdictional boundary. GHG emissions sectors serve to organize sources and activities for reporting purposes.

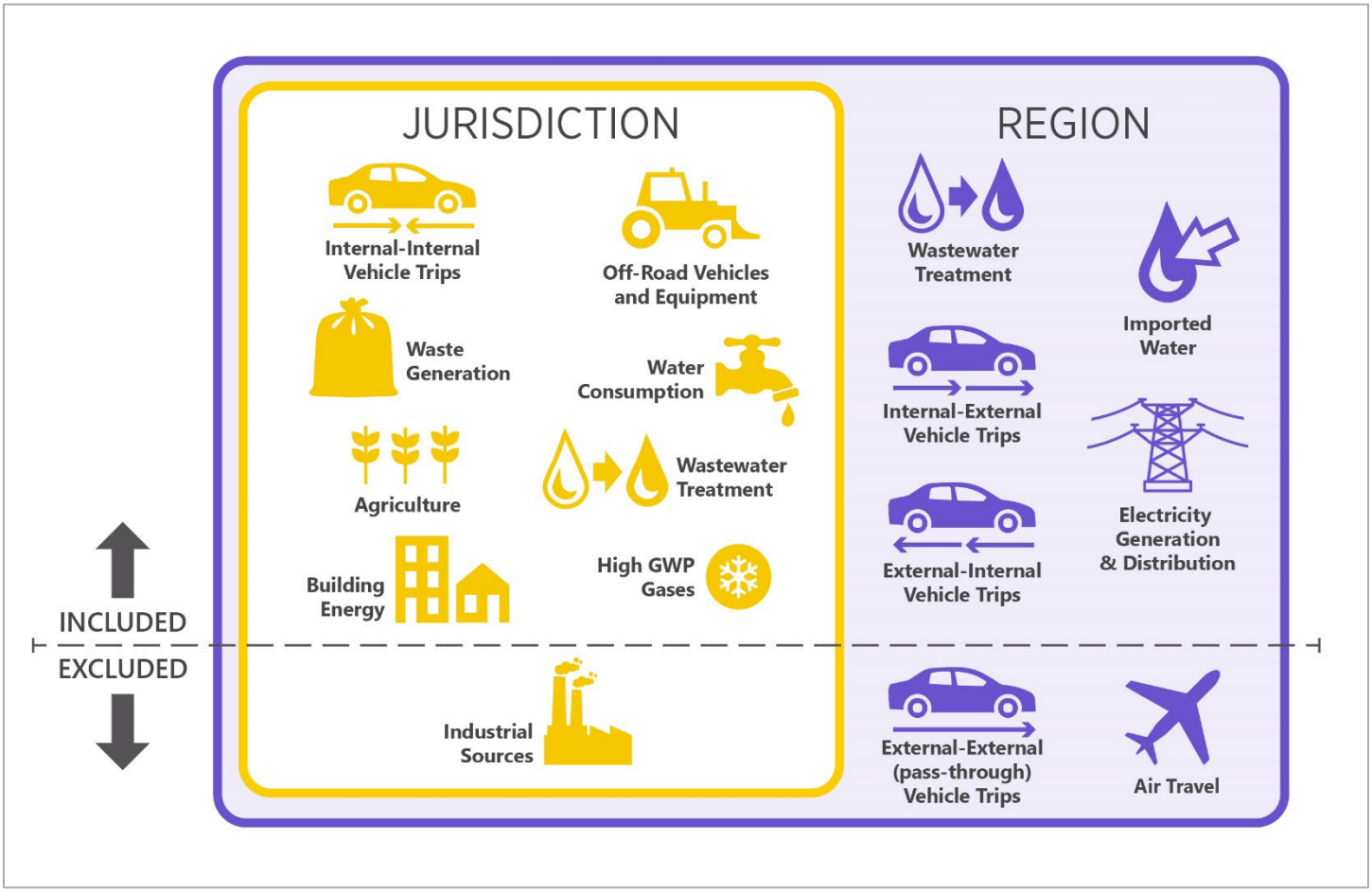
The 2021 community GHG emissions inventory was developed in accordance with the *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions* (Community Protocol), Version 1.2 (ICLEI 2019), prepared by ICLEI – Local Governments for Sustainability (ICLEI). The 2021 government operations GHG emissions inventory was developed with guidance from ICLEI's *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories* (ICLEI 2010). State agencies, including the California Air Resources Board (CARB) and the California Governor's Office of Planning and Research, recommend that jurisdictions prepare GHG emissions inventories using the guidelines included in these protocols.

The community inventory represents GHG emissions generated within the unincorporated county along with emissions associated with activities occurring within the unincorporated county, including emissions that occur elsewhere because of those activities, over which the County has some influence or control. The government operations inventory represents emissions from County-owned and -controlled facilities and operations. While the government operations inventory was prepared separately from the community inventory, it should not be considered additive to the community inventory because some emissions from government operations are also present in the community inventory.

2021 Community Greenhouse Gas Emissions Inventory for Unincorporated Sacramento County

The CAP aims to reduce community GHG emissions from sources within the unincorporated county for which the County has operational control, regulatory authority, or significant influence. As a result, the County's community inventory includes emissions generated from activities that occur within the boundaries of the unincorporated county and over which the County has operational control, regulatory authority, or significant influence. These GHG emissions sources have been organized and reported in various sectors, such as on-road transportation or residential buildings. The inventory does not include emissions generated from activities located within the unincorporated county boundary but outside of the County's jurisdiction, as the County does not have operational control, regulatory authority, or significant influence over these emissions sources. For example, industrial facilities regulated by California's Cap-and-Trade program are overseen by the state and are therefore not included in the inventory. **Figure 2.2** depicts the emissions sources that are included and some examples of emissions sources that are excluded from the community inventory, noting which are generated within the jurisdiction and outside (i.e., within the region).

Figure 2.2 Emissions Sources Included and Excluded from Community Inventory



Notes: Excluded GHG emissions sources are provided for demonstration purposes and are not intended to encompass all possible GHG emissions sources in Sacramento County or the region; GWP = global warming potential.

Source: **Developed by Ascent in 2024**.

The 2021 community GHG emissions inventory includes GHG emissions estimates for eight sectors: (1) on-road vehicles; (2) off-road vehicles; (3) residential building energy; (4) commercial/industrial building energy; (5) high GWP gases; (6) agriculture; (7) solid waste; and (8) water and wastewater. These sectors are described further in **Table 2.1** below. More detail on the calculation methods and results for the GHG emissions inventories can be found in **Appendix C**.

Table 2.1 Community Inventory Sectors and Descriptions

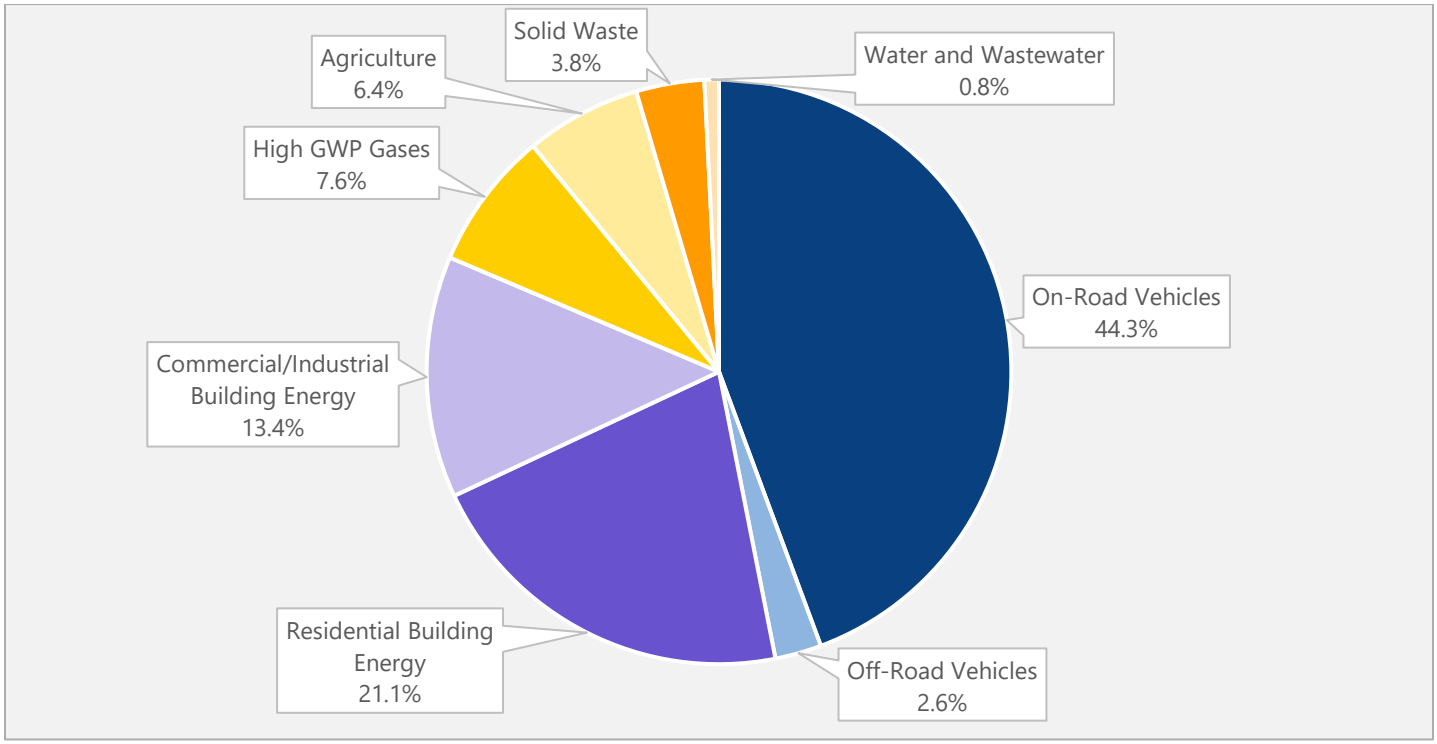
Sector	Description
On-Road Vehicles	The on-road vehicles sector includes emissions associated with fuel combustion and electricity consumption in vehicles on local and regional roadways. The fuel types of such vehicles include gasoline, diesel, natural gas, and electricity. Vehicle types include light-duty (e.g., passenger cars, motorcycles) and medium- and heavy-duty (e.g., delivery trucks, buses). The metric used for calculating GHG emissions in the on-road transportation sector is vehicle miles traveled.
Off-Road Vehicles	The off-road vehicles sector includes emissions associated with fuel combustion in the following vehicle and equipment categories: construction & mining, pleasure craft, transport refrigeration units, lawn & garden, light commercial, industrial equipment, oil drilling, recreational, and airport ground support. The metric used for calculating GHG emissions in the off-road vehicles sector is the amount of fuel consumed. The fuel types of such equipment include gasoline, diesel, and natural gas.
Residential Building Energy	GHG emissions from residential buildings throughout the unincorporated county are generated from purchased electricity and combusted natural gas. While electricity does not produce emissions at the end-use location, it does generate off-site emissions from where it was generated. The metric used for calculating GHG emissions in this sector is the amount of electricity used and natural gas consumed.
Commercial/Industrial Building Energy	Similar to residential building energy, this sector includes GHG emissions from commercial and industrial buildings in the unincorporated county. GHG Emissions are calculated based on the amount of electricity used and natural gas consumed.
High GWP Gases	High global warming potential gases are those that include hydrofluorocarbons, which can be found locally in refrigerants, aerosols, foams, and fire suppressants. These are fugitive emissions from leakage.
Agriculture	GHG emissions from agricultural activities are associated with enteric fermentation, fertilizer application, manure management, and fuel combustion in farm equipment.
Solid Waste	Solid waste emissions comprise three categories: waste generation, landfill gas (LFG) flaring, and LFG combustion (for energy purposes). The main source of emissions is fugitive methane emitted at landfills.
Water and Wastewater	Emissions from wastewater come from several different sources, though the most impactful is the energy to operate the various treatment and pumping facilities. Emissions from water include both water supply and stormwater collection. The emissions are related to energy needed to operate the treatment and delivery system for potable water and the stormwater system for residents within the unincorporated county.

Notes: GHG = greenhouse gas; GWP = global warming potential; LFG = landfill gas.

Source: **Compiled by Ascent in 2024**.

Based on the modeling conducted for the 2021 community GHG emissions inventory, community sources and activities in the unincorporated county generated approximately 4.2 million $MTCO_2e$ in 2021. On-road vehicles were the largest emitter and accounted for 44 percent of all community GHG emissions. Building energy, including both residential building and commercial/industrial building energy, was the second leading emitter at approximately 34 percent. **Figure 2.3** displays a pie chart presenting the relative contributions of each sector to the unincorporated county's overall emissions. The community inventory is also presented in **Table 2.2**.

Figure 2.3 2021 Unincorporated Sacramento County Community GHG Emissions Inventory by Sector



Notes: Percentages may not sum to 100 percent due to individual rounding. % = percent; GWP = global warming potential.

Source: **Analysis conducted by Ascent in 2024**.

Table 2.2 2021 Unincorporated Sacramento County Community GHG Emissions Inventory by Sector

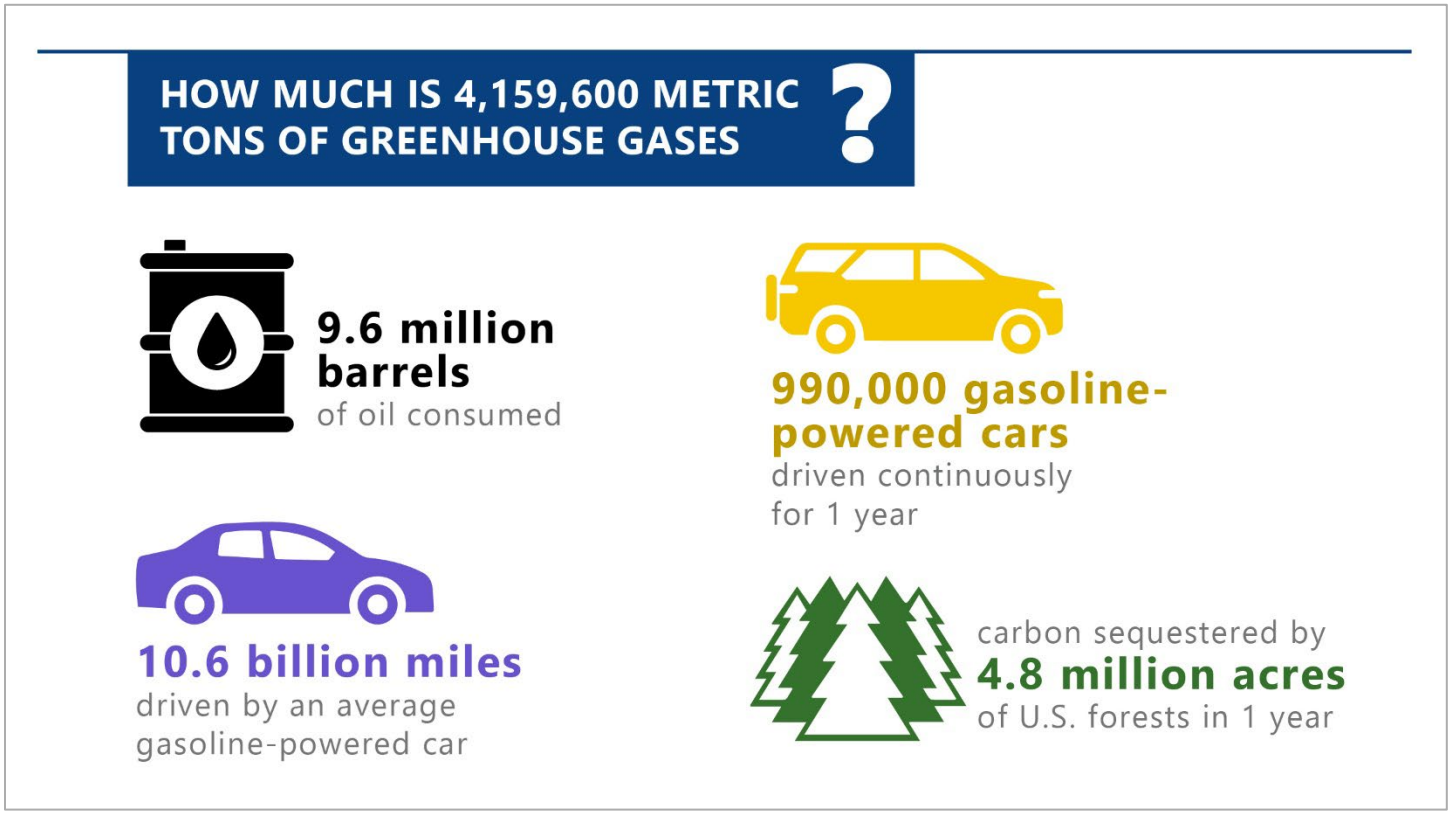
Sector	2021 GHG Emissions ($MTCO_2e$)	Percent of Total GHG Emissions (%)
On-Road Vehicles	1,844,200	44.3
Off-Road Vehicles	107,200	2.6
Residential Building Energy	878,300	21.1
Commercial/Industrial Building Energy	555,600	13.4
High GWP Gases	317,800	7.6
Agriculture	266,500	6.4
Solid Waste	156,700	3.8
Water and Wastewater	33,300	0.8
Total	**4,159,600**	**100**

Notes: Percentages may not sum to 100 percent due to individual rounding. Values have been rounded to the nearest 100 $MTCO_2e$.; GHG = greenhouse gas; GWP = global warming potential; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: **Analysis conducted by Ascent in 2024**.

As shown in **Figure 2.4** for illustrative purposes, the total community GHG emissions in 2021 of approximately 4.2 million $MTCO_2e$ are equivalent to: (1) consuming roughly 9.6 million barrels of oil; (2) driving 10.6 billion miles by an average gasoline-powered car; (3) almost 1 million gasoline-powered cars driving continuously for one year; and (4) carbon sequestered by 4.8 million acres of forests in one year.

Figure 2.4 Equivalencies of the 2021 Unincorporated Sacramento County Community GHG Emissions Inventory



Source: **EPA 2024; adapted by Ascent in 2024**.

2021 Government Operations Greenhouse Gas Emissions Inventory

The 2021 government operations GHG inventory includes emissions generated by County facilities and operations that occur within both the unincorporated area and incorporated city boundaries. The CAP does not include emissions generated within incorporated city boundaries that are not directly associated with County government operations. The government operations inventory estimates GHG emissions in six sectors: (1) employee commute; (2) building and facilities energy; (3) airport building and facilities energy; (4) vehicle fleet; (5) water and wastewater; and (6) streetlights and traffic signals. These sectors are described further in **Table 2.3** below.

Table 2.3 Government Operations Inventory Sectors and Descriptions

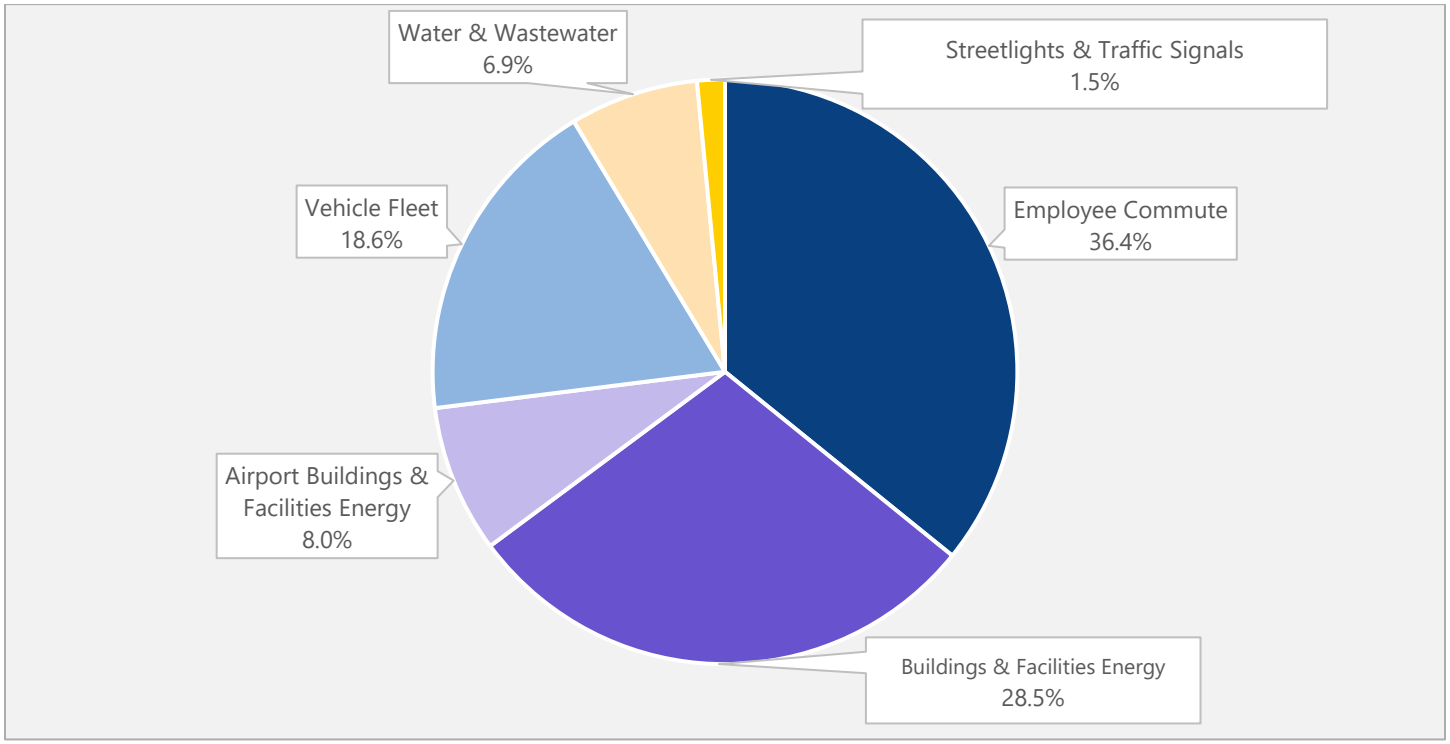
Sector	Description
Employee Commute	The employee commute sector includes emissions associated with fuel combustion and electricity consumption in vehicles that are used by County employees to commute to and from work. The fuel types of such vehicles may include gasoline, diesel, and electricity. The metric used for calculating GHG emissions in the employee commute sector is vehicle miles traveled (VMT), as measured by the employee commute survey.
Buildings and Facilities	GHG emissions from County buildings and facilities are generated from purchased electricity and natural gas. This emission sector specifically focuses on non-airport County buildings and facilities, such as County offices, and operation centers.
Airport (Buildings and Facilities)	Similar to the buildings and facilities sector, the airport buildings and facilities sector includes emissions associated with electricity use and natural gas consumption. This sector was separated from the buildings and facilities sector for other County divisions because the Sacramento County Department of Airports is funded separately from other divisions.
Vehicle Fleet	The vehicle fleet emission sector represents direct emissions from fossil fuel combustion in on-road vehicles and off-road vehicles and equipment owned and operated by the County. The fuel types of such vehicles include unleaded, diesel, renewable diesel, compressed natural gas, renewable natural gas, and propane.
Water and Wastewater	GHG emissions from the water and wastewater sector include the electricity used to pump, treat, and supply or convey water and wastewater; as well as electricity used to collect and convey stormwater. The government operations water sector includes the emissions associated with the Sacramento County Water Agency and the stormwater utility, which are both under County control. This sector also includes water use and wastewater generation by County employees and facilities.
Streetlights and Traffic Signals	This sector's emissions originate from purchased electricity for operating traffic signals and streetlights.

Notes: GHG = greenhouse gas; VMT = vehicle miles traveled.

Source: **Compiled by Ascent in 2024**.

Based on the modeling conducted for the 2021 government operations GHG emissions inventory, the County generated approximately 84,000 $MTCO_2e$ in 2021. The two largest emissions sectors for the County's government operations were employee commute and buildings and facilities energy, accounting for 36 and 29 percent of total emissions, respectively. **Figure 2.5** displays a pie chart presenting the relative contributions of each sector to overall emissions for the County's government operations. The government operations inventory is also presented in **Table 2.4**.

Figure 2.5 2021 County of Sacramento Government Operations GHG Emissions Inventory by Sector



Notes: Percentages may not sum to 100 percent due to individual rounding. % = percent.

Source: **Analysis conducted by Ascent in 2024**.

Table 2.4 2021 County of Sacramento Government Operations GHG Emissions Inventory by Sector

Sector	2021 GHG Emissions ($MTCO_2e$)	Percent of Total GHG Emissions (%)
Employee Commute	30,400	36.4
Buildings and Facilities Energy	23,800	28.5
Airport Buildings and Facilities Energy	6,700	8
Vehicle Fleet	15,600	18.6
Water and Wastewater	5,800	6.9
Streetlights and Traffic Signals	1,300	1.5
Total	**83,500**	**100**

Notes: Percentages may not sum to 100 percent due to individual rounding. Values have been rounded to the nearest 100. % = percent; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: **Analysis conducted by Ascent in 2024**.

2.3 Greenhouse Gas Emissions Forecasts

GHG emissions forecasts provide a modeled estimate of future emissions levels based on a continuation of current trends in activity, population, and job growth, while also accounting for known regulatory actions by state and federal agencies (i.e., "legislative" actions) that are expected to reduce emissions in the future. Emissions forecasts provide insights into the scale of local reductions needed to achieve GHG emissions reduction targets after applying anticipated reductions from regulatory actions.

This CAP includes two forecast scenarios: a "business-as-usual" (BAU) scenario, and a legislative-adjusted BAU (ABAU) scenario. The BAU scenario is based on a variety of scaling factors for each sector and assumes no additional state or federal actions will occur after 2021 (the baseline inventory year). It serves as a basis for understanding how GHG emissions levels may change with growth, and how far GHG emissions will need to be reduced in future years to meet GHG reduction targets. In the ABAU scenario, the BAU forecast is "adjusted" to account for the effects of state and federal laws and regulatory requirements on forecasted emissions, and additionally, it shows how they will help the County meet its GHG reduction targets. The forecasts estimate emissions for the years 2030 and 2045.

Community Greenhouse Gas Emissions Forecasts

Business-as-Usual Greenhouse Gas Emissions Forecast

The community BAU forecast estimates GHG emissions based on predicted growth in existing demographic forecasts, including population and employment changes. These forecasts assume the continuation of current behaviors and activities within the unincorporated county and that no additional efforts or legislative actions beyond what have already been implemented will be made to reduce GHG emissions in the future. The results of the community BAU forecast show that community GHG emissions would be expected to grow through 2045, assuming no further GHG reduction efforts beyond 2021, as shown in **Table 2.5**. While a more realistic scenario for future GHG emissions is provided with the community ABAU forecast, the BAU forecast provides the basis for understanding the GHG impact solely due to growth in the unincorporated county. Total BAU emissions for the unincorporated county are forecasted to grow from 4.2 million $MTCO_2e$ in 2021 to approximately 4.8 million $MTCO_2e$ by 2030, a 15 percent increase, and to approximately 5.8 million $MTCO_2e$ by 2045, a 40 percent increase.

Table 2.5 Unincorporated Sacramento County Community BAU GHG Emissions Forecast

Sector	GHG Emissions ($MTCO_2e$)		
	2021	2030	2045
On-Road Vehicles	1,844,200	2,140,000	2,633,800
Off-Road Vehicles	107,200	126,800	160,000
Residential Building Energy	878,300	1,005,400	1,217,300
Commercial/Industrial Building Energy	555,600	668,300	856,200
High-GWP Gases	317,800	363,800	440,500
Agriculture	266,500	263,100	259,100
Solid Waste	156,700	179,400	217,200
Water and Wastewater	33,300	38,100	46,100
Total	**4,159,600**	**4,784,900**	**5,830,200**
Percent Change from 2021 Levels (%)	N/A	15	40

Notes: Values have been rounded to the nearest 1000. GHG = greenhouse gas; N/A = not applicable; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: **Analysis conducted by Ascent in 2024**.

Legislative-Adjusted Business-as-Usual Greenhouse Gas Emissions Forecast

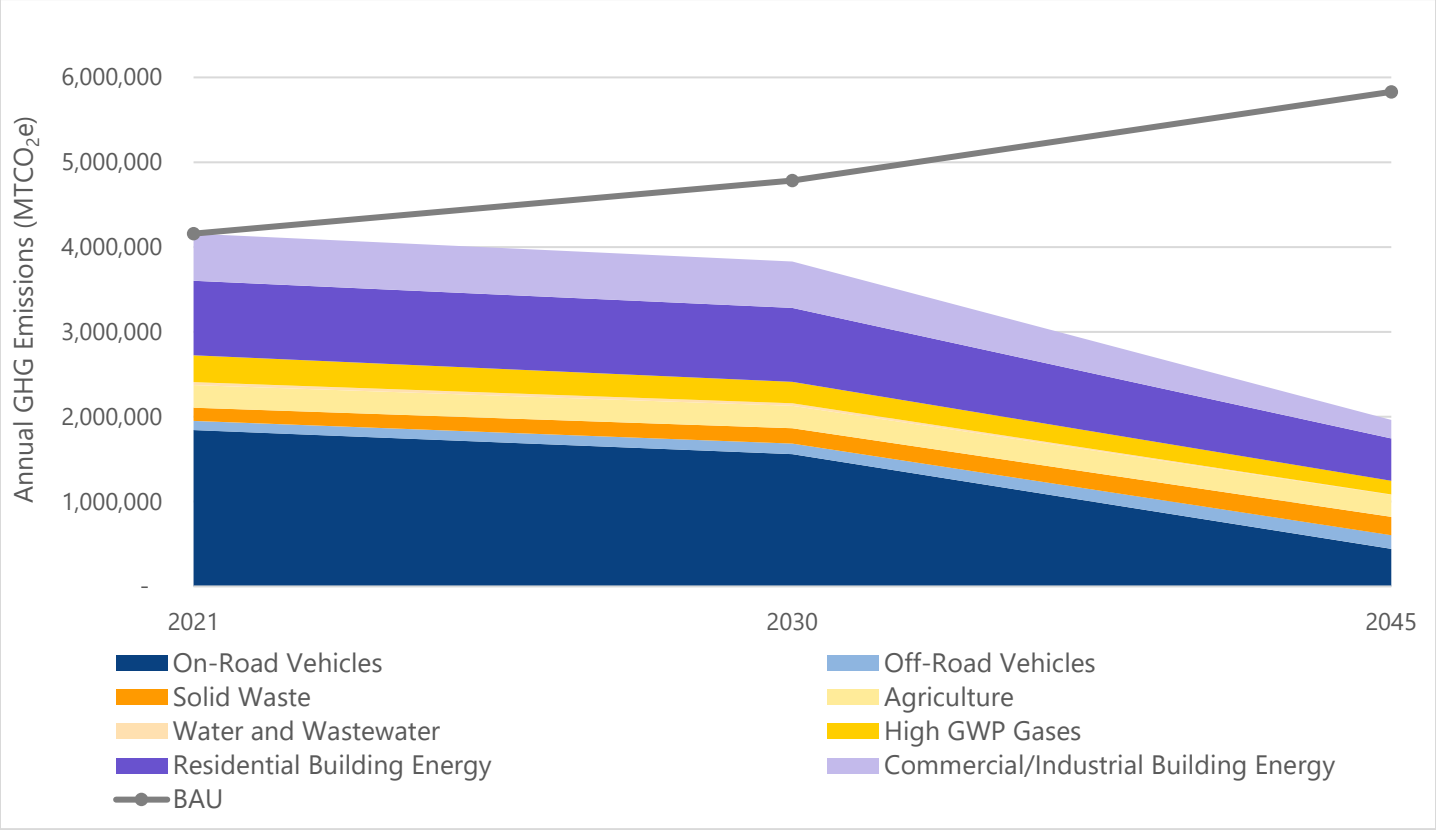
For the community ABAU forecast, GHG reductions are expected to occur as a result of adopted state and federal legislation and regulatory requirements (a full list of legislation and regulations considered can be found in **Appendix D**). Accounting for these reductions, the community ABAU forecast shows that GHG emissions are expected to decrease by 8 percent in 2030 to approximately 3.8 million $MTCO_2e$ and by 53 percent in 2045 to approximately 2.0 million $MTCO_2e$, compared with 2021 levels. **Table 2.6** and **Figure 2.6** below illustrate the anticipated gradual decline of GHG emissions through 2045, and additionally, **Figure 2.6** shows the emissions trend that would occur without legislative reductions (i.e., BAU emissions). The community BAU and ABAU forecast results presented together demonstrate the impact of state and federal legislative reductions on the unincorporated county's community GHG emissions over time.

Table 2.6 Unincorporated Sacramento County Community ABAU GHG Emissions Forecast

Sector	GHG Emissions ($MTCO_2e$)		
	2021	2030	2045
On-Road Vehicles	1,844,200	1,558,000	443,500
Off-Road Vehicles	107,200	126,800	160,000
Residential Building Energy	878,300	871,600	499,700
Commercial/Industrial Building Energy	555,600	546,500	217,500
High-GWP Gases	317,800	253,500	161,300
Agriculture	266,500	263,100	259,100
Solid Waste	156,700	179,400	217,200
Water and Wastewater	33,300	30,100	4,300
Total	**4,159,600**	**3,829,100**	**1,962,500**
Percent Change from 2021 Levels (%)	N/A	-8	-53

Notes: Values have been rounded to the nearest 100. GHG = greenhouse gas; N/A = not applicable; $MTCO_2e$ = metric tons of carbon dioxide equivalent.
Source: **Analysis conducted by Ascent in 2024**.

Figure 2.6 Unincorporated Sacramento County Community BAU and ABAU GHG Emissions Forecasts



Notes: BAU = business-as-usual; GHG = greenhouse gas; GWP = global warming potential; $MTCO_2e$ = metric tons of carbon dioxide equivalent. The stacked colored bars represent the ABAU GHG emissions forecast sectors.

Source: **Analysis conducted by Ascent in 2024**.

Government Operations Greenhouse Gas Emissions Forecasts

Business-as-Usual Greenhouse Gas Emissions Forecast

The government operations BAU forecast estimates GHG emissions for all sectors based on predicted growth in County of Sacramento employees. This forecast assumes the continuation of current behaviors and activities within government operations and that no additional efforts or legislative actions beyond what have already been implemented will be made to reduce GHG emissions in the future. The forecast was prepared using the same methods as the community BAU GHG emissions forecast, and further details can be found in **Appendix D**. As presented in **Table 2.7**, BAU emissions are projected to rise approximately 30 percent above 2021 levels in 2030 to approximately 106,100 $MTCO_2e$, and 60 percent above 2021 levels in 2045 to approximately 130,600 $MTCO_2e$.

Table 2.7 County of Sacramento Government Operations BAU GHG Emissions Forecast

Sectors	GHG Emissions ($MTCO_2e$)		
	2021	2030	2045
Employee Commute	30,400	34,100	41,900
Buildings & Facilities Energy	23,800	34,200	42,100
Airport Buildings & Facilities	6,700	9,600	11,800
Vehicle Fleet	15,600	17,400	21,500
Water & Wastewater	5,800	8,900	11,000
Streetlights & Traffic Signals	1,300	2,000	2,400
Total	**83,500**	**106,100**	**130,600**
Percent Change from 2021 Levels (%)	N/A	30	60

Notes: Values have been rounded to the nearest 100. GHG = greenhouse gas; N/A = not applicable; $MTCO_2e$ = metric tons of carbon dioxide equivalent.
Source: **Analysis conducted by Ascent in 2024**.

Legislative-Adjusted Business-as-Usual Greenhouse Gas Emissions Forecast

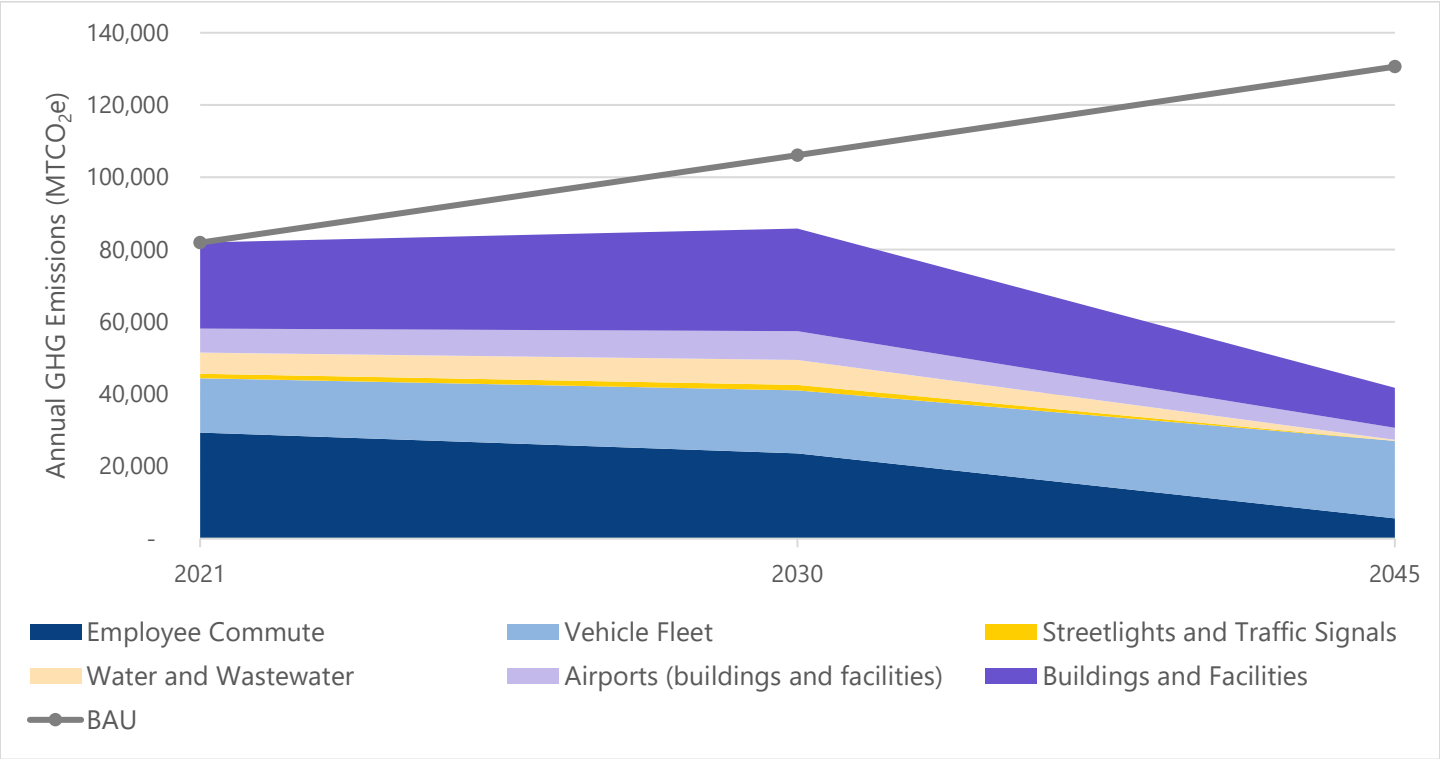
Accounting for legislative reductions and no further local actions, government operations GHG emissions are expected to rise slightly in 2030 compared to 2021 levels, but then steadily decline in 2045 to 49.1 percent below 2021 levels. This government operations ABAU forecast is presented in **Table 2.8** and **Figure 2.7** below, and additionally, **Figure 2.7** shows the emissions trend that would occur without legislative reductions (i.e., BAU emissions). The government operations BAU and ABAU forecast results presented together demonstrate the impact of the state and federal legislation on the County's government operations GHG emissions over time. Accounting for these reductions, the government operations ABAU forecast shows that GHG emissions are expected to decrease by 5 percent in 2030 to approximately 85,800 $MTCO_2e$ and by 49 percent in 2045 to approximately 41,700 $MTCO_2e$, compared with 2021 levels.

Table 2.8 County of Sacramento Government Operations ABAU GHG Emissions Forecast

Sectors	GHG Emissions ($MTCO_2e$)		
	2021	2030	2045
Employee Commute	30,400	23,600	5,600
Buildings & Facilities Energy	23,800	28,400	11,000
Airport Buildings & Facilities	6,700	8,000	3,300
Vehicle Fleet	15,600	17,400	21,500
Water & Wastewater	5,800	6,900	300
Streetlights & Traffic Signals	1,300	1,500	0
Total	**83,500**	**85,800**	**41,700**
Percent Change from 2021 Levels (%)	N/A	5	-49

Notes: Values have been rounded to the nearest 100. GHG = greenhouse gas; N/A = not applicable; $MTCO_2e$ = metric tons of carbon dioxide equivalent.
Source: **Analysis conducted by Ascent in 2024**.

Figure 2.7 County of Sacramento Government Operations BAU and ABAU GHG Emissions Forecasts



Notes: ABAU = legislative-adjusted business as usual; BAU = business-as-usual; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent. The stacked colored bars represent the ABAU GHG emissions forecast sectors.

Source: **Analysis conducted by Ascent in 2024**.

2.4 Greenhouse Gas Reduction Targets and Goals

The target-setting process for the CAP involved several key considerations. First, state laws and plans directing the timing and levels of statewide GHG emissions reductions needed to address climate change were identified. Second, the ability to demonstrate the unincorporated county's fair share towards meeting state reduction targets specific emissions levels and reduction percentages for the County was evaluated and local GHG reduction targets were calculated. The GHG reduction targets for the CAP are for the years 2030 and 2045 to align with the most recent state legislation and to be consistent with the target-setting approach used in the state's *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan), developed by CARB.

California Targets

In 2022, Assembly Bill (AB) 1279 was signed into law establishing the policy of the state to achieve net zero emissions[1] as soon as possible, but no later than 2045; to maintain net negative GHG emissions thereafter; and to ensure that by 2045 statewide anthropogenic GHG emissions are reduced at least 85 percent below 1990 levels. The bill requires CARB to ensure that Scoping Plan updates identify and recommend measures to achieve carbon neutrality, [2] and to identify and implement policies and strategies that enable carbon dioxide

[1] AB 1279 defines net zero GHG emissions as "emissions of GHGs, as defined in subdivision (g) of Section 38505, to the atmosphere are balanced by removals of GHG emissions over a period of time, as determined by CARB." California Health and Safety Code Section 38562.2.

[2] CARB defines carbon neutrality as "net zero" emissions of GHGs for the purposed of statewide climate planning. In other words, it means that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of CO_2 that is removed from the atmosphere over the same time period, both in natural sinks and through mechanical sequestration. AB 1279 uses the terminology "net zero" and the 2022 Scoping Plan uses the terminology "carbon neutrality" or "carbon neutral." For purposes of this 2045 CAP, these terms mean the same thing and are used interchangeably.

removal solutions and carbon capture, utilization, and storage (CCUS) technologies. The 2022 Scoping Plan addresses the AB 1279 emissions limits by identifying a technologically feasible, cost-effective scenario—referred to as the Scoping Plan Scenario—to achieve these goals. The Scoping Plan Scenario identifies a path to keep California on track to meet its Senate Bill (SB) 32 GHG reduction target of at least 40 percent below 1990 emissions by 2030 but concludes that additional reductions are needed by 2030 (i.e., 48 percent below 1990 levels) for the state to stay on track to achieve net zero GHG emissions by 2045, pursuant to AB 1279 (CARB 2022). In addition, the 2022 Scoping Plan shows that natural and working lands are projected to be a net source of GHG emissions in 2030 and that with residual anthropogenic emissions, additional carbon dioxide removal (CDR) technologies are required to reach net zero emissions by 2045.

To go beyond an 85 percent anthropogenic emissions reduction and achieve statewide net zero emissions by 2045, the 2022 Scoping Plan relies on large-scale deployment of carbon capture, utilization, and storage (CCUS) technologies and mechanical CDR strategies like direct air capture machines. These projects are subject to pending regulatory actions by CARB pursuant to SB 905 (codified in 2022), which requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate CCUS and CDR projects and technology. The bill requires CARB, on or before January 1, 2025, to adopt regulations creating a unified statewide permitting application for approval of CCUS and CDR projects. The bill also requires the Secretary of the Natural Resources Agency to publish a framework for governing agreements for two or more tracts of land overlying the same geologic storage reservoir for a CCUS project.

Unincorporated Sacramento County Targets and Aspirational Goal

The CAP sets a long-term GHG emissions reduction target for 2045 that is aligned with the AB 1279 target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. The 2030 GHG reduction target is also aligned with the 2022 Scoping Plan's accelerated target to reduce GHG emissions to 48 percent below 1990 levels by 2030. By adjusting the state-level GHG targets identified in the 2022 Scoping Plan to the County's 2021 baseline GHG emissions inventory (for both community and government operations), the CAP identifies two targets:

- **By 2030, reduce GHG emissions to 39 percent below 2021 levels** (in accordance with the 2022 Scoping Plan),
- **By 2045, reduce GHG emissions to 83 percent below 2021 levels** (in accordance with AB 1279).

These county targets are intended to demonstrate the County's fair-share contribution towards meeting statewide GHG reduction targets, in alignment with the statewide strategies outlined in the 2022 Scoping Plan.

According to the 2022 Scoping Plan, statewide emissions from the sectors relevant to the County's inventory must be reduced to 186 $MMTCO_2e$ by 2030 for the state to achieve the 2030 goal set forth in the 2022 Scoping Plan of 48 percent below 1990 levels. This represents an emissions reduction of approximately 122 $MMTCO_2e$, or 39 percent, by 2030, relative to 2021 levels of 307 $MMTCO_2e$. Additionally, statewide emissions from the sectors relevant to the County's inventory must be reduced to 53 $MMTCO_2e$, an emissions reduction of approximately 254 $MMTCO_2e$, or 83 percent, by 2045, relative to 2021 levels of 307 $MMTCO_2e$. Refer to **Appendix D** for a detailed approach to setting locally specific GHG emissions reduction targets and percentages.

The County adopted an aspirational goal to reach carbon neutrality by 2030 for unincorporated county GHG emissions pursuant to the County's Climate Emergency Resolution adopted by the Board of Supervisors in 2020 (Sacramento County 2020). This CAP sets an aspirational goal to achieve carbon neutral emissions by 2045, which will align the County's long-term aspirational goal with the statewide goal of achieving net-zero emissions by 2045 established under AB 1279. The County does not have the jurisdiction or other ability to permit, construct, and operate CCUS and mechanical CDR strategies at the pace and scale needed to achieve carbon neutrality by either 2030 or 2045. The 2022 Scoping Plan also assumes that additional reductions in statewide anthropogenic emissions beyond 85 percent below 1990 levels by 2045 will not be cost-effective or technologically feasible. Consequently, achieving carbon neutrality for the unincorporated County by 2030 or even by 2045 is not currently known to be cost-effective or technologically feasible, therefore the CAP's carbon neutral goal for 2045 is an aspirational goal and not a formal CAP target.

The County will continue to monitor statewide efforts led by CARB and other agencies to achieve statewide net-zero emissions by 2045 and pending future regulatory actions governing permitting of CCUS and CDR projects pursuant to SB 905. The County will also consider potential adjustments to GHG reduction goals and targets in future updates to the CAP to keep pace with ongoing changes to state law and future updates to the state's Scoping Plan (see **Chapter 4** for further details on the County's strategy for future CAP updates).

2.5 Greenhouse Gas Emissions "Gap" Analysis

One of the primary purposes of this CAP is to develop measures the County can implement to reduce both community and government operations GHG emissions to achieve the reduction targets outlined in **Section 2.4**. Based on the GHG emissions forecasts and reduction targets presented above, the County has assessed the reductions needed to achieve the community and government operations GHG emissions reduction targets, or in other words, to bridge the emissions "gap." The emissions gap analysis demonstrates the expected GHG emissions levels from the ABAU forecast for each GHG emissions sector, and additional GHG reductions that are needed from the GHG reduction measures in the CAP to align with the state's GHG reduction targets, because legislative reductions alone will not be sufficient. This gap analysis for community GHG emissions is presented in **Table 2.9** and visually displayed in **Figure 2.8**, while its counterpart for government operations GHG emissions is presented in **Table 2.10** and visually displayed in **Figure 2.9**. In both figures, the red dashed line indicates the 2030 and 2045 GHG emissions reduction targets, the solid gray line indicates the BAU GHG emissions forecasts, and the stacked colored bars represent the various emission sectors that make up the ABAU GHG emissions forecasts. As shown, for both community and government operations, substantial reductions still need to be achieved even after legislative reductions are applied.

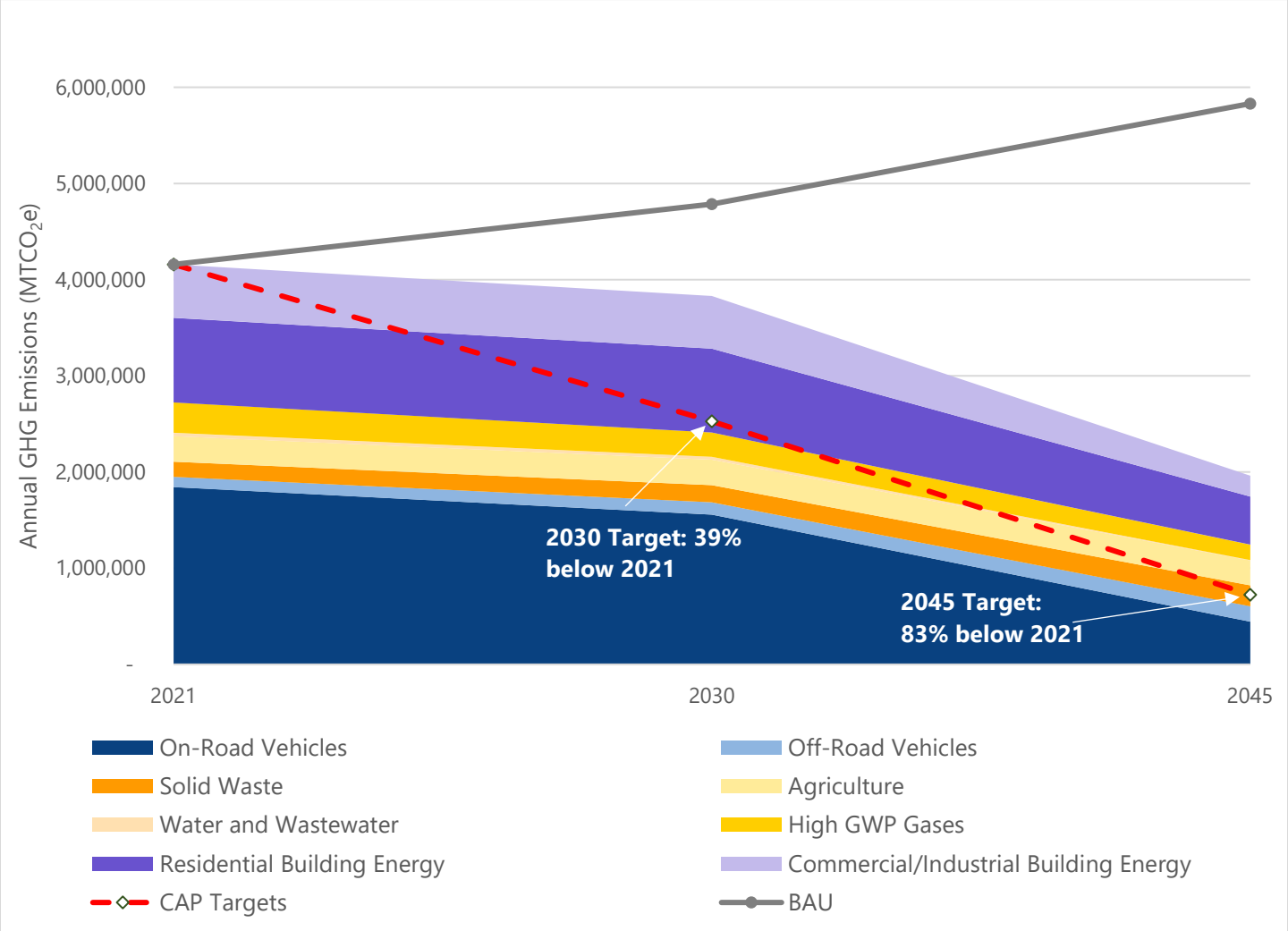
Table 2.9 Unincorporated Sacramento County Community GHG Emissions Gap Analysis

	2021	2030	2045
BAU GHG Emissions ($MTCO_2e$)	4,159,600	4,784,900	5,830,200
ABAU GHG Emissions ($MTCO_2e$)	4,159,600	3,829,100	1,962,500
Target Percent Reduction Below 2021 Levels	N/A	39%	83%
Target GHG Emissions Levels ($MTCO_2e$)	N/A	2,525,400	724,800
Local GHG Emissions Gap Beyond ABAU ($MTCO_2e$)	**N/A**	**1,303,700**	**1,237,700**

Notes: Values have been rounded to the nearest 100. BAU = business-as-usual; ABAU = legislative-adjusted business-as-usual; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; N/A = not applicable.

Source: **Analysis conducted by Ascent in 2024**.

Figure 2.8 Unincorporated Sacramento County Community BAU and ABAU GHG Emissions Forecasts and GHG Reduction Targets



Notes: % = percent; BAU = business-as-usual; CAP = Climate Action Plan; GHG = greenhouse gas; GWP = global warming potential; $MTCO_2e$ = metric tons of carbon dioxide equivalent. The stacked colored bars represent the ABAU GHG emissions forecast sectors.

Source: **Analysis conducted by Ascent in 2024**.

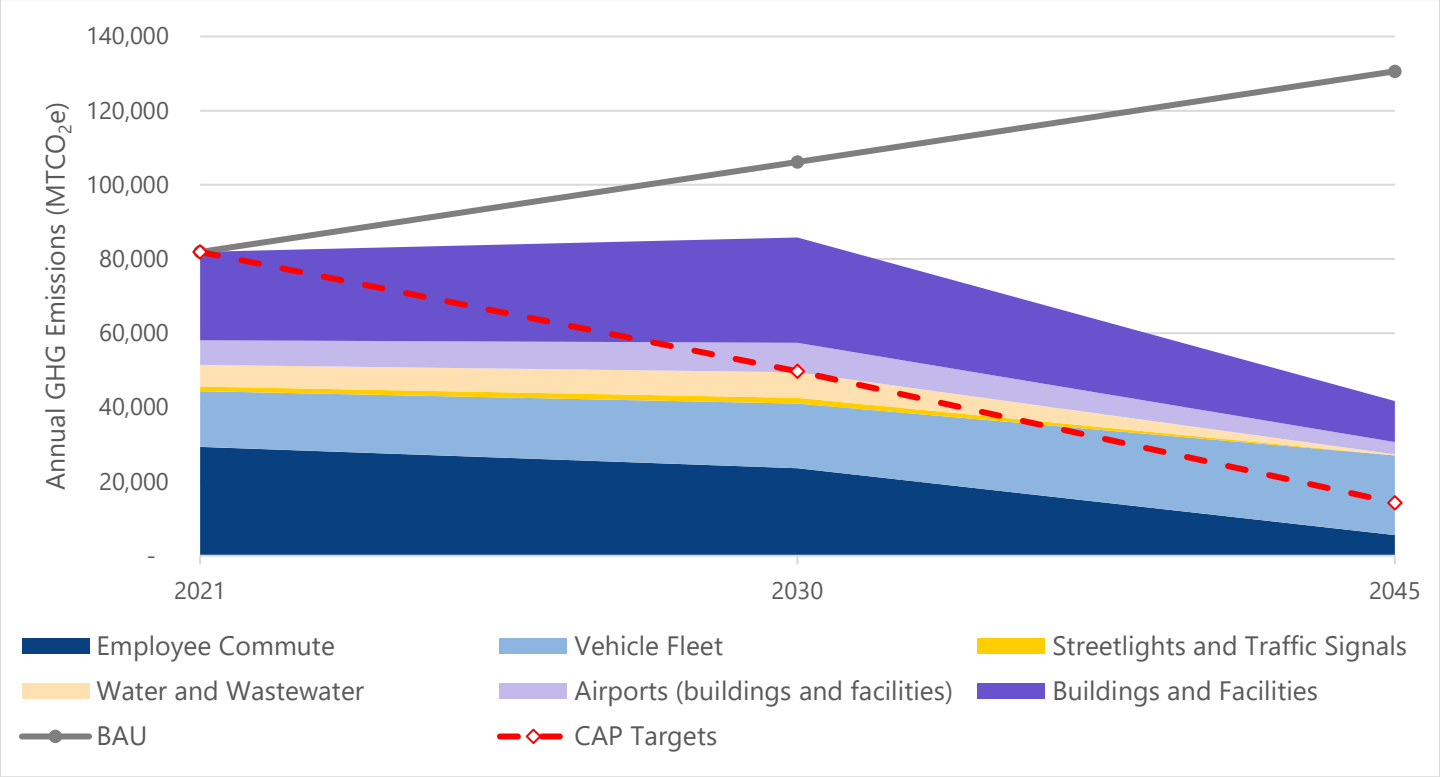
Table 2.10 County of Sacramento Government Operations GHG Emissions Gap Analysis

	2021	2030	2045
BAU GHG Emissions ($MTCO_2e$)	83,500	106,100	130,600
ABAU GHG Emissions ($MTCO_2e$)	83,500	85,800	41,700
Target Percent Reduction Below 2021 Levels	N/A	39%	83%
Target GHG Emissions Levels ($MTCO_2e$)	N/A	49,700	14,300
Local GHG Emissions Gap Beyond ABAU ($MTCO_2e$)	**N/A**	**36,100**	**27,400**

Notes: Values have been rounded to the nearest 100. BAU = business-as-usual; ABAU = legislative-adjusted business-as-usual; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; N/A = not applicable.

Source: **Analysis conducted by Ascent in 2024**.

Figure 2.9 County of Sacramento Government Operations BAU and ABAU GHG Emissions Forecasts and GHG Reduction Targets



Notes: BAU = business-as-usual; CAP = Climate Action Plan; GWP = global warming potential; $MTCO_2e$ = metric tons of carbon dioxide equivalent. The stacked colored bars represent the ABAU GHG emissions forecast sectors.

Source: **Analysis conducted by Ascent in 2024**.

2.6 GHG Emission Reduction Framework

The CAP's framework for GHG emission reductions includes "Measures" and "Actions." These are defined as follows:

- **Measures** are focused, sector-specific programs and goals that include measurable objectives and performance standards designed to be quantified for GHG emissions reductions. They support reductions in each emissions sector and are achieved through individual implementation actions. For example, "*Accelerate Existing Building Energy Efficiency Retrofits and Decarbonization*" is a measure.
- **Actions** are the specific policies, programs, or tools that will be implemented to support long-range planning. Actions are intended to be implemented in a coordinated manner to make meaningful progress toward the associated measure. For example, "*Conduct training for County permitting staff to understand the reach code requirements for existing buildings and how compliance will be demonstrated.*" is an action.

Each measure in the CAP includes at least one implementing action and time-defined targets that state the levels of performance required to reduce emissions.

Measures and their supporting actions were developed using a specific set of criteria to ensure that the measures are real, actionable, feasible, and enforceable. To meet the requirements of CEQA Guidelines section 15183.5 for a "qualified" CAP and the requirements of the 2011 General Plan EIR Mitigation Measure CC-2, each GHG reduction measure provides clear and specific implementation components. These components represent substantial evidence that GHG reduction measures will be implemented, monitored, and enforced

(where applicable), with clear pathways and metrics for achieving a determined GHG reduction level within the timeline of established targets. Each measure includes six key categories for conformity with CEQA and MM CC-2:

1. **Mechanism for Implementation.** Each GHG reduction measure clearly identifies the appropriate mechanism or vehicle for implementation, including whether the County will need to create a new program or modify an existing program, and whether the development of an ordinance or regulation subsequent to CAP adoption is appropriate to guide and enforce implementation.
2. **Public Engagement and Community Partnerships.** Each measure includes actions to engage with the community or partner with existing agencies and community-based organizations to assist in the dissemination of information and messaging associated with voluntary programs and ordinances. The County will strive to make public communications associated with CAP implementation accessible and available in multiple languages.
3. **Performance Standard.** Each measure has a performance standard that will measure the success of a program or that equates to a long-term emissions reduction supported by substantial evidence. These performance standards are clearly defined, with target years that align with the CAP's overall GHG reduction target years.
4. **Tracking Mechanism.** Each measure assesses whether data for performance standard success tracking are easily obtained through existing County processes. If a streamlined process for collecting these data does not exist, an action to develop a tracking mechanism is included as part of the measure's implementing actions.
5. **Timeline of Implementation.** Each measure includes a clear timeline of implementation that will be needed to support the GHG reductions that can be achieved within the CAP's GHG reduction target timeframe. This may include the year by which an ordinance would be adopted or becomes effective, a program established, or an outreach campaign planned and executed. For longer-term measures that include interdependent actions, require further evaluation or study, or currently lack funding sources, the measure includes estimated milestone dates by which certain implementing actions or phases would be completed, particularly when specific implementation details cannot be specified prior to CAP adoption.
6. **Funding Mechanism**. Each measure aims to include an action to develop a funding mechanism or identify a potential grant funding or financing source to support implementation of the measure. The costs of GHG reduction measures vary widely, with some measures having costs to the County for staffing or infrastructure, and other measures having costs for community members. For example, when community members would be expected to take on costs for measure implementation, the funding mechanisms may be an incentive. In other cases, the County may institute a fee to support funding infrastructure the County will develop. A Cost Analysis and Funding Strategy will be completed to analyze the County's needs for hiring additional staff to support implementation, as well as costs and funding and financing mechanisms.

2.7 Community Measures

This CAP includes 16 community measures that will reduce GHG emissions in the unincorporated county. The measures seek to reduce emissions from all emissions sectors included in the community inventory. Each measure includes specific actions that define the activities, programs, policies, or projects that the County will implement or support to achieve the CAP's goals. While the measures and actions included in this chapter are primarily intended to reduce emissions, co-benefits (as described in **Chapter 1**) are identified for each measure.

The community GHG reduction measures can be grouped into eight policy focus areas, which are summarized below.

- **Increase Carbon Sequestration in the Urban Forest and Natural and Working Lands**
  Increasing the carbon sequestration potential in the county is critical for alignment with statewide GHG reduction targets and can provide various co-benefits such as healthier natural lands and improved climate resilience. ***MEASURE GHG-01***, ***MEASURE GHG-02***, and ***MEASURE* GHG-15** increase carbon sequestration in the urban forest and natural and working lands of the county. ***MEASURE GHG-01*** creates a program to increase carbon farming in the county to improve carbon sequestration in working lands and maintain healthy soils that are valuable to the region. ***MEASURE GHG-02*** involves planting 15,000 net new trees by 2030 and 62,000 net new trees by 2045. ***MEASURE GHG-15*** continues the county's commitment to conserving and enhancing its natural lands through the implementation of the South Sacramento Habitat Conservation Plan (SSHCP).

- **Decarbonize the Energy Supply**
  Sacramento Municipal Utility District (SMUD) aims to supply 100 percent of its electricity from carbon-free sources by 2030, and is on track to meet this goal (SMUD 2023). ***MEASURE GHG-03*** commits the County to work with SMUD to support the implementation of the 2030 Zero Carbon Plan through the installation of solar photovoltaic and battery storage at County facilities, amendments to the zoning code, and ensuring implementation of all CAP measures are aligned with SMUD's goals.

- **Improve Energy Efficiency and Decarbonize Buildings**
  Improving energy efficiency and reducing fossil fuel use in new and existing buildings are key to avoiding future GHG emissions and reducing energy bill burdens. Improving the energy efficiency of current building stock reduces reliance on fossil fuel-based energy sources while lowering energy bills. However, designing new buildings with decarbonization in mind allows for a transition towards GHG-free energy sources over a building's lifetime, without the need for future retrofits. ***MEASURE GHG-04*** and ***MEASURE GHG-05*** aim to reduce GHG emissions associated with building energy using energy efficiency and decarbonization strategies. ***MEASURE GHG-04*** develops and implements building codes and performance standards for existing buildings in the county to reduce reliance on fossil fuels and achieve emissions reduction. ***MEASURE GHG-05*** requires all new construction projects to achieve specific performance standards to increase energy efficiency and decarbonization. These measures will be supported by the County through incentives, targeted outreach, and workforce development and training opportunities.

- **Decarbonize Equipment**

  The use of fossil fuels in landscaping, construction, and agricultural equipment generates GHG emissions that are hard to abate, as local governments have limited control over these equipment types. ***MEASURE GHG-06*** and ***MEASURE GHG-16*** encourage and support the community to phase fossil-fueled non-road equipment to electric and zero-emission equipment, reducing their generation of GHG emissions. ***MEASURE GHG-06*** facilitates the trade-in of landscaping equipment powered by fossil fuels for electric equipment, aiming to retire approximately 78,000 pieces of equipment by 2030 and 310,000 by 2045. ***MEASURE GHG-16*** encourages the adoption of zero-emission construction and agricultural equipment through incentives and outreach efforts and requires specific equipment types to be electric or zero-emission after 2035.

- **Institutionalize Low-Carbon Transportation**

  Transportation is the largest source of GHG emissions in the County. Adoption of low-carbon transportation options like plug-in hybrid or electric vehicles (EVs) by the community is the most impactful way of reducing transportation-related GHG emissions. ***MEASURE GHG-07*** institutionalizes low-carbon transportation by establishing robust EV charging infrastructure and frameworks to support the widespread adoption of hybrid and electric vehicles. Implementing the measure would increase EV network capacity in the county by installing 24,000 EV chargers by 2030 and 72,000 EV chargers by 2045, through both direct installation by the County and requirements for new development and retrofit projects.

- **Reduce Vehicle Miles Traveled and Vehicle Trips**

  In addition to adopting low-carbon transportation options, reducing the number of vehicle trips is another effective approach for eliminating emissions associated with transportation. This can be achieved by supporting offsite VMT mitigation for development projects and improving access to public and active transit options. ***MEASURE GHG-08***, ***MEASURE GHG-09***, ***MEASURE GHG-11***, and ***MEASURE GHG-12*** implement these strategies to reduce vehicle miles traveled (VMT) associated with single occupancy vehicles and thus reduce transportation-related GHG emissions. ***MEASURE GHG-08*** develops a VMT impact fee program requiring developers to contribute to regional VMT reductions when project-specific VMT cannot be mitigated to below the significance threshold. ***MEASURE GHG-09*** updates the requirements of the transportation system management plans to include a target of a 15 percent reduction in annual VMT compared to the regional average from all new developments through 2045. ***MEASURE GHG-11*** increases the accessibility, comfort, and convenience of active travel modes can help reduce single-occupancy trips. It enhances partnerships with regional transportation agencies to increase transit ridership by 16 percent by 2030 and 43 percent by 2045, both compared with 2021 levels, by implementing the "Transit" policy plan in the General Plan's Circulation Element. ***MEASURE GHG-12*** would improve active transportation infrastructure by implementing priority projects identified in the 2022 Active Transportation Plan (ATP), which include 66 pedestrian spot improvements, 51 miles of sidewalk gap closures, and bicycle projects representing 190 miles by 2030, and all recommended projects identified in the ATP by 2045.

- **Increase Infill Development**
  Increasing infill development can facilitate shorter trips, preserve natural areas, and lead to better resource utilization. One approach to increase infill development through CAP is imposing extra fees on projects that do not meet infill development standards. ***MEASURE GHG-13*** proposes the implementation of an infill development program and the establishment of an Infill Fee structure to advance infill development in priority areas through 2030 and 2045. Priority areas include critical locations like transit centers, job centers, and urban centers. By concentrating development in these strategic locations, people have greater access to essential services and job opportunities, reducing the need for long commutes and promoting more sustainable travel patterns. ***MEASURE GHG-10*** focuses on influencing parking policies and behaviors to further support infill development. It would revise parking standards for new developments to lower minimum parking requirements, potentially fostering more infill development and reducing housing costs in transit-priority areas. By increasing development in these key areas, the number of trips and trip distances can be minimized, thereby reducing greenhouse gas emissions associated with vehicle travel.

- **Minimize Waste and Recover Materials from the Waste Stream**
  Landfilled organic waste is responsible for generating methane emissions in the waste sector. Reduction in waste generated and increased composting can reduce GHG emissions in this sector. ***MEASURE GHG-14*** would increase the diversion of organic waste deposited into landfills to 75 percent by 2030 and 90 percent by 2045. This measure supports the implementation of statewide organic waste reduction targets set by CARB through SB 1383.

- **Growth Management**
  To further support the County in meeting its communitywide GHG reduction targets, future development projects proposed outside of the County's Urban Policy Area (UPA) and/or Urban Services Boundary (USB) must demonstrate carbon neutrality (i.e., net zero GHG emissions) from project construction and operation. ***MEASURE GHG-17*** amends the County's General Plan policy LU-120 for growth management to require projects seeking to amend the UPA and/or USB to demonstrate consistency with the CAP *and* carbon neutrality.

The measures and actions presented in this chapter were developed based on a combination of factors, including the results of the County's GHG emissions inventories and forecasts, robust engagement with the public and stakeholders, feedback from County staff and elected officials, and the best available climate action planning guidance. GHG emissions reductions were quantified for measures wherever substantial evidence and reasonable assumptions were available to support calculations (see **Appendix E** for additional details). Measures that were not quantifiable because of a lack of available data or quantification methods are also included as they are still expected to reduce GHG emissions.

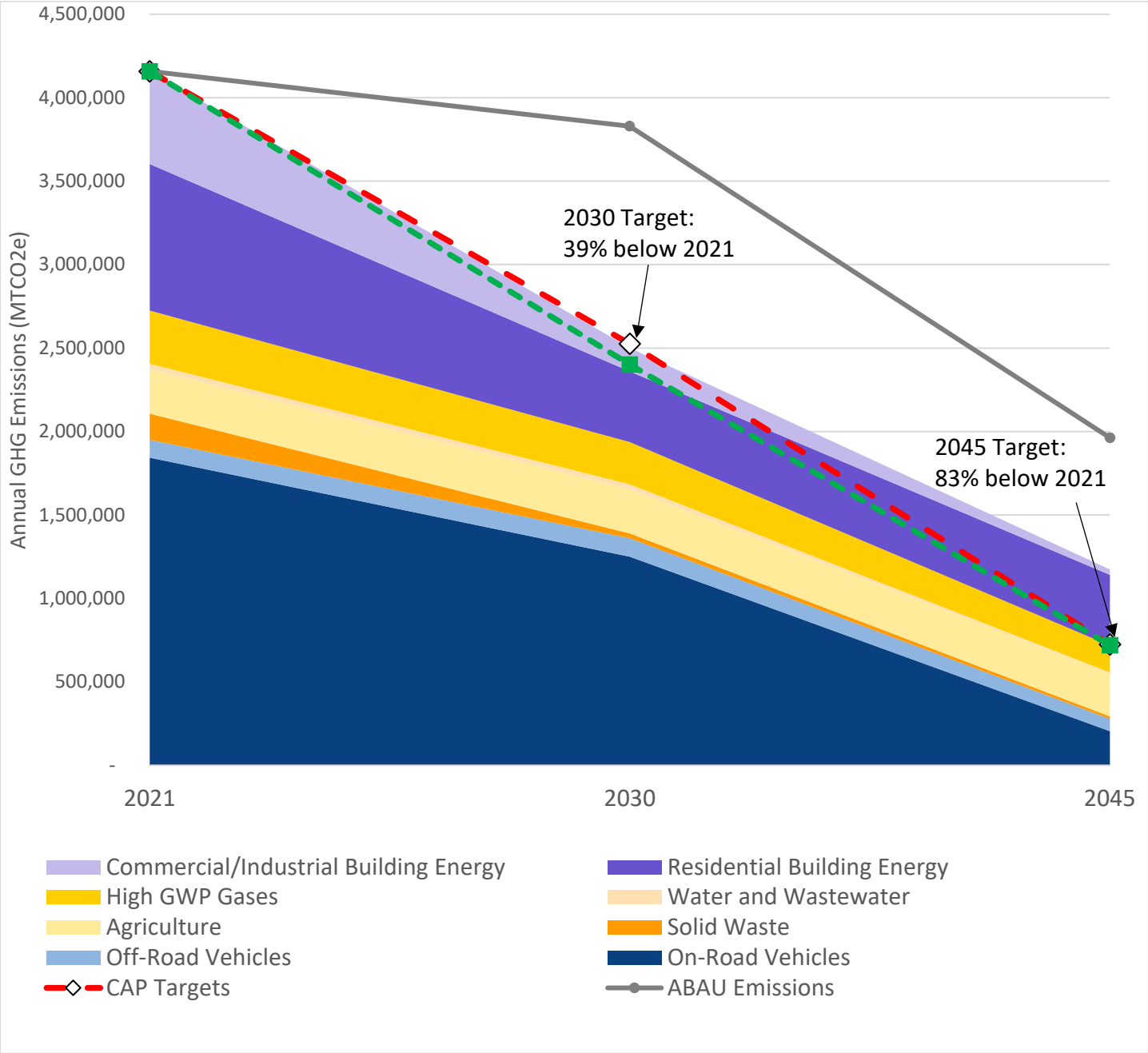
Meeting the Targets

The County conducted a GHG quantification analysis to estimate potential emissions reductions associated with all community measures. The total estimated GHG emissions reductions from all community measures quantified are anticipated to be 1.3 million $MTCO_2e$ in 2030 and 800,000 $MTCO_2e$ in 2045. The total estimated reductions from all proposed GHG reduction measures would be sufficient to meet the 2030 target without

accounting for carbon sequestration. However, carbon sequestration is needed to reduce the county's overall GHG emissions contribution to below the 2045 target levels. Future GHG emissions with implementation of the GHG measures and comparison to the County's GHG reduction targets are demonstrated in **Figure 2.10** and **Table 2.11**. Even with additional carbon sequestration in 2045, the total GHG reductions are not sufficient to meet the unincorporated county's aspirational goal of carbon neutrality by 2045.

The total GHG reductions are driven by a handful of measures that highlight the County's largest opportunities to contribute to meeting statewide GHG reduction targets of AB 1279 and the 2022 Scoping Plan. The GHG reduction measure that contributes the most to reaching the countywide 2030 target is ***MEASURE GHG-03***, which supports SMUD's implementation of the 2030 Zero Cabon Plan. The County's partnership with SMUD to achieve a 100% zero-carbon energy supply is a unique opportunity to drive large-scale decarbonization. As for reaching 2045 reduction targets, the natural and working lands of the county will play an essential role in aligning with statewide GHG reductions. ***MEASURE GHG-01*** aims for long-term, large-scale adoption of practices to maintain healthy soils and store carbon dioxide in farmland by 2045. Leveraging the unique characteristics of the county is key to contributing to statewide long-term decarbonization.

Figure 2.10 Unincorporated Sacramento County Community Measures Effectiveness



Notes: % = percent; ABAU = adjusted business-as-usual; CAP = Climate Action Plan; GHG = greenhouse gas; GWP = global warming potential; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: **Analysis conducted by Ascent in 2024**.

Table 2.11 Community Measures Summary

Emissions Sector	Community Measure	Anticipated GHG Reductions ($MTCO_2e$)	
		2030	2045
On-Road Vehicles	GHG-07: Increase EV Charging and ZEV Infrastructure	290,800	220,400
	GHG-08: Develop a VMT Impact Fee Program	Not Quantifiable	Not Quantifiable
	GHG-09: Reduce VMT from New Developments	14,100	15,900
	GHG-10: Revise Parking Standards	300	<100
	GHG-11: Increase Transit Ridership	300	100
	GHG-12: Implement the Active Transportation Plan	2,600	2,900
	GHG-13: Advance Infill Development	Not Quantifiable	Not Quantifiable
Off-Road Vehicles	GHG-06: Retire Fossil-Fuel-Powered Landscaping Equipment	3,100	17,300
	GHG-16: Expand the Use of Zero-Emission Construction and Agricultural Equipment	13,700	68,900
Residential Building Energy	GHG-03: Support the SMUD Zero Carbon Plan	436,200	0
	GHG-04: Accelerate Existing Building Energy Efficiency Retrofits and Decarbonization	10,400	69,200
	GHG-05: Decarbonize New Buildings	1,700	6,800
Commercial/Industrial Building Energy	GHG-03: Support the SMUD Zero Carbon Plan	373,200	0
	GHG-04: Accelerate Existing Building Energy Efficiency Retrofits and Decarbonization	29,600	134,800
	GHG-05: Decarbonize New Buildings	2,800	50,100
Solid Waste	GHG-14: Increase Organic Waste Diversion and Landfill Gas Capture	149,000	202,100
Reductions in Inventory Sectors		**1,328,600**	**791,600**
Carbon Sequestration	GHG-01: Develop a Carbon Farming Program	99,300	451,500
	GHG-02: Expand the Urban Forest	800	3,200
	GHG-15: Implement the South Sacramento Habitat Conservation Plan	Not Quantifiable	Not Quantifiable
Total Reductions Including Carbon Sequestration		**1,427,900**	**1,243,200**
Growth Management	GHG-17: Carbon Neutral New Growth	Not Quantifiable	Not Quantifiable
Comparison with Targets			
Required Reductions to Meet Target		1,303,700	1,237,700
Emissions Above (+) or Below (-) Target		-124,300	-5,500
Target Met?		**Yes**	**Yes**

Notes: Totals may not sum exactly due to independent rounding. Values have been rounded to the nearest 1000. EV = electric vehicle; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; N/A = not applicable; VMT = vehicle miles traveled.

Source: **Analysis conducted by Ascent in 2024**.

MEASURE GHG-01: Develop a Carbon Farming Program



GHG Reduction Potential

2030	2045
99,327 $MTCO_2e$	**451,519** $MTCO_2e$

Objectives

Create a County program to increase carbon farming to achieve:

- Application of compost instead of synthetic fertilizer to approximately 25,000 acres of cropland by 2030, and 113,000 acres of cropland by 2045.
- Grazing management to improve rangeland conditions, applied to approximately 13,000 acres by 2030 and 61,000 acres by 2045.
- Decrease fallow frequency or add perennial crops to rotations applied to approximately 7,000 acres by 2030, and 32,000 acres by 2045.
- Tillage reduced, eliminated, or changed to strip tilling on approximately 1,000 acres by 2030, and 4,000 acres by 2045.

Co-Benefits

Resource Preservation

MEASURE SUMMARY

The County aims to increase the carbon sequestration potential of natural and working lands in the county. The County will achieve this by developing and implementing a carbon farming program to encourage carbon farming practices like using compost, crop rotation, improved grazing practices, and tillage management. The program will be designed to promote sustainable agricultural practices that enhance soil health, improve the health of vegetation, and contribute to mitigating climate change impacts in the county.

ACTIONS

Action GHG-01-a: Initiate a partnership with Carbon Cycle Institute (CCI) and the University of California Cooperative Extension (UCCE) Capital Corridor unit, or other similar organizations, to develop a carbon farming program that engages farmers, ranchers, and land managers to share carbon farming best practices, provide grant application assistance for carbon farming practices, and track data on soil management practices.

Action GHG-01-b: Establish a County staff role or identify adequate support through partnerships with non-profit organizations (or a combination of both) to support implementation of a carbon farming program, including managing incentives, outreach, grant application support, and reporting under the program.

Action GHG-01-c: Develop a farming practices and soil management reporting incentive, in which County staff will assist farmers, ranchers, and land managers in preparation of carbon farming grant applications if farmers, ranchers, and land managers commit to annual reporting on soil management and carbon farming practices. UCCE has staff who assist with grant applications (free of charge) that can support in this effort.

Action GHG-01-d: Encourage reporting of soil management practices by facilitating optional reporting on current practices to all farmers, ranchers, and land managers during annual crop report data collection, including acres where the following practices are applied. Soil management practices include:

- application of compost/biochar,
- grazing management on irrigated pastures,
- reduction in fallow land,
- increase of perennial crops, and
- strip tilling or tillage reduction.

Action GHG-01-e: Work with UCCE and other partners to provide links to information on relevant current and upcoming carbon farming and healthy soil grant opportunities on the County's website, including semi-annual reviews and updates to grant opportunities. Include a hyperlink to this list in any external communications, such as newsletters or engagement materials for other programs. Examples of known potential funding sources related to carbon farming are included in **Appendix F** (Greenhouse Gas Reduction Measures County Cost Analysis and Potential Funding Sources).

Action GHG-01-f: In partnership with CCI and UCCE, or other similar organizations, develop a Carbon Sequestration Agricultural Practices for Sacramento County study that includes the following information:

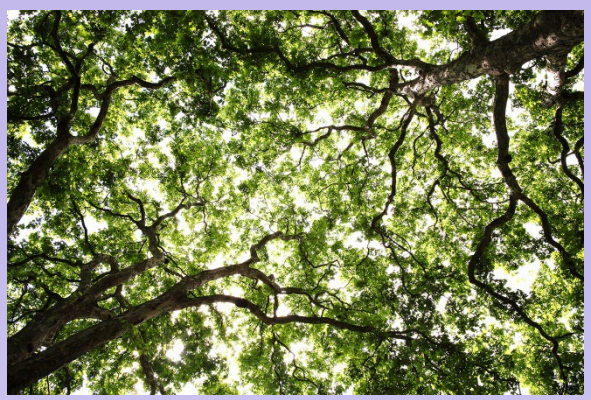
- Carbon sequestration practices suited for Sacramento County land including:
  - compost application,
  - nonsynthetic fertilizer application,
  - grazing management,
  - rotational cropping, and
  - tilling practices.
- Co-benefits of implementing carbon sequestration practices.
- A list of a variety of financial and technical resources that are available to assist farmers and ranchers in implementation.

Action GHG-01-g: In partnership with the Sacramento County Farm Bureau and other organizations such as CCI or UCCE, develop and share educational materials about soil management and carbon farming best practices, such as a "Carbon Sequestration Agricultural Practices for Sacramento County" study, and information about soil management reporting and grant application assistance.

Action GHG-01-h: Continue to provide free or reduced cost compost produced by County contracted organics processing facilities to residents in the county on a first come, first served basis.

Action GHG-01-i: Establish a terrestrial/agricultural carbon finance committee to identify finance mechanisms and funding sources to support the ongoing development and implementation of carbon farming programs in Sacramento County. This could include, but not limited to, assessment of participation in the voluntary carbon markets; the development of a local carbon or ecosystem marketplace; revolving loan funds; matching funds that can be used in conjunction with outside funding, and/or state funding.

MEASURE GHG-02: Expand the Urban Forest



GHG Reduction Potential

2030	2045
808 $MTCO_2e$	**3,234** $MTCO_2e$

Objectives

Maintain and enhance the urban forest, planting 15,000 net new trees by 2030 and 62,000 net new trees by 2045.

Co-Benefits

Public Health & Wellbeing

Equity

Resource Preservation

MEASURE SUMMARY

With this measure, the County aims to enhance carbon storage potential by preserving and improving urban forests while enhancing green spaces, promoting biodiversity, and improving environmental sustainability. The measure also aims to improve the quality of life for county residents while prioritizing actions Environmental Justice Communities as defined in the County's Environmental Justice Element of the General Plan.

ACTIONS

Action GHG-02-a: Develop and adopt an Urban Forest Management Plan to increase and maintain the urban forest, which includes:

- the identification of potential tree planting sites to meet goals of 15,000 net new trees by 2030 and 62,000 net new trees by 2045, highlighting priority areas in Environmental Justice Communities;
- street and park tree preservation;
- tree species and design guidelines, prioritizing native trees; and
- watering and maintenance practices.

Action GHG-02-b: Develop and annually update an urban forest work plan to identify a budget and specific tree planting and maintenance projects for implementation each year consistent with the goals and targets of the Urban Forest Management Plan.

Action GHG-02-c: Adopt an ordinance to require new development to plant an appropriate number of trees onsite to provide a 50 percent canopy cover over parking surfaces and a 20 percent canopy cover over the remainder of the site. Exemptions to the ordinance may be provided in cases where tree canopy may conflict with solar photovoltaic (PV) system siting on the development site, or with the Solar Shade Control Act.

Action GHG-02-d: Amend the Tree Preservation Ordinance to require that

- applicable tree removals during discretionary projects on private property that require a tree permit be replaced by an appropriate size and species tree as determined by Planning and Environmental Review, and
- where onsite replacement of an appropriate tree is not feasible, the permit applicant shall pay a fee equivalent to the County's cost for planting and maintaining each appropriate tree to the Tree Preservation Fund.

Also, amend the ordinance to expand the tree types for which the ordinance is applicable to include:

- any tree native to Sacramento County; and
- "heritage trees" that are 50 years or older or have a connection to a historical event, building, district, or person.

Action GHG-02-e: Continue to partner with the Sacramento Tree Foundation to use existing programs such as Sacramento Shade, NeighborWoods, and NATURE to increase the tree canopy through offering free tree planting on private property, prioritizing drought-tolerant species in Environmental Justice Communities.

Action GHG-02-f: Identify and partner with community cooperatives, and Sacramento Tree Foundation, to organize at least three tree-planting and maintenance events each year in different census designated places in the unincorporated county, to highlight and realize the community benefits of urban trees.

Action GHG-02-g: Inform county residents and businesses of the availability of free trees, from partnerships with Sacramento Tree Foundation, by including information on accessing the program on the County's website and through semi-annual newsletters, social media posts, or mailers.

Action GHG-02-h: Conduct a targeted outreach campaign to promote the availability of free trees, from partnerships with Sacramento Tree Foundation, in Environmental Justice Communities that may include multilingual printed outreach materials and promotion at community events.

Action GHG-02-i: Identify appropriate community-based organizations, and jointly submit applications for grant funding for urban forest expansion in underserved communities through the US Forest Service's Urban and Community Forestry Grant Program.

Action GHG-02-j: Develop a tracking system to ensure that the number of trees planted through County efforts is trackable, through internal County departments, the County's permitting system, and annual data requests from partner organizations on the number of trees planted, and removed, in the unincorporated county.

MEASURE GHG-03: Support the SMUD Zero Carbon Plan



GHG Reduction Potential

2030	2045
809,382 $MTCO_2e$	**0** $MTCO_2e$

Objectives

Support SMUD in the implementation of the 2030 Zero Carbon Plan, by:

- Identifying sites and capacity for installation of renewable energy resources and battery storage at County-owned buildings and properties.
- Supporting installation of 70 MW of rooftop solar photovoltaic and 28 MW of behind-the-meter battery storage between 2025 and 2030.
- Supporting installation of 281 MW of rooftop solar photovoltaic and 112 MW of behind-the-meter battery storage between 2025 and 2045.

Co-Benefits

Air Quality

Infrastructure Reliability

MEASURE SUMMARY

To reduce emissions associated with electricity, the County will support the Sacramento Municipal Utility District (SMUD) in executing its 2030 Zero Carbon Plan by coordinating with SMUD to identify sites for renewable energy generation and storage projects on County-owned properties and other potential sites in the unincorporated county, and by continuing ongoing efforts to streamline the permitting of residential and nonresidential rooftop solar PV or other renewable energy and battery storage projects.

As per mandates outlined in SB 100, electricity will be generated from 100 percent zero-carbon mix by 2045. Therefore, no additional emission reductions are expected from this measure in 2045.

ACTIONS

Action GHG-03-a: In coordination with SMUD, conduct a feasibility study to identify opportunities for installing renewable energy resources and battery storage at County-owned buildings and properties. During the assessment of sites, the potential for colocation of EV charging infrastructure will be considered. Following completion of the feasibility study, the County will incorporate feasible renewable energy and battery storage projects into the County's Capital Improvement Plan (CIP) to ensure funding for construction projects.

Action GHG-03-b: Coordinate with SMUD to identify potential sites for renewable generation and storage projects in the unincorporated county that would best support overall grid functionality while also supporting other measures to electrify the building stock and maximizing the use of existing electrical infrastructure.

Action GHG-03-c: Continue to encourage and streamline the permitting of rooftop solar and battery storage projects for existing buildings. The County already offers a streamlined and automated permitting process for residential solar projects through its SolarAPP+ tool, and the County's AP-25 Solar PV Information Package and Checklist identifies permit requirement and fee schedules for both residential and nonresidential solar installations. The County will update these resources to address solar and battery storage projects where appropriate, and consider reducing permitting fees.

Action GHG-03-d: At the time of development of any building reach codes (See Measures GHG-04, GHG-05, and GHG-07), coordinate with SMUD to identify appropriate measures to support SMUD's building and transportation electrification, and distributed energy resources goals. Reach code compliance under these measures may include distributed renewable energy resources and energy storage technologies.

Action GHG-03-e: Update the County Zoning Code to include land use requirements and development standards for stand-alone distributed energy resource facilities, including battery energy storage facilities.

Action GHG-03-f: Establish a County staff liaison to coordinate directly with SMUD, and meet with SMUD on a regular basis (at least annually), to address ways in which both the County and SMUD can support each other in reaching their near-term (2030) and long-term decarbonization goals.

MEASURE GHG-04: Accelerate Existing Building Energy Efficiency Retrofits and Decarbonization



GHG Reduction Potential

2030	2045
40,036 $MTCO_2e$	**203,945** $MTCO_2e$

Objectives

- Existing residential buildings:
  - 28,000 residential units retrofit by 2030 at half of maximum cost-effective retrofit measures score, and
  - 111,000 homes retrofit by 2045 at maximum cost-effective retrofit measures score.
- Existing nonresidential buildings:
  - Develop strategy and implement a building performance standards program which requires all nonresidential buildings to reduce non-electricity emissions 19% by 2030 and 85% by 2045
  - Implement and enforce a building performance standards program.

Co-Benefits

Public Health & Wellbeing

Equity

Air Quality

Infrastructure Reliability

MEASURE SUMMARY

To reduce emissions in existing buildings and support more energy-efficient homes and businesses, the County will adopt and enforce building code standards that go beyond the minimum requirements, known as "reach codes." These reach codes will set energy efficiency requirements for existing residential building retrofits and performance standards for existing nonresidential buildings. The aim is to reduce reliance on natural gas and other fossil fuels. The County will also provide incentives to encourage developers to meet or exceed the reach code requirements and provide training opportunities to construction workers for the successful implementation of this measure.

ACTIONS

Action GHG-04-a: Work with the California Energy Codes and Standards Program to develop reach codes and associated cost-effectiveness studies that must be met by existing residential buildings such that existing residential buildings' modeled energy efficiency must achieve half of the maximum cost-effective retrofit measures score at time-of-retrofit by 2030, and the maximum cost-effective retrofit measures score by 2045. (*Note: Cost-effective retrofit measures scores are a potential compliance mechanism for a reach code pathway that provides flexibility to implement measures that are assigned a numeric value, with a combination of measures meeting the target cost-effective retrofit measures score.*)

Action GHG-04-b: Develop an existing nonresidential buildings decarbonization strategy and implement a building performance standard that requires all buildings to reduce non-electricity-related emissions by 19 percent by 2030, and by 85 percent by 2045, with analysis of the existing building stock in the county.

Action GHG-04-c: Determine reach code compliance triggers which may be based on one or more metrics for retrofits such as time of equipment replacement, percent of existing floor area, building permit valuation, and project valuation; and based on square footage for existing nonresidential buildings.

Action GHG-04-d: Conduct stakeholder outreach with building industry members, contractors, residents, businesses, and other interest groups to present the reach code options and solicit feedback.

Action GHG-04-e: Develop and adopt an ordinance(s) to implement existing building reach code(s) based on the cost-effectiveness studies (completed as part of Actions GHG-04-a) and stakeholder outreach (completed as part of GHG-04-c).

Action GHG-04-f: Submit the ordinance(s) and cost-effectiveness studies for existing building reach code(s) to the California Energy Commission for review and approval.

Action GHG-04-g: Conduct training for County permitting staff to understand the reach code requirements for existing buildings and how compliance will be demonstrated.

Action GHG-04-h: Implement and staff a building performance standards program that:

- proactively engages with and enrolls nonresidential building owners and operators into a building performance standards program,
- develops a mechanism for building owners and operators to report energy use and emissions data,
- develops and distributes information on how to measures performance, maintain compliance, and reduce energy use and GHG emissions,
- enforces compliance with the building performance standards program, and
- compiles and reports data on the building performance standards program for CAP monitoring, such as number of buildings enrolled in the program and GHG reductions achieved.

Action GHG-04-i: Develop a tracking system for the types of measures implemented to maximize energy efficiency and decarbonization, energy efficiency upgrades, or pre-wiring completed by applicants pursuant to reach code requirements for existing buildings.

Action GHG-04-j: Develop an outreach program that provides education strategies that enable and encourage energy conservation and gas-to-electric conversions in residential and commercial buildings for space and water heating, and planning for equipment replacement before failure occurs due to emergencies. Develop and/or share existing online educational materials targeted toward building owners and tenants that are hosted on the County's website on energy efficiency and building electrification; including training, fact sheets, information on available incentives, video tutorials, and links to existing content (such as The Switch is On). In addition to education, video tutorials can explain to building owners how to enroll in real-time energy use monitoring tools to track energy use compared to historic levels and within the community through the EnergyStar™ Portfolio Manager, or other tools offered by third-party providers. The educational materials will also be provided as part of routine regulatory processes, such as applying for or renewing licenses or permits. Listed incentives should include, but not be limited to:

- SMUD's Residential and Business Rebate programs
- Energy Efficient Commercial Buildings Deduction tax credit program (179D)
- US Department of Energy's Homeowner Managing Energy Savings (HOMES) rebate program
- US Department of Energy's High-Efficiency Electric Home Rebate (HEEHRA) program

Action GHG-04-k: Review the existing permitting processes for residential building owners seeking to replace natural-gas-powered equipment with electric equipment and modify as needed to reduce complexity, cost, and processing time for any required permits.

Action GHG-04-l: Offset or reduce permitting fees for applicants for building retrofits that include all-electric conversion of mixed-fuel buildings and capping of natural gas lines, to encourage exceedance of existing building reach code requirements.

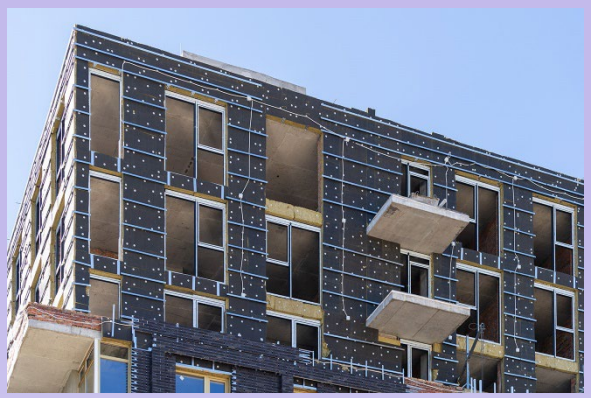
Action GHG-04-m: Partner with Sacramento Employment and Training Agency, Construction Trades Workforce Initiative, Sacramento-Sierra Building and Construction Trades Council, Sacramento Regional Builders' Exchange, and/or Northern California Construction Training to develop a training program targeted towards developing knowledge and skills of contractors and construction workers to support electrification of existing buildings.

Action GHG-04-n: Develop a revolving loan fund to provide low-interest loans to low-income residents and residents in Environmental Justice Communities to cover the time-of-replacement/emergency replacement of water heaters and/or HVAC units with electric options, ensuring that loans can be processed quickly and efficiently with equitable procedural access. Solicit donations and pursue grant funding opportunities to seed the revolving loan fund.

Action GHG-04-o: Review any County-adopted existing building reach codes at the release of each triennial building code cycle for updates to align with new cost-effective electrification pre-wiring and energy efficiency measures, such that the County's existing building reach codes are in line with the most recent decarbonization guidance and cost-effectiveness data.

Action GHG-04-p: Partner with Sacramento Housing and Redevelopment Agency (SHRA) and SMUD to identify appropriate sites and funding sources for electrifying SHRA managed housing developments.

MEASURE GHG-05: Decarbonize New Buildings



GHG Reduction Potential

2030	2045
4,462 $MTCO_2e$	**56,933** $MTCO_2e$

Objectives

- Residential buildings to meet or exceed a modeled EDR1 (hourly source energy) metric of 11.5 points (single-family) or Energy Source Margin of 11 percent (multifamily) above the Title 24, Part 6 statewide performance minimum, including:
  - 19,500 new residential units built by 2030, and
  - 78,200 new residential units built by 2045.
- Nonresidential buildings:
  - Adopt and enforce a reach code such that new construction reduces non-electricity-related emissions by 85% below 2022 Title 24, Part 6 equivalent emissions for each nonresidential buildings type.

Co-Benefits

Public Health & Wellbeing

Resource Preservation

Air Quality

Infrastructure Reliability

MEASURE SUMMARY

To reduce emissions in new buildings and support more energy efficient homes and businesses, the County will adopt a reach code that includes specific performance standards for energy efficiency and GHG emissions that would be applicable to all new buildings deemed eligible for these requirements. The aim is to reduce reliance on natural gas and other fossil fuels. The County also will provide incentives to encourage developers to meet or exceed the reach code requirements and provide training opportunities to construction workers for the successful implementation of this measure.

The County notes that at the time of development of this CAP, the California 2025 Building Energy Efficiency Standards are in development. As such, the County will monitor the standards included in the 2025 code to determine whether the adopted standards will, at minimum, achieve the GHG reduction and efficiency standards outlined by GHG-05.

ACTIONS

Action GHG-05-a: Work with the California Energy Codes and Standards Program to develop cost-effective reach codes that must be met by all new construction. The reach codes will include the following performance standards:

- Residential single-family: Projects must meet or exceed a modeled EDR1 (hourly source energy) metric of 11.5 points above the 2022 Title 24, Part 6 statewide performance minimum (the "standard design building").
- Residential multifamily: Projects must meet or exceed a modeled Energy Source Margin of 11 percent above the 2022 Title 24, Part 6 statewide performance minimum.
- Nonresidential: Projects must reduce non-electricity-related GHG emissions by 85 percent below 2022 Title 24, Part 6 equivalent emissions for each nonresidential buildings type.

Action GHG-05-b: Provide fee reductions or offsets and expedited permitting for residential and nonresidential projects that are built all-electric and do not include new natural gas infrastructure piping.

Action GHG-05-c: Conduct stakeholder outreach with building industry members, contractors, residents, businesses, and other interest groups to present the reach code options and solicit feedback.

Action GHG-05-d: Develop and adopt an ordinance(s) to implement new construction building reach code(s) based on the cost-effectiveness studies (completed as part of Action GHG-05-a) and stakeholder outreach (completed as part of Action GHG-05-c).

Action GHG-05-e: Submit the ordinance(s) and cost-effectiveness studies for new construction building reach code(s) to the California Energy Commission for review and approval.

Action GHG-05-f: Conduct training for County permitting staff to understand the reach code requirements for new buildings and how compliance will be demonstrated.

Action GHG-05-g: Engage with the California Energy Codes and Standards Program to continually monitor and reassess legal and regulatory barriers requiring all-electric new construction and develop pathways for eliminating the expansion of natural gas infrastructure in the county as feasible.

Action GHG-05-h: Develop a tracking system for the number of housing units and nonresidential square footage that is built to comply with the new reach code.

Action GHG-05-i: Provide information regarding new reach code requirements and any incentives to contractors, potential owners, and building applicants by publishing information on the County website, developer/business group-focused communications, and at the permit counter. This should also include information on grant funding opportunities, such as the Building Initiative for Low-Emissions Development (BUILD) Program, and 179D tax credits.

Action GHG-05-j: Partner with Sacramento Employment and Training Agency, Construction Trades Workforce Initiative, Sacramento-Sierra Building and Construction Trades Council, Sacramento Regional Builders' Exchange, and Northern California Construction Training to develop a training program targeted towards developing knowledge and skills of contractors and construction workers to support the construction of all-electric buildings. (Note that this action may be combined with Action GHG-04-k.)

MEASURE GHG-06: Retire Fossil-Fuel-Powered Landscaping Equipment



GHG Reduction Potential

2030	2045
3,134 $MTCO_2e$	**17,254** $MTCO_2e$

Objectives

Facilitate trade-in of fossil-fuel-powered landscaping equipment for electric equivalents. Aim to retire approximately 78,000 pieces of equipment by 2030 and 352,000 by 2045.

Co-Benefits

Public Health & Wellbeing

Air Quality

MEASURE SUMMARY

With this measure, the County aims to significantly reduce emissions generated by existing fossil-fuel-powered landscaping equipment by helping the community transition to electric equipment. The County plans to achieve this by partnering with the Sacramento Metropolitan Air Quality Management District (SMAQMD) to facilitate convenient trade-in of equipment and encourage residents and businesses to take advantage of the available opportunities.

ACTIONS

Action GHG-06-a: Work with SMAQMD to implement a landscaping equipment trade-in program that provides vouchers for purchasing electric landscape equipment to residents and businesses that trade in fossil-fuel-powered landscaping equipment.

Action GHG-06-b: Explore the feasibility of and funding opportunities for expanding the landscaping equipment trade-in program which may include:

- organizing trade-in events at convenient locations for residents throughout the county, multiple times per year; and
- establishing additional permanent drop-off locations at other County-operated facilities.

Action GHG-06-c: Develop a tracking system for the equipment exchanged by applicants through the landscaping equipment trade-in program including number and type of equipment.

Action GHG-06-d: Share information regarding incentives, including CARB's zero-emission landscaping equipment incentive programs and SMAQMD's Commercial Lawn and Garden Program, if available, and co-benefits of using electric landscaping equipment through newsletters, social media post, and the County's website.

MEASURE GHG-07: Increase EV Charging and ZEV Infrastructure



GHG Reduction Potential

2030	2045
290,826 $MTCO_2e$	**220,381** $MTCO_2e$

Objectives

Plan for and deploy increased EV network capacity and other ZEV infrastructure in the unincorporated county, installing 24,000 EV chargers by 2030 and 72,000 EV chargers by 2045 through both County direct installation and requirements for new development and retrofit projects.

Co-Benefits

- Public Health & Wellbeing
- Equity
- Air Quality
- Infrastructure Reliability

MEASURE SUMMARY

With this measure, the County aims to reduce on-road transportation emissions by increasing the availability and convenience of charging stations for electric vehicles (EVs) and refueling infrastructure for other types of zero-emission vehicles (ZEVs), including current and future EV charging types. The County plans to achieve this by making the network capacity and infrastructure for EVs and ZEVs easily accessible by installing a considerable number of EV chargers throughout the unincorporated county. The plan is to conduct direct installations by the County and simultaneously make amendments to the building code to require new developments and eligible retrofits to install EV charging stations or facilities.

ACTIONS

Action GHG-07-a: Develop and adopt an ordinance that amends the building code to require EV charging capability consistent with the latest version of CALGreen Tier 2 Voluntary Measures, at the time of ordinance development, for the following project types:

- new single-family residential,
- new multifamily residential, and
- new nonresidential (both light-duty and medium-/heavy-duty requirements).

Action GHG-07-b: Develop and adopt an ordinance that amends the building code to require EV charging capability installation at existing nonresidential developments consistent with the latest version of CALGreen Tier 2 Voluntary Measures, at the time of ordinance development, for additions or alterations to existing buildings or parking facilities under the following conditions:

- When the scope of construction work includes an increase in power supply to an electric service panel as part of a parking facility addition or alteration.

- When a new solar PV system is installed covering existing parking spaces.
- When additions or alterations to existing buildings are triggered pursuant to CALGreen and the scope of work includes an increase in power supply to an electric service panel.

Action GHG-07-c: Develop and adopt an ordinance that amends the building code to require EV charging capability installation at existing multifamily residential developments consistent with the latest version of CALGreen Tier 2 Voluntary Measures, at the time of ordinance development, for additions or alterations to existing buildings or parking facilities under the following conditions:

- When new parking facilities are added.
- When a new solar PV system is installed covering existing parking spaces.
- When electrical systems or lighting of existing parking facilities are added or altered, and the work requires a building permit.
- When additions or alterations to existing buildings are triggered pursuant to CALGreen and the scope of work includes an increase in power supply to an electric service panel.

Action GHG-07-d: Develop a "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy" to prepare Sacramento County for the widespread adoption of EVs, hydrogen fuel cell vehicles, or other types of ZEVs, and install public EV chargers in the unincorporated county and provide hydrogen-fueling and other renewable fuel options, using the Electric Vehicle Readiness and Infrastructure Plan as a foundation. The strategy should:

- identify key areas for public EV charging access, including near multifamily developments and in Environmental Justice Communities;
- assess additional electrical load capacity needs and limitations for EV charging;
- assess biofuels, hydrogen, and other ZEV technology growth forecasts, and potential infrastructure needs to support growth in alternative fuel demand;
- identify costs and funding and financing strategies for installation of EV charging installation;
- identify policy objectives to support an increased need for EV and alternative fuel infrastructure based on the analysis results; and
- identify methods and procedures for monitoring progress and evaluating the effectiveness of the strategy, and the strategy should be reviewed and updated every three years to reflect technology and market trends.

Action GHG-07-e: Upon completion and adoption of the "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy," include new EV charging infrastructure projects annually in the CIP to provide the direct install of at least 100 publicly available EV chargers per year. Installation of charging infrastructure should be located in shaded areas of parking lots when practical, and installation in shaded areas should be considered to increase charging efficiency.

Action GHG-07-f: Adopt an ordinance requiring gas stations that undergo major renovations with a permit value over $300,000 to install at least one EV DC fast charging station for every 10 fuel dispensers.

Action GHG-07-g: Develop a system for tracking the number, type, and location of new EV chargers installed in the unincorporated county each year for permitted installations.

Action GHG-07-h: The Sacramento County Airport System (SCAS) will expand EV charging at county airports by doing the following:

- Develop an EV charging plan for County airports, taking into consideration the opportunities and constraints identified in the Energy Management Plan as specified under Action GOV-04-a. The plan will hierarchize EV charging for the public and employees.
- SCAS currently hosts a pay-to-charge EV fueling facility at the Sacramento International Airport with eight DC fast chargers for passengers, employees, and commuters along the I-5 corridor. This facility is open 24-7 to allow EV drivers to charge their vehicles at any time. A second fueling station will be constructed in the Free Waiting Area to allow even greater access to charging.
- Any new long-term parking facilities constructed will include an appropriate percentage of spaces equipped with Level 1 chargers, based on the EV charging plan. Average parking dwell times at the airport do not warrant charging in excess of Level 1.
- Include signage for EV charging facilities for both wayfinding and parking restrictions.
- Perform bi-annual reviews of publicly accessible EV charging utilization at Sacramento International Airport and install additional EV chargers as supported by demand.

Action GHG-07-i: Prepare educational materials including pamphlets and video tutorials and conduct educational workshops to inform residents and businesses about new requirements, EVs rebates (like the SMUD's Residential Rebate program, SMUD's Business Rebate program, the Clean Vehicle Tax Credit program, the Commercial Clean Vehicles tax credits program, and the Credit for Previously Owned Clean Vehicles program) and the expanded EV infrastructure. Education materials and workshops will strive to be culturally compatible to be accessible to underserved and Environmental Justice Communities.

Action GHG-07-j: Partner with SMAQMD to secure additional funding for expanding the Our Community CarShare program to additional affordable housing developments in Environmental Justice Communities in the unincorporated county.

Action GHG-07-k: Coordinate with regional ZEV initiatives developed or implemented by various agencies including, Sacramento Regional Transit District (SacRT), City of Sacramento, SMUD, and SMAQMD to coordinate the activities of different agencies and simplify or unify permitting processes for the installation of EV charging or hydrogen refueling infrastructure and the deployment of ZEV fleets in the region.

Action GHG-07-l: Update the County's EV infrastructure permitting process triennially (if needed) to maintain consistency with regional permitting best practices, and as permitting processes are updated perform internal trainings such that permitting staff understand the permitting, inspection, and enforcement process. The County will also consider reductions in permitting fees during process updates.

Action GHG-07-m: Reassess and update the "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy" every five years to incorporate new market trends and technologies.

Action GHG-07-n: Conduct a feasibility study on a County program to encourage early retirement of internal combustion engine (ICE) vehicles and replacement with electric vehicles. The program may assess the feasibility of offering rebates, tax credits, or other incentives such as a buyback plan.

Action GHG-07-o: Based on the findings of the feasibility study described in GHG-07-n, the County may develop and implement a program to facilitate the early retirement of ICE vehicles.



MEASURE GHG-08: Develop a VMT Impact Fee Program



GHG Reduction Potential

2030	2045
Not Quantified	Not Quantified

Objectives

Develop a VMT Impact Fee Program to require developers to contribute to regional VMT reductions when project-specific VMT cannot be mitigated to below significance thresholds after all feasible onsite mitigation has been implemented.

Co-Benefits

Public Health & Wellbeing

Equity

Air Quality

MEASURE SUMMARY

Through this measure, the County aims to reduce on-road transportation emissions by developing a vehicle miles traveled (VMT) Impact Fee program that can fund VMT reduction projects in the unincorporated County. Under this proposed program, developers would be required to pay a VMT Impact Fee to help reduce regional VMT. This fee would apply to applicable development projects if the developers were unable to reduce onsite VMT to meet the VMT significance thresholds.

This measure was deemed not quantifiable because there was insufficient data to quantify reductions. The quantification of this measure would depend on how many individual projects would be subject to the VMT Impact Fee Program, and whether they would be required to first mitigate onsite VMT versus paying into the new VMT Impact Fee program. These details cannot be known and cannot be reasonably estimated with publicly available data until nexus studies and draft ordinances have been developed identifying those assumptions and parameters.

ACTIONS

Action GHG-08-a: Conduct a VMT Impact Fee Program nexus study to identify key VMT mitigation projects in the unincorporated County and the costs per VMT of project implementation. The projects identified in the nexus study must be proven to be:

- Additional to any VMT reduction projects or programs that would be implemented without the VMT Impact Fee as a funding source.
- Verifiable for monitoring of achieved VMT reductions after project implementation.
- Lasting the duration of the project's operational lifespan for which VMT is being mitigated through the VMT Impact Fee.
- Having direct public benefits to low-income residents and Environmental Justice Communities.

- Having appropriate nexus between new development projects and off-site VMT mitigation projects, including proximity of off-site VMT mitigation projects to new development projects within the unincorporated County.

Action GHG-08-b: Based on the findings of the nexus study, adopt an ordinance establishing the VMT Impact Fee Program that allows project proponents to pay for offsite VMT mitigation after all feasible onsite mitigation has been implemented and project VMT is still above the significance threshold. Detailed feasibility criteria will be developed and will include appropriate economic considerations to ensure that all feasible onsite VMT mitigation measures are prioritized and implemented prior to the development of offsite mitigation measures in the form of VMT Impact Fees.

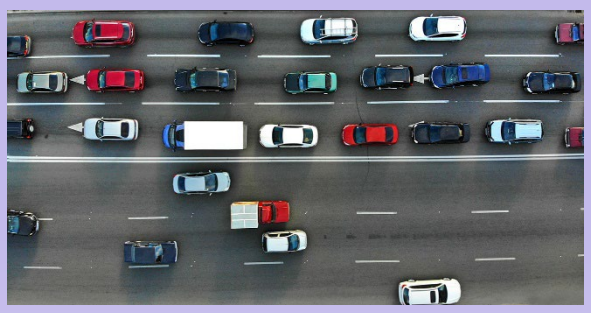
Action GHG-08-c: Establish a VMT Impact Fee fund to invest in VMT mitigation projects and a fee collection mechanism into which developers will pay.

Action GHG-08-d: Create a VMT monitoring program that allocates County resources to the annual monitoring and reporting of VMT reductions achieved through the implementation of VMT mitigation projects funded through the VMT Impact Fee and compare against the estimated VMT reductions at the time of VMT Impact Fee collection.

Action GHG-08-e: Reassess the projects available for offsite VMT mitigation through the VMT Impact Fee Program every three years, including the effectiveness of VMT mitigation through monitoring and reporting and the additionality of eligible projects.

Action GHG-08-f: Develop an informational packet on the requirements and applicability of the VMT Impact Fee Program, focused on educating project applicants and County staff.

MEASURE GHG-09: Reduce VMT from New Developments



GHG Reduction Potential

2030	2045
14,084 $MTCO_2e$	**15,885** $MTCO_2e$

Objectives

Update the requirements for TSM Plans to include a target of 15% reduction in annual VMT below the regional average from all new developments through 2045.

Co-Benefits

Public Health & Wellbeing

Air Quality

MEASURE SUMMARY

Through this measure, the County aims to include more rigorous VMT reduction targets in the Transportation System Management (TSM) Plans already required in the County's zoning code to promote sustainable transportation practices, alleviate traffic congestion, reduce on-road transportation emissions, and contribute to long-term environmental sustainability in the unincorporated county from all new developments.

ACTIONS

Action GHG-09-a: Adopt an ordinance to update Section 5.9.6 of the Zoning Code to update the TSM Plan requirements so that new development projects will be required to establish a target of 15 percent reduction in annual VMT below the regional average with a requirement for annual reporting of employee commute trips and VMT reduction target alignment, and a requirement to join 50 Corridor TMA/Sacramento TMA. The update should also provide additional and updated Trip Reduction Measures, such as transit incentives, micro-transit programs, parking cash-out and hybrid work policies.

Action GHG-09-b: Develop a tracking mechanism that includes annual reporting requirements and validation procedures through a web portal to demonstrate ongoing compliance. The project owner/applicant will be required to report the following information annually:

- employee commute VMT,
- modal split,
- number of onsite employees,
- number of full-time employees,
- ongoing travel management programs, and
- VMT reduction target progress.

Action GHG-09-c: Partner with Sacramento Area Council of Governments (SACOG) to provide up-to-date information about available transportation demand management (TDM) programs in Sacramento County through email and at time of annual reporting (See Action GHG-09-b) for all projects subject to Section 5.9.6 of the Zoning Code.

Action GHG-09-d: Conduct a nexus study for imposing a fee structure for projects that do not meet the employee commute trip reduction requirements. Based on the results, impose a fee for projects that do not meet trip reduction requirements for three or more consecutive years. Fees collected should be used to fund micro-transit or other trip reduction projects.

Action GHG-09-e: Develop an informational packet on the new requirements and applicability of TSM plans and the Zoning Code updates, focused on educating project applicants, facilities already required to submit TSM plans, and County staff.



MEASURE GHG-10: Revise Parking Standards



GHG Reduction Potential

2030	2045
279 $MTCO_2e$	**38** $MTCO_2e$

Objectives

Revise parking standards for new developments to reduce housing costs in transit priority areas and reduce VMT.

Co-Benefits

Resource Preservation

Air Quality

MEASURE SUMMARY

Under this measure, the County will revise parking standards for new developments aiming to reduce housing costs, promote transit use, decrease VMT, and thereby reduce on-road transportation emissions. By reducing or eliminating minimum parking requirements and encouraging shared parking facilities in areas with good public transit access, the County aims to encourage people to use public transportation instead of single-occupancy vehicles. This can help reduce traffic congestion and improve air quality in Sacramento County. This measure builds on recent changes in state law, including AB 2097 (enacted in 2022) which prohibits local agencies from imposing a minimum parking requirement on most development projects located within a half-mile radius of a major transit stop; and AB 894 (enacted in 2023), which requires local agencies to allow parking spaces identified in a shared parking agreement to count toward meeting automobile parking requirements for a new or existing development or use.

ACTIONS

Action GHG-10-a: Conduct a parking demand study that focuses on key rezone and infill growth areas to understand the current utilization of parking, and how transit access influences parking behaviors, to support the development of new minimum parking standards and shared parking opportunities. These areas should include at minimum:

- North Watt Avenue Corridor,
- West Arden Arcade,
- Arden Way from Howe to Watt, and
- other aging commercial corridors identified in the General Plan Land Use Element.

Action GHG-10-b: Adopt an ordinance to update the Zoning Code to update the current parking standards for new developments, based on the results of a parking demand study, to lower or eliminate minimum parking requirements and add requirements for shared parking facilities. Include mutually supportive parking management strategies for effective implementation and to mitigate potential parking spillover into surrounding areas. These include the following actions:

- Unbundle parking for new developments.
- Require residential area parking permits.
- Implement on-street parking regulations.

Action GHG-10-c: Measure outcomes of parking standard revisions by monitoring trends along corridors where unbundled parking is implemented including:

- Transit ridership.
- Housing costs compared to developments where parking standards were not changed.

Action GHG-10-d: Reassess the parking standards every five years with an aim to reduce housing costs near transit and support transit-priority development.

Action GHG-10-e: Share information regarding new requirements through newsletters, the permitting counter, and the County's website to project applicants as soon as the ordinance is adopted.

MEASURE GHG-11: Increase Transit Ridership



GHG Reduction Potential

2030	2045
323 $MTCO_2e$	**101** $MTCO_2e$

Objectives

Partner with regional transportation agencies to increase transit ridership by 16% by 2030 and 43% by 2045, above 2021 levels, through implementation of the "Transit" policy plan in the Circulation Element.

Co-Benefits

- Public Health & Wellbeing
- Equity
- Air Quality
- Infrastructure Reliability

MEASURE SUMMARY

Through this measure, the County intends to encourage increased transit ridership to shift travel from single-occupancy vehicles to public transit. The County will implement the General Plan Circulation Element's "Transit" policy plan by partnering with agencies like SacRT and SACOG. The policy plan will improve transit services by making the services more convenient and comfortable and therefore encourage the use of transit instead of light-duty and single-occupancy vehicles.

ACTIONS

Action GHG-11-a: Update the Traffic Impact Analysis (TIA) Guidelines, which guide traffic impact analyses for individual projects, to include assessments of public transit, including but not limited to:

- Accessibility of transit, including the American Disabilities Act (ADA) accessibility, to pedestrians, in the project vicinity.
- Need for route extensions/connectors and bus stops.
- Adequacy of pedestrian and bicycle connections to transit, including bike paths and parking.
- Impact of project-generated automobile trips on transit speeds and dwell time.
- Assessment of project-generated transit trips on transit capacity.

Action GHG-11-b: Update the TIA Guidelines to require projects near transit to prioritize measures to improve and support transit access, which may include:

- Prioritize walking and biking connections to transit.
- Allow for space and utility connections for high-quality bus stops at project frontages (e.g., electricity for bus stop lighting, signage, and surveillance, space for bike parking/lockers) in coordination with SacRT.

- Prioritize improving transit quality at the project site over private shuttles.
- Encourage transit use, for example through transit passes and/or other transit-specific initiatives.

Action GHG-11-c: Continue to include SacRT and other appropriate transit providers, in the pre-application process and review of traffic impact analyses for new projects to verify that projects do not impact transit access and that any planned or identified transit infrastructure improvements are addressed.

Action GHG-11-d: Dedicate one County staff member as a Transit Coordinator to lead collaboration with regional partners and coordinate within the County's transportation planning and development review processes. Responsibilities and duties may include but are not limited to:

- Facilitate regular coordination with local transit agencies to align transit priorities and coordinate County support for local transit planning and implementation.
- Participate in regional transit and transportation planning and represent the unincorporated county's interests, especially in Environmental Justice Communities.
- Prioritize funding for the most effective and equitable transit-supporting infrastructure to ensure access to transit is provided.
- Track changes in travel patterns, vehicle ownership trends, and evolutions in transit service models (such as on-demand micro-transit) to maximize transit use and reduce VMT from light-duty vehicles.
- Prioritize transit access improvements to reduce access barriers for seniors and people with physical disabilities, in coordination with the County ADA Coordinator.
- Coordinate land use zoning densities with existing and future mass transit station locations to ensure denser land use within 1/2 to 1 mile of rail or BRT (or other high-capacity transit) stations.
- Review road space and work with regional transit providers to re-allocate road space and change traffic operations to prioritize transit (e.g., bus-only lanes, pullouts).

Action GHG-11-e: Meet regularly with SacRT and SACOG transit and transportation planners serving the county to identify actions the County can take to help improve access to transit including, but not limited to:

- Identifying, prioritizing, and funding short-term needs for transit improvements in the unincorporated county based on the greatest need and highest impact (e.g., repairing dilapidated transit shelters and stops, addressing immediate safety concerns on or near transit stops, ensuring adequate bike parking at stops).
- Identifying, prioritizing, and funding long-term transit access improvements based on the greatest need and highest impact.
- Identifying priority transit areas, leveraging SACOG's data capabilities to identify areas that can benefit most from increased transit access.
- Understanding transit demand and parameters that will help increase ridership (e.g., station types, safety considerations, type of services, frequency) (SACOG Next Transit Strategy: UX.COM.3).
- Supporting non-County transit access projects (e.g., first mile/last mile projects like bike/e-scooter share partnerships, transportation network company reimbursements, and micro-transit for rural areas).

- Developing an aggressive joint marketing strategy to increase awareness and understanding of transit service, first mile/last mile amenities, and transit access and wayfinding, and advertising improvements and benefits of transit. Combining efforts with active transportation marketing.
- Supporting passenger safety.

Action GHG-11-f: Annually request transit ridership data within unincorporated Sacramento County from SACOG and SacRT to monitor transit utilization and transit mode share.

Action GHG-11-g: Provide and improve connections to transit stations by identifying, prioritizing, and seeking funding to plan and construct roadways, bikeways, and pedestrian improvements within 1/2 mile of existing and planned transit stations (implemented through Measure GHG-12).

Action GHG-11-h: Explore a potential partnership with SacRT to expand transit access when developing the VMT Mitigation Fee (see GHG-08).

Action GHG-11-i: Continue to partner with SacRT, incorporated cities, school districts, and other supporting organizations in a long-term cost-sharing program to provide fare-free transit for youth (i.e., ages 4-18) in SacRT's service area. This program removes barriers to youth transit ridership and enhances mobility options for families while also reducing VMT and GHG emissions.



MEASURE GHG-12: Implement the Active Transportation Plan



GHG Reduction Potential

2030	2045
2,564 $MTCO_2e$	**2,855** $MTCO_2e$

Objectives

Improve active transportation infrastructure through implementation of priority projects identified in the 2022 Active Transportation Plan that include 66 pedestrian spot improvements, 51 miles of sidewalk gap closures, and bicycle projects representing 190 miles by 2030 and all recommendation projects identified in the ATP by 2045.

Co-Benefits

- Public Health & Wellbeing
- Equity
- Air Quality
- Infrastructure Reliability

MEASURE SUMMARY

The 2022 Active Transportation Plan (ATP) is the County's vision to enhance active transportation infrastructure and reduce reliance on fossil-fuel-powered vehicles. Through the 2022 ATP, the County identified projects to increase and improve bike lanes, sidewalks, and pedestrian spots and provide more opportunities to reduce emissions generated by driving vehicles. The implementation of actions identified in 2022 ATP has already started. The County intends to reiterate its commitment to improving the infrastructure for pedestrians and cycling in the unincorporated county, with prioritization of projects in Environmental Justice Communities. The County has identified priority projects in the 2022 ATP that are planned to be completed by 2030, while all other recommended projects are planned to be completed by 2045.

ACTIONS

Action GHG-12-a: Develop and adopt an implementation plan for the goals and implementation measures included in the 2022 ATP.

Action GHG-12-b: Update the Zoning Code and/or Design Guidelines to clarify the preferred siting of both short-term and long-term employee bicycle parking to encourage bicycle use at commercial, multi-family, industrial, or institutional uses.

Action GHG-12-c: Continue to include active transportation projects in the transportation Capital Improvement Plan as project funding is secured.

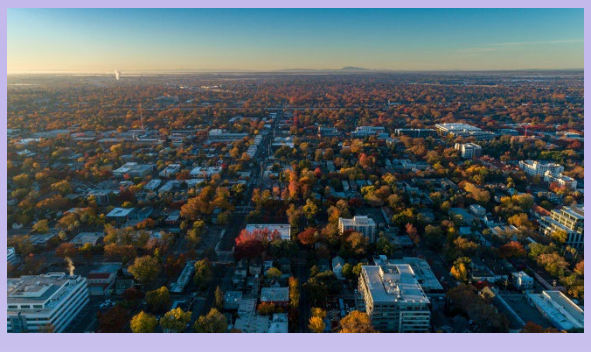
Action GHG-12-d: Implement Safe Routes to School programs and infrastructure improvements identified in the 2022 ATP as funding becomes available, with programs and infrastructure upgrades implemented at 6 schools by 2030 and the remainder of schools in the unincorporated county by 2045. The County has already secured funding for and hired a consultant to implement Safe Routes to School programming at the following schools: Thomas Edison Elementary, Howe Elementary, Fern Bacon Middle, Pacific Elementary, Nicholas Elementary, and Ethel Baker Elementary.

Action GHG-12-e: Develop a Complete Streets Design Guide based on Caltrans' Design Information Bulletin #94 (Complete Streets: Context Design Guidance) and other best practices to provide policy and design guidance on the planning, design, and operation of county roadways to be used in the following situations:

- When designing future streets or reconstructed streets in an area experiencing redevelopment.
- When implementing a capital improvement project, such as the construction or reconstruction of a street, intersection, or bridge.
- When resurfacing a street or conducting major work in the street, which may create an opportunity to reconsider some aspects of the street's design.



MEASURE GHG-13: Advance Infill Development



GHG Reduction Potential

2030	2045
Not Quantifiable	Not Quantifiable

Objectives

Implement the Infill Development Program to advance infill development in Priority Areas through 2030 and 2045.

Co-Benefits

Public Health & Wellbeing

Resource Preservation

Air Quality

MEASURE SUMMARY

This measure is based on the County's existing Infill Development Program, which promotes denser, more sustainable development within identified Priority Areas to reduce urban sprawl, preserve open space, and optimize existing infrastructure. The Priority Areas identified in the Infill Development Program are the regions within the urbanized parts of the unincorporated county that are targeted for redevelopment and new construction. These areas are typically characterized by vacant or underutilized lands, such as empty lots or outdated commercial spaces that are situated within existing urban settings. The County plans to advance infill development through several implementing actions in these areas under this measure, including conducting studies for a new impact fee on projects that do not meet infill development standards, as a means of increasing financial support for infill development projects.

Measure GHG-13 was deemed not quantifiable because project-level data on infill development was not available.

ACTIONS

Action GHG-13-a: Designate an Infill Coordinator position within the Planning and Environmental Review Division which will lead and oversee implementation of the Infill Development Program, including, but not limited to:

- Oversee coordination with County departments and external stakeholders throughout the development process.
- Identify the major barriers to quality infill development and develop strategies for addressing the removal of those barriers.
- Lead development of policies, development codes, and zoning codes that support infill.
- Support staff training on any relevant policies and codes designed to support infill.
- Develop and oversee administration of incentives for quality infill projects.
- Perform comprehensive reviews of the success and opportunities of the infill program every 5 years.

Action GHG-13-b: Conduct a nexus study for imposing a fee structure for projects that do not meet defined standards for infill development (Infill Fee) to provide financial support for infill projects. Activities that may facilitate infill development or redevelopment using the infill fee fund, include but are not limited to:

- design assistance,
- fee deferrals,
- application fee reductions or offsets,
- staff support for Property Business Improvement District formation and capacity building,
- EV charging facilities and other mobility hub infrastructure, and
- code amendments that may be necessary for the conversion of existing commercial or office buildings to residential uses.

Action GHG-13-c: Establish an Infill Fee fund using payments from non-infill development projects with the following requirements:

- Developers/builders of projects for non-infill developments, shall pay the County the appropriate amount determined by the nexus study for each dwelling unit equivalent; provided that the Infill Fee shall not be paid for any unit constructed on any parcel dedicated to the Sacramento Housing and Redevelopment Agency (SHRA) pursuant to an applicable Affordable Housing Strategy.
- The fee shall be adjusted annually on January 1 based on the Engineering News Record Construction Cost Index.
- This fee shall be paid to the County upon issuance of a building permit for the development and deposited into a separate account dedicated to facilitating infill development or redevelopment.

Action GHG-13-d: Adopt an ordinance to update the Zoning Code establishing the Infill Fee requirements for all new non-infill development projects.

Action GHG-13-e: Continue to engage with SACOG in regional planning efforts to secure funding and implement programs (such as the Green Means Go Pilot Program) to increase infill and reduce VMT by supporting the implementation of SACOG's Metropolitan Transportation Plan/Sustainable Communities Strategy.

Action GHG-13-f: Share information regarding new Infill Fee requirements and infill supportive policy and code changes through public notices, the County website, and information sheets for developers.

Action GHG-13-g: Adopt a form-based code based on floor area ratios for infill areas and corridors, such as Stockton Boulevard, when determined beneficial to reducing housing costs and increasing housing density.

Action GHG-13-h: Conduct a review of existing development standards and permitting process to evaluate measures to reduce the baseline costs of housing in infill areas such that Infill Fee funds can provide additional value and reduce housing costs in infill areas.

MEASURE GHG-14: Increase Organic Waste Diversion and Landfill Gas Capture



GHG Reduction Potential

2030	2045
149,039 $MTCO_2e$	**202,100** $MTCO_2e$

Objectives

Increase diversion of organic waste deposited into landfills from both commercial and residential sources to achieve a 75% diversion rate in countywide organic waste by 2030, 90% by 2045, and increase landfill gas capture at County-owned landfills.

Co-Benefits

- Public Health & Wellbeing
- Carbon Sequestration
- Equity
- Resource Preservation
- Infrastructure Reliability

MEASURE SUMMARY

This measure is the County's initiative aimed at reducing emissions generated by organic waste disposal and promoting more sustainable waste management practices. The County will enhance existing efforts and adopt new methods for diverting organic waste away from landfills, for both residential and commercial waste, by developing programs and encouraging residents and businesses to adopt sustainable waste management practices. The County will also explore the potential for increasing the effectiveness of existing landfill gas collection systems at County-owned landfills.

ACTIONS

Action GHG-14-a: Conduct a regional organics capacity planning study to better understand the future needs of composting facility capacity and identify opportunities for expansion of regional compost capacity.

Action GHG-14-b: Amend the Zoning Code to clarify and streamline the permitting process for the construction and operation of composting facilities within the unincorporated county.

Action GHG-14-c: Continue to implement and enforce organics diversion ordinances associated with SB 1383 (enacted in 2016) by working with the County's franchised commercial haulers to ensure all customers are subscribed to the appropriate level of service and that audits are completed and enforced on the appropriate schedule.

Action GHG-14-d: Provide Backyard Composting Program information flyers, and include information about the program in County emails or social media communications at least twice per year, with the following information for increasing participation in the Backyard Composting Program:

- How to start a compost bin.
- What materials to add.
- How to maintain your compost.
- Benefits of using compost in gardens for soil and garden health.

Action GHG-14-e: Continue to host workshops at least once every year and host educational materials on the County's website to raise awareness on the type of waste that can go in garbage carts, organics carts, and recyclable carts with an aim to increase the diversion of organic waste. Also, provide information to commercial waste generators on how to comply with SB 1383 requirements.

Action GHG-14-f: Partner with county school districts to educate students about:

- sustainable behaviors,
- waste types,
- how to dispose of waste in appropriate containers, and
- how to compost at home.

Action GHG-14-g: Continue collaborating with local Sacramento food banks to continue food recovery services and educate residents and food-generating businesses about the requirements, local food banks, and food protection. Maintain a list of food recovery organizations in Sacramento County on the County's website.

Action GHG-14-h: Apply for available grants to further education and implementation of organics diversion.

Action GHG-14-i: Conduct a waste characterization study every five years to determine the materials comprising the unincorporated county's waste stream, the amount of organic waste sent to landfills, and the amount of organic waste diverted from landfills.

Action GHG-14-j: Annually collect organics diversion tonnage and landfilled waste tonnage from waste haulers operating within the unincorporated County to track organics diversion rates over time.

Action GHG-14-k: Perform an engineering study to determine the feasibility and cost of increasing landfill gas capture at County-owned landfills.

Action GHG-14-l: Extend financial and regulatory support to food recovery banks and organizations that deliver food to the elderly, disabled, or others who are unable to leave home. Reassess the efficiency of support provided every five years.

MEASURE GHG-15: Implement the South Sacramento Habitat Conservation Plan



GHG Reduction Potential

2030	2045
Not Quantifiable	Not Quantifiable

Objectives

Implement the South Sacramento Habitat Conservation Plan.

Co-Benefits

Resource Preservation

MEASURE SUMMARY

With this measure, the County will continue its commitment to conserve and enhance its natural lands identified in the South Sacramento Habitat Conservation Plan (SSHCP). The County aims to understand and improve the carbon sequestration potential of these lands, and the County will partner with the South Sacramento Conservation Agency to perform a carbon sequestration capacity analysis and incorporate new carbon sequestration estimates in future updates to the County's GHG inventory.

This measure was deemed not quantifiable because it is not known what development, if any, could take place on these lands that would be avoided by this preservation measure. Additionally, actions to increase carbon sequestration on agricultural and open space lands are already captured and quantified under Measure GHG-01 (Carbon Farming), and sufficient data was not available to avoid potential double counting.

ACTIONS

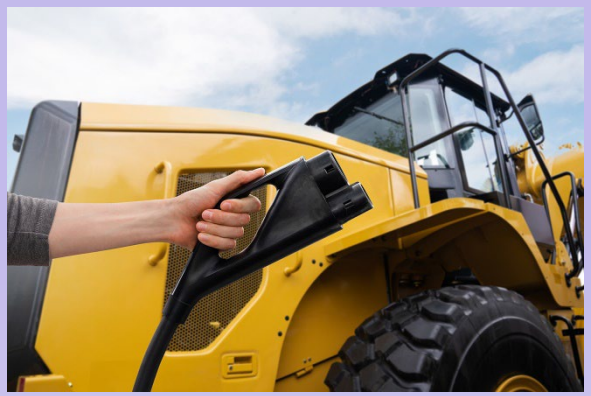
Action GHG-15-a: Continue implementation of the SSHCP to protect and enhance wetlands (primarily vernal pools), upland habitats, and agricultural lands within the conservation area.

Action GHG-15-b: Perform a carbon sequestration capacity analysis to understand the baseline carbon storage and sinks associated with lands covered under the SSHCP, and how preservation, restoration, and management activities under the implementation of the SSHCP may act to increase carbon sequestration potential in these lands. The analysis should also identify data that can be collected from the South Sacramento Conservation Agency annual implementation reports to calculate the carbon sequestration potential of SSHCP implementation activities for countywide GHG inventory updates.

Action GHG-15-c: Coordinate with the South Sacramento Conservation Agency to annually track the acres of lands conserved under the implementation of the SSHCP. Also, collect data to calculate additional carbon sequestration potential associated with activities performed each year for inclusion in GHG inventory updates, after a carbon sequestration capacity analysis has been completed.



MEASURE GHG-16: Expand the Use of Zero-Emission Construction and Agricultural Equipment



GHG Reduction Potential

2030	2045
13,669 $MTCO_2e$	**68,919** $MTCO_2e$

Objectives

Encourage adoption of zero-emission construction and agricultural equipment through incentives and outreach efforts.

Co-Benefits

Public Health & Wellbeing

Air Quality

MEASURE SUMMARY

Through this measure, the County intends to develop a pathway to phase out fossil-fuel-powered construction and agricultural equipment and encourage the use of zero-emission equipment, including electric- and hydrogen-powered equipment. The County will promote existing incentives and conduct targeted outreach.

ACTIONS

Action GHG-16-a: Incorporate use of zero-emission construction and portable equipment in the County's bid evaluation process for capital improvement projects, providing preference to contractors that use electric-powered equipment.

Action GHG-16-b: Provide information about available incentives for zero-emission construction and portable equipment to contracts at the building permit counter through informational brochures, such as CARB's Clean Off-Road Equipment Vouchers and Carl Moyer program.

Action GHG-16-c: Include a list of available incentives to support the purchase of zero-emission agricultural equipment on the County Agricultural Commissioner's website, such as CARB's FARMER program, Clean Off-Road Equipment Vouchers, Carl Moyer program, and SMAQMD's Commercial Lawn and Garden Program. Annually update the list of incentives and share it with the Sacramento County Farm Bureau.

Action GHG-16-d: Develop and adopt an ordinance requiring that all discretionary projects use electric-powered or zero-emission construction equipment starting in 2035.

Action GHG-16-e: Require that all projects implement SMAQMD Basic Construction Emission Control Practices (Best Management Practices) for reducing construction emissions as part of project conditions of approval.

MEASURE GHG-17: Carbon Neutral New Growth



GHG Reduction Potential

2030	2045
Not Quantified	**Not Quantified**

Objectives

New growth outside of the County's UPA/USB must demonstrate alignment, or exceedance, of the performance standards of GHG measures in the CAP and achieve net zero GHG emissions.

Co-Benefits

Public Health & Wellbeing

Air Quality

MEASURE SUMMARY

The County will require that all new growth projects outside of the Urban Policy Area (UPA) or Urban Services Boundary (USB) must achieve carbon neutrality (i.e., net zero GHG emissions), and must demonstrate compliance with all applicable GHG measures in the CAP. The purpose of this measure is to ensure that new growth projects support the attainment of the County's GHG reduction targets.

Note: Net zero GHG emissions means emissions of GHGs to the atmosphere are balanced by removals of GHG emissions over a period of time; in this case, during project construction and operation of the proposed new growth project. This means that GHG emissions generated by project sources such as transportation, energy consumption, fuel combustion, industrial processes, water usage, waste generation, and land use change must be less than or equal to the amount of CO_2 that is removed from the atmosphere over the same time period, both in natural sinks and through mechanical sequestration.

ACTIONS

Action GHG-17-a: Upon adoption of the CAP, General Plan Policy LU-120, Measure PC-8 (Consistency with County-adopted plan) was amended such that projects that propose expansion of the UPA and/or a Master Plan outside of the existing UPA must be planned and built in a manner that is consistent with the CAP and provides demonstration of carbon neutrality for projects seeking to amend the UPA and/or USB.

General Plan policy LU-120, PC-8 now requires the following:

Consistency with all applicable County adopted plans not sought to be amended by the proposed project. This includes the Climate Action Plan (CAP) and demonstration of carbon neutrality for projects seeking to amend the UPA and/or USB. Such development projects shall include all feasible on-site GHG and VMT reduction measures and may select off-site measures in the CAP. The off-site measures shall be subject to review and verification by the County or a qualified third party.

Future development projects that request an amendment to the UPA and/or USB shall include a GHG analysis that calculates project GHG emissions during construction and full buildout and reduces these emissions to 0 MT CO_2e through advanced project designs that incorporate energy efficiency, renewable energy generation, zero-emission modes of transportation, carbon sequestration and removal, and/or investments in initiatives with third-party validated GHG reduction benefits. The GHG analysis would also calculate the loss of existing carbon sequestration capacity of the proposed development project area. The combination of these analyses would take into account the loss of carbon sequestration, as well as the increase in GHG emissions associated with the development proposals. All future development projects needing an amendment to the UPA and/or USB would also be required to comply with all CAP consistency requirements by completing the Checklist or explain why certain consistency requirements are not applicable to the project.

Under this requirement, new development outside of the UPA and/or USB would be permitted to purchase and retire GHG offset credits. GHG offset projects could increase or protect carbon sequestration, invest in solar or wind projects, improve water or energy efficiency, capture methane at animal farms or landfills, replace high-global-warming potential gas use with a gas that has a lower global warming potential, or implement other measures subject to quantification of the costs per metric ton of CO_2e. This quantification shall be submitted by applicants for review and verification by the County or a qualified third party selected by the County. Any offset program approved by the County must include carbon offsets that are real, quantifiable, verified, additional, and permanent within the timeframe of the program or project. The offset program could allow for investments in GHG-reducing activities occurring outside of the County's control. To achieve the greatest environmental co-benefits to the County, priority would be given, from highest to lowest, to offsets purchased from local projects in Sacramento County's Environmental Justice communities, elsewhere within Sacramento County, regional projects (in the SACOG region), and projects within California's Central Valley.

2.8 Government Operations Measures

In addition to taking action at the community level, the County is furthering its commitment to address climate change through government operations measures. Local governments have an important role to play in influencing GHG reductions throughout their communities, and by taking steps to reduce contributions to climate change from its government operations, the County is demonstrating its commitment and setting an example for the community at large. The inclusion of government operations in this CAP builds on many years of action taken by the County to reduce its GHG emissions and provides an opportunity to strengthen the County's operations and ability to positively impact the community.

The government operations GHG reduction measures can be grouped into five policy focus areas, which are summarized below.

- **Reduce County Employees' Single-Occupancy Vehicle Trips**
  Single-occupancy vehicle trips are a significant contributor to transportation related emissions. ***MEASURE GOV-01*** aims to decrease County employees' single-occupancy vehicle trips by further expanding the County's Employee Transportation Program to continue encouraging employees to use EVs, vanpools, and other active transportation modes. The expansion of the program would target to reduce employee commute VMT to four percent below the 2021 per employee average by launching new programs and incentives.

- **Decarbonize County Transportation Infrastructure**
  Transitioning the County's vehicles and equipment to zero-emission alternatives is a critical step in the process of decarbonization County's transportation infrastructure. ***MEASURE GOV-02*** and ***MEASURE GOV-03*** would expand the County's Fleet Conversion Program to convert 35 percent of the County's on-road and off-road vehicle fleet to zero-emission technology by 2030 and 100 percent by 2045.

- **Decarbonize Buildings**
  The County commits to reducing reliance of County owned buildings and facilities on fossil fuel-based energy sources. ***MEASURE GOV-04*** commits the County to reducing natural gas use in County buildings and facilities by 85 percent below 2021 levels by 2045 by developing and implementing a County Buildings and Facilities Decarbonization Plan. The County will also adopt a policy that requires all newly constructed County buildings to include no natural gas infrastructure, as feasible. ***MEASURE GHG-03*** would identify opportunities to install renewable energy resources and battery storage at County-owned buildings and properties.

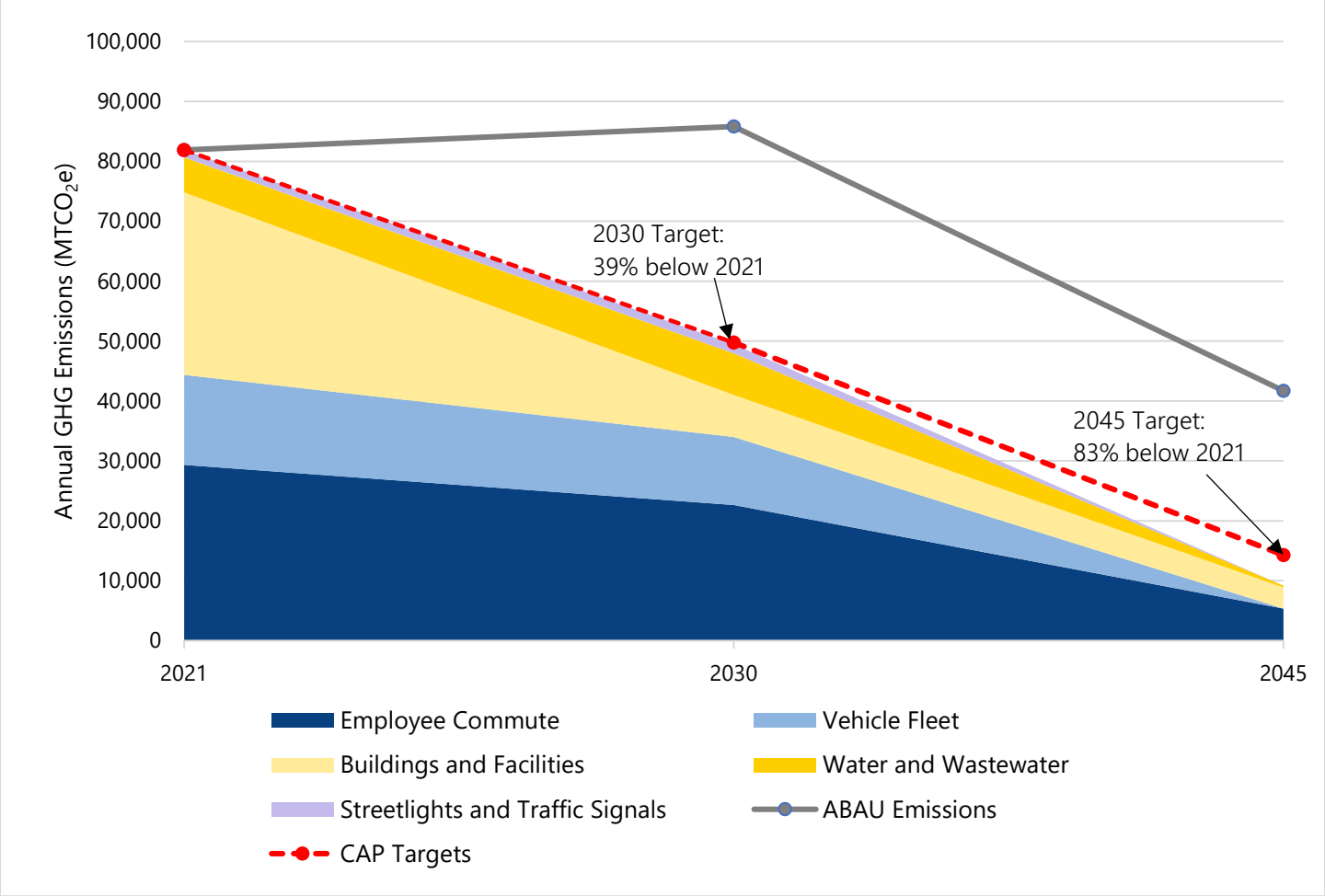
- **Increase Water Efficiency**
  Reducing water consumption reduces emissions associated with water pumping, distribution, treatment, and storage. ***MEASURE GOV-05*** improves water efficiency at County buildings, facilities, and landscaped areas to reduce water consumption by 11 percent in 2030 and 29 percent in 2045 below 2021 levels.

- **Increase Energy Efficient Lighting System**
  To improve energy efficiency, the County is already in the process of replacing high-pressure sodium County-managed lights with light-emitting diodes (LEDs). ***MEASURE GOV-06*** commits the County to replacing all 2,200 remaining County-managed streetlights with LEDs by 2030 and all remaining County-managed outdoor lighting with LEDs by 2045.

Meeting the Targets

The County conducted a GHG quantification analysis to estimate potential emissions reductions associated with government operations measures, which are discussed below. The total estimated GHG emissions reductions from all government operations measures quantified are anticipated to be 36,400 $MTCO_2e$ in 2030 and 33,000 $MTCO_2e$ in 2045. The total anticipated reductions from all proposed GHG reduction measures would be sufficient to meet the 2030 and 2045 targets, as shown in **Figure 2.11** and **Table 2.12**.

Figure 2.11 Sacramento County Government Operations Measures Effectiveness



Notes: % = percent; ABAU = legislative-adjusted business-as-usual; CAP = Climate Action Plan; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: **Analysis conducted by Ascent in 2024**.

Table 2.12 Government Operations Measures Summary

Emissions Sector	Government Operations Measure	Anticipated GHG Reductions ($MTCO_2e$)	
		2030	2045
Employee Commute	GOV-01: Reduce Employee Commute VMT	900	200
Buildings and Facilities	GOV-04: Reduce Natural Gas Usage in County Buildings	4,600	12,800
	GHG-03: Support SMUD Zero Carbon Plan	24,700	0
Airports (buildings and facilities)	GOV-03: Develop an Airport Fleet Conversion Program	1,000	3,400
Vehicle Fleet	GOV-02: Develop a Non-Airport Fleet Conversion Program	5,100	18,000
Water and Wastewater	GOV-05: Improve Water Efficiency	0	0
Streetlights and Traffic Signals	GOV-06: Replace Outdoor Lights with LEDs	0	0
Total		**36,400**	**34,500**
Comparison with Targets			
Required Reductions to Meet Target		36,100	27,400
Emissions Above (+) or Below (-) Target		-300	-7,100
Target Met?		**Yes**	**Yes**

Notes: Totals may not sum exactly due to independent rounding. Values have been rounded to the nearest 100. GHG = greenhouse gas; LED = light-emitting diode; $MTCO_2e$ = metric tons of carbon dioxide equivalent; SMUD = Sacramento Municipal Utility District; VMT = vehicle miles traveled.

Source: **Analysis conducted by Ascent in 2024**.

MEASURE GOV-01: Reduce Employee Commute VMT



GHG Reduction Potential

2030	2045
944 $MTCO_2e$	**223** $MTCO_2e$

Objectives

Expand the County of Sacramento Employee Transportation Program to reduce employee commute VMT to 4% below 2021 levels on a per employee basis (e.g., commute VMT per employee).

Co-Benefits

Public Health & Wellbeing

Air Quality

MEASURE SUMMARY

The County seeks to reduce single-occupant vehicle commute trips from County employees and will add this target to the existing Employee Transportation Program. The County will continue encouraging employees to use EVs, vanpools, and active transportation modes by launching new programs, introducing incentives, and organizing promotional events to raise awareness of the benefits that may come as a result of fewer transportation emissions. The County will conduct employee commute surveys to understand the current travel mode and use this data to update VMT reduction targets in the future to prioritize reducing fossil-fuel-based VMT.

ACTIONS

Action GOV-01-a: Conduct an employee commute survey every two years to understand current modes of commute, measure employee commute VMT, primary travel mode, and fuel type. The aim of the survey would be:

- to adjust Employee Transportation Program targets and requirements prioritizing the reduction of fossil-fuel based VMT;
- to assess the effectiveness of County incentives, policies, and TDM measures (e.g., bike facilities, carpools, first mile/last mile connections, guaranteed ride home);
- to understand and remove barriers for using/accessing any programs; and
- to understand the need for strengthening EV infrastructure and policies at County buildings and facilities.

Action GOV-01-b: Continue to offer a work-from-home policy that allows up to 2 days work-from-home per week that is available to full-time, non-essential County employees.

Action GOV-01-c: Prepare promotional materials to inform and encourage employee participation in regional and national bike-to-work days/months.

Action GOV-01-d: Conduct an EV infrastructure planning analysis every five years to assess:

- priority locations for EV chargers at County buildings and facilities,
- the need for installing additional EV chargers,
- policy updates for employees' personal vehicle charging, and
- signage updates.

Action GOV-01-e: Prepare educational materials to inform, promote, and encourage County employees to use incentives for purchasing ZEVs, such as the State of California Green Fleet Employee Pricing Program and federal tax credits.

Action GOV-01-f: Install signage to establish priority parking spaces for employee carpools.

Action GOV-01-g: Maintain the County's membership in the 50 Corridor Transportation Management Association (TMA)/Sacramento TMA such that employees are provided TMA services such as guaranteed ride home and first mile/last mile connections.

Action GOV-01-h: Increase the monthly subsidy of the Transit Subsidy Program to cover the cost of a monthly pass, and regularly review subsidy offerings to align with local monthly transit pass prices.

Action GOV-01-i: Assign a staff position to manage the County of Sacramento Employee Transportation Program and 50 Corridor TMA/Sacramento TMA services.

Action GOV-01-j: Create an incentive program (e.g., gift vouchers, free lunch, raffles, contests) for employees who use commute modes other than single-occupancy vehicles regularly.

Action GOV-01-k: Based on employee commute survey results, install both short-term and long-term bicycle parking in convenient and secure locations at all County buildings and where bicycle parking currently does not exist, to better encourage commuting via bicycle.

Action GOV-01-l: Based on employee commute survey results, conduct an employee shuttle feasibility study to determine the feasibility and cost of a shuttle system that would bring employees from major transit stations to County work sites. As part of the feasibility study, identify appropriate partnerships and contracting options for a shuttle service operator.

Action GOV-01-m: Based on employee commute survey results, establish a ZEV shuttle service for County employees, at no cost to employees, from major transit stations and with the appropriate service provider identified through the employee shuttle feasibility study.

MEASURE GOV-02: Develop a Non-Airport Fleet Conversion Program



GHG Reduction Potential

2030	2045
5,125 $MTCO_2e$	**18,022** $MTCO_2e$

Objectives

Expand the County's Fleet Conversion Program to convert 35% of the County's on-road and offroad non-airport vehicle fleet to zero-emission technology by 2030 and 100% by 2045.

Co-Benefits

Public Health & Wellbeing

Air Quality

Infrastructure Reliability

MEASURE SUMMARY

With this measure, the County intends to reduce its transportation-related emissions in the County's non-airport vehicle fleet by transitioning the County's on-road vehicles and offroad vehicles and equipment to zero-emission alternatives. The County plans to do this by updating existing policies, adopting new policies, and developing a plan for transitioning the fossil-fuel-powered vehicles and equipment to available zero-emission alternatives. See Measure GOV-03 (Airport Fleet Conversion Program) for SCAS fleet conversion efforts.

ACTIONS

Action GOV-02-a: Update the County's fleet acquisition policies for vehicles with a gross vehicle weight rating (GVWR) greater than 8,500 pounds to meet or exceed the requirements of the California Advanced Clean Fleets Regulation.

Action GOV-02-b: Update the County's light-duty (below 8,500 GVWR) fleet acquisition policies such that:

- All new vehicle purchases and leases are ZEVs.
- Exceptions may be granted for emergency vehicles and other unique duty circumstances with the approval of the County Executive or designee.

Action GOV-02-c: Update the County's offroad equipment acquisition policies such that:

- All new equipment purchases and leases are battery electric or other zero-emission technology.
- Exceptions may be granted for emergency equipment, equipment types that are not available at the time of procurement, or other unique duty circumstances with the approval of the County Executive or designee.

Action GOV-02-d: Adopt a policy to allow employees to be reimbursed for charging County-owned or -leased vehicles overnight at home, similar to how gasoline purchases are reimbursed.

Action GOV-02-e: Continue to fuel applicable diesel- and compressed-natural-gas-powered vehicles with renewable fuels as the County transitions to ZEVs.

Action GOV-02-f: Prepare a Zero-Emission Fleet Transition Plan that includes:

- an inventory of the County's existing on-road and offroad fleet,
- an assessment of the expected retirement/replacement timeline of each vehicle/equipment and identify appropriate replacement options,
- an analysis of the additional ZEV fueling/charging infrastructure needs and the timeline to support the transition to ZEVs,
- an assessment of the cost-effectiveness of various technology options considering up-front costs of vehicles/equipment and infrastructure and annual operating costs, and
- identification of fleet maintenance staff training needs and any specialized equipment or facilities to support a ZEV fleet.

Action GOV-02-g: Establish a County staff role to identify, monitor, and apply for grant funding opportunities, rebates, and incentives for fleet conversion to ZEVs and installation of infrastructure.

Action GOV-02-h: Annually assess existing ZEV fueling capacity and the number of new ZEVs added to the fleet so that additional infrastructure needs can be incorporated into operating budgets in the following year. Also, report the number of ZEVs as a percentage of the total fleet to the County Sustainability Manager for annual progress reporting.

MEASURE GOV-03: Develop an Airport Fleet Conversion Program



GHG Reduction Potential

2030	2045
978 $MTCO_2e$	**3,439** $MTCO_2e$

Objectives

Convert 35% of the SCAS fleet to zero-emission technology by 2030 and 100% by 2045.

Co-Benefits

Public Health & Wellbeing

Air Quality

Infrastructure Reliability

MEASURE SUMMARY

Similar to Measure GOV-02, with this measure, the County intends to reduce its transportation-related emissions in County operations by transitioning the SCAS vehicle fleet to zero-emission alternatives by updating policies and developing a transition plan.

ACTIONS

Action GOV-03-a: Develop an Airport Fleet Conversion Program to achieve 35 percent conversion of the SCAS fleet to ZEVs by 2030 and 100 percent by 2045. The program will consist of the following:

- Update the Sacramento International and Executive Airports fleet acquisition policies to require increased percentage of vehicles purchased or leased starting in 2025 to be powered by zero-emission vehicles and equipment available and practical at the time of purchase.
- Develop an "Airport Fleet Transition Plan" to convert fossil fuel powered vehicle fleet to zero-emission vehicles and equipment including:
  - prioritization of fleet to be converted,
  - cost of conversion,
  - timeline,
  - funding and financing options,
  - conditions for exceptions for vehicles used in unique circumstances, and
  - Airport Executive's or designee's approval will be required for applying exceptions to vehicles.

Action GOV-03-b: Annually assess existing ZEV fueling capacity and number of new ZEVs added to fleet so that additional charging/fueling infrastructure needs can be incorporated into operating budgets in the following year. Also, report the number of ZEVs as a percentage of the total fleet to the County Sustainability Manager for annual progress reporting.

MEASURE GOV-04: Reduce Natural Gas Usage in County Buildings



GHG Reduction Potential

2030	2045
4,623 $MTCO_2e$	**12,846** $MTCO_2e$

Objectives

Develop a County Buildings and Facilities Decarbonization Plan by 2026 and reduce natural gas use in County buildings 30% below 2021 levels by 2030 and 85% below 2021 levels by 2045.

Co-Benefits

Public Health & Wellbeing

Resource Preservation

Air Quality

Infrastructure Reliability

MEASURE SUMMARY

The County's goal with this measure is to decrease reliance on natural gas for heating and energy needs in County buildings and facilities over time. By setting specific targets to reduce natural gas consumption in the Decarbonization Plan, the County intends to lead energy efficiency and sustainability efforts and encourage the community to support the County in addressing environmental concerns related to natural gas usage throughout the county.

ACTIONS

Action GOV-04-a: Conduct an electrification, energy efficiency, solar PV, and battery storage opportunities assessment, which will:

- inventory existing County buildings and facilities and the associated energy end uses;
- identify potential solar PV and battery storage installation locations and capacity potential;
- identify energy efficiency, electrification and solar PV/battery storage projects that achieve full building/facility electrification;
- identify alternative technology/fuel options (e.g., hydrogen fuel) for hard-to-electrify end uses (e.g., high heat processes);
- identify funding and financing mechanisms to support individual projects;
- calculate up-front costs and long-term costs/savings for individual projects;
- account for increased building energy load and EV charging demand based on fleet electrification studies in Actions GOV-02-f and GOV-03-b; and
- prepare an Energy Management Plan for SCAS facilities to develop a base case energy usage projection for the next 10 years (2024-2034). A desktop engineering review will be conducted to identify projects that reduce energy consumption and peak energy demand.

Action GOV-04-b: Based on the results of the electrification, energy efficiency, solar PV, and battery storage opportunities assessment, develop and implement a Buildings and Facilities Decarbonization Plan and include projects in the County's Capital Improvements Plan.

Action GOV-04-c: Adopt an electric building policy that requires all newly constructed County buildings to include no natural gas infrastructure, with limited exceptions for cases where emergency power needs cannot be sufficiently met with battery storage. For equipment that cannot be electrified with current available technology (e.g., high-heat processes), staff should first identify technological alternatives to natural gas combustions and provide evidence for infeasibility.

Action GOV-04-d: Annually engage with SMUD to assess options for the electrification of space and water heating in County buildings.



MEASURE GOV-05: Improve Water Efficiency



GHG Reduction Potential

2030	2045
0 $MTCO_2e$	**0** $MTCO_2e$

Objectives

Improve water efficiency at County buildings, facilities, and landscaped areas to reduce water consumption by 11% in 2030 and 29% in 2045 below 2021 levels.

Co-Benefits

Resource Preservation

Infrastructure Reliability

MEASURE SUMMARY

With this measure, the County will reduce its water consumption by improving efficiency and using low-flow fixtures in County buildings and facilities and using recycled water for outdoor activities. The County will also develop three demonstration projects to promote native vegetation and high-efficiency irrigation techniques to lead by example and inspire the community.

This measure has no incremental GHG reductions because it reduces the County government's electricity usage, and it is assumed that by 2030 emissions from electricity will be zero due to GHG-03: Support SMUD in the implementation of the 2030 Zero Carbon Plan. However, there may be some reduction in GHG emissions outside of the government operations GHG inventory boundary, such as reduced energy consumption for upstream water conveyance and wastewater treatment.

ACTIONS

Action GOV-05-a: Develop and adopt a County Buildings and Facilities Water Efficiency Plan to achieve a goal of 11 percent reduction in potable water usage below 2021 levels for all County buildings by 2030 and 29 percent by 2045. The plan should include:

- a review of County building and facility water consumption,
- water efficiency upgrade opportunities, and
- a cost and timeline for performing upgrades.

Action GOV-05-b: Continue to replace water fixtures with low-flow equivalents to have all County buildings and facilities using low-flow equipment by 2030.

Action GOV-05-c: Continue to use recycled water for landscaping as per the General Waste Discharge Requirements for Landscaping Irrigation Uses of Municipal Recycled Water (SWRCB Order no. 2009-0006-DWQ).

Action GOV-05-d: Conduct a landscape conditions and irrigation audit to evaluate irrigation practices around County facilities to:

- Identify essential and non-essential/non-functional turf.
- Remove non-essential turf by 2027 and replace it with native and drought-tolerant species, consistent with AB 1572 requirements for removing non-functional turf.
- Modify irrigation practices and equipment accordingly for essential turf (e.g., timers, sprinkler heads).
- Evaluate necessary changes in irrigation practices for dry years to ensure tree survival.

Action GOV-05-e: Create drought-tolerant demonstration projects with interpretive signs at the three most visited County buildings to exhibit and promote native vegetation and high-efficiency irrigation techniques.

Action GOV-05-f: Develop a list of drought tolerant plants for use in County landscaping projects which focuses on California native plants and considers ability to support local pollinators and wildlife, plant size, sun and shade needs, water use, and wildlife benefits.



MEASURE GOV-06: Replace Outdoor Lights with LEDs



GHG Reduction Potential

2030	2045
0 $MTCO_2e$	**0** $MTCO_2e$

Objectives

Replace all 2,200 remaining high-pressure sodium County-managed streetlights with LEDs by 2030, and all remaining County-managed outdoor lighting with LEDs by 2045.

Co-Benefits

Infrastructure Reliability

MEASURE SUMMARY

With this measure, the County intends to reduce energy related emissions by replacing all high-pressure sodium streetlights and all other outdoor lights with light-emitting diode (LED) fixtures.

This measure has no incremental GHG reductions because it reduces the County government's electricity usage, and it is assumed that by 2030 emissions from electricity will be zero due to GHG-03: Support SMUD in the implementation of the 2030 Zero Carbon Plan.

ACTIONS

Action GOV-06-a: Replace remaining 2,200 high-pressure sodium (HPS) and mercury-vapor (MV) streetlights with LED technology.

Action GOV-06-b: Perform an audit of existing outdoor County lighting, including all County-owned and -managed buildings, facilities, parks, and properties.

Action GOV-06-c: Replace outdoor lighting with LED technology at all County-owned and -managed buildings, facilities, parks, and properties, where LED technology is not currently in place.



CHAPTER 3

Climate Adaptation and Resilience Strategy

3 Climate Adaptation and Resilience Strategy

This chapter describes the context of climate change adaptation and resilience for Sacramento County. First, it provides relevant background on the need for the county to adapt to climate change, along with an overview of the adaptation planning process. Additionally, it provides an overview and summary of the Vulnerability Assessment (VA) that was conducted by the County of Sacramento government (County), which was developed in preparation for this Climate Action Plan (CAP) (County of Sacramento 2017, 2022). This includes an overview of the findings from the potential impacts, adaptive capacity, and vulnerability scoring analyses that were completed for various climate change effects (i.e., flooding, increased temperatures and extreme heat, sea level rise, wildfire, and drought). Lastly, it presents a suite of adaptation measures that are intended to reduce risk and/or build resilience to the effects of climate change.

3.1 Why Must We Adapt?

The effects of climate change are already occurring on global, regional, and local scales and will continue to alter or worsen throughout the county. The climate change effects that apply to the county—which encompass both primary and secondary effects—include: (1) more severe or frequent flooding events; (2) increased temperatures and more severe extreme heat events; (3) sea level rise; (4) increases in the frequency and severity of wildfire events; and (5) more intense or prolonged periods of drought. While natural hazards have existed historically in the county and surrounding regions, their frequency, intensity, duration, and/or onset timeframe are projected to increase or change as a result of climate change. The level of impact from these climate change effects will vary across the county due to variations in physical, social, and economic characteristics.

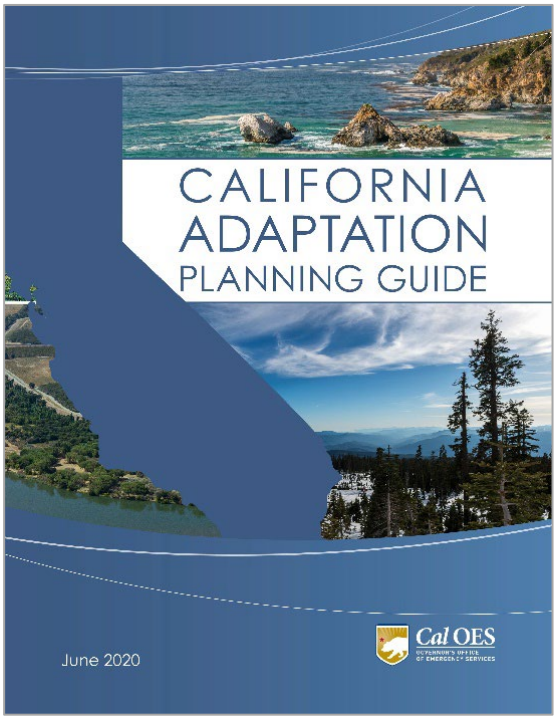
As the County continues to play its role in reducing its contributions to climate change through reducing local greenhouse gas (GHG) emissions, it must also prepare its communities to withstand and adapt to the impacts of climate change through adaptation planning. Climate change adaptation involves adjusting to climate change effects that are already occurring and preparing for those that are anticipated to occur in the future. Climate change adaptation planning aims to enhance the resilience of communities to the effects of climate change by evaluating jurisdiction-specific vulnerabilities to climate change and developing measures to respond to and prepare for current and future impacts.

Many plans, policies, and programs are already in place at the local and regional levels that address these climate change effects. In some cases, these may be sufficient for the time being. In other cases, significant gaps exist, and new policies are needed. This CAP aims to identify and address those gaps.

The County is committed to prioritizing the needs of its most vulnerable communities, including Environmental Justice (EJ) communities. The EJ Element in the County's General Plan acknowledges that the impacts of climate change can disproportionately affect EJ Communities. Consistent with Policy EJ-28 in the EJ Element, this chapter identifies the County's commitments to prioritize the needs of EJ communities in adapting to and building resilience to climate change.

3.2 Climate Adaptation Planning Process

The California Governor's Office of Emergency Services (Cal OES) prepared the *California Adaptation Planning Guide* (APG) to provide communities with vulnerability assessment and adaptation planning guidance (Cal OES 2020). Most recently updated in June 2020, the APG includes a step-by-step process that communities may use to help plan for the effects of climate change. The APG provides a framework for communities to identify potential climate change effects on important physical, social, and natural assets; create adaptation strategies to address climate change effects; and develop a monitoring and implementation framework for climate adaptation. The County prepared the adaptation components of this CAP consistent with the APG framework.



The APG includes a four-phase process, which allows communities to assess their specific climate vulnerabilities and provides a menu of strategies for communities to reduce climate-related risks and prepare for current and future impacts of climate change.

- **Phase 1, "Explore, Define, and Initiate,"** includes scoping and defining the adaptation planning effort. Phase 1 also involves identifying key roles and interested parties in the local government and throughout the community to contribute to the planning process. Potential climate change effects and important physical, social, and natural assets in the community are identified for further analysis.
- **Phase 2, "Assess Vulnerability,"** includes analysis to determine the vulnerability of populations, the built environment, and community functions. The vulnerability assessment is composed of four steps: exposure to climate change effects, sensitivities and potential impacts, adaptive capacity, and vulnerability scoring. Phase 2 also integrates public input to comprehensively assess the community's sensitivity to climate change and its ability to adapt.
- **Phase 3, "Define Adaptation Framework and Strategies,"** focuses on creating an adaptation framework and developing adaptation measures based on the results of the vulnerability assessment. Adaptation measures identify how the community will address the potential for harm based on the community's resources, goals, values, needs, and regional context. Community input is needed to prioritize adaptation measures, identify co-benefits of strategies, and determine implementation steps.
- In **Phase 4, "Implement, Monitor, Evaluate, and Adjust,"** the adaptation framework is implemented, consistently monitored and evaluated, and adjusted based on continual learning, feedback, and/or triggers.

Figure 3.1 illustrates the application of the APG process to the CAP development process.

Figure 3.1 Climate Change Adaptation Planning Process



Source: **Developed by Ascent in 2024**.

3.3 Vulnerability Assessment Summary

To effectively adapt to climate change and improve community resilience, the County first needs to understand its vulnerability climate change effects. This is determined through the Vulnerability Assessment.

The VA that was developed as part of the multi-year planning process that eventually culminated in this CAP was completed in January 2017 (County of Sacramento 2017). Several elements of the original VA were then updated and summarized in an appendix for the 2022 CAP (County of Sacramento 2022). Collectively, these two items serve as the basis for the county's climate change vulnerability, and henceforth, any reference to "VA" is meant to encompass both documents, as this chapter synthesizes and summarizes the most relevant and up-to-date components of each.

The VA provides a comprehensive analysis of community vulnerabilities to climate change across the unincorporated county. It identifies and characterizes climate change effects that are anticipated to impact the community. The VA follows the steps in Phase 2 of the APG and aims to answer the following questions:

- **Exposure**: what climate change effects does the county currently face? How are these climate change effects projected to change in the future?
- **Sensitivity and Potential Impacts:** what aspects of the community (i.e., populations, built environment, community functions) in the unincorporated county will be affected by climate change effects, and to what degree?
- **Adaptive Capacity:** what is currently being done to address climate change effects and the associated impacts in the unincorporated county? What ability does the County have to address such climate change effects and their impacts in the future?
- **Vulnerability:** how vulnerable is the unincorporated county to climate change effects?

The County conducted the VA consistent with APG guidance using the steps above. As mentioned previously, there were five climate change effects evaluated to which the county is exposed, including flooding, increased temperatures and extreme heat, sea level rise, wildfire, and drought. If left unaddressed, each of these climate change effects will adversely impact populations, community functions, and structures across the unincorporated county in various ways. However, the County, partner agencies, and other organizations within the county have already taken steps to build adaptive capacity and protect sensitive populations, community functions, and structures from the effects of climate change. **Table 3.1** below shows how both potential impacts and adaptive capacity are scored on a qualitative scale of Low, Medium, and High (along with a description of each), in accordance with the APG.

Table 3.1 Potential Impact and Adaptive Capacity Scoring Rubric

Score	Potential Impact Scoring Description	Adaptive Capacity Scoring Description
Low	Impact is unlikely based on projected exposure; would result in minor consequences to public health, safety, and/or other metrics of concern.	The unincorporated county lacks capacity to manage climate change effect; major changes would be required.
Medium	Impact is somewhat likely based on projected exposure; would result in some consequences to public health, safety, and/or other metrics of concern.	The unincorporated county has some capacity to manage climate change effect; some changes would be required.
High	Impact is highly likely based on projected exposure; would result in substantial consequences to public health, safety, and/or other metrics of concern.	The unincorporated county has high capacity to manage climate change effect; minimal to no changes are required.

Source: **Cal OES 2020; adapted by Ascent in 2024**.

Once the scoring for potential impacts and adaptive capacity has been determined, the final step in the VA process is to characterize the unincorporated county's vulnerability to each climate change effect, which is assessed on the magnitude of risk to and potential impacts on populations, community functions, and structures while considering the current adaptive capacity in place to mitigate these impacts. Each climate change effect is assigned an overall numerical vulnerability score based on associated scores for potential impacts and adaptive capacity. Vulnerability scoring can help the County understand which climate hazards it should prioritize in future planning efforts. **Table 3.2** presents the rubric used to determine overall vulnerability scores based on the ratings for potential impacts and adaptive capacity, in accordance with the APG.

Table 3.2 Vulnerability Scoring Rubric

Vulnerability Score				
Adaptive Capacity	Low	3	4	5
	Medium	2	3	4
	High	1	2	3
		Low	Medium	High
		Potential Impacts		

Source: **Cal OES 2020; adapted by Ascent in 2024**.

The unincorporated county's vulnerability score for each identified climate change effect— flooding, increased temperatures and extreme heat, sea level rise, wildfire, and drought—is included in **Table 3.3** below, along with the qualitative potential impact and adaptive capacity scores (County of Sacramento 2022). The table shows flooding as the most pressing vulnerability within the county with a score of 4/5, indicating that it should be a high priority for the County in its climate adaptation planning efforts. Increased temperatures and extreme heat, along with sea level rise both have the next highest vulnerability score of 4, indicating that the County should also consider these high priorities. These climate change effects could have significant impacts on the county's populations, community functions, and structures in both the near-term and long-term. Although a variety of adaptive efforts related to each climate change effect are already in place, the magnitude of risks posed by these effects contributes to higher vulnerability in the unincorporated county. Wildfire and drought are both characterized as having a vulnerability score of 3. While this vulnerability score is lower than the other climate change effects, additional adaptation efforts will be required in the future to mitigate potential impacts and protect the unincorporated county. More context for each climate change effect can be found throughout the rest of this chapter, and additional detail, data, information, references, and methodologies for analyzing exposure, sensitivities and potential impacts, adaptive capacity, and vulnerability can be found in the VA itself.

Table 3.3 Potential Impact, Adaptive Capacity, and Vulnerability Scores

Climate Change Effect	Potential Impacts	Adaptive Capacity	Vulnerability Score
Flooding	High	Low/Medium	4/5
Increased Temperatures and Extreme Heat	High	Medium	4
Sea Level Rise	High	Medium	4
Wildfire	Medium	Medium	3
Drought	Medium	Medium	3

Source: **Evaluated by Ascent in 2021**.

3.4 Adaptation Measures Overview

To address the vulnerabilities identified in the VA, the County has developed a suite of adaptation measures organized by climate change effect. Each measure is first denoted with a three to five-letter code indicating which climate change effect the measure is related to (e.g., the "code" for increased temperatures and extreme heat is "TEMP"), followed by the measure number. Though this classification system is applied to each measure for identification purposes, it should be noted that the order of measures is not related to measure importance, effectiveness, or otherwise, as implementation of each measure is important. **Table 3.4** below presents a summary of all the adaptation measures included in this CAP, with more detailed information on each measure presented throughout the rest of the chapter, organized by climate change effect.

Table 3.4 Adaptation Measures Summary

Climate Change Effect	Adaptation Measure
Flooding (FLOOD)	FLOOD-01: Evaluate and Improve Capacity of Stormwater Infrastructure for High-Intensity Rainfall Events
	FLOOD-02: Improve Sewage and Solid Waste Management Infrastructure
	FLOOD-03: Identify New Locations for Flood Control, Prioritizing Green Infrastructure Solutions
	FLOOD-04: Coordinate with Federal, State, and Local Agencies to Improve Emergency Evacuation and Supply Transportation Routes
	FLOOD-05: Invest in the Use of Pervious Pavements and Landscaping in Developed Areas and Restrict the Use of Paved Surfaces
	FLOOD-06: Map Critical Facilities and Infrastructure Locations Vulnerable to Flooding and Upgrade and/or Relocate Infrastructure Where Applicable
	FLOOD-07: Establish an Underground Utilities Program Resistant to Flooding
	FLOOD-08: Partner with SAFCA and Local Agencies, Utilities, and Other Organizations to Support Future and Ongoing Flood-Related Climate Change Initiatives
	FLOOD-09: Research the Tolerance of Current Crop Mixes to Withstand Flooding and Support Aquaculture and Fish Habitat
	FLOOD-10: Expand Educational Programs to Address Vector and Waterborne Diseases
	FLOOD-11: Identify Concrete Channel Restoration Areas
	FLOOD-12: Replant Bare or Disturbed Areas
	FLOOD-13: Update and Implement the County's Local Hazard Mitigation Plan to Address Climate-Change-Related Flooding Impacts
	FLOOD-14: Safeguard Freshwater Supply Against Contamination, Degradation, or Loss

Climate Change Effect	Adaptation Measure
Increased Temperatures and Extreme Heat (TEMP)	TEMP-01: Protect Critical Infrastructure Vulnerable to Extreme Heat Events
	TEMP-02: Partner with Local Agencies and Utilities on Heat-Related Climate Change Initiatives and Efforts
	TEMP-03: Expand Services and Raise Awareness of Heat-Related Risks and Illness for Residents of EJ Communities
	TEMP-04: Encourage the Installation or Use of Cool Roof Technologies, Passive Solar Home Design, Green Roofs, and Rooftop Gardens
	TEMP-05: Increase Participation in the Sacramento Area Sustainable Business Program
	TEMP-06: Partner with Valley Vision to Expand the Business Resiliency Initiative
	TEMP-07: Use Cool Pavement Technology and Reduce the Amount of Paved Surfaces
	TEMP-08: Increase Parking Lot Shading, Landscaping, and Urban Greening, Prioritizing EJ Communities
	TEMP-09: Understand the Tolerance of Current Crop Mixes to Withstand Increased Temperatures
	TEMP-10: Work with SMUD to Improve Electric Grid Reliability
Sea Level Rise (SLR)	SLR-01: Coordinate with Other Agencies on Floodplain Mapping Updates and Identification of Improvements to Protect Vulnerable Populations, Functions, and Structures
	SLR-02: Support and Monitor Ongoing Analysis of Sea Level Rise Data
	SLR-03: Update the County's Local Hazard Mitigation Plan to Incorporate Sea Level Rise
	SLR-04: Incorporate Sea Leve Rise Effects into Capital Improvement Plans
	SLR-05: Guide Future Development out of Areas Vulnerable to Sea Level Rise
Wildfire (FIRE)	FIRE-01: Map and Identify Locations that are Newly at Risk, or at Higher Risk for Fire Hazards
	FIRE-02: Coordinate with State and Local Agencies to Establish Ecological Recovery Programs
	FIRE-03: Transition County Tree Planting to More Fire-Resilient Species
	FIRE-04: Coordinate and Improve Emergency Preparedness Systems
	FIRE-05: Avoid New Development in Very-High Fire Hazard Severity Zones
	FIRE-06: Collaborate with Agencies and Organizations on Programs to Reduce Wildfire Hazards
Drought (WATER)	WATER-01: Evaluate Vulnerabilities of Water Supply Systems and Networks and Develop Strategies to Improve Resilience
	WATER-02: Increase Onsite Greywater and Rainwater Reuse, Stormwater Reuse, and Recycled Water Systems
	WATER-03: Create Incentives and Programs to Transfer Knowledge and Technologies to Assist Farmers with New Production Methods and Drought-Tolerant Species
	WATER-04: Reduce Potable Water Use in Outdoor Landscaping
	WATER-05: Expand Upon Existing Water Conservation Education Outreach Programs for Residents and Businesses
	WATER-06: Collaborate with Federal, State, and Local Agencies and Organizations to Identify Future Water Supplies, Explore Alternative Supply Sources, and Improve Capacity
Cross-Cutting[1] (ALL)	ALL-01: Create a Comprehensive Outreach Strategy
	ALL-02: Set Up Annual Progress Report/Check-In for All Applicable Measures

Note: SAFCA = Sacramento Area Flood Control Agency; SMUD = Sacramento Municipal Utility District

[1]"Cross-Cutting" refers to measures that are inherently broad and that largely address or overlap with all other climate change effects.

Source: **Compiled by Ascent in 2024**.



Flooding

The county is projected to experience a steady increase in average annual precipitation through the end of the century, with much of that precipitation likely to occur during extreme precipitation events, which can lead to flood impacts. According to Cal-Adapt, the historic average annual precipitation in Sacramento County is 18.3 inches, and the historic average annual number of extreme precipitation events is four. As shown in **Table** 3.5, the average annual precipitation across the county may rise upwards of 22 inches, with the number of extreme precipitation events potentially exceeding 7 per year by the end of the century, depending on the level of current and future GHG emissions (CEC 2020a, 2024).

Like extreme heat thresholds, extreme precipitation thresholds are unique to any location. Sacramento County's threshold is 0.73 inches of precipitation over a two-day period.

Table 3.5 Changes in Annual Average Precipitation and Extreme Precipitation in Sacramento County

Annual Averages	Historic (1961-1990)	Medium Emissions Scenario		High Emissions Scenario	
		Mid-Century (2035-2064)	Late Century (2070-2099)	Mid-Century (2035-2064)	Late Century (2070-2099)
Precipitation (inches)	18.3	20.3	20.3	20.5	22.1
Extreme Precipitation Events[1] (#)	4	5	6	6	7

Note: # = number.

[1] The threshold for an extreme precipitation event in Sacramento County is 0.73 inches of precipitation over a two-day period.

Source: **CEC 2020a, 2024**.

In general, California exhibits "booms and busts," which refers to the existence of both very wet years and very dry years. The amount of precipitation that falls in any particular year is largely influenced by occurrences of large, discrete winter storms, also known as atmospheric rivers, which often provide a substantial fraction of the region's annual precipitation, inclusive of the county. In California, atmospheric rivers vary in intensity; some are beneficial for water supply and replenish snowpack that naturally melts during the summer, serving as the water supply for people and agriculture, while others are responsible for widespread and adverse impacts (NOAA 2023). Extreme precipitation from these atmospheric rivers in the future may prove to be more variable, volatile, and potentially more severe. Noting this, the county may experience changes in the frequency and/or intensity of flood events, though the exact frequency, intensity, and duration of these events will vary annually.

Future flooding exacerbated by climate change will result in a range of potential impacts across the county. For populations, there is an array of social vulnerability factors that exacerbate flood-related risks, and those residing in floodplains are especially vulnerable to the direct impacts of flooding. Floodwaters can interact with sources of pollution and distribute hazardous pollutants locally and regionally, which may result in water contamination and a range of human health impacts. Additionally, flooding can disrupt transportation networks, cause economic losses through business and government facility closures, disrupt communications, disrupt the provision of utilities, and cause significant damage to buildings and critical infrastructure. Further, flooding may also threaten ecosystems and agricultural resources; unlike natural flooding regimes that deposit useful sediment resulting in increased soil fertility as well as groundwater recharge, catastrophic flooding from levee overtopping could lead to soil erosion and loss of viable cropland. It could also release sewage and hazardous materials into the environment if wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed (County of Sacramento 2017, 2022). The following adaptation measures address a broad range of potential flooding impacts exacerbated by climate change.



MEASURE FLOOD-01: Evaluate and Improve Capacity of Stormwater Infrastructure for High-Intensity Rainfall Events



Implementing County Departments

Sustainability Manager
Agricultural Commissioner's Office

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

Infrastructure Reliability

MEASURE SUMMARY

Investing in green infrastructure and maintenance of existing infrastructure under the jurisdiction of the County will reduce instances of localized flooding in the county.

ACTIONS

Action FLOOD-01-a: Identify areas where existing infrastructure is vulnerable to flooding and develop comprehensive short- and long-term plans for their maintenance and resilience.

Action FLOOD-01-b: Invest in green infrastructure such as rain gardens, bioswales, stormwater tree trenches, green roofs, detention basins, and rain barrels to reduce peak runoff, filter stormwater, and increase groundwater recharge. Establish clear funding sources and implementation guidelines for these projects. Additionally, conduct studies to assess and rank the effectiveness of various flood control methods to help prioritize green infrastructure development. Identify key projects for implementation, prioritizing selection based on vulnerability, effectiveness, and community needs.

Action FLOOD-01-c: Increase maintenance and cleaning of gutters, drainage ditches, and culverts to maximize drainage capacity.

MEASURE FLOOD-02: Improve Sewage and Solid Waste Management Infrastructure



Implementing County Departments

Department of Water Resources
Department of Waste Management and Recycling

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

Evaluation and improvement of existing undersized or inadequate sewage and solid waste management infrastructure will lessen the occurrences of floodwater contamination, thereby reducing the spread of pollution and degraded water quality.

ACTIONS

Action FLOOD-02-a: Track the efforts of sanitation districts and waste management agencies in the region with the improvement of sewage and solid-waste management infrastructure. Participate in interagency coordination meetings where applicable to identify opportunities for the County to support such efforts.

MEASURE FLOOD-03: Identify New Locations for Flood Control, Prioritizing Green Infrastructure Solutions



Implementing County Departments

Sustainability Manager
Department of Water Resources

Timeframe

Near Term (2025-2028)

Co-Benefits

Carbon Sequestration

Resource Preservation

MEASURE SUMMARY

Historically, to provide protection from flooding, Sacramento County has relied on flood control systems for both the American River and Sacramento River, which include dams, bypasses, and levees to control high flows and potential inundation. However, if climate change causes water to exceed the capacity of these systems, Sacramento County would be dependent on additional flood control efforts, which could provide other benefits including, but not limited to, groundwater recharge, aquaculture, and habitat restoration.

ACTIONS

Action FLOOD-03-a: Identify new locations suitable for multi-benefit flood control (e.g., underused agricultural areas, small streams) that encourage groundwater recharge, aquaculture, and habitat restoration (e.g., wetlands).

MEASURE FLOOD-04: Coordinate With Federal, State, and Local Agencies to Improve Emergency Evacuation and Supply Transportation Routes



Implementing County Departments

Office of Emergency Services
Department of Water Resources
Department of Transportation
Potential collaboration opportunities with the City of Sacramento, Cal OES, Sacramento Area Flood Control Agency, California Department of Water Resources, and the Federal Emergency Management Agency.

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

While the risk for large-scale flood-related evacuations in Sacramento County is relatively low, the risk is not zero, and additionally, even smaller-scale evacuations need to be prepared for. For any evacuation scenario, the limited bridge crossings in the county are just one of many unique considerations that could potentially complicate any scale of evacuation. Development of a comprehensive plan and multiple routes for evacuation and supply transport will be necessary to protect Sacramento County residents during flood events.

ACTIONS

Action FLOOD-04-a: Coordinate with the City of Sacramento, Cal OES, Sacramento Area Flood Control Agency, California Department of Water Resources, and the Federal Emergency Management Agency in improving emergency evacuation and supply transportation routes during flood events.

Action FLOOD-04-b: Identify locations of limited evacuation and supply transport capacity (e.g., bridges) and explore innovative alternative routes (e.g., American River bike trails, light-rail).

Action FLOOD-04-c: Host workshops and develop educational materials to inform the public about vulnerable areas and designated evacuation routes.

Action FLOOD-04-d: Develop or modify evacuation plans for inclusivity, providing accessible options for individuals without motor vehicles.

Action FLOOD-04-e: Develop comprehensive and equitable communication strategies for emergency evacuations to reach everyone, regardless of language, literacy levels, or access to technology.

MEASURE FLOOD-05: Invest in Use of Pervious Pavements and Landscaping in Developed Areas and Restrict the Use of Paved Surfaces



Implementing County Departments

Sustainability Manager
Planning and Environmental Review
Department of Water Resources
Department of Transportation

Timeframe

Near Term (2025-2028)

Co-Benefits

- Public Health & Wellbeing
- Carbon Sequestration
- Infrastructure Reliability

MEASURE SUMMARY

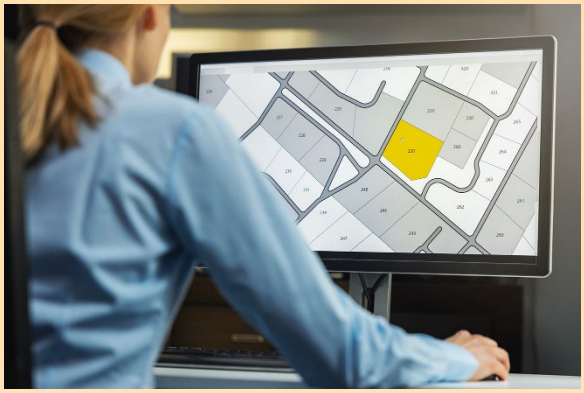
The County will encourage the use of pervious pavements and landscaping combined with restricting the overall square footage of paved surfaces within development areas, which can help to minimize surface runoff and rates of urban flooding. As such, the capacity of stormwater infrastructure can be maintained, and cases of localized flooding may be less frequent.

ACTIONS

Action FLOOD-05-a: Increase the use of pervious pavements and landscaped areas to allow for better infiltration and reduced stormwater overflow in developed areas.

Action FLOOD-05-b: Minimize paved surfaces for parking in favor of pervious surfaces to mitigate high volumes of stormwater runoff. The County will consider reducing minimum parking requirements in appropriate land use designations and/or increasing minimum tree or landscaping planter sizes.

MEASURE FLOOD-06: Map Critical Facilities and Infrastructure Locations Vulnerable to Flooding and Upgrade and/or Relocate Infrastructure Where Applicable



Implementing County Department(s)

Office of Emergency Services
Department of Transportation
Department of Technology GIS section

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

Public facilities and infrastructure, particularly energy infrastructure, located within the 100-year, 200-year, and 500-year floodplain may be subject to several feet of inundation. Contact with floodwaters could damage the efficacy of such infrastructure resulting in black-outs, loss of communication, and impeded public services. To combat these potential impacts, Sacramento County will identify the locations of existing vulnerable facilities and infrastructure, and upgrade or relocate such infrastructure to withstand potential flood events.

ACTIONS

Action FLOOD-06-a: Map locations of communication, energy, public service, and transportation facilities and infrastructure that are vulnerable to flooding.

Action FLOOD-06-b: In cases where existing communication, energy, public service, and transportation infrastructure and facilities are found to be vulnerable to flooding, assess and upgrade associated infrastructure to be more resilient to inundation and/or relocate critical infrastructure and related-elements to higher ground (e.g., generators relocated to upper floors of hospitals).

MEASURE FLOOD-07: Establish an Underground Utilities Program Resistant to Flooding



Implementing County Department(s)

Sustainability Manager

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

The undergrounding of electrical utilities will increase Sacramento County's resilience to temperature- and wildfire-related impacts (see TEMP-06 and FIRE-07); however, in flood-prone areas, such as portions of Sacramento County, underground utilities may be damaged during periods of inundation or rising groundwater. The County will partner with the Sacramento Municipal Utility District (SMUD) and the Pacific Gas & Electric Company (PG&E) to develop watertight, flood-resilient underground utility designs to minimize flood impacts to this infrastructure.

ACTIONS

Action FLOOD-07-a: Partner with SMUD and PG&E to define high flood risk locations where overhead utility lines could be feasibly installed underground. Implement flood-resistant underground utilities where feasible in appropriate areas to increase the resiliency of the electric grid and develop resiliency plans for critical flood control pumps.

MEASURE FLOOD-08: Partner With SAFCA and Local Agencies, Utilities, and Other Organizations to Support Future and Ongoing Flood-Related Climate Change Initiatives



Implementing County Department(s)

Sustainability Manager
Department of Water Resources

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

Coordination with agencies and organizations will enable Sacramento County to use and benefit from additional resources and experts. Comprehensive upstream and downstream management of the Sacramento and American River watersheds is integral to preventing catastrophic flooding in the region.

ACTIONS

Action FLOOD-08-a: Partner with Sacramento Area Flood Control Agency, SMUD, PG&E, Capital Region Climate Readiness Collaborative, Sierra Climate Adaptation and Mitigation Partnership, and others to support future and on-going flood-related climate change initiatives such as SMUD's Sacramento Resilient Grid Initiative, Flood Data Analysis and Preparedness Planning, and other initiatives designed to increase Sacramento County's resilience to flooding.

Action FLOOD-08-b: Partner with Sacramento Area Flood Control Agency, SMUD, PG&E, Capital Region Climate Readiness Collaborative, Sierra Climate Adaptation and Mitigation Partnership, and others in advancing upstream and downstream regional water management solutions that reduce flood risks by increasing storage capacity in upstream reservoirs (similar to improvements recently made to Folsom Dam), storing, and slowing snow melt until later in the season, and increasing capacity of the Yolo Bypass.

Action FLOOD-08-c: Advance projects to stabilize and reinforce shorelines and levees along the American River to accommodate necessary high flows during high release flood protection events.

MEASURE FLOOD-09: Research the Tolerance of Current Crop Mixes to Withstand Increased Flooding and Support Aquaculture and Fish Habitat



Implementing County Department(s)

Sustainability Manager
Agricultural Commissioner's Office
Department of Water Resources
Economic Development

Timeframe

Near Term (2025-2028)

Co-Benefits

Resource Preservation

MEASURE SUMMARY

Historically, when the Sacramento River reaches a threshold elevation, water is diverted into the Yolo Bypass, which has five times the capacity of the Sacramento River. Investing in options to use this water for aquaculture and fish and wildlife restoration habitat will benefit the county's economy and native ecosystems.

ACTIONS

Action FLOOD-09-a: Work with the agricultural sector to understand the tolerance of current crop mixes to withstand increased flooding and explore options to shift crop types to suit changing conditions.

Action FLOOD-09-b: Support the efforts of the California Trout's Nigiri Project and other similar projects to incentivize farmers to manage fields for fish habitat and aquatic food production (e.g., rice).

Action FLOOD-09-c: Coordinate with the US Department of Agriculture, California Department of Food and Agriculture, California Department of Water Resources, Sacramento County Department of Water Resources, California Trout, California Department of Fish and Wildlife, and others to identify and implement actions local farmers can take to anticipate increased flooding.

MEASURE FLOOD-10: Expand Educational Programs to Address Vector and Waterborne Diseases



Implementing County Department(s)

Department of Health Services
Environmental Management Department
Department of Water Resources

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

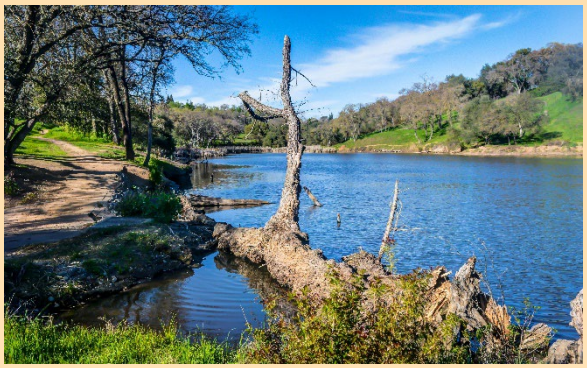
Stagnant water following flood events provides excellent breeding grounds for mosquitoes and other insects that may carry vector-borne diseases (e.g., West Nile virus, Zika virus). Expending greater resources to expand upon existing educational programs would reduce the deleterious effects these diseases may have on Sacramento County residents. Special focus should be placed on EJ Communities and sensitive populations (e.g., populations with chronic conditions).

ACTIONS

Action FLOOD-10-a: Coordinate with the Sacramento-Yolo Mosquito and Vector Control District in the design and installation of underground cisterns and other drainage facilities to reduce and treat vectors.

Action FLOOD-10-b: Expand public outreach and education through multiple forms of media (e.g., radio, television, social media) to reduce standing water in areas that attract mosquitos. Include information regarding methods of protection (e.g., covering up, use of sprays).

MEASURE FLOOD-11: Identify Concrete Channel Restoration Areas



Implementing County Department(s)

Department of Water Resources
Department of Regional Parks

Timeframe

Near Term (2025-2028)

Co-Benefits

Carbon Sequestration

Resource Preservation

Infrastructure Reliability

MEASURE SUMMARY

Naturalizing existing concrete channels will create natural buffers for flood protection. The planting of native trees, shrubs, and other vegetation increases water absorption and allows for groundwater recharge, which moderates the volume of water entering rivers and streams, thereby minimizing flood events.

ACTIONS

Action FLOOD-11-a: Identify and naturalize concrete channels along creeks and river corridors where appropriate by stabilizing stream banks and planting appropriate vegetation to buffer buildings, roads, and crops from flooding similar to the Cordova Creek Naturalization Project.

MEASURE FLOOD-12: Replant Bare or Disturbed Areas



Implementing County Department(s)

Department of Water Resources
Department of Regional Parks

Timeframe

Near Term (2025-2028)

Co-Benefits

Carbon Sequestration

Resource Preservation

MEASURE SUMMARY

Vegetation acts as a natural buffer to protect water quality during flood events by filtering contaminants and reducing flows of sedimentation through soil stabilization. Replanting bare or disturbed areas would reduce flood-related water quality impacts in Sacramento County.

ACTIONS

Action FLOOD-12-a: Develop a plan to address bare land on private property, including creating incentives for private property owners to replant bare lands and developing guidelines for the appropriate vegetation species to plant. (See also Measure GHG-02, "Expand the Urban Forest," and associated actions in Chapter 2 of the CAP; as well as Temp-08, "Increase Parking Lot Shading, Landscaping, and Urban Greening, Prioritizing EJ Communities", and associated actions, in this chapter).

Action FLOOD-12-b: Replant bare or disturbed areas to reduce runoff, improve water uptake, and reduce erosion and sedimentation in streams.

MEASURE FLOOD-13: Update and Implement the County's Local Hazard Mitigation Plan to Address Climate-Change-Related Flooding Impacts



Implementing County Department(s)

Department of Water Resources
Office of Emergency Services

Timeframe

Near Term (2025-2028)

Co-Benefits

- Public Health & Wellbeing
- Resource Preservation
- Infrastructure Reliability

MEASURE SUMMARY

In accordance with federal law, the Sacramento County Local Hazard Mitigation Plan (LHMP) will be updated periodically to adapt to potential changes in flooding hazard conditions, including climate change influences. As the effects of global climate change continue to manifest, Sacramento County's adaptation strategies and mitigation actions may need to evolve to accommodate changing conditions. Regular updates to the LHMP will include adjustments to Sacramento County's adaptation strategies and mitigation actions, so they are deployed accurately and in a timely manner.

ACTIONS

Action FLOOD-13-a: Ensure that all future updates to the County's LHMP incorporate comprehensive strategies to address the increasing likelihood of flooding as a result of the hazards of climate change.

Action FLOOD-13-b: Pursue implementation of plans related to flood protection and continue to secure grant funding to prepare future updates, where applicable.

MEASURE FLOOD-14: Safeguard Freshwater Supply Against Contamination, Degradation, or Loss



Implementing County Department(s)

Sacramento County Water Agency

Timeframe

Near Term (2025-2028)

Co-Benefits

Resource Preservation

Infrastructure Reliability

MEASURE SUMMARY

Floodwaters may interact with sources of pollution and disperse hazardous substances locally or regionally, potentially impairing freshwater supplies. Safeguarding freshwater supply sources through infrastructure improvements (e.g., backflow preventers) will improve Sacramento County's ability to provide drinking water to its residents during flood events.

ACTIONS

Action FLOOD-14-a: Invest in new and/or upgraded existing infrastructure to ensure that freshwater supplies are not contaminated, degraded, or lost during flood events.

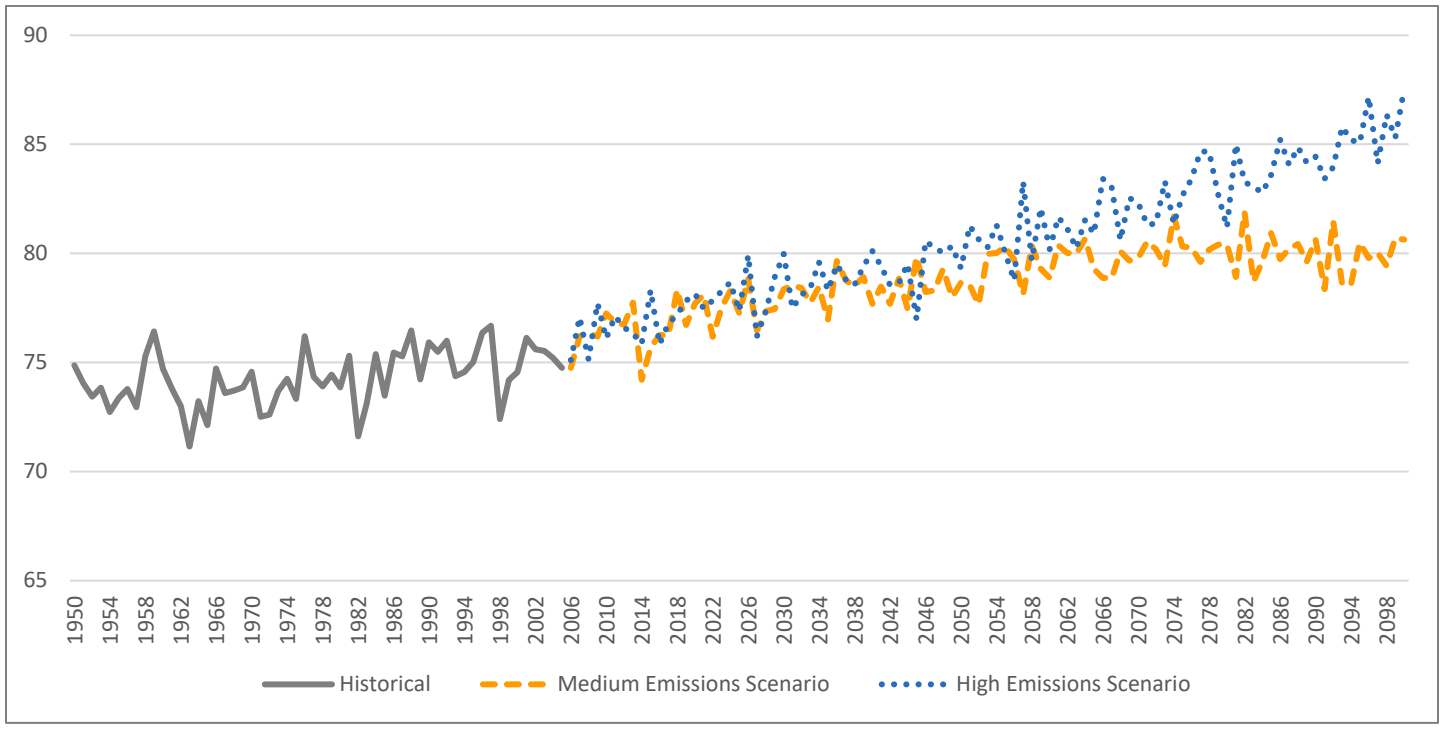


Increased Temperatures and Extreme Heat

The county has experienced, and is projected to continue experiencing, increases in average annual temperature and extreme heat, which could lead to an array of potential impacts. According to Cal-Adapt, the average annual maximum and minimum temperature across Sacramento County are both projected to rise between 5 and 9 degrees Fahrenheit (°F) from their respective historic averages by the end of the century as a result of climate change (CEC 2020a). **Figure 3.2** displays a time series of historic and future projected annual average maximum temperature in the county. Increased temperatures will also lead to a significant increase in extreme heat events. For the City of Sacramento, which serves as a proxy for the county, an extreme heat day is defined as a day when the maximum temperature is above the extreme heat threshold of 103.8 °F. Heat waves refer to a period of four or more consecutive extreme heat days (CEC 2020b). The average annual number of extreme heat days and heat waves are both projected to rise through the end of the century. **Table 3.6** displays historical data and future projections for increased temperatures and extreme heat in the county, organized by defined timescales and future GHG emissions scenarios.

Extreme heat thresholds are unique to any location. The threshold identified for the purposes of this CAP is 103.8 °F.

Figure 3.2 Historical and Projected Annual Average Maximum Temperature in Sacramento County



Source: **CEC 2020a**.

Table 3.6 Changes in Annual Average Temperature and Extreme Heat in Sacramento County

Annual Averages	Historic (1961-1990)	Medium Emissions Scenario		High Emissions Scenario	
		Mid-Century (2035-2064)	Late Century (2070-2099)	Mid-Century (2035-2064)	Late Century (2070-2099)
Temperature					
Maximum Temperature (°F)	74.0	78.3	79.8	79.4	82.7
Minimum Temperature (°F)	48.4	52.2	53.4	53.2	56.8
Extreme Heat					
Extreme Heat Days[1] (#)	4	17	24	22	40
Heat Waves[2] (#)	NA	1.9	2.8	2.6	5.8

Notes: # = number; °F = degrees Fahrenheit; NA = not applicable.

[1] The threshold for an extreme heat day for the City of Sacramento, which serves as a proxy for the county, is 103.8 °F.

[2] Heat waves are defined by Cal-Adapt as four or more consecutive extreme heat days.

Source: **CEC 2020a, 2020b**.

The unincorporated county's populations are at significant risk of being harmed by increased temperatures and extreme heat. Extreme heat can be harmful to public health, both directly and indirectly. Extreme heat itself can cause heat stroke and other heat-related illnesses, increase the risk of cardiovascular disease, respiratory disease, kidney failure, and preterm births, and exacerbate other pre-existing conditions in certain vulnerable populations, such as those who are medically fragile or chronically ill. Additionally, extreme heat and rising temperatures can heighten allergies and intensify the photochemical reactions that produce smog, ground-level ozone, and other pollutants, which can be detrimental to human health. Further, increased temperatures and extreme heat may lead to a notable increase in air conditioning demand across the county, placing more stress on the electrical grid, leading to higher-cost electricity bills for residents who have air conditioning access, and causing disproportionate impacts on individuals or families residing in units that do not have air conditioning. The county's transportation systems are at risk of being adversely affected by increased temperatures and extreme heat. During prolonged periods of increased temperatures or extreme heat, pavement may deteriorate, rail lines may buckle, the structural integrity of bridges may be compromised, air conditioning in buses could fail, and overall transportation maintenance costs may increase (County of Sacramento 2017, 2022). While these examples serve as a snapshot of how increased temperatures and extreme heat may affect the county, the range of potential impacts is much broader. The following adaptation measures will help build resilience to increased temperatures and extreme heat.

MEASURE TEMP-01: Protect Critical Infrastructure Vulnerable to Extreme Heat Events



Implementing County Departments

Department of General Services
Department of Transportation

Timeframe

Near Term (2025-2028)

Co-Benefits

Infrastructure Reliability

MEASURE SUMMARY

The County seeks to reinforce and bolster infrastructure and facilities under this measure. Increasing infrastructure resilience and reliability can reduce the frequency of power outages that can interrupt the functions of business and residences.

ACTIONS

Action TEMP-01-a: In cases where existing communication, energy, public service, and transportation facilities and infrastructure are found to be vulnerable to extreme heat, bolster and/or upgrade associated infrastructure to be more resilient to periods of high heat (e.g., use of heat-tolerant materials).

MEASURE TEMP-02: Partner with Local Agencies and Utilities on Heat-Related Climate Change Initiatives and Efforts



Implementing County Department

Sustainability Manager

Timeframe

Near Term (2025-2028)

Co-Benefits

- Public Health & Wellbeing
- Carbon Sequestration
- Resource Preservation

MEASURE SUMMARY

The County aims to reduce urban heat island effects by leveraging and supporting existing programs, as well as partnering with local agencies and utilities on the development of future heat-reducing initiatives. Reducing the urban heat island effect will result in less reliance on air conditioning, which decreases energy use. It also provides public health benefits through reducing occurrences of heat-borne illnesses.

ACTIONS

Action TEMP-02-a: Partner with the Sacramento Metropolitan Air Quality Management District (SMAQMD), SMUD, PG&E, and the Sacramento Area Council of Governments (SACOG) to implement future and ongoing heat-related climate change initiatives. Such partnerships could include helping other organizations increase participation in existing programs through education and promotion, and by using and integrating them in County programs and activities, where feasible. Examples include, but are not limited to, participation in SMAQMD's Regional Urban Heat Island Initiative, Sacramento Tree Foundation Shade Tree and NeighborWoods Programs, PG&E's Energy Efficient Cool Roof program, and SACOG's Complete Streets GHG reduction measures.

MEASURE TEMP-03: Expand Services and Raise Awareness of Heat-Related Risks and Illnesses for Residents of EJ Communities



Implementing County Departments

County Department of Health Services
Sustainability Manager

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Equity

MEASURE SUMMARY

Through this measure, the County seeks to provide support to residents for heat-related risks. Actions under this measure focus on improving public outreach regarding health and safety during extreme heat events, establishing more cooling centers in EJ Communities, and encouraging additional participation in the Sacramento Alert Emergency Notification System.

ACTIONS

Action TEMP-03-a: The County Department of Health Services will track heat-related illness, hospitalizations, and deaths in order to target education and outreach efforts.

Action TEMP-03-b: Expand partnerships with local governments, non-governmental organizations, churches, and businesses to provide additional cooling centers within EJ Communities, where residents may not have access to air conditioning during periods of extreme heat.

Action TEMP-03-c: Survey EJ Communities to identify community preferences regarding the appropriate location and accessibility of cooling centers, based on proximity to public transit.

Action TEMP-03-d: Improve the resilience of County-owned cooling centers and reduce dependence on diesel generators by installing solar panels, battery storage systems, and microgrids, prioritizing centers in and near EJ communities.

MEASURE TEMP-04: Encourage the Installation or Use of Cool Roof Technologies, Passive Solar Home Design, Green Roofs, and Rooftop Gardens



Implementing County Departments

Sustainability Manager
Planning and Environmental Review
Building Permits and Inspection

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

MEASURE SUMMARY

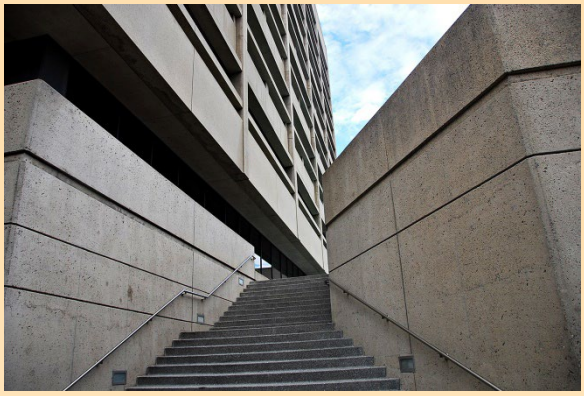
This measure aims to use cool roofs, passive design, rooftop gardens, and green roofs to mitigate urban heat island effects, lower energy consumption, and improve air quality.

ACTIONS

Action TEMP-04-a: Develop incentive programs including, but not limited to, permit streamlining, permit fee reductions, or tax rebates for developers and landowners to apply passive solar home design to future residential buildings. A home that employs passive solar home design has windows oriented toward the south, is composed of materials of high heat absorption, and is built to distribute heat and cold air throughout the home. Use of these design elements provides natural cooling and heating and reduces energy demand.

Action TEMP-04-b: Develop incentive programs including, but not limited to, permit streamlining, permit fee reductions, and tax rebates to encourage the use of rooftop gardens and green roofs in residential and commercial buildings. Rooftop gardens are gardens on rooftops, while green roofs (or living roofs) are roof tops that are partially or completely covered by vegetation. These forms of roofing lower the amount of heat absorbed by a building and reduce energy demand associated with air conditioning.

MEASURE TEMP-05: Increase Participation in the Sacramento Area Sustainable Business Program



Implementing County Departments

Sustainability Manager
Business Environmental Resource Center

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

MEASURE SUMMARY

Through this measure, the County aims to increase participation in the Sustainable Business Program, which will reduce energy consumption and promote environmental sustainability. For example, educating and promoting the reduction of baseline energy consumption will help the County and businesses avoid power disruptions when energy demand spikes during heatwaves.

ACTIONS

Action TEMP-05-a: Increase funding and staff resources for the Sacramento Area Sustainable Business Program through the County's Business Environmental Resource Center, with the goal of increasing overall participation and certification in the program and implementing annual monitoring of businesses that adopt practices to reduce energy consumption and promote energy efficiency, along with other sustainability measures.

MEASURE TEMP-06: Partner with Valley Vision to Expand the Business Resiliency Initiative



Implementing County Departments

Sustainability Manager
Economic Development

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

MEASURE SUMMARY

The County aims to increase participation in the Business Resiliency Initiative, which would result in increased resiliency on a business-by-business basis during power outages induced by extreme heat events. The Initiative was launched in the Sacramento Capital Region of California to increase awareness and preparedness for continuity risks faced by small and medium businesses. The Initiative aims to minimize the impacts of an economic crisis potentially caused by unforeseen disaster - recognizing the increase in frequency and severity of extreme weather events and climate change related impacts.

Businesses would be responsible for conducting self-evaluations to identify assets at risk or vulnerable to weather-related disturbances that include extreme heat events, but also other extreme events such storms, floods, or fires.

ACTIONS

Action TEMP-06-a: Partner with Valley Vision to train businesses to use the Business Resiliency Initiative toolkit, which will prepare business for weather-related risks to daily operations. Aspects of the Business Resiliency Initiative toolkit include:

- preparation of a hazard vulnerability assessment, which identifies the greatest risks and hazards facing individual businesses;
- review of existing resiliency;
- development of a business continuity plan;
- testing of business continuity plans through drills and exercises; and
- engagement in community outreach.

MEASURE TEMP-07: Use Cool Pavement Technology and Reduce the Amount of Paved Surfaces



Implementing County Departments

Sustainability Manager
Planning and Environmental Review
Building Permits and Inspection

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

This measure furthers the County's goal to lessen urban heat island effects through the incorporation of cool pavements into the construction and maintenance of paved surfaces. Cool pavements help reduce exposure to heat-related illnesses, decrease building energy consumption and associated GHG emissions, and improve air quality.

ACTIONS

Action TEMP-07-a: Require the use of cool pavement technology in both the replacement and construction of new roads, sidewalks, parking areas, and bikeways.

Action TEMP-07-b: Develop and incorporate cool pavement standards into the County's roadway design manual for use in public rights-of-way.

Action TEMP-07-c: Develop and incorporate cool pavement standards into the County's development standards for private development projects, in both new construction and changes to existing onsite paved surface areas (e.g., parking lots, private roadways, or other hardscape areas).

Action TEMP-07-d: Apply cool pavement standards when constructing new County-owned facilities or modifying existing County-owned facilities.

Action TEMP-07-e: Collaborate with the Capital Region Climate Readiness Collaborative, the California Environmental Protection Agency, the UC Davis Cool Pavement Research Center, and other regional partners to obtain guidance, explore pilot projects, or other technical support. (Note: this action could also be achieved collaboratively with others as part of the regional urban heat island initiative described in TEMP-02-a).

MEASURE TEMP-08: Increase Parking Lot Shading, Landscaping, and Urban Greening, Prioritizing EJ Communities



Implementing County Departments

Sustainability Manager
Planning and Environmental Review
Code Enforcement
Department of General Services

Timeframe

Midterm (2029-2031)

Co-Benefits

- Public Health & Wellbeing
- Carbon Sequestration
- Equity
- Infrastructure Reliability

MEASURE SUMMARY

The County seeks to increase urban greening through parking lot shading, tree planting, landscaping, and other heat-reducing activities to reduce the urban heat island effect. Actions included in this measure focus on enforcing County standards regarding shading requirements for parking lots, incorporating solar photovoltaic (PV) carports, and developing urban greening and tree planting programs that provide shade.

Additionally, under Measure GHG-02 (Expand the Urban Forest), the County aims to plant 15,000 net new trees by 2030 and 62,000 net new trees by 2045. This GHG measure will also provide adaptive co-benefits for extreme heat that include increasing shade and reducing the urban heat island effect.

ACTIONS

Action TEMP-08-a: Enforce the existing parking lot shading coverage requirements (i.e., 30 percent coverage for 5-24 parking spaces, 40 percent coverage for 25-29 parking spaces, and 50 percent coverage for 50+ parking spaces) for new development projects that include parking, and revise parking lot shading standards to provide larger minimum sizes for tree planters to improve tree health.

Action TEMP-08-b: Enforce existing standards for tree shading and landscaping in existing parking lots not in compliance and establish a compliance program to ensure that trees are maintained properly.

Action TEMP-08-c: Establish rebate programs, permit fee reductions, or tax deductions to incentivize the installation of solar PV carports in existing and future parking lots. Solar PV carports provide shade in parking lots while simultaneously converting solar energy into electricity that can be used to charge electric vehicles (EVs) and plug-in hybrid vehicles.

Action TEMP-08-d: Establish rebate programs, permit fee reductions, or tax deductions to incentivize the installation of solar PV carports in existing and future parking lots. Solar PV carports provide shade in parking lots while simultaneously converting solar energy into electricity that can be used to charge EVs and plug-in hybrid vehicles.

Action TEMP-08-e: Develop standards for the inclusion of solar PV carports in County-owned parking lots.

Action TEMP-08-f: Collaborate with the Capital Region Climate Readiness Collaborative, the Sacramento Tree Foundation, SMUD, PG&E, or other regional partners to identify incentives, grants, or other resources for the purposes of commercial and residential greening actions including, but not limited to, planting of parking lot or street trees, maintaining tree health, and establishing community gardens.

Action TEMP-08-g: Require County-led active transportation and public transit infrastructure modifications and upgrades to incorporate shading, preferably in the form of trees, when upgrades to facilities are performed. Encourage modifications led by SacRT to also incorporate shading in the form of trees.

MEASURE TEMP-09: Understand the Tolerance of Current Crop Mixes to Withstand Increased Temperatures



Implementing County Departments

Sustainability Manager
Agricultural Commissioner's Office

Timeframe

Midterm (2029-2031)

Co-Benefits

Carbon Sequestration

Resource Preservation

Infrastructure Reliability

MEASURE SUMMARY

Diversifying Sacramento County's crops will reduce the potential for crop loss from excessive pests, disease, and increased temperatures and will improve the agriculture industry's adaptive capacity.

ACTIONS

Action TEMP-09-a: Actively engage with the agricultural sector to understand the tolerance of current crop mixes to withstand increased temperatures, disease, and pests, and explore options to diversify and shift to drought-tolerant crops that can be cultivated in a warmer environment.

MEASURE TEMP-10: Work With SMUD to Improve Electric Grid Reliability



Implementing County Department

Sustainability Manager

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

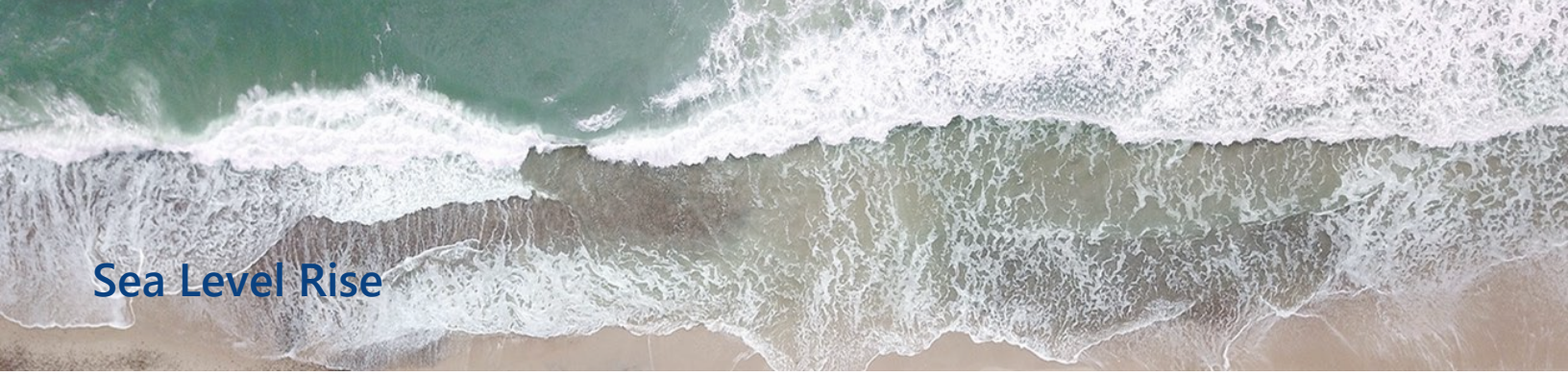
The County will partner with SMUD to identify potential future improvements to increase resiliency of the electric grid to climate hazards such as extreme heat events and wildfires. Working with SMUD, the County will implement identified projects to achieve the necessary resiliency. This measure is also closely linked to Measure GHG-03 (Support SMUD Zero Carbon Plan).

ACTIONS

Action TEMP-10-a: More frequent extreme heat events will lead to higher power and electricity usage, especially during peak hours. The County will work with SMUD to improve the electric grid's reliability so that the electricity needs of customers can be met at all times. Potential resiliency measures include but are not limited to:

- microgrid-powered resiliency centers;
- optimal co-location of solar PV, energy storage, and EV chargers to reduce costs and minimize strain on the grid;
- educational campaigns to support reduced electricity usage during extreme heat; and
- campaigns to encourage participation in SMUD's load flexibility programs such as My Energy Optimizer, PowerDirect® Automated Demand Response and Virtual Power Plant.

Action TEMP-10-b: Work with SMUD to design or use existing grid resilience/reliability metrics (e.g., attribute-based and performance-based metrics), to track the progress made on grid reliability improvements.

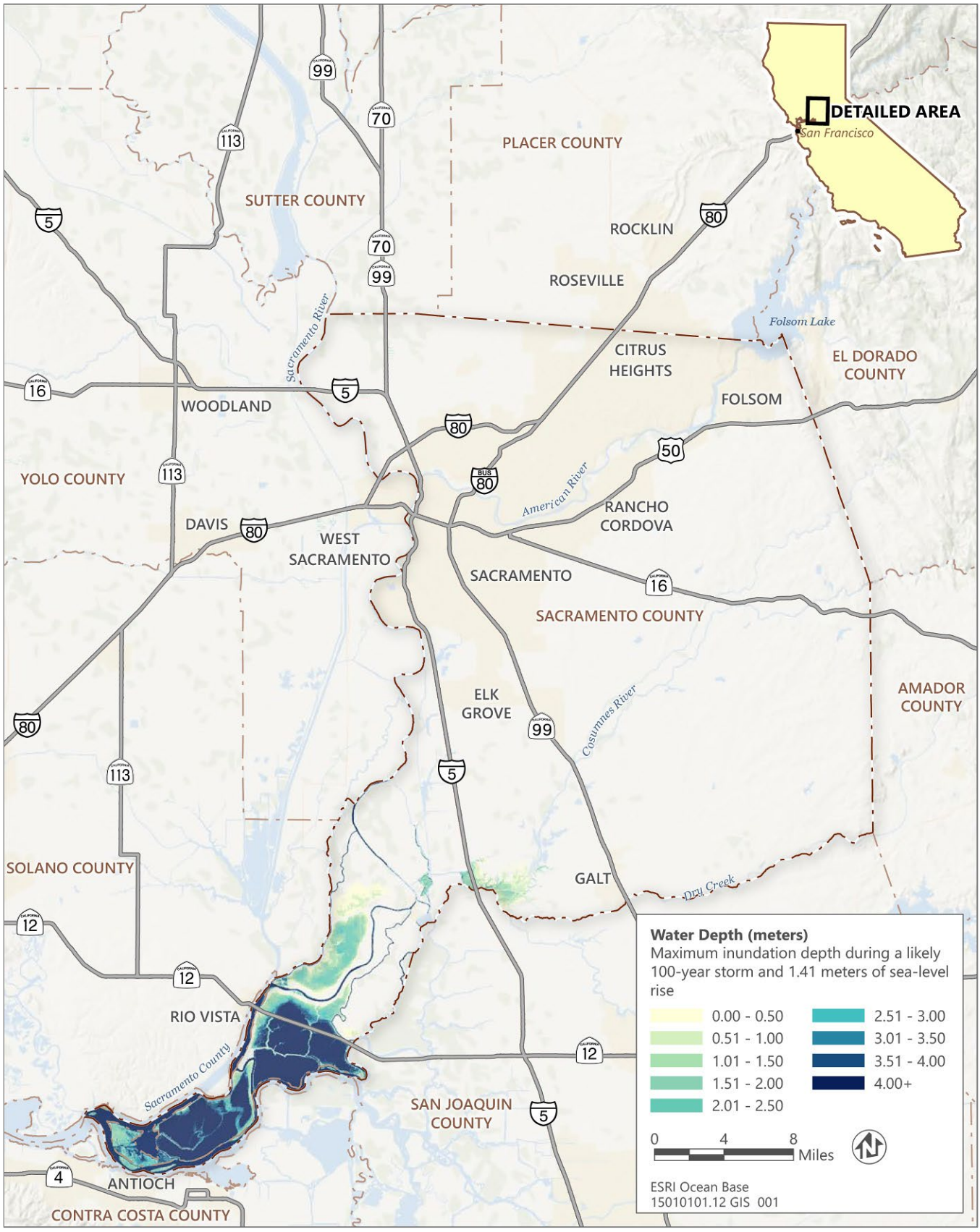


Sea Level Rise

The southwestern portion of the county (i.e., primarily rural and agricultural lands), which includes the lower reaches of the Sacramento River that flow into the Sacramento-San Joaquin Delta, is vulnerable to sea level rise. **Figure 3.3** below shows the areas that would be inundated during a likely 100-year storm event coupled with 1.41 meters (i.e., 4.63 feet) of sea level rise (County of Sacramento 2022). While many of the potential impacts associated with sea level rise are similar to those with flooding, sea level rise presents additional potential impacts, such as saltwater intrusion, which can affect the quality of the region's water supplies, especially when coupled with increased municipal and agricultural demand for freshwater (County of Sacramento 2017). The following adaptation measures will help build the county's resilience to sea level rise.



Figure 3.3 Maximum Inundation Depth During a 100-Year Storm and 1.41 Meters of Sea Level Rise



Source: **Developed by Ascent in 2021**.

MEASURE SLR-01: Coordinate With Other Agencies on Floodplain Mapping Updates and Identification of Improvements to Protect Vulnerable Populations, Functions, and Structures



Implementing County Department(s)

Department of Water Resources

Timeframe

Near Term (2025-2028)/Ongoing

Co-Benefits

- Public Health & Wellbeing
- Equity
- Resource Preservation
- Infrastructure Reliability

MEASURE SUMMARY

The impact of sea level rise will manifest gradually over the century, and according to current projections, 8 percent of Sacramento County is at risk of inundation from a 1.41-meter rise in sea level coupled with a 100-year flood event. The County will coordinate updates to floodplain mapping that include changes in Base Flood Elevations with sea level rise inputs to inform future planning and investment decisions. Additionally, the County will rely on partnerships with agencies and organizations conducting sea level rise research to identify specific actions that protect the county and adjacent areas in the region.

ACTIONS

Action SLR-01-a: Coordinate with the applicable reclamation districts, Federal Emergency Management Agency, and California Department of Water Resources to regularly update floodplain mapping for potentially affected areas to reflect changes in base flood elevations that account for sea level rise.

Action SLR-01-b: Partner with the applicable reclamation districts to establish measures to protect populations, functions, and structures within the affected areas including continued maintenance of reclamation district levee systems and relocation of vulnerable communities, infrastructure, and facilities where applicable. Partner with community-based organizations serving vulnerable communities in all aspects of the planning process.

MEASURE SLR-02: Support and Monitor Ongoing Analysis of Sea Level Rise Data



Implementing County Department(s)

Department of Water Resources
Sacramento County Water Agency

Timeframe

Ongoing

Co-Benefits

Resource Preservation

MEASURE SUMMARY

The County will gather and monitor information on sea level rise effects on Sacramento County (e.g., saltwater intrusion) to help the County and local water districts prepare for potentially more adverse hydrologic and water quality conditions.

ACTIONS

Action SLR-02-a: Support and monitor ongoing collection and analysis of sea level rise, storm surge, and tidal data by existing institutions, including, but not limited to the Federal Emergency Management Agency, the National Oceanic and Atmospheric Administration, and California Coastal Commission.

Action SLR-02-b: Support research and analysis of saltwater intrusion and degraded water quality in the Sacramento River, as well as surrounding freshwater inlets and wells, as a result of sea level rise.

MEASURE SLR-03: Update the County's Local Hazard Mitigation Plan to Incorporate Sea Level Rise



Implementing County Department(s)

Office of Emergency Services
Department of Water Resources

Timeframe

Midterm (2029-2031)/Ongoing

Co-Benefits

Public Health & Wellbeing

Resource Preservation

MEASURE SUMMARY

Future updates to the Sacramento County LHMP to include sea level rise hazards will increase Sacramento County's resilience to higher sea levels, because future LHMPs will assess the geographic extent, probability of future occurrences, magnitude/severity, significance, and climate change influence of sea level rise as it relates to the county. The LHMP's assessment of these factors will advise the development of future mitigation actions.

ACTIONS

Action SLR-03-a: Require that future updates to the Sacramento County LHMP incorporate a comprehensive evaluation of sea level rise in the county and associated risk management processes as the degree of sea level rise manifests and as more data becomes available.

MEASURE SLR-04: Incorporate Sea Level Rise Effects Into Capital Improvement Plans



Implementing County Department(s)

Department of Water Resources
Department of Transportation
Sacramento County Water Agency

Timeframe

Midterm (2029-2031)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

Infrastructure Reliability

MEASURE SUMMARY

Using sea level rise data, the County will be able to design and locate future infrastructure projects accordingly. In areas where sea level rise effects will likely occur, the County could bolster or relocate future infrastructure.

ACTIONS

Action SLR-04-a: Following the implementation of the actions contained in Measures SLR-01 and SLR-03, update capital improvement plans for critical infrastructure to address the effects of future sea level rise and associated hazards in potentially affected areas.

MEASURE SLR-05: Guide Future Development Out of Areas Vulnerable to Sea Level Rise



Implementing County Department(s)

Planning and Environmental Review
Department of Water Resources

Timeframe

Near Term (2029-2031)/Ongoing

Co-Benefits

Public Health & Wellbeing

Resource Preservation

MEASURE SUMMARY

Guiding development out of areas vulnerable to sea level rise will reduce future flooding impacts to people and property.

ACTIONS

Action SLR-05-a: Following implementation of the actions contained in Measures SLR-01 and SLR-03, guide future development out of areas that are vulnerable to sea level rise and associated hazards via zoning changes, transfer of development rights, or other mechanisms.

Action SLR-05-b: Publish sea level rise maps showing provisional areas for future development.

Action SLR-05-c: Outline plans, measures and resources to assist vulnerable communities to relocate ahead of emergency conditions resulting from sea level rise.



Wildfire

Historically, attention to wildfire in California has mostly focused on the Sierra Nevada region and Southern California, but recent large and destructive wildfires in other portions of the state have rapidly shifted attention to the ongoing risks statewide. Climate change is exacerbating many of the factors that contribute to wildfire risk. Increased variability in precipitation may lead to wetter winters and increased vegetative growth in the spring. Potentially longer and hotter summer periods will lead to the drying of vegetative growth, which may ultimately result in a greater amount of fuel for wildfire ignition and spread.

Within the county, the foothill areas in the east are most susceptible to wildfire, though grassland fires can also ignite in open spaces and parkway areas (e.g., American River Parkway). Potential wildfires both inside and outside of the boundaries of the county can result in an array of direct and indirect potential impacts. The risk of direct exposure of populations and the built environment to wildfire is especially worrisome for those who reside in the wildland-urban interface in the eastern portion of the county. Direct exposure can result in severe injuries to populations and can cause significant damage to residential and nonresidential buildings, critical facilities, roadways, and bridges. Additionally, smoke and air pollution linked to wildfires can be a severe human health hazard, potentially leading to cognitive impairment, premature births, and eye and respiratory illnesses, and exacerbating other pre-existing conditions. Further, wildfires can result in the closure of roadways and/or damage to transportation infrastructure, leading to reduced availability of recreational opportunities within the county. Hiking and mountain biking trails and campsites may become inaccessible or damaged by wildfire activity, impeding recreational use and the associated tourism revenue that may accompany it (County of Sacramento 2017, 2022). The potential impacts of wildfire presented here are not meant to be all-encompassing, as there is an array of additional potential impacts. The adaptation measures developed for this CAP and presented below are intended to help build the unincorporated county's resilience to wildfire.

MEASURE FIRE-01: Map and Identify Locations that are Newly at Risk, or at Higher Risk for Fire Hazards



Implementing County Departments

Office of Emergency Services
Department of Technology GIS section

Timeframe

Near Term (2025-2028)

Co-Benefits

- Public Health & Wellbeing
- Carbon Sequestration
- Resource Preservation

MEASURE SUMMARY

The County will partner with fire agencies to map and identify locations that are already at high risk or will be at increased risk in the future because of climate change.

ACTIONS

Action TEMP-01-a: Work with the California Department of Forestry and Fire Protection (CAL FIRE), the Sacramento Metropolitan Fire District (Metro Fire), and any other fire department operating within the boundaries of the unincorporated county to map and identify locations within the county that are newly at risk, or at higher risk, for wildfire hazards due to climate change and its impacts. Wildfire hazards may include direct damage to the American River Parkway, structures, electrical transmission, transportation, and communication infrastructure; increased rates of erosion, landslide, and water quality degradation; and ecological disturbance.

MEASURE FIRE-02: Coordinate with State and Local Agencies to Establish Ecological Recovery Programs



Implementing County Department

Sustainability Manager

Timeframe

Near Term (2025-2028)

Co-Benefits

Resource Preservation

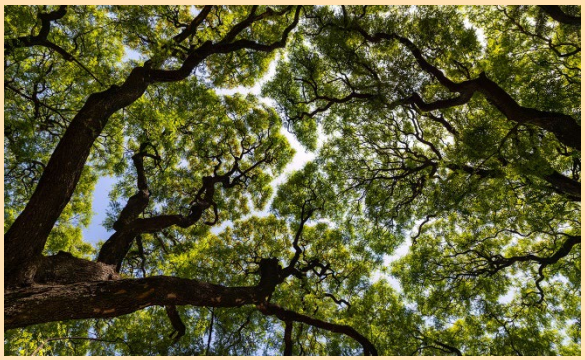
MEASURE SUMMARY

Implementation of ecological restoration strategies in existing burned or potentially future burned areas will encourage the regrowth of natural ecosystems that may be damaged during wildfire events. Ecological restoration includes the establishment of native ecological systems and processes that reduce the potential for high-intensity wildfires and improve ecological resiliency to wildfire events.

ACTIONS

Action FIRE-02-a: Coordinate with CAL FIRE, Metro Fire, resource conservation districts, land trusts, or other similar organizations to establish ecological recovery programs to support post-fire restoration efforts.

MEASURE FIRE-03: Transition County Tree Planting to More Fire-Resilient Species



Implementing County Department

Planning and Environmental Review

Timeframe

Near Term (2025-2028)

Co-Benefits

- Public Health & Wellbeing
- Carbon Sequestration
- Resource Preservation

MEASURE SUMMARY

Selecting tree species that are wildfire-resistant and/or can thrive in fire hazard severity zones will help mitigate wildfire risk while allowing the County to continue to expand tree planting efforts that result in improved air quality and urban heat island mitigation.

ACTIONS

Action FIRE-03-a: Consult with the Sacramento Tree Foundation and SelecTree to identify wildfire-resistant species and the appropriate species of trees for fire hazard severity zones. Incorporate such recommendations into updates to landscaping standards and tree planting guidelines in the County Code or other appropriate documents.

MEASURE FIRE-04: Coordinate and Improve Emergency Preparedness Systems



Implementing County Department

Office of Emergency Services

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

The County aims to improve the efficacy of evacuation procedures, reliability of emergency supplies, and distribution of wildfire risk information. Establishing wildfire monitoring systems to provide up-to-date data with respect to areas considered at high risk for wildfire breakouts will improve Sacramento County's ability to prepare for and combat wildfire-related impacts.

ACTIONS

Action FIRE-04-a: Coordinate with Metro Fire, CAL FIRE, Cal OES, and the City of Sacramento Fire Department to identify strategies to ensure capacity and resilience of routes potentially compromised by wildfire, including emergency evacuation and supply transportation routes.

Action FIRE-04-b: Improve upon education and outreach regarding emergency supplies, evacuation routes, pet protection, and key terminology (e.g., controlled/prescribed burn, fuel load), as well as frequently updating the Sacramento Ready webpage to include current information.

Action FIRE-04-c: Provide input to Metro Fire and CAL FIRE to establish reliable wildfire monitoring systems that provide early warning of high wildfire risk and wildfire occurrence and include evaluation of ecological and human impacts of wildfire.

Action FIRE-04-d: Collaborate with the SMAQMD to enhance public information campaigns on preparing for wildfire smoke and dealing with poor and life-threatening air quality situations. Special focus should be placed on EJ Communities and sensitive populations, such as those with existing respiratory diseases.

MEASURE FIRE-05: Avoid New Development in Very-High Fire Hazard Severity Zones



Implementing County Department

Planning and Environmental Review

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

MEASURE SUMMARY

The County seeks to limit human exposure to potential wildfire impacts by avoiding locating new development in designated Very-High Fire Hazard Severity Zones.

ACTIONS

Action FIRE-05-a: Avoid new development in Very-High Fire Hazard Severity Zones according to the most recent and available CAL FIRE Hazard Severity Zones maps and consider projections of future climate change when planning future land uses.

MEASURE FIRE-06: Collaborate with Agencies and Organizations on Programs to Reduce Wildfire Hazards



Implementing County Departments

Sustainability Manager
Code Enforcement
Department of Regional Parks

Timeframe

Near Term (2025-2028)

Co-Benefits

- Public Health & Wellbeing
- Carbon Sequestration
- Resource Preservation

MEASURE SUMMARY

The County seeks to employ an integrated approach among agencies and organizations to reduce wildfire hazards within the unincorporated areas of the county to ensure that effective fire management extends to a broad geographical area, resulting in more comprehensive protection against future wildfire events.

ACTIONS

Action FIRE-06-a: Collaborate with Metro Fire and other Sacramento County-based fire districts to continue to reduce wildfire hazards, including but not limited to, enforcing defensible space guidelines for existing and new development, restoring wildfire-resilient conditions by thinning and removing live or dead vegetation, implementing wildfire fuel reduction action plans, and retaining healthy native trees.

Action FIRE-06-b: Collaborate with the Bureau of Land Management, US Fish and Wildlife Service, Capital Region Climate Readiness Collaborative, the American River Parkway Foundation, the Sacramento River Watershed Program, and other local stakeholders in developing resource management plans for the Sacramento, Cosumnes, and American Rivers.



Drought

California, including Sacramento County, has a highly variable climate that is susceptible to prolonged periods of drought, and recent research suggests that extended drought occurrences (or "mega-droughts") could become more pervasive in future decades, which may result in major impacts on local water supplies and other secondary impacts (CEC 2020c). The county is not located in an area where snow accumulates, however, major water districts and utilities in the county receive and depend on a substantial amount of water from watersheds that rely upon spring and early-summer snowmelt in the Sierra Nevada mountain range. The Sierra Nevada snowpack, which serves as a natural water supply reservoir for California during the dry months, is predicted to decline in area covered and water volume stored as temperatures rise and precipitation falls more frequently as rain instead of snow at mountain elevations. Further, increased temperatures will affect the timing of historical snowmelt such that the snowpack will typically melt earlier in the year, causing more rapid early spring flows in the Sacramento, American, Cosumnes, and Mokelumne Rivers and reduced late spring and summer flows. Approximately 50 percent of the county is served by groundwater supplies. Changes in surface water flow will have a direct impact on groundwater recharge, including decreased periods of recharge when late spring and summer stream flows diminish. Further, groundwater usage is higher in periods of drought, therefore, groundwater supplies may be reduced during and after periods of limited surface water flows.

Although the county has yet to face a critical loss in water resources, it is possible that climate-induced drought and increased water demand due to population growth could result in future water shortages wherein residents must implement severe cutback strategies. Those relying on wells or groundwater may also face challenges in meeting water demands as rates of groundwater recharge decline. Drought conditions can also affect public health by increasing the spread of vector-borne illnesses, such as the airborne transmission of pathogenic fungi spores, generated by parched agricultural land. Additionally, energy production, agriculture, recreation, and ecosystem functions are especially vulnerable to drought. A declining volume of snowmelt coupled with earlier periods of melting could have severe consequences for the region's hydro-electricity generation. Drought and increased agricultural demand for water during extreme heat conditions could result in water insecurity for the sector. Reduced surface water flow in local watersheds could affect river-based economic and recreational opportunities such as the fishing, rafting, camping, and backpacking, and swimming activities in the tributaries of the Sacramento, American, Cosumnes, and Mokelumne Rivers. Reduced streamflow combined with increased human demand for water could lower the availability of water for wildlife and alter the composition and structure of riparian communities (County of Sacramento 2017, 2022). To address the array of potential impacts associated with climate change-induced drought, the County has developed the following adaptation measures to help build future resilience.

MEASURE WATER-01: Evaluate Vulnerabilities of Water Supply Systems and Networks and Develop Strategies to Improve Resilience



Implementing County Departments

Sustainability Manager
Department of Water Resources
Sacramento County Water Agency
Building Permits and Inspection

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Resource Preservation

Infrastructure Reliability

MEASURE SUMMARY

The County aims to improve resilience to drought and extreme precipitation events by implementing improvements to Sacramento County's water supply systems and networks.

ACTIONS

Action WATER-01-a: Establish a schedule to routinely evaluate the vulnerability of the water supply systems and networks to climate-change-related impacts and develop strategies to add resilience to these systems. Resilient water supply systems must be able to deliver services during disruptive events (e.g., storms, drought).

Action WATER-01-b: Adopt municipal codes to enforce standards of resiliency for water-related infrastructure for all future development. Municipal codes may include, but are not limited to, standards related to elevation of electrical generators and/or tanks and containers of hazardous materials, increased capacity of water storage tanks, and improved deployment of backflow preventers to impede contamination of drinking water following an extreme weather event (e.g., storms).

Action WATER-01-c: Continue to participate in and support the efforts of the Sacramento Water Forum to promote comprehensive and effective water management and support aquatic ecosystem protection in the Lower American River.

Action WATER-01-d: Collaborate with experts and other agencies to identify potential hazards (e.g., floods, drought) in sites of new infrastructure, assess the vulnerabilities associated with identified hazards, and use appropriate materials and establish adequate capacities for new infrastructure.

Action WATER-01-e: Support the projects of the Sacramento River Watershed Program aimed to improve water quality, streamflow, flood management, and watershed stewardship in the Sacramento River and the Lower American River watersheds.

Action WATER-01-f: Conduct ongoing maintenance of existing water supply-related infrastructure to identify potential weaknesses and deterioration.

MEASURE WATER-02: Increase Onsite Greywater and Rainwater Reuse, Stormwater Reuse, and Recycled Water Systems



Implementing County Departments

Sustainability Manager
Environmental Management Department
Public Information Office
Department of General Services
Department of Water Resources
Agricultural Commissioner's Office

Timeframe

Near Term (2025-2028)

Co-Benefits

Resource Preservation

Infrastructure Reliability

MEASURE SUMMARY

The deployment of onsite and regional rainwater capture and stormwater harvest technology will expand Sacramento County's existing water storage capacity and thereby improve the county's resiliency to periods of drought or cases where water distribution infrastructure is damaged. This measure is also closely linked to Measure WATER-04 (Reduce Potable Water in Outdoor Landscaping).

ACTIONS

Action WATER-02-a: Partner with the Regional Water Authority and other water districts to establish incentive programs that promote the deployment of onsite rainwater catchment systems, such as rain barrels, rain gardens, cisterns, and other mechanisms to capture and store rainwater for use during the dry season for water customers.

Action WATER-02-b: Continue and expand on the County's education and outreach regarding the safe and proper installation of rainwater catchment and storage systems.

Action WATER-02-c: Coordinate with appropriate agencies to develop a standard to deploy innovative options to meet future water demand for all County-owned facilities (e.g., reclaim and purify wastewater, onsite greywater reuse systems, or use of recycled water from the regional or local treatment plants).

Action WATER-02-d: Develop an integrated network of rainwater and greywater catchment systems within the county's agricultural sector through incentive and rebate programs to further increase water storage capacity.

Action WATER-02-e: Establish a regional stormwater harvest program and construct the related infrastructure (e.g., piping, storage basins and reservoirs, pumps) in existing rural and urban portions of the unincorporated county as well as in new development.

MEASURE WATER-03: Create Incentives and Programs to Transfer Knowledge and Technologies to Assist Farmers With New Production Methods and Drought-Tolerant Species



Implementing County Departments

Sustainability Manager
Agricultural Commissioner's Office
Economic Development
Department of Water Resources
Sacramento County Water Agency

Timeframe

Near Term (2025-2028)

Co-Benefits

Carbon Sequestration

Resource Preservation

MEASURE SUMMARY

Under this measure, the County aims to increase communication and financial support to the agricultural sector to allow farmers to transition and adapt to a hotter and potentially drier climate. This measure is also closely linked to Measure GHG-01 (Carbon Farming Program).

ACTIONS

Action WATER-03-a: Create programs that facilitate communication between farmers of specialty and climate-sensitive crops and agricultural specialists to advise future agricultural practices in light of a hotter and potentially drier climate.

Action WATER-03-b: Provide financial support to farmers of specialty and climate-sensitive crops for changes to irrigation systems associated with drought-tolerant crops, which may be cultivated more under future climate conditions.

Action WATER-03-c: Incentivize water conservation and efficiency in the agricultural sector through incentive and rebate programs to support climate-smart agricultural practices that include, but are not limited to, drip irrigation, tailwater return systems, covered canals, reduced tillage, and covered crops.

Action WATER-03-d: Create a collaborative framework between farmers and local groundwater sustainability agencies to capture and divert floodwater during rainy seasons for groundwater recharge, ensuring water availability during dry seasons and enhancing long-term water supply sustainability.

MEASURE WATER-04: Reduce Potable Water Use in Outdoor Landscaping



Implementing County Departments

Planning and Environmental Review
Sustainability Manager
Sacramento County Water Agency

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

The County seeks to reduce the amount of potable water used for landscaping. Actions under this measure focus on revising the County's landscaping standards, improving rebates to residential water users to incorporate drought-tolerant landscaping, and increasing the size of the recycled water system (see also Measure Water-02: Increase Onsite Greywater and Rainwater Reuse, Stormwater Reuse, and Recycled Water Systems). Water savings could be allocated to other more vital purposes (e.g., agriculture, potable water). These actions will also reduce the energy use and GHG emissions associated with water conveyance and treatment.

ACTIONS

Action WATER-04-a: Amend the Sacramento County Water Efficient Landscaping Ordinance to require that 80 percent of landscaping area be dedicated to low-water, drought-tolerant species for new residential and nonresidential buildings.

Action WATER-04-b: Partner with Regional Water Authority and other water districts in the county to improve existing rebate programs (e.g., Sacramento County Water Agency's Cash for Grass Program) to incentivize the incorporation of low-water, drought-tolerant species in lieu of water-intensive lawns and high-water vegetation in existing residential areas.

Action WATER-04-c: Partner with the Sacramento Area Sewer District to expand the existing recycled water system service areas.

Action WATER-04-d: Conduct a feasibility study to evaluate establishing requirements for dual-plumbing to support on-site greywater use in new residential single-family, residential multifamily, and commercial buildings.

MEASURE WATER-05: Expand Upon Existing Water Conservation Education and Outreach Programs for Residents and Businesses



Implementing County Departments

Sustainability Manager
Sacramento County Water Agency
Public Information Office

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

MEASURE SUMMARY

The County aims to support water districts by expanding the reach of educational resources to residents and businesses on water consumption.

ACTIONS

Action WATER-05-a: Expand communication of water conservation-related education and tips through multiple media platforms (e.g., radio, television, social media) to increase awareness of indoor and outdoor conservation methods. Showcase a drought-tolerant demonstration garden at a County building.

MEASURE WATER-06: Collaborate With Federal, State, and Local Agencies and Organizations to Identify Future Water Supplies, Explore Alternative Supply Sources, and Improve Capacity



Implementing County Departments

Sustainability Manager
Agricultural Commissioner's Office
Economic Development
Department of Water Resources
Sacramento County Water Agency

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Infrastructure Reliability

MEASURE SUMMARY

The County seeks to adapt to changes in precipitation patterns associated with climate change. Under this measure, the County will continue communicating and collaborating with other water-related stakeholders (e.g., agencies, organizations, businesses) to ensure that potentially limited water resources are allocated fairly and appropriately both upstream and downstream of Sacramento County.

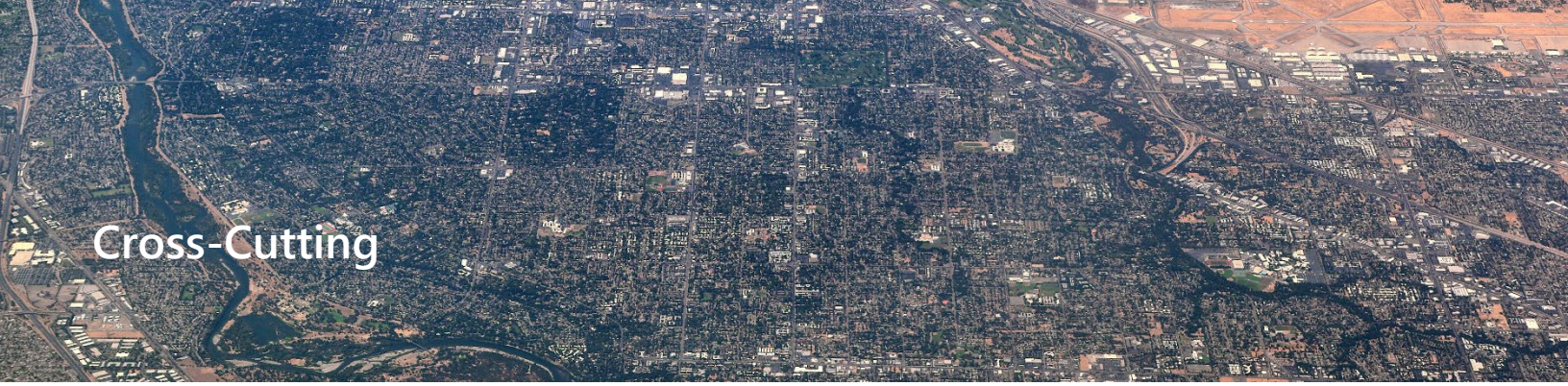
ACTIONS

Action WATER-06-a: Pursue grant funding opportunities from the State Water Resources Control Board, the California Department of Water Resources, US Bureau of Reclamation, US Army Corps of Engineers and other agencies related to water recycling projects, and/or other water resource planning projects.

Action WATER-06-b: Engage with Regional Water Authority, other water districts in the county, the State Water Resources Control Board, California Department of Water Resources, US Bureau of Reclamation, US Army Corps of Engineers, and other agencies to identify water supply options for the future and collaborate on water conservation strategies to improve supply capacity throughout the Sacramento and American River watersheds.

Action WATER-06-c: Collaborate with Sierra Climate Adaptation and Mitigation Partnership, Sierra Nature Conservancy, Sacramento Water Forum, and Capital Region Climate Readiness Collaborative, and other organizations to explore regional sustainability and conservation strategies for Sacramento County's water resources (i.e., Sacramento, American, Mokelumne, and Cosumnes Rivers; groundwater).

Action WATER-06-d: Invest in programs within Sacramento County and/or locations within or in proximity to the Sacramento Valley Groundwater Basin to artificially recharge groundwater supplies through recharge ponds and injection wells to improve Sacramento County's water storage capacity.



Cross-Cutting

While adapting to climate change requires the development of tailored measures that are specific to various climate change effects (e.g., increased temperatures and extreme heat, flooding), additional measures can be taken that are broader and cross-cutting in scope. Cross-cutting adaptation measures refer to measures and actions that are inherently broad and that largely address or overlap with all climate change effects and are presented below.

MEASURE ALL-01: Create a Comprehensive Outreach Strategy



Implementing County Department(s)

Office of Emergency Services
Sustainability Manager
Public Information Office
Department of Water Resources

Timeframe

Near Term (2025-2028)

Co-Benefits

Public Health & Wellbeing

Equity

MEASURE SUMMARY

Improving Sacramento County's outreach and educational programs to be more accessible to non-English speaking persons, residents living within vulnerable areas, and EJ Communities will provide Sacramento County residents with real-time information of climate hazards as well as useful resources regarding steps to protect against human and property damage.

ACTIONS

Action ALL-01-a: Develop robust multilingual education and outreach materials accessible across multiple media forms (e.g., radio, television, social media) to publicize potential real-time information of climate hazards (e.g., flood risk, extreme heat risk). The materials could include how to sign up for Sacramento Alert Emergency Notification System; information regarding emergency supplies, pet protection, electrical safety; where cooling centers are located; and evacuate route maps.

Action ALL-01-b: Invest resources and personnel to regularly update the Sacramento Ready webpage to include current information.

MEASURE ALL-02: Set Up Annual Progress Report/Check-In for All Applicable Measures



Implementing County Departments

Office of Emergency Services
Sustainability Manager

Timeframe

Ongoing

Co-Benefits

Public Health & Wellbeing

Resource Preservation

Infrastructure Reliability

MEASURE SUMMARY

To ensure effective implementation of the CAP, the County will conduct regular monitoring of the measures related to climate hazards and will report on the status annually.

ACTIONS

Action ALL-02-a: The County will set up annual progress report/check-in meetings with agencies, organizations, businesses, and others who are assigned to implement each adaptation measure. The assessment will include whether certain measures are completed, need to be revised, or are no longer applicable. The meetings can potentially be combined with annual LHMP check-in meetings, and/or following a significant hazard event or a disaster declaration.

Action ALL-02-b: The County will closely track implementation of mitigation actions, which will further inform the implementation of adaptation strategies, or vice versa. Changes, completion, and deletion of certain mitigation actions could also lead to the alterations of adaptations measures.



CHAPTER 4

Implementation, Monitoring, and Reporting Strategy

4 Implementation, Monitoring, and Reporting Strategy

This chapter discusses how the County of Sacramento government (County) will implement the Climate Action Plan (CAP), monitor and report on progress toward achieving both the CAP's greenhouse gas (GHG) reduction targets and climate adaptation goals, and periodically update the CAP over time.

4.1 Implementation Strategy

The County is committed to the successful implementation of the GHG reduction measures and climate adaptation measures outlined in **Chapter 2** and **Chapter 3**. This will require a diverse range of implementing actions led by various County departments. These County actions include:

- developing and enforcing new regulations,
- developing new programs and/or enhancing existing programs,
- obtaining grant funding,
- developing financing options,
- conducting feasibility studies,
- forming partnerships or collaborating with other government agencies and community organizations,
- conducting ongoing community education and engagement, and
- prioritizing the needs of Environmental Justice Communities.

After adoption, the County's Planning and Environmental Review Division (PER) will monitor and maintain the CAP. PER will monitor all CAP implementation efforts and will coordinate with other County departments to facilitate and oversee implementation and track and report on the progress of each measure and action. Staff will track progress on the expected quantified outcomes of each GHG reduction measure and action, as outlined further under Section 4.3 (Monitoring and Reporting).

The County's PER Division is committed to the implementation of the County's Environmental Justice Element (EJ Element) of the General Plan and will integrate CAP implementation with the EJ Element. Consistent with Policy EJ-28, implementation of the CAP will continue to prioritize investment in Environmental Justice Communities (EJ Communities) in program, development, and implementation. This includes but is not limited to prioritizing the following in EJ Communities: investment in active and public transportation infrastructure, expansion of the urban forest, supporting the transition to zero-emission vehicles, and implementing policies to support increased housing density and reduced housing costs. PER will also integrate feedback obtained during the EJ Element implementation Annual Stakeholder Meetings into the CAP implementation priorities of each fiscal year budget, such that the allocation of PER staff may be prioritized towards efforts that benefit EJ Communities.

The GHG reduction measures, along with one or more implementing actions for each GHG reduction measure described in **Chapter 2**, were developed using a set of measures guidelines that identified specific implementation categories to ensure that the requirements of California Environmental Quality Act (CEQA)

Guidelines Section 15183.5 and the requirements of the County 2011 General Plan Environmental Impact Report Mitigation Measure CC-2 are met. These guidelines are summarized in Chapter 2, section 2.6. The implementing actions and associated details developed as per these guidelines are summarized in **Table 4.3, Table 4.4**, and **Table 4.5** in **Section 4.6** in this chapter, and in **Appendix F** (Greenhouse Gas Reduction Measures County Cost Analysis and Potential Funding Sources). **Table 4.3** presents a list of County departments and other organizations that will support the implementation of measures and actions. **Table 4.3** presents the abbreviations used for these departments. **Table 4.4** and **Table 4.5** present implementation matrices for community and government operations respectively and provide implementation details for each set of implementing actions associated with the GHG reduction measures. The following details can be found in **Table 4.4** and **Table** 4.5 for each set of GHG reduction measures and implementing actions:

- **Implementation Mechanism**: Identifies the specific mechanism that each implementing action is focused on, such as creating a new program, modifying an existing program, adopting and enforcing an ordinance or regulation, formation of specific partnerships, and so forth.
- **Implementation Lead and Support**: Identifies a County department that will lead the implementing action, as well as County department(s) who will play a supporting where applicable.
- **Public Engagement and Community Partnerships**: Identifies whether public engagement or community partnerships are required for implementation, and if so, the names of potential partner agencies or organizations if known.
- **Start Date**: the year when the implementation of the action is expected to begin following CAP adoption.
- **End Date**: detail on whether the action has a specific end year or is intended to be implemented on an ongoing basis.
- **Timeline Dependency**: highlights any dependencies the action has on other actions. For example, implementing a specific program might depend on the completion of a study that provides necessary background information.

Implementation Cost and Funding Analysis

A cost and funding analysis was completed alongside the CAP to provide a better understanding of the total cost to the County to implement the CAP in the near-term and how that cost can be reduced with funding and financing opportunities. **Appendix F** elaborates on the financial aspects of implementing the GHG reduction measures and actions. It provides details on estimated near-term implementation costs incurred by the County over five years (i.e., 2025-2030) for each GHG reduction measure. Additionally, it provides details on the potential funding source(s) or financing mechanisms for each implementation action, based on available information.

4.2 California Environmental Quality Act Streamlining

CEQA requires public agencies to identify the significant environmental impacts of new development and other projects, including GHG emissions impacts, and avoid or mitigate those impacts, if it is feasible to do so. In addition, the CAP includes several measures and actions that would reduce GHG emissions from new development and other projects.

In preparation for the CAP, a Subsequent Environmental Impact Report (SEIR) was prepared to evaluate the potential environmental impacts anticipated with the implementation of the CAP's measures.

CEQA Qualification

In the implementing guidelines, CEQA provides for streamlining the GHG analysis of projects that are consistent with a "plan for the reduction of greenhouse gas emissions" that meets specified criteria. These criteria are outlined in CEQA Guidelines Section 15183.5(b)(1). **Table 4.1** demonstrates that this CAP meets the criteria for CEQA tiering and streamlining. Later project-specific environmental documents that are consistent with the County's General Plan and the CAP are therefore eligible to tier from the CAP SEIR's programmatic analysis of GHG emissions.

Table 4.1 CAP Compliance with Elements of a CEQA Qualified Plan for the Reduction of GHG Emissions

Elements of a Plan for the Reduction of Greenhouse Gas Emissions [CEQA Guidelines 15183.5(b)(1)]	Climate Action Plan Compliance with Elements
(A) Quantify greenhouse gas (GHG) emissions, both existing and projected, over a specified period of time, resulting from activities within a defined geographic area.	The Climate Action Plan (CAP) is based on the County's 2021 inventory of existing GHG emissions, and forecasts for 2030 and 2045, for both the unincorporated area and County operations. GHG emissions for all years include emissions associated with all activities occurring within the boundaries of the unincorporated areas. The inventories and forecasts were prepared pursuant to the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol) version 1.2 (July 2019) developed by Local Governments for Sustainability (ICLEI) and the ICLEI Local Government Operations Protocol (LGO Protocol), version 1.1 (May 2010) developed by ICLEI. Further, the inventories and forecasts include sources over which the County has some level of jurisdictional control or influence (such as building energy use) and exclude those sources over which the County has no jurisdictional control or influence (such as military vehicles and power plants). ► Chapter 2: Greenhouse Gas Reduction Strategy contains a summary of the GHG emissions inventory and forecasts ► Appendix D: Greenhouse Gas Emissions Forecasts and Targets Analysis
(B) Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.	The CAP establishes 2030 and 2045 targets for the reduction of GHG emissions in alignment with legislative targets for statewide emissions reductions and the state's 2022 Scoping Plan for Achieving Carbon Neutrality. The CAP identifies a GHG emissions reduction target for the year 2030 of 39% below baseline 2021 levels. This aligns with the 2022 Scoping Plan Scenario excluding industrial stationary sources and exceeds the statewide target of 40% below 1990 levels by 2030 pursuant to SB 32. Consistency with the 2022 Scoping Plan and SB 32 is an appropriate metric by which to determine the significance of the CAP's GHG emissions through 2030. As explained in CEQA Guidelines Section 15064.4(b)(3), a lead agency "may consider a project's consistency with the state's long-term climate goals or strategies" when determining the significance of a project's cumulative GHG emissions impacts. Therefore, the CAP's 2030 target represents the level below which GHG emissions would not be cumulatively considerable in the year 2030. ► The CAP also identifies a GHG emissions reduction target for the year 2045 of 83% below baseline 2021 levels, which is equivalent to 85% below 1990 levels, and therefore aligned with the statewide target of 85% below 1990 levels by 2045 pursuant to AB 1279. Consistency with the 2022 Scoping Plan and AB 1279 is an appropriate method of determining that the 2045 GHG emissions are not cumulatively considerable. Chapter 2: GHG Strategy contains a summary of the GHG emissions reductions targets for 2030 and 2045 and a discussion of the CAP's aspirational net-zero emissions goal for 2045. ► Appendix D: Greenhouse Gas Emissions Forecasts and Targets Analysis

Elements of a Plan for the Reduction of Greenhouse Gas Emissions [CEQA Guidelines 15183.5(b)(1)]	Climate Action Plan Compliance with Elements
(C) Identify and analyze the GHG emissions resulting from specific actions, or categories of actions anticipated within the geographic area.	The CAP's inventory of existing GHG emissions and emissions forecasts accounts for existing and future changes from on-road and off-road transportation, electricity, natural gas, solid waste, agriculture, water, and wastewater. The forecasts of future emissions analyze how existing emissions are expected to change over time under a business-as-usual scenario and an adjusted business-as-usual scenario that accounts for state and federal legislative reductions. The CAP identifies 16 measures and numerous implementing actions to reduce GHG emissions within unincorporated areas of the county to achieve the 2030 and 2045 targets for community-wide GHG emissions. Additionally, the CAP identifies six measures and numerous implementing actions to reduce County government operations emissions to achieve the 2030 and 2045 targets for government operations. ▶ Chapter 2: Greenhouse Gas Reduction Strategy contains a summary of the GHG emissions inventory and forecasts ▶ Appendix D: Greenhouse Gas Emissions Forecasts and Targets Analysis
(D) Specify measures or a group of measures, including performance standards that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.	The CAP sets forth a package of strategies, measures, and implementing actions and presents analysis demonstrating that their collective implementation would achieve the 2030 and 2045 targets established in the CAP. The CAP also identifies how, if these measures were implemented on a project-by-project basis, the measures collectively would achieve the 2030 and 2045 targets. The CAP includes a preponderance of mandatory (versus voluntary) measures and actions, measures that address the largest GHG emissions sources (such as building energy use and transportation), a focus on core measures that are likely to reduce large amounts of emissions, transparency in methods of quantification, and no reliance on voluntary carbon offsets. ▶ Chapter 2: Greenhouse Gas Reduction Strategy contains a description of all GHG reduction measures and their associated implementing actions, including a summary of quantitative GHG emissions reduction estimates for each measure ▶ Appendix E: Greenhouse Gas Reduction Measures Analysis ▶ Appendix B: Preliminary Draft Climate Action Plan Consistency Review Checklist
(E) Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels.	The CAP includes a detailed plan for implementing, monitoring, and reporting on the CAP, including how the CAP will be updated periodically, that will evaluate the effectiveness of CAP measures and actions and include regular emissions inventory updates to ensure the County is on track to meet the GHG reduction targets. The implementation plan also includes details regarding funding and financing options and a list of available and expected funding sources, along with a table for monitoring and reporting progress on the measures and their implementing actions. The County will prepare annual GHG emissions inventory updates. The next comprehensive CAP update will coincide with the 2030 General Plan Update. Focused minor updates may occur in response to annual monitoring and reporting. The comprehensive CAP update will include updated inventories and forecasts, adjustments to reduction measures and actions, and updates to the implementation strategy. It will also include refined cost estimates and updated funding sources. ▶ Chapter 4: Implementation, Monitoring, and Reporting Strategy
(F) Be adopted in a public process following environmental review.	The County has prepared a Subsequent Environmental Impact Report (SEIR) to evaluate the environmental effects of CAP Implementation. The SEIR will be circulated for a 45-day public review and comment period, along with the Public Draft CAP. The Board of Supervisors will consider whether to certify the SEIR and adopt the CAP at a public hearing. ▶ The SEIR will be available for review on the County's website: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/CAP.aspx

Source: **Compiled by Ascent in 2024**.

Project Level Consistency

A project eligible for tiering and streamlining using the CAP must demonstrate consistency with the CAP by implementing applicable GHG reduction measures and/or demonstrating consistency with performance standards associated with such measures. Eligible projects can then tier from and/or incorporate by reference the CAP's programmatic review of GHG emissions in their CEQA analysis of cumulative GHG emissions.

Projects eligible for streamlining include discretionary projects subject to environmental review that are determined by County staff to be consistent with the General Plan and the forecast assumptions used in the CAP. Projects that are inconsistent with the General Plan or the forecast assumptions will not be eligible for tiering and streamlining their GHG analysis from the CAP. However, projects that are not eligible to streamline can conduct a project- or program- specific analysis of GHG emissions pursuant to the CEQA Guidelines (including the CEQA Guidelines Appendix G Environmental Checklist).

The County will use a CAP Consistency Review Checklist to ensure that eligible project seeking to tier and streamline its GHG emissions analysis is consistent with applicable GHG reduction measures and incorporates appropriate mitigation measures into its environmental document. A Preliminary Draft CAP Consistency Review Checklist is provided with this CAP in **Appendix B**. The Checklist serves as an administrative tool that is separate from the CAP itself and is intended to be updated regularly to reflect the most recent implementation status of GHG reduction measures.

4.3 Monitoring and Reporting

The County will regularly track the status of the GHG reduction measures implementing actions and regularly monitor and report on their effectiveness in achieving GHG reductions. This will ensure that the County is actively tracking and reporting on the CAP's progress in meeting its GHG emission reduction targets and goals. Monitoring and reporting efforts are also essential to informing future CAP updates, which are addressed under Section 4.4.

Monitoring

The County's monitoring efforts for the CAP will include tracking both the status of implementation of each measure and associated implementing actions, as well as tracking the performance of each measure based on data collection.

- **Implementation status**: PER staff will track the status of all measures and their specific actions quarterly. PER staff will work with all County department leads to maintain and update tracking tables, using consistent status categories. Examples of these categories may include but are not limited to, the following: planned, waiting for funding approval, in progress, nearing completion, completed, ongoing, or not yet started. PER staff will also include the most current/available data on implementation status in annual monitoring reports.
- **Performance monitoring:** The County, led by PER staff, will monitor the effectiveness of all GHG reduction measures based on specific tracking metrics or key performance indicators (KPIs) that are closely aligned with the objectives established for each GHG reduction measure as presented in **Chapter 2**.

Performance Monitoring Matrices

Table 4.6, **Table 4.7**, and **Table 4.8**, available in **Section 4.7**, identify the specific tracking metrics or KPIs that will be monitored for each measure, for both community and government operations measures. Data will be gathered at least annually for each set of KPIs unless otherwise noted, and results will be included in the annual monitoring report. Additional detail on the development of KPIs and their connection to GHG reduction quantifications can be found in **Appendix E**.

Reporting

County staff will post regular updates regarding implementation status and performance monitoring efforts on the County's Sustainability Dashboard page at:
https://green.saccounty.net/Sustainability/Pages/GHGMeasures.aspx

PER staff will also prepare annual CAP monitoring reports and present these reports to the County Board of Supervisors. The purpose of these reports is to track the implementation progress and performance of the CAP, and to identify where further efforts and additional resources may be needed to ensure effective implementation. The first annual CAP monitoring report will be issued in late 2025, approximately one year after the anticipated approval of the CAP. These annual CAP monitoring reports will be published annually thereafter and will include the status of each GHG reduction measure and its associated implementing actions, as well as the latest data on measure performance based on the metrics and KPIs identified in the monitoring discussion above.

The County, led by PER staff, will integrate the reporting of CAP implementation status and performance monitoring efforts into the reporting process for the EJ Element. PER publishes an annual EJ Element implementation "report card" that documents EJ Element implementation for the previous calendar year. PER will include reporting on CAP implementation priorities and success that benefit EJ Communities in the annual report card.

The County will also continue its CAP-related public outreach efforts so that County departments, external stakeholders, and the general public can be informed about efforts to monitor the progress and effectiveness of each CAP measure.

4.4 CAP Updates

Based in part on the findings from monitoring and reporting activities described under Section 4.3, and annual GHG emissions inventory updates, the County will prepare a comprehensive CAP update that will coincide with the 2030 General Plan Update. Focused minor updates may occur in response to annual monitoring and reporting. The comprehensive CAP update will include updated inventories and forecasts, adjustments to reduction measures and actions, and updates to the implementation strategy. Refined cost estimates and funding sources will also be identified. Future updates to the CAP will also comply with CEQA Guidelines 15183.5. **Table 4.2** provides a schedule of planned activities for the County's monitoring and reporting efforts, along with future CAP updates.

Table 4.2 CAP Monitoring, Reporting, and Update Schedule

Year and Milestone	CAP Monitoring, Reporting, or Update Activity
2024 – CAP Adoption and Implementation	CAP adoption by the Board of Supervisors in late 2024 will be followed by implementation of many of the measures and actions beginning in early 2025.
2025 – Annual Monitoring and Reporting	County staff will prepare and publish the first annual monitoring report in late 2025. Annual monitoring reports will include an assessment of the CAP's annual performance in measure implementation. County staff will also prepare the 2024 GHG emissions inventory update.
2025-2030 – Annual GHG Emissions Inventory Updates and Minor CAP Updates	County staff will prepare annual updates to the GHG emissions inventory starting in 2024. Minor CAP updates will be informed by annual monitoring and reporting and GHG inventory updates.
2030 – Comprehensive CAP Update	County staff will complete a comprehensive CAP update concurrently with the 2030 General Plan Update and present the updated General Plan and CAP to the Board of Supervisors for review and approval.

Notes: CAP = Climate Action Plan; GHG = greenhouse gas.

Source: **Compiled by Ascent in 2024**.

4.5 Ongoing Engagement

Continued engagement with and active participation by the community is critical for the successful implementation of the County's CAP. As the County implements and monitors measures and actions, engagement with residents, businesses, community organizations, developers, property owners, and other local, regional, and state agencies will ultimately guide measure implementation and promote the achievement of the CAP's goals. While some measures will be led solely by the County, many will require partnerships and collaboration with other agencies or community organizations, as noted in previous chapters.

Effective and long-term climate action and resilience building in the community depends on efforts that continue to change the way individuals and businesses interact with the environment. Numerous measures require participation from residents, businesses, and visitors to fully implement, and the County is committed to continuing its outreach efforts through implementation, monitoring, and future plan updates as outlined above. Many of the measures and implementing actions in **Chapter 2** and **Chapter 3** are focused on increasing community awareness and participation in existing programs and connecting the community with new information, tools, funding, and resources.

The County will strive to ensure that all community members are aware of and continue to have the opportunity to provide input regarding the County's climate action efforts. The County is committed to overcoming any barriers to engagement, such as lack of access to technology and language barriers, to ensure an equitable implementation process, especially in Environmental Justice Communities.

4.6 Implementation Matrices

The following tables present the implementation details for each set of implementing actions associated with the GHG reduction measures. The abbreviations presented in **Table 4.3** are utilized in the proceeding tables to indicate department responsibility for implementing and monitoring GHG reduction measures. Note that some County department names may be combined to indicate department structure. For example, Planning and Environmental Review (PER) is under the Community Development (CD) Department, and may be characterized

as CD, PER in the tables below. Please visit the County's Interactive Organizational Chart for more details on the structure of County departments.
https://www.saccounty.gov/CountyDepartments/OrganizationChart/Pages/default.aspx.

Table 4.3 Abbreviations for County Departments and Other Organizations Used in Implementation Matrix

Abbreviation Used in Implementation Matrix	Department/Agency/Organization Name
County Departments	
AC	Agricultural Commissioner
BERC	Business Environmental Resource Center
BP&I	Building Permits and Inspection
CD	Community Development
CEO	County Executive Office
CF	Chief of Fleet Management Division and Parking Enterprise
CE	Engineering Division
DGS	Department of General Services
DHS	Department of Health Services
DPS	Department of Personnel Services
DTech	Department of Technology
DWMR	Department of Waste Management and Recycling
DWR	Department of Water Resources
ED	Economic Development
EMD	Environmental Management Department
FIN	Department of Finance
PER	Planning and Environmental Review
PIO	Public Information Office
RP	Regional Parks
SACDOT	Department of Transportation
SacOES	Office of Emergency Services
SCAS	Sacramento County Airport System
SCWA	Sacramento County Water Agency
SM	Sustainability Manager
TC	Tree Coordinator

Table 4.3 Abbreviations for County Departments and Other Organizations Used in the Implementation Matrix (*continued*)

Abbreviation Used in Implementation Matrix	Department/Agency/Organization Name
External Agencies	
CEC	California Energy Commission
CECSP	California Energy Codes and Standards Program
CTWI	Construction Trades Workforce Initiative
NCCT	Northern California Construction Training
SACOG	Sacramento Area Council of Governments
SacRT	Sacramento Regional Transit District
SacTMA	Sacramento Transportation Management Association
SBCTC	Sacramento-Sierra Building and Construction Trades Council
SCFB	Sacramento County Farm Bureau
SETA	Sacramento Employment and Training Agency
SHRA	Sacramento Housing and Redevelopment Agency
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SRBX	Sacramento Regional Builders' Exchange
SSCA	South Sacramento Conservation Agency
Organizations/Institutions	
CCI	Carbon Cycle Institute
STF	Sacramento Tree Foundation
UCCE	University of California Cooperative Extension

Source: **Compiled by Ascent in 2024.**

Table 4.4 Community GHG Reduction Measures Implementation Matrix

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
MEASURE GHG-01: Develop a Carbon Farming Program							
Action GHG-01-a	Develop a carbon farming program to share carbon farming best practices, provide grant application assistance for carbon farming practices, and track data on soil management practices.	Program	CEO, SM (AC)	CCI, UCCE Capital Corridor unit, or similar organizations; stakeholders like farmers, ranchers, and land managers	2025	Ongoing	N/A
Action GHG-01-b	Establish support for the carbon farming program	Staff role	CEO, SM	N/A	2025	Ongoing	N/A
Action GHG-01-c	Develop a carbon farming reporting incentive	Incentive	AC (CEO, SM)	UCCE	2025	Ongoing	N/A
Action GHG-01-d	Encourage optional reporting of soil management practices	Reporting	AC	N/A	2025	Ongoing	N/A
Action GHG-01-e	Develop and maintain a list of carbon farming and healthy soil grant opportunities on the County website	Outreach program	CEO, SM	UCCE, Agricultural community stakeholders	2025	Ongoing	N/A
Action GHG-01-f	Develop a Carbon Sequestration Agricultural Practices study	Study	CEO, SM (AC, CD, PER)	CCI, UCCE	2025	2026	Action GHG-01-a
Action GHG-01-g	Develop and share the study, information about reporting incentives and grant application assistance	Outreach program	CEO, SM (AC, CEO, PIO)	SCFB, CCI, or UCCE	2025	Ongoing	Action GHG-01-af
Action GHG-01-h	Provide free or reduced-cost compost	Community Program	DWMR (AC)	N/A	Continued	Ongoing	N/A
Action GHG-01-i	Establish support for identifying finance mechanisms and funding sources	Finance committee	AC (CEO, SM)	N/A	2025	Ongoing	N/A
MEASURE GHG-02: Expand the Urban Forest							
Action GHG-02-a	Develop and adopt an Urban Forest Management Plan	Plan	CD, TC (RP)	N/A	2025	2025	N/A
Action GHG-02-b	Develop and annually update an urban forest work plan	Plan	CD, TC (CD, PER, RP, SACDOT)	N/A	2026	2026	Action GHG-02-a

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
Action GHG-02-c	Adopt an ordinance to require new development to plant an appropriate number of trees on site	Ordinance	CD, PER (CD, TC)	N/A	2025	2025	N/A
Action GHG-02-d	Amend the Tree Preservation Ordinance	Amend ordinance	CD, PER (CD, TC)	N/A	2025	2025	N/A
Action GHG-02-e	Continue partnership to use existing programs to increase the tree canopy	Partnership	CD, TC (CEO, PIO)	STF	Continued	Ongoing	N/A
Action GHG-02-f	Establish partnership to organize tree-planting and maintenance events	Partnership	CD, TC (CEO, PIO)	Community cooperatives, STF	2026	Ongoing	N/A
Action GHG-02-g	Inform county residents and businesses of the availability of free trees	Outreach program	CD, TC (CD, BP&I, CEO, PIO)	STF	2025	Ongoing	N/A
Action GHG-02-h	Conduct a targeted outreach campaign to promote the availability of free trees	Outreach program	CD, TC (CEO, PIO)	STF	2025	Ongoing	N/A
Action GHG-02-i	Partner and jointly apply for grants for urban forest expansion	Grant applications	CD, TC (RP)	Community-based organizations	2025	Ongoing as grants are available	N/A
Action GHG-02-j	Track number of trees planted through County efforts and partner organizations	Tracking system	CD, TC (CD, BP&I, CD, PER, RP, DGS, SACDOT, DWR)	N/A	2025	2025	N/A
MEASURE GHG-03: Support the SMUD Zero Carbon Plan							
Action GHG-03-a	Identify potential sites for renewable energy and storage projects at County-owned properties	Feasibility study	CEO, SM (CD, PER)	SMUD	2025	2026	Action GHG-03-a
Action GHG-03-b	Identify potential sites for renewable energy and storage projects in the unincorporated county	Site identification	CEO, SM (CD, PER)	SMUD	2025	2030	N/A
Action GHG-03-c	Continue to streamline permitting process to address solar and battery storage projects, update as necessary.	Permitting process update	CD, PER (CEO, SM)	N/A	Ongoing	Updates completed in 2025	N/A

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
Action GHG-03-d	Establish support for SMUD's plan through building reach codes	Reach codes	CEO, SM (CD, PER)	SMUD	2025	2025	Measures GHG-04, GHG-05, and GHG-07
Action GHG-03-e	Establish support for SMUD's plan through County Zoning Code	Zoning Code Update	CEO, SM (CD, PER)	N/A	2025	2025	N/A
Action GHG-03-f	Establish support for coordinating on decarbonization goals	Staff role	CEO, SM	N/A	2025	2025	N/A
MEASURE GHG-04: Accelerate Existing Building Energy Efficiency Retrofits and Decarbonization							
Action GHG-04-a	Develop reach codes and associated cost-effectiveness studies that must be met by existing residential buildings	Ordinance	CD, PER (CEO, SM, CD, BP&I)	CECSP	2025	2025	N/A
Action GHG-04-b	Implement a building performance standard for existing nonresidential buildings	Decarbonization strategy	CD, PER (CEO, SM, CD, BP&I)	N/A	2025	2026	N/A
Action GHG-04-c	Determine reach code compliance triggers for existing nonresidential buildings	Compliance triggers	CD, PER (CD, BP&I, CEO, SM)	N/A	2025	2025	Action GHG-04-a
Action GHG-04-d	Present the reach code options and solicit feedback	Stakeholder outreach	CD, PER (CEO, SM, CD, BP&I)	Building industry members, contractors, residents, businesses, and other interest groups	2025	2026	Action GHG-04-a and c
Action GHG-04-e	Implement existing buildings reach code	Ordinance	CD, PER (CD, BP&I)	N/A	2025	2025	Action GHG-04-a and c
Action GHG-04-f	Submit the ordinance(s) and cost-effectiveness studies for state review and approval	Ordinance	CD, PER (CD, BP&I)	CEC	2026	2026	Action GHG-04-a and c
Action GHG-04-g	Conduct reach code training for County permitting staff	Training	CD, BP&I	N/A	2026	Ongoing as needed with every reach code update	Action GHG-04-a and c

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
Action GHG-04-h	Implement the decarbonization strategy for nonresidential buildings	Building performance standards	CD, PER (CD, BP&I)	N/A	2026	Ongoing	Action GHG-04-b
Action GHG-04-i	Track reach code compliance	Permit tracking system	CD, BP&I (CD, PER)	N/A	2025	2025	N/A
Action GHG-04-j	Develop an outreach program to encourage gas-to-electric conversions in residential and commercial buildings	Outreach program	CD, BP&I (CEO, PIO)	County residents and businesses	2025	Ongoing	N/A
Action GHG-04-k	Review the existing permitting processes to reduce complexity, cost, and processing time	Permitting process update	CD, BP&I	N/A	2025	2025	N/A
Action GHG-04-l	Waive or reduce permitting fees for applicants for all-electric conversion of mixed-fuel buildings	Incentive	CD, BP&I	N/A	2025	Ongoing	N/A
Action GHG-04-m	Develop a training program targeted towards developing knowledge and skills of contractors and construction workers	Training program	CEO, SM (CD, BP&I, CD, PER)	SETA, CTWI, SBCTC, SRBX, NCCT	2025	Ongoing	Action GHG-04-a, b, and c
Action GHG-04-n	Develop a revolving loan fund to provide low-interest loans for gas-to-electric replacements	Revolving loan fund	FIN (CD, BP&I)	N/A	2025	Ongoing	N/A
Action GHG-04-o	Review any County-adopted existing building reach codes at the release of each triennial building code cycle for updates	Ordinance	CD, PER (CD, BP&I)	N/A	2028	Ongoing, implemented triennially	Action GHG-04-a and c
Action GHG-04-p	Partner with SMUD and SHRA to electricity low-income housing.	Community program	CD, PER (CEO, SM)	SHRA, SMUD	2026	Ongoing	N/A
MEASURE GHG-05: Decarbonize New Buildings							
Action GHG-05-a	Develop cost-effective reach codes that must be met by all new construction	Reach code	CD, BP&I	CECSP	2025	2025	N/A
Action GHG-05-b	Provide fee reductions or offsets and expedited permitting for all electric projects	Community program	CD, BP&I (FIN)	N/A	2025	Ongoing	N/A

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
Action GHG-05-c	Present the reach code options and solicit feedback	Stakeholder outreach	CD, BP&I (CEO, SM; PIO; CD, PER)	Building industry members, contractors, residents, businesses, and other interest groups	2026	2026	Action GHG-05-a
Action GHG-05-d	Implement new construction building reach code(s)	Ordinance	CD, PER (CD, BP&I)	N/A	2026	2026	Action GHG-05-a and c
Action GHG-05-e	Submit the ordinance(s) and cost-effectiveness studies for state review and approval	Ordinance	CD, PER (CD, BP&I)	CEC	2026	2026	Action GHG-05-a and c
Action GHG-05-f	Conduct reach code training for County permitting staff	Training program	CD, BP&I	N/A	2026	Ongoing as needed with every reach code update	Action GHG-05-a and c
Action GHG-05-g	Engage with CA Energy Codes and Standards Program to monitor legal and regulatory barriers to requiring all electric new construction	State coordination	CD, BP&I (CEO, SM)	CECSP	2026	Ongoing, implemented annually after CAP adoption	Action GHG-05-a, c, and e
Action GHG-05-h	Track new construction project compliance with the new reach code	Tracking system	CD, BP&I (CD, PER)	N/A	2025	2025	N/A
Action GHG-05-i	Provide information regarding new reach code requirements and incentives	Outreach program	CD, BP&I (CEO, SM; PIO; CD, PER)	Contractors, potential owners, and building applicants	2025	Ongoing	Action GHG-05-e
Action GHG-05-j	Develop a training program targeted towards developing knowledge and skills of contractors and construction workers	Training program	CEO, SM (CD, BP&I, CD, PER)	SETA, CTWI, SBCTC, SRBX, NCCT	2025	Ongoing	Action GHG-05-a and c
MEASURE GHG-06: Retire Fossil-Fuel-Powered Landscaping Equipment							
Action GHG-06-a	Implement a landscaping equipment trade-in program	Community incentive program	CEO, SM	SMAQMD	2025	Ongoing	N/A
Action GHG-06-b	Explore the feasibility of expanding the landscaping equipment trade-in program	Community incentive program	CEO, SM (DWMR)	SMAQMD	2030	Ongoing, implemented every five years	Action GHG-06-a

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
Action GHG-06-c	Track equipment exchanged through the landscaping equipment trade-in program	Tracking system	CEO, SM (DWMR)	SMAQMD	2025	2025	N/A
Action GHG-06-d	Share information regarding incentives	Outreach program	CEO, SM (CEO, PIO)	SMAQMD; County residents and businesses	2025	Ongoing	N/A
MEASURE GHG-07: Increase EV Charging and ZEV Infrastructure							
Action GHG-07-a	Develop an ordinance to require EV charging capability in new developments	Ordinance	CD, PER (CD, BP&I)	N/A	2025	2025	N/A
Action GHG-07-b	Develop an ordinance to require EV charging capability in existing non-residential developments	Ordinance	CD, PER (CD, BP&I)	N/A	2025	2025	N/A
Action GHG-07-c	Develop an ordinance to require EV charging capability in existing multifamily residential developments	Ordinance	CD, PER (CD, BP&I)	N/A	2025	2025	N/A
Action GHG-07-d	Develop a "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy"	Strategy	CD, PER (CEO, SM, SACDOT, DGS)	N/A	2025	2025	N/A
Action GHG-07-e	Include new EV charging infrastructure projects in the Capital Improvement Plan (CIP)	CIP	CD, PER (CEO, SM, SACDOT, DGS)	N/A	2025	Ongoing	Action GHG-07-d
Action GHG-07-f	Adopt an ordinance requiring gas stations to install EV DC fast charging station	Ordinance	CD, PER (CD, BP&I)	N/A	2025	2025	N/A
Action GHG-07-g	Track the number, type, and location of new EV chargers	Tracking system	CD, BP&I (DGS, CEO, SM)	N/A	2025	2025	N/A
Action GHG-07-h	Expand EV charging at county airports	Implementation plan	SCAS (DGS)	N/A	2025	Ongoing	N/A
Action GHG-07-i	Prepare educational materials and conduct educational workshops	Outreach program	CEO, SM (CD, PER, PIO)	County residents and businesses	2025	Ongoing	N/A
Action GHG-07-j	Secure additional funding for expanding the Our Community CarShare program	Partnership	CEO, SM (CD, PER)	SMAQMD	2025	Ongoing	N/A

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
Action GHG-07-k	Coordinate the activities of different agencies and simplify or unify permitting processes for the installation of EV charging or hydrogen refueling infrastructure	Partnership	CEO, SM (DGS, CD, BP&I, CD, PER)	SacRT, City of Sacramento, SMUD, SMAQMD	2025	Ongoing	N/A
Action GHG-07-l	Maintain consistency with regional permitting best practices	Permitting process update	CD, BP&I (CD, PER)	N/A	2028	Ongoing, implemented triennially as needed	Action GHG-07-d
Action GHG-07-m	Update ZEV infrastructure strategy to incorporate new market trends and technologies	Strategy Updates	DGS (SACDOT, CD, BP&I)	N/A	2030	Ongoing	Action GHG-07-d
Action GHG-07-n	Conduct a program feasibility study to encourage early retirement of internal combustion engine (ICE) vehicles	Feasibility study	CEO, SM (SACDOT)	N/A	2025	2025	N/A
Action GHG-07-o	Implement a program to facilitate early retirement of ICE vehicles	Community program	CEO, SM (SACDOT, CD, BP&I, CD, PER)	N/A	2026	2026	Action GHG-07-n
MEASURE GHG-08: Develop a VMT Impact Fee Program							
Action GHG-08-a	Conduct a VMT Impact Fee Program nexus study	Nexus study	CD, PER (SACDOT)	N/A	2025	2025	N/A
Action GHG-08-b	Adopt an ordinance establishing the VMT Impact Fee Program	Ordinance	CD, PER	N/A	2026	2026	Action GHG-08-a
Action GHG-08-c	Establish a VMT Impact Fee fund to invest in VMT mitigation projects	Fee fund	CD, PER	N/A	2026	2026	N/A
Action GHG-08-d	Create VMT monitoring program	Monitoring program	CD, PER (FIN)	N/A	2026	2026	Action GHG-08-b
Action GHG-08-e	Reassess VMT Impact Fee Program every three years	Community program	CD, PER (SACDOT)	N/A	2025	Ongoing, implemented every three years	Action GHG-08-d
Action GHG-08-f	VMT Impact Fee Program education for project applicants and County staff	Educational and outreach program	CD, PER (SACDOT)	Project applicants	2025	Ongoing	Action GHG-08-d

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
MEASURE GHG-09: Reduce VMT from New Developments							
Action GHG-09-a	Adopt the ordinance amending Section 5.9.6 of the Zoning Code to update the TSM Plan requirements	Ordinance	CD, PER	N/A	2025	2025	N/A
Action GHG-09-b	Track TSM plan compliance through annual reporting	Tracking system	CD, PER (TEC)	N/A	2025	2025	N/A
Action GHG-09-c	Partner with SACOG to provide information about transportation demand management (TDM) programs	Outreach program	CD, PER (CEO, PIO)	SACOG	2025	Ongoing	Action GHG-09-a
Action GHG-09-d	Conduct a nexus study for imposing a fee structure for projects that do not comply with the requirements.	Study	CD, PER (SACDOT)	N/A	2025	Ongoing	N/A
Action GHG-09-e	Develop an informational packet to enable compliance with new TSM plan requirements.	Educational and outreach program	CD, PER (CEO, PIO)	Project applicants; facilities already required to submit TSM plans	2025	Ongoing	Action GHG-09-a
MEASURE GHG-10: Revise Parking Standards							
Action GHG-10-a	Conduct a parking demand study	Study	CD, PER	N/A	2025	2025	N/A
Action GHG-10-b	Adopt an ordinance to amend the Zoning Code to update the current parking standards for new developments	Ordinance	CD, PER	N/A	2026	2026	Action GHG-10-a
Action GHG-10-c	Measure outcomes of parking standard revisions	Code compliance and monitoring	CD, PER	N/A	2030	Ongoing, implemented every five years	Action GHG-10-b
Action GHG-10-d	Reassess parking standards	Study	CD, PER	N/A	2030	Ongoing, implemented every five years	Action GHG-10-b
Action GHG-10-e	Information and education for revised parking standards	Outreach program	CD, PER (CEO, PIO)	Project applicants	2026	Ongoing, implemented whenever the parking standards are updated	Action GHG-10-b

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
MEASURE GHG-11: Increase Transit Ridership							
Action GHG-11-a	Update the Traffic Impact Analysis (TIA) Guidelines to include assessments of public transit	Community plan	SACDOT (CD, PER)	N/A	2025	2025	N/A
Action GHG-11-b	Update the TIA Guidelines to require projects near transit to prioritize VMT mitigation measure	Community plan	CD, PER (CD, BP&I)	N/A	2025	2025	Action GHG-11-a
Action GHG-11-c	Continue to include SacRT and other transit providers in development review processes	Partnership	CD, PER	SacRT	Continued	Ongoing	N/A
Action GHG-11-d	Dedicate one staff position to serve as Transit Coordinator	Staff role	CD, PER (SACDOT)	SacRT, SACOG	2025	Ongoing	N/A
Action GHG-11-e	Partner with regional agencies to discuss ways that the County can help improve access to transit	Partnership	CD, PER (SACDOT)	SacRT, SACOG	2025	Ongoing	N/A
Action GHG-11-f	Obtain transit ridership data within unincorporated Sacramento County	Partnership	CD, PER (SACDOT)	SacRT, SACOG	2025	Ongoing	N/A
Action GHG-11-g	Provide and improve connections to transit stations	Community plan	CD, PER (SACDOT)	N/A	Continued	Ongoing	Measure GHG-12
Action GHG-11-h	Expand transit access when developing the VMT Mitigation Fee	Partnership	CD, PER (SACDOT)	SacRT	Continued	Ongoing	Measure GHG-8
Action GHG-11-i	Provide fare-free transit for youth in SacRT's service area	Community plan; Partnership	CD, PER (SACDOT, CEO, SM)	SacRT, incorporated cities, school districts, and other supporting organizations	Continued	Ongoing	N/A
MEASURE GHG-12: Implement the Active Transportation Plan							
Action GHG-12-a	Develop and adopt an implementation plan for the 2022 ATP	Implementation Plan	SACDOT	N/A	Ongoing	2045	N/A
Action GHG-12-b	Adopt an ordinance and/or design guidelines to clarify the preferred siting of employee bicycle parking	Ordinance	CD, PER	N/A	2025	2025	N/A

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
Action GHG-12-c	Continue to include active transportation projects in the transportation CIP	CIP	SACDOT	N/A	Continued	Ongoing	N/A
Action GHG-12-d	Implement Safe Routes to School programs and infrastructure improvements	Implementation plan	SACDOT	N/A	Continued	Ongoing as funding is available	Action GHG-12-c
Action GHG-12-e	Provide updated policy and design guidance on the planning, design, and operation of County roadways	Design guide	SACDOT (CD, PER)	N/A	2025	2028	N/A
MEASURE GHG-13: Advance Infill Development							
Action GHG-13-a	Establish support to oversee implementation of the Infill Development Program	Staff role	CD, PER	N/A	2025	Ongoing	N/A
Action GHG-13-b	Conduct a nexus study for imposing a fee structure for projects that do not meet defined standards	Study	CD, PER	N/A	2025	2025	N/A
Action GHG-13-c	Establish an Infill Fee fund using payments from non-infill development projects	Fee fund	CD, PER (CD, BP&I; ED)	N/A	2025	2025	Action GHG-13-b
Action GHG-13-d	Update the Zoning Code establishing the Infill Fee requirements	Ordinance	CD, PER	N/A	2025	2025	Action GHG-13-c
Action GHG-13-e	Continue to engage in regional planning efforts to secure funding and implement programs to increase infill and reduce VMT	Partnership	CD, PER	SACOG	Continued	Ongoing	N/A
Action GHG-13-f	Share information regarding new Infill Fee requirements and infill supportive policy and code changes	Outreach program	CD, PER (CEO, PIO)	Project developers and applicants	2025	Ongoing	Action GHG-13-c
Action GHG-13-g	Adopt a form-based code based on floor area ratio for infill areas and corridor	Ordinance	CD, PER	N/A	Continued	Ongoing	N/A
Action GHG-13-h	Review existing development standards and permitting process to evaluate measures to reduce the baseline costs of housing in infill areas	Study	CD, PER (CD, BP&)	N/A	2025	2025	N/A

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
MEASURE GHG-14: Increase Organic Waste Diversion and Landfill Gas Capture							
Action GHG-14-a	Assess future needs of composting facility capacity	Study	DWMR	N/A	2025	2026	N/A
Action GHG-14-b	Adopt an ordinance amending the zoning code to streamline permitting of composting facilities	Ordinance	CD, PER (DWMR)	N/A	2025	2025	N/A
Action GHG-14-c	Continue to implement and enforce organics diversion ordinances associated with SB 1383	Ordinance	DWMR	N/A	Continued	Ongoing	N/A
Action GHG-14-d	Provide Backyard Composting Program information flyers	Outreach program	DWMR (CEO, PIO)	County residents	Continued	Ongoing	N/A
Action GHG-14-e	Continue to host workshops and provide educational materials on organic waste diversion.	Outreach program	DWMR (CEO, PIO)	County residents and businesses	Continued	Ongoing	N/A
Action GHG-14-f	Enhance sustainable waste management education in school students	Partnership	DWMR (CEO, SM)	School districts, students	2025	Ongoing	N/A
Action GHG-14-g	Continue food recovery services and educate residents and food-generating businesses	Partnership	DWMR	Sacramento food banks	Continued	Ongoing	N/A
Action GHG-14-h	Apply for available grants to further education and implementation of organics diversion.	Grant applications	DWMR (EMD)	N/A	2025	Ongoing	N/A
Action GHG-14-i	Conduct a waste characterization study every five years	Study	DWMR	N/A	2025	Ongoing, implemented every five years	N/A
Action GHG-14-j	Collect waste tonnage data from haulers	Data collection	DWMR	N/A	2025	Ongoing, implemented annually	N/A
Action GHG-14-k	Conduct engineering study for increasing landfill gas capture	Study	CD, PER (DWMR)	N/A	2025	2026	N/A
Action GHG-14-l	Support food recovery banks and organizations	Community program	DWMR	N/A	2025	Ongoing, implemented every five years	N/A

Table 4.4 Community GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
MEASURE GHG-15: Implement the South Sacramento Habitat Conservation Plan (SSHCP)							
Action GHG-15-a	Continue implementation of the SSHCP	Implementation	CD, PER	N/A	Continued	Ongoing	N/A
Action GHG-15-b	Perform a carbon sequestration capacity analysis of lands covered under the SSHCP	Study	CD, PER (CEO, SM)	SSCA	2030	Ongoing, implemented with every CAP Update	N/A
Action GHG-15-c	Track the acres of lands conserved under implementation of the SSHCP	Tracking system	CD, PER	SSCA	2025	Ongoing	Action GHG-15-a
MEASURE GHG-16: Expand the Use of Zero-Emission Construction and Agricultural Equipment							
Action GHG-16-a	Update County's bid evaluation process to incorporate use of zero-emission construction and portable equipment	Procurement process update	DGS (SACDOT, CD, CE)	N/A	2025	Ongoing	N/A
Action GHG-16-b	Provide information about available incentives for zero-emission equipment	Outreach program	CEO, SM (CD, BP&I)	Construction-related stakeholders	2025	Ongoing	N/A
Action GHG-16-c	Provide information about available incentives for zero-emission agricultural equipment	Outreach program	AC (CEO, SM)	SCFB and other agriculture-related stakeholders	2025	Ongoing	N/A
Action GHG-16-d	Adopt ordinance requiring electric-powered or zero-emission construction equipment starting in 2035	Ordinance	CD, PER (CD, BP&I)	N/A	2033	2033	N/A
Action GHG-16-e	Require the implementation of SMAQMD Basic Construction Emission Control Practices for project approval.	Approval process update	CD, PER (CD, BP&I)	N/A	2025	Ongoing	N/A
MEASURE GHG-17: Carbon Neutral New Growth							
Action GHG-17-a	Amend General Plan policy LU-120 to require consistency with the CAP and carbon neutrality	General Plan Amendment Resolution	CD, PER	N/A	2024 (upon CAP adoption)	2024	N/A

Notes: N/A = not applicable.

[1] Action descriptions included in this table are concise versions of the full action language that can be found in Chapter 2. Actions have been shortened for brevity, focusing on the intent of the action.

[2] Definitions of the abbreviations used for implementation lead, support, and public engagement and community partnerships can be found in **Table 4.3**.

Source: **Compiled by Ascent in 2024**.

Table 4.5 Government Operations GHG Reduction Measures Implementation Matrix

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
MEASURE GOV-01: Reduce Employee Commute VMT							
Action GOV-01-a	Conduct an employee commute survey every two years	Employee commute survey	DPS (CEO, SM)	N/A	2025	Ongoing, every two years	N/A
Action GOV-01-b	Continue to offer a work-from-home work policy	County policy	DPS	N/A	Continued	Ongoing	N/A
Action GOV-01-c	Inform and encourage employee participation in bike-to-work days/months	Outreach program	CEO, SM	County employees	2025	Ongoing	N/A
Action GOV-01-d	Conduct an EV infrastructure planning analysis every five years for County buildings and facilities	Assessment Study	DGS	N/A	2026	Ongoing, every five years	N/A
Action GOV-01-e	Encourage County employees to utilize incentives for purchasing ZEVs	Outreach program	CEO, SM (DPS)	County employees	2025	Ongoing	N/A
Action GOV-01-f	Install signage to establish priority parking spaces for employee carpools	County policy	DGS, CF	N/A	2025	2026	N/A
Action GOV-01-g	Ensure that employees are provided TMA services	Employee incentives	CEO, SM (DPS)	SacTMA	2025	Ongoing	N/A
Action GOV-01-h	Increase the monthly subsidy of the Transit Subsidy Program	Employee incentives	DPS	N/A	2026	Ongoing	N/A
Action GOV-01-i	Establish staff support for Employee Transportation Program and 50 Corridor TMA/Sacramento TMA services.	Staff role	DPS (COE, SM)	N/A	2025	Ongoing	N/A
Action GOV-01-j	Create an incentive program for encouraging employees to regularly utilize commute modes other than single-occupancy vehicles	County Program	DPS	N/A	2026	Ongoing	N/A
Action GOV-01-k	Install bicycle parking at all County buildings	County Program	DGS	N/A	2025	2030	N/A
Action GOV-01-l	Conduct an employee shuttle feasibility study	Feasibility study	DPS	N/A	2026	2026	N/A

Table 4.5 Government Operations GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
Action GOV-01-m	Establish a ZEV shuttle service for County employees	County Program	DPS	N/A	2027	Ongoing	N/A
MEASURE GOV-02: Non-Airport Fleet Conversion Program							
Action GOV-02-a	Meet or exceed the requirements of the California Advanced Clean Fleets Regulation	County policy	DGS, CF	N/A	2025	2025	N/A
Action GOV-02-b	Update light-duty (below 8,500 GVWR) fleet acquisition policy for purchasing ZEVs	County policy	DGS, CF	N/A	2025	2025	N/A
Action GOV-02-c	Update off-road equipment acquisition policy for purchasing battery electric or zero-emission technology equipment	County policy	DGS, CF	N/A	2025	2025	N/A
Action GOV-02-d	Reimburse employees for charging County-owned vehicles at home	County policy	DGS, CF	N/A	2025	Ongoing	N/A
Action GOV-02-e	Continue using renewable fuels where applicable	County policy	DGS, CF	N/A	Continued	Ongoing	N/A
Action GOV-02-f	Prepare a Zero-Emission Fleet Transition Plan	Plan	DGS, CF	N/A	2026	2026	N/A
Action GOV-02-g	Establish staff support for fleet conversion to ZEVs and installation of infrastructure	Staff role	DGS, CF	N/A	2025	Ongoing	N/A
Action GOV-02-h	Track existing ZEV fueling capacity and new ZEVs added to fleet	Tracking system	DGS, CF (CEO, SM)	N/A	2025	Ongoing annually	N/A
MEASURE GOV-03: Airport Fleet Conversion Program							
Action GOV-03-a	Develop an Airport Fleet Conversion Program	County program	SCAS	N/A	2025	2025	N/A
Action GOV-03-b	Track existing ZEV fueling capacity and new ZEVs added to fleet	Tracking system	SCAS	N/A	2026	Ongoing	N/A

Table 4.5 Government Operations GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
MEASURE GOV-04: Reduce Natural Gas Usage in County Buildings							
Action GOV-04-a	Conduct study of energy end uses, potential for solar PV, electrification projects, and other upgrades for decarbonizing County buildings and facilities	Assessment study	DGS (CEO, SM)	N/A	2025	2026	N/A
Action GOV-04-b	Implement a Decarbonization Plan and include projects in the CIP	CIP	DGS	N/A	2027	Ongoing	N/A
Action GOV-04-c	Adopt an all-electric building policy for newly constructed County buildings	County policy	DGS	N/A	2025	2025	N/A
Action GOV-04-d	Annually engage with SMUD on electrification incentive options for existing County buildings	Incentives	DGS	SMUD	2025	Ongoing	N/A
MEASURE GOV-05: Improve Water Efficiency							
Action GOV-05-a	Develop and adopt a County Buildings and Facilities Water Efficiency Plan	Plan	DGS	N/A	2025	2025	N/A
Action GOV-05-b	Continue to replace water fixtures with low-flow equivalents	County policy	DGS	N/A	Continued	Ongoing	N/A
Action GOV-05-c	Continue to use recycled water for landscaping	County policy	DGS	N/A	Continued	Ongoing	N/A
Action GOV-05-d	Conduct a landscape conditions and irrigation audit	Audit	DGS, RP (CEO, SM)	N/A	2025	2026	N/A
Action GOV-05-e	Create drought-tolerant demonstration projects at County buildings	Capital Improvement Projects	DGS	N/A	2025	2028	N/A
Action GOV-05-f	Create a list of drought tolerant plants for County projects	County policy	DGS	N/A	2027	2028	N/A

Table 4.5 Government Operations GHG Reduction Measures Implementation Matrix (*continued*)

Action Identifier	Action Description[1]	Implementation Mechanism	Implementation Lead (Support)[2]	Public Engagement and Community Partnerships[2]	Start Date	End Date	Timeline Dependency
MEASURE GOV-06: Replace Outdoor Lights with LEDs							
Action GOV-06-a	Replace remaining 2,200 high-pressure sodium and mercury-vapor streetlights with light-emitting diode (LED) technology	County policy	SACDOT	N/A	Continued	2030	N/A
Action GOV-06-b	Perform an audit of existing outdoor County lighting	Audit	DGS (RP)	N/A	2025	2026	N/A
Action GOV-06-c	Replace outdoor lighting with LED technology	County policy	DGS (RP)	N/A	2027	2035	Action GOV-06-b

Notes: N/A = not applicable

[1] Action descriptions included in this table are concise versions of the full action language that can be found in Chapter 2. Actions have been shortened for brevity, focusing on the intent of the action.

[2] Definitions of the abbreviations used for implementation lead, support, and public engagement and community partnerships can be found in **Table 4.3**.

Source: **Compiled by Ascent in 2024**.

4.7 Performance Monitoring Matrices

Table 4.6, **Table** 4.7, and **Table** 4.8 present the performance monitoring details for each of the GHG reduction measures and climate adaptation strategies.

Table 4.6 Community GHG Reduction Measures Performance Monitoring Matrix

Measure Identifier	Measure Title	Key Performance Indicator[1]	2030 Target Indicator	2045 Target Indicator	Monitoring Lead(s)[2]
GHG-01	Develop a Carbon Farming Program	▶ Acres of compost applied to cropland instead of synthetic fertilizer	25,000 acres of treatment applied	113,000 acres of treatment applied	CEO, SM; AC
		▶ Acres of grazing management to improve irrigated pasture conditions	13,000 acres of treatment applied	61,000 acres of treatment applied	
		▶ Acres of fallow land decreased and/or of perennial crops added to rotations	7,000 acres of treatment applied	32,000 acres of treatment applied	
		▶ Acres of reduced or eliminated tillage	1,000 acres of treatment applied	4,000 acres of treatment applied	
GHG-02	Expand the Urban Forest	▶ Net new trees planted by County departments, by private development, and through external partners	15,000 net new trees	62,000 net new trees	CD, TC; CD, PER
GHG-03	Support the SMUD Zero Carbon Plan	▶ Percent of SMUD's electricity generated from zero-carbon sources	100 percent	100 percent	CD, PER
		▶ New MW of rooftop solar photovoltaic installed after 2025	70 MW	281 MW	
		▶ New MW of behind-the-meter battery storage installed after 2025	28 MW	112 MW	

Table 4.6 Community GHG Reduction Measures Performance Monitoring Matrix (*continued*)

Measure Identifier	Measure Title	Key Performance Indicator[1]	2030 Target Indicator	2045 Target Indicator	Monitoring Lead(s)[2]
GHG-04	Accelerate Existing Building Energy Efficiency Retrofits and Decarbonization	▶ Number of existing residential buildings meeting or exceeding half of the cost-effective retrofit measures score at time-of-retrofit	28,000 residential units	No 2045 target identified	CD, PER; CD, BP&I;
		▶ Number of existing residential buildings meeting or exceeding the maximum cost-effective retrofit measures score at time-of-retrofit	No 2030 target identified	111,000 residential units	
		▶ Number of existing nonresidential buildings retrofitted to reduce non-electricity-related emissions to comply with the building performance standard program	Target to be identified with further analysis	Target to be identified further analysis	
		▶ GHG emissions reduced for existing nonresidential buildings retrofitted under a building performance standard program, as calculated from program reporting (when established)	29,600 metric tons of carbon dioxide equivalent	134,800 metric tons of carbon dioxide equivalent	
		▶ Number of buildings enrolled in a nonresidential building performance standards program	Target to be identified with further analysis	Target to be identified with further analysis	
GHG-05	Decarbonize New Buildings	▶ Number of new residential units that meet or exceed a modeled EDR1 metric of 11.5 points (single-family) or Energy Source Margin of 11 percent (multifamily) above the Title 24, Part 6 statewide performance minimum	19,500 residential units	78,200 residential units	CD, BP&I; CEO, SM
		▶ Square footage of new nonresidential buildings built to reduce non-electricity-related emissions 85% below Title 24	Target to be identified with further analysis	Target to be identified with further analysis	
		▶ Number of all electric residential units approved and built	No target identified	No target identified	
		▶ Square footage of all electric commercial projects approved and built	No target identified	No target identified	

Table 4.6 Community GHG Reduction Measures Performance Monitoring Matrix (*continued*)

Measure Identifier	Measure Title	Key Performance Indicator[1]	2030 Target Indicator	2045 Target Indicator	Monitoring Lead(s)[2]
GHG-06	Retire Fossil-Fuel-Powered Landscaping Equipment	▶ Number of fossil-fuel-powered landscaping equipment retired	78,000 pieces of equipment	352,000 pieces of equipment	CEO, SM
GHG-07	Increase EV Charging and ZEV Infrastructure	▶ Number and type of EV chargers installed through both County direct installation and at development and retrofit projects	24,000 EV chargers	72,000 EV chargers	CD, PER; CD, BP&I; SCAS; CEO, SM; DGS
		▶ Number of light-duty ZEVs registered in the County from Department of Motor Vehicles data	125,800 light-duty ZEVs (or 30% of total registered light-duty vehicles in the County)	378,500 light-duty ZEVs (or 90% of total registered light-duty vehicles in the County)	CD, PER;
		▶ Number of medium-duty and heavy-duty ZEVs registered in the County	9,200 medium- and heavy-duty ZEVs (or 30% of total registered medium- and heavy-duty vehicles in the County)	378,500 medium- and heavy-duty ZEVs (or 90% of total registered medium- and heavy-duty vehicles in the County)	CD, PER;
GHG-08	Develop a VMT Impact Fee Program	▶ VMT mitigated through the VMT impact fee program	Target to be identified with further analysis	Target to be identified with further analysis	CE, PER
GHG-09	Reduce VMT from New Developments	▶ Annual VMT avoided by Transportation System Management Plan implementation	45,000,000 annual VMT avoided	214,000,000 annual VMT avoided	CD, PER
GHG-10	Revise Parking Standards	▶ Updated parking standards for new development that lower minimum parking requirements and add requirements for shared parking facilities	5,730 dwelling units built with lowered minimum parking standards	No target identified	CD, PER
GHG-11	Increase Transit Ridership	▶ Increase in transit ridership in unincorporated County from 2021 levels	557,000 increased annual transit trips (above 2021)	1,275,000 increased annual transit trips (above 2021)	SACDOT; CD, PER
		▶ Miles of dedicated bus lanes, and shared bus-bike lanes completed	Target to be identified with further analysis	Target to be identified with further analysis	

Table 4.6 Community GHG Reduction Measures Performance Monitoring Matrix (*continued*)

Measure Identifier	Measure Title	Key Performance Indicator[1]	2030 Target Indicator	2045 Target Indicator	Monitoring Lead(s)[2]
GHG-12	Implement the Active Transportation Plan	▶ Number of pedestrian spot improvements completed	66 pedestrian spot improvements	194 pedestrian spot improvements	SACDOT; CD, PER
		▶ Miles of sidewalk gap closures completed	51 miles of sidewalk gap closures	192 miles of sidewalk gap closures	
		▶ Miles of new bikeways completed (Class I-IV)	190 miles of new bikeways completed	1,218 miles of new bikeways completed	
GHG-13	Advance Infill Development	▶ Number of residential units and square footage of non-residential development constructed in infill areas	Target to be identified with further analysis	Target to be identified with further analysis	CD, PER
GHG-14	Increase Organic Waste Diversion and Landfill Gas Capture	▶ Landfill gas capture rates at County-owned landfills	90% landfill gas capture rate	90% landfill gas capture rate	DWMR; CD, PER
		▶ Diversion rate of countywide organic waste	75% organic waste diversion rate	90% organic waste diversion rate	
GHG-15	Implement the South Sacramento Habitat Conservation Plan	▶ Acres of land conserved under implementation of SSHCP	Target to be identified with further analysis	Target to be identified with further analysis	CD, PER
GHG-16	Expand the Use of Electric Construction and Agricultural Equipment	▶ Number of County bids where the selected bidder utilized zero-emission construction or portable equipment.	No target identified	No target identified	DGS; CEO, SM; AC; CD, PER

Notes: VMT = vehicle miles traveled; ICE; internal combustion engine; ZEV = zero-emission vehicle; EV = electric vehicle; LED = light emitting diode; EDR = energy design rating.

[1] All key performance indicators are based on annual data, unless otherwise noted.

[2] Definitions of the abbreviations used for monitoring leads can be found in Table 4.3.

Table 4.7 Adaptation Measures Performance Monitoring Matrix

Measure Identifier	Measure Title	Key Performance Indicator[1]	Monitoring Lead(s)[2]
TEMP-01	Protect Critical Infrastructure Vulnerable to Extreme Heat Events	▶ Number of facilities protected ▶ Number of facilities unprotected	DGS, SACDOT
TEMP-02	Partner with Local Agencies and Utilities on Heat-Related Climate Change Initiatives and Efforts	▶ No performance indicators identified	SM
TEMP-03	Expand Services to and Awareness of EJ Communities on Heat-Related Risks and Illness	▶ No performance indicators identified	DHS, SM
TEMP-04	Encourage the Installation or Use of Cool Roof Technologies, Passive Solar Home Design, Green Roofs, and Rooftop Gardens	▶ No performance indicators identified	SM, PER, BP&I
TEMP-05	Increase Participation in the Sacramento Area Sustainable Business Program	▶ No performance indicators identified	SM, BERC
TEMP-06	Partner with Valley Vision to Expand the Business Resiliency Initiative	▶ No performance indicators identified	SM, ED
TEMP-07	Use Cool Pavement Technology and Reduce the Amount of Paved Surfaces	▶ No performance indicators identified	SM, PER, BP&I
TEMP-08	Increase Parking Lot Shading, Landscaping, and Urban Greening, Prioritizing EJ Communities	▶ No performance indicators identified	SM, PER, CE, DGS
TEMP-09	Understand the Tolerance of Current Crop Mixes to Withstand Increased Temperatures	▶ No performance indicators identified	SM, ACO
TEMP-10	Work with SMUD to Improve Electric Grid Reliability	▶ No performance indicators identified	SM
FIRE-01	Map and Identify Locations that are Newly at Risk, or at Higher Risk for Fire Hazards	▶ Identification and mapping of wildfire-prone locations	SacOES, DTech
FIRE-02	Coordinate with State and Local Agencies to Establish Ecological Recovery Programs	▶ Acres of burned areas ▶ Acres benefitting from ecological recovery programs	SM
FIRE-03	Transition County Tree Planting to More Fire-Resilient Species	▶ Number and type of tree planted in Fire Hazard Severity Zones	PER
FIRE-04	Coordinate and Improve Emergency Preparedness Systems	▶ No performance indicators identified	OES
FIRE-05	Avoid New Development in Very-High Fire Hazard Severity Zones	▶ No performance indicators identified	PER
FIRE-06	Collaborate with Agencies and Organizations on Programs to Reduce Wildfire Hazards	▶ No performance indicators identified	SM, CE, RP
WATER-01	Evaluate Vulnerabilities of Water Supply Systems and Networks and Develop Strategies to Improve Resilience	▶ No performance indicators identified	SM, DWR, SCWA, BP&I

Table 4.7 Adaptation Measures Performance Monitoring Matrix (*continued*)

Measure Identifier	Measure Title	Key Performance Indicator[1]	Monitoring Lead(s)[2]
WATER-02	Increase Onsite Greywater and Rainwater Reuse, Stormwater Reuse, and Recycled Water Systems	▶ No performance indicators identified	SM, EMD, PIO, DGS, DWR, ACO
WATER-03	Create Incentives and Programs to Transfer Knowledge and Technologies to Assist Farmers with New Production Methods and Drought-Tolerant Species	▶ No performance indicators identified	SM, ACO, ED, DWR, SCWA
WATER-04	Reduce Potable Water Use in Outdoor Landscaping	▶ No performance indicators identified	PER, SM, SCWA
WATER-05	Expand Upon Existing Water Conservation Education and Outreach Programs for Residents and Businesses	▶ No performance indicators identified	SM, SCWA, PIO
WATER-06	Collaborate with Federal, State, and Local Agencies and Organizations to Identify Future Water Supplies, Explore Alternative Supply Sources, and Improve Capacity	▶ No performance indicators identified	SM, ACO, ED, DWR, SCWA
FLOOD-01	Evaluate and Improve Capacity of Stormwater Infrastructure for High-Intensity Rainfall Events	▶ Number of stormwater infrastructure improvement projects completed	SM, ACO
FLOOD-02	Improve Sewage and Solid Waste Management Infrastructure	▶ Number of wastewater infrastructure improvement projects completed ▶ Number of solid waste management infrastructure improvement projects completed	DWR, DWMR
FLOOD-03	Identify New Locations for Flood Control, Prioritizing Green Infrastructure Solutions	▶ Identification and mapping of locations for flood control	SM, DWR
FLOOD-04	Coordinate with Federal, State, and Local Agencies to Improve Emergency Evacuation and Supply Transportation Routes	▶ Number of emergency evacuation and supply transportation route improvements completed	SacOES, DWR, SACDOT
FLOOD-05	Invest in Use of Pervious Pavements and Landscaping in Developed Areas and Restrict the Use of Paved Surfaces	▶ Area of pervious pavement installed	SM, PER, DWR, SACDOT
FLOOD-06	Map Critical Facilities and Infrastructure Locations Vulnerable to Flooding and Update and/or Relocate Infrastructure Where Applicable	▶ Mapping of critical facilities vulnerable to flooding	OES, SACDOT, DTech
FLOOD-07	Establish an Underground Utilities Program Resistant to Flooding	▶ Miles of overhead utility lines undergrounded	SM
FLOOD-08	Partner with SAFCA and Local Agencies, Utilities, and Other Organizations to Support Future and Ongoing Flood-Related Climate Change Initiatives	▶ No performance indicators identified	SM, DWR

Table 4.7 Adaptation Measures Performance Monitoring Matrix (*continued*)

Measure Identifier	Measure Title	Key Performance Indicator[1]	Monitoring Lead(s)[2]
FLOOD-09	Research the Tolerance of Current Crop Mixes to Withstand Increased Flooding and Support Aquaculture and Fish Habitat	▶ No performance indicators identified	SM, ACO, DWR, ED
FLOOD-10	Expand Educational Programs to Address Vector and Waterborne Diseases	▶ No performance indicators identified	DHS, EMD, DWR
FLOOD-11	Identify Concrete Channel Restoration Areas	▶ Miles of concrete channel restoration areas	DWR, RP
FLOOD-12	Replant Bare or Disturbed Areas	▶ Amount of vegetation replantation	DWR, RP
FLOOD-13	Update and Implement the County's Local Hazard Mitigation Plan to Address Climate-Change-Related Flooding Impacts	▶ No performance indicators identified	DWR, OES
FLOOD-14	Safeguard Freshwater Supply Against Contamination, Degradation, or Loss	▶ Number of freshwater supply infrastructure improvement projects completed	SCWA
SLR-01	Coordinate with Other Agencies on Floodplain Mapping Update and Identification of Improvements to Protect Vulnerable Populations, Functions, and Structures	▶ No performance indicators identified	DWR
SLR-02	Support and Monitor Ongoing Analysis of Sea Level Rise Data	▶ Review of applicable sea level rise data	DWR, SCWA
SLR-03	Update the County's Local Hazard Mitigation Plan to Incorporate Sea Level Rise	▶ No performance indicators identified	SacOES, DWR
SLR-04	Increase Sea Level Rise Effects into Capital Improvement Plans	▶ No performance indicators identified	DWR, SACDOT, SCWA
SLR-05	Guide Future Development Out of Areas Vulnerable to Sea Level Rise	▶ No performance indicators identified	PER, DWR
ALL-01	Create a Comprehensive Outreach Strategy	▶ No performance indicators identified	SacOES, SM, PIO, DWR
ALL-02	Set Up Annual Progress Report/Check-In for All Applicable Measures	▶ No performance indicators identified	SacOES, SM

Notes:

[1] All key performance indicators are based on annual data, unless otherwise noted.

[2] Definitions of the abbreviations used for monitoring leads can be found in Table 4.3.

Table 4.8 Government Operations Measures Performance Monitoring Matrix

Measure Identifier	Measure Title	Key Performance Indicator[1]	2030 Target Indicator	2045 Target Indicator	Monitoring Lead(s)[2]
GOV-01	Reduce Employee Commute VMT	▶ County employee commute VMT from commute survey (average VMT per employee)	6,438 average annual VMT per employee	6,438 average annual VMT per employee	DPS, CEO, SM, DGS
GOV-02	Implement Non-Airport Fleet Conversion Program	▶ Number of ICE County vehicles/equipment retired and replaced with ZEVs	945 ICE vehicles and equipment replaced with ZEV	2,700 ICE vehicles and equipment replaced with ZEV	DGS, CF
		▶ Number and type of EV chargers installed on County property	Target to be identified with further analysis	Target to be identified with further analysis	
		▶ Percent of total non-airport vehicle fleet that is ZEV	35 percent	100 percent	
GOV-03	Implement Airport Fleet Conversion Program	▶ Number of ICE County Airport Systems vehicles/equipment retired and replaced with ZEVs	Target to be identified with further analysis	Target to be identified with further analysis	SCAS
		▶ Number and type of EV chargers installed at County airports	Target to be identified with further analysis	Target to be identified with further analysis	
		▶ Percent of total airport vehicle fleet that is ZEV	35 percent	100 percent	
GOV-04	Reduce Natural Gas Usage in County Buildings	▶ Total metered natural gas use in County buildings and facilities	1,322,000 therms annually	283,000 therms annually	DGS
GOV-05	Improve Water Efficiency	▶ Reduction in total metered water consumption in county buildings and facilities	11% below 2021 levels	29% below 2021 levels	DGS
GOV-06	Replace Outdoor Lights with LEDs	▶ Number and percent of County-managed streetlights and outdoor lighting replaced with LEDs	2,200 streetlights replaced	100% of outdoor lighting replaced	SACDOT, DGS

Notes: VMT = vehicle miles traveled; ICE; internal combustion engine; ZEV = zero-emission vehicle; EV = electric vehicle; LED = light emitting diode.

[1] All key performance indicators are based on annual data, unless otherwise noted.

[2] Definitions of the abbreviations used for monitoring leads can be found in Table 4.3.



CHAPTER 5

Works Cited

5 Works Cited

Chapter 1, Introduction

California Air Resources Board. 2022 (November). *2022 Scoping Plan for Achieving Carbon Neutrality*. Available: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed May 13, 2024.

California Department of Public Health. 2023 (August). *Excess Mortality During the September 2022 Heat Wave in California*. Available: https://www.cdph.ca.gov/Programs/OHE/CDPH%20Document%20Library/Climate-Health-Equity/CDPH-2022-Heat-Wave-Excess-Mortality-Report.pdf. Accessed May 10, 2024.

California Governor's Office of Emergency Services. 2020 (June). *California Adaptation Planning Guide*. Available: https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf. Accessed May 13, 2024.

California Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency. 2019 (January). *California's Fourth Climate Change Assessment: Statewide Summary Report*. Available: https://www.energy.ca.gov/sites/default/files/2019-11/Statewide_Reports-SUM-CCCA4-2018-013_Statewide_Summary_Report_ADA.pdf. Accessed May 13, 2024.

Cal OES. *See* California Governor's Office of Emergency Services.

CARB. *See* California Air Resources Board.

CDPH. *See* California Department of Public Health.

Intergovernmental Panel on Climate Change. 2018. *Special Report: Global Warming of 1.5°C: Summary for Policymakers*. Available: https://www.ipcc.ch/sr15/chapter/spm/. Accessed May 13, 2024.

———. 2021 (August). *Climate Change 2021: The Physical Science Basis: Summary for Policymakers*. Available: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf. Accessed May 13, 2024.

IPCC. *See* Intergovernmental Panel on Climate Change.

OPR, CEC, and CNRA. *See* California Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency.

SACOG. *See* Sacramento Area Council of Governments.

Sacramento Area Council of Governments. n.d. 2025 Blueprint. Available: https://www.sacog.org/planning/blueprint. Accessed May 15, 2024.

Sacramento Metropolitan Air Quality Management District. 2024. *Capital Region Climate Priorities Plan*. Available: https://www.airquality.org/ClimateChange/Documents/CapitalRegionClimatePrioritiesPlan2024.pdf. Accessed May 15, 2024.

Sacramento Municipal Utility District. 2021 (April). *2030 Zero Carbon Plan*. Available: https://www.smud.org/-/media/Documents/Corporate/Environmental-Leadership/ZeroCarbon/2030-Zero-Carbon-Plan-Technical-Report.ashx. Accessed May 15, 2024.

SMAQMD. *See* Sacramento Metropolitan Air Quality Management District.

SMUD. *See* Sacramento Municipal Utility District.

Yale Program on Climate Change Communication. n.d. Five Facts, Ten Words. Available: https://climatecommunication.yale.edu/wp-content/uploads/2021/02/Five-Facts-Ten-Words-1.pdf. Accessed May 13, 2024.

YPCCC. *See* Yale Program on Climate Change Communication.

Chapter 2, Greenhouse Gas Reduction Strategy

California Air Resources Board. 2022 (November). *2022 Scoping Plan for Achieving Carbon Neutrality*. Available: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed May 13, 2024.

CARB. *See* California Air Resources Board.

EPA. *See* US Environmental Protection Agency.

ICLEI. *See* ICLEI – Local Governments for Sustainability.

ICLEI – Local Governments for Sustainability. 2010. *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories*. Version 1.1. Available: https://ww2.arb.ca.gov/sites/default/files/classic/cc/protocols/lgo_protocol_v1_1_2010-05-03.pdf. Accessed May 20, 2024.

———. 2019. *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*. Version 1.2. Available: https://icleiusa.org/us-community-protocol/. Accessed May 20, 2024.

Intergovernmental Panel on Climate Change. 2013. *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Available: https://www.ipcc.ch/report/ar5/wg1/. Accessed May 20, 2024.

IPCC. *See* Intergovernmental Panel on Climate Change.

US Environmental Protection Agency. 2024. Greenhouse Gas Equivalencies Calculator Tool. Available: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator. Accessed May 20, 2024.

Sacramento County. 2020. Board of Supervisors Public Hearing, December 16, 2020, Agenda Item 9. https://agendanet.saccounty.gov/BoardofSupervisors/Meetings/ViewMeeting?id=6728&doctype=1.

SMUD. *See SMUD* – Sacramento Municipal Utility District.

———. 2023 (April). 2030 Zero Carbon Plan Progress Report. Available: 2030 Zero Carbon Plan Progress Report - March 2022 (smud.org)/. Accessed July 1, 2024.

Chapter 3, Climate Adaptation and Resilience Strategy

Cal OES. *See* California Governor's Office of Emergency Services.

California Energy Commission. 2020a. Cal-Adapt Annual Averages Tool. Available: https://cal-adapt.org/tools/annual-averages. Accessed November 25, 2020.

———. 2020b. Cal-Adapt Extreme Heat Days & Warm Nights Tool. Available: https://cal-adapt.org/tools/extreme-heat/. Retrieved November 25, 2020.

———. 2020c. Cal-Adapt Extended Drought Scenarios Tool. Available: https://cal-adapt.org/tools/extended-drought. Retrieved November 25, 2020.

———. 2024. Cal-Adapt Extreme Precipitation Events Tool. Available: https://cal-adapt.org/tools/extreme-precipitation. Retrieved May 22, 2024.

California Governor's Office of Emergency Services. 2020 (June). *California Adaptation Planning Guide*. Available: https://www.caloes.ca.gov/HazardMitigationSite/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf. Accessed May 13, 2024.

CEC. *See* California Energy Commission.

County of Sacramento. 2017 (January). *Climate Change Vulnerability Assessment for the Sacramento County Climate Action Plan: Communitywide Greenhouse Gas Reduction and Climate Change Adaptation*. Available: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Documents/Climate%20Action%20Plan/Climate%20Change%20Vulnerability%20Assessment.pdf. Accessed May 22, 2024.

———. 2022 (August). "Appendix B – Climate Change Adaptation, Background, & Vulnerability Assessment." In *Sacramento County Climate Action Plan*. Available: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Documents/Climate%20Action%20Plan/Final%20Climate%20Action%20Plan.pdf. Accessed May 22, 2024.

National Oceanic and Atmospheric Administration. 2023. What is the Pineapple Express? Available: https://oceanservice.noaa.gov/facts/pineapple-express.html. Accessed May 22, 2024.

NOAA. *See* National Oceanic and Atmospheric Administration.

Chapter 4, Implementation, Monitoring, and Reporting Strategy

No references were cited in this chapter.

APPENDIX

A

Community Engagement Summary

A.1 Community Engagement Summary

Local action on climate change requires active and ongoing partnerships between residents, businesses, the County of Sacramento government (County), agencies, and organizations. Starting in August 2016, the County prioritized engagement and outreach throughout the Climate Action Plan (CAP) development process to ensure the CAP provides feasible, equitable, and implementable measures. The goals of the outreach process were to: (1) raise awareness of climate change and the need for this CAP; (2) inform stakeholders and the public about the CAP; (3) gather input at the various steps of CAP development; and (4) provide opportunities to influence decision-making. The County provided CAP updates via, a dedicated project website, electronic mail notifications, community meetings and press releases. This extensive engagement process has been documented and retained to inform the development of the most recent version of the CAP (2024 CAP).

A summary of stakeholder and public outreach events is included in **Table A-1**. The County hosted four public workshops at various community locations (including two disadvantaged communities) to ensure that the CAP captured the ideas and concerns of residents and businesses. Outreach media were produced to advertise community events, solicit input on the CAP, and provide general information on the CAP development process. All flyers for community events were produced in both English and Spanish. In 2020 a stakeholder group representing a wide variety of interests was formed to provide input on the CAP. The Stakeholder Working Group was comprised of representatives from 350 Sacramento; Associated Builders and Contractors, Inc.; Capital Region Climate Readiness Collaborative; Community Resource Project, Inc., Environmental Council of Sacramento; Lewis Group of Companies; North State Building Industry Association; Sacramento Metropolitan Air Quality Management District; Sacramento Municipal Utility District; Sacramento Regional Builders' Exchange; and Sierra Club Mother Lode Chapter.

Stakeholders and the public shaped the strategies and measures in this CAP in several ways, from attending meetings and providing comments, sending emails and letters, and participating in stakeholder calls. Comments have ranged from suggesting ideas for greenhouse gas reduction and adaptation to highlighting especially urgent and important issues that the CAP should prioritize. Themes that emerged from the outreach focused on greenhouse gas reduction and included the need to reduce water consumption, consider zero-waste goals, prioritize food recovery before composting, incentivize electric vehicles and rooftop solar, encourage signups for the Sacramento Municipal Utilities District's Greenergy program, improve transit connectivity, target transportation improvements in disadvantaged communities, reduce sprawl, protect farmland, and prioritize measures with co-benefits. Themes that emerged from the outreach relating to adaptation and resiliency included the importance of urban forestry, considering rain barrels and greywater as strategies to address changing precipitation patterns and drought, the need to specifically assess climate impacts to the Delta such as saltwater intrusion, and the urgency of increasing wildfire risk.

An additional opportunity for public input on a Draft version of the CAP was provided in March 2021. The Final Draft CAP was released in September of 2021 with an associated environmental document, which was available for public review and comment for 30 days. Additional public input on the CAP and CEQA environmental document were heard at Planning Commission hearing in November of 2021. Letters received during the comment periods are included in Section A.2, including the County's responses to public comments.

In 2022, a revised version of the Final Draft CAP was developed (Revised Final Draft CAP) based on comments received on the Final Draft CAP during the September 2021 comment period. The Revised Final Draft CAP was presented at a Board of Supervisors workshop for discussion in March of 2022 and released for additional public

review and comment for 30 days. At this meeting, and during the public review and comment period, additional comment letters were received, which are included in Section A.2. Lastly, in August of 2022, a Final CAP (2022 Final CAP) was released for an additional public review and comment period, in which additional comment letters were received. The 2022 Final CAP was presented for adoption in September 2022 where additional public comments were received.

Table A-1 Summary of CAP Stakeholder Meetings and Public Workshops

Event	Date	Description
Stakeholder Meeting	August 24, 2016	Project kickoff meeting for stakeholders to understand the purpose of the CAP and CAP development process.
Stakeholder Meeting	September 13, 2016	Meeting with VG Consulting.
Stakeholder Meeting	October 6, 2016	Meeting with Community Resource Project.
Neighborhood Meeting	October 17, 2016	Presentation to MLK Neighborhood Association.
Neighborhood Meeting	October 20, 2016	Presentation to South Oak Park Community Association.
Public Workshop #1 and #2	November 15 and 16, 2016	Initial set of public workshops held at different locations within the County to raise awareness of the CAP and get feedback and ideas for GHG emissions reduction strategies.
Public Workshop #3 and #4	February 6 and 9, 2016	Set of public workshops held at different locations within the County to raise awareness of the CAP and get feedback and ideas for climate change adaptation and resiliency strategies.
Stakeholder Meeting	March 21, 2017	Meeting with the Sacramento Metropolitan Air Quality Management District to discuss strategies related to energy efficiency and consumption, VMT, and methane emissions.
Board Workshop	May 24, 2017	Board of Supervisors workshop to discuss the 2015 GHG emissions inventory and forecasts and climate change vulnerability assessment.
Stakeholder Meeting	June 15, 2017	Meeting with the North State Building Industry Association.
Stakeholder Meeting	January 4, 2018	Meeting with the Sacramento Municipal Utility District.
Stakeholder Meeting	February 23, 2018	Meeting with the Delta Stewardship Council.
Stakeholder Meeting	February 27, 2018	Meeting with the Pacific Gas & Electric Company.
Stakeholder Meeting	Mach 19, 2018	Meeting with Teichert.
Stakeholder Meeting	March 21, 2018	Meeting with the Sacramento Association of Realtors.
Stakeholder Meeting	March 28, 2018	Meeting with the Sacramento Region Business Association.
Stakeholder Meeting	March 29, 2018	Meeting with the North State Building Industry Association.
Stakeholder Meeting	April 19, 2018	Meeting with the Sacramento Metropolitan Fire District.
Stakeholder Meeting	April 19, 2018	Meeting with the Environmental Justice Advisory Committee.
Stakeholder Meeting	April 26, 2018	Meeting with the Sacramento Regional Builders Exchange.
Stakeholder Meeting	April 26, 2018	Meeting with the California Sierra Club.
Stakeholder Meeting	April 30, 2018	Meeting with the Sacramento Municipal Utility District.
Stakeholder Meeting	May 1, 2018	Meeting with the Sacramento Association of Realtors.
Stakeholder Meeting	May 3, 2018	Meeting with the Sacramento Electric Vehicle Association.

Event	Date	Description
Stakeholder Meeting	May 8, 2018	Meeting with the Capital Region Climate Readiness Collaborative.
Stakeholder Meeting	May 9, 2018	Meeting with the Sacramento Sierra Club.
Stakeholder Meeting	May 17, 2018	Meeting with 350 Sacramento.
Stakeholder Meeting	May 22, 2018	Meeting with the Environmental Council of Sacramento.
Stakeholder Meeting	May 22, 2018	Meeting with the Capital Region Climate Readiness Collaborative.
Stakeholder Meeting	August 16, 2018	Meeting with the Sacramento Sierra Club.
Stakeholder Meeting	October 29, 2018	Meeting with 350 Sacramento.
Stakeholder Meeting	December 3, 2018	Presentation to the American River College class.
Stakeholder Meeting	August 12, 2020	Meeting with Stakeholder Working Group.
Stakeholder Meeting	August 19, 2020	Meeting with Stakeholder Working Group.
Stakeholder Meeting	September 24, 2020	Meeting with Stakeholder Working Group.
Stakeholder Meeting	November 19, 2020	Meeting with Stakeholder Working Group.
Public Workshop	March 15, 2021	Public Workshop presenting Draft CAP Document at Sacramento Environmental Commission Meeting.
Stakeholder Meeting	May 11, 2021	Meeting with Stakeholder Working Group.
Stakeholder Meetings	June 2021 through present	Numerous individual meetings with key stakeholders.
Public Hearing	October 25, 2021	Public hearing at Sacramento County Planning Commission presenting Final Draft CAP.
Public Workshop	November 10, 2021	Public meeting at Agricultural Advisory Committee presenting Final Draft CAP.
Board Workshop	March 23, 2022	Board of Supervisors workshop to discuss the Revised Final Draft CAP.
Board Hearing	September 27, 2022	Board of Supervisors hearing for adoption of the 2022 Final CAP.

Notes: CAP = climate action plan, GHG = greenhouse gas, MLK neighborhood association = Martin Luther King Neighborhood Association; VMT = vehicle miles traveled.

Source: Ascent Environmental 2024.

A.2 Comment Letters Received for Draft and Final CAP

The County has provided the current and previous iterations of the CAP for public review and received numerous public comment letters since 2021. There have been five primary public review periods for the CAP document during which comment letters were received, as described below. Comment letters were also accepted outside of these public review periods.

- 30-day comment period following publication of the Draft CAP starting in March 2021.
- 30-day comment period following release of the Final Draft CAP starting in September 2021.
- 30-day comment period following release of the Revised Final Draft CAP starting in February 2022.
- 30-day comment period following release of the 2022 Final CAP starting in August 2022.
- 45-day comment period following release of the Draft 2024 CAP starting in July 2024.

Comments received during these public review periods, are available for review on the County's webpage at: https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/CAP.aspx. Responses to comments prepared by the County for comment letters received for each iteration of the CAP can also be found on the same webpage.

A.3 Public Comments Incorporated into the Climate Action Plan – 2024

It is important to the County of Sacramento (County) that the CAP reflects the priorities of community members and stakeholders. The County released the most recent iteration of the Draft Climate Action Plan (CAP), also referred to as the 2024 Draft CAP, for a public review period from July 15, 2024, to August 29, 2024. During this period, 17 public comment letters were received on the Draft CAP and the associated Draft Supplemental Environmental Impact Report (SEIR), which included suggestions for modifying the CAP including clarifications, correction of identified errors, additional implementation actions, and additional detail for actions and intent of measures. The County has reviewed all suggestions and has made a good-faith effort to include appropriate edits in the Final 2024 CAP, based on these suggestions. These suggested edits to the CAP and the resulting edits that were incorporated into the Final 2024 CAP are demonstrated in **Table A-2**.

The County received several additional suggestions for the Draft 2024 CAP that had potential for inclusion, but were not incorporated in the Final 2024 CAP for various reasons. For example, the following suggestion was received but not incorporated into the CAP:

> GHG-14-c: Organic waste diversion efforts should include materials requirements for business. For example, restaurants should provide single use items (i.e., utensils, containers) that are compostable.

This is an example of a valuable suggestion; however, it was not incorporated into the CAP for two reasons. First, the County already has ordinances in effect that place organic waste diversion requirements on businesses and set requirements for single-use food ware accessories. Second, compostable utensils are not compostable in the local composting system for the County, and as such requiring compostable single use items would not provide significant local GHG reduction benefit. Many other suggestions of a similar character were received, and the County appreciates the time spent by commentors to provide a thorough review of the CAP and voice opinions on how it could be improved.

Any suggested modifications not included in **Table A-2** below were not incorporated into the CAP but can be reviewed in the FEIR for the CAP, on the County's webpage at: https://planning.saccounty.net/PlansandProjectsIn-Progress/Pages/CAP.aspx. Additional context on the public comment suggestions and responses to comments can also be found in Chapter 10 of the FEIR.

Table A-2 Summary of Public Comment Suggestions Incorporated into Final 2024 CAP

Public Comment Suggestion	Character of Edit Made to CAP	Description of Edit Made to CAP
Measure TEMP-08 is aimed at increasing urban greening through six action items which each call for planting trees or otherwise providing shading for parking lots. While the SEC concurs that increasing urban greening and shade are certainly important efforts, as currently drafted this measure focuses temperature mitigation actions on addressing the urban heat island effect broadly, rather than providing direct relief to exposed residents. The SEC recommends improving this measure by calling for urban greening and the provision of shade in locations where residents will be exposed and vulnerable to rising temperatures and extreme heat. These additional locations could include, but should not be limited to, public transit stops/waiting areas and active transportation routes.	Added Implementation Action	Action TEMP-08-g: Require County-led active transportation and public transit infrastructure modifications and upgrades to incorporate shading, preferably in the form of trees, when upgrades to facilities are performed. Encourage modifications led by SacRT to also incorporate shading in the form of trees.
Measure GHG-08 calls for the development of a VMT Impact Fee Program which requires proponents of new development projects to pay into a fund for regional VMT mitigation programs where onsite VMT mitigation is shown to be insufficient or infeasible to address the VMT impacts of the project. The VMT Impact Fee Program could be improved by ensuring that benefits of projects funded by the VMT Mitigation Program are directed toward the on-site impacts of the development projects which pay into the program. The SEC recommends this be addressed by including this factor in the VMT Impact Fee Program nexus study set out in Action GHG-08-a. Alternatively, the Measure could be modified to direct VMT impact fees paid by new development projects toward mitigation projects which are geographically located near the development or otherwise have demonstrable VMT mitigation benefits to the area where the new development project is located. By addressing the nexus between the VMT impacts triggering the fee and the VMT mitigation benefits of projects funded by the fee, the program will be aided by better ensuring that new developments without on-site VMT mitigation still fund projects which benefit the localized impacts created by the new development.	Additional Detail Added	Action GHG-08-a edited to include: "The projects identified in the nexus study must be proven to be having appropriate nexus between new development projects and off-site VMT mitigation projects, including proximity of off-site VMT mitigation projects to new development projects within the unincorporated County"
Action GHG-07-d in the CAP includes the development of a Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy to support the transition to widespread adoption of electric vehicles (EVs). During the development of the strategy, the County should identify methods to monitor and evaluate the effectiveness of the strategy.	Additional Detail Added	Action GHG-07-d edited to include: "The strategy should identify methods and procedures for monitoring progress and evaluating the effectiveness of the strategy, and the strategy should be reviewed and updated every three years to reflect technology and market trends."
To support the implementation of Measure GHG-07: Increase EV Charging and ZEV Infrastructure, the County should ensure that EV charging infrastructure is located in areas of parking lots that also have shading to increase charging efficiency and reduce battery degradation.	Additional Detail Added	Action GHG-07-e edited to include: "Installation of charging infrastructure should be located in shaded areas of parking lots when practical, and installation in shaded areas should be considered to increase charging efficiency."

Public Comment Suggestion	Character of Edit Made to CAP	Description of Edit Made to CAP
Actions GHG-11-e and GHG-11-h encourage partnerships and community plans that would improve pedestrian access to public transit. As the County conducts discussions with partners and develops actionable community plans, Sac Metro Air District recommends incorporating infrastructure for heat mitigation such as tree shading, solar arrays, shade structures, and/or the installation of cool pavements and cool walls at transit stops to improve rider comfort, safety, and accessibility. These improvements to the built environment would bolster pedestrian use of existing transit services and reduce vehicle miles traveled (VMT).	Added Implementation Action	Action TEMP-08-g: Require County-led active transportation and public transit infrastructure modifications and upgrades to incorporate shading, preferably in the form of trees, when upgrades to facilities are performed. Encourage modifications led by SacRT to also incorporate shading in the form of trees.
SHRA Electrification. The County should consider electrifying the public housing it manages through SHRA.	Added Implementation Action	Action GHG-04-p: Partner with Sacramento Housing and Redevelopment Agency (SHRA) and SMUD to identify appropriate sites and funding sources for electrifying SHRA managed housing developments.
GHG-05: Standard not Substantiated for Multi-Family Units. The stated EDR1 standard is apparently meant to apply to all residential units, but the cited substantiating study addresses only single-family homes: Appendix E, GHG Quantification Approach (p. 33) cites to reference, "2022 Cost Effectiveness Analysis: Single Family New Construction". Please correct or justify this reference.	Clarifying Edit	Action GHG-05-a was clarified to include "an Energy Source Compliance Margin of 11% for multifamily residential" and this clarification was added to Appendix E. In Appendix E, it was clarified that an Energy Source Compliance Margin of 11% would achieve similar GHG reductions as an EDR1 11.5 margin, making the assumptions for GHG reductions appropriate for all new residential units, regardless of whether new units are single-family or multifamily.
Actions GHG-04 a,c,d, e,f, and g: develop standards and triggers for existing residential building efficiency and decarbonization. Language for the planned residential ordinance is unclear and needs to be re-written. It refers to a "cost effectiveness score" when the score actually represents a "cost-effective efficiency score".	Clarifying Edit	The term "cost-effectiveness score" has been replaced throughout the CAP, including Measure GHG-04 and relevant appendices, with "cost-effective retrofit measures score" to provide clarification on the intent of Measure GHG-04.
In order to promote water efficient landscapes, the County should develop a list of drought tolerant plants for use in local landscaping. The list should substantially focus on California native plants due to their inherent adaptation to our local climate and their ability to support local pollinators and wildlife. This list should include pertinent information needed for plant selection such as: size, sun and shade needs, water use, and wildlife benefits	Added Implementation Action	Action GOV-05-f: Develop a list of drought tolerant plants for use in County landscaping projects which focuses on California native plants and considers ability to support local pollinators and wildlife, plant size, sun and shade needs, water use, and wildlife benefits.
GHG-09-b and GHG-09-d: How will VMT monitoring and tracking occur to ensure that self-reported data is accurate?	Additional Detail Added	Action GHG-09-b was clarified to include "annual reporting requirements and validation procedures".

Public Comment Suggestion	Character of Edit Made to CAP	Description of Edit Made to CAP
FLOOD-01-a: Provide specific funding and implementation guidelines for green infrastructure. Conduct studies to outline ranked priorities for green infrastructure development, citing the effectivity of different flood control methods. Outline priority areas and justifications for their identification.	Additional Detail Added	Action FLOOD-01-a (relabeled as FLOOD-01-b) was edited to include "Establish clear funding sources and implementation guidelines for these projects. Additionally, conduct studies to assess and rank the effectiveness of various flood control methods to help prioritize green infrastructure development. Identify key projects for implementation, prioritizing selection based on vulnerability, effectiveness, and community needs.."
FLOOD-01: Identify areas that are prone to flooding and develop both short and long-term plans for their maintenance.	Added Implementation Action	Action FLOOD-01-a: Identify areas where existing infrastructure is vulnerable to flooding and develop comprehensive short- and long-term plans for their maintenance and resilience
FLOOD-04: Develop workshops and educational materials to inform the public of vulnerable areas and evacuation routes. Make sure that evacuation plans are accessible to those without motor vehicles.	Added Implementation Actions	Action FLOOD-04-c: Host workshops and develop educational materials to inform the public about vulnerable areas and designated evacuation routes. Action FLOOD-04-d: Develop or modify evacuation plans for inclusivity, providing accessible options for individuals without motor vehicles.
FLOOD-04: Develop communication plans for emergency evacuation situations. Make sure that communications are accessible across language, literacy, and technological barriers.	Added Implementation Action	Action FLOOD-04-e: Develop comprehensive and equitable communication strategies for emergency evacuations to reach everyone, regardless of language, literacy levels, or access to technology.
FLOOD-12-a: Develop a plan to address bare land on private property, including:• Create incentives for private property owners to replant bare lands.• Create guidelines for the appropriate vegetation species to plant. Provide resources, including programs with relevant organizations, similar to the tree planting services that the Sacramento Tree Foundation provides in urban areas.	Added Implementation Action	Action FLOOD-12-a: Develop a plan to address bare land on private property, including creating incentives for private property owners to replant bare lands and developing guidelines for the appropriate vegetation species to plant. (See also Measure GHG-02, “Expand the Urban Forest,” and associated actions in Chapter 2 of the CAP; as well as Temp-08, “Increase Parking Lot Shading, Landscaping, and Urban Greening, Prioritizing EJ Communities”, and associated actions, in this chapter).
SLR-05: Publish maps with provisional areas for future development, in response to sea level rise. What measures will be taken to mitigate sprawl during such development?	Added Implementation Action	Action SLR-05-b: Publish sea level rise maps showing provisional areas for future development.
SLR-05: Outline measures and resources to assist lower income and other vulnerable populations to relocate ahead of emergency conditions.	Added Implementation Action	Action SLR-05-c: Outline plans, measures and resources to assist vulnerable communities to relocate ahead of emergency conditions resulting from sea level rise.

Public Comment Suggestion	Character of Edit Made to CAP	Description of Edit Made to CAP
WATER-03: Develop a program between farmers and local groundwater sustainability agencies to divert floodwater during the rainy season.	Added Implementation Action	Action WATER-03-d: Create a collaborative framework between farmers and local groundwater sustainability agencies to capture and divert floodwater during rainy seasons for groundwater recharge, ensuring water availability during dry seasons and enhancing long-term water supply sustainability.
WATER-04: Evaluate the possibility of using greywater for outdoor landscaping in residential areas. Develop incentives for property owners to use greywater.	Added Implementation Action	Action WATER-04-d: Conduct a feasibility study to evaluate establishing requirements for dual-plumbing to support on-site greywater use in new residential single-family, residential multifamily, and commercial buildings.
GHG-13: Adopt a form-based code based on Floor Area Ratio (FAR) rather than unit caps	Added Implementation Action	Action GHG-13-g: Adopt a form-based code based on floor area ratios for infill areas and corridors, such as Stockton Boulevard, when determined beneficial to reducing housing costs and increasing housing density.
GHG-10: Abolish Parking minimums	Additional Detail Added	Action GHG-10-b was edited to include: "lower or eliminate minimum parking requirements".
GHG-13: Any new revenue measures meant to support sustainable housing development (such as the proposed “infill fee”) will also go a lot further if they are paired with measures to reduce the baseline costs of development. Sacramento County should lower the costs of infill development by conducting a holistic review of its current development standards and permitting practices. The County should minimize the number of projects subject to discretionary review or that need deviations from the adopted standards to proceed.	Added Implementation Action	Action GHG-13-h: Conduct a review of existing development standards and permitting process to evaluate measures to reduce the baseline costs of housing in infill areas such that Infill Fee funds can provide additional value and reduce housing costs in infill areas.
Sacramento County needs to support solar-powered resiliency centers, provide sufficient air conditioning during extreme heat, and retrofit existing buildings so that air conditioning can be installed where people live.	Added Implementation Action	Action TEMP-03-d: Improve the resilience of County-owned cooling centers and reduce dependence on diesel generators by installing solar panels, battery storage systems, and microgrids, prioritizing centers in and near EJ communities.
GHG-04: Increase pre-emptive education for HPWH replacement so that residents can engage in preplanning before equipment requires emergency replacement.	Additional Detail Added	Action GHG-04-j was edited to include: "and encourage planning for equipment replacement before failure occurs during emergencies".
GHG-01: In addition, the Ag Commissioner would not be the correct entity to have responsible to continually monitor and post grant opportunities. The Ag Commissioner’s website should only have a link to direct farmers to the UCCE website for grant opportunities and assistance.	Clarifying Edit	Action GHG-01-e was edited to read " Work with UCCE and other partners to provide links to information on relevant current and upcoming carbon farming and healthy soil grant opportunities on the County's website, including semi-annual reviews and updates to grant opportunities. Include a hyperlink to this list in any external communications, such as newsletters or engagement materials for other programs." The implementation lead of GHG-01-e was also changed to CEO,SM.

Public Comment Suggestion	Character of Edit Made to CAP	Description of Edit Made to CAP
We are concerned with the financials in Appendix F which shows funding for only one year for GHG-07, not annually for five or six years."	Corrected Error	A calculation error has been identified in calculation of annual and total costs for five years for implementation of Measure GHG-07. This error is corrected in Appendix F.
GHG-07: Recommend a three year review cycle to increase efficiency and avoid expenditures on outdated plans	Additional Detail Added	Action GHG-07-d edited to include: "The strategy identify methods and procedures for monitoring progress and evaluating the effectiveness of the strategy, and the strategy should be reviewed and updated every three years to reflect technology and market trends."
GHG-03: SMUD recommends that, where appropriate, EV charging can be included as part of this co location plan because renewable energy & battery can help moderate the impacts of EV charging on local grids.	Additional Detail Added	Action GHG-03-a edited to include: " During the assessment of sites, the potential for colocation of EV charging infrastructure will be considered. Following completion of the feasibility study, the County will incorporate feasible renewable energy and battery storage projects into the County's Capital Improvement Plan (CIP) to ensure funding for construction projects."
SMUD has completed electrification measures for approximately 2,900 low-income customers in the Energy Assistance Program Rate (EAPR) since 2019 at no cost, including heat pump space heaters, heat pump water heaters, induction cooktops, and weatherization and energy efficiency measures. With over 100,000 low-income residents in SMUD territory, significant collaboration will be needed to secure the funds to facilitate decarbonization for these communities. SMUD has supported the City of Sacramento's efforts to secure grant funds for low-income electrification from the TECH Quick Start Program and welcomes the opportunity to collaborate with the county and other local agencies in future grant opportunities to address this important need.	Added Implementation Action	Action GHG-04-p: Partner with Sacramento Housing and Redevelopment Agency (SHRA) and SMUD to identify appropriate sites and funding sources for electrifying SHRA managed housing developments.
GHG-07: SMUD recommends providing a definition of the word "Charger"	Clarifying Edit	The Measure Summary for GHG-07 was edited to clarify "current and future EV charging types"
TEMP-03: The measure proposes the county's completion of a study to evaluate needs for additional cooling centers in environmental justice communities; this action would allow SMUD to plan future microgrids to strengthen the reliability of services during grid outages. In addition, many cooling centers will likely be backed up by diesel generators. SMUD welcomes the opportunity to explore with the county the extent to which these diesel generators can be replaced by 100% renewable energy microgrids to reduce carbon and criteria pollutant emissions.	Added Implementation Action	Action TEMP-03-d: Improve the resilience of County-owned cooling centers and reduce dependence on diesel generators by installing solar panels, battery storage systems, and microgrids, prioritizing centers in and near EJ communities.

Public Comment Suggestion	Character of Edit Made to CAP	Description of Edit Made to CAP
There are a few areas that SMUD believes collaboration with the county on implementing resiliency measures will be most effective. These areas include development of microgrid-powered resiliency centers; optimal co-location of solar, energy storage, and EV chargers to reduce costs and minimize strain on the grid; and educational campaigns on electric usage during extreme heat and participation in SMUD's load flexibility programs such as My Energy Optimizer, PowerDirect® Automated Demand Response and Virtual Power Plant.	Additional Detail Added	Action TEMP-10-a was edited to include: The County will work with SMUD to improve the electric grid's reliability so that the electricity needs of customers can be met at all times. Potential resiliency measures include but are not limited to: • Microgrid-powered resiliency centers; • Optimal co-location of solar PV, energy storage, and EV chargers to reduce costs and minimize strain on the grid; • Educational campaigns to support reduced electricity usage during extreme heat; and • Campaigns to encourage participation in SMUD's load flexibility programs such as My Energy Optimizer, PowerDirect® Automated Demand Response and Virtual Power Plant.
The County must explain how these off-model adjustments were determined, and demonstrate that the adjustments were reasonable assumptions. Namely, how the ABAU Vehicle Emission Factors were calculated."	Additional Detail Added	Additional detail on the methods and sources used to estimate legislative adjusted business-as-usual GHG emissions was added, specifically for the incorporation of Advanced Clean Cars II and Advanced Clean Fleets and the associated vehicle emission factors.
The County must clarify that Measure GHG-08 will utilize funds collected from the Program for strictly in-county VMT mitigation, and must ensure that the forthcoming feasibility criteria adequately require onsite VMT mitigation	Additional Detail Added	GHG-08-a was edited to clarify that VMT mitigation projects would be in the unincorporated County. This detail was clarified in the description of GHG-08 on page 2-40 to replace "projects in the region" with "projects in the unincorporated County".
GHG-13 should require periodic reassessments as a specific action item, and identify clear funding	Additional Detail Added	GHG-13-a was edited to include " Perform comprehensive reviews of the success and opportunities of the infill program every 5 years.", as part of the Infill Coordinator position.
The CAP's obtainment of its targets depends on projects conforming to the future zoning amendments and plans. Therefore, the CAP and SEIR must be revised to specify that projects cannot rely on the Consistency Checklist and CAP for GHG streamlining until the County	Clarifying Edit	The Preliminary Draft CAP Consistency Checklist (Appendix B) has been updated to require projects wishing to streamline GHG emissions analysis under the CAP to comply with all applicable GHG measures in the CAP immediately after adoption, regardless of whether the formal action has been completed by the County to adopt ordinances or other implementing actions.

Notes: CAP = climate action plan, SEIR = Subsequent Environmental Impact Report; GHG = greenhouse gas, VMT = vehicle miles traveled; EV = electric Vehicle; SMUD = Sacramento Municipal Utility District;

Source: Ascent Environmental 2024.

APPENDIX

B

Preliminary Draft Climate Action Plan Consistency Review Checklist

Climate Action Plan Consistency Review Checklist

1 Introduction

The County of Sacramento (County) Climate Action Plan (CAP) identifies measures, and actions to meet the County's targets to reduce greenhouse gas (GHG) emissions by 2030 and 2045, consistent with the California Air Resources Board's (CARB) 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) and statewide GHG reduction targets pursuant to Senate Bill (SB) 32 and Assembly Bill (AB) 1279. The CAP's attainment of the County's GHG reduction targets is the result of (1) several initiatives to be directly implemented by the County and (2) incorporating GHG-reduction features into the construction and operation of development projects (including County-initiated and privately initiated projects).

The CAP has been prepared in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15183.5, which allows for public agencies to tier and streamline the analysis of GHG emissions for discretionary projects undergoing environmental review that analyze and mitigate GHG emissions consistent with applicable GHG reduction measures in a larger "plan for the reduction of greenhouse gases." As noted and explained in detail in Chapter 4 of the CAP, the CAP, CAP Consistency Review Checklist (Checklist), and the Subsequent Environmental Impact Report (SEIR) for the CAP collectively include the required elements of "a plan for the reduction of greenhouse gas emissions" set forth in CEQA Guidelines Section 15183.5(b). Therefore, the CAP is a CEQA-qualified climate action plan.

The purpose of the Checklist is three-fold:

1. Incorporate applicable GHG reduction measures and actions into projects when they are not otherwise binding and enforceable,
2. Provide a streamlined environmental review process for GHG emissions analysis for projects that require and are not exempt from environmental review pursuant to CEQA and determined to be consistent with the CAP
3. Provide a guide for projects to demonstrate consistency with local plans, policies, and regulations adopted for the purpose of reducing GHG emissions as part of the completion of the CEQA Guidelines Appendix G Environmental Checklist.

The CAP estimates unincorporated Sacramento County's future emissions based on the growth projections outlined in the General Plan's Land Use and Housing Elements, as well as reasonably expected growth induced by in progress general plan amendments and rezoning efforts. . Therefore, projects can use the Checklist if they are consistent with the General Plan and forecast assumptions used in the CAP. This consistency allows a project to streamline its analysis of GHG impacts by using the existing programmatic environmental review contained in the certified Final SEIR for the CAP. In doing so, pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to climate change resulting from the project's GHG emissions may be determined not to be cumulatively considerable. This approach is consistent with the

DRAFT

recommendations of CARB in the 2022 Scoping Plan that "CEQA-qualified CAPs" can allow eligible projects to streamline their determination of significance for GHG emissions.[1] It is also consistent with the Association of Environmental Professionals Climate Change Committee's best practices for tiering from qualified GHG reduction plans that demonstrate substantial progress toward meeting the next milestone statewide planning reduction target (i.e., a 40 percent reduction below 1990 levels by 2030 as set forth by SB 32).[2]

This Checklist provides a mechanism for projects to specifically identify "those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project" per Section 15183.5(b)(2) of the CEQA Guidelines.

2 Alignment with the 2022 Scoping Plan

Appendix D of CARB's 2022 Scoping Plan provides guidance for local governments and lead agencies for how local climate action planning can support the State of California's climate goals.[3] CARB reiterates that a CAP that has been adopted through the CEQA review process and meets the criteria specified in CEQA Guidelines Section 15183.5(b) for a "plan for the reduction of greenhouse gas emissions"—such as the County of Sacramento's CAP—is a "CEQA-qualified CAP" that can allow eligible projects to streamline their determination of significance for GHG emissions.

Streamlining CEQA GHG analysis for future projects by demonstrating consistency with a CAP involves evaluating whether a project demonstrates consistency with "all applicable GHG reduction measures identified in the CAP." CARB notes that such consistency can be determined by using CAP compliance checklists, which can be "included as part of the proposed project's CEQA analysis documenting the project's consistency with the CEQA-qualified CAP."

The Checklist is therefore consistent with CARB's guidance in the 2022 Scoping Plan as a valid way for discretionary projects to streamline their analysis of GHG impacts.

Recommended Project Attributes for Residential and Mixed-Use Projects

Appendix D of the 2022 Scoping Plan includes a list of "key project attributes" for residential and mixed-use projects. CARB states that if a project incorporates these attributes, the project would "accommodate growth in a manner consistent with State GHG reduction and equity prioritization goals" and would be "***clearly*** consistent with the State's climate goals." Further, such projects would be "consistent with the Scoping Plan or other plans, policies, or regulations adopted for the purposes of reducing GHGs" and that therefore, "the GHG emissions associated with such projects may result in a less-than-significant GHG impact under CEQA."

[1] California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality.* Appendix D, "Local Actions." November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf. Accessed in January 2023.

[2] Association of Environmental Professionals. 2016. *Final White Paper Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California.* October 18, 2016. Available: https://califaep.org/docs/AEP-2016_Final_White_Paper.pdf.

[3] California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality.* Appendix D, "Local Actions." November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf. Accessed in January 2023.

3 Checklist Applicability

The Checklist applies to discretionary projects that are subject to and not exempt from CEQA (referred to herein as "projects") and that seek CEQA streamlining of GHG emissions analysis. The Checklist is therefore a critical implementation tool for incorporating GHG reduction measures and actions that are not otherwise binding and enforceable into development projects (including new development applications and expansions or renovations of existing development). If a project does not seek streamlining of GHG emissions or analysis or is otherwise unable to complete the Checklist, it will be required to complete a project-specific GHG emissions analysis as part of its CEQA review. For projects that complete a project-specific GHG emissions analysis, applicable "CAP consistency requirements" contained within the Checklist are strongly encouraged but are not required.

4 Checklist Overview

The Checklist establishes a two-step process that project proponents shall follow to determine if projects are consistent with the CAP and whether they may have a significant cumulative impact under the County's adopted GHG thresholds of significance.

Step 1 of the Checklist assesses a project's consistency with the County's General Plan and the forecast assumptions used in the CAP to estimate future GHG emissions from activities occurring in the unincorporated area and County operations. Because the CAP includes growth forecasts based on implementation of the adopted General Plan, the first step in determining a project's consistency with the CAP is to demonstrate its consistency with the land use designations and development intensities in the existing General Plan. All projects must demonstrate consistency with existing General Plan land use designations, and associated development densities and intensities.

If a project is determined consistent with the General Plan and forecast assumptions under Step 1, then Step 2 of the Checklist should be completed. If a project is not consistent with the General Plan and forecast assumptions, then it shall not use the CAP Consistency Review Checklist for CEQA streamlining.

Step 2 of the Checklist identifies the specific CAP measures or associated implementing actions that are applicable to projects in the form of performance standards or other requirements ("consistency requirements") that project proponents are required to meet or incorporate into their projects to demonstrate consistency with the CAP. In order to streamline GHG emissions analysis, project proponents are required to demonstrate project consistency with the CAP or demonstrate why the consistency requirements are not applicable to their project.

Projects that are consistent with the General Plan and CAP, as determined using Steps 1 and 2 in this Checklist, may rely on the CAP for the cumulative impacts analysis of GHG emissions under CEQA. Projects that are not consistent with the CAP as determined by Steps 1 or 2 of the Checklist, shall not use the CAP Consistency Checklist for CEQA streamlining.

DRAFT

Projects That Are Not Eligible for CEQA Streamlining

In some cases, a project may not be able to comply with all CAP consistency requirements. This may be because the project is inconsistent with the General Plan's growth projections as described in Step 1. Or a project may not be able to feasibly incorporate all CAP consistency requirements as identified in Table 1 or Table 2 and discussed in Step 2; such a project may further be unable to adequately identify alternative project measures to achieve a similar level of GHG reduction to each CAP consistency requirement with which a project cannot comply. Such projects are not eligible to streamline environmental review of their GHG impacts using the CAP's Final SEIR and may be required to prepare a comprehensive project-specific analysis of GHG emissions pursuant to the CEQA Guidelines (including the CEQA Guidelines Appendix G Environmental Checklist).

A comprehensive project-specific analysis of GHG emissions must be prepared for any project that elects not to use the Checklist for CEQA streamlining by completing Table 1 and (if applicable) Table 2. Such an analysis shall quantify existing and projected GHG emissions and evaluate potential impacts pursuant to the CEQA Guidelines (including the CEQA Guidelines Appendix G Environmental Checklist). It is encouraged that the project incorporate all applicable CAP consistency requirements in the Checklist, though this is not required.

If a project would not be consistent with the General Plan's land use designations or CAP GHG emissions forecast assumptions, however, then it would not be eligible for streamlining. Projects requiring General Plan amendments that would increase density or intensity beyond what is allowed in the General Plan and reflected in the GHG emission projections contained in the CAP would be subject to the County's adopted GHG thresholds and would be required to conduct a project-level assessment. Such an analysis would quantify existing and projected GHG emissions for the project and would incorporate applicable items from the Checklist to the maximum extent feasible, along with any identified project-specific mitigation measures. If the project is requesting a General Plan amendment but not requesting an increase in density or intensity beyond what is allowed in the General Plan and GHG emission projections contained in the CAP, then the project could achieve consistency with the CAP by implementing applicable GHG emissions reduction measures as adopted in the CAP and outlined in the Checklist. An analysis would be required to demonstrate how the project would achieve consistency with the CAP.

5 Checklist Completion and Review Procedures

General procedures for Checklist completion and review are described below, with more specific directions provided in Steps 1 and 2 of the Checklist.

1. The County's Department of Planning and Environmental Review (PER) reviews development applications and makes determinations regarding project environmental review requirements under CEQA.
2. The project proponent shall complete the Checklist, and must provide substantial evidence to demonstrate project consistency with the CAP.
3. When completing Step 2 of the Checklist, the project proponent must provide substantial evidence demonstrating how each applicable CAP consistency requirement or performance standard will be implemented by or incorporated into the project.

DRAFT

4. CAP consistency requirements and performance standards determined to be applicable to the project in Step 2 of the Checklist shall be required as conditions of project approval.
5. Projects that cannot demonstrate consistency with the CAP using this Checklist are required to prepare a separate GHG analysis as part of the CEQA document prepared for the project and may be required to prepare an Environmental Impact Report (EIR).

6 Checklist Updates

The Checklist is an administrative document that may be updated by the County from time to time to comply with amendments to state laws or court directives, or to remove measures that may become mandatory through future updates to state or local codes. Administrative revisions to the Checklist will be limited to changes that do not trigger a subsequent EIR or a supplement to the SEIR for the CAP pursuant to CEQA Guidelines Section 15162. Administrative revisions, as described above, will not require approval by the Board of Supervisors (Board).

Comprehensive updates to the Checklist will be coordinated following each CAP update.

DRAFT

Application Information

Contact Information

Project Name: _____

Property Address and APN: _____

Applicant Name and Co.: _____

Contact Phone: _____ Contact Email: _____

Was a consultant retained to complete this checklist? ☐ Yes ☐ No
If Yes, complete the following:

Consultant Name: _____ Contact Phone: _____

Company Name: _____ Contact Email: _____

Project Information

1. What is the size of the project site (acres [gross and net])? _____
2. Identify all applicable proposed land uses (indicate square footage [gross and net]):
   - ☐ Residential (indicate # of single-family dwelling units): _____
   - ☐ Residential (indicate # of multifamily dwelling units): _____
   - ☐ Commercial (indicate total square footage [gross and net]): _____
   - ☐ Industrial (indicate total square footage [gross and net]): _____
   - ☐ Agricultural (indicate total acreage [gross and net]): _____
   - ☐ Other (describe): _____
3. Provide a description of the project. This description should match the project description used for the CEQA document. The description may be attached to the Checklist if there are space constraints.

DRAFT

Step 1: Demonstrate Consistency with the General Plan

The CAP uses growth projections based on the implementation of the adopted General Plan to estimate future GHG emissions from activities occurring in the unincorporated area and County operations. Therefore, the first step in determining a project's consistency with the CAP is to demonstrate its consistency with the General Plan.

All projects must demonstrate consistency with existing General Plan land use designations and associated development densities and intensities. If a project is consistent with the General Plan, then Step 2 of the Checklist should be completed. If a project is not consistent with the General Plan, then it shall not use the CAP Consistency Checklist for CEQA streamlining.

Step 1: Demonstrate Consistency with the General Plan		
CAP Consistency Requirement	**Yes**	**No**
1. **Is the proposed project consistent with the existing 2011 General Plan land use designations and the uses and development densities and intensities?** If "**Yes**," Questions 2, 3, and 4 below are not applicable and the project shall proceed to Step 2: Demonstrate Consistency with CAP Measures and Actions. If "**No**," proceed to question 2 below.	☐	☐

Provide substantial evidence supporting the project's General Plan consistency determination. Attach additional information as needed.

DRAFT

Step 1: Demonstrate Consistency with the General Plan		
CAP Consistency Requirement	**Yes**	**No**
2. **Is the project included in the growth forecasts of the CAP, as shown in Table 3 (*Communities and Associated Land Use Assumptions for 2045 Included in the GHG Emissions Forecast*) in CAP Appendix D *GHG Forecasts and Targets Analysis,*** **AND** **Does not require amendment to the Urban Policy Area (UPA) and/or Urban Services Boundary (USB)?** If the answer to both of these questions is "**Yes**", Questions 3 and 4 below are not applicable and the project shall proceed to Step 2: Demonstrate Consistency with CAP Measures and Actions. If "**No**", proceed to Question 3 below.	☐	☐

Provide substantial evidence supporting the project's CAP growth forecast consistency determination. Attach additional information as needed.

DRAFT

Step 1: Demonstrate Consistency with the General Plan		
CAP Consistency Requirement	**Yes**	**No**
3. **Is amendment to the Urban Policy Area (UPA) and/or Urban Services Boundary (USB) required for the project?** If **"No"**, proceed to Question 4 below. If "**Yes**", the applicant must conduct a full GHG impact analysis for the project as part of the CEQA process. The County strongly encourages the project to incorporate each of the applicable measures identified in Step 2: Demonstrate Consistency with CAP Measures and Actions to mitigate cumulative GHG emissions impacts, though this is not required.	☐	☐
4. **If the proposed project is not consistent with the General Plan land use or zoning designations, or the growth forecasts of the CAP, does the project include a land use plan and/or zoning designation amendment that would result in equivalent or less GHG emissions when compared to the existing designations?** Methodology: Compare the maximum buildout of the existing designation and the maximum buildout of the proposed designation using the California Emissions Estimator Model (CalEEMod) and standard GHG modeling protocol and methods pursuant to CEQA. If "**Yes**", attach to this checklist the estimated project emissions under both existing and proposed designation(s) for comparison. Compare the maximum buildout of the existing designation and the maximum buildout of the proposed designation. If full buildout of the proposed project would result in the same or fewer GHG emissions than full buildout of the existing designations, proceed to Step 2: Demonstrate Consistency with CAP Measures and Actions. If "**No**", the project proponent must conduct a full GHG impact analysis for the project as part of the CEQA process. The project shall incorporate each of the applicable measures identified in Step 2: Demonstrate Consistency with CAP Measures and Actions to mitigate cumulative GHG emissions impacts.	☐	☐

DRAFT

Step 2: Demonstrate Consistency with CAP Measures and Actions

The completion of this Checklist will document a project's compliance with the GHG reduction measures in the County's CAP that are applicable to new development and building retrofits and renovations. The compliance requirements and performance standards apply to development projects that include discretionary review, require environmental review, and, therefore, are not exempt under CEQA.

To demonstrate consistency with the CAP, all applicable Checklist questions must be answered "Consistent," and documentation provided that substantiates how compliance would be achieved. For measures for which a "Consistent" is indicated, the features must be demonstrated as part of the project's design and described. All applicable requirements in the Checklist will be included in the conditions of approval for issuance of building permit stage of project approval for projects that are using the checklist for streamlined environmental review. Projects that are using the checklist to only demonstrate CAP consistency for CEQA Guidelines Appendix G checklist, and not for streamlined environmental review, may not have requirements of the checklist included as conditions of approval.

If any questions are marked with a "Not Consistent," the project cannot be determined to be consistent with the CAP, and project specific GHG analysis and mitigation would be required. The project applicant should only select "Not Consistent" if it is infeasible, as defined by the CEQA Guidelines, for the project to comply with the CAP consistency requirement. Sufficient documentation of such infeasibility must be supplied to the County to support such a determination. The County retains ultimate discretion for determining the feasibility of the CAP consistency requirement for the proposed project.

If any questions are marked "N/A" (meaning "not applicable"), a statement describing why the question is not applicable shall be provided to the satisfaction of the Department of Planning and Environmental Review or building official.

For ease of reference, two sets of CAP consistency requirements are provided in this section: one set of requirements that applies to privately initiated projects (Table 1), and a second set of requirements that applies to County-initiated projects (Table 2).

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
1. Tree Planting				
The project must plant an appropriate number of trees to provide a 20 percent canopy cover over the project site (excluding parking areas).	GHG-02 (GHG-02-c)	☐	☐	☐
If the project includes parking areas, it must plant an appropriate number of trees onsite to provide a 50 percent canopy cover over parking surfaces.	GHG-02 (GHG-02-c)	☐	☐	☐
If the project removes trees, it must replace all trees with appropriate sizes and species determined by PER.	GHG-02 (GHG-02-d)	☐	☐	☐

Note:

1. Check "N/A" if the project is not a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
2. Install Electric Vehicle Charging Infrastructure				
Projects of the below types must install EV charging capability consistent with the latest version of CALGreen Tier 2 Voluntary Measures: 1. **Single-family residential new construction projects;** 2. **Multifamily residential new construction projects;** **Nonresidential new construction projects**, which must include both light-duty and medium-/heavy-duty requirements;	GHG-07 (GHG-07-a)	☐	☐	☐
For **multifamily residential and nonresidential projects**, must include signage for EV charging facilities for both wayfinding and parking restrictions	GHG-07 (GHG-07-a)	☐	☐	☐
For **nonresidential projects involving additions or alterations to existing buildings or parking facilities** which include an increase in power supply to an electric service panel as part of a parking facility addition or alteration, a new solar PV system is installed covering existing parking spaces, or when additions or alterations to existing buildings are triggered pursuant to CALGreen and includes an increase in power supply to an electric service panel, the project must be consistent with the latest version of CALGreen Tier 2 Voluntary Measures for EV charging.	GHG-07 (GHG-07-b)	☐	☐	☐
For **multifamily residential projects involving additions or alterations to existing buildings or parking facilities** which include new parking facilities, a new solar PV system covering existing parking spaces, new electrical systems or lighting of existing parking facilities and the work requires a building permit, or when additions or alterations to existing buildings are triggered pursuant to CALGreen and includes an increase in power supply to an electric service panel, the	GHG-07 (GHG-07-c)	☐	☐	☐

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
project must be consistent with the latest version of Tier 2 Voluntary Measures for EV charging.				
For projects including a **gas station undergoing major renovation** with a permit value over $300,000, at least one EV DC fast charging station must be installed for every 10 fuel dispensers.	GHG-07 (GHG-07-f)	☐	☐	☐

Note:

1. Check "N/A" if the project is not a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
3. Increase Active Transportation				
If both of the following conditions are met, the project must incorporate sidewalk and bikeway improvements from the County's Active Transportation Plan. 1. Intersection or roadway segment improvements are proposed and/or required as part of the project, AND 2. The County's Active Transportation Plan identifies sidewalks or on-road bikeway facilities at intersection(s) or on roadway segment(s) that would be improved as part of the project. *Check "N/A" if the project does not meet both conditions.*	GHG-12 (GHG-12-a)	☐	☐	☐
If the project includes **multifamily residential, commercial, industrial, or institutional uses**, the project must include short-term and long-term employee bicycle parking.	GHG-12 (GHG-12-b)	☐	☐	☐

Note:

1. Check "N/A" if the project is not a privately initiated project.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
4. Reduce Vehicle Miles Traveled				
The project must develop and implement a Transportation System Management (TSM) Plan to achieve a 15 percent reduction in annual project-generated vehicle miles traveled (VMT) below the regional average. Project applicants must report annual employee commute trips and achieved VMT reductions to align with the 15 percent target. The Project must join the 50 Corridor Transportation Management Association/Sacramento Transportation Management Association.	GHG-09 (GHG-09-a)	☐	☐	☐

Note:

1. If "Not Consistent" was selected because VMT cannot be reduced to required levels, appropriate fees must be paid into the County's VMT Mitigation Fee to reduce VMT to reduce VMT to the appropriate levels through offsite mitigation, if the County VMT Mitigation Fee program has been established.
2. Check "N/A" if the project is not a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
5. Increase Transit Ridership				
The project must complete assessments of public transit with the County's Traffic Impact Analysis (TIA) Guidelines , including but not limited to: 1. Accessibility of transit, including Americans with Disabilities Act (ADA) accessibility, to pedestrians, in the project vicinity. 2. Need for route extensions/connectors and bus stops. 3. Adequacy of pedestrian and bicycle connections to transit, including bike paths and parking. 4. Impact of project-generated automobile trips on transit speeds and dwell time. 5. Assessment of project-generated transit trips on transit capacity.	GHG-11 (GHG-11-a)	☐	☐	☐
If the project is near transit, it must prioritize measures to improve and support transit access, including but not limited to: 1. Prioritize walking and biking connections to transit. 2. Allow for space and utility connections for high-quality bus stops at project frontages (e.g., electricity for bus stop lighting, signage, and surveillance, space for bike parking/lockers) in coordination with SacRT. 3. Prioritize improving transit quality at the project site over private shuttles. 4. Encourage transit use, for example through transit passes and/or other transit-specific initiatives.	GHG-11 (GHG-11-b)	☐	☐	☐

Note:

1. Check "N/A" if the project is not a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
6. Reduce Parking Minimums				
If the project is a **residential project in a transit priority area**, the project must lower or eliminate parking minimums and include shared parking facilities.	GHG-10 (GHG-10-b)	☐	☐	☐

Note:

1. A 'Transit Priority Area' is defined in California Public Resource Code, Section 21099 as an area within one-half mile of a major transit stop that is existing or planned
2. Check "N/A" if the project is not a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
7. Decarbonize New Buildings				
All Projects must use 100 percent carbon-free electricity for all operations by 2030. This can be achieved through utility-supplied electricity (such as from SMUD), on-site renewable electricity generation (such as rooftop solar), or both.	GHG-03 (GHG-03-b, GHG-03-c, GHG-03-d)	☐	☐	☐
Single-family residential projects must meet or exceed a modeled EDR1 (hourly source energy) metric of 11.5 points above the 2022 Title 24, Part 6 statewide performance minimum (the "standard design building").	GHG-05 (GHG-05-a)	☐	☐	☐
Multifamily residential projects must meet or exceed a modeled Source Energy Margin of 11 percent above the 2022 Title 24, Part 6 statewide performance minimum (the "standard design building").	GHG-05 (GHG-05-a)	☐	☐	☐
Nonresidential projects must reduce non-electricity-related GHG emissions by 85 percent below 2022 Title 24, Part 6 equivalent emissions for the respective building type.	GHG-05 (GHG-05-a)	☐	☐	☐

Note:

1. Check "N/A" if the project is not a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
8. Decarbonize Existing Buildings				
All Projects must use 100 percent carbon-free electricity for all operations by 2030. This can be achieved through utility-supplied electricity (such as from SMUD), on-site renewable electricity generation (such as rooftop solar), or both.	GHG-03 (GHG-03-b, GHG-03-c, GHG-03-d)	☐	☐	☐
Residential projects must meet or exceed a modeled energy efficiency that is half of the maximum cost-effective retrofit measures score at time-of-retrofit if the project if before 2030. The maximum cost-effective retrofit measures score for projects built after 2030.	GHG-04 (GHG-04-a)	☐	☐	☐
Nonresidential projects must: 1. Participate in and comply with requirements of any ongoing County building performance standards program, OR 2. Demonstrate measures to reduce non-electricity-related GHG emissions by 19 percent by 2030 and 85 percent by 2045, below building baseline levels.	GHG-04 (GHG-04-b)	☐	☐	☐

Note:

1. Check "N/A" if the project is not a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
9. Use Zero-Emission Construction Equipment				
The project must use zero-emission construction equipment as commercially available.	GHG-16 (GHG-16-d)	☐	☐	☐

Note:

1. Zero-emission construction equipment is considered "commercially available" if the vehicle is capable of serving the intended purpose and is included in the California Air Resources Board's Advanced Clean Equipment (ACE) List, included in California Air Resources Board's Clean Off-Road Equipment Voucher Incentive Project (CORE) catalog, or listed as available in the US on the Global Commercial Vehicle Drive to Zero Off-Road Zero-Emission Technology Inventory (ZETI) inventory. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made.
2. Check "N/A" if the project is not a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
10. Increase Organic Waste Diversion				
The project must provide proper storage, collection, and loading of organics in a manner that is convenient and safe for all users of the building. The project must ensure that collection containers for organics are of sufficient sizes, are kept clean, and are clearly labeled. The project must ensure sufficient pick-up of collection containers to meet the needs of the occupants.	GHG-14 (GHG-14-c)	☐	☐	☐
The project must provide space for multi-stream collection containers for both recycling and organics in any location where a solid waste container is traditionally housed. This applies to both outdoor collection containers serviced by a waste hauler and indoor collection containers utilized by occupants. The project must provide educational material and training to occupants and tenants on how to properly separate organics from all other solid waste and place organics in a separate container designated for organics.	GHG-14 (GHG-14-c)	☐	☐	☐
The project must require that all single-use food service ware (plates, bowls, cups) and accessories (straws, utensils, condiment cups) served by tenants at the project site be BPI-certified compostable fiber, except where certain materials may be deemed medically necessary or necessary to ensure equal access for persons with disabilities.	GHG-14 (GHG-14-c)	☐	☐	☐
The project must require that any single-use accessories (straws, utensils, condiment cups) provided or administered by project tenants be only available on demand.	GHG-14 (GHG-14-c)	☐	☐	☐
The project must require that containers are audited annually to ensure proper service levels and to check for contamination. The project must require haulers to report findings back to occupants within 30 days and to the County as requested.	GHG-14 (GHG-14-c)	☐	☐	☐

DRAFT

Table 1. CAP Consistency Requirements for Privately Initiated Projects *(continued)*

CAP Consistency Requirement (Privately Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
The project must work with the waste hauler to provide educational materials to tenants on at least an annual basis.	GHG-14 (GHG-14-c)	☐	☐	☐
The project must provide compliance data to the County as required for any current auditing program.	GHG-14 (GHG-14-c)	☐	☐	☐

Note:

2. Check "N/A" if the project is not a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 2. CAP Consistency Requirements for County Initiated Projects

CAP Consistency Requirement (County-Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
1. Install Electric Vehicle Charging Infrastructure				
All new County buildings must be consistent with the latest version of CALGreen Tier 2 Voluntary Measures for EV charging.	GHG-07 (GHG-07-a)	☐	☐	☐
All new County buildings must be consistent with the latest version of CALGreen Tier 2 Voluntary Measures for for medium-duty and heavy-duty EV charging infrastructure.	GHG-07 (GHG-07-a)	☐	☐	☐
All new County buildings must include signage for EV charging facilities for both wayfinding and parking restrictions	GHG-07 (GHG-07-a)	☐	☐	☐
For **all County buildings involving additions or alterations to existing buildings or parking facilities** which include an increase in power supply to an electric service panel as part of a parking facility addition or alteration, a new solar PV system is installed covering existing parking spaces, or when additions or alterations to existing buildings are triggered pursuant to CALGreen and includes an increase in power supply to an electric service panel, the project must be consistent with the latest version of CALGreen Tier 2 Voluntary Measures for EV charging.	GHG-07 (GHG-07-b)	☐	☐	☐
All projects identified in the "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy" must provide the direct installation of the appropriate number of publicly available EV chargers as recommended by the "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy".	GHG-07 (GHG-07-e)	☐	☐	☐

Note:

1. Check "N/A" if the project is a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 2. CAP Consistency Requirements for County Initiated Projects *(continued)*

CAP Consistency Requirement (County-Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
2. Decarbonize County Buildings				
All County Projects must use 100 percent carbon-free electricity for all operations by 2030. This can be achieved through utility-supplied electricity (such as from SMUD), on-site renewable electricity generation (such as rooftop solar), or both.	GHG-03 (GHG-03-b)	☐	☐	☐
All new County projects should include no new natural gas infrastructure. *If answered "Not Consistent", continue to next item*	GOV-04 (GOV-04-c)	☐	☐	☐
If the project: 1. Must include natural gas or onsite fossil fuel consumption due to emergency power needs which cannot be met with battery storage, AND/OR 2. Include equipment that cannot be electrified with currently available and cost-effective technology. Include substantial evidence documenting the infeasibility of all-electric building operations.	GOV-04 (GOV-04-c)	☐	☐	☐
All existing County buildings must implement measures that reduce non-electricity-related emissions by 19 percent by 2030 and 85 percent by 2045.	GHG-04 (GHG-04-b)	☐	☐	☐

Notes: Check "N/A" if not a County-initiated project.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 2. CAP Consistency Requirements for County Initiated Projects *(continued)*

CAP Consistency Requirement (County-Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
3. Replace Outdoor Lights with LEDs				
If the project **includes streetlights**, all remaining high-pressure sodium (HPS) and mercury-vapor (MV) streetlights must be replaced with light-emitting diode (LED) technology.	GOV-06 (GOV-06-a)	☐	☐	☐
If the project **outdoor lighting**, all outdoor lighting must be LED technology.	GOV-06 (GOV-06-a)	☐	☐	☐
If the project includes a building or facility that has **existing outdoor lighting**, all remaining outdoor lighting must be replaced with LED technology.	GOV-06 (GOV-06-c)	☐	☐	☐
Note: Check "N/A" if the project is privately initiated.				

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 2. CAP Consistency Requirements for County Initiated Projects *(continued)*

CAP Consistency Requirement (County-Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
4. Use Zero-Emission Construction Equipment				
The project must use zero-emission construction equipment as commercially available.	GHG-16 (GHG-16-d)	☐	☐	☐

Note:

1. Zero-emission construction equipment is considered "commercially available" if the vehicle is capable of serving the intended purpose and is included in the California Air Resources Board's Advanced Clean Equipment (ACE) List, included in California Air Resources Board's Clean Off-Road Equipment Voucher Incentive Project (CORE) catalog, or listed as available in the US on the Global Commercial Vehicle Drive to Zero Off-Road Zero-Emission Technology Inventory (ZETI) inventory. The County shall be responsible for the final determination of commercial availability, based on all the facts and circumstances at the time the determination is made.
2. Check "N/A" if the project is a privately initiated project or is not subject to the requirements outlined above. If the project is not subject to the requirements, provide supporting evidence.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 2. CAP Consistency Requirements for County Initiated Projects *(continued)*

CAP Consistency Requirement (County-Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
5. Use Zero-Emission Landscaping Equipment				
The project must use zero emission landscaping equipment for all landscaping needs.	GHG-06 (GHG-06-a)	☐	☐	☐

Note: Check "N/A" if the project is privately initiated.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

Table 2. CAP Consistency Requirements for County Initiated Projects *(continued)*

CAP Consistency Requirement (County-Initiated Project)	Supporting Measure (Action) in CAP	Project Consistency Determination		
		Consistent	Not Consistent	N/A
6. Improve Water Efficiency				
The project must incorporate applicable measures identified in the County's Water Efficiency Plan, OR if a Water Efficiency Plan has not yet been adopted, the project must implement measures to reduce annual potable water use 29 percent below the average 2021 water consumption of a similar County building facility on a per-employee or per-square foot basis.	GOV-05 (GOV-05-a)	☐	☐	☐

Note: Check "N/A" if the project is privately initiated.

Provide substantial evidence supporting the project's consistency determination. Attach additional information as needed.

DRAFT

APPENDIX

C

2021 GHG Emissions Inventory



SACRAMENTO COUNTY 2021 GHG INVENTORY

Community-wide and Government Operations

April 2024 Corrected Final

SACRAMENTO COUNTY

Acknowledgements

Prepared By

Alex Herrin, *CivicSpark Fellow (2022-23 Service Year)*
Sustainability Program, Office of the County Executive

Staff Team

John Lundgren, *Sustainability Manager*
Sustainability Program, Office of the County Executive

Jason Scott-Sheets, *CivicSpark Fellow (2023-24 Service Year)*
Sustainability Program, Office of the County Executive

David Villanueva, *County Executive*

Review And Assistance By

Calyn Hart, ICLEI

Sacramento County Planning and Environmental Review Division

Todd Smith, Planning Director

Planning Consultant Team Review

Ascent Environmental

Environmental Science Associates

Table of Contents

1 Introduction....3
1.1 Global Warming Potential....4
2 Summary of Results....6
2.1 Community-wide....6
2.2 Government Operations....10
3 Methodology....14
3.1 Utility Emission Factors....14
3.2 Community-wide....15
3.2.1 On-Road Vehicles....15
3.2.2 Off-Road Vehicles....17
3.2.3 Building Energy....19
3.2.4 High-GWP Gases....20
3.2.5 Agriculture....21
3.2.6 Solid Waste....24
3.2.7 Wastewater....26
3.2.8 Water Supply and Stormwater....28
3.3 Government Operations....29
3.3.1 Employee Commute....29
3.3.2 Building Energy....30
3.3.3 Vehicle Fleet....31
3.3.4 Wastewater....33
3.3.5 Water Supply and Stormwater....33
3.3.6 Streetlights & Traffic Signals....34
4 Glossary....35
5 References....37

1 Introduction

Greenhouse gas (GHG) inventories are data-driven tools utilized to report and benchmark GHG emissions for a particular organization, facility, or jurisdiction. They can be used to measure the progress of GHG emission reduction measures when conducted periodically over time. This document presents Sacramento County's Community-wide and Government Operations emissions inventories for the calendar year 2021.

The Community-wide Inventory represents all GHG emissions generated within unincorporated Sacramento County along with emissions associated with activities occurring within unincorporated Sacramento County areas, including emissions that occur elsewhere because of those activities. The Government Operations Inventory represents emissions from only Sacramento County Government-owned-and-controlled facilities and operations. This document, hereafter referred to as the Inventory or the 2021 Inventory, builds upon the County's 2015 GHG inventory (Baseline Inventory), to examine if Sacramento County is making progress, stagnating, or regressing in GHG emissions reductions. This report also serves to assist the public and decision makers in understanding the relative emissions contributions of the various Community-wide and Government Operations sectors, and which of these may represent the best opportunities for further GHG reductions.

The 2021 Community-wide Inventory was developed using the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol) version 1.2 (July 2019) developed by Local Governments for Sustainability (ICLEI). The 2021 Government Operations Inventory was developed using the ICLEI Local Government Operations Protocol (LGO Protocol), version 1.1 (May 2010) developed by ICLEI.

Like the Baseline Inventory, the Government Operations Inventory covers all Scope 1 and 2 emissions, and Scope 3 emissions where applicable and sufficient data exists. A definition of emission scopes can be found in the Glossary section, as well as all other terminology that will be used throughout this report. Emission scopes are not classified for the Community-wide Inventory because, as noted by the Community Protocol, "the organization-related definitions of scopes do not translate to the community scale in a manner that is applicable, clear, and valuable" (ICLEI, 2019). Sacramento County is a member of ICLEI and utilized ICLEI's ClearPath GHG accounting software for conducting this Inventory.

Because this document presents unincorporated Sacramento County's Community-wide Inventory and Government Operations Inventory side by side, readers are advised that the Government Operations Inventory is not

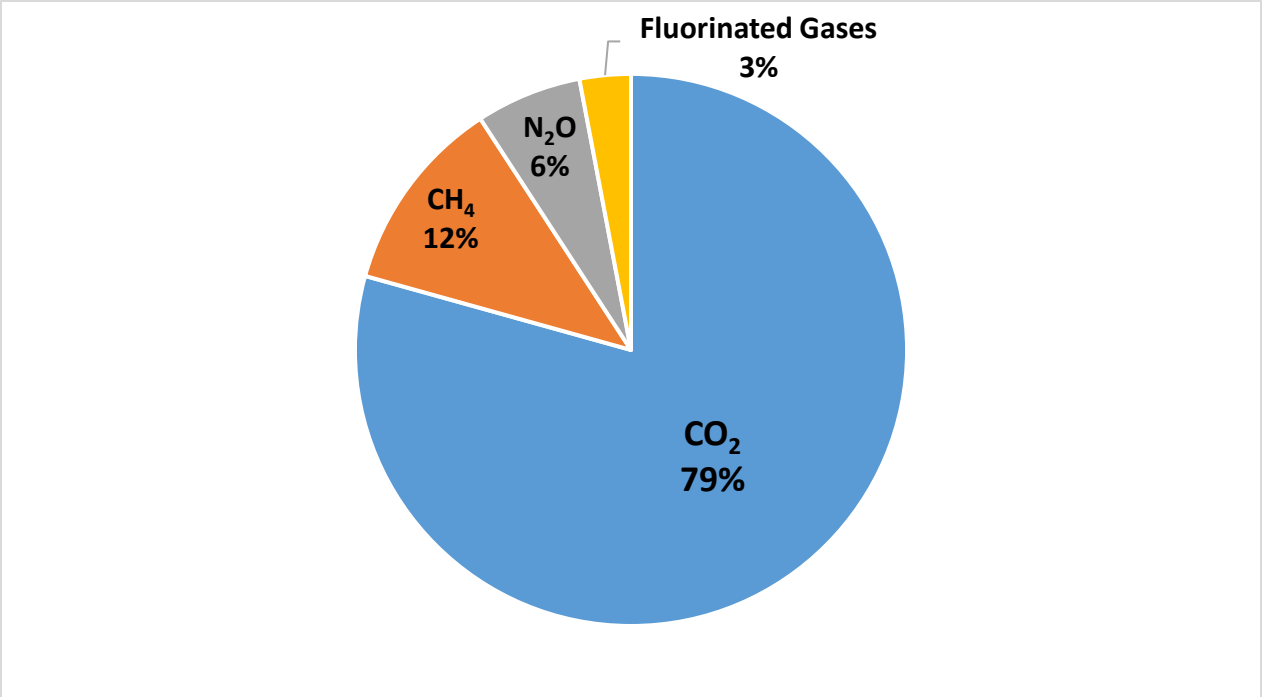
additive to the Community-wide Inventory. They are separate analyses that serve different analytical and reporting purposes. Furthermore, unlike the 2015 Inventory which was prepared by an outside consultant, the County utilized ClearPath to prepare this Inventory in-house so that it could easily repeat future inventories, with existing staff, utilizing similar methodologies and assumptions. This results in minor methodological differences between the 2015 and 2021 inventories. When making decisions regarding assumptions and methodologies, the County chose the direction that would be the most repeatable and utilize data which is the most accurate and readily available.

1.1 Global Warming Potential

GHGs contribute to climate change by trapping heat in the atmosphere. Each GHG has a respective Global Warming Potential (GWP) based on its effectiveness at trapping heat. The three most prevalent GHGs that are released from human activities are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Fluorinated gases, such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), have very high GWPs but make up less than 3% of overall U.S. GHG emissions, and less than 8% of Sacramento County emissions (US EPA, 2022a).

The GWP of a gas is used to calculate its emissions value as a carbon dioxide equivalent or CO_2e (US EPA, 2022b). CO_2 is used as the benchmark because it is the most prevalent GHG, as shown by Figure 1. Every other GHG is assigned a GWP based on its ability to absorb heat and how long it remains in the atmosphere, equivalent to one unit of CO_2. The unit of measurement of CO_2e is frequently provided in metric tons (MT). GWPs can change over time as measurement accuracy increases and more data becomes available. Table 1 provides the GWPs used for this Inventory which are taken from the United Nations' Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report (AR5) 100-year Values (Myhre et al, 2013). Consistent with protocol guidance for inventories conducted at the time of this writing, 5th Assessment Report values have been utilized for this Inventory and are updated from the 4th Assessment Report (AR4) values that were utilized in the 2015 inventory.

Figure 1: Overview of U.S. GHG Emissions in 2021



Source: EPA. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks.

Table 1: IPCC 5th Assessment 100-year GWP Values for GHGs

GHG Name	Chemical Formula	GWP
Carbon Dioxide	CO_2	1
Methane	CH_4	28
Nitrous Oxide	N_2O	265

Note: GWPs for fluorinated gases are not listed in this table, as they are only used for one section of the Inventory and are numerous. For the entire list of GWP values, see the IPCC website at https://www.ipcc.ch/.

2 Summary of Results

2.1 Community-wide

GHG emissions in 2021 from unincorporated Sacramento County amounted to 4,159,556 $MTCO_2e$. On-road vehicles were the largest emitter and accounted for 44% of all community-wide GHG emissions. This mirrors statewide emissions data as vehicle miles traveled (VMT) are a major contributor to GHG emissions. Building energy was the second leading emitter at 35%, also on par with statewide data as shown in the California Air Resource Board's (CARB) 2020 California GHG Inventory (CARB, 2022). High-GWP gases accounted for 8%, agriculture 6%, solid waste 4%, off-road vehicles 3%, and finally water and wastewater combined at less than 1%. Figure 2 illustrates the comparison between sectors, and Table 2 expands the data further.

Community-wide emissions decreased overall by 0.3% in comparison to the Baseline Inventory, but the rate of decrease, or in some instances increase, varied across sectors. This variance is due to different factors that may include actual emission reductions/increases or methodological differences. This will be discussed in this section and in more detail in Section 3.2.

Figure 3 and Table 3 illustrate the changes in emissions between the Baseline Inventory and this Inventory.

Figure 2: Community-Wide GHG Emissions

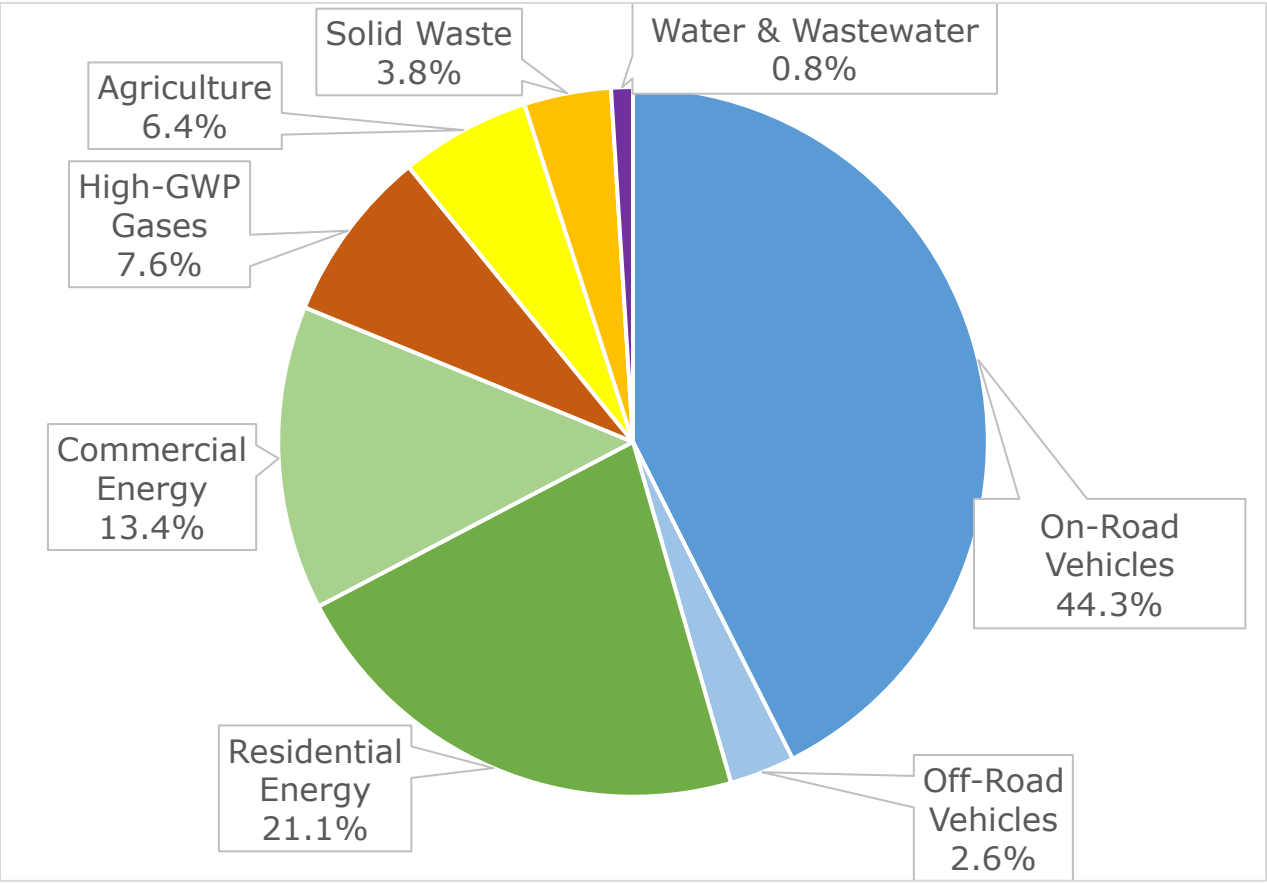


Table 2: 2021 Sacramento County Community GHG Inventory

Sectors	2021 (MTCO2e/year)	Percent of Total (%)
On-Road Vehicles	1,844,206	44.3
Off-Road Vehicles	107,174	2.6
Residential Building Energy	878,308	21.1
Commercial/Industrial Building Energy	555,596	13.4
High-GWP Gases	317,796	7.6
Agriculture	266,470	6.4
Solid Waste	156,744	3.8
Water & Wastewater	33,262	0.8
Total	**4,159,556**	**100.0**

Figure 3: Community GHG Inventory Comparison ($MTCO_2e$)

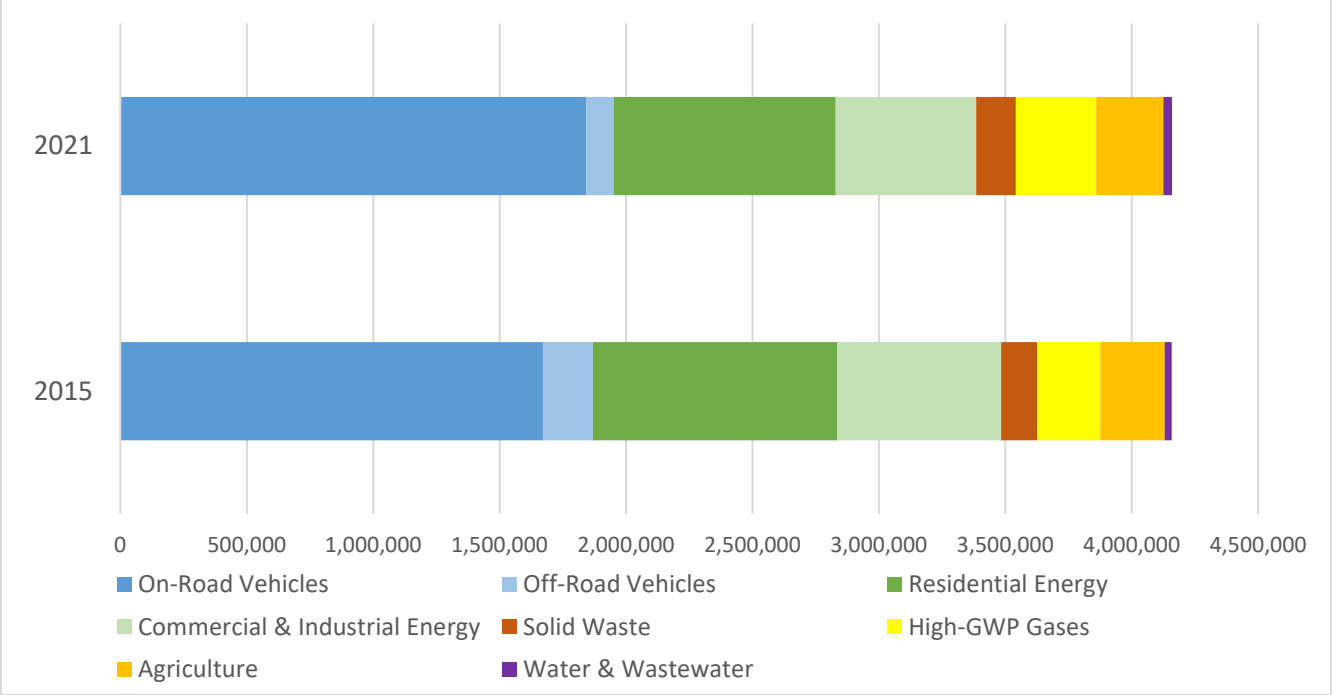


Table 3: Comparison of Sacramento County Community-wide GHG Inventories

Sectors	2015 Emissions ($MTCO_2e$)	2021 Emissions ($MTCO_2e$)	Difference 2015 to 2021 ($MTCO_2e$)	Percent (%) Change
On-Road Vehicles	1,671,596	1,844,206	172,610	4.1
Off-Road Vehicles	196,769	107,174	-89,595	-45.5
Residential Building Energy	967,253	878,308	-88,945	-9.2
Commercial/Industrial Building Energy	648,868	555,596	-93,272	-14.4
High-GWP Gases	251,085	317,796	66,711	26.6
Agriculture	254,710	266,470	-11,760	4.6
Solid Waste	140,670	156,744	16,074	11.4
Water & Wastewater	42,475	33,262	-9,213	-21.7
Total	**4,173,426**	**4,159,556**	**-13,870**	**-0.3**

Note: The 2015 Inventory utilized AR4 GWP and the 2021 utilized AR5 GWP

As shown in Table 3, changes in emissions by sector in the Community-wide Inventory included minimal reductions, large reductions, and steady increases. The building energy sector in its entirety recorded moderate reductions in emissions even though energy usage increased. This is due to the improved electricity emission factor. Emission factors and their effects on emissions will be discussed in Section 3.1.

Another sector that dropped in emissions, though more substantially, was Off-Road Vehicles. This reduction is not likely attributed to changes in GWP because the primary GHG generated by fuel consumption is CO_2, which always maintains a GWP of 1. It was most likely due to changes within the California Air Resources Board's (CARB) OFFROAD2021 model compared to the 2014 model which was used in the Baseline. Staff noted that fuel usage estimates reported by the 2014 model nearly matched the 2021 model, yet the emissions reported by the 2021 model were substantially lower.

Wastewater also recorded a measurable drop in emissions due to the owner and operator of the regional wastewater conveyance system's (Regional San's) participation in Sacramento Municipal Utility District's (SMUD's) SolarShares program and the introduction of a nutrient removal system, which is elaborated in Section 3.2.7. GWP changes may also contribute to some changes here, but to a lesser degree than improvements made by Regional San.

There were three sectors that increased in emissions: On-Road Vehicles, High-GWP Gases, and Solid Waste. On-Road Vehicles increased by 10.3%, which is generally consistent with the unincorporated County's population growth of 6.2% since 2015 (CA DOF, 2023). Like the off-road results, this change is not likely attributed to changes in GWP because the primary GHG generated by fuel consumption is CO_2 which always maintains a GWP of 1. It should be noted that 2021 VMT was provided by the Sacramento Area Council of Governments (SACOG) based on projected growth and not based on actual traffic counts during the pandemic downturn; the methodology is detailed further in Section 3.2.1: On-Road Vehicles. Solid Waste increased by 11.4%, in large part due to the increased amount of community-generated waste sent to landfill.

High-GWP Gases, which includes hydrofluorocarbons (HFCs) and other fluorocarbons, increased by 26.6%. This mirrors statewide data from the same period. According to CARB's 2022 Scoping Plan for Achieving Carbon Neutrality: "HFCs are the fastest-growing source of GHG emissions, primarily driven by their use to replace ozone-depleting substances and an increased demand for cooling and refrigeration. Since 2005, statewide HFC emissions have more than doubled. While the rate of increase has slowed in recent years due to the state's measures, HFC emissions are still on the rise in

California, and have grown by over 50 percent since 2010. Globally, as temperatures rise, adoption of cooling technologies (and refrigerants) is increasing rapidly. If no measures are taken, it is estimated that HFCs will account for nine to 19 percent of the total global GHG emissions by 2050. (CARB, 2022a)." Regardless of whether AR4 or AR5 GWPs are used, high-GWP gas use and associated emissions are expected to increase.

2.2 Government Operations

Total GHG emissions in 2021 for Sacramento County Government Operations were 83,502 $MTCO_2e$. Figure 4 and Table 4 provide Sacramento County Government GHG emissions by sector. Employee commute and energy usage at County buildings and facilities (including airport buildings) generated the most GHG emissions, accounting for 36.4% and 36.5% of total emissions respectively. The County vehicle fleet was responsible for 18.6% of total emissions, and the two smallest emission sectors were Water & Wastewater and Streetlights & Traffic Signals, accounting for 6.9% and 1.5% of total emissions respectively. Like the Community Inventory, AR5 GWP values were utilized for the Government Operations Inventory consistent with current guidance. This can result in some differences between the 2015 and 2021 inventories in sectors more heavily influenced by methane and nitrous oxide.

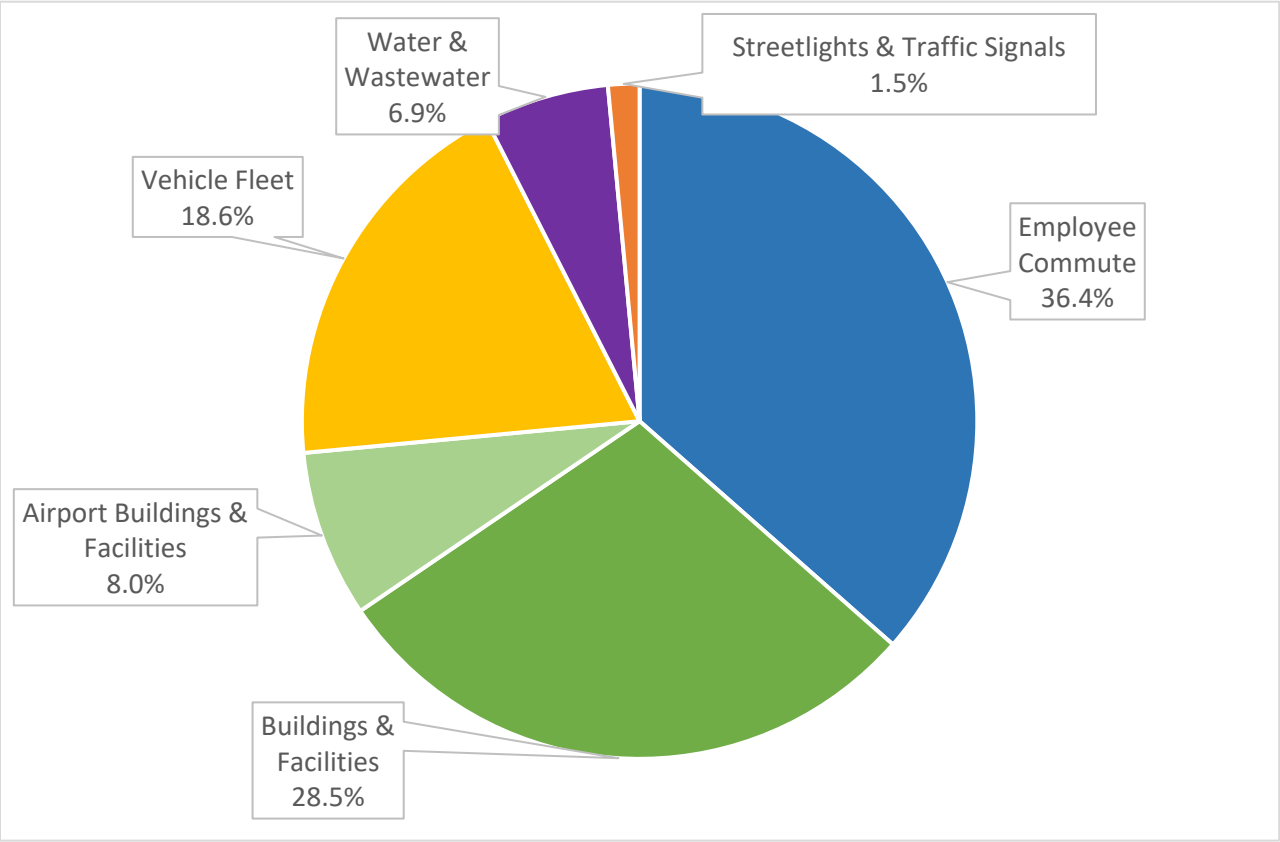
Government Operations emissions declined by 39,895 $MTCO_2e$, or 32.3%, when compared to the Baseline Inventory. Emissions declined or stayed the same across almost all sectors, with the only exception being water, which increased slightly. This is consistent with the County's efforts to reduce GHG emissions since work began on a Climate Action Plan (CAP) in 2009.

Figure 5 and Table 5 represent the $MTCO_2e$ difference from 2015 as well as the percentage change.

The largest measured emission reduction was the County fleet, which decreased by 14,035 $MTCO_2e$ or 47.4%. According to County fleet services, they have "put a high priority and invested heavily on reducing emissions (R. Wirth, personal communication, January 19, 2023)". County fleet emission reduction measures include: converting Department of Waste Management and Recycling (DWMR) route and long-haul operations to 100% natural gas (mostly renewable); transitioning to renewable diesel (R99); increasing number of hybrid vehicles; beginning the EV transition process; and managing/replacing vehicles on schedule to achieve the best possible fuel efficiency.

The second-largest measured emissions decrease was in the Airport Buildings & Facilities sector at 11,617 $MTCO_2e$ or 63.5%. This was primarily due to a new 7.9-megawatt solar energy facility coming online in 2017 that provides power directly to the Sacramento International Airport (Sacramento County, 2017). This large decrease is without SMUD SolarShares participation, so the standard emission factor was used. SolarShares is a SMUD renewable energy program wherein a portion of the County's purchased electricity is derived directly from solar energy and therefore does not have any measurable GHG emissions (SMUD, 2023a). How this program affects emissions is discussed in more detail in Section 3.1.

Figure 4: Government Operations GHG Emissions by Sector



Note: May not total 100% due to rounding.

Table 4: 2021 Government Operations GHG Inventory

Sectors	2021 ($MTCO_2e$/year)	Percent of Total
Employee Commute	30,414	36.4
Buildings & Facilities	23,760	28.5
Airport Buildings & Facilities	6,693	8.0
Vehicle Fleet	15,556	18.6
Water & Wastewater	5,824	6.9
Streetlights & Traffic Signals	1,255	1.5
Total	**83,502**	**100***

May not total 100% due to rounding.

Figure 5: Government Operations GHG Inventory Comparison ($MTCO_2e$)



Table 5: Comparison of Government Operations GHG Inventories

Sectors	2015 Emissions ($MTCO_2e$)	2021 Emissions ($MTCO_2e$)	Difference ($MTCO_2e$)	Change as a Percentage
Employee Commute	38,290	30,414	-7,876	-20.6%
Buildings & Facilities	28,247	23,760	-4,487	-15.9%
Airport Buildings & Facilities	18,310	6,693	-11,617	-63.5%
Vehicle Fleet	29,591	15,556	-14,035	-47.4%
Wastewater	565	208	-357	-63.2%
Water	4,665	5,616	951	20.4%
Streetlights & Traffic Signals	3,729	1,255	-2,474	-66.3%
Total	**123,397**	**83,502**	**-39,895**	**-32.3%**

Streetlights & Traffic Signals represented the largest percentage decrease at 66.3% for 2,474 $MTCO_2e$. This is due to the Streetlight Improvement Plan that was enacted in 2015 by Sacramento Department of Transportation (SACDOT) to replace "7,500 old street light fixtures with newer, energy efficient models", as well as SolarShares participation by the County (Regan, 2015). Building & Facilities emissions decreased by 15.9%, which was mostly due to the County's participation in SMUD's SolarShares program, as total energy usage increased slightly. Total energy usage for the County in 2021 was 89,473 gigawatt hours (GWh), compared to 89,101 GWh in 2015, yet the adjusted emission factor (EF) allows the County to show a reduction in emissions due to SolarShares participation.

Employee Commute emissions declined from 38,290 $MTCO_2e$ in 2015 to 30,414 $MTCO_2e$ in 2021 and remains the largest emitter of GHGs within Government Operations. The decrease in emissions is likely related to methodological differences between the two Inventories and does not necessarily equate to a reduction in real GHG emissions. The difference in methodology will be discussed in detail in Section 3.3.1. Finally, water was the only sector that experienced increased emissions, rising by 20.4%. This is most likely a change in reporting methodology from the Baseline Inventory and not increased usage.

3 Methodology

3.1 Utility Emission Factors

This section outlines the utility-provided EFs that are used to calculate GHG emissions throughout the Inventory anytime purchased electricity is involved. EFs are an integral part of calculating GHG emissions by helping form the connection between raw usage data and actual GHG emissions. Most EFs will stay constant over time, though some may fluctuate based on new data becoming available from methodological changes in the way they are calculated, or by improvements in the carbon content of the energy portfolio.

EFs can be sourced directly from the IPCC Emission Factor Database (EFDB) or locally when data is available and considered reliable. Local is generally better, as it will often give a more accurate representation of emissions. This Inventory strives to use the most up-to-date and local EFs whenever possible.

Table 6 illustrates the electricity EFs used for this Inventory compared with the Baseline. Electricity EFs are expressed in pounds of a given GHG per megawatt-hour delivered and are used to calculate emissions throughout the Inventory, though they are primarily used in the buildings & facilities sectors.

Table 6: Electricity Emission Factors

2015	2021	2021 (Adjusted)	Unit
561.08	533.5	393.2	CO_2 lbs./MWh
0.03112	0.032	0.032	CH_4 lbs./MWh
0.005670	0.004	0.004	N_2O lbs./MWh

For 2015 and 2021, the CO_2 EF was provided through direct communication with SMUD. They are almost the sole provider of electricity throughout unincorporated Sacramento County, so their EF was sufficient for calculating all electricity usage emissions throughout both Inventories. The emission factor SMUD provided for 2021 decreased from 2015 in alignment with SMUD's goals to increase renewables in their energy mix. These goals are reflected in SMUD's 2030 Zero Carbon Plan, wherein SMUD has committed to reaching zero carbon emissions by 2030 (SMUD, 2021b). CH_4 and N_2O were derived from the 2020 eGRID – the EPA's Emission Factor Database (US EPA, 2023). EPA had not yet updated the eGRID to 2021 at the time of this Inventory's completion, but it is assumed that CH_4 and N_2O

would not have significant changes, as they have remained constant over the last several eGRID updates.

The Inventory used 2021 EFs for all Community-wide electricity, and 2021 (adjusted) for Government Operations. Electricity EFs consider the total energy mix of power generation from a given utility. By purchasing SolarShares, the County is allocated a carbon-free amount of electricity equal to the amount purchased. The adjusted EF accounts for the participation of the County in the SolarShares program, which in 2021 was 30,000 GWh. Of the County's total usage of 114,604 GWh, SolarShares participation accounted for 26.3%. When that percentage is applied to the SMUD-supplied emission factor, the adjusted emission factor becomes 393.2 lbs. CO_2/MWh.

Natural gas EFs remained unchanged from 2015. The EF for CO_2 was provided by PG&E for 2021, which supplies nearly all the natural gas to unincorporated Sacramento County. CH_4 and N_2O EFs were provided by ICLEI and already integrated into ClearPath for 2021.

Table 7: Natural Gas Emission Factors

2015	2021	Unit
11.7	11.7	CO_2 lbs./therm
.0011	.0011	CH_4 lbs./therm
.00002	.00002	N_2O lbs./therm

3.2 Community-wide

3.2.1 On-Road Vehicles

The most important metric for calculating GHG emissions in the transportation sector is VMT, or the "amount of travel for all vehicles in a geographic region over a given period of time" (Williams et al, 2016). VMT is a useful measure for transportation GHG emission accounting because it "provides a measure of total travel" and shows "how travel changes over time" (Williams et al). The other influential factor for determining GHG emissions is fuel type (gasoline, diesel, electric, etc.). When these factors are combined with a respective vehicle type and an EF, the emissions can be calculated.

Every four years the Sacramento Area Council of Governments (SACOG) updates a Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) for the Sacramento region. The SACOG Board adopted the 2020 MTP/SCS on November 18, 2019. The MTP/SCS used an

"activity/tour"-based travel demand model in accordance with CARB and Senate Bill (SB) 743 to calculate regional VMT. The model is "designed to estimate individual's daily travel, accounting for land use, transportation, and demographics that influence peoples' travel behaviors" (SACOG, 2021). Using that model, SACOG was able to project 2021 VMT on a linear annual rate applied to the 2016 base year based on growth. The VMT data obtained was the most up-to-date modeling available at the time this Inventory was completed. Though the VMT used for this Inventory is projected from a non-pandemic to a pandemic-affected year, SACOG is confident that VMT trends have increased back to pre-pandemic level overall. By using this methodology, Sacramento County is presenting a more meaningful inventory and not attempting to take credit for any temporary trip reductions caused by the pandemic.

SACOG provided daily VMT totaling 12,118,018 for the unincorporated County. To calculate annual VMT, the same methodology as the Baseline Inventory was applied, in that "daily VMT was multiplied by 347 days per year […] to account for lower VMT during weekends, holidays, and summer periods" (Walters et al, 2016). Since SACOG's model is based on a typical non-holiday weekday, this method is consistent with CARB methodology for GHG emission accounting. To promote continuity throughout the inventory process, it was deemed appropriate to employ the same method as was used for the Baseline Inventory. Annual VMT calculated in this way amounted to 4,204,952,246, which represents a 710 million VMT or 17% increase from 2015.

Once total VMT is found, the data must be parsed further by vehicle characterization and fuel type, as emissions will differ based on a combination of these variables. County-wide fuel and vehicle type were downloaded directly from EMFAC2021 and scaled to the unincorporated County based on the provided VMT from SACOG. The unincorporated VMT was found to be approximately 32.63% of County-wide VMT as sourced from EMFAC, so every vehicle/fuel type VMT combination was multiplied by 0.3263 to find the unincorporated VMT of each.

Vehicles are grouped into four main categories for calculating emissions: Passenger (P), Light Duty (LD) Trucks, Heavy Duty (HD) Trucks, and Motorcycles (M). For emissions purposes, the EPA designates LD as less than 8,500 lbs., and HD as over 8,500 lbs. (EPA, 2022e). These distinctions are important because each vehicle type, along with its associated fuel type, has a respective EF. The EFs used for the Inventory were derived from the EMFAC2021 model to best represent Sacramento County vehicle emissions. Table 8 provides a summary of on-road VMT by fuel and vehicle type.

Table 8: On-Road VMT by Fuel & Vehicle Type (in thousands)

VMT Category	Passenger	LD	HD	Motorcycle	Total Daily	Total Annual
Gas	5,781	4,794	367	46	10,988	3,812,904
Diesel	18	39	745	0	803	278,542
Natural Gas	0	0	28	0	28	9,546
Plug-in Hybrid	123	17	0	0	140	48,465
Electric	154	5	0	0	159	55,244
Total					**12,118**	**4,204,701**

Note: The totals calculated in this table may differ due to rounding and by less than 1% from the SACOG provided totals.

3.2.2 Off-Road Vehicles

Activity from off-road vehicles is not captured in SACOG's VMT and must be calculated separately. Fuel usage data based on vehicle category is obtained from CARB's OFFROAD2021 model for the entire County and scaled to the unincorporated area based on population. Sacramento County had a population of 1,580,624 in 2021, while the unincorporated population was 609,504 (Sacramento County, 2023b). The unincorporated County population represented 38.56% of the population; therefore, that ratio was applied to the countywide data provided by the OFFROAD2021 model.

Off-road vehicles include, but are not limited to, recreational vehicles (watercraft, all-terrain vehicles, etc.), airline ground support vehicles, lawnmowers, and construction equipment. There are many potential categories, but the eight most impactful and County-relevant categories are included in this Inventory and listed in Table 9: Off-Road Fuel Consumption and Emissions by Equipment & Fuel Type. Emissions from off-road agriculture vehicles are included in the agriculture section and thus omitted from this section, as was done in the Baseline. For the fuel types listed in Table 9, liquid fuels (gasoline and diesel) are shown in gallons and natural gas is in gallons gas equivalent (GGE).

Table 9: Off-Road Fuel Consumption and Emissions by Equipment & Fuel Type

Equipment Category	Gasoline (Gallons)	Diesel (Gallons)	Natural Gas (GGE)	2021 Emissions ($MTCO_2e$)	2015 Emissions ($MTCO_2e$)
Construction & Mining	119,537	3,385,448	0	35,913	96,063
Pleasure Craft	1,641,538	0	0	14,538	28,826
Transport Refrigeration Units	0	405,244	0	4,138	16,233
Lawn & Garden	1,619,716	30,430	0	14,649	12,145
Light Commercial	1,846,430	164,157	140,184	18,941	11,242
Industrial Equipment	316,611	138,881	572,243	7,990	10,627
Oil Drilling	0	151,023	0	1,555	9,781
Recreational	97,650	0	0	864	7,039
Airport Ground Support	775,304	110,126	91,272	8,586	4,633
Total	**6,416,787**	**4,385,308**	**803,698**	**107,174**	**196,589**

All categories shown in Table 9 were scaled based on population except for Airport Ground Support, because the Sacramento International Airport is located entirely in the unincorporated area of the County; therefore, the County-wide data is the same as the unincorporated. Finally, entertainment and railyard operations categories from the Baseline Inventory were omitted from this Inventory because their emissions relative to the entire off-road section were negligible and amounted to less than 200 $MTCO_2e$ combined.

3.2.3 Building Energy

GHG emissions from buildings and facilities throughout the unincorporated County are derived from purchased electricity and natural gas. While electricity does not produce emissions at the end-use location, it does create off-site emissions from where it was generated, and the level of emissions depends on the energy mix, as discussed previously. Almost all electricity in the County is served by SMUD, and almost all natural gas is delivered by PG&E. Data for this sector was provided by those respective utilities in kWh for electricity and therms for natural gas. The data in this section is broken down into residential, industrial, and commercial.

Table 10: Building Energy Use and Emissions by Source

Source	Quantity	GHG Emissions	% of Sector
Electricity	kWh/year	$MTCO_2e$/year	%
- Residential	1,982,264,551	481,450	54
- Commercial	1,392,983,289	338,326	38
- Industrial	290,216,671	70,488	8
Electricity Total	3,773,845,123	916,587	100
Natural Gas	therms/year		
- Residential	74,616,385	396,858	73
- Commercial	27,454,537	146,021	27
- Industrial	143,143	760	< 1
Natural Gas Total	102,214,065	543,639	100
Combined Totals			
Residential		878,308	61
Commercial		484,347	34
Industrial		71,248	5
Total		**1,433,903**	**100**

To parse the unincorporated consumers from the entire County, SMUD was provided a GIS shape file of the unincorporated area (PG&E has an automated data request system that parses the data automatically). Using the shape file, SMUD was able to generate a list of premises within the unincorporated area and pull the respective 2021 electricity usage data. It was observed that this data was noticeably different from the 2015 data, not only in total usage but in how it was categorized into commercial and industrial usage.

To ensure consistency with the 2015 Inventory, electricity data from 2015 was then requested from SMUD to be compiled using the same methodology as the 2021 data. When this revised 2015 data was provided by SMUD, it was noted to be more consistent with what was reported for 2021 as far as characterization of commercial and industrial usage. The total usage in the new 2015 data was lower than what was reported for the 2015 inventory. The new 2015 data was used in this Inventory to be consistent with the methodology used in generating the 2021 electricity usage data. This results in a more accurate and transparent comparison of emissions. In other words, instead of keeping the higher 2015 electricity usage and showing a larger reduction for 2021, an apples-to-apples methodology was used that shows electricity usage slightly increased over 2015.

Data was entered directly into ClearPath along with the utility EFs. The SMUD-provided, non-adjusted EF was used for electricity. Electricity usage from the Sacramento Regional Wastewater Treatment Plant (SRWWTP) and wastewater pumping was subtracted from the Industrial total, as that data is included separately in the wastewater section. Agricultural data was provided by SMUD and combined into the commercial energy category because there was no separate agriculture data from PG&E, and per communication with PG&E, agricultural gas customers are usually assigned to the commercial sector.

3.2.4 High-GWP Gases

Gases with particularly high GWP, namely hydrofluorocarbons, can be found locally in refrigerants, aerosols, foams, and fire suppressants. Refrigerants, such as those used in air conditioning systems, are the most prominent emissions source for these types of gases, especially in Sacramento County, due to the hot and dry climate. Local data wasn’t available so statewide Inventory data was scaled based on the unincorporated County population. The California Inventory was from 2020 so population data from that year was used as well, taken from the U.S Census Bureau. County population was taken directly from the County

website. Mass emissions were obtained from CARB's GHG Inventory Query Tool, and the GWPs from the 5th Assessment were applied.

2020 California population: 39,538,245

2020 Unincorporated Sacramento County population: 610,442

Ratio of unincorporated to CA: 0.01544

Using this data, the ratio was applied to each category of high-GWP gases to find their respective County emissions, as shown in Table 11.

Finally, fugitive emissions from natural gas distribution leakage were added to this Inventory based on recommendation by ICLEI. This calculation was done by inputting the total amount of natural gas used by the community in 2021 into ClearPath, which was 102,214,065 therms, and applying an ICLEI default leakage rate of 0.3%.

Table 11: High-GWP Gases Emissions Compared

Parameter	2021 Emissions ($MTCO_2e$)	2015 Emissions ($MTCO_2e$)
Refrigerants - Commercial	134,959	112,400
Refrigerants - Transportation	56,598	49,700
Refrigerants - Residential	55,597	28,900
Refrigerants - Industrial	28,251	24,900
Aerosols	9,549	14,800
Foams	11,890	18,400
Solvents & Fire Suppression	3,217	2,100
Natural Gas Distribution	17,734	N/A
Total	**317,796**	**251,200**

3.2.5 Agriculture

GHG emissions from agricultural activities in Sacramento County were found to be a result of enteric fermentation, fertilizer application, manure management, and vehicle engine combustion. Their respective calculation methods and emissions can be found in Table 12. The unincorporated

County contains virtually all the agriculture activities of the entire County, so the data that was provided for County-wide is assumed to be the same as the unincorporated County.

Table 12: Sacramento County Agriculture Emissions by Source

Emissions Category	Calculation Method	2021 Emissions ($MTCO_2e$)
Enteric Fermentation	Equation A.1	59,985
Fertilizer Application	Scaled from CA GHG Inventory	41,533
Manure Management	Scaled from CA GHG Inventory	131,369
Farm Equipment	OFFROAD2021	33,583
Total		**266,470**

According to Appendix G of the Community Protocol, "enteric fermentation is the process of microbial fermentation through which methane is produced during animal digestion," and "is one of the largest sources of methane." Digestion from ruminant animals (hoofed mammals such as cows and goats) produces the highest levels of methane so they are accounted for. The number of cattle in Sacramento County in 2021 was 24,896 and was provided in the 2021 County Crop Report (Flores, 2022). To apply the correct emission factor, it was then necessary to divide the cattle based on their type – 45% beef and 55% dairy. This information was provided by the County Agricultural Commissioner's office.

Using these percentages, it was determined that the beef cattle head count in 2021 was 11,203 and the dairy count was 13,693. The respective EFs were then applied, which were retrieved from the IPCC Emission Factor Database (EFDB), and using equation A.1 in Appendix G of the Community Protocol, the emissions were determined:

Equation A.1: Animal Population (head) x EF (kg CH_4/head/year) x (1/1000) x GWP = Emissions

In the equation above, 1/1000 represents the conversion from kg CH_4 to MT CH_4, and GWP is the CO_2e equivalent of CH_4. Using the provided data and Equation A.1, the total emissions was solved for as shown below:

Beef: 11,203 x 47 x .001 x 28 = 14,743 $MTCO_2e$

Dairy: 13,693 x 118 x .001 x 28 = 45,242 $MTCO_2e$

Total: 59,985 $MTCO_2e$

There was not sufficient local data to calculate fertilizer application & manure management, so these values were scaled down from the statewide GHG Inventory. Manure management is based on production from livestock, of which there are local and statewide head counts available from the County Crop Report and USDA State Agriculture Overview for California, respectively. The number of beef and dairy cattle in the state of California for 2021 totaled 2,400,000, and for Sacramento County it was 24,896. The ratio of Sacramento County to the state of California was then found to be 0.0104. Because cattle manure management emissions dominate all other animal categories, the scaling ratio was based on cattle to provide the best scaling estimates for Sacramento County.

This ratio was then applied to the statewide mass emissions from livestock manure management for all animals (cattle, poultry, swine, and others as obtained from the CA 2020 GHG Inventory (California, 2022)) and the GWPs from the 5th Assessment were applied. 2020 was the most recent statewide data available at the time this inventory was prepared:

12,631,625 (statewide emissions) x 0.0104 = **131,369 MTCO$_2$e**

Emissions from fertilizer are the result of micro-organisms in the soil producing "N_2O as a by-product of their metabolism" after fertilizer has been applied (Menegat, 2022). Fertilizer can either be synthetic or organic in nature, with the former resulting in far higher N_2O emissions. Since local data was not available for fertilizer application, emissions were scaled down from statewide data. To find the ratio of Sacramento County farmland to statewide farmland, crops grown in the County were compared against the same crops for harvested acreage statewide. Crop acreage totals for the County were taken from the Crop Report, and statewide data was acquired from the USDA Agriculture Review.

Table 13: Sacramento County & California Crops Harvested

Crop Type	County Acres Harvested	CA Acres Harvested
Grapes	37,888	829,000
Hay, Alfalfa	13,190	580,000
Hay, Other	4,158	330,000
Corn, Silage	8,764	345,000
Wheat	6,938	220,000
Rice	8,673	405,000
Pears	5,002	9,400
Tomatoes, Processed	4,310	228,000
Safflower	2,104	39,500
Almonds	1,752	1,320,000
Walnuts	2,163	390,000
Cherries	1,494	34,000
Total	**96,436**	**4,729,900**

Once the totals of each were calculated (1), the ratio was determined and multiplied with the state mass emissions for fertilizer (2) as pulled from the CA 2020 GHG Inventory (California, 2022), and the GWPs from the 5th Assessment were applied:

1. 96,546 / 4,729,900 = 0.0204
2. 2,035,940 $MTCO_2e$ (statewide fertilizer emissions both direct and indirect) x 0.0204 = **41,533 $MTCO_2e$**

3.2.6 Solid Waste

The GHG emissions from solid waste are primarily a result of landfill gas (LFG), which comprises mostly methane, as well as a portion of biogenic CO_2 (which is not included in GHG emissions per either Protocol) and a negligible amount of N_2O and other gasses (US EPA, 2022d). Solid waste emissions for Sacramento County comprise three categories: community waste generation, LFG flaring, and LFG combustion (for energy purposes), as outlined in Table 14.

Table 14: Solid Waste Emissions

Emissions Category	Quantity	Emissions 2021 ($MTCO_2e$)	Emissions 2015 ($MTCO_2e$)
Waste Generation	546,072 tons	156,233	140,650
LFG Flaring	78,568,023 cubic feet (cf)/year	189	N/A
LFG Combustion	2,669,779,468 cf/year	322	20
Total		**156,744**	**140,670**

Community-wide waste generation represents all solid waste that was generated by businesses and residents in the unincorporated County in 2021 and sent to landfill, which amounted to 546,072 tons. This data was sourced directly from the CalRecycle website, and the closest available year at the time of this Inventory was 2019 (CalRecycle, 2019).

The tonnage of waste was entered into ClearPath along with an LFG collection of 75% and oxidation percentage of 10%. LFG collection is the amount of LFG that is collected by the landfill before it escapes into the atmosphere, and the percentage used is consistent with the Baseline Inventory and Appendix E of the Community Protocol. Oxidation percentage is the amount of LFG that is absorbed by the soil, for which the Community Protocol standard of 10% was used. Finally, California-specific waste characterization was used. Waste characterization is the breakdown of types of waste by percentages—for example, newspaper, food, textiles, construction, etc.—and was also sourced directly from CalRecycle.

Once LFG is captured and treated by the landfill, it can be turned into energy via a combustion process or flared (burned off). Kiefer Landfill flaring & combustion data for 2021 was provided by the Sacramento County Department of Waste Management and Recycling (DWMR). They were able to provide the total amount flared for 2021 along with the percentage of methane in the LFG (45.8%) and the destruction efficiency (99%). Destruction efficiency refers to the amount of methane that is destroyed during flaring, and subsequently converted to CO_2 (Plant et al, 2022). LFG is combusted at Kiefer and turned into energy via two on-site energy plants with a 15 MW capacity. Most of that electricity is sold to SMUD, while a fraction is used on-site to run the energy plant itself and the flare compound.

Waste-in-place emissions were omitted from the 2021 Inventory due to changes in the Community Protocol and to avoid double-counting. For this reason, they are not utilized in calculating the comparison table for 2015.

Kiefer Landfill is responsible for their own mandatory GHG emission reporting, which they report to CARB and the EPA annually. By making this change, the County is focusing on current behaviors and is more in line with the Community Protocol. This creates an Inventory that is more representative of emissions from the activities of Sacramento County residents in 2021 and therefore better informs potential local actions to address these emissions.

3.2.7 Wastewater

Emissions from wastewater come from several different sources, though the most impactful is energy purchased from SMUD to operate the various treatment and pumping facilities. Regional San has a contract with SMUD for SolarShares, so its purchased electricity emissions were adjusted accordingly. Data was provided by Regional San for 2021, including the allotted amounts of SolarShares for each entry, as displayed in Table 15.

Table 15: Sacramento County Wastewater Emissions

Emission Source	Quantity	SolarShares Adjusted	Total Emissions ($MTCO_2e$)	Unincorporated Portion of Emissions ($MTCO_2e$)
Treatment Facility	102,962,388 kWh	76,991,093 kWh	18,700	7,106
Regional San - Interceptor System	10,467,789 kWh	5,491,516 kWh	1,334	507
Sac Sewer - Collection System	3,586,215 kWh	2,705,183 kWh	657	335
Effluent Discharge	5,459 kg N/day	N/A	4,148	1,576
Digester Gas Flaring	254,140 cubic feet (cf)/day	N/A	317	121
Digester & NG Gas Boilers	78576 cf/day	N/A	4	2
Process N_2O	14 MT	N/A	3,710	1410
Total			28,870	11,057

Note: kg N = kilograms Nitrogen.

These emissions represent the total energy used to power the EchoWater Resource Recovery Facility (EchoWater Facility). Per Regional San, they allocate 25,971,295 kWh of purchased SolarShares to the treatment facility, bringing their total kWh usage for emission purposes to 76,991,093 kWh. As described earlier in this report, SolarShares represent 100% renewable energy purchased from SMUD and therefore have zero emissions, so a simple subtraction was made and the unaltered SMUD EF was then applied to calculate emissions. Since Regional San also serves several incorporated cities and limited areas in Yolo County, total emissions were scaled to the unincorporated County. The scaling was based on the unincorporated County population (609,504) divided by the total Regional San reported service population (1.6 million), resulting in a ratio of 0.3809 or a 38% scaling factor. It is noted that while some of residents in the unincorporated County utilize septic systems, the total unincorporated population is being used to facilitate repeatable calculations in future inventories.

It should also be noted that instead of changing the EF to represent the SolarShares purchases, as was done in the Government Operations Inventory, here the bulk kWh is changed. This is because of the way Regional San allocates their SolarShares: it is not a blanket application like at the County, so using a singular adjusted EF did not make sense, as there would have to be several different EFs for the different allocations. The same principle is applied, and emissions are reduced by the amount of SolarShares purchased.

Data on electricity usage for wastewater pumping, collection, and conveyance was provided by Regional San for the Interceptor System (1.6 million service population) and the Sac Sewer Local Collection System (1.2 million service population). Like the EchoWater facility, SolarShares are allocated here as well. For the Interceptor System, total kWh usage was 10,467,789 minus a SolarShares allocation of 4,966,273, resulting in 5,491,516 kWh. This was then scaled by the same 38% discussed above due to the 1.6 million service population compared to the unincorporated County population. For the Sac Sewer Local Collection System, total kWh usage was 3,586,215 minus a SolarShares allocation of 881,032, resulting in 2,705,183 kWh. An adjustment for the unincorporated area based on the unincorporated population of 609,504 divided by the 1.2 million service population then resulted in a ratio of 0.5079 or a scaling factor of 51%. The results are expressed in Table 15.

In normal operations, WWTPs discharge effluent, or treated wastewater, into nearby bodies of water. According to the Community Protocol, "Conventional WWTPs are not able to remove all of the nitrogen content in wastewater," and "when this nitrogen-containing effluent reaches a natural

watershed, indirect N_2O emissions occur". The EchoWater Facility has two rates of effluent discharge for 2021, since in April they commissioned the EchoWater Nutrient Removal Project (BNR) which is a seven-stage nitrification and denitrification biological treatment process, effectively cutting their effluent ammonia releases by 99%. The average of the two rates, pro-rated based on days in operation, was used to calculate the total discharge for the year.

The wastewater also undergoes a nitrification/denitrification process, in which ammonia is oxidized to nitrite, then to nitrate, and finally released as nitrogen gas (US EPA, 2007). This releases 14MT of N_2O emissions that, according to the Community Protocol, is calculated based on the population served by the EchoWater Facility.

Anaerobic digesters take in treated wastewater solids and turn them into biogas, which is then combusted or used as a renewable fuel. Most of the biogas is sent to SMUD for electricity generation. The EchoWater Facility uses flaring and boilers to burn off the portion of biogas that is not sent to SMUD. The amount burned in the boilers and amount combusted during flaring is represented in Table 15.

3.2.8 Water Supply and Stormwater

Emissions from community water supply and stormwater collection in this Inventory are classified as a Scope 2 emission, as they are calculated from the amount of purchased energy from SMUD to operate the treatment and delivery system for potable water and the stormwater system for residents within the unincorporated County.

Potable water in Sacramento County is supplied by numerous private water purveyors and the Sacramento County Water Agency. Many of the water purveyors serve incorporated communities within Sacramento County as well as communities outside of Sacramento County. This makes isolating the emissions associated with unincorporated Sacramento County's water supply challenging to calculate. There are several estimation methods that can be utilized. The method employed for this Inventory is outlined below.

Consistent with the LGO Protocol for emissions from water delivery and pumping facilities, the Sacramento County Water Agency (SCWA) was asked to provide an Excel spreadsheet of total energy usage for 2021 within its own facilities and operations associated with Zone 41, which totaled 28,838,061 kWh. Zone 41, per the SCWA website, includes all "water production, treatment, storage, and distribution facilities, pursuant to permits issued by the California Department of Health Services." The SCWA data also included the electricity associated with stormwater pumping.

There were a handful of water-related entries on the building energy spreadsheet that were combined with the SCWA file. They amounted to only 157,113 kWh (minus duplicates totaling 47,566 kWh) and when added to the SCWA data, the final water energy total amounted to 28,995,174 kWh. SCWA also provided the number of connections they serve (59,300) and an estimation of population per connection of 3.25 based on their 2010 Water System Infrastructure Update. This results in an estimated service population of 192,725. Dividing the total kWh by service population results in an estimated 150 kWh per person for potable water supply and stormwater. Lastly, the unincorporated County population of 609,504 is multiplied by 150 kWh, resulting in an estimated 91,425,600 kWh electricity used for potable water treatment and delivery as well as stormwater in unincorporated Sacramento County. This is then entered into ClearPath with the non-adjusted SMUD emission factor to result in 22,205 $MTCO_2e$, or less than 0.5 percent of the total Community-wide Inventory.

It is acknowledged that this is an estimate and does not differentiate between unincorporated residents who use wells vs. a commercial water supply. It is also acknowledged that ICLEI guidance cautions that the electricity used for potable water can often show up in the community-wide report for commercial and/or industrial electricity usage. As such, ICLEI advises providing water supply emissions as information only. In this Inventory, the County is incorporating water emissions in the totals. By including it in the totals, it likely results in a minor overreporting of emissions. The County has made this choice so that the reader has the benefit of seeing the minor contribution to emissions water supply and stormwater creates when compared to the transportation and building energy sectors and so that these comparisons can be carried across the entire set of charts and graphs for the inventory.

3.3 Government Operations

3.3.1 Employee Commute

Like the Community-wide transportation sector, when determining employee commute emissions, the most important dataset is VMT. Though technically a Scope 3 emission, Employee Commute is included in the Inventory because of its impact on emissions. For this Inventory, VMT was calculated using an origin-destination model. Home zip codes for all County employees were compiled, as well as their respective work addresses. VMT to work locations was calculated by using either the post office as the origin, or in cases with no post office present, the centroid point of the zip code.

To account for vacation and work-from-home days, it was assumed that every other week employees either work from home or take a day off for vacation or illness, in addition to County holidays. Beginning with 365 days out of the year, then subtracting 104 for weekends, 14 for County holidays, and an additional 25 for vacation/work from home, it was determined that the average County employee commuted to work 222 days in 2021. This is consistent with what was used in the Baseline Inventory, and for all intents and purposes may be an overestimation due to the increase of employees working from home since the onset of the pandemic. However, this methodology was chosen for the sake of consistency, the ability to compare data across inventories, and to account for a gradual return to regular work schedules.

When determining mode split with alternative means of transportation such as bicycle, public transit, or carpool, several factors were considered. Based on data from the US Census Bureau, local observations, employee interviews, and the County Department of Personnel Services, it was determined that 6.5% of County employees commute to work by some other means than a personal vehicle.

Using this methodology, total annual VMT for County employees in 2021 was calculated as 81,877,233. This represents a decrease of 26 million miles from the Baseline Inventory. When computing VMT for this Inventory, there were a handful of outliers that were removed due to their reported home zip codes being hundreds or even thousands of miles away from their listed work location. Since it is not feasible for these employees to commute this distance, these entries were not included in VMT calculations for this Inventory. These entries represented only 31 of 12,209 employees, but the distances involved significantly impacted the VMT metric.

3.3.2 Building Energy

Emissions from County buildings & facilities are classified as a Scope 2 emission, meaning that they are indirect and result from purchased electricity and natural gas. Like the community, the County purchases its natural gas from PG&E and its electricity from SMUD. The difference for the County is the EF is adjusted for County-purchased SolarShares, as described previously in Section 3.1. See Table 16 for a breakdown of electricity and natural gas usage expressed in kWh and therms, respectively.

Table 16: Government Operations Building Energy Usage

Sector	Electricity (kWh)	Natural Gas (therms)	Emissions ($MTCO_2e$)
Buildings & Facilities	89,472,931	1,452,005	23,760
Airport Buildings & Facilities	24,369,743	437,124	6,693
Total	**113,842,674**	**1,889,129**	**30,453**

Buildings & Facilities includes all buildings & facilities that are owned, operated, and leased by the County. Energy usage data was provided by the County Energy Program Manager in the form of an Excel spreadsheet, which included all County energy usage and was referenced throughout the Government Operations section of the Inventory. From this spreadsheet, airport data was parsed out separately.

Airport energy usage and emissions are shown separately for two reasons. First, they have an energy program separate from the County. Second, for the purpose of continuity with the Baseline Inventory, as the airport data was broken out separately there. In addition to airport data being removed from the building energy data, there was some duplicate water-related data as well. To avoid double-counting, 206,479 kWh of stormwater pumping data was removed because it already appears in the water section of the Inventory.

3.3.3 Vehicle Fleet

This Scope 1 emission sector of the Inventory represents direct emissions from combustion and includes vehicles owned and operated by the County, both off-road and on-road. The amount of miles driven with a particular fuel, along with an EF, is used to calculate emissions associated with that fuel type. For certain fuel types used mostly by off-road vehicles, namely propane and diesel, vehicles are stationary and operate based on hours, not miles. VMT is not required for these emissions calculations and are therefore not included in the data. For the fuel types listed in Table 17, liquid fuels (unleaded, diesel, and propane) are shown in gallons and natural gas is in gallons gas equivalent (GGE).

Table 17: County Fleet (Non-Airport)

Fuel Type	Fuel Usage (gal or GGE)	VMT	GHG Emissions ($MTCO_2e$)	Biogenic CO_2 Emissions
Unleaded	1,406,894	15,575,483	12,353	N/A
Diesel	13,926	N/A	144	N/A
R99 Diesel	725,140	669,661	28	6,784
CNG	2,791	N/A	18	N/A
RNG	1,344,379	2,166,025	0	7,848
Propane	12,800	N/A	72	N/A
Total	N/A	N/A	**12,615**	**14,632**

As shown in Table 17, emissions from unleaded fuel represent by far the largest source of CO_2e. R99 Diesel and renewable natural gas (RNG), which the County sources from California's renewable natural gas procurement program, represent rather large amounts of fuel usage and VMT, but because of their renewable properties they emit biogenic CO_2, as opposed to fossil CO_2 that is extracted from underground. These renewable fuels are made from biological processes that occur upstream, re-using carbon that is already in the carbon cycle, and are therefore not counted in County GHG emissions. Biogenic CO_2 is shown in the table only for accounting purposes. This reporting methodology is consistent with the LGO Protocol.

As with building energy, the airport system manages its fleet separately from the rest of the County. Emissions from aircraft and airline-owned ground support equipment were not included in the airport emissions because these are not part of County Government Operations and therefore do not fall under any of the reportable emission Scopes. They are owned by private entities such as the airline companies themselves and should be accounted for in their inventories. The airport system uses just three types of fuels for its fleet, which are shown in Table 18.

Table 18: 2021 County Airport Fleet Usage Data

Fuel Type	Fuel Usage (gal or GGE)	VMT	Emissions ($MTCO_2e$)
Unleaded	79,858	806,536	701
Diesel	3,558	37,331	61
Natural Gas	260,662	1,091,778	1,645
Total			**2,407**

3.3.4 Wastewater

Wastewater emissions associated with County Government Operations were estimated utilizing the non-scaled 28,870 $MTCO_2e$ value from the Community-wide Inventory and scaling it to the approximate 11,500 County Employees in 2021 compared to the entire wastewater service population of 1.6 million, resulting in scaled emissions of 208 $MTCO_2e$.

3.3.5 Water Supply and Stormwater

Water Supply emissions for Sacramento County government operations were calculated by multiplying the 150 kWh per person calculation developed for the Community-wide Inventory by an approximate 11,500 County employees in 2021. The resulting 1,725,000 kWh energy usage was entered into ClearPath using the non-adjusted SMUD emission factor set, resulting in emissions of 419 $MTCO_2e$.

The emissions associated with the Sacramento County Water Agency and the Stormwater utility are also included in the Government Operations Inventory as they are solely County agencies. These emissions were calculated using the same methodology as in the Community-wide Inventory to establish the total kWh used by SCWA (28,995,174) and then entered into ClearPath with the adjusted SMUD emission factor used to account for the County's purchase of SolarShares. This calculation yielded an emissions total of 5,197 $MTCO_2e$. As described for the Community-wide Inventory as well, ICLEI advises providing water supply emissions as information only. In this Inventory, the County is incorporating water emissions in the totals. By including it in the totals, it likely results in a minor overreporting of emissions. The County has made this choice so that the reader has the benefit of seeing the minor contribution to emissions that water supply and stormwater create when compared to the transportation and building energy sectors, and so that these comparisons can be carried across the entire set of charts and graphs for the Inventory.

3.3.6 Streetlights & Traffic Signals

Streetlights & Traffic Signals represents another Scope 2 emission, as emissions originate from purchased electricity. Electricity usage for this sector was parsed out of the provided SMUD energy data using traffic signal (TS) and streetlight (SL) indicators, the same methodology as the Baseline. As mentioned earlier, there has been a large reduction in electricity usage due to the implementation of the Streetlights Improvement Plan, resulting in decreased kWh for 2021. When calculating emissions, the adjusted EF was used, further reducing emissions.

Table 19: Streetlights & Traffic Signals Emissions

Inventory	Total Usage (kWh)	Emissions ($MTCO_2e$)
2015	14,979,246	3,729
2021	7,002,921	1,255

4 Glossary

AR (4 & 5) – United Nations' Intergovernmental Panel on Climate Change 4th & 5th Assessment Reports.

ClearPath – GHG accounting software developed by ICLEI that was used to conduct this Inventory.

Community Protocol - U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions. The standard by which Community GHG Inventories are conducted in the U.S. and the inventory handbook used for this Inventory.

eGRID – Emissions & Generation Resource Integrated Database. Database of nationwide electricity emissions data.

Emission Scopes – Classification system for GHG emissions when conducting a government or other entity-driven GHG inventory. Not generally used for community inventories.

Scope 1 – Direct emissions from controlled sources such as internal combustion engines or methane from a landfill.

Scope 2 – Indirect emissions, generally from purchased electricity and natural gas.

Scope 3 – Indirect *adjacent* emissions that are not from owned and operated facilities, such as from purchased goods that were manufactured elsewhere.

GGE – Gasoline Gallon Equivalent. Measure of a particular fuel converted to gallons of gasoline for accounting and comparability purposes.

GHG – Greenhouse Gas. Gases which, when present in the atmosphere, reflect heat back to the Earth's surface. Three primary GHGs are:

CO_2 – Carbon Dioxide. Most common GHG.

CH_4 – Methane. More potent than CO_2, but less so than Nitrous Oxide.

N_2O – Nitrous Oxide. High-GWP gas.

GWP – Global Warming Potential. Unit of measure for the warming potential of a GHG.

kWh – Kilowatt-hour. Standard unit of measurement for electricity usage. Equivalent to one kilowatt of power per hour.

LGO Protocol - Shorthand for "Local Government Operations Protocol: for the quantification and reporting of greenhouse gas emissions", which is a standard by which Government GHG inventories are conducted in the United States.

MPG – Miles per Gallon. A measurement of how many miles a vehicle travels on one gallon of fuel.

Natural Gas – Fossil fuel that emits GHGs into the atmosphere when burned, primarily methane. Three types of natural gas are:

LNG – Liquefied Natural Gas.

CNG – Compressed Natural Gas.

RNG – Renewable Natural Gas.

Therms – Standard measurement for natural gas usage.

R99 Diesel – Diesel fuel containing at least 99% renewable diesel (CARB, 2023). Renewable Diesel is "a fuel made from fats and oils, such as soybean oil or canola oil, and is processed to be chemically the same as petroleum diesel (US DOE, n.d.)."

VMT – Vehicle Miles Traveled. A measure of total miles traveled by a given vehicle, or number of vehicles.

CARB – California Air Resources Board. California State agency in charge of air quality. Responsible for conducting statewide GHG Inventories.

ICLEI – Local Governments for Sustainability. "Global network of local and regional governments committed to sustainable urban development (About, 2023)." Authors of the Community and LGO Protocols and ClearPath software.

IPCC – International Panel on Climate Change. United Nations body that sets standards for GHG emission reporting.

EPA - Environmental Protection Agency. The Federal agency responsible for nationwide environmental regulation and policy.

PG&E – Pacific Gas & Electric Company. Investor-owned utility that provides natural gas services to Sacramento County.

SACOG – Sacramento Area Council of Governments. Metropolitan Planning Organization for the greater Sacramento region.

Sac Sewer – Owner and operator of the local sewer collection system.

SMUD – Sacramento Municipal Utility District. Community-owned utility that supplies electricity to Sacramento County.

DGS – Department of General Services.

SCWA – Sacramento County Water Agency.

DWMR – Department of Waste Management & Recycling.

Regional San – Owner and operator of the regional wastewater conveyance system and the EchoWater Resource Recovery Facility (EchoWater Facility) formerly known as the Sacramento Regional Wastewater Treatment Plant.

5 References

"About Us". *ICLEI.* (2023). Retrieved on January 10, 2023 from https://iclei.org/about_iclei_2/#:~:text=ICLEI%20%E2%80%93%20Local%20Governments%20for%20Sustainability,equitable%2C%20resilient%20and%20circular%20development.

CalRecycle. (2019). "California Solid Waste Statistics". Retrieved on December 15, 2022 from https://www2.calrecycle.ca.gov/LGCentral/DisposalReporting/

California Air Resources Board (CARB). (October 26, 2022). *California Greenhouse Gas Emissions for 2000 to 2020: Trends of Emissions and Other Indicators.*

CARB. (November 2022a). *2022 Scoping Plan for Achieving Carbon Neutrality. Retrieved from https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf*

CARB. (February 2023). "CHC Factsheet: Renewable Diesel (R100 or R99)." California Code of Regulations, Title 17, Section 93118.5

California (CA) Department of Finance (DOF). (2023). "January Population and Housing Estimates." Retrieved on May 26, 2023 from https://dof.ca.gov/forecasting/demographics/estimates/

Flores, Chrisandra J. (2022). *Sacramento County 2021 Crop and Livestock Report.* Sacramento County Department of Agriculture, Weights & Measures

ICLEI. (2019). U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions. Local Governments for Sustainability USA. Version 1.2

Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestvedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura and H. Zhang, 2013: Anthropogenic and Natural Radiative Forcing. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Plant, G., Kort, E., Brandt, A., Chen, Y., Fordice, G., Smith, M. (September 2022). *Inefficient and unlit natural gas flares both emit large quantities of methane.* Science; Vol. 377, Issue 6614, pp. 1566-1571

Regan, Dan. (February 2015). *Doubling Energy Efficient Street Lights.* SACCOUNTY NEWS. Sacramento County. Retrieved from https://www.saccounty.gov/news/latest-news/Pages/Doubling-Energy-Efficient-Street-Lights.aspx

SACOG. (2021). "Sacramento Region Draft Growth Projections." Retrieved on May 26, 2023 from https://www.sacog.org/sites/main/files/file-attachments/attachment_a._growth_projections_technical_memo.pdf?1640645575

Sacramento County. (December 2017). "Airport Celebrates New Solar Facility That Will Provide More Than 30% of Electricity". Retrieved from https://sacramento.aero/scas/about/news-and-events/airport-celebrates-new-solar-facility-that-will-provide-more-than-30-of-ele

"Senate Bill 743". SACOG. Retrieved on January 19, 2023 from https://sb743-sacog.opendata.arcgis.com/

SMUD. (2023a). "Commercial SolarShares." Retrieved on January 12, 2023 from https://www.smud.org/en/Going-Green/Commercial-SolarShares

SMUD. (2023b). *2030 Zero Carbon Plan.* Retrieved on May 24, 2023 from https://www.smud.org/-/media/Documents/Corporate/Environmental-Leadership/ZeroCarbon/2030-Zero-Carbon-Plan-Executive-Summary.ashx

US Department of Energy (DOE). (n.d.). Retrieved on May 25, 2023 from https://afdc.energy.gov/fuels/renewable_diesel.html

US EPA. (January 2023). "Emission & Generation Resource Integrated Database (eGRID)". Retrieved from https://www.epa.gov/egrid

US EPA. (May 2022a). "Overview of Greenhouse Gases". Retrieved from https://www.epa.gov/ghgemissions/overview-greenhouse-gases

US EPA. (May 2022b). "Understanding Global Warming Potentials". Retrieved from https://www.epa.gov/ghgemissions/understanding-global-warming-potentials

US EPA. (April 2022d). "Frequent Questions about Landfill Gas." Retrieved from https://www.epa.gov/lmop/frequent-questions-about-landfill-gas#:~:text=Combusting%20the%20LFG%20also%20destroys,and%20other%20less%20volatile%20compounds.

US EPA. (August 2022e) "How does MOVES Define Light Duty Trucks?" (August 2022). Retrieved from https://www.epa.gov/moves/how-does-moves-define-light-duty-trucks

US EPA. (September 2007). "Wastewater Management Fact Sheet". Retrieved from https://www.epa.gov/sites/default/files/2019-08/documents/denitrifying_filters_fact_sheet_p100il79.pdf

Walters, H.; de Kok, E.; Antoniou, D. (November 2016). *Task 1 Technical Memorandum: 2015 Greenhouse Gas Emissions Inventory & Forecasts*. Ascent Environmental

Williams, T.; Chigoy, B.; Borowiec, J.; Glover, B. (July 2016). *Methodologies Used to Estimate and Forecast Vehicle Miles Traveled (VMT).* Texas A&M Transportation Institute. Transportation Policy Research Center. Retrieved from https://static.tti.tamu.edu/tti.tamu.edu/documents/PRC-2016-2.pdf

APPENDIX

D

Greenhouse Gas Emissions Forecasts and Targets Analysis

COUNTY OF SACRAMENTO

Greenhouse Gas Emissions Forecast and Targets Memorandum for the County of Sacramento Climate Action Plan

MAY 20, 2024 (REVISED SEPTEMBER 2024)

Table of Contents

Chapter/Section **Page**

1 INTRODUCTION 1
Organization of this Memorandum 1

2 GREENHOUSE GAS EMISSIONS FORECASTS 2
Community Greenhouse Gas Emissions Forecasts 2
Government Operations Greenhouse Gas Emissions Forecasts 9

3 GREENHOUSE GAS REDUCTION TARGETS 12
2022 Scoping Plan 12
Aligning with Statewide Targets 13
Developing Emissions Reduction Levels and Target Percentages Specific to the County of Sacramento 14

4 ANALYSIS OF CAP TARGETS ATTAINMENT 18
Emissions Gap Analysis 18
Meeting the Targets 21

5 REFERENCES 22

6 LIST OF PREPARERS 24
County of Sacramento 24
Ascent Environmental, Inc. dba Ascent 24
Environmental Science Associates 24

Attachments

A Greenhouse Gas Emissions Forecast and Targets Technical Documentation for the County of Sacramento Climate Action Plan

Figures

Figure 1 Communitywide BAU and ABAU Emissions Forecasts 8
Figure 2 Government Operations BAU and ABAU Emissions Forecasts 11
Figure 3 Communitywide GHG Emissions Forecast and Emissions Reduction Targets 20
Figure 4 Government Operations GHG Emissions Forecast and Emissions Reduction Targets 20

Tables

Table 1 Demographic Indicators to Estimate Community GHG Emissions Forecasts 3
Table 2 Scaling Factors to Estimate Community GHG Emissions Forecasts 4
Table 3 Communities and Associated Land Use Assumptions for 2045 Included in the GHG Emissions Forecast 4
Table 4 Communitywide BAU Forecast 6
Table 5 Federal and State Legislative Adjustments Applied under the ABAU Scenario 7
Table 6 Communitywide ABAU Forecast 8
Table 7 Demographic Indicators to Estimate Government Operations GHG Emissions Forecasts 9
Table 8 Scaling Factors to Estimate Government Operations GHG Emissions Forecasts 9
Table 9 Government Operations BAU Forecast Results 10
Table 10 Government Operations ABAU Forecast Results 10
Table 11 2022 Scoping Plan Emissions Sectors Applicable to the County of Sacramento 15
Table 12 2022 Scoping Plan Estimated Change in Emissions by Sector ($MMTCO_2e$) 16
Table 13 Application of Statewide Emissions Reductions by Sector to Applicable County Sectors 17
Table 14 County of Sacramento Communitywide Target Emissions and Target Percent Reduction from 2021 Communitywide Emissions Levels 17
Table 15 County of Sacramento Government Operations Target Emissions and Target Percent Reduction from 2021 Government Operations Emissions Levels 17
Table 16 Comparison of Communitywide ABAU GHG Emissions Forecast to GHG Emissions Reduction Targets 18
Table 17 Comparison of Government Operations ABAU GHG Emissions Forecast to GHG Emissions Reduction Targets 19

List of Acronyms

2022 CAP	2022 Climate Action Plan
AB	Assembly Bill
ABAU	adjusted business-as-usual scenario
BAU	business-as-usual scenario
CARB	California Air Resources Board
CCS	carbon capture and storage
CDR	carbon dioxide removal
County	County of Sacramento
GHG	greenhouse gas
GWP	global warming potential
MMTCO2e	million metric tons of carbon dioxide equivalent
MTCO2e	metric tons of carbon dioxide equivalent
NWL	natural and working lands
SB	Senate Bill
VMT	vehicle miles traveled

1 Introduction

The County of Sacramento (County) is revising the 2022 Climate Action Plan (2022 CAP) to incorporate a long-term 2045 greenhouse gas (GHG) reduction target, consistent with the most recently adopted state legislation, Assembly Bill (AB) 1279. The revisions that will be made to the 2022 CAP include the following:

- An updated baseline GHG emissions inventory prepared by the County for both the community GHG emissions sources and the County government operations (Sacramento County 2023),
- A forecast of future GHG emissions to align with growth projections of the current General Plan and in-progress General Plan rezoning efforts and amendments, and
- An assessment of the GHG emissions reductions needed to meet a long-term GHG reduction target for the County that is consistent with state targets.

The aim is to account for new state legislation and policies that have changed statewide GHG targets and reduction strategies since the 2022 CAP was prepared. This memorandum summarizes the results of an updated GHG emissions forecast that aligns with the County's growth projections and updated GHG reduction targets consistent with the 2022 Scoping Plan (California Air Resources Board [CARB] 2022) and AB 1279. The updated GHG reduction forecasts and targets will provide the context needed for the County to develop near- and long-term strategies for reducing GHG emissions for both the community and County government operations in line with state-adopted targets.

A detailed explanation of the methods and assumptions is included in Attachment A: *GHG Emissions Forecast and Targets Technical Documentation*.

Organization of this Memorandum

This memorandum consists of three parts:

- **Section 1: Greenhouse Gas Emissions Forecasts** summarizes the forecasted GHG emissions for the years 2030 and 2045.
- **Section 2: GHG Reduction Targets** describes the approach for establishing emissions reduction targets for the CAP.
- **Section 3: Analysis of CAP Targets Attainment** presents the analysis for identifying the emissions gap that the County needs to reduce through CAP strategies to achieve the CAP targets.

2 Greenhouse Gas Emissions Forecasts

The purpose of a GHG emissions forecast for a CAP prepared by a local agency is to estimate how community and government operations GHG emissions may evolve in the future given changes in population and housing, economic growth, and local operations, and how state and federal legislation may help to reduce local emissions. Developing a GHG emissions forecast is an essential step in the climate action planning process, as it provides insight into what future emissions levels may be, and the necessary scale of action that will be needed in each GHG emissions sector to reduce emissions within local control for state GHG reduction target alignment.

The updated GHG emissions forecast prepared for the County is presented as a sector-level assessment of near-term (2030) and long-term (2045) GHG emissions forecasts based on current conditions under two scenarios. The first scenario is a baseline scenario where GHG emissions grow from 2021 levels at the same rates as housing, population, employment, and vehicle travel, which is known as a business-as-usual scenario (BAU) forecast. The BAU forecast serves as a basis for understanding how emissions levels may change with growth, and how far GHG emissions will need to be reduced in future years to meet GHG reduction targets. The second scenario considers the local GHG reduction impact of state and federal legislation, which is known as a legislative-adjusted business-as-usual scenario (ABAU) forecast. The ABAU forecast shows how currently adopted state and federal legislation will help the County to meet its GHG reduction targets.

As mentioned above, the CAP uses the 2021 GHG emissions inventory prepared by the County for both the community and the government operations (Sacramento County 2024). The 2021 GHG inventory uses the most recently available data and provides an updated baseline for forecasting future emissions. With the use of an updated emissions inventory baseline of the year 2021, for both the community and County's government operations, the GHG emissions forecasts and reduction targets will also be updated from those included in the 2022 CAP.

It should be noted that the 2021 GHG emissions inventory and this GHG emissions forecast used the same base data and methods for emissions calculations; however, different tools were used for calculations which results in some rounding error. The 2021 GHG emissions inventory was calculated using the ICLEI – Local Governments for Sustainability USA ClearPath GHG emissions inventory tool. The 2021 GHG inventory was recalculated for the purpose of forecasting calculations using an Excel spreadsheet tool that allows for better refinement of GHG emissions forecast calculations to represent the specific conditions of Sacramento County and California. As such, there may be small difference in the 2021 GHG emissions values reported in this document and the 2021 GHG emissions inventory published by the County. Each of these small differences have been systematically verified to be from rounding errors and not any other type of error such as transcription, methodology, or calculation that would result in significantly different GHG emissions forecast results.

Community Greenhouse Gas Emissions Forecasts

The community BAU and ABAU forecasts presented in this memorandum incorporate the best available data and are consistent with the 2011 Sacramento County General Plan and the rezoning efforts and General Plan amendments that have occurred since adoption or are currently in progress. The BAU forecast utilizes demographic projections that are consistent with current General Plan land use designations and in-progress

rezones and amendments and is based on the emissions levels of the 2021 community GHG emissions inventory. Additionally, the ABAU forecast incorporates new state legislation that was not in place during the development of the 2022 CAP, such as the 2022 California Building Energy Efficiency Standards and Advanced Clean Cars II regulations. As such, the CAP will be based on a more likely future emissions scenario, given an ever-evolving local GHG emission profile and ongoing efforts to increase GHG reductions by state and federal agencies.

Methods for Forecasting Activity Data

Economic activity, such as electricity and natural gas usage, travel, waste disposal, and water consumption, contributes to GHG emissions. The magnitude of everyday economic activity is indicated by "activity data". Some examples of activity data include:

- Energy consumption - a measure of use of electricity or natural gas.
- Vehicle miles traveled (VMT)- a measure of distance traveled by a vehicle.
- Tonnage of solid waste – weight of waste disposed into landfills.

GHG emissions are estimated based on this activity data derived from everyday economic activity. For example, an increase in residential energy consumption will result in an increase in associated GHG emissions; and increase in VMT will result in increased on-road vehicles related GHG emissions.

Growth in activity data is indicated by demographic indicators like population, housing units, number of jobs (also called employment numbers), and service population[1]. For example, an increase in population indicates an increase in residential energy consumption which is expected to result in an increase in GHG emissions if no actions are taken. Another example is growth in service population will result in increased VMT[2], which is expected to result in increased GHG emissions if no actions are taken. Table 1 presents the data on demographic indicators used for estimating the community GHG emissions forecasts and Table 2 provides the scaling factors associated with demographic indicators used for forecasting the activity data. Table 3 in Attachment A presents the assignment of activity data to different emissions sectors and sub-sectors for developing the communitywide emissions forecasts.

Table 1 Demographic Indicators to Estimate Community GHG Emissions Forecasts

Demographic Indicators	2021	2030	2045
Housing Units	243,185	278,384	337,050
Population	609,504	697,725	844,761
Employment	231,077	277,963	356,105
Service Population	840,581	975,688	1,200,866

Source: County of Sacramento.

[1] Service population is the sum of population and number of jobs in a jurisdiction.

[2] Another method for estimating VMT forecast for the unincorporated Sacramento County can be the use of region-wide VMT modeling developed by the 2020 Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). SACOG VMT modeling was not used for developing communitywide VMT forecasts because the modeling assumptions included in the 2020 MTP/SCS land use scenario were determined to be inconsistent with the County's General Plan and in-progress rezones and amendments.

Table 2 Scaling Factors to Estimate Community GHG Emissions Forecasts

Demographic Indicators	2021	2030	2045
Housing Units	1	1.14	1.39
Population	1	1.14	1.39
Employment	1	1.20	1.54
Service Population	1	1.16	1.43

Source: County of Sacramento.

Table 3 Communities and Associated Land Use Assumptions for 2045 Included in the GHG Emissions Forecast

Communities	Status	Housing Units	Jobs	Data Source
West Jackson Highway Specific Plan	Pending General Plan Amendment	16,484	19,323	County of Sacramento 2023
Jackson Township Specific Plan	Approved	5,690	5,248	County of Sacramento 2022
NewBridge Specific Plan	Approved	3,075	1,350	County of Sacramento 2020
Mather South Community Master Plan	Approved	3,522	1,999	County of Sacramento 2020
North Vineyard Station Specific Plan	Approved	6,339	1,113	County of Sacramento, 2020
Florin Vineyard Community Plan	Approved	9,919	19,200	County of Sacramento 2020
Vineyard Springs Comprehensive Plan	Approved	5,942	953	County of Sacramento 2020
Elverta Specific Plan	Approved	5,627	200	SACOG 2023
Easton Place	Approved	1,644	12,827	County of Sacramento 2020
Cordova Hills	Approved	8,000	6,548	County of Sacramento 2012
Upper Westside Specific Plan	Pending General Plan Amendment	9,356	9,570	County of Sacramento 2020
Grandpark Specific Plan	Pending General Plan Amendment	21,705	17,068	County of Sacramento 2017
West of Watt	No change from General Plan EIR holding capacity analysis	4,368	4,188	County of Sacramento 2011
Other (includes Commercial Corridors)	Adopted 2011 General Plan	227,446	256,518	County of Sacramento 2011
Antelope	No change from General Plan EIR holding capacity analysis	1,785	0	County of Sacramento 2011
Countywide Rezone Program	Pending, target completion 2024	4,148	0	County of Sacramento 2023
Stockton Boulevard	Pending, target completion 2024	2,000	0	County of Sacramento 2023
Total		**337,050**	**356,105**	

Notes: GHG = greenhouse gas; SACOG = Sacramento Area Council of Governments.

Source: Compiled by Ascent in 2024.

Note that population growth in unincorporated Sacramento County was projected based on the number of housing units, assuming the average household size remains consistent through 2045. Data for growth in housing units and number of employees were obtained from the General Plan land use designations and in progress rezones and amendments, detailed in the section below.

For developing the BAU forecast, activity data was scaled as per demographic indicators without considering the local GHG reduction impact of state and federal legislation. The ABAU forecast is based on the same method; however, adjustments were made to account the local GHG reduction impact of state and federal legislation.

Agricultural GHG emissions are driven by livestock populations and crop production, which have significant interannual variability and are influenced by global markets. Agricultural acreage is sometimes used to scale agricultural related GHG emissions; however, the intensity of emissions-generating activities on a given acre can also vary depending on the crop type or density of livestock within that acre. Due to this complexity in the interannual variance of agricultural GHG emissions, no activity data and scaling factors were developed for agricultural emissions, and agricultural emissions are assumed to remain constant in both the BAU and ABAU forecasts.

Land Uses Included in GHG Emissions Forecasts

The growth in housing units and number of employees used in the GHG emissions forecast were obtained from the current General Plan and in-progress General Plan rezoning efforts and amendments. The buildout data for the current land uses and in-progress General Plan rezoning efforts and amendments were obtained from the 2011 General Plan and project-specific analyses, including environmental impact reports and traffic impact studies. It was assumed that 2045 is the buildout year for all land uses in unincorporated Sacramento County. Table 3 outlines reasonably foreseeable growth assumed in unincorporated Sacramento County by 2045, which includes projected housing units and the number of employees associated with the 2011 General Plan and in-progress General Plan rezoning efforts and amendments, as well as the respective data source. It is acknowledged that there may be changes in pending projects' land use assumptions as their project-specific analyses are completed in the planning and environmental review process. There may also be changes in infill corridor buildout and approved master plans' land use assumptions over time as development occurs. Any such changes may not preclude individual projects from demonstrating consistency with the CAP and potentially benefitting from CEQA streamlining because CAP implementation progress, buildout of land uses, and the achievement of targets will be monitored for consistency with the projections developed in this memorandum.

Communitywide Business-as-Usual Scenario Greenhouse Gas Emissions Forecast

For the communitywide BAU forecast, the activity data in each emissions sector were scaled using the appropriate scaling factors without considering the local GHG reduction impact of the state and federal legislation. The results of the communitywide BAU forecast show that communitywide GHG emissions would be expected to grow through 2045, given no further GHG reduction efforts beyond 2021, as shown in Table 4. Emissions are presented in units of metric tons of carbon dioxide equivalent ($MTCO_2e$). While a more realistic scenario for future GHG emissions can be provided with an ABAU forecast, the BAU provides the basis for understanding the GHG impact of growth in the county.

Table 4 Communitywide BAU Forecast

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
On-Road Vehicles	1,843,626	2,139,952	2,633,829
Off-Road Vehicles	106,850	126,783	160,004
Residential Building Energy	878,283	1,005,408	1,217,284
Commercial/Industrial Building Energy	555,575	668,300	856,176
High GWP Gases	317,795	363,794	440,458
Agriculture	266,119	263,147	259,068
Solid Waste	156,744	179,432	217,244
Water and Wastewater	33,261	38,075	46,100
Total	**4,158,253**	**4,784,891**	**5,830,163**
Percent Change from 2021 Levels	NA	15%	40%

Notes: All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$). BAU = business-as-usual; GWP = global warming potential; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

Communitywide Legislative Adjusted Business-as-Usual Scenario Greenhouse Gas Emissions Forecast

For the communitywide ABAU forecast, the activity data in each emissions sector were scaled using the scaling factors and emissions were adjusted to account for GHG reductions that are expected to occur as a result of adopted state and federal legislation. For example, growth in residential building electricity consumption was scaled using population, and a legislative reduction was applied to incorporate the 2022 California Building Energy Efficiency Standards for new housing units. The GHG reductions considered in the ABAU forecast fall generally into four categories: building efficiency standards, fuel efficiency standards and electric vehicle sales requirements, renewable and zero-carbon electricity requirements, and state high-GWP gas phaseouts. The primary drivers of the emissions reductions are the requirements of Senate Bill (SB) 100 and SB 1020, as well as increased electric vehicle penetration from the Advanced Clean Cars II regulations. The full list of legislation considered is provided in Table 5.

Table 5 Federal and State Legislative Adjustments Applied under the ABAU Scenario

Source	Legislations	Description	Sector(s) Applied
State	California's Building Energy Efficiency Standards (2022 Title 24, Part 6)	Effective January 1, 2023, new residential and nonresidential buildings in California are required to comply with energy efficiency standards established by the California Energy Commission (CEC 2022). The 2022 standards establish energy performance requirements that encourage energy-efficient approaches to building decarbonization by emphasizing electric heat pumps for space heating and water heating and extending the benefits of photovoltaic and battery storage systems and other demand flexible technology to work in combinations with heat pumps.	Residential Building Energy
State	SB 100	Requires that 60 percent of retail electricity sold in California must come from renewable or zero-carbon resources by 2030 and 100 percent by 2045.	Residential and Commercial/ Industrial Building Energy
State	SB 1020 (Clean Energy, Jobs, and Affordability Act of 2022)	Requires that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by December 31, 2035, 95 percent of all retail sales of electricity to California end-use customers by December 31, 2040, 100 percent of all retail sales of electricity to California end-use customers by December 31, 2045, and 100 percent of electricity procured to serve all State agencies by December 31, 2035.	Residential and Commercial/ Industrial Building Energy
State	Advanced Clean Car Standards I and II	Requires all new passenger cars, trucks, and sport utility vehicles sold in California to meet increasingly stringent requirements regarding zero-emission technologies and emissions standards.	On-Road Vehicles
State	Advanced Clean Trucks	Requires manufacturers to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035.	On-Road Vehicles
State	Advanced Clean Fleets	Starting in 2036, all medium- and heavy-duty trucks sold in California must be zero emissions with limited exceptions. In addition to this sales mandate, fleet owners must also purchase electric trucks on an accelerated timeline.	On-Road Vehicles
State	SB 1206	SB 1206 prohibits the sale of bulk virgin hydrofluorocarbons (HFCs) while allowing the sale of reclaimed HFCs. SB 1206 will mitigate emissions from existing sources that use HFCs, ultimately aiding California in meeting HFC emission reduction goals.	High-GWP Gases
Federal	Fuel Efficiency Standards for Medium- and Heavy-Duty Vehicles	Establishes fuel efficiency standards for medium- and heavy-duty engines and vehicles.	On-Road Vehicles
Federal	EPA Off-Road Compression-Ignition Engine Standards	Establishes standards for phasing of EPA diesel engine tiers for off-road compression-ignition equipment.	Off-Road Vehicles

Notes: ABAU = adjusted business-as-usual; EPA = US Environmental Protection Agency; SB = Senate Bill.

Source: Compiled by Ascent in 2024.

The results of communitywide ABAU forecasts show that emissions are expected to decline from 2021 levels through 2045, as shown in Table 6.

Table 6 Communitywide ABAU Forecast

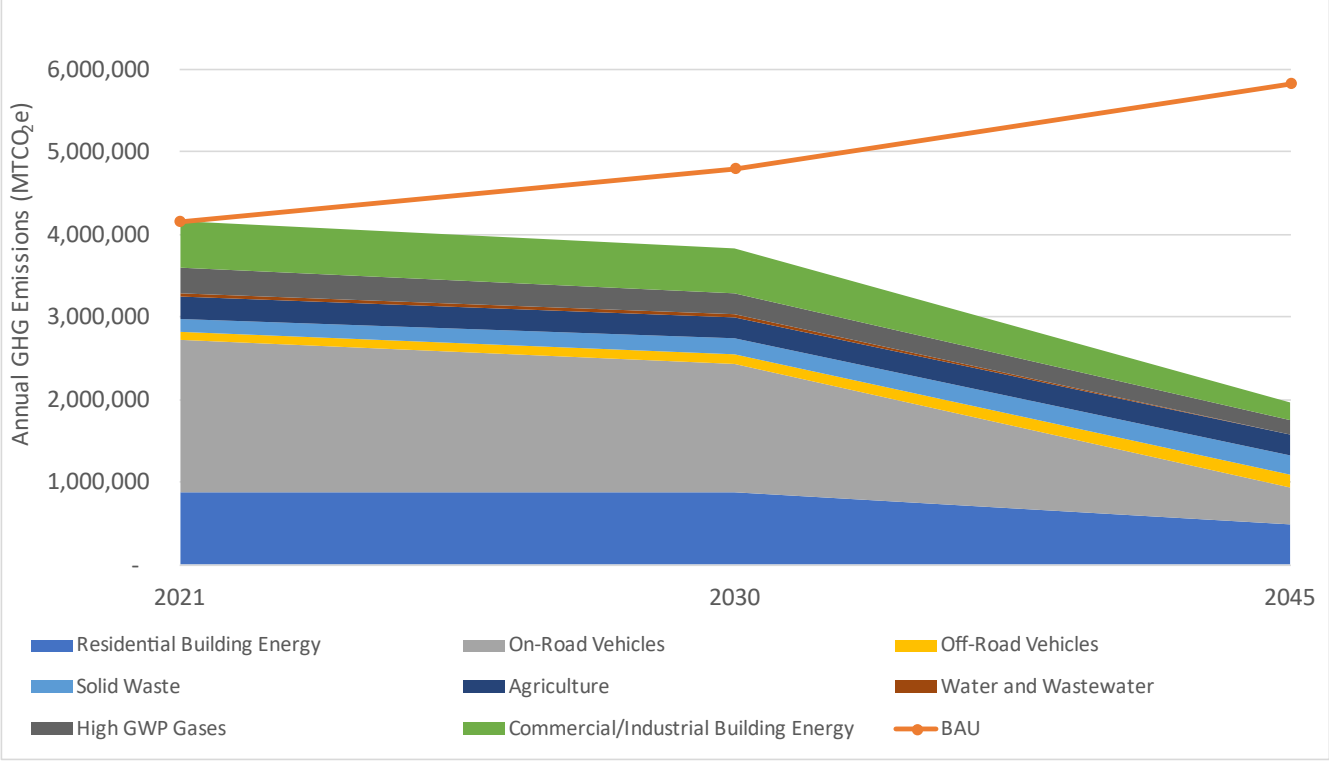
Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
On-Road Vehicles	1,843,626	1,557,953	443,457
Off-Road Vehicles	106,850	126,783	160,004
Residential Building Energy	878,283	871,570	499,660
Commercial/Industrial Building Energy	555,575	546,530	217,521
High GWP Gases	317,795	253,532	161,255
Agriculture	266,119	263,147	259,068
Solid Waste	156,744	179,432	217,244
Water and Wastewater	33,261	30,110	4,309
Total	**4,158,253**	**3,829,056**	**1,962,519**
Percent Change from 2021 Levels	NA	-8%	-53%

Notes: All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$).ABAU = adjusted business-as-usual; GWP = global warming potential; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

The communitywide BAU and ABAU forecast results presented together demonstrate the impact of the state and federal legislation on the County's communitywide GHG emissions profile over time, as shown in Figure 1.

Figure 1 Communitywide BAU and ABAU Emissions Forecasts



Notes: ABAU = adjusted business-as-usual; BAU = business-as-usual; GHG = greenhouse gas; GWP =global warming potential; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Government Operations Greenhouse Gas Emissions Forecasts

The County of Sacramento government operations BAU and ABAU forecasts utilize projections in activity data in the and is based on the emissions levels of the 2021 government operations GHG emissions inventory. Additionally, the ABAU forecast incorporates new state legislation that were not in place during the development of the 2022 CAP, such as the 2022 California Building Energy Efficiency Standards.

Methods for Forecasting Activity Data

Service population in the unincorporated Sacramento County was used for forecasting activity data in all sectors in the County of Sacramento government operations GHG emissions forecasts. Note that activity data related to some sectors are expected to grow with the growth in number of County employees (for example, "Employee Commute" sector is expected to grow with the growth in number of County employees), but growth in County employees is also assumed to grow based on the growth in service population in the unincorporated Sacramento County. Therefore, it was determined that service population can be used for scaling activity data for all sectors in the government operations forecast. Table 7 presents the data on demographic indicators used for estimating the government operations GHG emissions forecasts and Table 8 provides the scaling factors used for forecasting the activity data. Table 20 in Attachment A presents the assignment of activity data to different emissions sectors for developing the government operations emissions forecasts.

Table 7 Demographic Indicators to Estimate Government Operations GHG Emissions Forecasts

Demographic Indicators	2021	2030	2045
Service Population	840,581	975,688	1,200,866

Source: County of Sacramento.

Table 8 Scaling Factors to Estimate Government Operations GHG Emissions Forecasts

Demographic Indicators	2021	2030	2045
Service Population	1	1.16	1.43

Source: County of Sacramento.

Government Operations Business-as-Usual Scenario Greenhouse Gas Emissions Forecast

The government operations BAU forecast was developed by scaling government operations GHG emissions from the 2021 emissions inventory by the appropriate scaling factors. The results of the government operations BAU forecast show that emissions would grow, given no further GHG reduction efforts beyond 2021, as shown in Table 9. While a more realistic scenario for future GHG emissions can be provided with an ABAU forecast, the BAU provides the basis for understanding the GHG impact of growth in the County's government operations.

Table 9 Government Operations BAU Forecast Results

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
Employee Commute	29,341	34,057	41,916
Buildings and Facilities	23,767	34,187	42,076
Airports (Buildings and Facilities)	6,695	9,568	11,777
Vehicle Fleet	15,022	17,436	21,461
Water and Wastewater	5,824	8,901	10,955
Streetlights and Traffic Signals	1,255	1,974	2,430
Total	**81,903**	**106,123**	**130,615**
Percent Change from 2021 Levels	NA	30%	59%

Notes: All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$). BAU = business-as-usual; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

Government Operations Legislative Adjusted Business-as-Usual Scenario Greenhouse Gas Emissions Forecast

The government operations ABAU forecast was developed by accounting for the expected GHG reductions in government operations associated with new state legislation, such as the 2022 California Building Energy Efficiency Standards. The full list of legislation considered is provided in Table 5. The potential GHG reductions from the implementation of the Advanced Clean Fleets regulation are not considered in the ABAU forecast for government operations, as this will require discrete action from the County and should be considered in the GHG reduction measures of the CAP. The results of government operations ABAU forecasts show that emissions are expected to decline from 2021 levels through 2045, as shown in Table 10 and Figure 2.

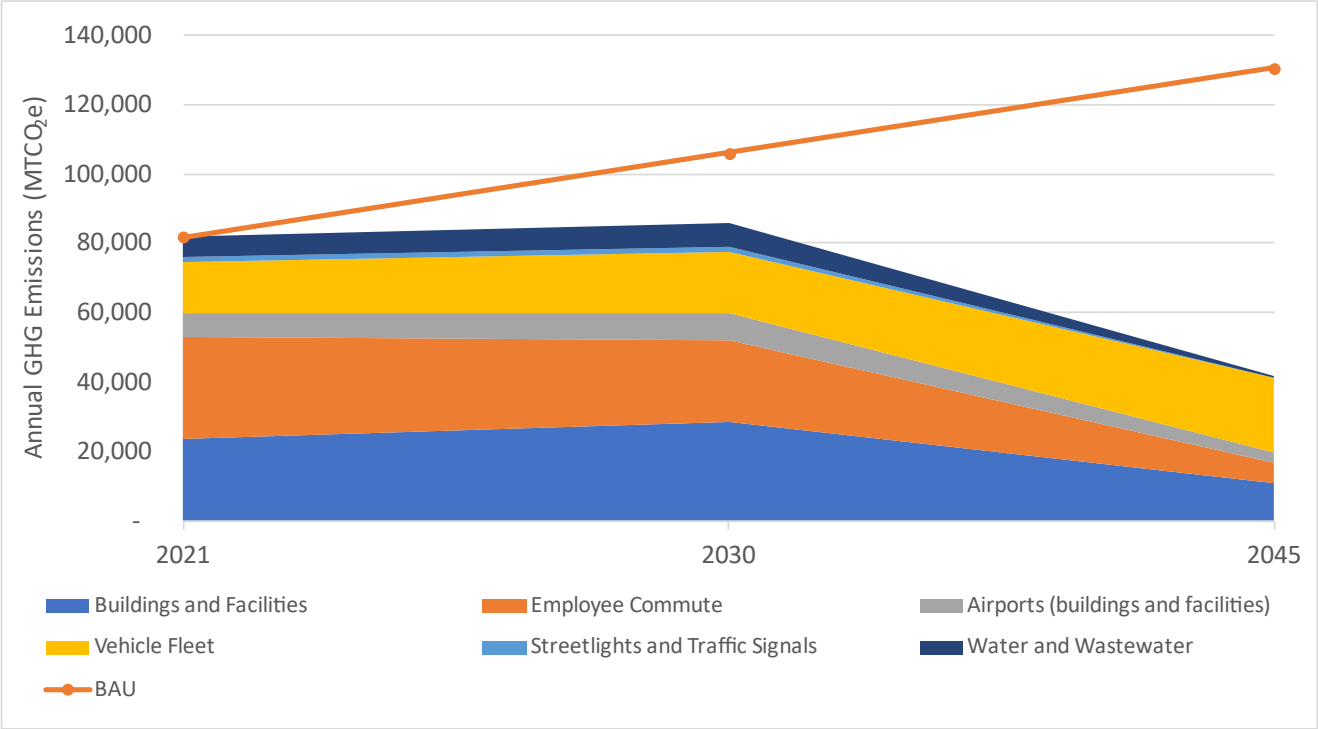
Table 10 Government Operations ABAU Forecast Results

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
Employee Commute	29,341	23,602	5,579
Buildings and Facilities	23,767	28,366	11,033
Airports (buildings and facilities)	6,695	7,983	3,321
Vehicle Fleet	15,022	17,436	21,461
Water and Wastewater	5,824	6,902	296
Streetlights and Traffic Signals	1,255	1,519	0
Total	**81,903**	**85,808**	**41,690**
Percent Change from 2021 Levels	NA	5%	-49%

Notes: All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$). ABAU = adjusted business-as-usual; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

Figure 2 Government Operations BAU and ABAU Emissions Forecasts



Notes: ABAU = adjusted business-as-usual; BAU = business-as-usual; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

3 Greenhouse Gas Reduction Targets

The target-setting process for the CAP involves identifying the state laws and plans with the best available information on the timing and levels of GHG emissions reductions needed to address climate change, and then calculating specific emissions levels and reduction percentages for the County that demonstrate the County's fair share towards meeting state reduction targets. The GHG reduction targets for the CAP should be based on the years 2030 and 2045 to align with the most recent state legislation and utilize consistent approaches based on the state's latest Climate Change Scoping Plan.

In 2022, AB 1279 was signed into law, which required the state to develop and implement a strategy for achieving a statewide GHG emissions reduction target of 85 percent below 1990 levels for anthropogenic emissions, as well as net zero[3] emissions by 2045 or sooner and net negative emissions thereafter. The CAP should include a long-term GHG reduction target for 2045 that aligns with AB 1279. The 2030 GHG reduction target of the CAP should be align with 2022 Scoping Plan's accelerated target to reduce GHG emissions to 48 percent below 1990 levels by 2030.

2022 Scoping Plan

The 2022 Scoping Plan lays out a path to achieve statewide targets for both carbon neutrality[4] and reducing anthropogenic GHG emissions by 85 percent below 1990 levels by 2045. It addresses the AB 1279 emissions limits by identifying a technologically feasible, cost-effective scenario, referred to as the Scoping Plan Scenario, to achieve these goals. The Scoping Plan Scenario was selected by CARB as the most feasible pathway towards statewide carbon neutrality out of four alternatives modeled in the Scoping Plan development process. The Scoping Plan Scenario identifies a path to keep California on track to meet its SB 32 GHG reduction target of at least 40 percent below 1990 emissions by 2030 but concludes that additional reductions are needed by 2030 (i.e., 48 percent below 1990 levels) for the state to stay on track to achieve net zero GHG emissions by 2045 pursuant to AB 1279 (CARB 2022a:108; 116). The 2022 Scoping Plan is the first Climate Change Scoping Plan to consider natural and working lands (NWL) as part of the state's strategy to reduce GHG emissions.

Scoping Plan Scenario

The Scoping Plan Scenario shows that it is economically and technologically feasible to reduce statewide emissions to at least 85 percent below 1990 levels by 2045 as required by AB 1279. It also shows that reducing 100 percent of statewide anthropogenic emissions by 2045 is not economically or technologically feasible and that carbon dioxide removal (CDR) and sequestration must be used to achieve carbon neutrality. In addition, the Scoping Plan Scenario shows that NWL are projected to be a net emissions source of approximately seven

[3] AB 1279 defines *net zero GHG emissions* as "emissions of GHGs, as defined in subdivision (g) of Section 38505, to the atmosphere are balanced by removals of GHG emissions over a period of time, as determined by CARB." California Health and Safety Code Section 38562.2. In other words, it means that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of carbon dioxide that is removed from the atmosphere, both in natural sinks (such as trees) and through mechanical sequestration (such as direct air capture).

[4] *Carbon neutrality* means "net zero" emissions of GHGs. In other words, it means that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of carbon dioxide that is stored, both in natural sinks and through mechanical sequestration.

million metric tons of carbon dioxide equivalent ($MMTCO_2e$) per year statewide in 2030 and 2045 (CARB 2022a:91), even with actions to preserve carbon sequestration potential. As a result, the Scoping Plan Scenario compensates for residual anthropogenic emissions and net emissions from NWL with CDR strategies, including mechanical direct air capture. The Scoping Plan Scenario includes actions to reduce anthropogenic emissions and manage carbon stocks in NWL to achieve a statewide reduction in anthropogenic emissions of 85 percent below 1990 levels by 2045. However, the Scoping Plan Scenario shows that even with the implementation of these actions, anthropogenic emissions will continue to be emitted and NWL will continue to serve as a net source of emissions. The Scoping Plan Scenario aims to close the remaining emissions gap to reaching net zero emissions through the deployment of mechanical CDR technologies, such as direct air capture, and natural CDR, such as increased NWL sequestration.

2022 Scoping Plan Alternatives

The Scoping Plan development process included evaluation of the technological feasibility, cost-effectiveness, and equity-focused pathways for the state to achieve statewide carbon neutrality by 2045. In this process of evaluating alternatives, CARB modeled four scenarios for economic sectors (called alternatives), including two scenarios to reach carbon neutrality by 2035. The ability for NWL to sequester carbon was also evaluated in four separate alternatives to maximize effectiveness of natural CDR. Based on this information and a thorough stakeholder engagement process, CARB decided on a preferred "Scoping Plan Scenario" of achieving net zero emissions by 2045. The alternatives evaluated and the preferred Scoping Plan Scenario are discussed further below.

2022 Scoping Plan Alternatives Evaluating Statewide Carbon Neutrality by 2035

The draft version of the 2022 Scoping Plan (May 2022) considered two alternative scenarios that would achieve statewide carbon neutrality by 2035 (referred to as Alternatives 1 and 2) (CARB 2022c). The 2022 Scoping Plan included an analysis comparing Alternatives 1 and 2 (that would achieve carbon neutrality by 2035) with the alternatives that would achieve carbon neutrality by 2045. The analysis showed that Alternatives 1 and 2 would have the following outcomes relative to the 2045 timeline of the Scoping Plan Scenario (CARB 2022c:44):

- 5 times and 3 times slower job growth in Alternatives 1 and 2, respectively,
- 7 times and 6 times higher direct costs in Alternatives 1 and 2, respectively, and
- 6 times and 5 times slower economic growth in Alternatives 1 and 2, respectively.

CARB ultimately concluded that the Scoping Plan Scenario for achieving carbon neutrality by 2045 is more cost effective and technologically feasible than the 2035 carbon neutrality alternatives and identified "several feasibility concerns" with achieving carbon neutrality by 2035. Ultimately, CARB adopted the final 2022 Scoping Plan using the Scoping Plan Scenario that identified a statewide pathway to carbon neutrality by 2045.

Aligning with Statewide Targets

The CAP's GHG reduction targets and goals should be aligned with state plans and laws as follows:

- Reducing emissions to at least 40 percent below 1990 levels by 2030 (per SB 32)
- Reducing emissions to 48 percent below 1990 levels by 2030 (per the 2022 Scoping Plan), and
- Reducing emissions to 85 percent below 1990 levels by 2045 (per AB 1279).

Basis for the 2030 Greenhouse Gas Reduction Target

For 2030, the CAP's target should be aligned with the 2022 Scoping Plan, which concludes that statewide GHG emissions levels need to be reduced to 48 percent below 1990 levels by 2030 for the state to stay on track to achieve net zero GHG emissions no later than 2045 (as required by AB 1279). This is a steeper reduction than set forth in SB 32, which establishes a statutory limit of reducing statewide emissions to 40 percent below 1990 levels by 2030.

Basis for the 2045 Greenhouse Gas Reduction Target

For 2045, the CAP's target should be aligned with AB 1279, which requires that the state reduce statewide anthropogenic emissions by at least 85 percent below 1990 levels by 2045 and achieve net zero emissions by 2045. Anthropogenic emissions include the primary sources and activities that generate emissions through fuel combustion in vehicles and buildings. To go beyond an 85 percent anthropogenic emissions reduction and achieve statewide net zero emissions by 2045, the 2022 Scoping Plan relies on new regulations and programs for large-scale deployment of carbon capture and storage (CCS) technologies and mechanical CDR strategies like direct air capture machines, pursuant to SB 905.[5]

The state's CDR sector identifies significant reductions from engineered strategies to remove significant levels of emissions from the atmosphere and the CCS strategy relies on technological advancements, infrastructure development, and a supportive regulatory framework to achieve large-scale implementation. In the early stages, the state is taking the lead in developing strategies for both CCS and mechanical CDR and local governments like the County of Sacramento government do not have a clear role or directions from the state to implement CCS and CDR strategies. As a result, CCS and CDR technologies were not taken into consideration for setting the County's emission reduction targets and, as a result, the CAP's 2045 target is aligned with the AB 1279 target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045.

Developing Emissions Reduction Levels and Target Percentages Specific to the County of Sacramento

To develop unincorporated Sacramento County-specific reduction targets for the CAP that align with statewide targets, the 2022 Scoping Plan was reviewed to identify the emissions sectors in this statewide plan that are relevant and applicable to Sacramento County (based on what emissions sectors were included in the County's GHG emissions inventory). The emissions reduction trajectory of each applicable sector in the 2022 Scoping Plan was then applied to the County's emissions levels to calculate reduction levels and target percentages for the CAP. The analysis performed to derive County-specific GHG reduction targets from state targets and applicable statewide sectors is provided in the following sections.

[5] SB 905 (Caballero, 2022) requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate CCS and CDR projects and technology. The bill requires CARB, on or before January 1, 2025, to adopt regulations creating a unified State permitting application for approval of CCS and CDR projects.

Statewide Sectors Applicable to the County of Sacramento

Review of the 2022 Scoping Plan demonstrates that the County has direct or indirect jurisdiction or control over activities that generate emissions and can reasonably contribute to reductions in six of the eight emissions sectors included in the statewide emissions inventory: agriculture, residential and commercial, electric power, high global warming potential (GWP), recycling and waste, and transportation. This review is summarized in Table 11.

Table 11 2022 Scoping Plan Emissions Sectors Applicable to the County of Sacramento

Emissions Sectors – 2022 Scoping Plan	Applicable to the County of Sacramento?
Agriculture	Yes
Residential and Commercial[1]	Yes
Electric Power	Yes
High GWP	Yes
Industrial[2]	No
Recycling and Waste	Yes
Transportation	Yes

Note: GWP = global warming potential.

1. The Residential and Commercial sector includes fuel combustion, such as natural gas and propane in residential and commercial buildings. GHG emissions from electricity consumed in buildings is included in the Electric Power sector.

2. The Industrial sector refers to CARB's categorization, which includes emissions from entities that report emissions under the State's Mandatory GHG Reporting Program.

Source: Analysis conducted by Ascent in 2024.

The industrial sector is excluded from County's applicable sectors for the following reasons. The County does not have large-scale petroleum refineries, cement manufacturing facilities, or other large-scale industrial facilities that are considered in the 2022 Scoping Plan's "Industrial" emissions sector categorization. Furthermore, industrial entities covered under the State's Mandatory GHG Reporting Program are regulated by CARB under the state's Cap-and-Trade regulatory program, or can opt-in to the Cap-and-Trade. Therefore, the industrial sector is excluded from the list of sectors applicable to the County of Sacramento.

By excluding this sector under this approach, GHG reduction targets for the County can be established in proportion with statewide reductions for all sectors relevant to County jurisdiction to the extent feasible using available data. This target setting approach is consistent with the California Supreme Court decision in *Center for Biological Diversity v. California Department of Fish and Wildlife and Newhall Land and Farming (2015) 62 Cal.4th 204*, which determined that the approach of assessing a project's consistency with statewide emissions reduction goals must include a "reasoned explanation based on substantial evidence" that links the project's emissions (in this case, the project is the CAP, which covers community emissions) to statewide emissions included in achieving statewide GHG reduction goals.

Emissions Reduction Targets and Reduction Percentages for the County of Sacramento

To determine the County of Sacramento's reduction targets, the state's GHG inventories for 1990 and 2021 were compared for the six relevant sectors that are applicable to the County. All sectors that were included in the statewide inventories are shown in Table 12 for 1990 and 2021. Table 12 also includes statewide forecasted emissions by sector provided in the 2022 Scoping Plan for 2030 and 2045. According to the inventories available from CARB, statewide emissions from the relevant sectors were approximately 340 $MMTCO_2e$ in 1990 and 307 $MMTCO_2e$ in 2021 (CARB 2023). Thus, 2021 statewide emissions were approximately 33 $MMTCO_2e$ (10 percent) lower than the 1990 level and the State's 2020 GHG target (i.e., reduce emissions to 1990 levels by 2020) for the relevant sectors.

Table 12 2022 Scoping Plan Estimated Change in Emissions by Sector ($MMTCO_2e$)

GHG Emissions by Sector	1990	2021	2030	2045
Agriculture	26	31	20	15
Residential and Commercial	44	39	27	4
Electric Power	108	62	39	9
High GWP	3	21	10	9
Industrial	98	74	41	12
Recycling and Waste	7	8	9	8
Transportation	152	146	81	8
Total	**438**	**381**	**226**	**65**
Adjusted Total (Excludes Industrial Sector)	*340*	*307*	*186*	*53*

Notes: Totals may not sum exactly due to independent rounding. GHG = greenhouse gases; GWP = global warming potential; $MMTCO_2e$ = million metric tons of carbon dioxide equivalent; NA = not applicable.

Source: CARB 2023; CARB 2022b.

According to the 2022 Scoping Plan, statewide emissions from the sectors relevant to the County's inventory must be reduced to 186 $MMTCO_2e$ by 2030 for the state to achieve the 2030 goal set forth in the 2022 Scoping Plan of 48 percent below 1990 levels. This represents an emissions reduction of approximately 122 $MMTCO_2e$, or 39 percent, by 2030, relative to 2021 levels of 307 $MMTCO_2e$. Additionally, statewide emissions from the sectors relevant to the County's inventory must be reduced to 53 $MMTCO_2e$, an emissions reduction of approximately 254 $MMTCO_2e$, or 83 percent, by 2045, relative to 2021 levels of 307 $MMTCO_2e$. This analysis is summarized in Table 13.

Table 13 Application of Statewide Emissions Reductions by Sector to Applicable County Sectors

Year	All Statewide Sectors		Statewide Sectors Applicable to County of Sacramento	
	Statewide Emissions (2021 Inventory and 2022 Scoping Plan Scenario) ($MMTCO_2e$)	Percent Below 2021 levels	Statewide Emissions (2021 Inventory and 2022 Scoping Plan Scenario) ($MMTCO_2e$)	Percent Below 2021 levels
2021	381	NA	307	--
2030	226	41%	186	39%
2045	65	85%	53	83%

Notes: $MMTCO_2e$ = million metric tons of carbon dioxide equivalent; NA = not applicable.

Table 14 and Table 15 show the GHG emissions reduction targets for the communitywide and government operations emissions, respectively, and show the percentage reduction from 2021 levels (CAP GHG Reduction Target), the emissions levels needed to meet the reduction target (Target Emissions Levels), and the amount of GHG reductions needed to achieve the target (Reductions from GHG Emissions Forecast Needed to Achieve Target). All GHG reduction targets have been translated to be measured from the baseline of the 2021 GHG emissions inventory so that GHG reductions targets can be aligned with 1990 emissions levels and future progress can be measured from the County's 2021 GHG inventory.

Table 14 County of Sacramento Communitywide Target Emissions and Target Percent Reduction from 2021 Communitywide Emissions Levels

Year	CAP GHG Reduction Target (relative to 2021 levels)	Target Emissions Levels ($MTCO_2e/yr$)	Reductions from GHG Emissions Forecast Needed to Achieve Target ($MTCO_2e/yr$)
2021	NA	4,183,598	NA
2030	39%	2,540,792	1,312,248
2045	83%	729,234	1,244,698

Notes: CAP = Sacramento County Climate Action Plan; GHG = greenhouse gas; $MTCO_2e/yr$ = metric tons of carbon dioxide equivalent per year; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

Table 15 County of Sacramento Government Operations Target Emissions and Target Percent Reduction from 2021 Government Operations Emissions Levels

Year	CAP GHG Reduction Target (relative to 2021 levels)	Target Emissions Levels ($MTCO_2e/yr$)	Reductions from GHG Emissions Forecast Needed to Achieve Target ($MTCO_2e/yr$)
2021	NA	81,903	NA
2030	39%	49,742	35,455
2045	83%	14,276	26,941

Notes: CAP = Sacramento County Climate Action Plan; GHG = greenhouse gas; $MTCO_2e/yr$ = metric tons of carbon dioxide equivalent per year; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

4 Analysis of CAP targets attainment

The purpose of the CAP is to develop strategies the County can implement to reduce communitywide and government operations GHG emissions consistent with the reduction targets. With the GHG emissions forecast and reduction targets presented in this memorandum, the County can assess the GHG reductions it will need to achieve the communitywide and government operations GHG emissions reduction targets or bridge the "emissions gap." The emissions gap analysis demonstrates the expected GHG emissions levels from the ABAU forecast for each GHG emissions sector, and additional GHG reductions that will need to be achieved by the reduction strategies of the CAP to align with state GHG reduction targets.

Emissions Gap Analysis

Comparing the County's projected communitywide and government operations GHG emissions levels with the respective emissions reduction targets demonstrates that additional emissions reductions are needed for the County to achieve its targets (Table 16 and Table 17). To meet the 2030 communitywide GHG emissions reduction target, annual GHG emissions would need to be 1,312,248 MTCO2e lower than projected communitywide 2030 levels. To meet the 2045 communitywide GHG emissions reduction target, annual GHG emissions would need to be 1,244,698 MTCO2e lower than projected communitywide 2045 levels. To meet the 2030 government operations GHG emissions reduction target, annual GHG emissions would need to be approximately 35,500 MTCO2e lower than projected government operations 2030 levels. To meet the 2045 government operations GHG emissions reduction target, annual GHG emissions would need to be approximately 27,000 MTCO2e lower than projected government operations 2045 levels. Figure 3 and Figure 4 show community and government operations emissions forecast and emissions reduction targets respectively.

Table 16 Comparison of Communitywide ABAU GHG Emissions Forecast to GHG Emissions Reduction Targets

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
ABAU Forecast			
On-Road Vehicles	1,843,626	1,557,953	443,457
Off-Road Vehicles	106,850	126,783	160,004
Residential Building Energy	878,283	871,570	499,660
Commercial/Industrial Building Energy	555,575	546,530	217,521
High-GWP Gases	317,795	253,532	161,255
Agriculture	266,119	263,147	259,068
Solid Waste	156,744	179,432	217,244
Water and Wastewater	33,261	30,110	4,309
Total Emissions	**4,158,253**	**3,829,056**	**1,962,519**
Percent Reduction from 2021 levels	NA	8%	53%

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
GHG Reduction Targets			
Emissions Reduction Targets	4,158,253	2,525,399	724,817
Emissions Reduction Targets (percent reduction from 2021 levels)	NA	39%	83%
Emissions Gap Analysis			
Reductions from 2021 levels to meet Emissions Reduction Targets	NA	1,632,854	3,433,436
Reductions from ABAU Forecast to meet Emissions Reduction Targets	NA	1,303,657	1,237,702

Notes: All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$). ABAU = adjusted business-as-usual; GHG = greenhouse gas; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

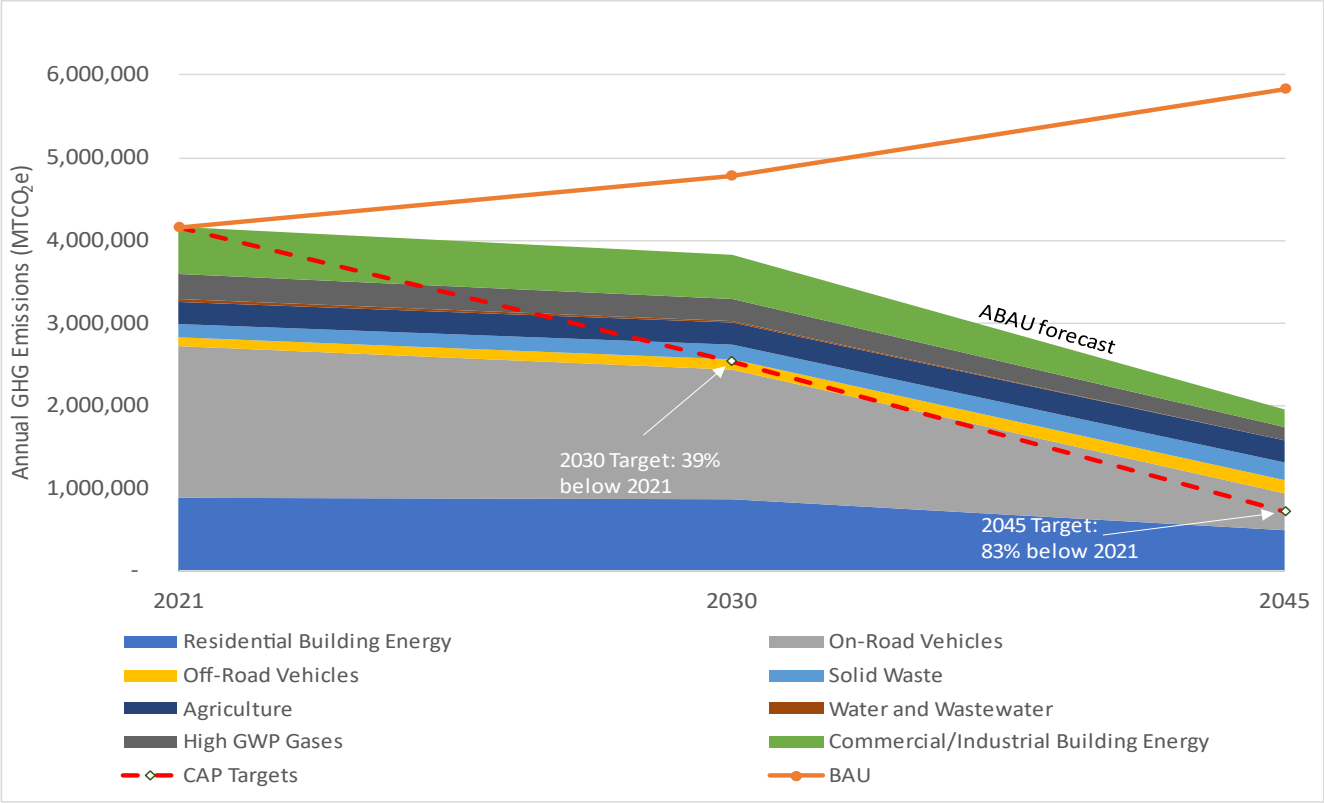
Table 17 Comparison of Government Operations ABAU GHG Emissions Forecast to GHG Emissions Reduction Targets

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
ABAU Forecast			
Employee Commute	29,341	23,602	5,579
Buildings and Facilities	23,767	28,366	11,033
Airports (buildings and facilities)	6,695	7,983	3,321
Vehicle Fleet	15,022	17,436	21,461
Water and Wastewater	5,824	6,902	296
Streetlights and Traffic Signals	1,255	1,519	0
Total Emissions	**81,903**	**85,808**	**41,690**
Percent Reduction from 2021 levels	NA	5%	-49%
GHG Reduction Targets			
Emissions Reduction Targets	81,903	49,742	14,276
Emissions Reduction Targets (percent reduction from 2021 levels)	NA	39%	83%
Emissions Gap Analysis			
Reductions from 2021 levels to meet Emissions Reduction Targets	NA	32,162	67,627
Reductions from ABAU Forecast to meet Emissions Reduction Targets	NA	36,067	27,414

Note: All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$).ABAU = adjusted business-as-usual; GHG = greenhouse gas; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

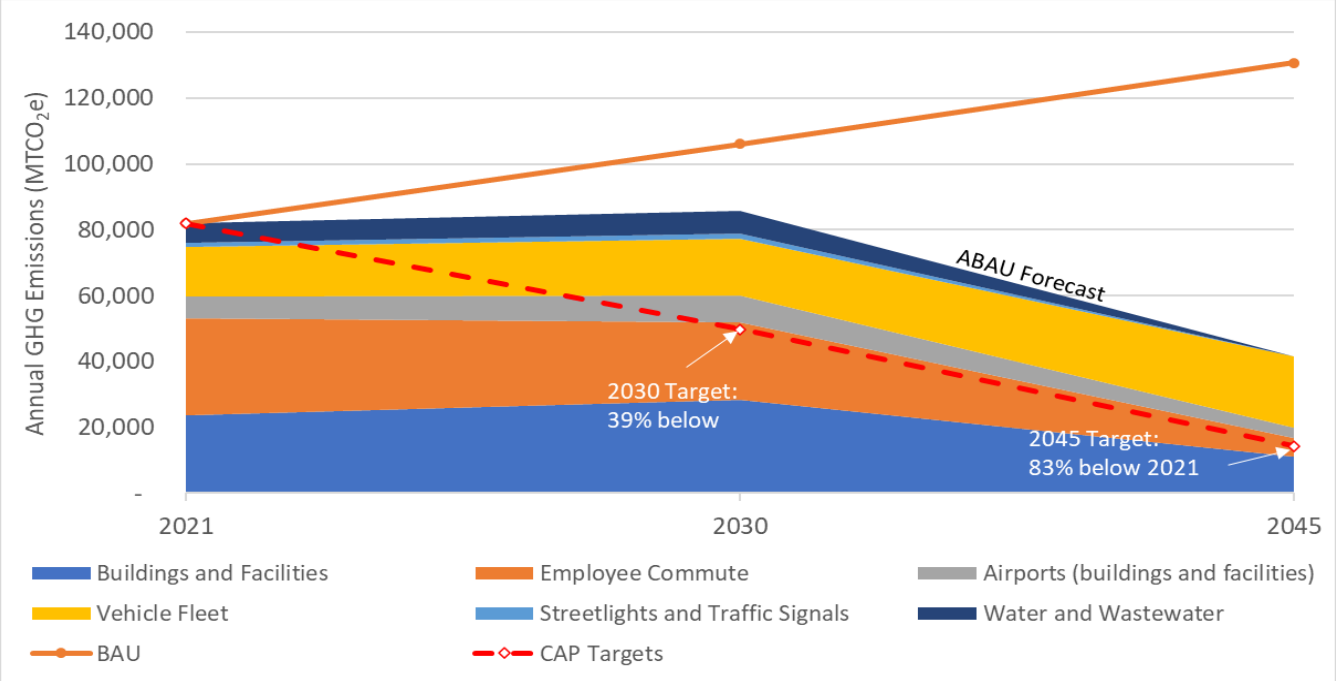
Figure 3 Communitywide GHG Emissions Forecast and Emissions Reduction Targets



Notes: ABAU = adjusted business-as-usual; BAU = business-as-usual; CAP = County of Sacramento Climate Action Plan; GHG = greenhouse gas; GWP = global warming potential; MTCO2e = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Figure 4 Government Operations GHG Emissions Forecast and Emissions Reduction Targets



Notes: ABAU = adjusted business-as-usual; BAU = business-as-usual; CAP = County of Sacramento Climate Action Plan; GHG = greenhouse gas; GWP = global warming potential; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Meeting the Targets

With locally specific GHG reduction targets developed and an understanding of the future emissions gap, the next step is to develop GHG reduction strategies, measures, and implementing actions and quantify their effectiveness towards meeting the targets. The GHG reduction strategies of the CAP will build upon previous GHG reduction success and provide a pathway for reaching the deep GHG reductions needed to align with state GHG reduction targets.

5 References

California Air Resources Board. 2022a. *2022 Draft Scoping Plan Update*. Available: https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf. Accessed October 19, 2023.

———. 2022b. AB 32 GHG Inventory Sectors Modeling Data Spreadsheet (For the Final 2022 Scoping Plan). Available: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-PATHWAYS-data-E3.xlsx. Accessed September 19, 2023.

———. 2022c. *2022 Draft Scoping Plan Update*. Available: https://ww2.arb.ca.gov/sites/default/files/2022-05/2022-draft-sp.pdf. Accessed June 19, 2023.

———. 2023. *California Greenhouse Gas Inventory for 2000-2021 – by Category as Defined in the 2008 Scoping Plan*. Available: https://ww2.arb.ca.gov/sites/default/files/2023-12/ghg_inventory_scopingplan_sum_2000-21.pdf. Accessed May 17, 2024.

CARB. *See* California Air Resources Board.

California Energy Commission. 2022. 2022 Building Energy Efficiency Standards. Available: 2022 Building Energy Efficiency Standards (ca.gov). Accessed September 29, 2023.

CEC. *see* California Energy Commission.

County of Sacramento. 2011. *General Plan of 2005-2030*. Available: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx . Accessed December 8, 2023.

———. 2012. *Final Environmental Impact Report. Volume III of III. Cordova Hills*. Available: https://saclafco.saccounty.gov/Meetings/Documents/2013/august/sac_034183.pdf. Accessed December 8, 2023.

———. 2017. *Grandpark Specific Plan*. Available: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/NatomasNorthPrecinctSpecificPlan.aspx. Accessed December 8, 2023.

———. 2020. *Jackson Highway Corridor Joint Transportation Impact Study for Mather South Community Master Plan*, *NewBridge Specific Plan*, *Jackson Township Specific Plan*, and *West Jackson Highway Master Plan*. Cumulative analysis included in respective Environmental Impact Reports.

———. 2020. *Mather South Community Master Plan Final Environmental Impact Report*. Table PD-2 and Appendix TR-1. Available: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/SouthMatherSpecificPlan.aspx. Accessed March 25, 2024.

———. 2020. *NewBridge Specific Plan Final Environmental Impact Report*. Table PD-3 and Appendix TR-1. Available: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/NewBridgeSpecificPlan.aspx. Accessed March 25, 2024.

———. 2020. *Upper Westside Specific Plan Notice of Preparation*. Table 1: Summary of Upper Westside Preliminary Land Use Plan. Available: https://planningdocuments.saccounty.net/ViewProjectDetails.aspx?ControlNum=PLNP2018-00284. Accessed December 8, 2023.

———. 2022. *Jackson Township Specific Plan Final Environmental Impact Report*. Table Alt-7 and Appendix TR-1. Available: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/JacksonTownshipSpecificPlan.aspx. Accessed March 25, 2024.

———. 2023. *West Jackson Highway Master Plan*. Preferred Land Use Plan. Available: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Pages/WestJacksonHighwayMasterPlan.aspx. Accessed March 25, 2024.

———. 2024. Sacramento County 2021 GHG Inventory Community-wide and Government Operations: April 2024 Corrected Final. Available: https://green.saccounty.net/Documents/2021_GHG_Inventory_Corrected_Final_Clean_April_2024.pdf. Accessed May 10, 2024.

SACOG. *See* Sacramento Area Council of Governments.

Sacramento Area Council of Governments. 2019. *2020 MTP/SCS*. Available: https://www.sacog.org/home/showpublisheddocument/76/638212804736270000. Accessed December 7, 2023.

———. 2023. 2025 Blueprint. Blueprint Land Use Updates. Available: https://www.sacog.org/planning/2025-blueprint/blueprint-land-use/blueprint-land-use-updates. Accessed December 8, 2023.

Sacramento County. *See* County of Sacramento.

6 List of Preparers

County of Sacramento

Todd Smith, Planning Director

June Powells-Mays, Supervising Deputy County Counsel

Ascent Environmental, Inc. dba Ascent

Honey Walters, Principal/Chief Practices Officer

Erik de Kok, Director of Interdisciplinary Planning

Andrew Beecher, Senior Climate Action Planner

Jessica Babcock, Senior Environmental Planner

Hannah Kornfeld, Senior Climate Action Planner

Fred Hochberg, Senior Climate Action Planner

Adam Qian, Climate Adaptation Planner

Sonam Sahu, Climate Action Analyst

John Steponick, Climate Adaptation Analyst

Gayiety Lane, Publishing Specialist

Corey Alling, Graphic Publication Specialist

Environmental Science Associates

Brian Schuster, Air Quality, Climate, and Acoustics Director

Jeff Caton, Climate Planning Services Director

Attachment A

Greenhouse Gas Emissions Forecast and Targets Technical Documentation for the County of Sacramento Climate Action Plan

Introduction

This document serves as an attachment to the Greenhouse Gas Emissions Forecast and Targets Memorandum for the County of Sacramento Climate Action Plan (hereafter referred to as "Forecast and Targets Memorandum" or "Memorandum"). It provides technical documentation for the results presented in the Memorandum. This document presents the 2030 and 2045 community and government operations emissions forecasts and explains the forecast methodology.

County of Sacramento 2021 Inventory

The 2021 community and government operations GHG inventory was prepared by the County (County of Sacramento 2023) which provided the foundation for developing the County's GHG emissions forecast. The following sections present the activity data, emissions factors, and results of the 2021 inventory for each sector. Data from the 2021 community and government operations GHG inventory has been compiled into tabular format and is presented in the tables below.

It should be noted that the 2021 GHG emissions inventory and this GHG emissions forecast used the same base data and methods for emissions calculations; however, different tools were used for calculations which results in some rounding error. The 2021 GHG emissions inventory was calculated using the ICLEI – Local Governments for Sustainability USA ClearPath GHG emissions inventory tool. The 2021 GHG inventory was recalculated for the purpose of forecasting calculations using an Excel spreadsheet tool that allows for better refinement of GHG emissions forecast calculations to represent the specific conditions of Sacramento County and California. As such, there may be small difference in the 2021 GHG emissions values reported in this document and the 2021 GHG emissions inventory published by the County. Each of these small differences have been systematically verified to be from rounding errors and not any other type of error such as transcription, methodology, or calculation that would result in significantly different GHG emissions forecast results.

Community Inventory

Table 1 presents the activity data, emissions factors, and the results of the 2021 community emissions inventory.

Table 1 Key Details of the 2021 Community Emissions Inventory

Sector	Subsector	Fuel Type	Unit	Activity Data	Emission Factor ($MTCO_2e$/unit)	GHG Emissions ($MTCO_2e$)
On-Road Vehicles	HD	NA	Annual VMT	367,290,215	0.001281	470,322
	LD	NA	Annual VMT	1,697,144,578	0.000424	719,280
	Motorcycle	NA	Annual VMT	16,190,008	0.000240	3,885
	Passenger	NA	Annual VMT	2,124,327,446	0.000306	650,139

Sector	Subsector	Fuel Type	Unit	Activity Data	Emission Factor ($MTCO_2e$/unit)	GHG Emissions ($MTCO_2e$)
Off-Road Vehicles	Construction and Mining	Gasoline	Gal	119,540	0.008850	1,058
	Industrial	Gasoline	Gal	316,619	0.008850	2,802
	Lawn and Garden Equipment	Gasoline	Gal	1,619,757	0.008850	14,335
	Light Commercial Equipment	Gasoline	Gal	1,846,476	0.008850	16,341
	Recreational Equipment	Gasoline	Gal	97,653	0.008850	864
	Transport Refrigeration Units	Gasoline	Gal	0	0.008850	0
	Pleasure Craft	Gasoline	Gal	1,641,580	0.008850	14,528
	Airport Ground Support	Gasoline	Gal	775,304	0.008850	6,861
	Oil Drilling	Gasoline	Gal	0	0.008850	0
	Construction and Mining	Diesel	Gal	3,385,533	0.010210	34,566
	Industrial	Diesel	Gal	138,885	0.010210	1,418
	Lawn and Garden Equipment	Diesel	Gal	30,430	0.010210	311
	Light Commercial Equipment	Diesel	Gal	164,162	0.010210	1,676
	Recreational Equipment	Diesel	Gal	0	0.010210	0
	Transport Refrigeration Units	Diesel	Gal	405,254	0.010210	4,138
	Pleasure Craft	Diesel	Gal	0	0.010210	0
	Airport Ground Support	Diesel	Gal	110,126	0.010210	1,124
	Oil Drilling	Diesel	Gal	151,027	0.010210	1,542
	Construction and Mining	Natural Gas	Gal	0	0.006576	0
	Industrial	Natural Gas	Gal	572,257	0.006576	3,763
	Lawn and Garden Equipment	Natural Gas	Gal	0	0.006576	0
	Light Commercial Equipment	Natural Gas	Gal	140,187	0.006576	922
	Recreational Equipment	Natural Gas	Gal	0	0.006576	0
	Transport Refrigeration Units	Natural Gas	Gal	0	0.006576	0
	Pleasure Craft	Natural Gas	Gal	0	0.006576	0
	Airport Ground Support	Natural Gas	Gal	91,272	0.006576	600
	Oil Drilling	Natural Gas	Gal	0	0.006576	0
Building Energy	Residential	Electricity	kWh	1,982,264,551	0.000243	481,425
	Residential	Natural Gas	therm	74,616,385	0.005319	396,858
	Commercial	Electricity	kWh	1,392,983,289	0.000243	338,308
	Commercial	Natural Gas	therm	27,454,537	0.005319	146,021
	Industrial	Electricity	kWh	290,216,671	0.000243	70,484
	Industrial	Natural Gas	therm	143,143	0.005319	761

Sector	Subsector	Fuel Type	Unit	Activity Data	Emission Factor ($MTCO_2e$/unit)	GHG Emissions ($MTCO_2e$)
High GWP Gases	Refrigerants - Commercial	NA	$MTCO_2e$	134,959	1	134,959
	Refrigerants - Transportation	NA	$MTCO_2e$	56,598	1	56,598
	Refrigerants - Residential	NA	$MTCO_2e$	55,597	1	55,597
	Refrigerants - Industrial	NA	$MTCO_2e$	28,251	1	28,251
	Aerosols	NA	$MTCO_2e$	9,549	1	9,549
	Foams	NA	$MTCO_2e$	11,890	1	11,890
	Solvents and Fire Suppression	NA	$MTCO_2e$	3,217	1	3,217
	Fugitive Natural Gas[1]	NA	$MTCO_2e$	17,734	NA	17,734
Agriculture	Fertilizer Application	NA	NA	NA	NA	41,533
	Agricultural Equipment	Gasoline	Gal	44,222	0.008850	391
	Agricultural Equipment	Diesel	Gal	3,216,551	0.010210	32,841
	Agricultural Equipment	Natural Gas	Gal	0	0.006576	0
	Enteric Fermentation (beef)	NA	Heads	14,743.41	1.316000	14,743
	Enteric Fermentation (cattle)	NA	Heads	45,241.01	3.304000	45,241
	Manure Management	NA	NA	NA	NA	131,369
Solid Waste	Waste Generation	NA	Waste tonnage	546,072	0.286103	156,233
	LFG Flaring[1]	LFG Quantity	cf/year	78,568,023	0.000002	189
	LFG Combustion[1]	LFG Quantity	cf/year	2,669,779,468	0.00000012	322
Water and Wastewater	Potable Water and Stormwater	Electricity	kWh	91,425,600	0.000243	22,204
	Treatment Facility[1]	Electricity	kWh	29,258,926	0.000243	7,106
	Interceptor and Pump Station[1]	Electricity	kWh	2,087,570	0.000243	507
	Local Collection System[1]	Electricity	kWh	1,379,361	0.000243	335
	Effluent Discharge[1]	Nitrogen	kg/day	NA	NA	1,576
	Digester Gas Flaring[1]	Natural Gas	cf/day	NA	NA	121
	Digester Gas and Natural Gas Boilers[1]	NA	NA	NA	NA	2
	Process N_2O[1]	Nitrogen oxide	MT	14	NA	1,410

Notes: cf = cubic feet; gal = gallons; GWP = global warming potential; HD = heavy-duty vehicles; kg = kilogram; kWh = kilowatt-hours; LD = light-duty vehicles; LFG = landfill gas; MT = metric ton; $MTCO_2e$ = metric tons of carbon dioxide equivalent; MWh = megawatt-hours; N_2O = nitrogen oxide; NA = not applicable; VMT = vehicle miles traveled.

[1] Emissions results reported in the County of Sacramento 2021 inventory have been directly used for estimating emissions forecasts for this sector or subsector.

Source: Analysis conducted by Ascent in 2024.

Government Operations Inventory

Table 2 presents the activity data, emissions factors, and the results of the 2021 government operations emissions inventory.

Table 2 Key Details of the 2021 Government Operations Emissions Inventory

Sector	Subsector	Fuel Type	Fuel Units	Activity Data	Emission Factor ($MTCO_2e$ /unit)	GHG Emissions ($MTCO_2e$)
Employee Commute	LD	NA	Annual VMT	36,362,297	0.00042	15,411
	Passenger	NA	Annual VMT	45,514,936	0.00031	13,930
Buildings and Facilities	Buildings and Facilities	Electricity	MWh	89,473	0.17924	16,037
	Buildings and Facilities	Natural Gas	therms	1,452,005	0.00532	7,730
Airports (Buildings and Facilities)	Airport Buildings and Facilities	Electricity	MWh	24,370	0.17924	4,368
	Airport Buildings and Facilities	Natural Gas	therms	437,124	0.00532	2,327
Vehicle Fleet	On-road Non-airport	Unleaded	gal	1,406,894	0.00878	12,353
	On-road Non-airport	R99 Diesel	gal	725,140	0.00004	28
	On-road Non-airport	RNG	GGE	1,344,379	0.00000	-
	On-road Airport	Unleaded	gal	79,858	0.01034	701
	On-road Airport	Diesel	gal	3,558	0.00645	61
	On-road Airport	Natural Gas	GGE	260,662	0.00563	1,645
	Off-Road Non-airport	Diesel	gal	13,926	0.00878	144
	Off-Road Non-airport	CNG	GGE	2,791	0.01714	18
	Off-Road Non-airport	Propane	gal	12,800	0.00631	72
Water and Wastewater	Water Supply	Electricity	MWh	1,725	0.24288	419
	Stormwater	Electricity	MWh	28,995	0.17924	5,197
	Wastewater[1]	NA	NA	NA	NA	208
Streetlights and Traffic Signals	Streetlights and Traffic Signals	Electricity	MWh	7,003	0.17924	1,255

Notes: CNG = compressed natural gas; gal = gallon; GGE = gallons gas equivalent; LD = light-duty vehicles; $MTCO_2e$ = metric tons of carbon dioxide equivalent; MWh = megawatt-hours; NA = not applicable; RNG = renewable natural gas; VMT = vehicle miles traveled.

[1] Emissions for government operations wastewater sector are estimated by scaling down the Regional San wastewater related emissions.

Source: Analysis conducted by Ascent in 2024.

Greenhouse Gas Emissions Forecast Methodology

Emissions forecasts are estimated based on the activity data (indicator of magnitude of everyday economic activity), scaling factors (factors derived from associated demographic indicators like population, housing, employment, and service population[6]), and emission factors. Activity data and scaling factors are described in detail in Section 1.1. in the Forecast and Targets Memorandum.

Two types of GHG emissions forecasts are developed for the CAP: the business-as-usual (BAU) forecast and the legislative-adjusted BAU (ABAU) forecast. The BAU emissions forecast provides an assessment of how emissions generated by activities in the unincorporated county will change over time without further state or federal action. The ABAU emissions forecast is an assessment of how emissions will change over time including adopted legislative and regulatory actions at the state and federal levels (without additional local action).

The following section describes the methodology behind estimating both the community and government operations BAU and ABAU emissions forecast for each sector.

Community Greenhouse Gas Emissions Forecasts

Business-as-Usual Forecast

The community BAU emissions forecast is estimated by scaling the 2021 baseline activity data. Different scaling factors are assigned to different emissions sectors and subsectors depending on how each sector or subsector is projected to grow. The scaling factors are based on four demographic indicators: housing, population, employment, and service population (see Section 1.1 in Forecast and Targets Memorandum for details). For example, residential energy consumption can be assumed to increase with population, while vehicle miles traveled (VMT) can be assumed to increase with service population. The list of sectors and subsectors along with the associated demographic indicators is shown in Table 3 below. The scaling factors derived from these demographic indicators are used to project activity data for each sector. The activity data is then translated to emissions using 2021 emission factors to represent the BAU scenario. Under the BAU scenario, it is assumed that baseline emission factors remain unchanged in the future. The resulting activity data for 2030 and 2045 for each sector is shown in Table 4 below.

[6] Service population is the sum of population and number of employment in the unincorporated county.

Table 3 Demographic Indicators by Sector for Community GHG BAU Emissions Forecast

Sector	Subsector	Associated Demographic Indicator
On-Road Vehicles	HD	Service Population
	LD	Service Population
	Motorcycle	Service Population
	Passenger	Service Population
Off-Road Vehicles	Construction and Mining	Employment
	Industrial	Employment
	Lawn and Garden Equipment	Population
	Light Commercial Equipment	Employment
	Recreational Equipment	Population
	Transport Refrigeration Units	Employment
	Pleasure Craft	Population
	Airport Ground Support	Employment
	Oil Drilling	Employment
Residential Building Energy	Residential	Population
	Residential	Population
Commercial/Industrial Building Energy	Commercial	Employment
	Industrial	Employment
High GWP Gases	Refrigerants - Commercial	Population
	Refrigerants - Transportation	Population
	Refrigerants - Residential	Population
	Refrigerants - Industrial	Population
	Aerosols	Population
	Foams	Population
	Solvents & Fire Suppression	Population
	Fugitive natural gas	Population
Agriculture	Fertilizer Application	Agricultural Acres
	Farm Equipment	Agricultural Offroad Equipment Activity Modeled in OFFROAD 2021[1]
	Enteric fermentation (Beef)	Agricultural Acres
	Enteric fermentation (Cattle)	Agricultural Acres
	Manure Management	Agricultural Acres
Solid Waste	Waste Generation	Population
	LFG Flaring	Population
	LFG Combustion	Population

Sector	Subsector	Associated Demographic Indicator
Water and Wastewater	Potable water and stormwater	Population
	Treatment Facility	Population
	Interceptor and pump station	Population
	Local collection system	Population
	Effluent Discharge	Population
	Digester Gas Flaring	Population
	Digester gas and natural gas boilers	Population
	Process N_2O	Population

Notes: BAU = business-as-usual; GHG = greenhouse gas; GWP = global warming potential; HD = heavy-duty vehicles; LD = light-duty vehicles; N_2O = nitrous oxide.

[1] California Air Resources Board's emissions inventory model for estimating emissions from off-road equipment and vehicles.

Source: Compiled by Ascent in 2024.

Table 4 Community BAU Activity Data by Emissions Sector

Sector	Subsector	Fuel Type	Unit	2,030	2,045
On-Road Vehicles	HD	NA	Annual VMT	426,324,783	524,715,731
	LD	NA	Annual VMT	1,969,926,684	2,424,563,527
	Motorcycle	NA	Annual VMT	18,792,229	23,129,263
	Passenger	NA	Annual VMT	2,465,770,669	3,034,842,707
Off-Road Vehicles	Construction and Mining	Gasoline	Gal	143,795	184,219
	Industrial	Gasoline	Gal	380,861	487,931
	Lawn and Garden Equipment	Gasoline	Gal	1,854,205	2,244,952
	Light Commercial Equipment	Gasoline	Gal	2,221,124	2,845,538
	Recreational Equipment	Gasoline	Gal	111,787	135,345
	Transport Refrigeration Units	Gasoline	Gal	0	0
	Pleasure Craft	Gasoline	Gal	1,879,187	2,275,198
	Airport Ground Support	Gasoline	Gal	932,613	1,194,793
	Oil Drilling	Gasoline	Gal	0	0
	Construction and Mining	Diesel	Gal	4,072,454	5,217,323
	Industrial	Diesel	Gal	167,064	214,030
	Lawn and Garden Equipment	Diesel	Gal	34,835	42,176
	Light Commercial Equipment	Diesel	Gal	197,470	252,983
	Recreational Equipment	Diesel	Gal	0	0
	Transport Refrigeration Units	Diesel	Gal	487,479	624,522
	Pleasure Craft	Diesel	Gal	0	0
	Airport Ground Support	Diesel	Gal	132,470	169,711
	Oil Drilling	Diesel	Gal	181,670	232,742

Sector	Subsector	Fuel Type	Unit	2,030	2,045
	Construction and Mining	Natural Gas	Gal	0	0
	Industrial	Natural Gas	Gal	688,367	881,885
	Lawn and Garden Equipment	Natural Gas	Gal	0	0
	Light Commercial Equipment	Natural Gas	Gal	168,631	216,038
	Recreational Equipment	Natural Gas	Gal	0	0
	Transport Refrigeration Units	Natural Gas	Gal	0	0
	Pleasure Craft	Natural Gas	Gal	0	0
	Airport Ground Support	Natural Gas	Gal	109,791	140,656
	Oil Drilling	Natural Gas	Gal	0	0
Residential Building Energy	Residential	Electricity	kWh	2,269,183,134	2,747,380,773
	Residential	Natural Gas	therm	85,416,572	103,416,883
Commercial/Industrial Building Energy	Commercial	Electricity	kWh	1,675,618,016	2,146,675,895
	Industrial	Electricity	therm	349,101,304	447,242,359
	Commercial	Natural Gas	kWh	33,025,031	42,309,189
	Industrial	Natural Gas	therm	172,187	220,592
High GWP Gases	Refrigerants - Commercial	NA	$MTCO_2e$	154,493	187,051
	Refrigerants - Transportation	NA	$MTCO_2e$	64,790	78,444
	Refrigerants - Residential	NA	$MTCO_2e$	63,644	77,056
	Refrigerants - Industrial	NA	$MTCO_2e$	32,340	39,155
	Aerosols	NA	$MTCO_2e$	10,931	13,235
	Foams	NA	$MTCO_2e$	13,611	16,479
	Solvents and Fire Suppression	NA	$MTCO_2e$	3,683	4,459
	Fugitive Natural Gas	NA	$MTCO_2e$	20,301	24,579
Agriculture	Fertilizer Application[1]	NA	NA	NA	NA
	Agricultural Equipment	Gasoline	Gal	41,863	38,635
	Agricultural Equipment	Diesel	Gal	2,927,505	2,530,849
	Agricultural Equipment	Natural Gas	Gal	0	0
	Enteric Fermentation (beef)	NA	Heads	11,203	11,203
	Enteric Fermentation (cattle)	NA	Heads	13,693	13,693
	Manure Management[1]	NA	NA	NA	NA
Solid Waste	Waste Generation[1]	NA	Waste tonnage	NA	NA
	LFG Flaring[1]	LFG Quantity	cf/year	NA	NA
	LFG Combustion[1]	LFG Quantity	cf/year	NA	NA

Sector	Subsector	Fuel Type	Unit	2,030	2,045
Water and Wastewater	Potable Water and Stormwater	Electricity	kWh	104,658,800	126,714,134
	Treatment Facility	Electricity	kWh	33,493,946	40,552,312
	Interceptor and Pump Station	Electricity	kWh	2,389,731	2,893,333
	Local Collection System	Electricity	kWh	1,579,014	1,911,768
	Effluent Discharge[1]	Nitrogen	kg/day	NA	NA
	Digester Gas Flaring[1]	Natural Gas	cf/day	NA	NA
	Digester Gas and Natural Gas Boilers[1]	NA	NA	NA	NA
	Process N_2O[1]	Nitrogen Oxide	MT	NA	NA

Notes: Gal= gallons; HD = heavy-duty vehicles; kWh = kilowatt hours; LD = light-duty vehicles; LFG = landfill gas; N_2O = nitrogen oxide; NA = not applicable; NG= natural gas; MT = metric tons; $MTCO_2e$ = metric tons of carbon dioxide equivalent; VMT = vehicle miles traveled.

[1] Activity data was not estimated for this sector or subsector because emissions results reported in the County of Sacramento 2021 inventory have been directly used for estimating emissions forecasts for this sector or subsector.

Source: Analysis conducted by Ascent in 2024.

Legislative-Adjusted Business-as-Usual Forecast

The ABAU scenario accounts for the effect of adopted legislative and regulatory actions at the state and federal levels on local emissions without additional action by the County. For building energy and high global warming potential (GWP) gases sectors, legislative reductions affect energy use through energy efficiency standards and electricity emission factors to account for increased zero carbon requirements for the electricity sector. For on-road vehicles, wastewater, and water sectors, legislative reductions affect emissions factors only. The ABAU forecast is equivalent to the BAU forecast for solid waste, off-road vehicles, and some subsectors within the agriculture sector. Although legislation exists that would affect these sectors (e.g., Senate Bill [SB] 1383 would impact the solid waste sector), there is not sufficient information to quantify the legislative reductions from these sectors. As such, any additional GHG reductions in these sectors would be factored as part of local actions as part of the CAP's GHG reduction measures and not as part of the forecasts.

Table 5 in the Forecast and Targets Memorandum presents a summary of the legislative adjustments applied to the activity data and emissions factors by sector under the ABAU scenario. Table 5 below lists community forecast sectors where activity data is affected by legislative reductions. A detailed discussion of each sector is provided in Section 3.

Table 5 Community ABAU Activity Data Forecast by Emissions Sector Affected by Legislative Reductions

Sector	Subsector	Fuel Type	Unit	2,030	2,045
Residential Building Energy	Residential	Electricity	kWh	2,334,657,236	2,921,978,379
	Residential	Natural Gas	therm	81,864,547	93,944,817
Commercial/Industrial Building Energy	Commercial	Electricity	kWh	1,648,655,411	2,074,775,615
	Commercial	Natural Gas	kWh	32,413,042	40,677,218
High GWP Gases	Refrigerants - Commercial	NA	$MTCO_2e$	100,461	50,231
	Refrigerants - Transportation	NA	$MTCO_2e$	42,131	21,065
	Refrigerants - Residential	NA	$MTCO_2e$	41,385	20,693
	Refrigerants - Industrial	NA	$MTCO_2e$	21,030	10,515

Notes: ABAU= legislative-adjusted business-as-usual; kWh = kilowatt-hours; $MTCO_2e$ = metric tons of carbon dioxide equivalent; MWh = megawatt-hour; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

Forecast Details by Emissions Sector

On-Road Vehicles

The emissions projections associated with the on-road vehicles sector are calculated by multiplying the projected annual VMT and the vehicle emission factors by vehicle category in 2030 and 2045. Annual VMT for the unincorporated county is projected by scaling the 2021 annual VMT using service population. The 2020 Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) VMT modeling was not used for developing community forecasts because the modeling assumptions included in the 2020 MTP/SCS land use scenario were determined to be inconsistent with the County's General Plan and in-progress rezones and amendments. For instance, MTP/SCS scenarios show no growth for many Specific Plan communities that have been approved (SACOG 2019). Consequently, they fail to effectively integrate the anticipated growth in the unincorporated areas of Sacramento County. Therefore, to incorporate assumptions regarding overall growth in the unincorporated county in the CAP, growth projections for the community forecast were obtained from the current General Plan and in-progress General Plan rezoning efforts and amendments (see section 1.1 and Table 3 in Forecast and Targets Memorandum for details). As such, the unincorporated county's service population is assumed to appropriately incorporate growth as per the County's General Plan and in-progress rezones and amendments. Hence service population was used for estimating VMT projections. This resulted in significantly higher VMT compared to the SACOG MTP/SCS VMT modeling and therefore is a conservative approach to estimating future VMT. Table 6 shows the MTP/SCS VMT data compared with the VMT scaled using the service population factor.

Table 6 Comparison Between SACOG MTP/SCS VMT Data and VMT Data Estimated by Scaling 2021 VMT Using Service Population

	2021	2030	2045
Annual VMT from MTP/SCS	4,204,951,899	4,430,464,971	4,955,879,963
Annual VMT scaled using service population factor	4,204,952,246	4,880,814,364	6,007,251,228
Change in VMT scaled using service population from MTP/SCS VMT	0.00001%	9.23%	17.50%

Notes: MTP/SCS = Metropolitan Transportation Plan/Sustainable Communities Strategy; SACOG = Sacramento Area Council of Governments; VMT = vehicle miles traveled.

Source: Analysis conducted by Ascent in 2024.

For the BAU forecast, vehicle emission factors are assumed to remain constant as of 2021. For the ABAU forecast, vehicle emission factors are based on forecasted vehicle population, VMT, and emissions from the California Air Resources Board's (CARB's) EMFAC2021 model. The EMFAC2021 model does not include the effects of Advanced Clean Cars II (ACCII) and Advanced Clean Fleets (ACF). Therefore, the default EMFAC2021 data was adjusted to account for these regulations, as described below.

- For ACCII, sales of new light-duty zero-emission vehicles (ZEVs, which comprise both battery electric vehicles and plug-in hybrids) were adjusted upwards from the default EMFAC values. ACCII sales requirements for new light-duty ZEVs increase over time beginning in 2026, reaching 100 percent of new sales in 2035. Data used to determine by-year ZEV sales, as well as the split between battery electric vehicles and plug-in hybrids in those sales, were derived from CARB (CARB 2022).

- For ACF, sales of medium and heavy-duty trucks were adjusted upwards from EMFAC defaults to meet CARB's target of 100 percent medium- and heavy-duty new vehicle sales by 2036 (CARB 2023)[7]. The percentage of truck sales that were ZEV was assumed to increase linearly year over year to reach 100 percent by 2036.

Due to these sales mandates, the overall population of ZEVs in the fleet increased relative to EMFAC2021 values. Table 7 below summarizes the percentages of ZEVs in the total population, under both the EMFAC2021 scenario and the "adjusted" scenario reflecting the regulations described above. The ZEV fleet percentages were used to develop county-wide vehicle average emission factors that are based on the vehicle-specific emission factors in EMFAC2021. The adjusted data was used for the ABAU forecast.

[7] The ACF targets are also adjusted to account for the fact that not all trucks in California are originally sold there (and thus not eligible for the sales requirement) (https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appf.pdf F-14 Table 7).

Table 7 ZEVs As a Percentage of Total Vehicle Fleet in Sacramento County (Default EMFAC Versus Adjusted)

Year	Light Duty (Default)	Light Duty (ACCII Adjusted)	Medium/Heavy Trucks (Default)	Medium/Heavy Trucks (ACF Adjusted)
2021	2%	2%	0%	0%
2030	7%	17%	5%	7%
2035	9%	39%	16%	24%
2040	10%	61%	28%	45%
2045	11%	78%	37%	62%
2050	11%	87%	43%	74%

Notes: ACCII = Advanced Clean Cars II; ACF = Advanced Clean Fleets; EMFAC = EMissions FACtor model; ZEV = zero-emission vehicle.

Source: Analysis conducted by Ascent in 2024.

The total estimated VMT, the average vehicle emission factor, and corresponding GHG emissions from on-road vehicles for each forecast year are given in Table 8.

Table 8 Details of On-Road Vehicles 2021 Inventory and Forecast

Year	Vehicle Category	Total Annual VMT (miles per year)	Average BAU Vehicle Emission Factors (g CO_2e/mile)	Average ABAU Vehicle Emission Factors (g CO_2e/mile)	BAU GHG Emissions ($MTCO_2e$)	ABAU GHG Emissions ($MTCO_2e$)
2021	HD	367,290,215	1,281	1,281	470,322	470,322
	LD	1,697,144,578	424	424	719,280	719,280
	Motorcycle	16,190,008	240	240	3,885	3,885
	Passenger	2,124,327,446	306	306	650,139	650,139
2030	HD	426,324,783	1,281	1,060	545,917	452,091
	LD	1,969,926,684	424	306	834,890	603,676
	Motorcycle	18,792,229	240	229	4,509	4,300
	Passenger	2,465,770,669	306	202	754,636	497,886
2045	HD	524,715,731	1,281	339	671,909	177,961
	LD	2,424,563,527	424	73	1,027,573	176,608
	Motorcycle	23,129,263	240	220	5,550	5,100
	Passenger	3,034,842,707	306	28	928,798	83,787

Notes: ABAU = legislative-adjusted business-as-usual; BAU = business-as-usual; CO_2e = carbon dioxide equivalent; g = grams; GHG = greenhouse gas; HD: heavy-duty vehicles; LD = light-duty vehicles; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Off-Road Vehicles

The emissions projections associated with the off-road vehicles sector are calculated by multiplying the projected fuel use and the emission factors by fuel type in 2030 and 2045. Future growth in fuel use is scaled using different factors for different subsectors. For example, growth in construction and mining equipment was scaled using employment, while growth in lawn and garden equipment was scaled using population (see

Table 3 for details). This approach was used instead of using CARB's 2021 OFFROAD model to account for the growth in various subsectors by the various scaling factors (for example, growth in employment and population) and account for any legislative adjustments. Activity growth could not be separated from impacts from legislation. Thus, the BAU and ABAU forecasts are the same for this sector. The off-road GHG emissions forecast is shown in Table 9.

Table 9 GHG Emissions from Off-Road Vehicles Sector ($MTCO_2e$)

Off-Road Vehicles Subsector	2021	2030	2045
Airport Ground Support	8,586	10,328	13,232
Construction and Mining	35,624	42,852	54,899
Industrial	7,983	9,603	12,302
Lawn and Garden Equipment	14,646	16,765	20,298
Light Commercial Equipment	18,939	22,782	29,187
Oil Drilling	1,542	1,855	2,376
Pleasure Craft	14,528	16,631	20,136
Recreational Equipment	864	989	1,198
Transport Refrigeration Units	4,138	4,977	6,376
Total	**106,850**	**126,783**	**160,004**

Note: $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Building Energy

Emissions associated with the building energy sector are generated from the upstream generation of electricity and on-site combustion of natural gas. This section presents the methodology behind forecasting the energy consumption for residential, commercial, and industrial sources and estimating future emission factors. BAU forecasted energy consumption for residential building energy is estimated by scaling 2021 energy consumption using population. For commercial and industrial sources, BAU forecasted energy consumption is estimated by scaling 2021 energy consumption using employment. The BAU forecasts for all three sources (residential, commercial, and industrial) use the 2021 GHG emissions factors for all forecast years. The ABAU forecasts for the residential and commercial sources consider the effects of legislation on residential and commercial energy use in new buildings per California's Building Energy Efficiency Standards (California Code of Regulations Title 24 Part 6, hereafter referred to as "Title 24"). Note that the ABAU forecast for industrial sources does not incorporate Title 24 legislative reductions because Title 24 can only have a minor impact on energy efficiency in industrial building energy use. ABAU forecast for all three sources (residential, commercial, and industrial) also considers changes to the carbon intensity of electricity generation under SB 100 and SB 1020 that would affect future electricity emission factors. Emissions are calculated by multiplying the annual projected building energy use by the respective emission factors.

Emission Factor Forecasts

Electricity

Sacramento Municipal Utility District (SMUD) is the main utility that provides electricity to the county. Under the BAU forecasts, SMUD's 2021 electricity supply emissions factor is assumed to remain unchanged through 2045. According to The Climate Registry (TCR), SMUD's emissions factor in 2021 was 535 lb. Carbon dioxide equivalent (CO_2e) per megawatt-hour (MWh) and represented a 48 percent zero-carbon electricity mix (TCR 2023), meaning that 48 percent of the electricity generated by SMUD in 2021 was generated by sources that emit no GHG emissions.

Under the ABAU forecasts, SMUD's carbon-free mix for 2030 and 2045 are set to align with the mandates outlined in SB 1020 and SB 100. Thus, under ABAU forecast, the emissions factors align with California Public Utilities Commission's Renewables Portfolio Standard (RPS) which are set through SB 1020 and SB 100. RPS requires that "eligible renewable energy and zero-carbon resources" supply 60 percent of retail electricity sales to end-user customers by 2030 and 100 percent by the end of 2045 (State of California 2023a and 2023b). To calculate future emission factors, SMUD's 2021 electricity supply emissions factor was adjusted to reflect the additional zero-carbon electricity mix percentage to meet the minimum RPS standards. As a result, the 2030 and 2045 emission factors are estimated by incorporating SMUD's 2021 zero-carbon electricity mix and the 60 percent and 100 percent zero-carbon mix by 2030 and 2045 targets, respectively. The emission factors and zero-carbon mix of electricity and associated GHG emissions factors for the ABAU forecast are presented in Table 10.

Table 10 Emission Factors and Zero-Carbon Mix of Electricity Used in Sacramento County

Provider	2021		2030		2045	
	Emission Factor (lb CO_2e/MWh)	Zero-Carbon Electricity Mix	Emission Factor (lb CO_2e/MWh)	Zero-Carbon Electricity Mix	Emission Factor (lb CO_2e/MWh)	Zero-Carbon Electricity Mix
SMUD	535	48%	412	60%	0	100%

Notes: lb CO_2e/MWh = pounds of carbon dioxide equivalent per megawatt-hour; SMUD = Sacramento Municipal Utility District.

Source: Compiled by Ascent in 2024.

Natural Gas

Pacific Gas and Electric Company (PG&E) is the main utility that provides natural gas to the county. According to TCR, 11.73 pounds of carbon dioxide equivalent is released for every therm of natural gas combusted (lb CO_2e/therm) (TCR 2023). Emissions factors associated with natural gas combustion are not anticipated to change over time, as there are no legislative actions that would reduce the carbon intensity of natural gas. The emission factors of natural gas for PG&E supplied natural gas are presented in Table 11.

Table 11 Natural Gas Emission Factors Used in Sacramento County

Provider	2021 Emissions Factor (lb CO_2e/therm)	2030 Emissions Factor (lb CO_2e/therm)	2045 Emissions Factor (lb CO_2e/therm)
PG&E	11.73	11.73	11.73

Notes: lb CO_2e/therm = pounds of carbon dioxide equivalent per therm; PG&E = Pacific Gas and Electric Company.

Source: Compiled by Ascent in 2024.

Energy Use Forecasts

For new buildings, energy use is adjusted to reflect increased stringency under Title 24. Title 24 standards apply to new construction. The 2019 Title 24 standards apply to projects constructed after January 1, 2020; 2022 Title 24 standards apply to projects constructed after January 1, 2023; and the next standards will apply after January 1, 2026. Note that Title 24 legislative reductions were not applied to the ABAU forecast for industrial sources because Title 24 can only have a minor impact on energy efficiency in industrial building energy use. To estimate adjusted future energy consumption resulting from Title 24 requirements in new residential and commercial building construction, electricity- and natural gas-specific adjustment factors are calculated using the difference in the average energy use in residential and commercial buildings between those built to 2019 Title 24 standards and those built to 2022 Title 24 standards. Adjustment factors are calculated using data available from the California Energy Commission (CEC) that were developed for the 2022 Title 24 standards. In addition to accounting for Title 24 requirements by land use type (i.e., residential and commercial), CEC also developed estimates for energy usage rates by climate zone, and the county's climate zone (Zone 12) is used for the residential buildings analysis. Climate zone-specific data for commercial buildings are unavailable; therefore, commercial adjustment factors relied on statewide averages.

The adjustment factors (specific to both building type and energy type) are applied to the projected fuel use that is estimated by scaling 2021 energy use by the appropriate scaling factor (population for residential buildings and employment for commercial buildings). Title 24 adjustment factors are then applied to this projected energy use to estimate ABAU energy consumption and associated GHG emissions of future development with legislative adjustments. The adjustment factors are shown in Table 12. They are presented in terms of the percent change in energy use for buildings compliant with the 2022 Title 24 standards compared to those built to meet the 2019 Title 24 standards. Positive values indicate an anticipated increase in energy use, while negative values indicate an anticipated decrease in energy use. It is important to note that although average electricity use in new residential buildings is anticipated to rise (due to an increase in electrical demand associated with electric appliances installed instead of natural gas appliances), emissions from new residential buildings are expected to be lower than they would be under 2019 Title 24 as a result of overall lower building emissions intensities (due to lower emissions factors associated with electricity compared to natural gas).

Table 12 Title 24 Building Energy Adjustment Factors for 2022 Standards Compared to 2019 Standards

Building Type	Electricity	Natural Gas
Residential	23%	-33%
Commercial	-10%	-11%

Source: Analysis conducted by Ascent in 2024.

Based on the building energy legislative reductions for new buildings and the expected net growth in the unincorporated county's housing and employment, Table 13 shows the resulting expected energy use by source and fuel type for forecast years and Table 14 shows ABAU forecast results. Under the BAU scenario, the 2021 emission factors would remain unchanged through 2045.

Table 13 ABAU Forecasted Building Energy Use

Building Energy Emission Source	Fuel Type	Units	Fuel use in 2030	Fuel use in 2045
Residential	Electricity	kWh	2,334,657,236	2,921,978,379
	Natural Gas	therm	81,864,547	93,944,817
Commercial	Electricity	kWh	1,648,655,411	2,074,775,615
	Natural Gas	therm	32,413,042	40,677,218
Industrial	Electricity	kWh	349,101,304	447,242,359
	Natural Gas	therm	172,187	220,592

Notes: ABAU = legislative-adjusted business-as-usual forecast; kWh = kilowatt-hour.

Source: Compiled by Ascent in 2024.

Table 14 ABAU Forecasted Building Energy Emissions

Building Energy Emission Source	Fuel Type	GHG Emissions in 2030 ($MTCO_2e$)	GHG Emissions in 2045 ($MTCO_2e$)
Residential	Electricity	436,161	0
	Natural Gas	435,409	499,660
Commercial	Electricity	308,002	0
	Natural Gas	172,394	216,348
Industrial	Electricity	65,219	0
	Natural Gas	916	1,173

Notes: ABAU = legislative-adjusted business-as-usual forecast; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

High GWP Gases

Emissions projections associated with the high GWP gases sector include emissions from refrigerants, aerosols, foams, solvents and fire suppression, and fugitive natural gas from pipelines. The BAU forecast for all parameters is estimated by scaling 2021 emissions directly using population. The ABAU forecast for refrigerants incorporates reductions from SB 1206 while for other parameters, the ABAU matches the BAU forecast. GHG emissions from the high GWP gases sector are presented in Table 15.

Table 15 BAU and ABAU Emissions from the High GWP Gases

Calendar Year	Subsector	BAU	ABAU
2021	Refrigerants - Commercial	134,959	134,959
	Refrigerants - Transportation	56,598	56,598
	Refrigerants - Residential	55,597	55,597
	Refrigerants - Industrial	28,251	28,251
	Aerosols	9,549	9,549
	Foams	11,890	11,890
	Solvents and Fire Suppression	3,217	3,217
	Fugitive Natural Gas	17,734	17,734
	Total	**317,795**	**317,795**

Calendar Year	Subsector	BAU	ABAU
2030	Refrigerants - Commercial	154,493	100,461
	Refrigerants - Transportation	64,790	42,131
	Refrigerants - Residential	63,644	41,385
	Refrigerants - Industrial	32,340	21,030
	Aerosols	10,931	10,931
	Foams	13,611	13,611
	Solvents and Fire Suppression	3,683	3,683
	Fugitive Natural Gas	20,301	20,301
	Total	**363,794**	**440,458**
2045	Refrigerants - Commercial	187,051	50,231
	Refrigerants - Transportation	78,444	21,065
	Refrigerants - Residential	77,056	20,693
	Refrigerants - Industrial	39,155	10,515
	Aerosols	13,235	13,235
	Foams	16,479	16,479
	Solvents and Fire Suppression	4,459	4,459
	Fugitive Natural Gas	24,579	24,579
	Total	**253,532**	**161,255**

Notes: ABAU = adjusted business-as-usual forecast; BAU = business-as-usual forecast; GWP = global warming potential.

Source: Analysis conducted by Ascent in 2024.

Agriculture

Emissions forecasts associated with the agriculture sector include emissions from enteric fermentation, manure management, fertilizer application, and use of off-road equipment on agricultural land. As explained in Section 1.1 in the Forecast and Targets Memorandum, agricultural GHG emissions are driven by livestock populations and crop production, which have significant interannual variability and are influenced by global markets. Agricultural acreage is sometimes used to scale agricultural related GHG emissions; however, the intensity of emissions generating activities on a given acre can also vary depending on the crop type or density of livestock within that acre. Due to this complexity in the interannual variance of agricultural GHG emissions, no activity data and scaling factors were developed for agricultural emission subsectors (with farm equipment subsector as an exception), and agricultural emissions are assumed to remain constant in both the BAU and ABAU forecasts. For all subsectors except farm equipment, 2021 activity growth is assumed to continue to be the same through 2045.

Activity data and emissions associated with farm equipment are taken directly from OFFROAD2021 outputs for Sacramento County. CARB released OFFROAD2021, an online emissions inventory database and forecast model for off-road equipment and vehicles, in 2021, that generates off-road vehicle emissions by county, vehicle category, equipment type, horsepower, and fuel type (CARB 2021). OFFROAD2021 integrates data and emissions reductions applicable to agriculture sector due to the Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program and the CARB's Carl Moyer Program.

As mentioned in the 2021 community inventory, the unincorporated county has virtually all the agriculture activities of the entire county. So, the data that was provided for Sacramento County is assumed to be the same as the unincorporated county. Activity growth for the agricultural equipment subsector could not be separated from impacts from legislative reductions from CARB's OFFROAD 2021 model. Thus, the BAU and ABAU forecasts for the agricultural equipment subsector are the same, and both account for legislative reductions. For all other subsectors in the agriculture sector, the BAU and ABAU forecasts are the same and do not account for legislative reductions. Table 16 shows fuel consumption data for agricultural equipment. GHG emissions from the agriculture sector are presented in Table 17.

Table 16 Fuel Consumption in Agricultural Equipment (gallons)

Calendar Year	Diesel	Gasoline	Natural Gas
2021	3,216,551	44,222	0
2030	2,927,505	41,863	0
2045	2,530,849	38,635	0

Source: Compiled by Ascent in 2024.

Table 17 GHG Emissions from Agricultural Subsectors ($MTCO_2e$)

Calendar Year	Fertilizer Application	Manure Management	Enteric Fermentation	Agricultural Equipment
2021	41,533	131,369	59,984	33,232
2030	41,533	131,369	59,984	30,260
2045	41,533	131,369	59,984	26,182

Note: $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Solid Waste

Emissions projections associated with the solid waste sector include emissions from waste generation, landfill gas (LFG) flaring, and LFG combustion. The projections are based on the population growth in the unincorporated county. Emissions are calculated by multiplying 2021 emissions by the population growth factor for each forecast year. No legislative reductions were applied to this sector. This is because SB 1383 (legislation applicable to the solid waste sector) requires the County to take action locally, hence these reductions will be applied as part of the CAP's GHG reduction measures and not as part of the forecasts. Therefore, ABAU emissions forecast for the solid waste sector is equivalent to BAU emissions forecast. Key inputs and forecasted GHG emissions from solid waste are presented in Table 18.

Table 18 GHG Emissions from Solid Waste Subsectors

Calendar Year	Emissions from Waste Generation ($MTCO_2e$)	Emissions from LFG Flaring ($MTCO_2e$)	Emissions from LFG Combustion ($MTCO_2e$)
2021	156,233	189	322
2030	178,847	216	369
2045	216,536	262	446

Notes: GHG = greenhouse gas; LFG = landfill gas; $MTCO_2e$: metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Wastewater

Emissions projections associated with the wastewater sector account for emissions generated from several different sources during the treatment and collection of wastewater. Regional San, which is the main provider of wastewater conveyance and treatment services in the Sacramento region, serves the unincorporated area, several incorporated cities, and limited areas in Yolo County. Energy purchased by Regional San from SMUD to operate the various treatment and pumping facilities is projected by scaling the 2021 electricity consumption by population. Emissions generated from these processes (i.e., treatment facility, interceptor and pump station, and local collection system subsectors) are calculated by multiplying the annual projected building energy use by the respective emission factors. The BAU forecast for these wastewater treatment processes uses the GHG emissions factors used to calculate emissions in the 2021 inventory for all forecast years. Under the ABAU forecast, the emissions factors align with RPS standards which are set through SB 1020 and SB 100. To calculate future emission factors, SMUD's 2021 electricity supply emissions factor was adjusted to reflect the additional zero-carbon electricity mix percentage obtained to meet the minimum RPS standards. As a result, the 2030 and 2045 emission factors are estimated by incorporating SMUD's 2021 zero-carbon electricity mix and the 60 percent and 100 percent zero-carbon mix by 2030 and 2045 targets, respectively. The emission factors and zero-carbon mix of electricity and associated GHG emissions factors for the ABAU forecast are presented in Table 10.

For all other processes (i.e., effluent discharge, digester gas flaring, digester, natural gas boilers, and process N_2O subsectors), 2021 emissions are directly scaled using population. No legislative reductions could be applied to this sector, so legislative-adjusted BAU emissions are equivalent to BAU emissions. Table 19 presents the wastewater sector emissions.

Table 19 GHG Emissions from Wastewater Subsectors

Subsector	GHG Emissions ($MTCO_2e$)				
	2021 Inventory	2030		2045	
		BAU	ABAU	BAU	ABAU
Treatment Facility	7,106	8,135	6,257	9,849	0
Interceptor and Pump Station	507	580	446	703	0
Local Collection System	335	383	295	464	0
Effluent Discharge	1,576	1,804	1,804	2,184	2,184
Digester Gas Flaring	121	139	139	168	168
Digester and Natural Gas Boilers	2	2	2	3	3
Process N_2O	1,410	1,614	1,614	1,954	1,954
Total	**11,057**	**12,657**	**10,558**	**15,325**	**4,309**

Note: ABAU = legislative-adjusted business-as-usual; BAU = business-as-usual; GHG = greenhouse gas; $MTCO_2e$: metric tons of carbon dioxide equivalent; N_2O = nitrogen oxide; NG = natural gas.

Source: Analysis conducted by Ascent in 2024.

Water and Stormwater

Emissions projections associated with the water and stormwater sector account for emissions generated from purchased energy from SMUD to operate the treatment and delivery system for potable water and the stormwater system for residents within the unincorporated county. Energy consumption for future years is estimated by scaling 2021 energy consumption using population. The BAU forecast uses the GHG emissions factors used to calculate emissions in the 2021 inventory for all forecast years. Under the ABAU forecast, the emissions factors align with RPS standards which are set through SB 1020 and SB 100. To calculate future emission factors, SMUD's 2021 electricity supply emissions factor was adjusted to reflect the additional zero-carbon electricity mix percentage obtained to meet the minimum RPS standards. As a result, the 2030 and 2045 emission factors are estimated by incorporating SMUD's 2021 zero-carbon electricity mix and the 60 percent and 100 percent zero-carbon mix by 2030 and 2045 targets, respectively. The emission factors and zero-carbon mix of electricity and associated GHG emissions factors for the ABAU forecast are presented in Table 9. Emissions are calculated by multiplying the annual projected building energy use by the respective emission factors. Table 20 presents projected fuel consumption and emissions for this sector.

Table 20 Fuel Consumption and GHG Emissions from the Water and Stormwater Sector

Calendar Year	Fuel Consumption (kWh)	BAU Emissions ($MTCO_2e$)	ABAU Emissions ($MTCO_2e$)
2021	91,425,600	22,204	22,204
2030	104,658,800	25,418	19,552
2045	126,714,134	30,775	0

Notes: ABAU = adjusted business-as-usual; BAU = business-as-usual; kWh = kilowatt-hours; $MTCO_2e$ = metric tons of carbon dioxide equivalent.
Source: Analysis conducted by Ascent in 2024.

Government Operations Greenhouse Gas Emissions Forecasts

Business-as-Usual Forecast

The government operations BAU forecasted emissions are estimated by scaling the 2021 baseline government operations emissions by service population (see Section 1.2 Forecast and Targets Memorandum for details). Service population is used for forecasting activity data for all the government operations forecast sectors. Table 21 presents the list of sectors and subsectors along with the associated demographic indicators.

Projections in activity data are translated to emissions using the 2021 emission factors to represent the BAU scenario. Under the BAU scenario, it is assumed that baseline emission factors remain unchanged in the future. The resulting activity data for 2030 and 2045 for each sector is shown in Table 22.

Table 21 Demographic Indicators by Sector for the Government Operations BAU Emissions Forecast

Sector	Subsector	Associated Demographic Indicator
Employee Commute	LD	Service Population
	Passenger	Service Population
Buildings and Facilities	Buildings and Facilities	Service Population
	Buildings and Facilities	Service Population
Airports (buildings and facilities)	Airport Buildings and Facilities	Service Population
	Airport Buildings and Facilities	Service Population
Vehicle Fleet	On-road Non-airport	Service Population
	Off-Road Non-airport	Service Population
	On-road Airport	Service Population
Water and Wastewater	Water Supply	Service Population
	Stormwater	Service Population
	Wastewater	Service Population
Streetlights and Traffic Signals	Streetlights and Traffic Signals	Service Population

Notes: LD = light-duty vehicles

Source: Compiles by Ascent in 2024.

Table 22 Government Operations BAU Activity Data Forecast by Emissions Sector

Sector	Subsector	Fuel Type	Fuel Units	2030	2045
Employee Commute	LD	NA	Annual VMT	42,206,811	51,947,666
	Passenger	NA	Annual VMT	52,830,553	65,023,248
Buildings and Facilities	Buildings and Facilities	Electricity	MWh	103,854	127,822
	Buildings and Facilities	Natural Gas	therms	1,685,386	2,074,354
Airports (buildings and facilities)	Airport Buildings and Facilities	Electricity	MWh	28,287	34,815
	Airport Buildings and Facilities	Natural Gas	therms	507,383	624,481
Vehicle Fleet	On-road Non-airport	Unleaded	gal	1,633,024	2,009,908
	On-road Non-airport	R99 Diesel	gal	841,692	1,035,945
	On-road Non-airport	RNG	GGE	1,560,461	1,920,598
	Off-Road Non-airport	Diesel	gal	16,164	19,895
	Off-Road Non-airport	CNG	GGE	3,240	3,987
	Off-Road Non-airport	Propane	gal	14,857	18,286
	On-road Airport	Unleaded	gal	92,694	114,086
	On-road Airport	Diesel	gal	4,130	5,083
	On-road Airport	Natural Gas	GGE	302,558	372,385

Sector	Subsector	Fuel Type	Fuel Units	2030	2045
Water and Wastewater	Water Supply	Electricity	MWh	2,002	2,464
	Stormwater	Electricity	MWh	33,656	41,423
	Wastewater	NA	NA	241	296
Streetlights and Traffic Signals	Streetlights and Traffic Signals	Electricity	MWh	8,129	10,004

Notes: BAU = business-as-usual; CNG = compressed natural gas; gal = gallon; GGE = gallons gas equivalent; LD = light-duty vehicles; MWh = megawatt-hours; NA = not applicable; RNG = renewable natural gas; VMT = vehicle miles traveled.

Source: Compiled by Ascent in 2024.

Legislative-Adjusted Business-as-Usual Forecast

The ABAU scenario accounts for the effect of adopted legislative and regulatory actions at the state and federal levels on local emissions without additional action by the County. For building energy, water supply and stormwater, and streetlights and traffic signals sectors, legislative reductions affect electricity emission factors through SB 100 and SB 1020 to account for increased zero-carbon requirements for the electricity sector. For the employee commute sector, legislative reductions affect emissions factors through ACCII. No legislative reductions are applied to the vehicle fleet sector because ACF and ACCII would require the County to take action locally for their fleets. Any GHG reductions in the vehicle fleet sector would be factored in as part of local actions as part of the CAP's GHG reduction measures and not as part of the forecasts. The wastewater sector does not incorporate legislative reductions. Table 5 in the Forecast and Targets Memorandum presents a summary of the legislative adjustments applied to the activity data and emissions factors by sector under the ABAU scenario. A detailed discussion of each sector is presented in Section 3.

Forecast Detail by Emissions Sector

Employee Commute

The emissions forecasts associated with the employee commute sector are calculated by multiplying the projected annual VMT and the vehicle emission factors by vehicle category in 2030 and 2045. Annual VMT for the sector is projected by scaling the 2021 annual County employee VMT using service population. Although VMT in future years will increase based on the growth in number of County employees, the growth in number of County employees is assumed to be based on growth in unincorporated county service population (see Section 1.2 Forecast and Targets Memorandum for details). That is why the VMT forecast for this sector is scaled based on service population.

For the BAU forecast, the applied future emission factors are based on 2021 emission factors. For the ABAU forecast, the future vehicle emission factors are based on those from CARB's EMFAC2021 webtool and are adjusted to account for the effects of ACCII. For ACCII, sales of electric vehicles are adjusted upwards from the default EMFAC values to be consistent with the state's target where 100 percent of new passenger vehicle sales are plug-in hybrids or battery electric vehicles by 2035 (CARB 2022). The total estimated VMT, the average vehicle emission factor, and corresponding GHG emissions from employee commute for each forecast year are given in Table 23.

Table 23 Key Details of Employee Commute 2021 Inventory and Forecast

Year	Vehicle Category	Total Annual VMT (miles per year)	Average BAU Vehicle Emission Factors (g CO_2e/mile)	Average ABAU Vehicle Emission Factors (g CO_2e/mile)	BAU GHG Emissions ($MTCO_2e$)	ABAU GHG Emissions ($MTCO_2e$)
2021	LD	36,362,297	424	424	15,411	15,411
	Passenger	45,514,936	306	306	13,930	13,930
2030	LD	42,206,811	424	306	17,888	12,934
	Passenger	52,830,553	306	202	16,169	10,667
2045	LD	51,947,666	424	73	22,016	3,784
	Passenger	65,023,248	306	28	19,900	1,795

Notes: ABAU = legislative-adjusted business-as-usual; BAU = business-as-usual; g CO_2e/mile = grams of carbon dioxide equivalent per mile; LD = light-duty; $MTCO_2e$: metric tons of carbon dioxide equivalent; VMT = vehicle miles traveled.

Source: Analysis conducted by Ascent in 2024.

Building Energy

Emissions associated with the County buildings and facilities are generated from the upstream generation of electricity and on-site combustion of natural gas in County buildings and facilities. Legislative reductions from Title 24 were not applied to forecast energy consumption in this sector. Hence, BAU energy consumption is equivalent to ABAU energy consumption. This section presents the methodology behind the forecasted emission factors from the Buildings and Facilities and Airport Buildings and Facilities sectors. Forecasted energy consumption for County buildings & facilities is estimated by scaling 2021 energy consumption using service population. The BAU forecast uses the GHG emissions factors used to calculate emissions in the 2021 inventory for all forecast years. The ABAU forecast considers changes to the carbon intensity of electricity generation under SB 100 and SB 1020 that would affect future electricity emission factors. Emissions are calculated by multiplying the annual projected building energy use by the respective emission factors.

Emission Factor Forecasts

Electricity

Under BAU forecasts, SMUD's 2021 emissions factor is assumed to remain unchanged through 2045. Under the ABAU forecast, the emissions factors align with RPS standards which are set through SB 1020 and SB 100. To calculate future emission factors, SMUD's 2021 electricity supply emissions factor was adjusted to reflect the additional zero-carbon electricity mix percentage obtained to meet the minimum RPS standards. As a result, the 2030 and 2045 emission factors are estimated by incorporating SMUD's 2021 zero-carbon electricity mix and the 60 percent and 100 percent zero-carbon mix by 2030 and 2045 targets, respectively. The emission factors and zero-carbon mix of electricity and associated GHG emissions factors for the ABAU forecast are presented in Table 24.

Natural Gas

Emissions factors associated with natural gas combustion are not anticipated to change over time, as there are no legislative actions that would reduce the carbon intensity of natural gas. The emission factors of natural gas for PG&E supplied natural gas are presented in Table 11.

Table 24 ABAU Forecasted Building Energy Emissions

Building Energy Emission Source	Fuel Type	GHG Emissions in 2030 ($MTCO_2e$)	GHG Emissions in 2045 ($MTCO_2e$)
Buildings & Facilities	Electricity	19,402	0
	Natural Gas	8,964	11,033
Airport Buildings & Facilities	Electricity	5,285	0
	Natural Gas	2,699	3,321

Note: ABAU = legislative-adjusted business-as-usual; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Vehicle Fleet

Emissions projections associated with the vehicle fleet sector include direct emissions from fuel combustion and includes vehicles owned and operated by the County, both off-road and on-road. Legislative reductions from ACF and ACCII were not applied to the vehicle fleet sector because these legislations require the County to take actions locally, hence these reductions will be applied as part of the CAP's GHG reduction measures and not as part of the forecasts. Therefore, ABAU emissions forecast for the government operations vehicle fleet is equivalent to BAU emissions forecast. Table 25 and Table 27 show County vehicle fleet fuel consumption (Non-Airport) and County airport fleet fuel consumption, respectively. Table 26 and Table 28 show associated emissions from the County's vehicle fleet (non-airport) and the County's airport fleet, respectively.

Table 25 County Vehicle Fleet Fuel Consumption by Fuel Type (Non-Airport)

Fuel Type	Unleaded (gallons)	Diesel (gallons)	R99 Diesel (gallons)	CNG (GGE)	RNG (GGE)	Propane (gallons)
2021	1,406,894	13,926	725,140	2,791	1,344,379	12,800
2030	1,633,024	16,164	841,692	3,240	1,560,461	14,857
2045	2,009,908	19,895	1,035,945	3,987	1,920,598	18,286

Notes: CNG: compressed natural gas; GGE= gallons gas equivalent; RNG: renewable natural gas.

Source: Compiled by Ascent in 2024.

Table 26 County Vehicle Fleet GHG Emissions by Fuel Type (Non-Airport) ($MTCO_2e$)

Fuel Type	Unleaded	Diesel	R99 Diesel	CNG	RNG	Propane	Total
2021	12,353	144	28	18	0	72	**12,615**
2030	14,338	167	33	21	0	84	**14,643**
2045	17,648	206	40	26	0	103	**18,022**

Notes: CNG: compressed natural gas; RNG: renewable natural gas; $MTCO_2e$: metric tons of carbon dioxide equivalent.

R99 Diesel and RNG emit biogenic CO_2, as opposed to fossil CO_2 that is extracted from underground. These renewable fuels are made from biological processes that occur upstream, re-using carbon that is already in the carbon cycle. R99 Diesel emits low fossil CO_2, and RNG is zero carbon.

Source: Analysis conducted by Ascent in 2024.

Table 27 County Airport Fleet Fuel Consumption by Fuel Type

Fuel Type	Unleaded (gallons)	Diesel (gallons)	Natural Gas (GGE)
2021	79,858	3,558	260,662
2030	92,694	4,130	302,558
2045	114,086	5,083	372,385

Note: GGE= gallons gas equivalent.

Source: Compiled by Ascent in 2024.

Table 28 County Airport Fleet GHG Emissions by Fuel Type ($MTCO_2e$)

Fuel Type	Unleaded	Diesel	Natural Gas	Total
2021	701	61	1,645	**2,407**
2030	814	71	1,909	**2,794**
2045	1,001	87	2,350	**3,439**

Notes: $MTCO_2e$: metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Wastewater

Emissions projections associated with the wastewater sector account for emissions generated from several different sources during the treatment of wastewater. The projections are based on service population growth in the unincorporated county. No legislative reductions were applied to this sector, so ABAU emissions are equivalent to BAU emissions.

Emissions are calculated by multiplying 2021 emissions by the service population growth factor for each forecast year. Forecasted GHG emissions from solid waste are presented in Table 29.

Table 29 GHG Emissions from the Wastewater Sector

Calendar Year	GHG Emissions ($MTCO_2e$)
2021	208
2030	241
2045	296

Notes: GHG = greenhouse gas; $MTCO_2e$: metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Water Supply and Stormwater

BAU forecasted energy consumption associated with the water supply and stormwater sector is estimated by scaling 2021 water supply and stormwater electricity consumption using service population. The BAU forecast uses the GHG emissions factors used to calculate emissions in the 2021 inventory for all forecast years. Under the ABAU forecast, the emissions factors align with RPS standards which are set through SB 1020 and SB 100. To calculate future emission factors, SMUD's 2021 electricity supply emissions factor was adjusted to reflect the additional zero-carbon electricity mix percentage obtained to meet the minimum RPS standards. As a result, the 2030 and 2045 emission factors are estimated by incorporating SMUD's 2021 zero-carbon electricity mix and the 60 percent and 100 percent zero-carbon mix by 2030 and 2045 targets, respectively. The emission

factors and zero-carbon mix of electricity and associated GHG emissions factors for the ABAU forecast are presented in Table 24. Emissions are calculated by multiplying the annual projected electricity use by the respective emission factors. Table 30 presents key details of this sector.

Table 30 Key Details of the Water Supply and Stormwater Sector

Calendar Year	Subsector	Fuel Consumption (MWh)	BAU Emissions ($MTCO_2e$)	ABAU Emissions ($MTCO_2e$)
2021	Water Supply	1,725	419	419
	Stormwater	28,995	5,197	5,197
2030	Water Supply	2,002	486	374
	Stormwater	33,656	8,174	6,288
2045	Water Supply	2,464	599	0
	Stormwater	41,423	10,060	0

Notes: ABAU = legislative-adjusted business-as-usual; BAU = business-as-usual; MWh = megawatt-hours; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Streetlights and Traffic Signals

Emissions projections associated with the streetlights and traffic signals sector account for emissions generated from purchased energy from SMUD to operate the streetlights and traffic signals. Forecasted energy consumption is estimated by scaling 2021 electricity use using service population. The BAU forecast uses the GHG emissions factors used to calculate emissions in the 2021 inventory for all forecast years. Under the ABAU forecast, the emissions factors align with RPS standards which are set through SB 1020 and SB 100. To calculate future emission factors, SMUD's 2021 electricity supply emissions factor was adjusted to reflect the additional zero-carbon electricity mix percentage obtained to meet the minimum RPS standards. As a result, the 2030 and 2045 emission factors are estimated by incorporating SMUD's 2021 zero-carbon electricity mix and the 60 percent and 100 percent zero-carbon mix by 2030 and 2045 targets, respectively. The emission factors and zero-carbon mix of electricity and associated GHG emissions factors for the ABAU forecast are presented in Table 24. Emissions are calculated by multiplying the annual projected electricity use by the respective emission factors. Table 31 presents key details of the Streetlights and Traffic Signals sector.

Table 31 Key Details of the Streetlights and Traffic Signals Sector

Calendar Year	Fuel Consumption (MWh)	BAU Emissions ($MTCO_2e$)	ABAU Emissions ($MTCO_2e$)
2021	7,003	1,255	1,255
2030	8,129	1,974	1,519
2045	10,004	2,430	0

Notes: ABAU = legislative-adjusted business-as-usual; BAU = business-as-usual; MWh = mega watt-hours; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

References

California Air Resources Board. 2021. *Off-Road Emissions Inventory*. Available: https://arb.ca.gov/emfac/offroad/emissions-inventory/7099e08b332d395a421541e4b40126d9b8f9635b. Assessed May 18, 2024

———. 2022. Advanced Clean Cars II Appendix D Emissions Inventory Methods and Results for the Proposed Amendments. Available: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/appd.pdf. Assessed September 18, 2024.

———. 2023. Appendix D Final Environmental Analysis for the Proposed Advanced Clean Fleets Regulation. Available: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/acffinalea.docx. Assessed September 18, 2024

California Energy Commission. 2022. *2022 Building Energy Efficiency Standards*. Available: 2022 Building Energy Efficiency Standards (ca.gov). Accessed September 29, 2023.

CEC. *see* California Energy Commission.

CARB. *See* California Air Resources Board.

County of Sacramento. 2023. *Sacramento County 2021 GHG Inventory. Communitywide and Government Operations*. Available: 2021 Sacramento County Greenhouse Gas Inventory (saccounty.net). Accessed January 2, 2024.

State of California. 2023a. SB 100. Available at: Bill Text - SB-100 California Renewables Portfolio Standard Program: emissions of greenhouse gases. Assessed December 18, 2023.

———. 2023b. SB 1020. Available at: Bill Text - SB-1020 Clean Energy, Jobs, and Affordability Act of 2022. (ca.gov). Assessed December 18, 2023.

SACOG. *See* Sacramento Area Council of Governments.

Sacramento Area Council of Governments. 2019. *2020 MTP/SCS*. Available: https://www.sacog.org/home/showpublisheddocument/76/638212804736270000. Accessed December 7, 2023.

The Climate Registry. 2023. *2023 Default Emission Factor Document*. Available: 2023-Default-Emission-Factors-Final-1.pdf (theclimateregistry.org). Accessed December 18, 2023.

APPENDIX

E

Greenhouse Gas Reduction Measures Analysis

COUNTY OF SACRAMENTO

County of Sacramento Climate Action Plan: Final Greenhouse Gas Reduction Measures Technical Memorandum

JULY 3, 2024 (REVISED SEPTEMBER 2024

Table of Contents

Chapter/Section		Page
1	**INTRODUCTION**	**1**
2	**GREENHOUSE GAS EMISSIONS FORECAST, TARGETS, AND GAP ANALYSIS SUMMARY**	**2**
	Greenhouse Gas Emissions Forecasts	2
	Greenhouse Gas Emissions Reduction Targets and Gap Analysis	3
	Greenhouse Gas Reduction Measures Guidelines	5
	Greenhouse Gas Reduction Measures Summary	6
3	**GREENHOUSE GAS REDUCTION MEASURES DETAIL**	**9**
	Community Measures	9
	Government Operations Measures	72
4	**REFERENCES**	**88**
5	**LIST OF PREPARERS**	**92**
	County of Sacramento	92
	Ascent Environmental, Inc. dba Ascent	92
	Environmental Science Associates	92

Attachments

A Greenhouse Gas Reduction Calculation Detail

Tables

Table 1 Sacramento County Community ABAU GHG Emissions Forecast 3
Table 2 County of Sacramento Government Operations ABAU GHG Emissions Forecast 3
Table 3 Comparison of Community ABAU GHG Emissions Forecast to Reduction Targets 4
Table 4 Comparison of Government Operations ABAU GHG Emissions Forecast to Reduction Targets 4
Table 5 GHG Reductions from Community Measures and Comparison with Targets 7
Table 6 GHG Reductions from Government Operations Measures and Comparison with Targets 8
Table 7 Measure GHG-01: Develop a Carbon Farming Program 10
Table 8 Acres Treated with Carbon Farming Techniques and Emissions Reductions from Measure GHG-01 13
Table 9 Performance Standards and Indicators for Measure GHG-01 14
Table 10 Measure GHG-02: Expand the Urban Forest 16
Table 11 Assumed Tree Species and Sequestration Rates for GHG-02 17
Table 12 Cumulative Trees Planted and Resultant GHG Reductions from Measure GHG-02 18
Table 13 Measure GHG-03: Support the SMUD Zero Carbon Plan 20
Table 14 Performance Standards and Indicators for Measure GHG-03 21
Table 15 Distributed Energy Resources Performance Indicators 22
Table 16 Summary of Reach Code Requirements in Measures GHG-04 and GHG-05 25
Table 17 Measure GHG-04: Accelerate Existing Building Retrofits Energy Efficiency 25
Table 18 Reductions in Natural Gas Usage in Existing Residential Buildings from Measure GHG-04 28
Table 19 Reductions in Natural Gas Usage in Existing Nonresidential Buildings from Measure GHG-04 29
Table 20 Performance Standards and Indicators for Measure GHG-04 29
Table 21 Measure GHG-05: Improve New Building Energy Efficiency 33
Table 22 Decrease in Emissions in New Residential Buildings from Reduced Natural Gas Usage from Measure GHG-05 34
Table 23 Reductions in Natural Gas Usage in New Non-Residential Buildings from Measure GHG-05 35
Table 24 Performance Standards and Indicators for Measure GHG-05 35
Table 25 Measure GHG-06: Retire Fossil-Fuel-Powered Landscaping Equipment 37
Table 26 GHG Reductions from Trade-In of Fossil-Fuel-Powered Equipment from Measure GHG-06 38
Table 27 Measure GHG-07: Increase EV Charging and ZEV Infrastructure 40
Table 28 Emissions Reductions from Increased ZEVs from Measure GHG-07 43
Table 29 Quantity of Chargers Needed for ZEVs from Measure GHG-07 43
Table 30 Performance Standards and Indicators for Measure GHG-07 43
Table 31 Measure GHG-08: Develop a VMT Impact Fee Program 46
Table 32 Measure GHG-09: Reduce VMT in Qualified Projects 48
Table 33 VMT Reductions from GHG-09 49
Table 34 Measure GHG-10: Revise Parking Standards 51
Table 35 Calculation of VMT Eligible for Reduction from Measure GHG-10 52
Table 36 VMT Reduction Due to Parking Unbundling from Measure GHG-10 52
Table 37 Measure GHG-11: Increase Transit Ridership 54
Table 38 Emissions Reductions from Increased Transit Ridership from Measure GHG-11 56
Table 39 Performance Standards and Indicators for Measure GHG-11 57
Table 40 Measure GHG-12: Implement the Active Transportation Plan 59

Table 41 Miles of Bicycle Lanes and Sidewalks in Unincorporated Sacramento County 59
Table 42 Emissions Reductions from Increased Bicycle Lane Miles from Measure GHG-12 60
Table 43 Emissions Reductions from Increased Sidewalks from Measure GHG-12 60
Table 44 Performance Standards and Indicators for Measure GHG-12 60
Table 45 Measure GHG-13: Advance Infill Development 62
Table 46 Measure GHG-14: Increase Organic Waste Diversion and Landfill Gas Capture 65
Table 47 Emissions Reduction Due to Increased Diversion from Measure GHG-14 66
Table 48 Emissions Reduction Due to Increased Diversion and Increased LFG Capture from Measure GHG-14 67
Table 49 Performance Standards and Indicators for Measure GHG-14 67
Table 50 Measure GHG-15: Implement the South Sacramento Habitat Conservation Plan 69
Table 51 Measure GHG-16: Expand the Use of Electric Construction and Agricultural Equipment 71
Table 52 Emissions Reductions from Trade-In of Construction and Agricultural Equipment from Measure GHG-16 71
Table 53 Measure GOV-01: Reduce Employee Commute VMT 73
Table 54 Emissions Reductions from Measure GOV-01 74
Table 55 Measure GOV-02: Develop a Non-Airport Fleet Conversion Program 76
Table 56 Incremental Non-Airport Fleet Emissions Reductions Due to Increased Electric ZEV Penetration from Measure GOV-03 77
Table 57 Performance Standards and Indicators for Measure GOV-02 78
Table 58 Measure GOV-03: Develop an Airport Fleet Conversion Program 79
Table 59 Emissions Reductions Due to Increased Electric Vehicle Penetration from Measure GOV-3 80
Table 60 Performance Standards and Indicators for Measure GOV-02 80
Table 61 Measure GOV-04: Reduce Natural Gas Usage in County Buildings 82
Table 62 Natural Gas Emissions Reductions from Measure GOV-04 83
Table 63 Measure GOV-05: Improve Water Efficiency 84
Table 64 Measure GOV-06: Replace Outdoor Lights with LEDs 86

List of Acronyms

ABAU	legislative-adjusted business-as-usual scenario
ATP	Active Transportation Plan
BAU	business-as-usual
BPS	building performance standard
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBECC	California Building Energy Code Compliance
CEC	California Energy Commission
CTWI	Construction Trades Workforce Initiative
DU	welling unit equivalent
EV	electric vehicle
GHG	greenhouse gas
GWP	global warming potential
HEEHRA	High-Efficiency Electric Home Rebate
HOMES	Homeowner Managing Energy Savings
HPS	high-pressure sodium
LED	light-emitting diode
LFG	landfill gas
MF	multifamily
$MTCO_2e$	metric tons of carbon dioxide equivalent
MTP/SCS	Metropolitan Transportation Plan/Sustainable Communities Strategy
MV	mercury-vapor
PHEV	plug-in hybrid
PV	photovoltaic
SACOG	Sacramento Area Council of Governments
SBCTC	Sacramento-Sierra Building and Construction Trades Council
SCAS	Sacramento County Airport System
SETA	Sacramento Employment and Training Agency
SF	single-family
SHRA	Sacramento Housing and Redevelopment Agency
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SRBX	Sacramento Regional Builders' Exchange
SSHCP	South Sacramento Habitat Conservation Plan
Tool	Cost-Effectiveness Explorer Tool
TSM	Transportation System Management
VMT	vehicle miles traveled

1 Introduction

This technical memorandum summarizes the proposed draft greenhouse gas (GHG) reduction measures and implementing actions for the County of Sacramento Climate Action Plan (CAP), along with the results of technical analysis of the GHG emissions reduction potential of proposed measures and their effectiveness in achieving targets. The memo builds on several steps in the climate action planning process and associated deliverables previously submitted to the County, which are listed below and addressed in subsequent sections.

- The 2030 and 2045 GHG emissions forecast, targets, and gap analysis as summarized in the "Greenhouse Gas Emissions Forecasts and Reduction Targets Technical Memorandum for the County of Sacramento Climate Action Plan," dated December 12, 2023 (referred to as "Forecast and Targets Memo" hereafter); and,
- The GHG Reduction Measures Guidelines that were used to guide the development and refinement of the proposed GHG reduction measures and implementing actions, per the Sacramento County Climate Action Plan: Updated GHG Reduction Measures Guidelines memorandum, dated September 13, 2023 (referred to as "Measures Guidelines Memo" hereafter).
- The technical analysis in this memorandum includes (1) the quantification of GHG emissions reduction potential of the proposed GHG reduction measures, and (2) the effectiveness of measures in the aggregate in closing the gap needed to meet the County's targets for 2030 and 2045. The memorandum also demonstrates how the proposed measures are consistent with the Measures Guidelines previously defined, including key assumptions and implementation details.

2 Greenhouse Gas Emissions Forecast, Targets, and Gap Analysis Summary

Greenhouse Gas Emissions Forecasts

Previously, as part of the CAP development process, GHG emissions forecasts were calculated to estimate future levels of both community and government operations emissions relative to the 2021 emissions inventory baseline, absent County-specific GHG reduction measures. Emissions forecasts were prepared for both "business-as-usual" (BAU) and "legislative-adjusted" BAU (ABAU) scenarios for 2030 and 2045. The BAU forecast scenario accounts only for anticipated growth in community emissions associated with changes and growth in the unincorporated county and government operations, while the ABAU forecast scenario includes adjustments to the BAU scenario based on legislative actions to reduce emissions because of state and federal laws, regulations, programs, or other mandated actions. The ABAU forecast scenario was used to perform the GHG measures quantification and gap analysis. A summary of legislative reductions applied in the ABAU forecast scenario and the methodology and assumptions used to prepare the forecasts are provided in the Forecast and Targets Memo.

It should be noted that the 2021 GHG emissions inventory and this GHG emissions forecast used the same base data and methods for emissions calculations; however, different tools were used for calculations which results in some negligible numerical differences due to rounding. The 2021 GHG emissions inventory was calculated using the ICLEI – Local Governments for Sustainability USA ClearPath GHG emissions inventory tool. The 2021 GHG inventory was recalculated for the purpose of forecasting calculations using an Excel spreadsheet tool that allows for better refinement of GHG emissions forecast calculations to represent the specific conditions of Sacramento County and California. As such, there may be negligible differences in the 2021 GHG emissions values reported in this document and the 2021 GHG emissions inventory published by the County. Each of these negligible differences have been systematically verified to be from rounding errors and not any other type of error such as transcription, methodology, or calculation that would result in significantly different GHG emissions forecast results.

The ABAU forecasts for community and government operations are summarized in Tables 1 and 2 below. Under the ABAU forecasts, the County's GHG emissions are projected to increase by approximately 20 percent between 2019 and 2045. Further details about the community GHG emissions forecasts are provided in the Forecast and Targets Memo.

Table 1 Sacramento County Community ABAU GHG Emissions Forecast

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
On-Road Vehicles	1,843,626	1,557,953	443,457
Off-Road Vehicles	106,850	126,783	160,004
Residential Building Energy	878,283	871,570	499,660
Commercial/Industrial Building Energy	555,575	546,530	217,521
High GWP Gases	317,795	253,532	161,255
Agriculture	266,119	263,147	259,068
Solid Waste	156,744	179,432	217,244
Water and Wastewater	33,261	30,110	4,309
Total	**4,158,253**	**3,829,056**	**1,962,519**
Percent Change from 2021 Levels	NA	-8%	-53%

Notes: ABAU = legislative-adjusted business-as-usual scenario; GHG = greenhouse gas; GWP = global warming potential; $MTCO_2e$ = metric tons of carbon dioxide equivalent; NA = not applicable. Community emissions include those emissions associated with the unincorporated county only.

Source: Analysis conducted by Ascent in 2024.

Table 2 County of Sacramento Government Operations ABAU GHG Emissions Forecast

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
Employee Commute	29,341	23,602	5,579
Buildings and Facilities	23,767	28,366	11,033
Airports (buildings and facilities)	6,695	7,983	3,321
Vehicle Fleet	15,022	17,436	21,461
Water and Wastewater	5,824	6,902	296
Streetlights and Traffic Signals	1,255	1,519	0
Total	**81,903**	**85,808**	**41,690**
Percent Change from 2021 Levels	NA	5%	-49%

Notes: ABAU = legislative-adjusted business-as-usual scenario; GHG = greenhouse gas; GWP = global warming potential; $MTCO_2e$ = metric tons of carbon dioxide equivalent; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

Greenhouse Gas Emissions Reduction Targets and Gap Analysis

Tables 3 and 4 below show the GHG emissions reduction targets identified for the community and government operations emissions forecast, respectively. These tables show the targets expressed as percentage reductions from 2021 levels in 2030 and 2045, the emissions levels needed to meet the reduction targets in 2030 and 2045, and the amount of GHG reductions needed relative to the ABAU forecast levels in the target years to achieve the target (Reductions from ABAU Forecast to meet Emissions Reduction Targets). The methodology and assumptions used to calculate the targets, target emission levels, and reductions required to achieve the targets are explained in detail in the Forecast and Targets Memo.

Table 3 Comparison of Community ABAU GHG Emissions Forecast to Reduction Targets

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
ABAU Forecast			
On-Road Vehicles	1,843,626	1,557,953	443,457
Off-Road Vehicles	106,850	126,783	160,004
Residential Building Energy	878,283	871,570	499,660
Commercial/Industrial Building Energy	555,575	546,530	217,521
High-GWP Gases	317,795	253,532	161,255
Agriculture	266,119	263,147	259,068
Solid Waste	156,744	179,432	217,244
Water and Wastewater	33,261	30,110	4,309
Total Emissions	4,158,253	3,829,056	1,962,519
Percent Reduction from 2021 levels	0%	8%	53%
GHG Reduction Targets			
Emissions Reduction Targets	4,158,253	2,525,399	724,817
Emissions Reduction Targets (percent reduction from 2021 levels)	NA	39%	83%
GHG Reduction Targets			
Reductions from 2021 levels to meet Emissions Reduction Targets	NA	1,632,854	3,433,436
Reductions from ABAU Forecast to meet Emissions Reduction Targets	NA	1,303,657	1,237,702

Notes: ABAU = legislative-adjusted business-as-usual; GHG = greenhouse gas; GWP = global warming potential; NA = not applicable. All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$).

Table 4 Comparison of Government Operations ABAU GHG Emissions Forecast to Reduction Targets

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
ABAU Forecast			
Employee Commute	29,341	23,602	5,579
Buildings and Facilities	23,767	28,366	11,033
Airports (buildings and facilities)	6,695	7,983	3,321
Vehicle Fleet	15,022	17,436	21,461
Water and Wastewater	5,824	6,902	296
Streetlights and Traffic Signals	1,255	1,519	—
Total Emissions	81,903	85,808	41,690
Percent Reduction from 2021 levels	NA	5%	-49%

Sector	Annual Greenhouse Gas Emissions ($MTCO_2e$)		
	2021	2030	2045
GHG Reduction Targets			
Emissions Reduction Targets	81,903	49,742	14,276
Emissions Reduction Targets (percent reduction from 2021 levels)	NA	39%	83%
Emissions Gap Analysis			
Reductions from 2021 levels to meet Emissions Reduction Targets	NA	32,162	67,627
Reductions from ABAU Forecast to meet Emissions Reduction Targets	NA	36,067	27,414

Notes: ABAU = legislative-adjusted business-as-usual; GHG = greenhouse gas; NA = not applicable. All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$).

Source: Analysis conducted by Ascent in 2024.

Greenhouse Gas Reduction Measures Guidelines

In September of 2023, the County developed a set of guidelines for the development of GHG reduction measures that meet the requirements of California Environmental Quality Act (CEQA) Guidelines section 15183.5 for a "qualified" GHG reduction plan (e.g., CAP) and the requirements of the County 2011 General Plan Environmental Impact Report Mitigation Measure CC-2. These guidelines included a specific set of criteria to ensure that the measures are real, actionable, feasible, and enforceable. These criteria for the development of GHG reduction measures include 6 key categories:

- **Mechanism for Implementation**. Each GHG reduction measure clearly identifies the appropriate mechanism or vehicle for implementation, including whether the County will need to create a new program or modify an existing program, and whether the development of an ordinance or regulation after CAP adoption is appropriate to guide and enforce implementation.
- **Public Engagement and Community Partnerships**. Each measure includes actions to engage with the community or partner with existing agencies and community-based organizations to assist in the dissemination of information and messaging associated with voluntary programs and ordinances.
- **Performance Standard**. Each measure has a performance standard that will measure the success of a program or that equates to a long-term emissions reduction supported by substantial evidence. These performance standards are clearly defined, with target years that align with the CAP's overall GHG reduction target years.
- **Tracking Mechanism**. Each measure assesses whether data for performance standard success tracking are easily obtained through existing County processes. If a streamlined process for collecting these data does not exist, an action to develop a tracking mechanism is included as part of the measure's implementing actions.
- **Timeline of Implementation**. Each measure includes a clear timeline of implementation that will be needed to support the GHG reductions that can be achieved within the CAP's GHG reduction target timeframe. This may include the year by which an ordinance would be adopted or becomes effective, a program established, or an outreach campaign planned and executed. For longer-term measures that include interdependent actions, require further evaluation or study, or currently lack funding sources, the

measure includes estimated milestone dates by which certain implementing actions or phases would be completed, particularly when specific implementation details cannot be specified prior to CAP adoption.

- **Funding Mechanism**. Each measure aims to include an action to develop a funding mechanism or identify a potential grant funding or financing source to support implementation of the measure. The costs of GHG reduction measures vary widely, with some measures having costs to the County for staffing or infrastructure, and other measures having costs for community members. For example, when community members would be expected to take on costs for implementing measures, the funding mechanisms may be an incentive. In other cases, the County may institute a fee to support funding infrastructure the County will develop. A Cost Analysis and Funding Strategy will be completed to analyze the County's needs for hiring additional staff to support implementation, as well as costs and funding and financing mechanisms.

The process for developing the current set of proposed GHG reduction measures included performing a detailed review of the GHG reduction measures and associated implementation actions included in the County's 2022 Final CAP for conformance with the Measures Guidelines. After this conformance review, the measures were then modified, deleted, combined, or supplemented with additional implementation actions such that the criterion of the Measures Guidelines were met. The results of this process are the current proposed set of GHG reduction measures included in this memorandum.

Greenhouse Gas Reduction Measures Summary

As shown in the gap analysis described above, additional GHG reductions are needed to achieve the community and government operations emissions reduction targets for 2030 and 2045, beyond reductions realized from state and federal legislative actions.

The measures presented below are organized based on whether they are focused on reducing community or government operations emissions. Community measures are numbered starting with "GHG" (i.e., GHG-01, GHG-02, and so forth), while the government operations measures are numbered starting with "GOV" (i.e., GOV-01, GOV-02, and so forth). Implementation actions were also defined for each measure, in accordance with the Measures Guidelines, to demonstrate how each measure will be implemented by one or more steps the County will need to take.

Annual GHG reductions associated with these recommended measures were calculated in a stepwise manner for the future years of 2030 and 2045. In other words, GHG reductions [in metric tons of carbon dioxide equivalent ($MTCO_2e$)] are assessed during a snapshot in time in the years 2030 and 2045. GHG emission reductions were quantified for each measure over a single year rather than adding cumulative reductions from prior years, which aligns with the methodology used to derive the County's GHG reduction targets. Importantly, GHG emissions reductions were quantified wherever substantial evidence and reasonable assumptions were available to support calculations, consistent with the Measures Guidelines. County staff and Ascent also identified measures that were not quantifiable because of a lack of available data or quantification methods but would still be expected to reduce GHG emissions. These measures are listed in this technical memorandum and will be discussed qualitatively in the CAP. They can be monitored for potential quantification opportunities in the future if data and/or quantification methods become available. Further details and description of all measures, their implementing actions, estimated GHG emission reductions, and quantification methods, are included under the "Greenhouse Gas Reduction Measures Detail" section of the memo.

Estimates of GHG emissions reductions, along with an analysis of the effectiveness of measures in closing the emissions "gap" (i.e., the difference between CAP targets and the ABAU forecast), are summarized in Table 5 (for the community analysis) and Table 6 (for government operations) below.

Table 5 shows that the proposed community GHG reduction measures would be sufficient to achieve the 2030 and 2045 community targets.

Table 5 GHG Reductions from Community Measures and Comparison with Targets

Community Measures	Annual GHG Reduction Potential of Individual Measures ($MTCO_2e$)	
	2030	**2045**
GHG-01: Develop a Carbon Farming Program	99,327	451,519
GHG-02: Expand the Urban Forest	808	3,234
GHG-03: Support SMUD Zero Carbon Plan	809,382	-
GHG-04: Accelerate Existing Building Retrofits Energy Efficiency	40,036	203,945
GHG-05: Improve New Building Energy Efficiency	4,462	56,933
GHG-06: Retire Fossil Fuel Powered Landscaping Equipment	3,134	17,254
GHG-07: Increase EV Charging and ZEV Infrastructure	290,826	220,381
GHG-08: Develop a VMT Impact Fee Program	Not Quantifiable	Not Quantifiable
GHG-09: Reduce VMT from New Developments	14,084	15,885
GHG-10: Revise Parking Standards	279	38
GHG-11: Increase Transit Ridership	323	101
GHG-12: Implement the Active Transportation Plan	2,564	2,855
GHG-13: Advance Infill Development	Not Quantifiable	Not Quantifiable
GHG-14: Increase Organic Waste Diversion and Landfill Gas Capture	149,039	202,100
GHG-15: Implement the South Sacramento Habitat Conservation Plan	Not Quantifiable	Not Quantifiable
GHG-16: Expand the Use of Electric Construction and Agricultural Equipment	13,669	68,919
Total Reductions	1,427,931	1,243,164
Comparison with Targets		
Required Reductions to Meet Target	1,303,657	1,237,702
Emissions Above (+) or Below (-) Target	-124,274	-5,462
Target Met?	Yes	Yes

Notes: EV = electric vehicle; GHG = greenhouse gas; SMUD = Sacramento Municipal Utility District; VMT = vehicle miles traveled. All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$). Totals may not sum exactly due to independent rounding.

Source: Analysis conducted by Ascent in 2024.

Table 6 shows that the proposed GHG reduction measures for government operations would achieve the 2030 and 2045 targets. Adjustments to the proposed government operations measures and associated implementing actions, along with the identification of additional measures and actions, would be required to meet the government operations 2030 target. Note that GHG-03 is added to reflect the effects of the Sacramento Municipal Utility District's (SMUD's) zero-carbon plan relative to County government operations—although it is not added as a government measure, it is added as a line item because it affects meeting the government operations reduction targets.

Table 6 GHG Reductions from Government Operations Measures and Comparison with Targets

Government Operations Measures	Annual GHG Reduction Potential of Individual Measures ($MTCO_2e$)	
	2030	2045
GOV-01: Reduce Fossil-Fueled Employee Commute VMT	944	223
GOV-02: Develop a Non-Airport Fleet Conversion Program	5,125	18,022
GOV-03: Develop an Airport Fleet Conversion Program	978	3,439
GOV-04: Reduce Natural Gas Usage in County Buildings	4,623	12,846
GOV-05: Improve Water Efficiency	0	0
GOV-06: Replace Outdoor Lights with LEDs	0	0
GHG-03: Support SMUD Zero Carbon Plan	24,687	0
Total Reductions	36,356	34,529
Comparison with Targets		
Required Reductions to Meet Target	36,067	27,414
Emissions Above (+) or Below (-) Target	-290	-7,115
Target Met?	Yes	Yes

Notes: GHG = greenhouse gas; LED = light-emitting diode; SMUD = Sacramento Municipal Utility District; VMT = vehicle miles traveled. All numbers are in the units of metric tons of carbon dioxide equivalent ($MTCO_2e$). Totals may not sum exactly due to independent rounding.

Source: Analysis conducted by Ascent in 2024.

3 Greenhouse Gas Reduction Measures Detail

- This section provides details on the proposed GHG emission reduction measures and implementing actions, as well as results of analyses conducted, for both community and government operations. For each measure, the following items are included:
- **Measure Summary**: overview of how the implementing actions support GHG reductions and successful implementation of the measure.
- **GHG Quantification Approach**: information about the technical approach and methods used to quantify estimate GHG emissions reductions that would result from implementing the measure and its associated actions, including key data sources and assumptions. Details on calculations are provided in Attachment A.
- **Performance Standards and Indicators**: information about the technical approach for the development of performance standards and indicators that are tied to GHG reduction calculations and used for GHG reduction measures performance tracking.
- **Measures Guidelines Alignment**: explanation of how the measures and all implementing actions associated with measure are consistent with the measure guidelines established for GHG reduction measures under a CEQA-qualified GHG reduction plan (see Section 2.3 for more details on the guidelines). Funding mechanisms are not fully addressed in this document, as additional analysis will be done at a later date to identify funding and financing mechanisms.

Community Measures

MEASURE GHG-01: Develop a Carbon Farming Program

Measure Objective:

Create a County program to increase carbon farming to achieve:

- Application of compost instead of synthetic fertilizer to approximately 25,000 acres of cropland by 2030, and 113,000 acres of cropland by 2045.
- Grazing Management to improve rangeland conditions, applied to approximately 13,000 acres by 2030, and 61,000 acres by 2045.
- Decrease fallow frequency or add perennial crops to rotations applied to approximately 7,000 acres by 2030, and 32,000 acres by 2045.
- Tillage reduced, eliminated, or changed to strip tilling on approximately 1,000 acres by 2030, and 4,000 acres by 2045.

Measure Summary

With this measure, the County aims to increase the carbon sequestration potential of natural and working lands in the county. The County will achieve this by developing and implementing a carbon farming program to encourage carbon farming practices like using compost, crop rotation, improved grazing practices, and tillage management. The program will be designed to promote sustainable agricultural practices that enhance soil health, improve the health of vegetation, and contribute to mitigating climate change impacts in the county.

GHG-01 will sequester carbon dioxide and reduce GHG emissions by offsetting the use of synthetic fertilizers and increasing the adoption of land management practices that increase the amount of carbon dioxide sequestered in soils. The core of the measure's implementation is a County-led program that is supported by key partners with deep connections in the agricultural community and expertise in soil management practices.

The structure of GHG-01 is modeled similar to the Marin Carbon Project (https://marincarbonproject.org/) and Yolo Carbon Farm Partnership (https://yolorcd.org/what-we-do/yolo-carbon-farm-partnership/), which are incentive based program that assists local land managers in implementing practices that reduce GHG emissions and sequester carbon. The Marin Carbon Project provides resources to farmers, including information sharing about best practices, research opportunities, and technical assistance. With GHG-01, the County strives to provide similar resources to farmers and land managers such that carbon sequestration practices will be adopted more widely in the County. Key components of GHG-01 include:

- Better understanding of current soil management practices by incentivizing reporting by land managers,
- Working with trusted agricultural partners and institutes, such as University of California Cooperative Extension and Carbon Cycle Institute, to ensure engagement with, and resources provided to, land managers through any County programs are appropriate for local economic and climate conditions,
- Continually engaging with growers and land managers in the county through various forums to provide the most up-to-date information on best practices and grant opportunities.
- Allocate County resources to provide compost, grant support, or other finance mechanisms to support increased carbon farming.

Table 7 below summarizes Measure GHG-01, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 7 Measure GHG-01: Develop a Carbon Farming Program

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-01	Create a County program to increase carbon farming to achieve: ▸ Application of compost instead of synthetic fertilizer to approximately 25,000 acres of cropland by 2030, and 113,000 acres of cropland by 2045. ▸ Grazing Management to improve rangeland conditions, applied to approximately 13,000 acres by 2030 and 61,000 acres by 2045. ▸ Decrease fallow frequency or add perennial crops to rotations applied to approximately 7,000 acres by 2030, and 32,000 acres by 2045. ▸ Tillage reduced, eliminated, or changed to strip tilling on approximately 1,000 acres by 2030, and 4,000 acres by 2045.	99,327	451,519
Action GHG-01-a	Initiate a partnership with Carbon Cycle Institute (CCI) and the University of California Cooperative Extension (UCCE) Capital Corridor unit, or other similar organizations, to develop a carbon farming program that engages farmers, ranchers, and land managers to share carbon farming best practices, provide grant application assistance for carbon farming practices, and track data on soil management practices.		
Action GHG-01-b	Establish a County staff role or identify adequate support through partnerships with non-profit organizations (or a combination of both) to support implementation of a carbon farming program, including managing incentives, outreach, grant application support, and reporting under the program.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-01-c	Develop a farming practices and soil management reporting incentive, in which County staff will assist farmers, ranchers, and land managers in preparation of carbon farming grant applications if farmers, ranchers, and land managers commit to annual reporting on soil management and carbon farming practices. UCCE has staff who assist with grant applications (free of charge) that can support in this effort.		
Action GHG-01-d	Encourage reporting of soil management practices by facilitating optional reporting on current practices to all farmers, ranchers, and land managers during annual crop report data collection, including acres where the following practices are applied: ▶ Application of compost/biochar ▶ Grazing management on irrigated pastures ▶ Reduction in fallow land ▶ Increase of perennial crops ▶ Strip tilling or tillage reduction		
Action GHG-01-e	Work with UCCE and other partners to provide links to information on relevant current and upcoming carbon farming and healthy soil grant opportunities on the County's website, including semi-annual reviews and updates to grant opportunities. Include a hyperlink to this list in any external communications, such as newsletters or engagement materials for other programs. Examples of known potential funding sources related to carbon farming are included in Appendix F (Greenhouse Gas Reduction Measures County Cost Analysis and Potential Funding Sources).		
Action GHG-01-f	In partnership with CCI and UCCE, or other similar organizations, develop a Carbon Sequestration Agricultural Practices for Sacramento County study that includes the following information: ▶ Carbon sequestration practices suited for Sacramento County land including: ▪ Compost application ▪ Nonsynthetic fertilizer application ▪ Grazing management ▪ Rotational cropping ▪ Tilling practices ▶ Co-benefits of implementing carbon sequestration practices. ▶ A list of a variety of financial and technical resources that are available to assist farmers and ranchers in implementation.		
Action GHG-01-g	In partnership with the Sacramento County Farm Bureau and other organizations such as CCI or UCCE, develop and share educational materials about soil management and carbon farming best practices, such as a "Carbon Sequestration Agricultural Practices for Sacramento County" study, and information about soil management reporting and grant application assistance.		
Action GHG-01-h	Continue to provide free or reduced cost compost produced by County-contracted organics processing facilities to residents in the County on a first come, first served basis.		
Action GHG-01-i	Establish a terrestrial/agricultural carbon finance committee to identify finance mechanisms and funding sources to support the ongoing development and implementation of carbon farming programs in Sacramento County. This could include, but not limited to, assessment of participation in the voluntary carbon markets; the development of a local carbon or ecosystem marketplace; revolving loan funds; matching funds that can be used in conjunction with outside funding, and/or state funding.		

Notes: CCI = Carbon Cycle Institute; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; UCCE = University of California Cooperative Extension.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

First, data from the 2021 Sacramento County Crop Report were used to determine acreages of field crops, rangelands, and orchards/vineyards in the county (County of Sacramento 2022a). In total, there were 277,991 acres of these land cover types in 2021. This acreage was forecasted to decline by approximately 777 acres (or 0.3 percent of the 2021 value) per year, based on the rate of decline calculated from 2017-2022 Census of Agriculture data from the United States Department of Agriculture (USDA 2017; USDA 2022).

The following assumptions were made regarding which lands could feasibly be treated with carbon farming practices. First, not all agricultural lands were eligible for all treatment types. For example, rangelands are eligible for compost application, but are not eligible for tillage reduction because they are generally not tilled. Second, more than one treatment can be applied on a given acre. For example, a given acre of rangeland can have compost application and also have managed grazing treatments. Third, for till reduction measures, half of the eligible acres received the intensive till to no-till treatment, and the other half received the intensive till to reduced till treatment because these treatments are mutually exclusive. Thus, it is not possible to apply them both on a single acre. A similar approach was taken for compost; half of the acres received compost treatments with a carbon-to-nitrogen ratio of greater than 11, and the other half less than or equal to 11.

Estimates for the percentage of land that could be treated annually are based on two sources. The first source used was the State's Nature-Based Solutions targets for natural and working lands, which were released in April 2024 as required by Assembly Bill 1757 (2022, C. Garcia). These targets include 190,000 statewide acres per year of agricultural land treated with healthy soil practices such as compost application, cover cropping, and no-till or reduced-till agriculture. This treatment rate represents 2 percent per year of the State's 9.5 million acres of agricultural lands (California Natural Resources Agency et al 2024: 20-21). The second source used was Marin County's Climate Action Plan, which was finalized in 2020, and targets 30 percent of land treated by 2030 (i.e., 3 percent per year over 10 years [Marin County 2020: B-48]). As a conservative estimate, an annual land treatment rate of 2.3 percent was used for this analysis, which is closer to the State's treatment rate (2 percent per year) than Marin County's treatment rate (3 percent per year). Assuming a 2026 implementation start date in Sacramento County (chosen to align with the "before 2027" timeline of GHG-01a), by 2030, 9 percent of lands in the unincorporated county would be treated, and 44 percent by 2045.

Once treatment eligibility and acreage were determined for each land type, carbon reduction values (in $MTCO_2e$ per acre per year) were obtained from the California Department of Food and Agriculture's COMET-Planner tool (California Department of Food and Agriculture 2024) and applied to the acres treated to calculate reductions. Table 8 below shows a summary of this calculation. These were used to calculate reductions of 99,327 and 451,519 MTCO2e in 2030 and 2045, respectively.

Table 8 Acres Treated with Carbon Farming Techniques and Emissions Reductions from Measure GHG-01

Conservation Practice	Applicability	Acres Treated in 2030	Acres Treated in 2045	CDFA COMET-Planner Reduction per treated acre per year ($MTCO_2e$)	Emissions Reductions ($MTCO_2e$) in 2030	Emissions Reductions ($MTCO_2e$) in 2045
Decrease Fallow Frequency or Add Perennial Crops to Rotations - Basic Rotation	Field Crop	7,084	32,203	0.264	1,870	8,502
Intensive Till to No Till or Strip Till on Irrigated Cropland - No-till or Strip-till	Field Crop	425	1,932	0.494	210	954
Intensive Till to Reduced Till on Irrigated Cropland - Reduced-till	Field Crop	425	1,932	0.059	25	114
Compost (C/N < or = 11) Application to Annual Crops, On-farm produced compost - 5 tons/acre	Field Crop	3,542	16,101	2.134	7,559	34,360
Compost (C/N > 11) Application to Annual Crops, On-farm produced compost - 6 tons/acre	Field Crop	3,542	16,101	4.401	15,589	70,862
Compost (C/N > 11) Application to Grazed Grassland, On-farm produced compost - 6 tons/acre	Rangeland	13,452	61,149	4.505	60,600	275,477
Grazing Management to Improve Rangeland or Non-Irrigated Pasture Condition - Pasture/Basic	Rangeland	13,452	61,149	0.007	94	428
Compost (C/N < or = 11) Application to Orchards or Vineyards, Purchased from a certified composting facility - 2 tons/acre	Orchard/Vineyard	2,198	9,992	1.586	3,486	15,847
Compost (C/N > 11) application to Application to Orchards or Vineyards, Purchased from a certified composting facility - 6 tons/acre	Orchard/ Vineyard	2,198	9,992	4.501	9,894	44,974
Total		**46,318**	**210,552**	**NA**	**99,327**	**451,519**

Notes: CDFA = California Department of Food and Agriculture; C/N = carbon-to-nitrogen ratio; MTCO2e = metric tons of carbon dioxide equivalent; NA = not applicable. Totals may not sum exactly due to independent rounding.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Performance standards are expressed in terms of cumulative acres of land treated, provided in Table 9. The methods for developing the performance standards are provided in the GHG Quantification Approach for Measure GHG-01, provided above, and are the cumulative acres treated from Table 8.

Table 9 Performance Standards and Indicators for Measure GHG-01

Performance Standard/Indicator	2030 Target	2045 Target
Acres of compost applied to cropland instead of synthetic fertilizer	25,000	113,000
Acres of grazing management to improve irrigated pasture conditions	13,000	61,000
Acres of fallow land decreased and/or of perennial crops added to rotations	7,000	32,000
Acres of reduced or eliminated tillage	1,000	4,000

Notes: Totals may not sum exactly due to rounding.

Substantial Evidence Narrative

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-01-a focuses on the County's commitment to develop the carbon farming program in partnership with a regional institute.
  - Action GHG-01-b identifies the County's commitment to either establishing and funding a County staff position focused on successfully implementing the carbon farming program, or identifying equivalent support from one or more partnerships as outlined in GHG-01-a.
  - Action GHG-01-f identifies the County's commitment to compile all carbon sequestration agricultural practices suitable for Sacramento County in a study and provides additional information on the co-benefits of these practices and available resources.
  - Action GHG-01-h identifies the County's commitment to continuing to provide free or reduced-cost compost to county residents to encourage the use of compost as a carbon farming practice.
- **Public Engagement and Community Partnerships**
  - Along with partnership for measure implementation, Action GHG-01-a additionally focuses on engaging stakeholders like farmers, ranchers, and land managers in the unincorporated county to share best practices and provide assistance in applying for grants.
  - Action GHG-01-e and g focus on sharing information about available grants, carbon farming best practices, available assistance for grant applications, and other important details through various modes to ensure that the information is accessible to all concerned parties.

    In addition to implementation, Action GHG-01-f also focuses on partnering with regional organizations for the development of the study.
- **Performance Standard and Tracking Mechanism**
  - Action GHG-01-a also focuses on collecting data with the support of farmers, ranchers, and land managers that engage in the program.
  - Action GHG-01-c focuses on incentivizing the reporting of data by assisting in applying for grants to farmers who commit to annual reporting.
  - Action GHG-01-d focuses on developing a tracking system for optional reporting of soil management practices during the annual crop report data collection process.
- **Timeline of Implementation**
  - Implementation of Actions GHG-01-a, b, c, d, e, and g is planned to start in 2025 and will be ongoing thereafter.

- Implementation of Action GHG-01-f is planned to start in 2025 and be completed in 2026.
- Action GHG-01-h is ongoing and will be continued.

MEASURE GHG-02: Expand the Urban Forest

Measure Objective:

Maintain and enhance the urban forest, planting 15,000 net new trees by 2030 and 62,000 net new trees by 2045.

Measure Summary

With this measure, the County aims to enhance carbon storage potential by preserving and improving urban forests while enhancing green spaces, promoting biodiversity, and improving environmental sustainability. The measure also aims to improve the quality of life for county residents while prioritizing actions in Environmental Justice Communities as defined in the County's Environmental Justice Element of the General Plan.

Measures GHG-02 reduces atmospheric GHGs by increasing the carbon sequestration potential in the county with increased biomass in urban areas, while also providing numerous co-benefits, including reducing the urban heat island effect and making communities more walkable. The County will increase the number of trees in the county through four mechanisms:

- Maintaining the current tree stock through updates to the County's Tree Preservation Ordinance, requiring replanting or replacement of certain trees;
- Requiring new development to meet tree canopy cover standards through amendment to the County's Zoning Code;
- Maintaining support to Sacramento Tree Foundation to continue free tree planting programs and planting of trees for offsite mitigation; and
- Continuing to plant trees directly through County capital improvement and park maintenance projects.

To support and guide the planting of trees in the county, the County will develop an Urban Forecast Management Plan that sets a strategy for achieving tree planting targets, as well as tree design guidelines, preservation practices, and maintenance practices. The Urban Forest Management Plan will guide the development of a work plan to identify a budget and specific tree planting and maintenance projects for each year.

Furthermore, with GHG-02 the County will engage with residents and community cooperatives to advertise and organize the availability of free trees and tree planting events. The County will focus on targeting opportunities in Environmental Justice communities, including identifying priority areas for tree planting, as well as supporting grant funding applications for tree planting in these areas.

Table 10 below summarizes Measure GHG-02, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 10 Measure GHG-02: Expand the Urban Forest

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-02	Maintain and enhance the urban forest, planting 15,000 net new trees by 2030 and 62,000 net new trees by 2045.	808	3,234
Action GHG-02-a	Develop and adopt an Urban Forest Management Plan to increase and maintain the urban forest, which includes: ▶ the identification of potential tree planting sites to meet goals of 15,000 net new trees by 2030 and 62,000 net new trees by 2045, highlighting priority areas in Environmental Justice Communities; ▶ street and park tree preservation; ▶ tree species and design guidelines, prioritizing native trees; and ▶ watering and maintenance practices.		
Action GHG-02-b	Develop and annually update an urban forest work plan to identify a budget and specific tree planting and maintenance projects for implementation each year consistent with the goals and targets of the Urban Forest Management Plan.		
Action GHG-02-c	Adopt an ordinance to require new development to plant an appropriate number of trees onsite to provide a 50 percent canopy cover over parking surfaces and a 20 percent canopy cover over the remainder of the site. Exemptions to the ordinance may be provided in cases where tree canopy may conflict with solar PV system siting on the development site, or with the Solar Shade Control Act.		
Action GHG-02-d	Amend the Tree Preservation Ordinance to require that ▶ applicable tree removal during discretionary projects on private property that require a tree permit be replaced by an appropriate size and species tree as determined by Planning and Environmental Review and; ▶ where onsite replacement of an appropriate tree is not feasible, the permit applicant shall pay a fee equivalent to the County's cost for planting and maintaining each appropriate tree to the Tree Preservation Fund. Also amend the ordinance to expand the tree types for which the ordinance is applicable to include: ▶ any tree native to Sacramento County; and ▶ "heritage trees" that are 50 years or older or have a connection to a historical event, building, district or person.		
Action GHG-02-e	Continue to partner with the Sacramento Tree Foundation to use existing programs such as Sacramento Shade, NeighborWoods, and NATURE to increase the tree canopy through offering free tree planting on private property, prioritizing drought-tolerant species in Environmental Justice Communities.		
Action GHG-02-f	Identify and partner with community cooperatives, and Sacramento Tree Foundation, to organize at least three tree-planting and maintenance events each year in different census designated places in the unincorporated county, to highlight and realize the community benefits of urban trees.		
Action GHG-02-g	Inform county residents and businesses of the availability of free trees, from partnerships with Sacramento Tree Foundation, by including information on accessing the program on the County's website and through semi-annual newsletters, social media posts, or mailers.		
Action GHG-02-h	Conduct a targeted outreach campaign to promote the availability of free trees, from partnerships with Sacramento Tree Foundation, in Environmental Justice Communities that may include multilingual printed outreach materials and promotion at community events.		
Action GHG-02-i	Identify appropriate community-based organizations, and jointly submit applications for grant funding for urban forest expansion in underserved communities through the US Forest Service's Urban and Community Forestry Grant Program.		
Action GHG-02-j	Develop a tracking system to ensure that the number of trees planted through County efforts is trackable, through internal County departments, the County's permitting system, and annual data requests from partner organizations on the number of trees planted, and removed, in the unincorporated county.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; PV = photovoltaic.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

The species of trees that would be planted during the implementation of this measure cannot be known in advance; however, counts of trees by species must be approximated for this analysis, because different tree species have different carbon sequestration rates. It was assumed the new trees planted comprised the top 20 species currently in the county (based on data from the CAL FIRE Urban and Community Forestry Program, in partnership with Cal Poly State University, San Luis Obispo [2024]). These trees were matched with their respective sequestration rates, which were calculated using the i-Tree tool (US Forest Service et al 2024).

The assumed tree types and their respective sequestration rates are listed in Table 11 below. These were used to calculate a weighted average sequestration rate of 0.052 MTCO2e per year per tree.

Table 11 Assumed Tree Species and Sequestration Rates for GHG-02

Tree Species	Sequestration Rate ($MTCO_2e$ per year per tree)	Percent of Top 20 Trees of this Species
Platanus x hispanica	0.030	16.2%
Sequoia sempervirens	0.050	12.9%
Lagerstroemia	0.053	10.8%
Quercus lobata	0.082	10.2%
Pyrus calleryana	0.055	7.8%
Pistacia chinensis	0.059	7.2%
Zelkova serrata	0.026	4.7%
Liquidambar styraciflua	0.048	4.1%
Acer rubrum	0.097	3.0%
Prunus cerasifera	0.060	2.9%
Quercus agrifolia	0.028	2.9%
Celtis sinensis	0.015	2.7%
Ulmus parvifolia	0.111	2.4%
Quercus wislizeni	0.028	2.4%
Quercus rubra	0.049	1.9%
Nyssa sylvatica	0.043	1.7%
Cupressus sempervirens	0.054	1.7%
Fraxinus velutina	0.042	1.6%
Betula pendula	0.097	1.5%
Quercus coccinea	0.091	1.5%
Weighted Average/Total	**0.052**	**100%**

Notes: MTCO2e = metric tons of carbon dioxide equivalent.

Source: Compiled by Ascent in 2024.

It was assumed that in the unincorporated county, 3,088 trees will be planted per year starting in 2025. This value was derived based on a statewide nature-based solutions target (which was developed pursuant to AB 1757, which ordered state agencies to develop climate targets for 2030, 2038, and 2045) of 200,000 trees planted per year (California Natural Resources Agency et al 2024: 30), downscaled using the ratio of the 2020

unincorporated county population to the 2020 statewide population (1.5 percent; statewide population data in 2020 is from the United States Census [2020]).

The resulting trees planted and associated carbon reductions are shown in Table 12 below.

Table 12 Cumulative Trees Planted and Resultant GHG Reductions from Measure GHG-02

Item	2030	2045
Cumulative Trees Planted	15,439	61,757
GHG Emission reductions ($MTCO_2e$)	**808**	**3,234**

Notes: $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Performance standards are expressed in terms of net new trees planted, and are provided in Table 12 above. The methods for developing the performance standards are provided in the GHG Quantification Approach for Measure GHG-02, above.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-02-a commits the County to develop and adopt an Urban Forest Management Plan with tree planting targets, identifying tree species and prioritizing native trees, and designing guidelines for tree preservation, watering, and maintenance.
  - Action GHG-02-b focuses on the County's commitment to develop and maintain an Urban Forest Work Plan to support the implementation of the Urban Forest Management Plan once adopted, and to identify specific projects and outline budget details once projects are identified.
  - Action GHG-02 commits the County to develop and adopt an ordinance. The ordinance will identify requirements for new developments regarding canopy cover on the site, including any exceptions in the requirements pertaining to mitigating conflicts with onsite solar system siting.
  - Action GHG-02-d commits the County to amending the current Tree Preservation Ordinance to include more tree species or any tree of significance in the current list of trees to be preserved. The action also focuses on making the tree removal rules more stringent by enhancing the fee structure and amending tree permits to prefer a more environmentally sustainable tree replacement.
- **Public Engagement and Community Partnerships**
  - Action GHG-02-e focuses on continuing the existing partnership with Sacramento Tree Foundation and using existing programs to support the implementation of this measure by offering free tree planting. The action prioritizes planting drought-tolerant tree species and prioritizing disadvantaged communities identified in the General Plan's Environmental Justice Element.
  - Action GHG-02-f focuses on developing partnerships with regional organizations to engage with local communities. The action aims to engage residents in planting trees and realizing related benefits.
  - Action GHG-02-g focuses on developing a mechanism for the continuous sharing of information about free tree planting with residents through various mediums so that the information reaches everyone.

- Action GHG-02-h focuses on conducting targeted outreach to engage low-income communities by using focused approaches like bi-lingual outreach material and conducting promotions at local community events.
- Action GHG-02-i focuses on partnering with local community-based organizations and applying for grants for expanding urban forests in underserved communities.

- **Performance Standard and Tracking Mechanism**
  - Action GHG-02-j focuses on developing a tracking mechanism for monitoring the progress of this measure by building a system for tracking all planted and removed trees through the County permitting system and through data requests to partner organizations.
  - A numeric performance standard has been set, as described in the Measure Objective
- **Timeline of Implementation**
  - Implementation of Actions GHG-02-a, c, d, and j is planned to start and be completed in 2025.
  - Implementation of Action GHG-02-b is planned to start and be completed in 2026.
  - Action GHG-02-e is ongoing and will be continued.
  - Implementation of Action GHG-02-f is planned to start in 2026 and will be ongoing thereafter.
  - Implementation of Actions GHG-02-g and h is planned to start in 2025 and will be ongoing thereafter.
  - Implementation of Action GHG-02-i is planned to start in 2025 and will be ongoing thereafter as grants are available.

MEASURE GHG-03: Support the SMUD Zero Carbon Plan

Measure Objective:

Support SMUD in the implementation of the 2030 Zero Carbon Plan, by:

- Identifying sites and capacity for installation of renewable energy resources and battery storage at County-owned buildings and properties.
- Supporting installation of 70 MW of rooftop solar photovoltaic and 28 MW of behind-the-meter battery storage between 2025 and 2030.
- Supporting installation of 281 MW of rooftop solar photovoltaic and 112 MW of behind-the-meter battery storage between 2025 and 2045.

Measure Summary

To reduce emissions associated with electricity, the County will support the Sacramento Municipal Utility District (SMUD) in executing its 2030 Zero Carbon Plan. Supporting SMUD in achieving its zero carbon goal would result in the supply of zero carbon electricity to all SMUD accounts in the county, significantly reducing GHG emissions associated with electricity consumption. While the County does not have full control over the implementation of actions that achieve the results of GHG-03, the County can still closely coordinate and provide support to SMUD in reaching the goal. The primary goal for the County in GHG-03 is to enable SMUD to successfully implement programs and support installation of the appropriate amount of distributed energy resources (DER) to meet the goals outlined in the 2030 Zero Carbon Plan. This includes:

- Coordinating with SMUD on the DER needs, and how the County could provide real-estate for meeting the needs, with a feasibility study to identify opportunities for installing renewable energy resources and battery storage at County-owned buildings and properties;
- Continuing to provide streamlined permitting for solar photovoltaic and creating streamlined permitting processes for battery storage;
- Coordinating with SMUD to identify potential sites in the county for utility and community scale solar and battery storage projects and updating the Zoning Code to clarify siting and development standards.

Furthermore, the County will continually engage with SMUD through a dedicated County staff liaison. This engagement will address ways in which both the County and SMUD can support each other in reaching their near-term (2030) and long-term decarbonization goals.

Table 13 below summarizes Measure GHG-03, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 13 Measure GHG-03: Support the SMUD Zero Carbon Plan

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-03	Support SMUD in the implementation of the 2030 Zero Carbon Plan, by: ▸ Identifying sites and capacity for installation of renewable energy resources and battery storage at County-owned buildings and properties. ▸ Supporting installation of 70 MW of rooftop solar photovoltaic and 28 MW of behind-the-meter battery storage between 2025 and 2030. ▸ Supporting installation of 281 MW of rooftop solar photovoltaic and 112 MW of behind-the-meter battery storage between 2025 and 2045..	809,382	0
Action GHG-03-a	In coordination with SMUD, conduct a feasibility study to identify opportunities for installing renewable energy resources and battery storage at County-owned buildings and properties. During the assessment of sites, the potential for colocation of EV charging infrastructure will be considered. Following completion of the feasibility study, the County will incorporate feasible renewable energy and battery storage projects into the County's Capital Improvement Plan (CIP) to ensure funding for construction projects.		
Action GHG-03-b	Coordinate with SMUD to identify potential sites for renewable generation and storage projects in the unincorporated county that would best support overall grid functionality while also supporting other measures to electrify the building stock and maximizing the use of existing electrical infrastructure.		
Action GHG-03-c	Continue to encourage and streamline the permitting of rooftop solar and battery storage projects for existing buildings. The County already offers a streamlined and automated permitting process for residential solar projects through its SolarAPP+ tool, and the County's AP-25 Solar PV Information Package and Checklist identifies permit requirement and fee schedules for both residential and nonresidential solar installations. The County will update these resources to address solar and battery storage projects where appropriate, and consider reducing permitting fees.		
Action GHG-03-d	At the time of development of any building reach codes (See Measures GHG-04, GHG-05, and GHG-07), coordinate with SMUD to identify appropriate measures to support SMUD's building and transportation electrification, and distributed energy resources goals. Reach code compliance under these measures may include distributed renewable energy resources and energy storage technologies.		
Action GHG-03-e	Update the County Zoning Code to include land use requirements and development standards for stand-alone distributed energy resource facilities, including battery energy storage facilities.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-03-f	Establish a County staff liaison to coordinate directly with SMUD, and meet with SMUD on a regular basis (at least annually), to address ways in which both the County and SMUD can support each other in reaching their near-term (2030) and long-term decarbonization goals.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; PV = photovoltaic; SMUD = Sacramento Municipal Utility District.
Source: Compiled by Ascent in 2024.

GHG Quantification Approach

SMUD has filed an Integrated Resource Plan at the California Energy Commission (CEC), which detailed its plan to achieve zero-carbon electricity by 2030 (SMUD 2021). In its April 2024 review of the Plan, the CEC found that "using the CEC and CARB accounting, SMUD plans that its 2030 emissions will be net negative if spot market sales are assumed to be accounted for at the default system power GHG intensity" (CEC 2024a: 7). Thus, it was assumed that electricity power sector emissions would go to zero in 2030, resulting in a reduction of 809,382 MTCO2e relative to the community ABAU forecast. It is assumed that this measure is implemented before any other measures that reduce energy consumption or affect the carbon intensity of consumed electricity. Any electricity usage on or after 2030 in the other measures is assumed to be zero-carbon and produce zero GHG emissions. Because a SMUD zero-carbon portfolio will also affect County-owned facilities, this measure also results in a reduction of 24,687 MTCO2e for these facilities (represented in this memorandum as GOV-NA).

Performance Standards and Indicators

Measure GHG-03 has three performance indicators, provided in Table 14, to help the County evaluate its contribution to meeting SMUD's 2030 Zero Carbon Plan goals.

Table 14 Performance Standards and Indicators for Measure GHG-03

Performance Standard/Indicator	2030 Target	2045 Target
Percent of SMUD's electricity generated from zero-carbon sources	100%	100%
New MW of rooftop solar photovoltaic installed after 2025	70	281
New MW of rooftop behind-the-meter battery storage installed after 2025	28	112

Notes: SMUD = Sacramento Municipal Utility District; MW = megawatts.
Source: Compiled by Ascent in 2024.

Methods for development of the performance indicators are provided below.

Percent of SMUD's electricity generated from zero-carbon sources. This value should be 100 percent in 2030 and 2045. Progress towards this goal can be assessed with the Power Content Labels (PCLs) that are produced annually by the CEC. PCLs show the mix of generation sources (including both emitting and zero carbon sources) that utilities use to provide electricity service (CEC 2024b).

Megawatts (MW) of distributed energy resources installed. This includes rooftop solar photovoltaic arrays and behind-the-meter battery storage. As of 2021, SMUD had approximately 260 MW of rooftop solar (SMUD 2021: 52) and 5 MW of behind-the-meter battery storage (SMUD 2020: 4; note that 2021 behind-the-meter battery storage MW values were not available, so the 2020 values cited here were used as a proxy). To reach

targets for those resources pursuant to its Zero Carbon Plan, SMUD is targeting between 500 to 750 MW and 50 – 250 MW for those resources, respectively (SMUD 2021: 7 and 52; the midpoint of these values was used for this analysis). To calculate the County's share of SMUD's targets, a value of 35 percent was used, which represents the County's portion of SMUD's electric load (10,573 gigawatt-hours for SMUD as a whole [SMUD 2021: 51], and 3,665 GWh in the County [County of Sacramento 2024a]). Table 15 shows how these targets translate to the quantities of rooftop solar and behind-the-meter battery storage targets that must be added to the County from 2025 to 2030 and from 2025 to 2045.

Table 15 Distributed Energy Resources Performance Indicators

Distributed Energy Resource Type	SMUD MW as of 2021	SMUD MW as of 2030	SMUD MW added per year	County MW added per year	County MW added, 2025-2030	County MW added, 2025-2045
Rooftop Solar	260	625	41	14	70	281
Behind-the-meter Battery	5	150	16	6	28	112

Notes: MW = megawatt; SMUD = Sacramento Municipal Utility District.

Source: Analysis conducted by Ascent in 2024.

Measures Guidelines Alignment

The 2030 Zero Carbon Plan is SMUD's clean energy vision to eliminate 00 percent of GHG emissions from electric generation. While the County plans to support SMUD in reaching this goal by identifying potential sites, the ownership and primary responsibility for the 2030 Zero Carbon Plan is within the jurisdictional control of SMUD, and the County has a limited role to play. Therefore, some of the measures guidelines that apply to other community measures are not fully applicable to this measure. Below is an explanation of how this measure aligns with the guidelines applicable to this measure:

- **Mechanism for Implementation**
  - Action GHG-03-a identifies the County's commitment to support SMUD in executing its 2030 Zero Carbon Plan by coordinating to identify potential County-owned sites for installing renewable energy generation and storage projects.
  - Action GHG-03-b identifies the County's commitment by coordinating to identify potential sites in the unincorporated county areas for installing renewable energy projects with an aim to support overall grid functionality and maximize efficiencies.
  - Action GHG-03-c highlights County's actions towards its commitment by planning to update the current permitting processes in favor of renewable energy projects in the unincorporated county areas.
- **Timeline of Implementation**
  - Implementation of Actions GHG-03-a and b is planned to start in 2025 and be completed in 2030.
  - Implementation of Action GHG-03-c is ongoing, and any updates will be completed in 2025.

MEASURE GHG-04: Accelerate Existing Building Energy Efficiency Retrofits and Decarbonization

Measure Objective:

- Existing residential buildings:
  - 28,000 residential units retrofit by 2030 at half of the maximum cost-effective retrofit measures score, and
  - 111,000 homes retrofit by 2045 at maximum cost-effective retrofit measures score.
- Existing nonresidential buildings:
  - Develop strategy and implement a building performance standards program that requires all nonresidential buildings to reduce non-electricity emissions by 19% by 2030 and 85% by 2045
  - Implement and enforce a building performance standards program.

Measure Summary

To reduce emissions in existing buildings and support more energy-efficient homes and businesses, the County will adopt and enforce a reach code that includes the specific performance standards that would apply to specified buildings that undergo retrofits deemed eligible for these requirements. The aim is to reduce reliance on fossil fuels. The County will also provide incentives to encourage developers to meet or exceed the reach code requirements and provide training opportunities to construction workers for the successful implementation of this measure.

Reducing GHG emissions in existing buildings requires multiple strategies, as the economics of retrofitting buildings to reduce or eliminate natural gas consumption can vary widely between building use and vintage. As such, the County will take a phased approach to reducing natural gas consumption in existing buildings, with different implementation mechanisms for residential and nonresidential buildings. The County is first setting performance standards for 2030 and 2045, with the GHG reduction goals significantly increasing as 2045 is neared. This phasing allows for opportunities for the cost and market share of electric-fueled equipment to come closer to that of fossil-fueled equipment. For residential buildings, the mechanism will be a building "reach code" (see note below for more information) that applies to residential buildings undergoing additions or alterations, which requires the building to meet a set of energy efficiency measures at the time of the renovation. Nonresidential buildings will be required to enroll in a building performance standards (BPS) program, which sets a GHG reduction target for various building types.

The development of the above implementation mechanisms will include extensive study and stakeholder engagement such that any adopted policies can achieve the desired outcomes while reducing costs to community members. Actions the County will take to this end include:

- Completing cost-effectiveness analyses for any reach codes in partnership with experts at the California Energy Codes and Standards Program;
- Determining a threshold to determine which existing residential and nonresidential buildings would be subject to reach code or BPS program requirements,
- Conducting outreach to stakeholders to build consensus on ideal reach code and BPS options, including residents, building owners, industry leaders, and workforce organizations; and

- Developing a strategy for addressing GHG emissions in existing nonresidential buildings such that a BPS program is data-informed and phased to meet GHG reduction targets with the current and future costs and availability of applicable technology.

Once the details of the mechanisms for implementation of GHG-04 are in place, the County will continuously support successful implementation through various means. These will include:

- Proactively sharing resources on existing rebates, incentives, and programs to help support community members in making energy efficiency retrofits to their homes and businesses;
- Collecting and reporting data on the effectiveness of reach codes and BPS programs in reducing emissions and achieving decarbonization goals;
- Performing internal and external training on how compliance with reach codes and BPS programs is met and enforced;
- Regularly reviewing and updating the reach codes and BPS program requirements based on the effectiveness of reducing GHG emissions, updated cost-effectiveness data, updated market trends, and updated statewide building codes.

Additionally, the County will continue to identify ways to encourage, or require in the future, that retrofits to buildings are all-electric. The County will first offer fee reductions or offsets and expedited permitting for residential and nonresidential projects that eliminate fossil fuels and cap natural gas piping. In future building code updates, the County will explore all-electric requirements as deemed legally feasible.

Note: Measure GHG-04, along with GHG-05 below, are focused on reducing emissions from existing and new buildings, respectively. These measures would be implemented through local amendments to the California Building Standards Code, known as "reach codes." Table 16 below summarizes the performance standards to be incorporated into reach codes proposed under these measures.

The details of the reach codes included in this measure vary depending on the building type (residential or nonresidential) and whether the building is an existing building that is being retrofitted or new construction. "Existing" means the building stock as of 2025, which is the start date of measures GHG-04 and GHG-05. "New Build" means buildings built after 2025.

For residential buildings, "modeled energy efficiency score" means the building's energy efficiency score as calculated by a CEC-approved compliance software program, such as the California Building Energy Code Compliance (CBECC) software. Individual building-level energy usage and emissions data are typically not available for these buildings, so compliance with the reach code would be tracked based on this modeled value. For nonresidential buildings over 50,000 feet, data on natural gas usage, energy usage, and emissions are already collected as part of CEC's benchmarking program. These data can be tracked over time to ensure that reductions are occurring. This is typically referred to as a BPS. A BPS, in contrast to modeled data, is based on actual energy consumption and emissions.

Table 16 Summary of Reach Code Requirements in Measures GHG-04 and GHG-05

Measure Number	Existing or New Build	Building Type	Reach Code Requirement
GHG-04	Existing	Residential	Building's modeled energy efficiency must achieve half of the maximum cost-effective retrofit measures score at time-of-retrofit by 2030, and the maximum cost-effective retrofit measures score by 2045.
GHG-04	Existing	Nonresidential	Buildings must reduce their non-electricity-related emissions by 19 percent by 2030, and by 85 percent by 2045.
GHG-05	New Build	Residential	Building must meet or exceed a modeled EDR1 (hourly source energy) metric of 11.5 points above the Title 24 statewide performance minimum (the "standard design building").
GHG-05	New Build	Nonresidential	Buildings must reduce their non-electricity-related emissions by 19 percent by 2030, and by 85 percent by 2045.

Source: Compiled by Ascent in 2024.

Table 17 below summarizes Measure GHG-04, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 17 Measure GHG-04: Accelerate Existing Building Retrofits Energy Efficiency

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-04	▶ Existing residential buildings: ▪ 28,000 residential units retrofit by 2030 at half of maximum cost-effective retrofit measures score, and ▪ 111,000 homes retrofit by 2045 at maximum cost-effective retrofit measures score. ▶ Existing nonresidential buildings: ▪ Develop strategy and implement a building performance standards program which requires all nonresidential buildings to reduce non-electricity emissions 19% by 2030 and 85% by 2045 ▪ Implement and enforce a building performance standards program.	40,036	203,945
Action GHG-04-a	Work with the California Energy Codes and Standards Program to develop reach codes and associated cost-effectiveness studies that must be met by existing buildings such that existing residential buildings' modeled energy efficiency must achieve half of the maximum cost-effective retrofit measures score at time-of-retrofit by 2030, and the maximum cost-effective retrofit measures score by 2045. *(Note: Cost-effective retrofit measures scores are a potential compliance mechanism for a reach code pathway that provides flexibility to implement measures that are assigned a numeric value, with a combination of measures meeting the target cost-effective retrofit measures score.)*		
Action GHG-04-b	Develop an existing nonresidential buildings decarbonization strategy and implement a building performance standard that requires all buildings to reduce non-electricity-related emissions by 19 percent by 2030, and by 85 percent by 2045, with analysis of the existing building stock in the county.		
Action GHG-04-c	Determine reach code compliance triggers which may be based on one or more metrics for retrofits such as time of equipment replacement, percent of existing floor area, building permit valuation, and project valuation; and based on square footage for existing nonresidential buildings.		
Action GHG-04-d	Conduct stakeholder outreach with building industry members, contractors, residents, businesses, and other interest groups to present the reach code options and solicit feedback.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-04-e	Develop and adopt an ordinance(s) to implement existing building reach code(s) based on the cost-effectiveness studies (completed as part of Action GHG-04-a) and stakeholder outreach (completed as part of GHG-04-c).		
Action GHG-04-f	Submit the ordinance(s) and cost-effectiveness studies for existing building reach code(s) to the California Energy Commission (CEC) for review and approval.		
Action GHG-04-g	Conduct training for County permitting staff to understand the reach code requirements for existing buildings and how compliance will be demonstrated.		
Action GHG-04-h	Implement and staff a building performance standards program that: ▶ proactively engages with and enrolls nonresidential building owners and operators into a building performance standards program, ▶ develops a mechanism for building owners and operators to report energy use and emissions data, ▶ develops and distributes information on how to measure performance, maintain compliance, and reduce energy use and GHG emissions, and ▶ enforces compliance with the building performance standards program, ▶ compiles and reports data on the building performance standards program for CAP monitoring, such as number of buildings enrolled in the program and GHG reductions achieved.		
Action GHG-04-i	Develop a tracking system for the types of measures implemented to maximize energy efficiency and decarbonization, energy efficiency upgrades, or pre-wiring completed by applicants pursuant to reach code requirements for existing buildings.		
Action GHG-04-j	Develop an outreach program that provides education strategies that enable and encourage energy conservation and gas-to-electric conversions in residential and commercial buildings for space and water heating, and planning for equipment replacement before failure occurs due to emergencies. Develop and/or share existing online educational materials targeted toward building owners and tenants that are hosted on the County's website on energy efficiency and building electrification; including training, fact sheets, information on available incentives, video tutorials, and links to existing content (such as The Switch is On). In addition to education, video tutorials can explain to building owners how to enroll in real-time energy use monitoring tools to track energy use compared to historic levels and within the community through the EnergyStar™ Portfolio Manager, or other tools offered by third-party providers. The educational materials will also be provided as part of routine regulatory processes, such as applying for or renewing licenses or permits. Listed incentives should include, but not be limited to: ▶ SMUD Residential and Business Rebate programs ▶ Energy Efficient Commercial Buildings Deduction tax credits program (179D) ▶ US Department of Energy's Homeowner Managing Energy Savings (HOMES) rebate program ▶ US Department of Energy's High-Efficiency Electric Home Rebate (HEEHRA) program		
Action GHG-04-k	Review the existing permitting processes for residential building owners seeking to replace natural-gas-powered equipment with electric equipment and modify as needed to reduce complexity, cost, and processing time for any required permits.		
Action GHG-04-l	Offset or reduce permitting fees for applicants for building retrofits that include all-electric conversion of mixed-fuel buildings and capping of natural gas lines to encourage exceedance of existing building reach code requirements.		
Action GHG-04-m	Partner with Sacramento Employment and Training Agency (SETA), Construction Trades Workforce Initiative (CTWI), Sacramento-Sierra Building and Construction Trades Council (SBCTC), Sacramento Regional Builders' Exchange (SRBX), and/or Northern California Construction Training to develop a training program targeted towards developing knowledge and skills of contractors and construction workers to support electrification of existing buildings.		
Action GHG-04-n	Develop a revolving loan fund to provide low-interest loans to low-income residents and residents in Environmental Justice Communities to cover the time-of-replacement/emergency replacement of water heaters and/or HVAC units with electric options, ensuring that loans can be processed quickly and efficiently with equitable procedural access. Solicit donations and pursue grant funding opportunities to seed the revolving loan fund.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-04-o	Review any County-adopted existing building reach codes at the release of each triennial building code cycle for updates to align with new cost-effective electrification pre-wiring and energy efficiency measures, such that the County's existing building reach codes are in line with the most recent decarbonization guidance and cost-effectiveness data.		
Action GHG-04-p	Partner with Sacramento Housing and Redevelopment Agency (SHRA) and SMUD to identify appropriate sites and funding sources for electrifying SHRA managed housing developments.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

Existing residential buildings: This measure assumed that existing residential buildings would be retrofitted at the average rate of 3.6 percent per year from 2025 to 2045, respectively. This rate is derived from *Zero-Carbon Buildings in California: A Feasibility Study*, which gives average annual rates of building retrofits in California (Mozingo 2021: xviii). 2025 was assumed as the start year for this measure, per actions GHG-04-a through GHG-04-d (which all reference a "before 2026" timeline). Thus, "existing buildings" are defined as the building stock as of 2025.

For retrofits of existing residential buildings (defined as the set of residential buildings already built in 2025; this value was calculated via interpolation between 2021 and 2030 demographic data from the Forecast and Targets Memo), the Cost-Effectiveness Explorer Tool (Tool) (California Energy Codes and Standards Program 2024a) was used to analyze potential building energy efficiency standards exceeding existing statewide standards (a "reach code"). The Tool allows the user to set an cost-effective retrofit measures "score" that a building must achieve after a retrofit. To achieve this score, the user of the Tool can identify any number of measures, including energy efficiency, installing rooftop solar, or electrification. In implementing a reach code, a jurisdiction can choose the score that buildings must meet. However, that score cannot be set above a "maximum cost-effective retrofit measures score," which represents the highest score that can be achieved using a mix of cost-effective measures (California Energy Codes and Standards Program 2024a).

Table 18 below shows the reductions in natural gas that would be achieved by requiring a score that is approximately half of the maximum cost-effective retrofit measures score in 2030, and the maximum cost-effective retrofit measures score in 2045. The actual score cannot be known before the reach code is developed, so these required scores represent assumptions. Changes in emissions due to electricity use are not quantified here, because emissions from electricity are assumed to be zero by 2030 given SMUD's Zero Carbon Plan (see Measure GHG-03). Results are presented for single-family (SF) and multifamily (MF) homes (representing 82 and 18 percent of total residential units, respectively, based on data in the Sacramento County Housing Element [2022b: 66]), as well as by construction year (construction year was included in the Tool). Approximately 95 percent of the housing stock was assumed to be able to be retrofitted. The remaining 5 percent was constructed after 2005 and the Tool has no ability to calculate reductions in homes that were built in this timeframe—it was assumed that reductions in these homes would be minimal as they are already recently built and thus more efficient than the average home. Thus, the reduction value for these homes was assumed to be zero. From these data, a weighted average reduction of 70.51 therms (equivalent to

approximately 0.37 $MTCO_2e$ per housing unit per year) was calculated in 2030, and 117.31 therms (approximately 0.62 $MTCO_2e$ per housing unit per year) in 2045.

Table 18 Reductions in Natural Gas Usage in Existing Residential Buildings from Measure GHG-04

Housing Unit Type	Year of Construction	Number of Units	2030 Required Score	2045 Required Score	Maximum Cost-Effective Score	2030 Therms of Natural Gas Reduced (per housing unit per year)	2045 Therms of Natural Gas Reduced (per housing unit per year)
SF	Before 1978	117,794	16	33	33	120.9	168.4
SF	1978-1991	60,723	13	26	26	22.2	113.8
SF	1992-2005	23,859	7	15	15	18.4	32.9
MF	Before 1978	25,674	9	19	19	79.9	78.7
MF	1978-1991	17,977	7	15	15	8.8	43.8
MF	1992-2005	828	6	12	12	13.4	29.9
All	After 2005	11,975	NA	NA	NA	0	0
All	**All**	**258,829**	**NA**	**NA**	**NA**	**70.51**	**117.31**

Notes: MF = multifamily housing units; NA = not applicable; SF = single-family housing unit. Zero reductions are assumed for housing units built after 2005. The maximum cost-effective score is for Climate Zone 12, which covers Sacramento County.

Source: Analysis conducted by Ascent in 2024.

For the purposes of this measure, it was assumed that the natural gas usage reductions shown in Table 18 above applied only to existing residential buildings heated by natural gas. This was assumed to be 153,838 of the 258,829 residential buildings in 2025 (approximately 59 percent); the remaining 41 percent were assumed to be heated by electricity, and thus were unaffected by this measure. These percentages are based on the fuel type data for the 2021 Sacramento County housing stock from the United States Census (2021).

Based on the retrofit annual percentages shown above, approximately 18 percent of those 153,838 buildings would be retrofitted by 2030, and 72 percent by 2045. This represents 27,706 and 110,840 residential buildings in 2030 and 2045, respectively. Multiplied by 0.37 $MTCO_2e$ per housing unit per year in 2030 and 0.62 $MTCO_2e$ per housing unit per year in 2045, this results in annual reductions of 10,390 and 69,159 $MTCO_2e$ for each of those years, respectively.

Existing nonresidential buildings: These were assumed to be subject to a BPS, in which GHG emissions per square foot are mandated to decrease over time. The City of Seattle and the City of Sacramento both have approved BPS (City of Sacramento 2024 and City of Seattle 2024). For the unincorporated county, a decrease in emissions per square foot of 3.7 percent per year was assumed until 2030; this rate was derived based on the California Air Resources Board's (CARB's) 2022 Scoping Plan estimates of statewide total fossil fuel use reduction, which states a goal of reducing this consumption by 86 percent in 2045 relative to 2022 levels (CARB 2022: 2). For 2045, a target of 85 percent reduction was assumed, which is comparable to the CARB goal. This represents a more conservative target than the City of Seattle's BPS, which targets zero emissions for all building types except multifamily housing by 2045, and all buildings by 2050 (City of Seattle 2024).

Table 19 below shows reductions from the BPS in existing nonresidential buildings after the assumed start date of this measure (i.e., 2025). Similar to the residential values calculated above, these emissions values only

include reductions from therm usage (not electricity usage), because by 2030 electricity is assumed to be zero carbon.

Table 19 Reductions in Natural Gas Usage in Existing Nonresidential Buildings from Measure GHG-04

Item	2030	2045
ABAU emissions from natural gas usage in existing nonresidential buildings as of 2025 ($MTCO_2e$)	158,572	158,572
Target emissions reductions (as percent of 2025 levels) in BPS	19%	85%
Emissions reductions ($MTCO_2e$)	**29,646**	**134,786**

Notes: ABAU = adjusted business-as-usual; BPS = building performance standard, $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Measure GHG-04 has five performance indicators, provided in Table 20. Not all performance indicators have been quantified at this time.

Table 20 Performance Standards and Indicators for Measure GHG-04

Performance Standard/Indicator	2030 Target	2045 Target
Number of existing residential buildings meeting or exceeding half of the maximum cost-effective retrofit measures score at time-of-retrofit	28,000 residential units	No 2045 target identified
Number of existing residential buildings meeting or exceeding the maximum cost-effective retrofit measures score at time-of-retrofit	No 2030 target identified	111,000 residential units
Number of existing nonresidential buildings retrofitted to reduce non-electricity-related GHG emissions to comply with the building performance standard program	Target to be identified with further analysis	Target to be identified with further analysis
Number of buildings enrolled in a nonresidential building performance standard program	Target to be identified further analysis	Target to be identified with further analysis
GHG emissions reduced for existing nonresidential buildings retrofitted under a building performance standard program, as calculated from program reporting (when established)	29,600 metric tons of carbon dioxide equivalent	134,800 metric tons of carbon dioxide equivalent

Notes: GHG = greenhouse gas.

Source: Compiled by Ascent in 2024.

Methods for development of the performance indicators are provided below.

Number of existing residential units retrofitted to comply with the requirements of GHG-04. The methods for developing the performance standards are provided in the GHG Quantification Approach for Measure GHG-04, above.

Number of existing nonresidential buildings enrolled in and retrofitted under a building performance standard program. Sufficient data is not currently available to estimate the number of buildings in the unincorporated county, and as such additional study will be conducted under GHG-04 to develop this tracking metric.

GHG emissions reduced for existing nonresidential buildings retrofitted under a building performance standard program. Emissions reductions from existing nonresidential buildings, relative to their 2025 values

shown in Table 19. Emissions data for these buildings would be gathered from the CEC's benchmarking program mentioned in the "Measure Summary" section above, as well as the building standards program in GHG-04.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-04-a commits the County to developing a cost-effective reach code for all existing residential buildings undergoing retrofits in partnership with the California Energy Codes and Standards Program.
  - Action GHG-04-b commits the County to developing a strategy for addressing emissions from existing non-residential buildings and implementing a building performance standard program to achieve a goal of reaching a reduction in non-electricity emissions of 19 percent by 2030, and by 85 percent by 2045.
  - Action GHG-04-c clarifies that the reach code to be developed by the County will include specific retrofit thresholds that determine which projects will be required to comply with the reach code.
  - Action GHG-04-e and GHG-04-f clarify the County's commitment to implement the new reach code by first adopting them via ordinance(s) and gaining approval from the California Energy Commission prior to enforcing the reach codes as required by state law.
  - Action GHG-04-g focuses on providing training to County staff who will be responsible for enforcing compliance of building permit applicants with the adopted reach codes.
  - Action GHG-04-h focuses on making the permitting process simpler, cost-effective, and more streamlined for applicants seeking to replace natural-gas-powered equipment with electric equipment in existing buildings.
  - Action GHG-04-i focuses on supporting permit applicants who exceed the reach code requirements by including all-electric conversion and capping natural gas lines at the point of retrofit through incentives in the form of reduced permitting fees.
  - Action GHG-04-j focuses on developing a partnership with regional organizations to provide training to contractors and construction workers to support the construction of all-electric buildings in the unincorporated county. The action also focuses on driving public engagement with the local workforce and enhancing partnerships with regional organizations for developing a skilled workforce.
  - Action GHG-04-k focuses on continuous monitoring of building codes in the state with an aim to keep the County's reach code updated.
- **Public Engagement and Community Partnerships**
  - Action GHG-04-i focuses on community engagement by encouraging unincorporated county residents and businesses to adopt energy conservation techniques and support decarbonization of existing buildings and switching from natural gas to electric equipment, through sharing information about electrification benefits, incentives, and available resources. The County plans to conduct targeted outreach by incorporating engaging modes like videos and fact sheets to share information including requirements, incentives, training, and educational material.

- Action GHG-04-m focuses on supporting low-income residents in adopting the reach code requirements through a revolving loan fund. The County plans to continuously pursue funding opportunities to support this action.
- Action GHG-04-p focuses on partnership with Sacramento Housing and Redevelopment Agency (SHRA) and SMUD to identify appropriate sites and funding sources for electrifying SHRA managed housing developments.

- **Performance Standard and Tracking Mechanism**
  - Compliance with the reach code will mark the success of this measure. The County already uses a software system to facilitate permit applications, review, and tracking. Action GHG-04-g focuses on documenting additional data related to existing building retrofits permitted pursuant to the new reach code that would need to be tracked through the County's existing permitting system software for monitoring the progress of this measure.
- **Timeline of Implementation**
  - Implementation of Actions GHG-04-a, b, c, d, e, f, g, h, and i is planned to start and be completed in 2025.
  - Implementation of Actions GHG-04-j, k, l, and m is planned to start in 2025 and will be ongoing thereafter.
  - Implementation of Action GHG-04-n is planned to start in 2028 and will be ongoing thereafter, implemented triennially.

MEASURE GHG-05: Decarbonize New Buildings

Measure Objective:

- Residential buildings to meet or exceed a modeled EDR1 (hourly source energy) metric of 11.5 points (single-family)/Energy Source Margin of 11 percent (multifamily) above the Title 24, Part 6, statewide performance minimum, including:
  - 19,500 new residential units built by 2030, and
  - 78,200 new residential units built by 2045
- Nonresidential buildings:
  - Adopt and enforce a reach code such that new construction reduces non-electricity-related emissions by 85% below 2022 Title 24, Part 6 equivalent emissions for each nonresidential buildings type.

Measure Summary

To reduce emissions in new buildings and support more energy efficient homes and businesses, the County will adopt a reach code that includes specific performance standards that would be applicable to all new buildings deemed eligible for these requirements. The aim is to reduce reliance on fossil fuels. The County also will provide incentives to encourage developers to meet or exceed the reach code requirements and provide training opportunities to construction workers for the successful implementation of this measure.

Through adoption of building reach codes that exceed the requirements of the California Building Standards Code Part 6, Title 24 (hereafter referred to as Title 24), the County can limit future fossil fuel consumption through increased energy efficiency requirements, thereby avoiding future GHG emissions from new construction. GHG-04 will be implemented through adoption of a reach code that all applicable new

construction would be subject to. Enforcement of the requirements will occur through the building permitting and review process at the County.

The development of the above implementation mechanisms will include extensive study and stakeholder engagement such that any adopted policies can achieve the desired outcomes while reducing costs to community members. Actions the County will take to this end include:

- Completing cost-effectiveness analyses for any reach codes in partnership with experts at the California Energy Codes and Standards Program;
- Conducting outreach to stakeholders to build consensus on ideal reach code options, including residents, building owners, industry leaders, and workforce organizations; and

Once the details of the mechanisms for implementation for GHG-05 are in place, the County will continuously support successful implementation through various means. These will include:

- Proactively sharing resources on existing rebates, incentives and programs to help support construction of more efficient buildings;
- Collecting and reporting data on the effectiveness of reach codes;
- Performing internal and external trainings on how compliance with reach codes is met and enforced;
- Regularly reviewing and updating the reach codes based on effectiveness of reducing GHG emissions, updated cost-effectiveness data, updated market trends, and updated statewide building codes.

Additionally, the County will continue to identify ways to encourage, or require in the future, construction of all-electric buildings. The County will first offer fee reductions or offsets and expedited permitting for residential and nonresidential projects that are built all-electric and do not include new natural gas infrastructure. In future building code updates, the County will explore all-electric requirements as deemed legally feasible.

Table 21 below summarizes Measure GHG-05, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 21 Measure GHG-05: Improve New Building Energy Efficiency

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-05	▶ Residential buildings to meet or exceed a modeled EDR1 (hourly source energy) metric of 11.5 points (single-family)/Energy Source Margin of 11 percent (multifamily) above the Title 24, Part 6, statewide performance minimum, including: ▪ 19,500 new residential units built by 2030, and ▪ 78,200 new residential units built by 2045. ▶ Nonresidential buildings: ▪ Adopt and enforce a reach code such that new construction reduces non-electricity-related emissions by 85% below 2022 Title 24, Part 6 equivalent emissions for each nonresidential buildings type.	4,462	56,933
Action GHG-05-a	Work with the California Energy Codes and Standards Program to develop cost-effective reach codes that must be met by all new construction. The reach codes will include the following performance standards: ▶ Residential single-family: Projects must meet or exceed a modeled EDR1 (hourly source energy) metric of 11.5 points above the 2022 Title 24, Part 6 statewide performance minimum (the "standard design building") ▶ Residential multifamily: Projects must meet or exceed a modeled Energy Source Margin of 11 percent above the 2022 Title 24, Part 6 statewide performance minimum. ▶ Nonresidential: Projects must reduce non-electricity-related GHG emissions by 85 percent below 2022 Title 24, Part 6 equivalent emissions for each nonresidential buildings type.		
Action GHG-05-b	Provide fee reductions or offsets and expedited permitting for residential and nonresidential projects that are built all-electric and do not include new natural gas infrastructure piping.		
Action GHG-05-c	Conduct stakeholder outreach with building industry members, contractors, residents, businesses, and other interest groups to present the reach code options and solicit feedback.		
Action GHG-05-d	Develop and adopt an ordinance(s) to implement new construction building reach code(s) based on the cost-effectiveness studies (completed as part of Action GHG-05-a) and stakeholder outreach (completed as part of GHG-05-c).		
Action GHG-05-e	Submit the ordinance(s) and cost-effectiveness studies for new construction building reach code(s) to the California Energy Commission for review and approval.		
Action GHG-05-f	Conduct training for County permitting staff to understand the reach code requirements for new buildings and how compliance will be demonstrated.		
Action GHG-05-g	Engage with the California Energy Codes and Standards Program to continually monitor and reassess legal and regulatory barriers requiring all-electric new construction and develop pathways for eliminating the expansion of natural gas infrastructure in the county as feasible.		
Action GHG-05-h	Develop a tracking system for the number of housing units and nonresidential square footage that is built to comply with the new reach code.		
Action GHG-05-i	Provide information regarding new reach code requirements and any incentives to contractors, potential owners, and building applicants by publishing information on the County website, developer/business group-focused communications, and at the permit counter. This should also include information on grant funding opportunities, such as the Building Initiative for Low-Emissions Development (BUILD) Program, and 179D tax credits.		
Action GHG-05-j	Partner with Sacramento Employment and Training Agency, Construction Trades Workforce Initiative, Sacramento-Sierra Building and Construction Trades Council, Sacramento Regional Builders' Exchange, and Northern California Construction Training to develop a training program targeted towards developing knowledge and skills of contractors and construction workers to support the construction of all-electric buildings. (Note that this action may be combined with Action GHG-04-k.)		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; EDR = energy design rating.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

New residential buildings: It was assumed that these homes would be subject to a performance standard corresponding to an EDR1 (hourly source energy) metric of 11.5 points above the 2020 Title 24, Part 6 statewide performance minimum for a single-family "standard design building." This level approximates the energy usage of an all-electric home that has implemented basic efficiency measures. It is assumed that a building code for multifamily buildings would achieve a similar efficiency standard through use of an Energy Source Margin basis, which is excepted to be an 11 percent margin above code minimum. A mixed-fuel building could comply with this standard as well, but would likely need to incorporate a combination of additional efficiency measures and a battery system (California Energy Codes and Standards Program 2024b: 2). Under this performance score, a mixed-fuel single-family building would save 29.5 therms of natural gas per year. For multifamily homes, this savings value was scaled to approximately 64 percent, based on the ratio of square footages in the unincorporated county (2,188 square feet for a single-family home, and 1,400 for a multifamily home [Sacramento County 2024a: 3-4]).

For the purposes of this measure, it was assumed that 41 percent of new homes would be built all-electric, and 59 percent built with gas heating. This was applied to the 19,555 new units expected to be constructed between 2025 and 2030, and the 78,221 new units expected to be constructed between 2025 and 2045. These values are based on the fuel type data for the 2021 Sacramento County housing stock from the United States Census (2021). Similar to the method in Measure GHG-04, only buildings heated by natural gas reduced their emissions, due to all-electric buildings having an assumed zero-emission electricity supply by 2030 per GHG-03. Note that assumptions on the mix of single-family and multifamily units built in the future uses existing unit mixes as a conservative scenario. A shift towards more multifamily units would be expected to result in lower future emissions than as projected by both GHG-05 and the GHG emissions forecast.

Table 22 below shows the results of this analysis.

Table 22 Decrease in Emissions in New Residential Buildings from Reduced Natural Gas Usage from Measure GHG-05

Item	2030	2045
Total new housing units relative to 2025	19,555	78,221
Percent of existing housing units using natural gas as primary heating fuel	59%	59%
Estimated units built as mixed-fuel relative to 2025	11,623	46,491
Ratio of multifamily units to single-family units (existing)	0.22	0.22
New multifamily housing units relative to 2025 (natural-gas-heated units only)	2,070	8,281
New single-family housing units relative to 2025 (natural-gas-heated units only)	9,553	38,211
Decreased emissions per natural-gas-heated multifamily housing unit per year ($MTCO_2e$)	0.100	0.100
Decreased emissions per natural-gas-heated single-family housing unit per year ($MTCO_2e$)	0.157	0.157
Emissions reductions ($MTCO_2e$)	**1,707**	**6,827**

Notes: $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

New nonresidential buildings: Similar to the measure for existing nonresidential buildings in GHG-04, a BPS was assumed to decrease the natural gas use of new nonresidential buildings by 19 percent and 85 percent in 2030 and 2045, respectively. Table 23 shows these reductions.

Table 23 Reductions in Natural Gas Usage in New Non-Residential Buildings from Measure GHG-05

Item	2025	2030	2045
ABAU emissions for all nonresidential buildings	158,572	173,309	217,521
ABAU emissions from new buildings (after 2025)	0	14,737	58,949
Target reductions compared to ABAU	0	19%	85%
Emissions reductions ($MTCO_2e$)	**0**	**2,755**	**50,107**

Notes: ABAU = legislative-adjusted business-as-usual; BPS = building performance standard, $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Measure GHG-05 has four performance indicators, provided in Table 24. Not all performance indicators have been quantified at this time.

Table 24 Performance Standards and Indicators for Measure GHG-05

Performance Standard/Indicator	2030 Target	2045 Target
Number of new residential units that meet or exceed a modeled EDR1 metric of 11.5 points (single-family)/Energy Source Margin of 11 percent (multifamily) above the Title 24, Part 6 statewide performance minimum	19,500 residential units	78,200 residential units
Square footage of new nonresidential buildings built to reduce non-electricity-related emissions 85% below Title 24	Target to be identified with further analysis	Target to be identified with further analysis
Number of all electric residential units approved and built	No target identified	No target identified
Square footage of all electric commercial projects approved and built	No target identified	No target identified

Notes: GHG = greenhouse gas; EDR = energy design rating.

Source: Compiled by Ascent in 2024.

Methods for development of the performance indicators are provided below.

Number of new residential units that meet or exceed a modeled EDR1 metric of 11.5 points (single-family)/Energy Source Margin of 11 percent (multifamily) above the Title 24, Part 6 statewide performance minimum. This is described in GHG Quantification Approach for Measure GHG-05, and is the sum of values for new residential units in Table 22.

Square footage of new nonresidential buildings built to reduce non-electricity-related emissions 85% below Title 24. Sufficient data is not currently available to estimate the number of buildings in the unincorporated county, and as such additional study will be conducted under GHG-05 to develop this tracking metric.

Number of all-electric residential units and square footage of all-electric commercial projects. Measure GHG-05 incentives all-electric new construction, but it is not required. As such, the county has not identified a numeric target for future all-electric construction, but will monitor the number and size of building constructed as all-electric to inform future policy decisions.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-05-a commits the County to develop and adopt a cost-effective reach code for all new residential and nonresidential buildings.
  - Action GHG-05-b supports the measure by prioritizing all-electric construction projects through incentives in the form of fee waivers and an expedited project permitting process.
  - Action GHG-05-c commits the County to training County staff who will be responsible for enforcing compliance of new construction projects with the adopted reach codes.
  - Action GHG-05-g focuses on the County's commitment to partner with regional agencies in providing training opportunities to contractors and construction workers to support successful compliance of the reach code. The action also focuses on driving public engagement with the local workforce and enhancing partnerships with regional organizations to develop a skilled workforce in the county.
- **Public Engagement and Community Partnerships**
  - Action GHG-05-d focuses on engaging with the California Energy Codes and Standards Program to monitor legal and regulatory barriers to requiring all-electric new construction in the county. This action holds significant importance due to the ruling by the Ninth Circuit Court regarding the Berkeley natural gas ban (US Court of Appeals for the Ninth Circuit 2023).
  - Action GHG-05-f focuses on sharing important information like new requirements, incentives, funding opportunities, and tax credits with stakeholders through various means that are convenient and accessible to all concerned parties.
- **Performance Standard and Tracking Mechanism**
  - Compliance with the reach code will mark the success of this measure. The County already uses a software system to facilitate permit applications, review, and tracking. Action GHG-05-e focuses on documenting additional data that would need to be tracked through the County's existing permitting system software for monitoring the progress of this measure.
- **Timeline of Implementation**
  - Implementation of Actions GHG-05-a and e is planned to start and be completed in 2025.
  - Implementation of Actions GHG-05-b, f and g is planned to start in 2025 and will be ongoing thereafter.
  - Implementation of Action GHG-05-c is planned to start in 2025 and will be ongoing as needed thereafter with every reach code update.
  - Implementation of Action GHG-05-d is planned to start in 2026 and will be ongoing, implemented annually after CAP adoption.

MEASURE GHG-06: Retire Fossil-Fuel-Powered Landscaping Equipment

Measure Objective:

Facilitate trade-in of fossil-fuel-powered landscaping equipment for electric equivalents. Aim to retire approximately 78,000 pieces of equipment by 2030 and 352,000 by 2045.

Measure Summary

With this measure, the County aims to significantly reduce emissions generated by existing fossil-fuel-powered landscaping equipment by helping the community transition to electric equipment. The County plans to achieve this by partnering with the Sacramento Metropolitan Air Quality Management District (SMAQMD) to facilitate convenient trade-in of equipment and encourage residents and businesses to take advantage of the available opportunities.

GHG-06 will be implemented through an equipment trade in program that provides vouchers for purchasing electric landscape equipment to residents and businesses that trade in fossil-fuel-powered landscaping equipment, which would support the State's implementation of the small off-road engine regulations of Assembly Bill 1346. SMAQMD currently has an equipment trade in program that is available for businesses, the Commercial Lawn and Garden Program. Through GHG-06 the County will investigate avenues for expanding such a trade-in program, including offering County facilities as trade in sites and participating in grant funding applications. The County will also assist in sharing information with the public about rebates and incentives, as well as co-benefits, for switching to electric lawn equipment. Throughout the program, the County will track success to determine the effectiveness of the program and alternative future pathways for achieving further participation.

Table 25 below summarizes Measure GHG-06, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 25 Measure GHG-06: Retire Fossil-Fuel-Powered Landscaping Equipment

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-06	Facilitate trade-in of fossil-fuel-powered landscaping equipment for electric to retire approximately 78,000 pieces of equipment by 2030 and 352,000 by 2045.	3,134	17,254
Action GHG-06-a	Work with SMAQMD to implement a landscaping equipment trade-in program that provides vouchers for purchasing electric landscape equipment to residents and businesses that trade in fossil-fuel-powered landscaping equipment.		
Action GHG-06-b	Explore the feasibility of and funding opportunities for expanding the landscaping equipment trade-in program which may include: ▶ organizing trade-in events at convenient locations for residents throughout the county, multiple times per year; and ▶ establishing additional permanent drop-off locations at other County-operated facilities.		
Action GHG-06-c	Develop a tracking system for the equipment exchanged by applicants through the landscaping equipment trade-in program including number and type of equipment.		
Action GHG-06-d	Share information regarding incentives including CARB's zero-emission landscaping equipment incentive program and SMAQMD's Commercial Lawn and Garden Program, if available, and co-benefits of using electric landscaping equipment through newsletters, social media post, and the County's website.		

Notes: CARB = California Air Resources Board; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; SMAQMD = Sacramento Metropolitan Air Quality Management District.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

This measure assumes that approximately 3.7 percent of landscaping equipment in the unincorporated county could be traded in every year until 2030. This rate was derived based on the 2022 Scoping Plan estimates of

statewide total fossil fuel use reduction, which states a goal of reducing this consumption by 86 percent in 2045 relative to 2022 levels (CARB 2022: 2). No explicit target for landscaping equipment was available, so this statewide total target was used as a proxy. For 2045, it was assumed that 85 percent of equipment had been traded in, a value comparable to the statewide goal described above.

To calculate the quantity of equipment traded in, the quantity of total equipment and associated emissions in Sacramento County (including unincorporated areas and cities) was extracted from CARB's OFFROAD model (2024a). The unincorporated county equipment totals were apportioned using population ratio values of 40 percent and 36 percent in 2030 and 2045, respectively. The percentage reduction described above was applied to these equipment's emissions. A 2025 start date was assumed consistent with the timeline of Action GHG-06-a. Table 26 below shows this calculation, along with the pieces of equipment for tracking purposes.

Table 26 GHG Reductions from Trade-In of Fossil-Fuel-Powered Equipment from Measure GHG-06

Item	2030	2045
ABAU emissions from landscaping equipment ($MTCO_2e$)	16,765	20,298
Cumulative percent of landscaping equipment traded for electric	18.7%	85.0%
Pieces of fossil fuel powered equipment traded for electric	78,371	352,196
Emission Reductions ($MTCO_2e$)	**3,134**	**17,254**

Notes: ABAU = legislative-adjusted business-as-usual; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Performance standards are expressed in terms of the number of pieces of fossil fueled equipment traded in for electric, and are provided in Table 26 above. The methods for developing the performance standards are provided in the GHG Quantification Approach for Measure GHG-06, above.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-06-a identifies the County's commitment to develop a trade-in program in partnership with SMAQMD.
  - Action GHG-06-b focuses on exploring opportunities for expanding the program to ensure more support to county residents and businesses. The plan is to explore the feasibility of organizing multiple targeted trade-in events and establishing additional convenient drop-off locations in the county.
- **Public Engagement and Community Partnerships**
  - Action GHG-06-d focuses on engaging county residents and businesses by promoting co-benefits expected from transitioning to electric equipment and providing information about available incentives and the trade-in program through various mediums.
- **Performance Standard and Tracking Mechanism**
  - Action GHG-06-c identifies the County's commitment to monitoring the progress of this measure by developing and implementing a tracking system for documenting all exchanged equipment through the trade-in program in the unincorporated county, either through the County's efforts or in partnership/collaboration with SMAQMD.

- **Timeline of Implementation**
  - Implementation of Actions GHG-06-a and d is planned to start in 2025 and will be ongoing thereafter.
  - Implementation of Actions GHG-06-b is planned to start in 2030 and will be ongoing, implemented every five years thereafter.
  - Implementation of Actions GHG-06-c is planned to start and will be completed in 2025.

MEASURE GHG-07: Increase EV Charging and ZEV Infrastructure

Measure Objective:

Plan for and deploy increased EV network capacity and other ZEV infrastructure in the unincorporated county, installing 24,000 EV chargers by 2030 and 72,000 EV chargers by 2045 through both County direct installation and requirements for new development and retrofit projects.

Measure Summary

With this measure, the County aims to reduce on-road transportation emissions by increasing the availability and convenience of EV charging stations and refueling infrastructure for other types of ZEVs. The County plans to achieve this by making the network capacity and infrastructure for EVs and ZEVs easily accessible by installing a considerable number of EV chargers throughout the unincorporated county. The plan is to conduct direct installations by the County and simultaneously make amendments to the building code to require new developments and eligible retrofits to install EV charging stations or facilities.

Measure GHG-07 has three primary mechanisms for increasing the number and availability of ZEV charging infrastructure. The first mechanism is the direct installation of ZEV charging infrastructure each year as part of the capital improvements program, which will be guided under an infrastructure deployment strategy. The second mechanism will be through the enforcement of ordinances and standards for new development and major renovations. Lastly, the third mechanism will be through County-led education programs that encourage the use of rebates and incentives to purchase ZEVs and install charging infrastructure.

Under GHG-07, the County will develop a ZEV Infrastructure Deployment Strategy to support the widespread adoption of EVs, hydrogen fuel cell vehicles, or other types of ZEVs using the Electric Vehicle Readiness and Infrastructure Plan as a foundation. Once the Strategy is developed, the County can then implement the Strategy through the installation of EV chargers and facilitating renewable fuel options. The County will set an annual target for ZEV infrastructure installations and include projects in the Capital Improvements Program to meet these targets.

To implement GHG-07 the County will also adopt multiple reach codes that increase the requirements for the number and type of ZEV charging infrastructure that must be installed at new and existing developments undergoing renovations. The reach codes will require:

- New developments meet CALGreen Tier 2 EV requirements for:
  - Single-family residential,
  - Multifamily residential,
  - Nonresidential for light-duty vehicles
  - Nonresidential for heavy- and medium-duty vehicles;

- Renovations to existing nonresidential developments meet CALGreen Tier 2 EV requirements;
- Renovations to existing multifamily residential developments meet CALGreen Tier 2 EV requirements; and
- Gas stations undergoing renovations must install EV charging stations.

The County will also implement GHG-07 through incentive programs. The County will conduct regular outreach and education to community members to promote the benefits of ZEVs and available incentives and rebates. The County will also explore developing its own incentive program that encourages early retirement of internal combustion engine vehicles.

Lastly, the County will engage in regional efforts to support planning and deployment of EVs, including supporting the expansion of the Our Community CarShare program.

Table 27 below summarizes Measure GHG-07, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 27 Measure GHG-07: Increase EV Charging and ZEV Infrastructure

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-07	Plan for and deploy increased EV network capacity and other ZEV infrastructure in the unincorporated county, installing 24,000 EV chargers by 2030 and 72,000 EV chargers by 2045 through both County direct installation and requirements for new development and retrofit projects.	290,826	220,381
Action GHG-07-a	Develop and adopt an ordinance that amends the building code to require EV charging capability consistent with the latest version of CALGreen Tier 2 Voluntary Measures, at the time of ordinance development, for the following project types: ▸ New single-family residential, ▸ New multifamily residential, ▸ New nonresidential (both light-duty and medium-/heavy-duty requirements).		
Action GHG-07-b	Develop and adopt an ordinance that amends the building code to require EV charging capability installation at existing nonresidential developments consistent with the latest version of CALGreen Tier 2 Voluntary Measures, at the time of ordinance development, for additions or alterations to existing buildings or parking facilities under the following conditions: ▸ When the scope of construction work includes an increase in power supply to an electric service panel as part of a parking facility addition or alteration. ▸ When a new solar PV system is installed covering existing parking spaces. ▸ When additions or alterations to existing buildings are triggered pursuant to CALGreen and the scope of work includes an increase in power supply to an electric service panel.		
Action GHG-07-c	Develop and adopt an ordinance that amends the building code to require EV charging capability installation at existing multifamily residential developments consistent with the latest version of CALGreen Tier 2 Voluntary Measures, at the time of ordinance development, for additions or alterations to existing buildings or parking facilities under the following conditions: ▸ When new parking facilities are added. ▸ When a new solar PV system is installed covering existing parking spaces. ▸ When electrical systems or lighting of existing parking facilities are added or altered, and the work requires a building permit. ▸ When additions or alterations to existing buildings are triggered pursuant to CALGreen and the scope of work includes an increase in power supply to an electric service panel.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-07-d	Develop a "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy" to prepare Sacramento County for the widespread adoption of electric vehicles (EVs), hydrogen fuel cell vehicles, or other types of ZEVs, and install public EV chargers in the unincorporated county and provide hydrogen-fueling and other renewable fuel options, using the Electric Vehicle Readiness and Infrastructure Plan as a foundation. The strategy should: ▶ identify key areas for public EV charging access, including near multifamily developments and in Environmental Justice Communities. ▶ assess additional electrical load capacity needs and limitations for EV charging. ▶ assess biofuels, hydrogen, and other ZEV technology growth forecasts, and potential infrastructure needs to support growth in alternative fuel demand. ▶ identify costs and funding and financing strategies for installation of EV charging infrastructure. ▶ identify policy objectives to support an increased need for EV and alternative fuel infrastructure based on the analysis results. ▶ identify methods and procedures for monitoring progress and evaluating the effectiveness of the strategy, and the strategy should be reviewed and updated every three years to reflect technology and market trends.		
Action GHG-07-e	Upon completion and adoption of the "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy," include new EV charging infrastructure projects annually in the CIP to provide the direct install of at least 100 publicly available EV chargers per year. Installation of charging infrastructure should be located in shaded areas of parking lots when practical, and installation in shaded areas should be considered to increase charging efficiency.		
Action GHG-07-f	Adopt an ordinance requiring gas stations that undergo major renovations with a permit value over $300,000 to install at least one EV DC fast charging station for every 10 fuel dispensers.		
Action GHG-07-g	Develop a system for tracking the number, type, and location of new EV chargers installed in the unincorporated county each year for permitted installations.		
Action GHG-07-h	The Sacramento County Airport System (SCAS) will expand EV charging at county airports by doing the following: ▶ Develop an EV charging plan for County airports, taking into consideration the opportunities and constraints identified in the Energy Management Plan as specified under Action GOV-04-a. The plan will hierarchize EV charging for the public and employees. ▶ SCAS currently hosts a pay-to-charge EV fueling facility at the Sacramento International Airport with eight DC fast chargers for passengers, employees, and commuters along the I-5 corridor. This facility is open 24-7 to allow EV drivers to charge their vehicles at any time. A second fueling station will be constructed in the Free Waiting Area to allow even greater access to charging. ▶ Any new long-term parking facilities constructed will include an appropriate percentage of spaces equipped with Level 1 chargers, based on the EV charging plan. Average parking dwell times at the airport do not warrant charging in excess of Level 1. ▶ Include signage for EV charging facilities for both wayfinding and parking restrictions. ▶ Perform bi-annual reviews of publicly accessible EV charging utilization at Sacramento International Airport and install additional EV chargers as supported by demand.		
Action GHG-07-i	Prepare educational materials including pamphlets and video tutorials and conduct educational workshops to inform residents and businesses about new requirements, EVs rebates (like the SMUD's Residential Rebate program, SMUD's Business Rebate program, the Clean Vehicle Tax Credit program, the Commercial Clean Vehicles tax credits program, and the Credit for Previously Owned Clean Vehicles program) and the expanded EV infrastructure. Education materials and workshops will strive to be culturally compatible to be accessible to underserved and Environmental Justice Communities.		
Action GHG-07-j	Partner with SMAQMD to secure additional funding for expanding the Our Community CarShare program to additional affordable housing developments in Environmental Justice Communities in the unincorporated county.		
Action GHG-07-k	Coordinate with regional ZEV initiatives developed or implemented by various agencies including, the Sacramento Regional Transit District (SacRT), City of Sacramento, SMUD, and SMAQMD to coordinate the activities of different agencies and simplify or unify permitting processes for the installation of EV charging or hydrogen refueling infrastructure and the deployment of ZEV fleets in the region.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-07-l	Update the County's EV infrastructure permitting process triennially (if needed) to maintain consistency with regional permitting best practices, and as permitting processes are updated perform internal trainings such that permitting staff understand the permitting, inspection, and enforcement process. The County will also consider reductions in permitting fees during process updates.		
Action GHG-07-m	Reassess and update the "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy", every five years to incorporate new market trends and technologies.		
Action GHG-07-n	Conduct a feasibility study on a County program to encourage early retirement of internal combustion engine (ICE) vehicles and replacement with electric vehicles. The program may assess the feasibility of offering rebates, tax credits, or other incentives such as a buyback plan.		
Action GHG-07-o	Based on the findings of the feasibility study described in GHG-07-n, the County may develop and implement a program to facilitate the early retirement of ICE vehicles.		

Notes: GHG = greenhouse gas; EV = electric vehicle; ICE = internal combustion engine; $MTCO_2e$ = metric tons of carbon dioxide equivalent; SCAS = Sacramento County Airport System; SMAQMD = Sacramento Metropolitan Air Quality Management District; SMUD = Sacramento Municipal Utility District; ZEV = zero-emission vehicle.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

For this analysis, ZEVs are defined as battery EVs, plug-in hybrids (PHEVs), and fuel cell EVs. This definition is used by CARB (2024b) for its Advanced Clean Cars regulation.

This measure facilitates an increase in ZEVs above the forecast number of vehicles in the Advanced Clean Cars and Advanced Clean Fleets regulations (the increases in ZEV populations due both of these regulations are included in the ABAU forecast). Targets of 30 and 90 percent ZEVs in the vehicle population were set for both light-duty and medium- and heavy-duty vehicles in 2030 and 2045, respectively. For 2030, the value of 30 percent is based on the *Sacramento Air District's Capital Regional Climate Priorities Plan* (SMAQMD 2024: 51). The Capital Regional Climate Priorities Plan does not explicitly reference a target for medium- and heavy-duty vehicles, so 30 percent was assumed for those vehicles as well. Additionally, the Capital Regional Climate Priorities Plan only considers reductions through 2030 and does not forecast past that time. Therefore, for 2045, the targets in the March 2023 Revised Draft 2045 Climate Action Plan: County of Los Angeles (County of Los Angeles 2023: 3-37 and 3-40) were used—these targets are 90 percent for both light-duty and medium- and heavy-duty vehicles.

It was assumed that these ZEV vehicles would displace internal combustion engine (ICE) vehicles on a one-for-one basis (i.e., adding an additional ZEV above the ABAU forecast would displace the emissions of one ICE vehicle). For light-duty ZEVs specifically, these vehicles comprised 81 percent battery-electric and 19 percent plug-in hybrids in 2030; in 2045, those values were 90 and 10 percent, respectively (per the Advanced Clean Cars II forecast used in the Forecast and Targets Memo). Since PHEVs still have tailpipe GHG emissions, reduction values for light-duty vehicles were adjusted downward accordingly. Emissions values for ICE vehicles decline over time due to increasing fuel efficiency, which causes lower reductions per displaced vehicle in 2045 as compared to 2030.

Table 28 shows the results of these calculations.

Table 28 Emissions Reductions from Increased ZEVs from Measure GHG-07

Vehicle Type	2030 ABAU ZEVs	2045 ABAU ZEVs	2030 ZEVs with Measure GHG-07	2045 ZEVs with Measure GHG-07	2045 Emissions Reduction per Displaced ICE Vehicle per year ($MTCO_2e$)	2045 Emissions Reduction per Displaced ICE Vehicle per year ($MTCO_2e$)	2030 Emissions Reductions ($MTCO_2e$)	2045 Emissions Reductions ($MTCO_2e$)
LD	72,444	326,048	125,820	378,570	3.28	1.84	175,027	96,728
MD/HD	2,226	18,848	9,177	27,274	16.66	14.68	115,798	123,652
Total	**74,670**	**344,896**	**134,996**	**405,843**	**NA**	**NA**	**290,826**	**220,381**

Notes: ABAU = legislative-adjusted business-as-usual; ICE = internal combustion engine; LD = light-duty; MD/HD = medium- and heavy-duty; $MTCO_2e$ = metric tons of carbon dioxide equivalent; NA = not applicable. ZEV = zero-emission vehicle. Totals may not sum exactly due to independent rounding.

Source: Analysis conducted by Ascent in 2024.

The number of chargers required for implementation of this measure is the sum of two values: 1) the number of chargers needed to implement Advanced Clean Cars II and Advanced Clean Fleets, which are included in the ABAU forecast, and 2) additional chargers needed to reach emissions reduction goals. This quantity of chargers is the quantity used for the cost analysis. For light-duty chargers (including public and shared private chargers) and medium- and heavy-duty chargers (including depot and en route chargers) vehicles, a ratio of 7.19 and 1.43 vehicles per charger was assumed, respectively (calculated based on charger counts from CEC 2024c: 3-8). This resulted in the quantity of chargers and vehicles shown in Table 29 below.

Table 29 Quantity of Chargers Needed for ZEVs from Measure GHG-07

Vehicle Type	2030 ZEVs with Measure GHG-07	2045 ZEVs with Measure GHG-07	2030 Chargers Needed	2045 Chargers Needed
LD	125,820	378,570	17,491	52,626
MD/HD	9,177	27,274	6,438	19,135
Total	**134,996**	**405,843**	**23,929**	**71,761**

Note: ABAU = legislative-adjusted business-as-usual; ICE = internal combustion engine; LD = light-duty; MD/HD = medium- and heavy-duty; $MTCO_2e$ = metric tons of carbon dioxide equivalent; ZEV = zero-emission vehicle.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Measure GHG-07 has three performance indicators, provided in Table 30.

Table 30 Performance Standards and Indicators for Measure GHG-07

Performance Standard/Indicator	2030 Target	2045 Target
Number and type of EV chargers installed through both County direct installation and at development and retrofit projects	24,000 EV chargers	72,000 EV chargers
Number of light-duty ZEVs registered in the County from Department of Motor Vehicles data	125,800 light-duty ZEVs (or 30% of total registered light-duty vehicles in the County)	378,500 light-duty ZEVs (or 90% of total registered light-duty vehicles in the County)
Number of medium-duty and heavy-duty ZEVs registered in the County	9,200 medium- and heavy-duty ZEVs (or 30% of total registered medium- and heavy-duty vehicles in the County)	378,500 medium- and heavy-duty ZEVs (or 90% of total registered medium- and heavy-duty vehicles in the County)

Notes: EV = electric vehicle: ZEV = zero-emission vehicle.
Source: Compiled by Ascent in 2024.

Methods for development of the performance indicators are provided below.

Number and type of EV chargers installed through both County direct installation and at development and retrofit projects. This is described in GHG Quantification Approach for Measure GHG-07, and is the sum of values for chargers needed in Table 29.

Number of light-duty ZEVs registered in the County from Department of Motor Vehicles data. This is described in GHG Quantification Approach for Measure GHG-07 and Table 28.

Number of medium-duty and heavy-duty ZEVs registered in the County. This is described in GHG Quantification Approach for Measure GHG-07 and Table 28.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-07-a identifies the County's commitment to develop and adopt an ordinance to require EV charging capability in new developments to install EV chargers as per requirements established in the ordinance.
  - Action GHG-07-b identifies the County's commitment to develop and adopt an ordinance to require EV charging capability at existing nonresidential developments to install EV chargers as per requirements established in the ordinance.
  - Action GHG-07-c identifies the County's commitment to develop and adopt an ordinance to require EV charging capability at existing multifamily residential developments to install EV chargers as per requirements established in the ordinance.
  - Action GHG-07-d identifies the County's commitment to develop a ZEV Infrastructure Deployment Strategy to support the widespread adoption of EVs, hydrogen fuel cell vehicles, or other types of ZEVs using the Electric Vehicle Readiness and Infrastructure Plan as a foundation. Once the Strategy is developed, the County can then implement the Strategy through the installation of EV chargers and facilitating renewable fuel options, as described in other implementing actions under this measure.
  - Action GHG-07-e centers on the outcomes of Action GHG-07-d and focuses on ensuring that the projects resulting from the countywide strategy are included in the Capital Improvement Program annually to support the direct installation of at least 100 EV chargers per year by the County.
  - Action GHG-07-f identifies the County's commitment to develop and adopt an ordinance to require eligible gas station renovations to install EV chargers as per requirements established in the ordinance.
  - Action GHG-07-h identifies the County's commitment to expand EV charging infrastructure the Sacramento International Airport by developing an EV charging plan for installing additional EV chargers, making the chargers easier to access, and ensuring efficient use of the charging infrastructure.
  - Action GHG-07-k aims to streamline and optimize EV and ZEV infrastructure initiatives across all regional transportation agencies in Sacramento County. Through this action, the County intends to consolidate regional efforts and enhance the efficiency of the permitting process for charger installations. For this, the County plans to coordinate with various agencies including SacRT, City of Sacramento, SMUD, and SMAQMD.
  - Action GHG-07-l centers on Action GHG-07-k and focuses on ensuring that if needed as an outcome of Action GHG-07-k, the permitting process is updated triennially for optimization.

- Action GHG-07-m focuses on ensuring that the strategy for enhancing ZEV infrastructure is updated to incorporate new market trends and technologies by setting a five-year reassessment timeline for such updates.
- Action GHG-07-n focuses on strengthening funding support to communities by assessing feasibility of a County program to encourage the adoption of EVs.
- Action GHG-07-o centers on the outcomes of Action GHG-07-n and aims to develop and implement the County program with an aim to strengthen the funding support to communities.

- **Public Engagement and Community Partnerships**
  - Action GHG-07-i focuses on engaging and encouraging residents and businesses to transition to EVs or ZEVs by sharing information about available funding opportunities, related benefits, new requirements, and any other resources. The County aims to conduct targeted outreach prioritizing underserved and EJ Communities by using culturally appropriate mediums of communication.
  - Action GHG-07-j focuses on partnering with or supporting the efforts of SMAQMD to extend current financial support to additional affordable housing developments in EJ Communities in the unincorporated county.
- **Performance Standard and Tracking Mechanism**
  - Compliance with the requirements established in the ordinances identified in the corresponding actions above will mark the success of this measure. Action GHG-07-g focuses on developing a tracking mechanism for monitoring compliance with these ordinances by setting up a system for tracking new EV chargers or hydrogen refueling stations installed in the unincorporated county.
  - A numeric performance standard has been set, as described in the Measure Objective
- **Timeline of Implementation**
  - Implementation of Actions GHG-07-a, b, c, d, f, g, and n is planned to start and end in 2025.
  - Implementation of Actions GHG-07-e, h, i, j, and k is planned to start and will be ongoing thereafter.
  - Implementation of Action GHG-07-l is planned to start in 2028 and will be ongoing thereafter, implemented triennially as needed.
  - Implementation of Action GHG-07-m is planned to start in 2030 and will be ongoing thereafter, implemented every five years.
  - Implementation of Action GHG-07-o is planned to start and end in 2026.

MEASURE GHG-08: Develop a VMT Impact Fee Program

Measure Objective:

Develop a VMT Impact Fee Program to require developers to contribute to regional VMT reductions when project-specific VMT cannot be mitigated to below significance thresholds after all feasible onsite mitigation has been implemented.

Measure Summary

Through this measure, the County aims to reduce on-road transportation emissions by developing a VMT Impact Fee program that can fund VMT reduction projects in the unincorporated County. Under this proposed program, developers would be required to pay a VMT Impact Fee to help reduce regional VMT. This fee would

apply to applicable development projects if the developers were unable to reduce on-site VMT to meet the VMT mitigation thresholds.

The implementation of GHG-08 does not result in direct GHG reductions; however, it enables the realization of reductions from other measures, such as GHG-09, GHG-11, and GHG-12, by establishing a process for funding offsite VMT mitigation projects where projects would previously not have been able to reduce VMT. The implementation actions of Measures GHG-08 focus on the administrative steps that would be needed to establish a VMT Impact Fee Program, establish data collection mechanisms to monitor performance, and make regular updates.

Table 31 below summarizes Measure GHG-08, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 31 Measure GHG-08: Develop a VMT Impact Fee Program

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-08	Develop a VMT Impact Fee Program to require developers to contribute to regional VMT reductions when project-specific VMT cannot be mitigated to below significance thresholds after all feasible onsite mitigation has been implemented.	Not Quantified	Not Quantified
Action GHG-08-a	Conduct a VMT Impact Fee Program nexus study to identify key VMT mitigation projects in the unincorporated County and the costs per VMT of project implementation. The projects identified in the nexus study must be proven to be: ▶ Additional to any VMT reduction projects or programs that would be implemented without the VMT Impact Fee as a funding source. ▶ Verifiable for monitoring of achieved VMT reductions after project implementation. ▶ Lasting the duration of the project's operational lifespan for which VMT is being mitigated through the VMT Impact Fee. ▶ Having direct public benefits to low-income residents and Environmental Justice Communities. ▶ Having appropriate nexus between new development projects and off-site VMT mitigation projects, including proximity of off-site VMT mitigation projects to new development projects within the unincorporated County		
Action GHG -08-b	Adopt an ordinance establishing the VMT Impact Fee Program that allows project proponents to pay for offsite VMT mitigation after all feasible onsite mitigation has been implemented and project VMT is still above the significance threshold. Detailed feasibility criteria will be developed and will include appropriate economic considerations to ensure that all feasible onsite VMT mitigation measures are prioritized and implemented prior to the development of offsite mitigation measures in the form of VMT Impact Fees.		
Action GHG-08-c	Establish a VMT Impact Fee fund to invest in VMT mitigation projects and a fee collection mechanism into which developers will pay.		
Action GHG-08-d	Create a VMT monitoring program that allocates County resources to the annual monitoring and reporting of VMT reductions achieved through the implementation of VMT mitigation projects funded through the VMT Impact Fee and compare against the estimated VMT reductions at the time of VMT Impact Fee collection.		
Action GHG-08-e	Reassess the projects available for offsite VMT mitigation through the VMT Impact Fee Program every three years, including the effectiveness of VMT mitigation through monitoring and reporting and the additionality of eligible projects.		
Action GHG-08-f	Develop an informational packet on the requirements and applicability of the VMT Impact Fee Program, focused on educating project applicants and County staff.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; VMT = vehicle miles traveled.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

Measure GHG-08 was deemed not quantifiable because there were insufficient data to quantify reductions. The quantification of this measure would depend on how many individual projects would be subject to the VMT Impact Fee Program, and whether they would be required to first mitigate onsite VMT versus paying into the new VMT Impact Fee program. These details cannot be known and cannot be reasonably estimated with publicly available data until nexus studies and draft ordinances have been developed identifying those assumptions and parameters.

Performance Standards and Indicators

The performance indicator for Measures GHG-08 is the amount of VMT mitigated through the VMT impact fee program. However, as discussed in the GHG Quantification Approach section above, this performance indicator cannot be quantified until additional study is conducted as part of GHG-08.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-08-a focuses on conducting a nexus study for the proposed VMT Impact Fee Program to identify key projects for mitigating VMT and determine their associated costs per VMT. The actions also define details on eligibility criteria for identifying the projects.
  - Action GHG-08-b focuses on identifying the County's commitment to develop and adopt an ordinance to establish the VMT Impact Fee Program based on the findings of the nexus study under Action GHG-8-a, which would require project proponents to pay the VMT Impact Fee as per program requirements.
  - Action GHG-08-e focuses on updating the list of identified projects and re-analyzing the effectiveness of this measure using the monitoring mechanism every three years.
- **Public Engagement and Community Partnerships**
  - Action GHG-08-f focuses on sharing information regarding the program and applicability criteria with the project proponents. The action also focuses on educating the appropriate County staff about the new VMT Impact Fee Program.
- **Performance Standard and Tracking Mechanism**
  - Action GHG-08-c focuses on developing a fund to which the identified project proponents pay the VMT Impact fee for investing in regional VMT mitigation. The action additionally focuses on developing a fee collection mechanism, to unluck funding opportunities for additional VMT mitigation.
  - A numeric performance standard has not been set at this time.
  - Compliance with the requirements established in the ordinance will mark the success of this measure. Action GHG-08-d focuses on developing a program to monitor VMT reductions achieved through the implementation of VMT mitigation projects funded by the VMT Impact Fee. The program will monitor the progress of this measure by comparing VMT reductions achieved with this measure with VMT reductions estimated without this measure.
- **Timeline of Implementation**
  - Implementation of Action GHG-08-a is planned to start and be completed in 2025.
  - Implementation of Action GHG-08-b, c, and d is planned to start and be completed in 2026.

- Implementation of Action GHG-08-e is planned to start in 2025 and will be ongoing thereafter, implemented every three years.
- Implementation of Action GHG-08-f is planned to start in 2025 and will be ongoing thereafter.

MEASURE GHG-09: Reduce VMT from New Developments

Measure Objective:

Update the requirements for TSM Plans to include a target of 15 % reduction in annual VMT below the regional average from all new developments through 2045.

Measure Summary

Through this measure, the County aims to include more rigorous VMT reduction targets in the Transportation System Management (TSM) Plans already required in the County's zoning code to promote sustainable transportation practices, alleviate traffic congestion, reduce on-road transportation emissions, and contribute to long-term environmental sustainability in the unincorporated county from all new developments.

Measure GHG-09 primarily focuses on developing the implementation and reporting mechanisms for an increased VMT reduction target for new development. The County will update its Zoning Code and then require that developments of certain sizes develop and implement TSM Plans and join 50 Corridor Transportation Management Association (TMA/Sacramento TMA). The County will implement the Zoning Code updates as part of the development review process. The County will also require reporting on TSM Plan implementation for developments and impose a fee structure for lack of compliance.

A core goal of measure GHG-09 is to also provide developments subject to the TSM Plan requirements with the tools for implementing transportation demand management (TDM) programs. As such, the County would rely on participation in 50 Corridor TMA/Sacramento TMA and the offering of additional TDM programs and services through the collection of the noncompliance fee.

Table 32 below summarizes Measure GHG-09, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 32 Measure GHG-09: Reduce VMT in Qualified Projects

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-09	Update the requirements for TSM Plans to include a target of 15 % reduction in annual VMT below the regional average from new development through 2045.	14,084	15,885
Action GHG-09-a	Adopt an ordinance to update Section 5.9.6 of the Zoning Code to update the TSM Plan requirements so that new development projects will be required to establish a target of 15 percent reduction in annual VMT below the regional average, with a requirement for annual reporting of employees commute trips and VMT reduction target alignment, and a requirement to join 50 Corridor TMA/Sacramento TMA. The update should also provide additional and updated Trip Reduction Measures, such as transit incentives, micro-transit programs, parking cash-out and hybrid work policies.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-09-b	Develop a tracking mechanism that includes annual reporting requirements and validation procedures through a web portal to demonstrate ongoing compliance. The project owner/applicant will be required to report the following information annually: ▶ Employee commute VMT ▶ Modal split ▶ Number of onsite employees ▶ Number of full-time employees ▶ Ongoing travel management programs ▶ VMT reduction target progress		
Action GHG-09-c	Partner with SACOG to provide up-to-date information about available transportation demand management (TDM) programs in Sacramento County through email and at time of annual reporting (See Action GHG-09-b) for all projects subject to Section 5.9.6 of the Zoning Code.		
Action GHG-09-d	Conduct a nexus study for imposing a fee structure for projects that do not meet the employee commute trip reduction requirements. Based on the results, impose a fee for projects that do not meet trip reduction requirements for three or more consecutive years. Fees collected should be used to fund micro-transit or other trip reduction projects.		
Action GHG-09-e	Develop an informational packet on the new requirements and applicability of TSM plans and the Zoning Code updates, focused on educating project applicants, facilities already required to submit TSM plans, and County staff.		

Notes: ABAU = legislative-adjusted business-as-usual; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; SACOG = Sacramento Area Council of Governments; TDM = transportation demand management; TMA = transportation management association; TSM = transportation system management.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

It was assumed that new VMT added after 2026 would be eligible for a 15 percent reduction. Table 33 below shows the reductions from reducing this new VMT by 15 percent. The emissions factor for all vehicles (i.e. including passenger, light-duty, and heavy-duty) was assumed to calculate reductions.

Table 33 VMT Reductions from GHG-09

	2026	2030	2045
VMT in Unincorporated Sacramento County	4,580,431,201	4,880,814,364	6,007,251,228
New VMT relative to 2026	NA	300,383,164	1,426,820,027
15 percent reduction in new VMT relative to 2026	0	45,057,475	214,023,004
Emissions factor all vehicles (gCO_2e per VMT)	NA	313	74
Emissions reduction ($MTCO_2e$, assumes 15 percent VMT decrease)	**NA**	**14,084**	**15,885**

Notes: gCO_2e per VMT = grams of carbon dioxide equivalent per vehicle-mile traveled; MT = metric tons; NA = not applicable.
Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

The performance indicator for Measures GHG-09 is the amount of VMT through TSM plan implementation reporting. The method for developing the performance indicator is applying 15 percent reduction to new VMT after 2026, as discussed in the GHG Quantification Approach section above and provided in Table 33, labeled as "15 percent reduction in new VMT relative to 2026".

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-09-a identifies the County's commitment to develop and adopt an ordinance to update the zoning code to update TSM plan requirements to achieve VMT reduction targets established in this measure.
  - Action GHG-09-d focuses on conducting a nexus study for designing a fee structure to be implemented on projects that do not meet the employee commute trip reduction requirements. The action focuses on establishing requirements and imposing the fee as per the requirements established in the study.
- **Public Engagement and Community Partnerships**
  - Action GHG-09-c identifies the County's commitment to regular reporting of updated information regarding TDM programs to the Sacramento Area Council of Governments (SACOG) for all applicable projects.
  - Action GHG-09-e focuses on sharing information regarding the new plan requirements and applicability criteria with the project proponents and facilities that are already required to submit TSM plans. The action also focuses on educating the appropriate County staff about the plan for the successful implementation of the measure.
- **Performance Standard and Tracking Mechanism**
  - Compliance with the requirements established in the ordinance will mark the success of this measure. Action GHG-09-b focuses on developing a tracking mechanism through a web portal for easy reporting to demonstrate compliance. The action includes information required by the project for reporting purposes.
- **Timeline of Implementation**
  - Implementation of Action GHG-09-a and b is planned to start and be completed in 2025.
  - Implementation of Action GHG-09-c, d, and e is planned to start in 2025 and will be ongoing thereafter.

MEASURE GHG-10: Revise Parking Standards

Measure Objective:

Revise parking standards for new developments to reduce housing costs in transit priority areas and reduce VMT.

Measure Summary

Under this measure, the County will revise parking standards for new developments aiming to reduce housing costs, promote transit use, decrease VMT, and thereby reduce on-road transportation emissions. By reducing or eliminating minimum parking requirements and encouraging shared parking facilities in areas with good public transit access, the County aims to encourage people to use public transportation instead of vehicles. This can help reduce traffic congestion and improve air quality in Sacramento County. This measure builds on recent changes in state law, including AB 2097 (enacted in 2022) which prohibits local agencies from imposing a minimum parking requirement on most development projects located within a half-mile radius of a major transit stop; and AB 894 (enacted in 2023), which requires local agencies to allow parking spaces identified in a shared parking agreement to count toward meeting automobile parking requirements for a new or existing development or use.

The implementation mechanism for GHG-10 is the enforcement of an ordinance that lowers parking minimums and requires shared parking in some infill development areas. The selection of the areas of the county where the lowered parking minimums and shared parking requirements will be implemented will be identified through a study of parking utilization and transit access in key rezone and infill development areas of the county. The County will continually monitor the success of GHG-10 and reassess the standards regularly.

Table 34 below summarizes Measure GHG-10, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 34 Measure GHG-10: Revise Parking Standards

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-10	Revise parking standards for new developments to reduce housing costs in transit priority areas and reduce VMT.	279	38
Action GHG-10-a	Conduct a parking demand study that focuses on key rezone and infill growth areas to understand the current utilization of parking, and how transit access influences parking behaviors, to support the development of new minimum parking standards and shared parking opportunities. These areas should include at minimum: ▶ North Watt Avenue Corridor ▶ West Arden Arcade ▶ Arden Way from Howe to Watt ▶ Other aging commercial corridors identified in the General Plan Land Use Element		
Action GHG-10-b	Adopt an ordinance to update the Zoning Code to update the current parking standards for new developments, based on the results of a parking demand study, to lower minimum or eliminate minimum parking requirements and add requirements for shared parking facilities. Include mutually supportive parking management strategies for effective implementation and to mitigate potential parking spillover into surrounding areas. These include the following actions: ▶ Unbundle parking for new developments. ▶ Require residential area parking permits. ▶ Implement on-street parking regulations.		
Action GHG-10-c	Measure outcomes of parking standard revisions by monitoring trends along corridors where unbundled parking is implemented including: ▶ Transit ridership. ▶ Housing costs compared to developments where parking standards were not changed.		
Action GHG-10-d	Reassess the parking standards every five years with an aim to reduce housing costs near transit and support transit-priority development.		
Action GHG-10-e	Share information regarding new requirements through newsletters, the permitting counter, and the County's website to project applicants as soon as the ordinance is adopted.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; VMT = vehicle miles traveled.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

It was assumed that new developments comprised the list of residential parcels anticipated to be rezoned as part of the Countywide Rezone Program. In total, there are 79 parcels containing 7,419 dwelling units (County of Sacramento 2024c: 2). Of these parcels, 18 are not within a quarter mile of existing or planned transit stops

with headways of less than 30 minutes (Smith, pers. comm., 2024), and the other 61 (i.e., 77 percent of the total) are, equating to approximately 5,730 dwelling units within transit priority areas. Thus, it was assumed that 77 percent of the new VMT generated by the developments could be eligible for unbundled parking, as residents would have access to transit and thus not need a car for transportation. Table 35 shows the calculation of the quantity of VMT eligible for reduction under this measure.

Table 35 Calculation of VMT Eligible for Reduction from Measure GHG-10

Item	Description	Value	Source for Assumptions / Calculation
A	VMT per capita per day	14.74	County of Sacramento 2024c: 13
B	Dwelling units	7,419	County of Sacramento 2024c: 13
C	Percent of rezoned development near transit	77%	Smith, pers. comm., 2024
D	Number of applicable dwelling units	5,730	B x C
E	People in rezone development	18,595	Assumes 2.51 people per dwelling unit (calculated based on County of Sacramento [2024b])
F	Total VMT per day	274,083	A x E
G	Total VMT per year	95,106,850	E x 347 travel days per year (CARB 2024c: 238)
H	Project VMT per year eligible for reduction	73,436,935	C x G

Notes: VMT = vehicle miles traveled.

Source: Analysis conducted by Ascent in 2024.

To this annual VMT value of 73,436,935, the California Air Pollution Control Officers Association's (CAPCOA's) Formula T-16 (Unbundle Residential Parking Costs from Property Cost) was used to determine the VMT reductions from such an action (CAPCOA 2021: 126). Table 36 below shows the assumptions used and the output.

Table 36 VMT Reduction Due to Parking Unbundling from Measure GHG-10

Item	Description	Value	Source / Assumption
A	Annual parking cost per space	$432	Assumes value for suburban surfaces from CAPCOA (2021: C-3); this is $36 per space per month, and thus $432 per space per year. This is the lowest parking price value in CAPCOA and is used as a conservative estimate (the highest is underground urban parking, at $2,292 per space per year).
B	Average annual vehicle cost	$9,282	CAPCOA 2021: 127
C	Elasticity of vehicle ownership with respect to total vehicle cost	0.4	CAPCOA 2021: 127
D	Adjustment factor from vehicle ownership to VMT	1.01	CAPCOA 2021: 127
E	Percent reduction in VMT	1.9%	A / B x C x D
F	VMT reduction per year	1,380,823	E x reduction-eligible VMT from Table 29

Notes: CAPCOA = California Air Pollution Control Officers Association; VMT = vehicle miles traveled.

Source: Analysis conducted by Ascent in 2024.

Applying this VMT reduction to ABAU passenger vehicle emissions factors of 202 grams CO_2e per VMT and 28 grams CO_2e per VMT for 2030 and 2045, respectively, yields GHG reductions of 279 and 38 $MTCO_2e$, respectively.

Performance Standards and Indicators

The performance indicator for Measures GHG-10 is the dwelling units built with lowered minimum parking standards. The method for developing the performance indicator is discussed in the GHG Quantification Approach section above and provided in Table 35 as the Number of applicable dwelling units. A target for 2045 has not been identified as the sites determined applicable to the requirements of GHG-10 are to begin development prior to 2030.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

1. **Mechanism for Implementation**
   - Action GHG-10-a focuses on assessing the current parking situation in specific areas to support the new parking standards.
   - Action GHG-10-b identifies the County's commitment to develop and adopt an ordinance to reduce or eliminate minimum parking requirements and add requirements for allowing the use of shared parking facilities. The action includes specific parking management strategies for supporting the implementation of this measure.
2. **Public Engagement and Community Partnerships**
   - Action GHG-10-e focuses on sharing important information like new requirements with stakeholders through various means that are convenient and accessible to all concerned parties.
3. **Performance Standard and Tracking Mechanism**
   - Compliance with the requirements established in the ordinance will mark the success of this measure. Action GHG-10-c focuses on developing a tracking mechanism for monitoring compliance by documenting transit ridership data and comparing housing costs for developments impacted by this measure with developments not impacted by this measure.
   - Action GHG-10-d focuses on developing a mechanism for continuous assessment at regular intervals.
4. **Timeline of Implementation**
   - Implementation of Action GHG-10-a is planned to start and be completed in 2025.
   - Implementation of Action GHG-10-b is planned to start and be completed in 2026.
   - Implementation of Actions GHG-10-c and d is planned to start in 2030 and will be ongoing thereafter, implemented every five years.
   - Implementation of Action GHG-10-e is planned to start in 2026 and will be ongoing thereafter, implemented whenever the parking standards are updated.

MEASURE GHG-11: Increase Transit Ridership

Measure Objective:

Partner with regional transportation agencies to increase transit ridership by 16% by 2030 and 43% by 2045, above 2021 levels, through implementation of the "Transit" policy plan in the Circulation Element.

Measure Summary

Through this measure, the County intends to encourage increased transit ridership to shift travel from single-occupancy vehicles to public transit. The County will implement the General Plan Circulation Element's "Transit" policy plan by partnering with agencies like SacRT and SACOG. The policy plan will improve transit services by making the services more convenient and comfortable and therefore encourage the use of transit instead of light-duty and single-occupancy vehicles.

The core implementation mechanism for Measures GHG-11 is the use of the County's Traffic Impact Analysis (TIA) Guidelines during the development review process. The County will update the TIA guidelines to a more specified assessment of public transit access for projects and to require that projects near transit improve and support transit access prior to off-site mitigation. The County will also continue to engage SacRT in the development review process, to verify that projects do not impact transit access and that any planned or identified transit infrastructure improvements are addressed.

The County will also coordinate regularly with SacRT to align objectives, such that the County's Capital Improvements Program, planning processes, and pursual of grant funding opportunities are consistent with SacRT's infrastructure and access priorities. The County will establish a Transit Coordinator position that would lead coordination efforts with SacRT and serve as the County's internal champion for transit access.

The County will also continue to partner with SacRT and other regional agencies to provide transit access to areas where it is most needed. This includes continued support for a long-term cost-sharing program to provide fare-free transit for youth, and prioritizing improved connections between transit stations and surrounding uses.

Table 37 below summarizes Measure GHG-11, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 37 Measure GHG-11: Increase Transit Ridership

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-11	Partner with regional transportation agencies to increase transit ridership by 16% by 2030 and 43% by 2045, above 2021 levels, through implementation of the "Transit" policy plan in the Circulation Element.	323	101
Action GHG-11-a	Update the Traffic Impact Analysis (TIA) Guidelines, which guide traffic impact analyses for individual projects, to include assessments of public transit, including but not limited to: ▶ Accessibility of transit, including ADA accessibility, to pedestrians, in the project vicinity. ▶ Need for route extensions/connectors and bus stops. ▶ Adequacy of pedestrian and bicycle connections to transit, including bike paths and parking. ▶ Impact of project-generated automobile trips on transit speeds and dwell time. ▶ Assessment of project-generated transit trips on transit capacity.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-11-b	Update the TIA Guidelines to require projects near transit to prioritize measures to improve and support transit access, which may include: ▶ Prioritize walking and biking connections to transit. ▶ Allow for space and utility connections for high-quality bus stops at project frontages (e.g., electricity for bus stop lighting, signage, and surveillance, space for bike parking/lockers) in coordination with SacRT. ▶ Prioritize improving transit quality at the project site over private shuttles. ▶ Encourage transit use, for example through transit passes and/or other transit-specific initiatives.		
Action GHG-11-c	Continue to include SacRT and other appropriate transit providers, in the pre-application process and review of traffic impact analyses for new projects to verify that projects do not impact transit access and that any planned or identified transit infrastructure improvements are addressed.		
Action GHG-11-d	Dedicate one County staff member as a Transit Coordinator to lead collaboration with regional partners and coordinate within the County's transportation planning and development review processes. Responsibilities and duties may include but are not limited to: ▶ Facilitate regular coordination with local transit agencies to align transit priorities and coordinate County support for local transit planning and implementation. ▶ Participate in regional transit and transportation planning and represent the unincorporated county's interests, especially in Environmental Justice Communities. ▶ Prioritize funding for the most effective and equitable transit-supporting infrastructure to ensure access to transit is provided. ▶ Track changes in travel patterns, vehicle ownership trends, and evolutions in transit service models (such as on-demand micro-transit) to maximize transit use and reduce VMT from light-duty vehicles. ▶ Prioritize transit access improvements to reduce access barriers for seniors and people with physical disabilities, in coordination with the County ADA Coordinator. ▶ Coordinate land use zoning densities with existing and future mass transit station locations to ensure denser land use within one-half to one mile of rail or BRT (or other high-capacity transit) stations. ▶ Review road space and work with regional transit providers to re-allocate road space and change traffic operations to prioritize transit (e.g., bus-only lanes, pullouts).		
Action GHG-11-e	Meet regularly with SacRT and SACOG transit and transportation planners serving the county to identify actions the County can take to help improve access to transit including, but not limited to: ▶ Identifying, prioritizing, and funding short-term needs for transit improvements in the unincorporated county based on the greatest need and highest impact (e.g., repairing dilapidated transit shelters and stops, addressing immediate safety concerns on or near transit stops, ensuring adequate bike parking at stops). ▶ Identifying, prioritizing, and funding long-term transit access improvements based on the greatest need and highest impact. ▶ Identifying priority transit areas, leveraging SACOG's data capabilities to identify areas that can benefit most from increased transit access. ▶ Understanding transit demand and parameters that will help increase ridership (e.g., station types, safety considerations, type of services, frequency) (SACOG Next Transit Strategy: UX.COM.3). ▶ Supporting non-County transit access projects (e.g., first mile/last mile projects like bike/e-scooter share partnerships, TNC reimbursements, and micro-transit for rural areas). ▶ Developing an aggressive joint marketing strategy to increase awareness and understanding of transit service, first/last-mile amenities, and transit access and wayfinding, and advertising improvements and benefits of transit. Combining efforts with active transportation marketing. ▶ Supporting passenger safety.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-11-f	Annually request transit ridership data within unincorporated Sacramento County from SACOG and SacRT to monitor transit utilization and transit mode share.		
Action GHG-11-g	Provide and improve connections to transit stations by identifying, prioritizing, and seeking funding to plan and construct roadways, bikeways, and pedestrian improvements within a ½ mile of existing and planned transit stations (implemented through GHG-12).		
Action GHG-11-h	Explore a potential partnership with SacRT to expand transit access when developing the VMT Mitigation Fee (see GHG-08).		
Action GHG-11-i	Continue to partner with SacRT, incorporated cities, school districts, and other supporting organizations in a long-term cost-sharing program to provide fare-free transit for youth (i.e., ages 4-18) in SacRT's service area. This program removes barriers to youth transit ridership and enhances mobility options for families while also reducing VMT and GHG emissions.		

Notes: BRT = bus rapid transit; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; SACOG = Sacramento Area Council of Governments; SacRT = Sacramento Regional Transit District; TIA = traffic impact analysis; TNC = transportation network companies; VMT = vehicle miles traveled.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

Policy CI-19 of the Transportation Policy Plan in the Circulation Element directs the County to "collaborate with transit service providers to provide transit services within the County that are responsive to existing and future transit demand" (County of Sacramento 2020: 25). Pursuant to this language, it was assumed that transit ridership would increase commensurate with the service population increase (16 and 43 percent in 2030 and 2045, per County of Sacramento [2024b]). This results in displaced VMT from passenger vehicles, and corresponding emissions reductions. Table 38 shows the quantity of reductions from this measure.

Table 38 Emissions Reductions from Increased Transit Ridership from Measure GHG-11

Item	Description	2030	2045	Source
A	Assumed ABAU PMT for Sacramento Regional Transit District	38,614,017	38,614,017	FTA 2022
B	Assumed ABAU PMT for unincorporated county only	14,910,112	12,791,605	Scaled using ratio of unincorporated county population to county population (County of Sacramento 2024b)
C	Percentage increase in PMT due to Measure GHG-11 implementation	16%	43%	Measure targets
D	Increased PMT due to increase in service population	2,396,503	5,482,653	B x C
E	Total PMT after Measure GHG-11 implementation	17,306,615	18,274,258	B + D
F	Occupants per trip for passenger vehicles	1.5	1.5	DOE 2024
G	Displaced passenger vehicle VMT from increased transit	1,597,669	3,655,102	D / F
H	Passenger vehicle emissions factor, grams CO_2e per VMT	202	28	County of Sacramento 2024b
	Emissions reduction ($MTCO_2e$)	**323**	**101**	G x H

Notes: ABAU = legislative-adjusted business-as-usual; DOE = US Department of Energy; FTA = Federal Transit Administration; $MTCO_2e$ = metric tons of carbon dioxide equivalent; PMT = passenger-miles traveled; VMT = vehicle miles traveled.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Measure GHG-11 has two performance indicators, provided in Table 39.

Table 39 Performance Standards and Indicators for Measure GHG-11

Performance Standard/Indicator	2030 Target	2045 Target
Increase in transit ridership in unincorporated County from 2021 levels	557,000 increased annual transit trips (above 2021)	1,275,000 increased annual transit trips (above 2021)
Miles of dedicated bus lanes, and shared bus-bike lanes completed	Target to be identified with further analysis	Target to be identified with further analysis

Source: Compiled by Ascent in 2024.

Methods for development of the performance indicators are provided below.

Increase in transit ridership in unincorporated County from 2021 levels. This was derived by dividing the total increase in PMT from implementation of Measure GHG-11 (see Table 38) by the average ground public transportation trip length in the United State of 4.3 miles (APTA 2024) to obtain an increase in annual transit trips above 2021 levels.

Miles of dedicated bus lanes, and shared bus-bike lanes completed. A target has not been determined at this time, and will be determined through coordination with SacRT.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

5. Mechanism for Implementation

- Action GHG-11-a focuses on updating the TIA Guidelines for individual projects to include the assessment of transit conditions like accessibility, need for extension, multi-modal connections, capacity, etc.
- Action GHG-11-b focuses on updating the TIA Guidelines for projects near transit to prioritize measures to encourage transit use and reduce the use of single-occupancy vehicles.
- Action GHG-11-g focuses on developing ways to implement the measure by constructing roadway improvements for bikes and pedestrians.

6. Public Engagement and Community Partnerships

- Action GHG-11-c focuses on partnering with SacRT and other appropriate agencies to revise the new guidelines to ensure regional efficiency.
- Action GHG-11-e focuses on developing partnerships between the County and regional transportation agencies to identify the County's role in funding, strategizing, or supporting the implementation of transportation projects.
- Action GHG-11-i identifies the County's commitment to a sustained cost-sharing partnership with regional agencies to continue an existing fare-free transit subsidy program for youth. The County's share of the partnership was $300,000 in FY23-24 and is proposed to be $350,000 in FY24-25.

7. Performance Standard and Tracking Mechanism

- Action GHG-11-d focuses on hiring a new County employee for the implementation of all actions under this measure.

- Action GHG-11-f focuses on developing a tracking mechanism by requesting transit ridership data from SACOG and SacRT for the unincorporated county.

8. Timeline of Implementation

- Implementation of Actions GHG-11-a and b is planned to start and be completed in 2025.
- Actions GHG-11-c, g, h, and i are ongoing efforts.
- Implementation of Actions GHG-11-d and e is planned to start in 2025 and will be ongoing thereafter.
- Implementation of Action GHG-11-f is planned to start in 2025 and will be ongoing annually thereafter.

MEASURE GHG-12: Implement the Active Transportation Plan

Measure Objective:

Improve active transportation infrastructure through implementation of priority projects identified in the 2022 Active Transportation Plan that include 66 pedestrian spot improvements, 51 miles of sidewalk gap closures, and bicycle projects representing 190 miles by 2030; and all recommended projects identified in the ATP by 2045.

Measure Summary

The 2022 ATP is the County's vision to enhance active transportation infrastructure and reduce reliance on fossil-fuel-based vehicles. Through the 2022 ATP, the County identified projects to increase and improve bike lanes, sidewalks, and pedestrian spots and provide more opportunities to reduce emissions generated by driving vehicles. The implementation of actions identified in ATP has already started. With this measure, the County intends to reiterate its commitment to improving the infrastructure for pedestrians and cycling in the unincorporated county. The County has identified priority projects in the 2022 ATP that are planned to be completed by 2030, while all other recommended projects are planned to be completed by 2045.

Implementation of Measure GHG-12 will occur as active transportation projects are funded and included in the County's Capital Improvements Program, requiring that the County have an implementation plan for the 2022 ATP and have access to funding sources. As part of GHG-12, the County will develop and adopt an implementation plan for the ATP to guide prioritization of projects. The County will pursue grant funding and utilize funds from a VMT Impact Fee (Measures GHG-08) to fund active transportation projects.

The County will also support the use of active modes of transportation by clarifying requirements for short- and long-term bicycle parking at new development and developing complete streets guidelines for redesign of roadways and capital improvement projects.

Table 40 below summarizes Measure GHG-12, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 40 Measure GHG-12: Implement the Active Transportation Plan

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-12	Improve active transportation infrastructure through implementation of priority projects identified in the 2022 Active Transportation Plan that include 66 pedestrian spot improvements, 51 miles of sidewalk gap closures, and bicycle projects representing 190 miles by 2030, and all recommendation projects identified in the ATP by 2045.	2,564	2,855
Action GHG-12-a	Develop and adopt an implementation plan for the goals and implementation measures included in the 2022 ATP.		
Action GHG-12-b	Update the Zoning Code and/or Design Guidelines to clarify the preferred siting of both short-term and long-term employee bicycle parking to encourage bicycle use at commercial, multi-family, industrial, or institutional uses.		
Action GHG-12-c	Continue to include active transportation projects in the transportation Capital Improvement Plan as project funding is secured.		
Action GHG-12-d	Implement Safe Routes to School programs and infrastructure improvements identified in the ATP as funding becomes available, with programs and infrastructure upgrades implemented at 6 schools by 2030 and the remainder of schools in the unincorporated County by 2045. The County has already secured funding for and hired a consultant to implement Safe Routes to School programming at the following schools: Thomas Edison Elementary, Howe Elementary, Fern Bacon Middle, Pacific Elementary, Nicholas Elementary, and Ethel Baker Elementary.		
Action GHG-12-e	Develop a Complete Streets Design Guide based on Caltrans' Design Information Bulletin #94 (Complete Streets: Context Design Guidance) and other best practices to provide policy and design guidance on the planning, design, and operation of county roadways to be used in the following situations: ▶ When designing future streets or reconstructed streets in an area experiencing redevelopment, ▶ When implementing a capital improvement project, such as the construction or reconstruction of a street, intersection, or bridge, and ▶ When resurfacing a street or conducting major work in the street, which may create an opportunity to reconsider some aspects of the street's design.		

Notes: ATP = Sacramento County Active Transportation Plan; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; PV = photovoltaic.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

Miles of sidewalk and bicycle paths in 2030 and 2045 under this measure were derived from project data presented in the ATP (County of Sacramento 2022c: 426-585). Table 41 below shows those values.

Table 41 Miles of Bicycle Lanes and Sidewalks in Unincorporated Sacramento County

Item	2021	2030	2045
Bicycle lane length (miles)	304	494	1,522
Sidewalk length (miles)	517	568	854

Source: Compiled by Ascent in 2024.

CAPCOA T-20 (Expand Bikeway Network) was used to calculate GHG reductions from adding additional bicycle lane miles. Table 42 below shows the calculation. This formula yields a percentage reduction, which was then applied to total passenger vehicle emissions.

Table 42 Emissions Reductions from Increased Bicycle Lane Miles from Measure GHG-12

Item	Item Name	2030	2045	Source
A	Percent increase in bikeway lane miles	63%	401%	Calculated based on ATP values (2022c)
B	Bicycle mode share	0.56%	0.56%	CAPCOA 2021: C-5
C	Vehicle mode share	95.04%	95.04%	CAPCOA 2021: C-1
D	Average one-way bicycle trip length (miles)	2.9	2.9	CAPCOA 2021: C-2
E	Average one-way vehicle trip length (miles)	10.9	10.9	CAPCOA 2021: C-2
F	Elasticity of bike commuters with respect to bikeway miles	0.25	0.25	CAPCOA 2021: 147
G	Percent reductions (applied to light-duty vehicle VMT)	0.024%	0.157%	(A x B x D x F) / (C x E)
H	Emissions from passenger vehicle VMT	497,886	83,787	County of Sacramento 2024b
I	**Emissions reduction ($MTCO_2e$)**	**122**	**132**	G x H

Notes: ATP = Sacramento County Active Transportation Plan; CAPCOA = California Air Pollution Control Officers Association; $MTCO_2e$ = metric tons of carbon dioxide equivalent; VMT = vehicle miles traveled.

Source: Analysis conducted by Ascent in 2024.

For additional miles of sidewalks, CAPCOA T-18 was used (Provide Pedestrian Network Improvement). VMT reductions from sidewalks were applied to vehicle emissions after the bicycle lane reductions described above. The results are shown in Table 43 below.

Table 43 Emissions Reductions from Increased Sidewalks from Measure GHG-12

Item	Item Name	2030	2045	Source
A	Passenger vehicle emissions after bicycle lane emissions reductions	497,764	83,656	H minus I from Table 31
B	Percent increase in sidewalk miles	10%	65%	Calculated based on ATP values (2022c)
C	Elasticity of household VMT with respect to the ratio of sidewalks-to-streets	0.05	0.05	CAPCOA 2021: 134
D	Percent reductions (applied to emissions after bicycle lane reductions)	0.5%	3.3%	B x C
E	Reductions in $MTCO_2e$	2,442	2,723	A x D

Notes: ATP =Sacramento County Active Transportation Plan; $MTCO_2e$ = metric tons of carbon dioxide equivalent; VMT = vehicle miles traveled.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Measure GHG-12 has three performance indicators, provided in Table 44. All performance indicators are derived directly from the County's 2022 ATP.

Table 44 Performance Standards and Indicators for Measure GHG-12

Performance Standard/Indicator	2030 Target	2045 Target
Number of pedestrian spot improvements completed	66 pedestrian spot improvements	194 pedestrian spot improvements
Miles of sidewalk gap closures completed	51 miles of sidewalk gap closures	192 miles of sidewalk gap closures
Miles of new bikeways completed (Class I-IV)	190 miles of new bikeways completed	1,218 miles of new bikeways completed

Source: Compiled by Ascent in 2024.

Measures Guidelines Alignment

With this measure, the County intends to reiterate its commitment to improving active transportation infrastructure in the county through the 2022 ATP. This specific measure does not address public engagement and partnership-related guidelines because these are met through actions included in the ATP. Below is an explanation of how this measure aligns with the guidelines applicable to this measure:

9. Mechanism for Implementation

- Action GHG-12-a focuses on developing a mechanism for the implementation of the ATP goals and measures by developing an implementation plan.
- Action GHG-12-b supports the implementation of this measure by focusing on streamlining zoning and design requirements for developing employee bicycle parking.
- Action GHG-12-c focuses on implementing ATP projects by including the projects in the transportation Capital Improvement Plan.
- Action GHG-05-d focuses on implementing the Safe Routes to School program in identified schools.
- Action GHG-05-e focuses on developing a policy and design guide for new roads or road renovations using Caltrans' Complete Streets Design Guidance.

10. Performance Standard and Tracking Mechanism

- The progress of this measure will be tracked by ensuring completion of 66 pedestrian spot improvements and construction of 51 miles of sidewalk gap closures and bicycle projects representing 190 miles by 2030 and completion of all recommendation projects identified in the ATP by 2045.

11. Timeline of Implementation

- Implementation of Action GHG-12-a is planned to start in 2025 and be completed in 2045.
- Implementation of Action GHG-12-b is planned to start and be completed in 2025.
- Actions GHG-12-c and d are ongoing efforts.
- Implementation of Action GHG-12-e is planned to start in 2025 and be completed in 2028.

MEASURE GHG-13: Advance Infill Development

Measure Objective:

Implement the Infill Development Program to advance infill development in Priority Areas through 2030 and 2045.

Measure Summary

This measure is based on the County's existing Infill Development Program, which promotes denser, more sustainable development within identified Priority Areas to reduce urban sprawl, preserve open space, and optimize existing infrastructure. The Priority Areas identified in the Infill Development Program are the regions within the urbanized parts of the unincorporated county that are targeted for redevelopment and new construction. These areas are typically characterized by vacant or underutilized lands, such as empty lots or outdated commercial spaces that are situated within existing urban settings. The County plans to advance infill development through several implementing actions in these areas under this measure, and imposing a new impact fee on projects that do not meet infill development standards, as a means of increasing financial

support for infill development projects. The County will also designate an Infill Coordinator position to lead and oversee the implementation of the County's ongoing Infill Development Program.

Table 45 below summarizes Measure GHG-13, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 45 Measure GHG-13: Advance Infill Development

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-13	Implement the Infill Development Program to advance infill development in Priority Areas through 2030 and 2045.	Not Quantifiable	Not Quantifiable
Action GHG-13-a	Designate an Infill Coordinator position within the Planning and Environmental Review Division which will lead and oversee implementation of the Infill Development Program, including, but not limited to: ▶ Oversee coordination with internal County departments and external stakeholders throughout the development process. ▶ Identify the major barriers to quality infill development and develop strategies for addressing the removal of those barriers. ▶ Lead development of policies, development codes, and zoning codes that support infill. ▶ Support staff training on any relevant policies and codes designed to support infill. ▶ Develop and oversee administration of incentives for quality infill projects. ▶ Perform comprehensive reviews of the success and opportunities of the infill program every 5 years.		
Action GHG-13-b	Conduct a nexus study for imposing a fee structure for projects that do not meet defined standards for infill development (Infill Fee) to provide financial support for infill projects. Activities that may facilitate infill development or redevelopment using the infill fee fund, include but are not limited to: ▶ design assistance, ▶ fee deferrals, ▶ application fee reductions or offsets, ▶ staff support for Property Business Improvement District formation and capacity building, ▶ EV charging facilities and other mobility hub infrastructure, and ▶ code amendments that may be necessary for the conversion of existing commercial or office buildings to residential uses.		
Action GHG-13-c	Establish an Infill Fee fund using payments from non-infill development projects with the following requirements: ▶ Developers/builders of projects for non-infill developments, shall pay the County the appropriate amount determined by the nexus study for each dwelling unit equivalent (DUE); provided that the Infill Fee shall not be paid for any unit constructed on any parcel dedicated to the Sacramento Housing and Redevelopment Agency (SHRA) pursuant to an applicable Affordable Housing Strategy. ▶ The fee shall be adjusted annually on January 1 based on the Engineering News Record Construction Cost Index. ▶ This fee shall be paid to the County upon issuance of a building permit for the development and deposited into a separate account dedicated to facilitating infill development or redevelopment.		
Action GHG-13-d	Adopt an ordinance to update the Zoning Code establishing the Infill Fee requirements for all new non-infill development projects.		
Action GHG-13-e	Continue to engage with SACOG in regional planning efforts to secure funding and implement programs (such as the Green Means Go Pilot Program) to increase infill and reduce VMT by supporting the implementation of the SACOG Metropolitan Transportation Plan/Sustainable Communities Strategy.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GHG-13-f	Share information regarding new Infill Fee requirements and infill supportive policy and code changes through public notices, the County website, and information sheets for developers.		
Action GHG-13-g	Adopt a form-based code based on floor area ratios for infill areas and corridors, such as Stockton Boulevard, when determined beneficial to reducing housing costs and increasing housing density.		
Action GHG-13-h	Conduct a review of existing development standards and permitting process to evaluate measures to reduce the baseline costs of housing in infill areas such that Infill Fee funds can provide additional value and reduce housing costs in infill areas.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; MTP/SCS = Metropolitan Transportation Plan/Sustainable Communities Strategy; SACOG = Sacramento Area Council of Governments; VMT = vehicle miles traveled.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

Measure GHG-13 was deemed not quantifiable because project-level data on VMT reductions from infill development were not available at the time of CAP development.

Performance Standards and Indicators

A performance indicator for Measures GHG-13 is the number of residential units and square footage of non-residential development constructed in infill areas. However, this performance indicator cannot be quantified until additional study is conducted as part of GHG-13.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-13-a focuses on establishing a new County staff position to oversee the Infill Development Program.
  - Action GHG-13-b focuses on developing a nexus study for designing a new impact fee program that would require projects that do not meet infill development standards to pay this new fee. The action also outlines potential criteria for what might be considered infill development or redevelopment under this new impact fee program.
  - Action GHG-13-d identifies the County's commitment to develop and adopt an ordinance to establish the new Infill Impact Fee program requirements.
- **Public Engagement and Community Partnerships**
  - Action GHG-13-e supports the implementation of this measure by focusing on securing funding and implementing programs in continued partnership with SACOG.
  - Action GHG-13-f focuses on sharing information regarding County's infill policy, updates to building codes, and Infill Fee requirements with stakeholders through various communications mediums so that the information is accessible to all concerned parties.
- **Performance Standard and Tracking Mechanism**
  - Compliance with the requirements established in the ordinance will mark the success of this measure. Action GHG-13-c relies on the study planned in Action GHG-13-b and focuses on establishing a fund

for securing Infill Fee payments as per requirements established by the ordinance. The action also includes requirements regarding annual fee updates and sets a mechanism for fee payments.

- A numeric performance standard has not been identified at this time.

- **Timeline of Implementation**
  - Implementation of Actions GHG-13-a and f is planned to start in 2025 and will be ongoing thereafter.
  - Implementation of Actions GHG-13-b, c, and d is planned to start and be completed in 2025.
  - Action GHG-13-e is an ongoing effort.

MEASURE GHG-14: Increase Organic Waste Diversion and Landfill Gas Capture

Measure Objective:

Increase diversion of organic waste deposited into landfills from both commercial and residential sources to achieve a 75% diversion rate in countywide organic waste by 2030, 90% by 2045, and increase landfill gas capture at County-owned landfills.

Measure Summary

This measure is the County's initiative aimed at reducing emissions generated by organic waste disposal and promoting more sustainable waste management practices. The County will enhance existing efforts and adopt new methods for diverting organic waste away from landfills, for both residential and commercial waste, by developing programs and encouraging residents and businesses to adopt sustainable waste management practices. The County will also explore the potential for increasing the effectiveness of existing landfill gas collection systems at County-owned landfills.

The primary implementation mechanisms for GHG-14 are County initiated programs that provide the resources and infrastructure to meet countywide organic waste reduction targets, while continuing to enforce ordinances required under SB 1383. The County will study both the needs for and feasibility of expanding organic waste processing facilities. At the same time, the County will be providing information and resources to community members about best practices for organic waste diversion and onsite composting, including social media/e-blasts, flyers, workshops, and student education programs. The County has also adopted numerous ordinances that inform organic waste collection requirements to meet the State's requirements for SB 1383. The County will continue to follow audit and enforcement procedures to maintain that organics collection requirements are being met. This includes maintaining partnerships and support for food recovery banks and organizations that assist in the distribution of recovered food.

Lastly, the County will investigate opportunities to increase the landfill gas capture rates at County owned landfills and implement recommendations as feasible.

The County will monitor progress on reaching the goals Measure GHG-14 through regular collection of waste disposal and organics diversion tonnage from waste haulers operating in the county, as well as conducting regular waste-characterization studies.

Table 46 below summarizes Measure GHG-14, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 46 Measure GHG-14: Increase Organic Waste Diversion and Landfill Gas Capture

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-14	Increase diversion of organic waste deposited into landfills from both commercial and residential sources to achieve a 75% diversion rate by 2030 and a 90% rate by 2045 and increase gas collection at County-owned landfills.	149,039	202,100
Action GHG-14-a	Conduct a regional organics capacity planning study to better understand the future needs of composting facility capacity and identify opportunities for expansion of regional compost capacity.		
Action GHG-14-b	Amend the Zoning Code to clarify and streamline the permitting process for the construction and operation of composting facilities within the unincorporated county.		
Action GHG-14-c	Continue to implement and enforce organics diversion ordinances associated with SB 1383 (enacted in 2016) by working with the County's franchised commercial haulers to ensure all customers are subscribed to the appropriate level of service and that audits are completed and enforced on the appropriate schedule.		
Action GHG-14-d	Provide Backyard Composting Program information flyers, and include information about the program in County emails or social media communications at least twice per year, with the following information for increasing participation in the Backyard Composting Program: ▶ How to start a compost bin. ▶ What materials to add. ▶ How to maintain your compost. ▶ Benefits of using compost in gardens for soil and garden health.		
Action GHG-14-e	Continue to host workshops at least once every year and host educational materials on the County's website to raise awareness on the type of waste that can go in garbage carts, organics carts, and recyclable carts with an aim to increase the diversion of organic waste. Also, provide information to commercial waste generators on how to comply with SB 1383 requirements.		
Action GHG-14-f	Partner with county school districts to educate students about: ▶ sustainable behaviors, ▶ waste types, ▶ how to dispose of waste in appropriate containers, and ▶ how to compost at home.		
Action GHG-14-g	Continue collaborating with local Sacramento food banks to continue food recovery services and educate residents and food-generating businesses about the requirements, local food banks, and food protection. Maintain a list of food recovery organizations in Sacramento County on the County's website.		
Action GHG-14-h	Apply for available grants to further education and implementation of organics diversion.		
Action GHG-14-i	Conduct a waste characterization study every five years to determine the materials comprising the unincorporated county's waste stream, the amount of organic waste sent to landfills, and the amount of organic waste diverted from landfills.		
Action GHG-14-j	Annually collect organics diversion tonnage and landfilled waste tonnage from waste haulers operating within the unincorporated County to track organics diversion rates over time.		
Action GHG-14-k	Perform an engineering study to determine the feasibility and cost of increasing LFG capture at County-owned landfills.		
Action GHG-14-l	Extend financial and regulatory support to food recovery banks and organizations that deliver food to the elderly, disabled, or others who are unable to leave home. Reassess the efficiency of support provided every five years.		

Notes: GHG = greenhouse gas; LFG = landfill gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; SB = Senate Bill.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

This measure assumes that SB 1383 is enforced with a five-year delayed timeline, with compliance by 2030 (the legislation originally targeted 2025), per action GHG 14-c: "Continue to implement and enforce organics diversion ordinances associated with SB 1383 by working with the County's franchised commercial haulers to ensure all customers are subscribed to the appropriate level of service and that audits are completed and enforced on the appropriate schedule."

A portion of the solid waste stream is organic and thus releases methane when decomposing. However, if this organic waste is diverted to a composting facility or processed in a landfill with an LFG (landfill gas) collection system, these methane emissions can be avoided. Data on the quantities of organic waste generated and diverted for the County specifically were not available. Since 2007, CalRecycle has not tracked jurisdiction-specific diversion data, instead focusing on disposal rates (i.e., waste sent to a landfill) following the passage of SB 1016, the Per Capita Disposal Measurement System (CalRecycle 2024). Given this limitation in available data, all emissions calculations below are based on total tonnages of landfilled waste in the unincorporated county and assume that this waste stream reflects the California statewide characterization (i.e., the percent of waste comprised of newspaper, food, textiles, etc.) (County of Sacramento 2023: 25). The emissions factors used in the calculation reflect emissions from the organic materials in this waste stream. Implementation of Action GHG-14-i will improve estimates of organic waste diversion to allow for more precise emissions quantification in the future.

As a baseline against which to calculate GHG reductions due to increased diversion, 2030 and 2045 ABAU landfilled waste tonnages were calculated by scaling 2021 landfilled tonnages based on population growth in the unincorporated county (the population increases by 14 and 39 percent of 2021 values for 2030 and 2045, respectively) (County of Sacramento 2024b). It was assumed that this landfilled waste represented 60 percent of the total generated waste stream (based on a diversion rate of 40 percent—see CalRecycle [2021: 3]). With implementation of this measure, the percentage of generated waste that was landfilled would fall from 60 percent to 25 percent in 2030, or a 35 percent decrease, and from 60 percent to 10 percent in 2045, or a 50 percent decrease. These percent decreases were applied to ABAU landfilled waste to calculate additional tons diverted.

Table 47 below shows the resultant waste tonnages. As described above, for quantification purposes only, these values (and all subsequent calculations in this section) represent total waste tonnages from all landfilled waste and the associated emissions factors. However, because the principal driver of GHG emissions in this waste stream is decomposing organic waste, the measure language focuses on reducing organic waste disposal.

Additionally, in addition to the increased diversion shown in Table 47, it was assumed that the landfill gas (LFG) capture rate could be increased from 75 percent (its value in the ABAU forecast, which is the default from the United States Community Protocol [Local Governments for Sustainability: 2019]) to 90 percent, per action GHG-14-j. This represents an assumption at the upper end of the United States Environmental Protection Agency's (2024)'s range of capture rates from LFG projects (60 to 90 percent). In practice, the actual LFG capture rate increase would depend on the results of an engineering study and cost estimates, which should be available after implementing Action GHG-14-j.

Table 47 Emissions Reduction Due to Increased Diversion from Measure GHG-14

Item	2021	2030	2045
ABAU landfilled waste (tons)	546,072	625,112	756,845
ABAU generated waste (tons) - assumes 40 percent diversion rate	910,120	1,041,853	1,261,409
Decrease in landfilled waste due to GHG-14 (tons) 2030: Change from 40 percent diversion rate to 75 percent diversion rate—additional 35 percent of waste diverted relative to ABAU 2045: Change from 40 percent diversion rate to 90 percent diversion rate—additional 50 percent of waste diverted relative to ABAU	NA	364,649	630,704
Emissions from landfilled waste after Measure GHG-14 implementation ($MTCO_2e$)	**NA**	**260,463**	**126,141**

Notes: ABAU = legislative-adjusted business-as-usual, GHG = greenhouse gas emissions; $MTCO_2e$ = metric tons of carbon dioxide equivalent; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

Table 48 below shows the resultant GHG reductions from both the reduced tonnages shown in Table 47 and the increase in LFG capture rates just described. The calculations in this table are based on United States Community Protocol's Equation SW.4.1, which calculates methane emissions from decomposition of organic waste in landfills. Per this equation, $MTCO_2e$ values for 2030 and 2045 are calculated as the product of these years' respective waste tonnage and all the other values in the row.

Table 48 Emissions Reduction Due to Increased Diversion and Increased LFG Capture from Measure GHG-14

Item	MT CH_4 per short ton waste	1 – LFG collection rate	1 – Oxidation Rate	CH_4 GWP	2030 short tons of waste	2045 short tons of waste	2030 $MTCO_2e$	2045 $MTCO_2e$
ABAU	0.0454	0.25	0.9	28	625,112	756,845	178,847	216,536
With Measure GHG-14	0.0454	0.10	0.9	28	260,463	126,141	29,808	14,436
Reductions							**149,039**	**202,100**

Notes: ABAU = legislative-adjusted business-as-usual; CH_4 = methane; GWP = global warming potential; LFG = landfill gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Measure GHG-14 has three performance indicators, provided in Table 49.

Table 49 Performance Standards and Indicators for Measure GHG-14

Performance Standard/Indicator	2030 Target	2045 Target
Landfill gas capture rates at County-owned landfills	90% landfill gas capture rate	90% landfill gas capture rate
Diversion rate of countywide organic waste	75% organic waste diversion rate	90% organic waste diversion rate

Source: Compiled by Ascent in 2024.

The performance indicator targets are the cumulative desired results of successful implementation of all policies of GHG-14.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-14-a identifies the County's commitment to conduct a study to review the County's composting requirements and identify opportunities for expansion of regional composting capacity.
  - Action GHG-14-b supports the implementation of this measure by streamlining the permitting process for establishing composting facilities within the unincorporated county.
  - Action GHG-14-h focuses on seeking funding for the implementation of this measure and promoting education about sustainable waste management practices.
  - Action GHG-14-k commits the County to support organizations that deliver food to people in need in the form of finances and favorable regulatory measures.
- **Public Engagement and Community Partnerships**
  - Action GHG-14-d focuses on enhancing the County's current efforts associated with the Backyard Composting Program. The action aims to promote the program through various communication channels at least twice per year with easy-to-understand and more comprehensive information with an aim for increased participation.
  - Action GHG-14-e focuses on sharing information about different waste types and sustainable waste management practices to residents and commercial waste generators through workshops and other easy-to-access communication mediums like the County's website.
  - Action GHG-14-f focuses on raising waste management-related education and awareness in students by partnering with County school districts.
  - Action GHG-14-g focuses on continuing the County's collaboration with local Sacramento food banks. The County also plans to raise residents' awareness regarding the collaboration and the food protection requirements and methods.
- **Performance Standard and Tracking Mechanism**
  - Action GHG-14-c focuses on continuing the County's current efforts to comply with state law under SB 1383 through organics diversion ordinances. The County plans to monitor the progress of this measure by continuing the existing ordinance's audit requirements.
  - Action GHG-14-i creates a system for tracking the success of this measure by conducting a waste characterization study for the unincorporated county.
- **Timeline of Implementation**
  - Implementation of Actions GHG-14-a and j is planned to start in 2025 and be completed in 2026.
  - Implementation of Action GHG-14-b is planned to start and be completed in 2025.
  - Actions GHG-14-c, d, e, f, and g are ongoing efforts.
  - Implementation of Action GHG-14-h is planned to start in 2025 and will be ongoing thereafter.
  - Implementation of Actions GHG-14-i and k is planned to start in 2025 and will be ongoing thereafter, implemented every five years.

MEASURE GHG-15: Implement the South Sacramento Habitat Conservation Plan

Measure Objective:

Implement the South Sacramento Habitat Conservation Plan (SSHCP).

Measure Summary

With this measure, the County will continue its commitment to conserve and enhance its natural lands identified in the SSHCP. The County aims to understand and improve the carbon sequestration potential of these lands, and the County will partner with the South Sacramento Conservation Agency to perform a carbon sequestration capacity analysis and incorporate new carbon sequestration estimates in future updates to the County's GHG inventory.

The SSHCP is implemented through separate processes outside of the CAP, and as such Measure GHG-15 does not include actions for implementation of the SSHCP.

Table 50 below summarizes Measure GHG-15, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 50 Measure GHG-15: Implement the South Sacramento Habitat Conservation Plan

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-15	Implement the South Sacramento Habitat Conservation Plan (SSHCP).	Not quantifiable	Not quantifiable
Action GHG-15-a	Continue implementation of the SSHCP to protect and enhance wetlands (primarily vernal pools), upland habitats, and agricultural lands within the conservation area.		
Action GHG-15-b	Perform a carbon sequestration capacity analysis to understand the baseline carbon storage and sinks associated with lands covered under the SSHCP, and how preservation, restoration, and management activities under the implementation of the SSHCP may act to increase carbon sequestration potential in these lands. The analysis should also identify data that can be collected from the South Sacramento Conservation Agency annual implementation reports to calculate the carbon sequestration potential of SSHCP implementation activities for countywide GHG inventory updates.		
Action GHG-15-c	Coordinate with the South Sacramento Conservation Agency to annually track the acres of lands conserved under the implementation of the SSHCP. Also, collect data to calculate additional carbon sequestration potential associated with activities performed each year for inclusion in GHG inventory updates, after a carbon sequestration capacity analysis has been completed.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; SSHCP = South Sacramento Habitat Conservation Plan.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

Measure GHG-15 is not currently quantifiable without additional analysis on the carbon sequestration potential within the SSHCP boundary. Therefore, this measure was not quantified.

Performance Standards and Indicators

The performance indicator for Measures GHG-15 is the acres of land conserved under implementation of SSHCP. However, a numeric target has not been set at this time as additional study is needed as part of GHG-15.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-15-a focuses on continuing County's current conservation efforts on lands identified in the SSHCP.
- **Public Engagement and Community Partnerships**
  - Action GHG-15-b focuses on understanding the current and future carbon sequestration potential of the lands. The County plans to partner with the South Sacramento Conservation Agency to understand the potential of conservation action in the plan and gather data to support the development of a more accurate GHG inventory of Sacramento County.
- **Performance Standard and Tracking Mechanism**
  - Action GHG-15-c develops a tracking mechanism for monitoring the progress of this measure by annually tracking the acres of land conserved by implementing SSHCP. The action additionally focuses on gathering data for developing a more accurate GHG inventory of Sacramento County.
  - A numeric performance standard has not been identified at this time.
- **Timeline of Implementation**
  - Action GHG-15-a confirms the County's ongoing effort.
  - Implementation of Action GHG-15-b is planned to start in 2030 and will be ongoing thereafter, implemented with every CAP Update.
  - Implementation of Action GHG-15-c is planned to start in 2025 and will be ongoing thereafter.

MEASURE GHG-16: Expand the Use of Zero-Emission Construction and Agricultural Equipment

Measure Objective:

Encourage adoption of zero-emission construction and agricultural equipment through incentives and outreach efforts.

Measure Summary

Through this measure, the County intends to develop a pathway to phase out fossil-fuel-based construction and agricultural equipment and encourage the use of zero-emission equipment, including electric- and hydrogen-powered equipment. The County will promote existing incentives and conduct targeted outreach.

The implementation mechanisms for Measures GHG-16 are primarily incentive based. The County will support the dissemination of information about existing zero-emissions equipment incentives to relevant stakeholders throughout the county. The County will also update its bid evaluation process for capital improvement projects, providing preference to contractors that use electric-powered equipment.

In the longer-term, the County will create an ordinance to require the use of electric-powered or zero-emissions construction equipment, as the technology becomes more widely available and cost competitive.

Table 51 below summarizes Measure GHG-16, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 51 Measure GHG-16: Expand the Use of Electric Construction and Agricultural Equipment

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GHG-16	Encourage adoption of zero-emission construction and agricultural equipment through incentives and outreach efforts.	13,669	68,919
Action GHG-16-a	Incorporate use of zero-emission construction and portable equipment in the County's bid evaluation process for capital improvement projects, providing preference to contractors that use electric-powered equipment.		
Action GHG-16-b	Provide information about available incentives for zero-emission construction and portable equipment to contracts at the building permit counter through informational brochures, such as California Air Resources Board's (CARB's) Clean Off-Road Equipment Vouchers and Carl Moyer program.		
Action GHG-16-c	Include a list of available incentives to support the purchase of zero-emission agricultural equipment on the County Agricultural Commissioner's website, such as CARB's FARMER program, Clean Off-Road Equipment Vouchers, Carl Moyer program and SMAQMD's Commercial Lawn and Garden Program. Annually update the list of incentives and share it with the Sacramento County Farm Bureau.		
Action GHG-16-d	Develop and adopt an ordinance requiring that all discretionary projects use electric-powered or zero-emission construction equipment starting in 2035.		
Action GHG-16-e	Require that all projects implement SMAQMD Basic Construction Emission Control Practices (Best Management Practices) for reducing construction emissions as part of project conditions of approval.		

Notes: CARB = California Air Resources Board; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; SMAQMD = Sacramento Metropolitan Air Quality Management District.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

This measure assumes that approximately 3.7 percent of construction and agricultural equipment in the unincorporated county could be converted to zero emissions in every year until 2030. This rate was derived based on the 2022 Scoping Plan estimates of statewide total fossil fuel use reduction, which states a goal of reducing this consumption by 86 percent in 2045 relative to 2022 levels (CARB 2022: 2). For 2045, it was assumed that 85 percent of equipment had been converted, a value comparable to the statewide goal described above. Table 52 below shows the resulting emissions reductions.

Table 52 Emissions Reductions from Trade-In of Construction and Agricultural Equipment from Measure GHG-16

Item	2030	2045
ABAU emissions from construction and agricultural equipment ($MTCO_2e$)	73,113	81,081
Percent of fossil fuel powered equipment traded for electric	18.7%	85.0%
Pieces of fossil fuel powered equipment traded for electric	789	3,189
Emissions reductions ($MTCO_2e$)	**13,669**	**68,919**

Notes: ABAU = legislative-adjusted business-as-usual; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

The performance indicator for Measures GHG-16 is the number of County bids where the selected bidder utilized zero-emission construction or portable equipment. However, a numeric target is not set due a lack of historical data to indicate the success that will be achieved with this policy.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GHG-16-a focuses on developing a bid preference for contractors who use zero-emission construction equipment for the County's capital improvement projects.
  - Action GHG-16-d identifies the County's commitment to develop and adopt an ordinance and requires discretionary development projects to use all-electric or zero-emission construction equipment starting in 2035.
- **Public Engagement and Community Partnerships**
  - Acton GHG-16-b focuses on making the information about the County's preferences and available incentives available to all construction-related stakeholders through modes that are accessible to all at the building permit counter.
  - Acton GHG-16-c focuses on making the information about the County's preferences and available incentives available to all agriculture-related stakeholders through modes that are accessible to all at the County's Agricultural Commissioner Website.
- **Performance Standard and Tracking Mechanism**
  - Compliance with the requirements established in the ordinance will mark the success of this measure. The County will develop tracking mechanisms based on the type of construction equipment being used through project permits and can use this data to monitor compliance with the ordinance.
  - A numeric performance standard has not been identified at this time.
- **Timeline of Implementation**
  - Implementation of Actions GHG-16-a, b, and c is planned to start in 2025 and will be ongoing thereafter.
  - Implementation of Action GHG-16-d is planned to start and be completed in 2033.

Government Operations Measures

MEASURE GOV-01: Reduce Employee Commute VMT

Measure Objective:

Expand the County of Sacramento Employee Transportation Program to reduce employee commute VMT to 4% below 2021 levels on a per employee basis (e.g., commute VMT per employee).

Measure Summary

The County seeks to reduce single-occupant vehicle commute trips from County employees and will add this target to the existing Employee Transportation Program. The County will continue encouraging employees to use EVs, vanpools, and other active transportation modes by launching new programs, introducing incentives,

and organizing promotional events to raise awareness of the benefits that may come as a result of fewer transportation emissions. The County will conduct employee commute surveys to understand the current travel mode and use this data to update VMT reduction targets in the future to prioritize reducing fossil-fuel-based VMT. Table 53 below summarizes Measure GOV-01, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 53 Measure GOV-01: Reduce Employee Commute VMT

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GOV-01	Expand the County of Sacramento Employee Transportation Program to reduce employee commute VMT to 4% below 2021 levels on a per employee basis (e.g., commute VMT per employee).	944	223
Action GOV-01-a	Conduct an employee commute survey every two years to understand current modes of commute, measure employee commute VMT, primary travel mode, and fuel type. The aim of the survey would be: ▶ to adjust Employee Transportation Program targets and requirements prioritizing the reduction of fossil-fuel-based VMT; ▶ to assess of the effectiveness of County incentives, policies, and TDM measures (e.g., bike facilities, carpools, first mile/last mile connections, guaranteed ride home); ▶ to understand and remove barriers for using/accessing any programs; and ▶ to understand the need for strengthening EV infrastructure and policies at County buildings and facilities.		
Action GOV-01-b	Continue to offer a work-from-home policy that allows up to 2 days work-from-home per week that is available to full-time, non-essential County employees.		
Action GOV-01-c	Prepare promotional materials to inform and encourage employee participation in regional and national bike-to-work days/months.		
Action GOV-01-d	Conduct an EV infrastructure planning analysis every five years to assess: ▶ priority locations for EV chargers at County buildings and facilities, ▶ the need for installing additional EV chargers, ▶ policy updates for employees' personal vehicle charging, and ▶ signage updates.		
Action GOV-01-e	Prepare educational materials to inform, promote, and encourage County employees to use incentives for purchasing ZEVs, such as the State of California Green Fleet Employee Pricing Program and federal tax credits.		
Action GOV-01-f	Install signage to establish priority parking spaces for employee carpools.		
Action GOV-01-g	Maintain the County's membership in the 50 Corridor Transportation Management Association (TMA)/Sacramento TMA such that employees are provided TMA services such as guaranteed ride home and first mile/last mile connections.		
Action GOV-01-h	Increase the monthly subsidy of the Transit Subsidy Program to cover the cost of a monthly pass, and regularly review subsidy offerings to align with local monthly transit pass prices.		
Action GOV-01-i	Assign a staff position to manage the County of Sacramento Employee Transportation Program and 50 Corridor TMA/Sacramento TMA services.		
Action GOV-01-j	Create an incentive program (e.g., gift vouchers, free lunch, raffles, contests) for employees who use commute modes other than single-occupancy vehicles regularly.		
Action GOV-01-k	Based on employee commute survey results, install both short-term and long-term bicycle parking in convenient and secure locations at all County buildings and where bicycle parking currently does not exist, to better encourage commuting via bicycle.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GOV-01-l	Based on employee commute survey results, conduct an employee shuttle feasibility study to determine the feasibility and cost of a shuttle system that would bring employees from major transit stations to County work sites. As part of the feasibility study, identify appropriate partnerships and contracting options for a shuttle service operator.		
Action GOV-01-m	Based on employee commute survey results, establish a ZEV shuttle service for County employees, at no cost to employees, from major transit stations and with the appropriate service provider identified through the employee shuttle feasibility study.		

Notes: ABAU = legislative-adjusted business-as-usual; EV = electric vehicle; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; TDM = transportation demand management; TMA = transportation management association; ZEV = zero-emission vehicle.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

For this measure, GHG reductions are attributable to two different changes: 1) decreased VMT under an expanded Transportation Program, and 2) increased EV charging which incents EV purchases and thus decreases emissions from internal combustion engine vehicles. However, only 1) causes incremental GHG reductions because increased EV penetration under 2) is already included in the government operations forecast. 2) is calculated solely for the cost analysis.

For 1), reductions were calculated based on CAPCOA T-5: Implement Commute Trip Reduction. It was assumed that 100 percent of employees were eligible for this program. A 4 percent reduction was assumed for eligible employees (CAPCOA 2021: 83-84), for a total reduction of 4 percent. Table 54 below shows the effects of the VMT reduction on emissions.

Table 54 Emissions Reductions from Measure GOV-01

Item	2030	2045
ABAU County employee VMT	95,037,363	116,970,914
ABAU County employee VMT with GOV-01	91,235,869	112,292,078
Employee commute vehicle emissions factor (gCO_2e per VMT)	248	48
Emissions reductions ($MTCO_2e$)	944	223

Notes: ABAU = legislative-adjusted business-as-usual; gCO_2e = grams of carbon dioxide equivalent; $MTCO_2e$ = metric tons of carbon dioxide equivalent; MT = metric tons; VMT = vehicle miles traveled.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

The performance indicator for Measures GOV-01 the average commute VMT per County employee as measured through employee commute survey. Pursuant to this measure, VMT per County employee must reduce by 4 percent in 2030 and 2045, relative to its 2021 level of 6,706 VMT per employee per year (based on VMT data and employee count data from County of Sacramento 2023: 31). The target VMT level for 2030 and 2045 is 6,438 average annual VMT per employee.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GOV-01-a focuses on conducting a survey to develop a baseline understanding of current County employee commute characteristics and to understand the most effective method for achieving the target. The survey results will enable the County to update the VMT reduction target in the future and prioritize fossil fuel based VMT.
  - Action GOV-01-b focuses on continuing the current mechanism of reducing drive-alone trips by continuing the work-from-home policy.
  - Action GOV-01-d focuses on conducting an assessment of EV infrastructure at County buildings and facilities. As needed, the results of this assessment can be used to identify priority locations and the need for installing additional EV chargers at County buildings and facilities. The County may also update the EV charger use policies for employees' personal vehicle charging with a view to encourage the use of electric or hybrid vehicles.
  - Action GOV-01-f focuses on encouraging the use of carpools by providing dedicated priority parking at County facilities.
  - Action GOV-01-g focuses on ensuring convenience for County employees who choose not to drive by safeguarding employees' access to services like guaranteed ride home and first mile/last mile connections. The County plans to do this by continuing membership in the 50 Corridor TMA/Sacramento TMA.
  - Action GOV-01-h focuses on the successful implementation of this measure by increasing the current monthly subsidy of the Transit Subsidy Program to encourage County employees to use transit for office commute.
  - Action GOV-01-i focuses on developing a new County staff position for the successful implementation of this measure.
  - Action GOV-01-j focuses on providing incentives to County employees who regularly choose transit or active transportation modes over drive-alone trips for office commutes.
  - Action GOV-01-k focuses on encouraging the use of bikes by providing bicycle parking facilities at convenient locations at County facilities.
  - Action GOV-01-l focuses on conducting a baseline study to determine travel patterns and the feasibility of a shuttle program. This study will aim to find cost-effective ways to implement the measure.
  - Action GOV-01-m focuses on using the results of the study (see Action GOV-01-m) to establish a ZEV shuttle service as appropriate.
- **Public Engagement and Community Partnerships**
  - Action GOV-01-c focuses on promoting a "bike-to-work" program that encourages County employees to prefer active transportation for office commute.
  - Action GOV-01-e focuses on sharing information about and promoting available opportunities for funding ZEVs through incentives and tax credits.
- **Performance Standard and Tracking Mechanism**
  - Action GOV-01-a develops a tracking mechanism for monitoring the progress of this measure through a survey to understand the reduction in VMT as a result of implementing various programs and promotional events.

- **Timeline of Implementation**
  - Implementation of Actions GOV-01-a, h, and k is planned to start in 2025 and will be ongoing afterwards, implemented every two years.
  - Action GOV-01-b and g are ongoing efforts.
  - Implementation of Actions GOV-01-c, e, and j is planned to start in 2025 and will be ongoing afterwards.
  - Implementation of Actions GOV-01-d, l, and m is planned to start in 2025 and will be ongoing afterwards, implemented every five years.
  - Implementation of Actions GOV-01-f and i is planned to start and be completed in 2025.

MEASURE GOV-02: Develop a Non-Airport Fleet Conversion Program

Measure Objective:

Expand the County's Fleet Conversion Program to convert 35% of the County's on-road and offroad non-airport vehicle fleet to zero-emission technology by 2030 and 100% by 2045.

Measure Summary

With this measure, the County intends to reduce its transportation-related emissions in the County's vehicle fleet by transitioning the County's on-road vehicles and off-road vehicles and equipment to zero-emission alternatives. The County plans to do this by updating existing policies, adopting new policies, and developing a plan for transitioning the fossil-fuel-based vehicles and equipment to available zero-emission alternatives. Table 55 below summarizes Measure GOV-02, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 55 Measure GOV-02: Develop a Non-Airport Fleet Conversion Program

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GOV-02	Expand the County's Fleet Conversion Program to convert 35% of the County's on-road and offroad non-airport vehicle fleet to zero-emission technology by 2030 and 100% by 2045.	5,125	18,022
Action GOV-02-a	Update the County's fleet acquisition policies for vehicles with a gross vehicle weight rating (GVWR) greater than 8,500 pounds to meet or exceed the requirements of the California Advanced Clean Fleets Regulation.		
Action GOV-02-b	Update the County's light-duty (below 8,500 GVWR) fleet acquisition policies such that: ▸ All new vehicle purchases and leases are ZEVs. ▸ Exceptions may be granted for emergency vehicles and other unique duty circumstances with the approval of the County Executive or designee.		
Action GOV-02-c	Update the County's off-road equipment acquisition policies such that: ▸ All new equipment purchases and leases are battery electric or other zero-emission technology. ▸ Exceptions may be granted for emergency equipment, equipment types that are not available at the time of procurement, or other unique duty circumstances with the approval of the County Executive or designee.		
Action GOV-02-d	Adopt a policy to allow employees to be reimbursed for charging County-owned or -leased vehicles overnight at home, similar to how gasoline purchases are reimbursed.		
Action GOV-02-e	Continue to fuel applicable diesel- and compressed-natural-gas-powered vehicles with renewable fuels as the County transitions to ZEVs.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GOV-02-f	Prepare a Zero-Emission Fleet Transition Plan that includes: ▶ an inventory of the County's existing on- and offroad fleet, ▶ an assessment of the expected retirement/replacement timeline of each vehicle/equipment and identify appropriate replacement options, ▶ an analysis of the additional ZEV fueling/charging infrastructure needs and the timeline to support the transition to ZEVs, ▶ an assessment of the cost-effectiveness of various technology options considering up-front costs of vehicles/equipment and infrastructure and annual operating costs, and ▶ identification of fleet maintenance staff training needs and any specialized equipment or facilities to support a ZEV fleet.		
Action GOV-02-g	Establish a County staff role to identify, monitor, and apply for grant funding opportunities, rebates, and incentives for fleet conversion to ZEVs and installation of infrastructure.		
Action GOV-02-h	Annually assess existing ZEV fueling capacity and the number of new ZEVs added to the fleet so that additional infrastructure needs can be incorporated into operating budgets in the following year. Also, report the number of ZEVs as a percentage of the total fleet to the County Sustainability Manager for annual progress reporting.		

Notes: GHG = greenhouse gas; GVWR = gross vehicle weight rating; $MTCO_2e$ = metric tons of carbon dioxide equivalent; ZEV = zero-emission vehicle.
Source: Compiled by Ascent in 2024.

GHG Quantification Approach

Table 56 shows the reductions from implementing this measure. The measure was applied to non-airport vehicles only because airport vehicles are covered under GOV-03.

Table 56 Incremental Non-Airport Fleet Emissions Reductions Due to Increased Electric ZEV Penetration from Measure GOV-03

Year	ABAU On-road Emissions ($MTCO_2e$)	ABAU Off-road Emissions ($MTCO_2e$)	On-Road Percent ZEV	Off-Road Percent ZEV	On-Road Emissions Reductions ($MTCO_2e$)	Off-Road Emissions Reductions ($MTCO_2e$)	Total Emissions Reductions ($MTCO_2e$)
2030	14,371	272	35%	35%	5,030	95	**5,125**
2045	17,688	334	100%	100%	17,688	334	**18,022**

Notes: ABAU = legislative-adjusted business-as-usual; $MTCO_2e$ = metric tons of carbon dioxide equivalent; ZEV = zero-emissions vehicle.
Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Measure GOV-02 has three performance indicators, provided in Table 57.

Table 57 Performance Standards and Indicators for Measure GOV-02

Performance Standard/Indicator	2030 Target	2045 Target
Number of ICE County vehicles/equipment retired and replaced with ZEVs	945 ICE vehicles and equipment replaced with ZEV	2,700 ICE vehicles and equipment replaced with ZEV
Number and type of EV chargers installed on County property	Target to be identified with further analysis	Target to be identified with further analysis
Percent of total non-airport vehicle fleet that is ZEV	35 percent	100 percent

Notes: ICE = internal combustion engine; EV = electric vehicle: ZEV = zero-emission vehicle.

Source: Compiled by Ascent in 2024.

Methods for development of the performance indicators are provided below.

Number of ICE County vehicles/equipment retired and replaced with ZEVs. As of 2022, the County had a total of approximately 2,700 vehicles and off-road equipment in the non-airport fleet. The target indicator was developed by applying the target ZEV percentages from Table 56 to the total number of current fleet vehicles.

Number and type of EV chargers installed on County property. This performance indicator cannot be quantified until additional study is conducted as part of GOV-02.

Percent of total vehicle fleet non-airport vehicle fleet that is ZEV. This performance indicator is the target ZEV percentage for the fleet and includes both new and existing fleet vehicles and equipment.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GOV-02-a focuses on updating the County's existing heavy-duty vehicles policy to be meet or exceed the California Advanced Clean Fleets Regulation requirements.
  - Action GOV-02-b focuses on updating the County's existing light-duty vehicles policy to ensure that all new light-duty vehicles purchased are ZEVs as appropriate.
  - Action GOV-02-c focuses on updating the County's existing off-road equipment policy to ensure that all new purchases use the latest zero-emission technology as appropriate.
  - Action GOV-02-d focuses on adopting a new policy for encouraging employees to use the County's electric or hybrid vehicles for County operations by allowing reimbursements for charging vehicles at home.
  - Action GOV-02-e focuses on continuing the commitment to low-carbon alternatives where zero-carbon alternatives are not applicable by using renewable fuels in County fleets wherever applicable.
  - Action GOV-02-f focuses on developing a plan to identify County fleets that can be prioritized for transition to electric, infrastructure updates required to support the transition, and other details required for successful implementation of the measure including cost estimates, timeline, staff training requirements, etc.
  - Action GOV-02-g focuses on supporting the implementation by establishing requirements regarding the hiring of a new County employee to look for funding opportunities for this transition.

- **Performance Standard and Tracking Mechanism**
  - Action GOV-02-h focuses on developing a system for regular monitoring of the measure outcomes. This action aims to keep track of implementation, annually update the fleet inventory, and update the transition plan as needed.
  - A numeric performance standard has been set, as described in the Measure Objective
- **Timeline of Implementation**
  - Implementation of Actions GOV-02-a, b, c, and d is planned to start and be completed in 2025.
  - Action GOV-02-e is an ongoing effort.
  - Implementation of Action GOV-02-f is planned to start and be completed in 2026.
  - Implementation of Action GOV-02-g is planned to start in 2025 and will be ongoing thereafter.
  - Implementation of Action GOV-02-h is planned to start in 2025 and will be ongoing annually thereafter.

MEASURE GOV-03: Develop an Airport Fleet Conversion Program

Measure Objective:

Convert 35% of the SCAS fleet to zero-emission technology by 2030 and 100% by 2045.

Measure Summary

Similar to Measure GOV-02, with this measure, the County intends to reduce its transportation-related emissions in County operations by transitioning the SCAS vehicle fleet to zero-emission alternatives by updating policies and developing a transition plan. Table 58 below summarizes Measure GOV-03, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 58 Measure GOV-03: Develop an Airport Fleet Conversion Program

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GOV-03	Convert 35% of the Sacramento County Airport System (SCAS) fleet to zero-emission technology by 2030 and 100% by 2045.	978	3,439
Action GOV-03-a	Develop an Airport Fleet Conversion Program to achieve 35 percent conversion of the SCAS fleet to ZEVs by 2030 and 100 percent by 2045. The program will consist of the following: ▶ Update the Sacramento International and Executive Airports fleet acquisition policies to require increased percentage of vehicles purchased or leased starting in 2025 to be powered by zero-emission vehicles and equipment available and practical at the time of purchase. ▶ Develop an "Airport Fleet Transition Plan" to convert fossil-fuel-powered vehicle fleet to zero-emission vehicles and equipment including: ▪ prioritization of fleet to be converted, ▪ cost of conversion, ▪ timeline, ▪ funding and financing options, ▪ conditions for exceptions for vehicles used in unique circumstances, and ▪ Airport Executive's or designee's approval will be required for applying exceptions to vehicles.		

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Action GOV-03-b	Annually assess existing ZEV fueling capacity and number of new ZEVs added to fleet so that additional charging/fueling infrastructure needs can be incorporated into operating budgets in the following year. Also, report the number of ZEVs as a percentage of the total fleet to the County Sustainability Manager for annual progress reporting.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; ZEV = zero-emission vehicle.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

Table 59 below shows total ABAU emissions from the airport fleet, along with the reductions that would occur due to the fleet conversion figures shown above.

Table 59 Emissions Reductions Due to Increased Electric Vehicle Penetration from Measure GOV-3

Year	Total Emissions ($MTCO_2e$)	Reductions (%)	Reductions ($MTCO_2e$)
2030	2,794	35%	978
2045	3,439	100%	3,439

Notes: $MTCO_2e$ = metric tons of carbon dioxide equivalent; ZEV = zero-emissions vehicle.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

Measure GOV-02 has three performance indicators, provided in Table 60.

Table 60 Performance Standards and Indicators for Measure GOV-02

Performance Standard/Indicator	2030 Target	2045 Target
Number of ICE County Airport Systems vehicles/equipment retired and replaced with ZEVs	Target to be identified with further analysis	Target to be identified with further analysis
Number and type of EV chargers installed at County airports	Target to be identified with further analysis	Target to be identified with further analysis
Percent of total airport vehicle fleet that is ZEV	35 percent	100 percent

Notes: ICE = internal combustion engine; EV = electric vehicle: ZEV = zero-emission vehicle.

Source: Compiled by Ascent in 2024.

Methods for development of the performance indicators are provided below.

Number of ICE County Airport Systems vehicles/equipment retired and replaced with ZEVs. This performance indicator cannot be quantified until additional study is conducted as part of GOV-03.

Number and type of EV chargers installed on County property. This performance indicator cannot be quantified until additional study is conducted as part of GOV-03.

Percent of total airport vehicle fleet that is ZEV. This performance indicator is the target ZEV percentage for the fleet and includes both new and existing fleet vehicles and equipment.

Measures Guidelines Alignment

The County has complete control over the SCAS fleet and is in a position to independently implement this measure without external support or public engagement. This is why all measure guidelines that apply to community measures do not apply to this government operations measure. Below is an explanation of how this measure aligns with the guidelines applicable to this measure:

- **Mechanism for Implementation**
  - Action GOV-03-a focuses on developing and implementing a program to achieve the targets established in the measure. Within the program, the action focuses on updating existing policies in favor of the measure and developing a plan to identify details required for successful implementation of the measure including prioritization of fleets, cost estimates, timeline, exceptions, and approval process.
- **Performance Standard and Tracking Mechanism**
  - Action GOV-03-b focuses on developing a system for regular monitoring of the measure outcomes. This action aims to keep track of implementation and update the program, policies, and the transition plan as needed.
- **Timeline of Implementation**
  - Implementation of Action GOV-03-a is planned to start and be completed in 2025.
  - Implementation of Action GOV-03-b is planned to start in 2026 and will be ongoing, implemented annually thereafter.

MEASURE GOV-04: Reduce Natural Gas Usage in County Buildings

Measure Objective:

Develop a County Buildings and Facilities Decarbonization Plan by 2026 and reduce natural gas use in County buildings 30% below 2021 levels by 2030 85% below 2021 levels by 2045.

Measure Summary

The County's goal with this measure is to decrease reliance on natural gas for heating and energy needs in County buildings and facilities over time. By setting specific targets to reduce natural gas consumption in the Decarbonization Plan, the County intends to lead energy efficiency and sustainability efforts and encourage the community to support the County in addressing environmental concerns related to natural gas usage in the County. Table 61 below summarizes Measure GOV-04, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 61 Measure GOV-04: Reduce Natural Gas Usage in County Buildings

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GOV-04	Develop a County Buildings and Facilities Decarbonization Plan by 2026 and reduce natural gas use in County buildings 30% below 2021 levels by 2030 and 85% below 2021 levels by 2045.	4,623	12,846
Action GOV-04-a	Conduct an electrification, energy efficiency, solar PV, and battery storage opportunities assessment, which will: ▶ inventory existing county buildings and facilities and the associated energy end uses; ▶ identify potential solar pv and battery storage installation locations and capacity potential ; ▶ identify energy efficiency, electrification and solar PV/battery storage projects that achieve full building/facility electrification; ▶ identify alternative technology/fuel options (e.g., hydrogen fuel) for hard-to-electrify end uses (e.g., high heat processes); ▶ identify funding and financing mechanisms to support individual projects; ▶ calculate up-front costs and long-term costs/savings for individual projects; ▶ account for increased building energy load and EV charging demand based on fleet electrification studies in Actions GOV-02-f and GOV-03-b; and ▶ prepare an Energy Management Plan for SCAS facilities to develop a base case energy usage projection for the next ten years (2024-2034). A desktop engineering review will be conducted to identify projects to reduce energy consumption and peak energy demand.		
Action GOV-04-b	Based on the results of the electrification, energy efficiency, solar PV, and battery storage opportunities assessment, develop and implement a Buildings and Facilities Decarbonization Plan and include projects in the County's Capital Improvements Plan.		
Action GOV-04-c	Adopt an electric building policy that requires all newly constructed County buildings to include no natural gas infrastructure, with limited exceptions for cases where emergency power needs cannot be sufficiently met with battery storage. For equipment that cannot be electrified with current available technology (e.g., high-heat processes), should first identify technological alternatives to natural gas combustions and provide evidence for infeasibility.		
Action GOV-04-d	Annually engage with SMUD to assess options for the electrification of space and water heating in County buildings.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; PV = photovoltaic; SCAS = Sacramento County Airport System; SMUD = Sacramento Municipal Utility District.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

A target of 30 percent natural gas reduction for county facilities in 2030 and an 85 percent natural gas reduction for County facilities in 2045, relative to 2021 levels, was assumed. The 2045 target of 85 percent reflects the logistical difficulty of electrifying all end uses in County buildings. Table 62 below shows the results of the natural gas reduction outlined in the measure.

Table 62 Natural Gas Emissions Reductions from Measure GOV-04

Item	2021	2030	2045
ABAU therms of natural gas used	1,889,129	2,192,769	2,698,835
ABAU natural gas emissions ($MTCO_2e$)	10,057	11,663	14,354
Reduction percentage, relative to 2021 levels	0%	30%	85%
Therms of natural gas used after measure reduction	1,889,129	1,322,390	283,369
Emissions remaining after reduction ($MTCO_2e$)	10,057	7,040	1,508
Emissions reductions ($MTCO_2e$)	NA	4,623	12,846

Notes: ABAU = legislative-adjusted business-as-usual; $MTCO_2e$ = metric tons of carbon dioxide equivalent; NA = not applicable.

Source: Analysis conducted by Ascent in 2024.

Performance Standards and Indicators

The performance indicator for Measures GOV-04 is the total metered natural gas use in County buildings and facilities. The method for developing the performance indicator is discussed in the GHG Quantification Approach section above and provided in Table 62 as the "Therms of natural gas used after measure reduction" line item.

Measures Guidelines Alignment

Below is an explanation of how this measure aligns with the measure guidelines:

- **Mechanism for Implementation**
  - Action GOV-04-a focuses on conducting an assessment of existing County buildings and facilities to identify opportunities for energy efficiency, using renewable energy, electrification, and alternative technology or fuel options and identify the cost of potential projects that can result from the assessment. With this Action, the County also commits to developing an Energy Management Plan for estimating energy use projections and design projects aimed to reduce future energy use.
  - Action GOV-04-b focuses on developing and implementing a Decarbonization Plan for the County buildings and facilities using the assessment results from Action GOV-04-a.
  - Action GOV-04-c focuses on adopting a policy to ensure that new County buildings and facilities eliminate the use of natural gas with only exceptions to emergency power needs.
- **Public Engagement and Community Partnerships**
  - Action GOV-04-d focuses on partnering with SMUD for fuel switching.
- **Performance Standard and Tracking Mechanism**
  - The performance of this measure will be tracked by monitoring the compliance of County building with the updated policy. Achievement of targets regarding reduction in natural gas usage can be monitored using energy invoices.
- **Timeline of Implementation**
  - Implementation of Action GOV-04-a is planned to start in 2025 and be completed in 2026.
  - Implementation of Action GOV-04-b is planned to start and be completed in 2027. The implementation of the Capital Improvement Plans will be ongoing thereafter.
  - Implementation of Action GOV-04-c is planned to start and be completed in 2025.
  - Implementation of Action GOV-04-d is planned to start in 2025 and will be ongoing thereafter.

MEASURE GOV-05: Improve Water Efficiency

Measure Objective:

Improve water efficiency at County buildings, facilities, and landscaped areas to reduce water consumption by 11% in 2030 and 29% in 2045 below 2021 levels.

Measure Summary

With this measure, the County will reduce its water consumption by improving efficiency and using low-flow fixtures in County buildings and facilities and using recycled water for outdoor activities. The County will also develop three demonstration projects to promote native vegetation and high-efficiency irrigation techniques to lead by example and inspire the community. Table 63 below summarizes Measure GOV-05, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 63 Measure GOV-05: Improve Water Efficiency

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GOV-05	Improve water efficiency at County buildings, facilities, and landscaped areas to reduce water consumption in these buildings by 11% in 2030 and 29% in 2045 below 2021 levels.	0	0
Action GOV-05-a	Develop and adopt a County Buildings and Facilities Water Efficiency Plan to achieve a goal of 11 percent reduction in potable water usage below 2021 levels for all County buildings by 2030 and 29 percent by 2045. The plan should include: ▶ a review of County building and facility water consumption, ▶ water efficiency upgrade opportunities, and ▶ a cost and timeline for performing upgrades.		
Action GOV-05-b	Continue to replace water fixtures with low-flow equivalents to have all County buildings and facilities using low-flow equipment by 2030.		
Action GOV-05-c	Continue to use recycled water for landscaping as per the General Waste Discharge Requirements for Landscaping Irrigation Uses of Municipal Recycled Water (SWRCB Order no. 2009-0006-DWQ).		
Action GOV-05-d	Conduct a landscape conditions and irrigation audit to evaluate irrigation practices around County facilities to: ▶ Identify essential and non-essential / non-functional turf. ▶ Remove non-essential turf by 2027 and replace it with native and drought-tolerant species, consistent with AB 1572 requirements for removing non-functional turf. ▶ Modify irrigation practices and equipment accordingly for essential turf (e.g., timers, sprinkler heads). ▶ Evaluate necessary changes in irrigation practices for dry years to ensure tree survival.		
Action GOV-05-e	Create drought-tolerant demonstration projects with interpretive signs at the three most visited County buildings to exhibit and promote native vegetation and high-efficiency irrigation techniques.		
Action GOV-05-f	Develop a list of drought tolerant plants for use in County landscaping projects which focuses on California native plants and considers ability to support local pollinators and wildlife, plant size, sun and shade needs, water use, and wildlife benefits.		

Notes: AB = Assembly Bill; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

This measure has no incremental GHG reductions because it reduces the County government's electricity usage and it is assumed that by 2030 emissions from electricity will be zero due to GHG-03: Support SMUD in the implementation of the 2030 Zero Carbon Plan. GHG reductions to County facilities due to zero-carbon energy from SMUD are credited to the County under GOV-NA, shown in Table 6. However, water conservation is part of the state of California's "Make Conservation a Way of Life" water use efficiency framework that informs policy at the California State Water Resources Board. Consistent with this policy, water use reduction measures are included here as part of the CAP. This measure targets water use reduction of 11 percent by 2030 and 29 percent by 2045 relative to 2021 levels, interpolated based on 2035 targets for the Sacramento area from the Legislative Analyst's Office (2024: See Figure 13).

Performance Standards and Indicators

The performance indicator for Measures GOV-05 is the reduction in total metered water consumption in county buildings and facilities. Water use in County buildings (measured in gallons or acre-feet) will be monitored and compared to 2021 values, to ensure the goals in GOV-05 are met.

Measures Guidelines Alignment

The County has complete control over its buildings and facilities for implementing all actions within this measure and is in a position to independently implement this measure without external support or public engagement. Therefore, some of the measures guidelines that apply to community measures are not fully applicable to this government operations measure. Below is an explanation of how this measure aligns with the guidelines applicable to this measure:

- **Mechanism for Implementation**
  - Action GOV-05-a focuses on implementing a water efficiency plan with an aim to achieve the targets established for this measure. Within the plan, the County's water consumption will be reviewed for identifying water efficiency upgrade opportunities and developing a cost and time estimate for implementing the plan.
  - Action GOV-05-b focuses on maintaining the County's ongoing endeavors to decrease water consumption by substituting traditional water fixtures with low-flow alternatives. The action establishes a goal to replace all traditional fixtures by 2030.
  - Action GOV-05-c focuses on maintaining the County's ongoing endeavors to decrease water consumption by continued use of recycled water for landscaping.
  - Action GOV-05-d focuses on conducting an audit to evaluate irrigation practices and identify opportunities for replacing turf with native and drought-tolerant species at County's landscapes and strategizing irrigation practices to plan for dry years.
  - Action GOV-05-e aims to establish a demonstration project at three County buildings that are most visited by residents, which will also help educate and encourage the community to plant native vegetation and adopt efficient irrigation methods for outdoor spaces.
- **Performance Standard and Tracking Mechanism**
  - The performance of this measure will be tracked by monitoring the adoption of the water efficiency plan, completion of irrigation audit, and completion of the demonstration projects. Achievement of targets regarding reduction in water usage can be monitored using water bills.

- **Timeline of Implementation**
  - Implementation of Actions GOV-05-a and d is planned to start and be completed in 2025.
  - Actions GOV-05-b and c are ongoing efforts.
  - Implementation of Action GOV-05-e is planned to start in 2025 and be completed in 2028.

MEASURE GOV-06: Replace Outdoor Lights with LEDs

Measure Objective:

Replace all 2,200 remaining high-pressure sodium County-managed streetlights with LEDs by 2030, and all remaining County-managed outdoor lighting with LEDs by 2045.

Measure Summary

With this measure, the County intends to reduce energy-related emissions by replacing all high-pressure sodium streetlights and all other outdoor lights with light-emitting diode (LED) fixtures. Table 64 below summarizes Measure GOV-06, estimated GHG emissions reduction potential, and all implementing actions associated with the measure.

Table 64 Measure GOV-06: Replace Outdoor Lights with LEDs

Identifier	Measure/Action	GHG Reduction Potential ($MTCO_2e$)	
		2030	2045
Measure GOV-06	Replace all 2,200 remaining high-pressure sodium County-managed streetlights with LEDs by 2030, and all remaining County-managed outdoor lighting with LEDs by 2045.	0	0
Action GOV-06-a	Replace remaining 2,200 high-pressure sodium (HPS) and mercury-vapor (MV) streetlights with light-emitting diode (LED) technology.		
Action GOV-06-b	Perform an audit of existing outdoor County lighting, including all County-owned and -managed buildings, facilities, parks, and properties.		
Action GOV-06-c	Replace outdoor lighting with LED technology at all County-owned and -managed buildings, facilities, parks, and properties, where LED technology is not currently in place.		

Notes: GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent; LED = light-emitting diode.

Source: Compiled by Ascent in 2024.

GHG Quantification Approach

See "GHG Quantification Approach" section under GOV-05—the same applies to this measure.

Performance Standards and Indicators

The number of replaced streetlights and outdoor lights will be monitored, per Measure Objective of GOV-06.

Measures Guidelines Alignment

The County has full control over its buildings and facilities and is in a position to independently implement this measure without external support or public engagement. This is why all measure guidelines that apply to community measures do not apply to this government operations measure. Below is an explanation of how this measure aligns with the guidelines applicable to this measure:

- **Mechanism for Implementation**
  - Action GOV-06-a focuses on implementing this measure by replacing all non-LED streetlights with LEDs.
  - Action GOV-06-b supports the implementation of this measure by focusing on developing a list of all existing outdoor lights that are not LEDs.
  - Action GOV-06-c centers on using the results of Action GOV-06-b and focuses on implementing this measure by replacing all non-LED outdoor lighting with LEDs.
- **Performance Standard and Tracking Mechanism**
  - The performance of this measure will be evaluated by monitoring the progress towards replacing all non-LED streetlights with LED streetlights by 2030 and replacing all other non-LED outdoor lights with LED outdoor lights by 2045.
  - A numeric performance standard has been set, as described in the Measure Objective
- **Timeline of Implementation**
  - Implementation of Action GOV-06-a is ongoing and will be completed by 2030.
  - Implementation of Action GOV-06-b is planned to start in 2025 and be completed in 2026.
  - Implementation of Action GOV-06-c is planned to start in 2027 and be completed in 2035.

4 References

American Public Transportation Association. 2024. *2023 Public Transportation Fact Book*. 74th Edition. Available: https://www.apta.com/wp-content/uploads/APTA-2023-Public-Transportation-Fact-Book.pdf. Accessed July 1, 2024.

APTA. *See* American Public Transportation Association.

CAL FIRE Urban and Community Forestry Program and Cal Poly State University, San Luis Obispo. California Urban Forest Inventory. Available: https://lookerstudio.google.com/u/0/reporting/880d448d-de26-48d3-b563-0c6317e456e4/page/jWHKB. Accessed May 8, 2024.

California Air Pollution Control Officers Association. 2021. *Handbook for Analyzing Greenhouse Gas Emissions Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*. Available: https://www.caleemod.com/documents/handbook/full_handbook.pdf. Accessed May 8, 2024.

California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Available: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf. Accessed May 8, 2024.

———. 2024a. Off-Road Web Platform. Available: https://arb.ca.gov/emfac/offroad/. Accessed May 8, 2024.

———. 2024b. Cars and Light Trucks are Going Zero – Frequently Asked Questions. Available: https://ww2.arb.ca.gov/resources/documents/cars-and-light-trucks-are-going-zero-frequently-asked-questions#:~:text=Zero%2Demission%20vehicles%20(ZEV),visit%20DriveClean.ca.gov. Accessed May 8, 2024.

———. 2024c. EMFAC 2017 Volume III Technical Documentation. Available: https://ww2.arb.ca.gov/sites/default/files/2023-01/emfac2017-volume-iii-technical-documentation.pdf. Accessed May 8, 2024.

California Department of Food and Agriculture. COMET-Planner tool. 2024. Available: https://planner-cdfa-dot-comet-201514.appspot.com/pdfs/onepagers/CPS_808_SoilCarbonAmendment_Interim.pdf. Accessed May 7, 2024.

California Energy Codes and Standards Program. 2024a. Cost-Effectiveness Explorer Tool. Available: https://explorer.localenergycodes.com/. Accessed May 21, 2024.

———. 2024b. 2022 Cost-Effectiveness Study: Single Family New. Available: https://localenergycodes.com/download/1240/file_path/fieldList/2022%20Single%20Family%20NewCon%20Cost-eff%20Study.pdf. Accessed May 22, 2024.

California Energy Commission. 2024a. *Staff Report—Review of SMUD 2022 Integrated Resource Plan*. Available: https://www.energy.ca.gov/publications/2024/review-smud-2022-integrated-resource-plan. Accessed May 8, 2024.

———. 2024b. Power Content Label. Available: https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure-program/power-content-label. Accessed July 9, 2024.

———. 2024c. Assembly Bill 2127 Second Electric Vehicle Charging Infrastructure Second Assessment Revised Staff Report. Available: https://efiling.energy.ca.gov/GetDocument.aspx?tn=254161. Accessed May 8, 2024.

California Natural Resources Agency, California Air Resources Board, California Environmental Protection Agency, California Department of Food and Agriculture. 2024. California's Nature-Based Solutions (NBS) Climate Targets: Appendix 1, Methodology. Available: https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Expanding-Nature-Based-Solutions/NBS-Climate-Targets-Appendix-1---Methodology.pdf. Accessed May 8, 2024.

CalRecycle. 2021. *State of Disposal Report 2021*. Available: https://www2.calrecycle.ca.gov/Publications/Download/1890. Accessed May 8, 2024.

———. 2024. *Jurisdiction Diversion/Disposal Rate Summary*. Available: https://calrecycle.ca.gov/lgcentral/datatools/reports/divdisprtsum/. Accessed May 21, 2024.

CAPCOA. *See* California Air Pollution Control Officers Association.

CEC. *See* California Energy Commission.

City of Sacramento. 2024. Existing Building Electrification Strategy. Available: https://sacramento.granicus.com/MetaViewer.php?view_id=22&clip_id=5916&meta_id=779440. Accessed May 21, 2024.

City of Seattle. 2024. Seattle Building Emissions Performance Standard. Available: https://www.seattle.gov/documents/Departments/OSE/Building%20Energy/BEPS-GHGI-Targets.pdf. Accessed May 21, 2024.

County of Los Angeles. 2023. *Revised Draft 2045 Climate Action Plan: County of Los Angeles*. Available: https://planning.lacounty.gov/wp-content/uploads/2023/03/LA_County_2045-CAP_Rev_Public_Draft_March_2023_Chapters.pdf. Accessed May 22, 2024.

County of Sacramento. 2020. *General Plan Circulation Element*. Available: https://planning.saccounty.gov/PlansandProjectsIn-Progress/Documents/Circulation%20Element%20-%20Amended%2010-06-20.pdf. Accessed May 8, 2024.

———. 2022a. *Sacramento County 2021 Crop and Livestock Report*. Available: https://agcomm.saccounty.gov/Documents/CropandLivestockReports/2021Report.pdf. Accessed May 7, 2024.

———. 2022b. *2021-2029 Housing Element*. Available: https://planning.saccounty.gov/applicants/Documents/Housing%20Element_Clean.pdf. Accessed May 21, 2024.

———. 2022c. *Sacramento County Active Transportation Plan*. Available: https://sacdot.saccounty.net/Documents/A%20to%20Z%20Folder/Active%20Transportation/Sac%20ATP%20Plan%20+%20Appendices_June%20Final.pdf. Accessed May 7, 2024.

———. 2023. November. Sacramento County 2021 GHG Inventory: Community-wide and Government Operations. Available: https://green.saccounty.net/Documents/2021_GHG_Inventory.pdf. Accessed May 21, 2024.

———. 2024a. *Greenhouse Gas Emissions Forecast and Targets Memorandum for the County of Sacramento Climate Action Plan*.

———. 2024c. Appendix TRAN-1: Project Specific Vehicle Miles Traveled Analysis Memo. Available: https://planning.saccounty.gov/Documents/Countywide%20Rezone%20Program%20SEIR/Appendix%20TRAN-1%20Project%20Specific%20Vehicle%20Miles%20Traveled%20Analysis%20Memo.pdf. Accessed May 8, 2024.

DOE. *See* United States Department of Energy.

Federal Transit Administration. 2022. Sacramento Regional Transit District: 2021 Annual Agency Profile. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2021/90019.pdf. Accessed May 22, 2024.

FTA. *See* Federal Transit Administration.

Legislative Analyst's Office. 2024. Assessing Early Implementation of Urban Water Use Efficiency Requirements. Available: https://lao.ca.gov/Publications/Report/4823. Accessed May 9, 2024.

Local Governments for Sustainability. 2019. *United States Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*. Available: https://icleiusa.org/us-community-protocol/. Accessed May 22, 2024.

Marin County. 2020. *Marin County Unincorporated Area Climate Action Plan 2030*. Available: https://www.marincounty.org/-/media/files/departments/cd/planning/sustainability/climate-and-adaptation/cap-2030_12082020final.pdf. Accessed May 7, 2024.

Mozingo, Louise. 2021. *Zero-Carbon Buildings in California: A Feasibility Study*. Available: https://www.researchgate.net/publication/359931845_Zero-Carbon_Buildings_in_California_A_Feasibility_Study. Accessed May 8, 2024.

SMAQMD. *See* Sacramento Municipal Air Quality Management District.

Sacramento Municipal Air Quality Management District. 2024. *Capital Regional Climate Priorities Plan*. Available: https://www.epa.gov/system/files/documents/2024-03/sacramento-roseville-csa-pcap.pdf. Accessed May 22, 2024.

Sacramento Municipal Utility District. 2020. SMUD 2020 Energy Storage Compliance Report AB 2514. Available: https://efiling.energy.ca.gov/GetDocument.aspx?tn=236114&DocumentContentId=69120. Accessed July 9, 2024.

———. 2021. *2030 Zero Carbon Plan*. Available: https://efiling.energy.ca.gov/GetDocument.aspx?tn=246077&DocumentContentId=80240. Accessed May 21, 2024.

Smith, Todd. Planning Director. Sacramento, CA. April 29, 2024—email message on proximity of County proposed rezone sites to transit.

SMUD. *See* Sacramento Municipal Utility District.

United States Census. 2020. California state profile. Available: https://data.census.gov/profile/California?g=040XX00US06. Accessed May 8, 2024.

———. 2021. B25040: House Heating Fuel for Sacramento County, California in 2021. Available: https://data.census.gov/table?q=B25040:%20House%20Heating%20Fuel&g=050XX00US06067. Accessed May 22, 2024.

United States Department of Agriculture. 2017. Sacramento County Profile. Available: https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/California/cp06067.pdf. Accessed May 7, 2024.

———. 2022. Sacramento County Profile. Available: https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/California/cp06067.pdf. Accessed May 7, 2024.

United States Department of Energy. 2024. Fact of the Week #1333. Available: https://www.energy.gov/eere/vehicles/articles/fotw-1333-march-11-2024-2022-average-number-occupants-trip-household#:~:text=According%20to%20the%202022%20National,than%20two%20people%20per%20trip. Accessed May 22, 2024.

United States Environmental Protection Agency. 2024. Benefits of Landfill Gas Energy Projects. Available: https://www.epa.gov/lmop/benefits-landfill-gas-energy-projects. Accessed May 22, 2024.

United States Forest Service, Davey Tree Expert Company, The Arbor Day Foundation, Urban and Community Forestry Society, International Society of Arboriculture, Casey Trees, and SUNY College of Environmental Science and Forestry. 2024. i-Tree Tool. Available: https://www.itreetools.org/. Accessed May 8, 2024.

USDA. *See* United States Department of Agriculture.

US Court of Appeals for the Ninth Circuit, 2023. *California Restaurant Ass'n v. City of Berkeley*. Available at https://cdn.ca9.uscourts.gov/datastore/opinions/2023/04/17/21-16278.pdf. Accesses on April 22, 2024.

5 List of Preparers

County of Sacramento

Todd Smith, Planning Director

Elizabeth Pollock, Deputy County Counsel

Ascent Environmental, Inc. dba Ascent

Honey Walters, Principal/Chief Practices Officer

Erik de Kok, Director of Interdisciplinary Planning

Andrew Beecher, Senior Climate Action Planner

Jessica Babcock, Senior Environmental Planner

Hannah Kornfeld, Senior Climate Action Planner

Fred Hochberg, Senior Climate Action Planner

Adam Qian, Climate Adaptation Planner

Sonam Sahu, Climate Action Analyst

John Steponick, Climate Adaptation Analyst

Gayiety Lane, Publishing Specialist

Corey Alling, Graphic Publication Specialist

Environmental Science Associates

Brian Schuster, Air Quality, Climate, and Acoustics Director

Jeff Caton, Climate Planning Services Director

APPENDIX

F

Greenhouse Gas Reduction Measures County Cost Analysis and Potential Funding Sources

1 Introduction

This appendix provides a concise overview of the findings from a preliminary cost analysis for the County of Sacramento (County) Climate Action Plan (CAP). The cost analysis is intended to estimate the near-term (2025 to 2030) additional County staffing requirements and County municipal expenses necessary to implement the greenhouse gas (GHG) reduction measures. It outlines the preliminary results of a cost analysis for both community and government operations GHG reduction measures, offering insights into the financial implications associated with GHG reduction measures and implementing actions. Additionally, it outlines a current review of potential funding sources that can be utilized by the County for financing the implementation of these GHG reduction measures and actions. However, it does not include annual cost savings to the County (e.g., through reduced municipal utility bills associated with more efficient buildings and vehicles), nor does it include costs and savings to the community (e.g., reduced utility bills through home electrification or fuel costs through vehicle electrification).

2 Preliminary County Cost Analysis

This section presents the results of a preliminary cost analysis conducted to estimate the incremental up-front cost that would be incurred by the County in implementing the GHG reduction measures for the community and government operations. The cost analysis intends to provide transparency in the cost implications of specific CAP policy decisions and provide an additional decision-making tool on how the implementation of GHG reduction measures can be prioritized, based on the availability of funding and financing options. The GHG reduction measures presented in the CAP are currently in draft form, and as such, the cost analysis presented here is preliminary. Once the GHG reduction measures in the CAP are finalized, cost assumptions can be further refined to provide more detail and a more accurate assessment.

Methods

The cost analysis was conducted through data collection from internal County departments. A data request was sent to all County departments based on their role in the implementation of specific GHG reduction measures in the CAP. Cost data that was requested included the following for fiscal year (FY) 2025-2026 through FY 2029-2030:

- Can the GHG reduction measure be implemented with current staff capacity;
- Additional full-time employees needed to implement measures for each FY; and,
- Additional costs needed for implementation, including capital expenditures (e.g., vehicles, electric vehicles chargers) and non-personnel costs (e.g., consultants, compost purchases).

The cost data collected from County departments were compiled for each GHG reduction measure, and some gaps in data were filled with reasonable estimates based on publicly available data. As discussed previously, these costs are considered preliminary and do not represent the full scope of costs to be considered in the CAP in its draft form. During the data collection process, some of the GHG reduction measures were modified and as such, the most recent version of each GHG reduction measure and all implementing actions may not be captured here.

The cost analysis considers only the incremental up-front costs and annual costs through FY 2030 to the County for CAP implementation. This analysis does not consider discount rates. The cost analysis does not include costs or cost savings for the community (such as for residents and businesses). Many measures are likely to result in net cost savings to the community, such as energy efficiency retrofits per measure GHG-04 which would result in utility bill savings, or fueling vehicles with electricity instead of gasoline per measure GHG-07 which would reduce fuel costs. It also does not include annual cost savings to the County, which are likely to occur through similar measures like GOV-02 which would result in fuel cost savings, or GOV-04 which could result in utility bill savings.

In many cases, GHG reduction measures and actions call for the continuation of programs or policies that already exist, and as such the action in the CAP does not incur additional costs to the County. Additionally, some of the implementation actions of the CAP can be completed within the current staff capacity. Cost savings, grant opportunities, and other funding and financing mechanisms that can lower up-front costs are not considered.

Preliminary County Cost Analysis Results

The results of the analysis indicate that if all measures were implemented, the County would incur a total of approximately $178.9 million in total costs from the FY 2025-2026 to the FY 2029-2030, or approximately $35.8 million per year over five years. Of these total costs, approximately $54.0 million are from the GHG reduction measures focused on reducing community GHG emissions and $124.9 million are from government operations measures. **Table F-1** below shows the incremental cost that would be incurred by the County in implementing each GHG reduction measure, rounded to the nearest $10,000. These costs are based on the County's current preliminary estimates of costs and are subject to change based on revisions to CAP GHG reduction measures, market conditions, the availability and cost of zero-emissions technology, and County staff workload.

County Cost Analysis Framework

The results of the cost analysis in **Table F-1** fall into three categories described below: personnel costs, capital costs, and other costs.

- **Personnel costs**: correspond to County staff. These are expressed in terms of a fraction of one average FTE per year over the five years from the FY 2025-2026 to the FY 2029-2030 (inclusive of both). For example, a value of 1 FTE per year could mean one dedicated staff member working full-time on a measure over the five-year period, or it could mean two staff members working half-time over the same period. For this analysis, it was assumed that 1 FTE would cost the County $167,424 per year (including wages, salary and benefits). This value was derived using publicly available salary data for County employees (State of California 2024), and represents an average across environmental specialist and engineering positions. This represents an approximation; the exact positions and salaries that would need to be created to implement the CAP measures are beyond the scope of this analysis.
- **Capital costs**: correspond to physical assets and equipment with a useful life of five years or more (such as electric vehicles and chargers; see County of Sacramento [2024: 1088]), and
- **Other costs**: correspond to non-capital expenses (e.g., compost, trees, transit subsidy programs, and consultants). Note the costs of outreach (e.g. organizing workshops, sending mailers) were assumed to be de minimis and not included in the analysis. This value represented less than 1 percent of CAP implementation costs in the City of San Diego Climate Action Plan Implementation Cost Analysis (City of San Diego 2023: 17).

Table F-1 also includes information on potential funding sources for each GHG reduction measure. For more information on potential funding sources, please refer to **Section 3: Potential Funding Sources**.

Table F-1 Incremental Implementation Costs (Fiscal Years 2025-2030) for Community Measures and Government Operations Measures

Measure Number	Measure Description[1]	Personnel Cost	Capital Cost	Other Cost	Total Cost	Cost Per Fiscal Year	Personnel Cost Assumptions	Capital Cost Assumptions	Other Cost Assumptions	Potential Funding Source(s)[2]
GHG-01	Develop a Carbon Farming Program	$1,050,000	$70,000	$3,480,000	$4,600,000	$920,000	0.25 FTE per year for SM (managing incentives, outreach, grant application support) 1 FTE per year for AC (reporting, outreach support on sustainable agricultural practices study, grant application support)	Five-year ownership cost of a new vehicle (assuming an average price of a full-size car), per Kelly Blue Book (2024). [1]	$25 per ton to provide compost per DWMR, multiplied by 137,258 cumulative tons of compost needed by 2030 (approximately 5.5 tons of compost per acre, derived using acreage and tons per acre values in Table 8 of Appendix E [GHG Measures]). $50,000 for one year for GHG-01-f: consulting work to develop a Carbon Sequestration Agricultural Practices study	EQIP; HSP; CPRG; RRGP; General Fund[2]
GHG-02	Expand the Urban Forest	$1,760,000	$70,000	$8,130,000	$9,950,000	$1,990,000	Approximately 2.1 FTE per year spread across RP, PER, TC: developing urban forest planning documents, updating tree planting ordinances, instigating community partnerships, grant applications	Five-year ownership cost of a new vehicle (assuming an average price of full-size car), per Kelly Blue Book (2024).[1]	$325/tree for first three years per CD; includes site prep, planting, irrigation and maintenance. Scaled up to $542/tree for five year timeframe. Assuming 15,000 trees by 2030.	UCFG; CPRG; RRGP; General Fund[3]
GHG-03	Support the SMUD Zero Carbon Plan	$200,000	$7,120,000	N/A	$7,320,000	$1,460,000	Approximately 0.24 FTE per year for PER for coordination with SMUD and streamlining rooftop solar and battery projects	Assuming 139 rooftop projects, one per County building (Lundgren, pers. comm., 2024). Each rooftop solar/battery project could cost between $2,500 and $100,000 depending on complexity. Average of these two values used for this analysis.	N/A	TCC; General Fund[3]
GHG-04	Accelerate Existing Building Energy Efficiency Retrofits and Decarbonization	$220,000	N/A	$3,200,000	$3,420,000	$680,000	Approximately 0.26 FTE per year for PER (developing reach codes and tracking systems, pursuing grant funding).	N/A	For GHG-04-j, (waiving permit fees for all-electric conversion), estimated revenue reduction of $3M per year in waived permit fees. For the purposes of this analysis, this revenue reduction is treated as a cost to the County. $100,000 per year in potential consultant costs for two years (help with reach code development).	SMUD rebates; EECBD; CPRG; IRA CCGP; IRA RERP; EoAP; LIWP; CDBG; General Fund[3]

Table F-1 Incremental Implementation Costs (Fiscal Years 2025-2030) for Community Measures and Government Operations Measures (*continued*)

Measure Number	Measure Description[1]	Personnel Cost	Capital Cost	Other Cost	Total Cost	Cost Per Fiscal Year	Personnel Cost Assumptions	Capital Cost Assumptions	Other Cost Assumptions	Potential Funding Source(s)[2]
GHG-05	Decarbonize New Buildings	$210,000	N/A	$3,000,000	$3,210,000	$640,000	No FTE data were available for Sacramento County specifically. As a proxy, this analysis uses the value from San Diego Implementation Cost Assessment for Measure BE-1.2, Decarbonize New Building Development (City of San Diego 2023: 11), which estimates a need for approximately 0.25 FTE per year over five years. San Diego's measure and the County of Sacramento's measures are similar; both measures have an action to develop a reach code (City of San Diego 2024). It is assumed that reach code development represents the bulk of the costs of this measure, and thus the San Diego values are a reasonable proxy for County of Sacramento cost values.	N/A	For GHG-05-g, (waiving permit fees for all-electric new construction), estimated $3M per year in waived permit fees. For the purposes of this analysis, this revenue reduction is treated as a cost to the County.	SMUD rebates; EECBD; CDBG; SB2P; CPRG; EoAP; LIWP; BUILD; IRA AABEC; IRA CCGP; General Fund[3]
GHG-06	Retire Fossil Fuel Powered Landscaping Equipment	$290,000	N/A	$5,680,000	$5,970,000	$1,190,000	Approximately 0.34 FTE per year for SM to work with SMAQMD on a trade-in program, develop tracking system for equipment, and grant applications.	N/A	Assumes total voucher value of $145 per piece of lawn and garden equipment traded in (based on data from the Carl Moyer Program; see California Air Resources Board [2021: 6]), and a total of 78,371 pieces of equipment traded in by 2030. Of this cost, assume 50/50 split between the County and SMAQMD, per Action GHG-06-a.	CPRG; EECBG; CDBG; General Fund[3]
GHG-07	Increase EV Charging and ZEV Infrastructure	$1,010,000	$13,120,000	N/A	$14,130,000	$2,830,000	Approximately 0.76 FTE / year for PER and 0.45 for SM for ordinance development, infrastructure deployment strategy development, preparing educational materials, coordinating with other agencies (e.g., SMUD, SMAQMD), and conducting feasibility study for retirement of internal combustion engine vehicles.	Includes $10.4 million in capital costs for chargers at Sacramento County airports (MHR and SAC). Also includes cost of 100 directly installed public chargers per year over 5 years, per GHG-07-e, at $5,440 per charger (Nicholas 2019: 9).	N/A	CPRG; CEFP; BIL; ISRF; CDBG; IRA AABEC; IRA CCGP; TCC; General Fund[3]
GHG-08	Develop a VMT Impact Fee Program	$750,000	N/A	$750,000	$1,500,000	$300,000	Approximately 0.34 FTE per year for SACDOT and 0.56 FTE for PER for performing a nexus study to identify VMT mitigation projects, establishing VMT monitoring program and creating a VMT impact fee fund.	N/A	Need a total of $750,000 of consultant support for the nexus study: $150,000 for PER and $600,000 for SacDOT.	CDBG; VMT Impact fee; General Fund[3]
GHG-09	Reduce VMT from New Developments	$230,000	N/A	$300,000	$530,000	$110,000	Approximately 0.12 FTE per year for PER and 0.16 for SacDOT to perform a nexus study and develop VMT reporting requirements.	N/A	SACDOT needs a total of $300,000 of consultant support for the nexus study	IRA AABEC; CDBG; STEP; General Fund[3]

Table F-1 Incremental Implementation Costs (Fiscal Years 2025-2030) for Community Measures and Government Operations Measures (*continued*)

Measure Number	Measure Description[1]	Personnel Cost	Capital Cost	Other Cost	Total Cost	Cost Per Fiscal Year	Personnel Cost Assumptions	Capital Cost Assumptions	Other Cost Assumptions	Potential Funding Source(s)[2]
GHG-10	Revise Parking Standards	$100,000	N/A	$150,000	$250,000	$50,000	Approximately 0.12 FTE per year for PER to conduct a parking demand study, adopt an ordinance to update the parking standards in the zoning code, and monitoring outcomes of parking standard revisions.	N/A	PER needs $150,000 of consultant support for a parking demand study.	IRA AABEC; IRA CCGP; CDBG; CPRG; AHSC; General Fund[3]
GHG-11	Increase Transit Ridership	$590,000	N/A	N/A	$590,000	$120,000	Approximately 0.46 FTE per year for PER and 0.04 FTE per year for SacDOT to update Traffic Impact Analysis guidelines and serve as Transit Coordinator. Also assuming additional 0.2 FTE per year for SACDOT for grant application support (based on grant application support item in GHG-14; see below).	N/A	N/A	VMT mitigation fee; RAISE; FTAGP; CPRG; TPGP; General Fund[3]
GHG-12	Implement the Active Transportation Plan	$120,000	N/A	$1,000,000	$1,120,000	$220,000	Approximately 0.14 FTE per year for PER to create a Complete Streets Design Guide.	Capital projects are not included here; it is assumed that sidewalk and bike lane projects included in the ATP are not incremental because they are already in the Active Transportation Plan and would have occurred without the CAP.	Assuming a total of $1M for developing an implementation plan for 2022 ATP (GHG-12-a), updating the Zoning Code (GHG-12-b), and developing a Complete Streets design guide (GHG-12-e).	CSP; ATPP; STEP; General Fund[3]
GHG-13	Advance Infill Development	$840,000	N/A	$150,000	$990,000	$200,000	Approximately 1 FTE/year in PER for Infill Coordinator Position described in GHG-13-a.	N/A	PER needs $150,000 of consultant support to conduct a nexus study.	CPRG; CDBG; AHSC; IRA AABEC; General Fund[3]
GHG-14	Increase Organic Waste Diversion and Landfill Gas Capture	$170,000	$10,000	$30,000	$200,000	$40,000	Approximately 0.2 FTE per year for EMD (per GHG-14-h) for grant application support.	EMD needs approximately $2,000 per year of capital expenditures to help with grant applications.	EMD needs approximately $5,000 per year of materials to help with grant applications.	BIL; EGP; CPRG; CDBG; General Fund[3]
GHG-15	Implement the South Sacramento Habitat Conservation Plan	$0	$0	$0	$0	$0	Assuming no incremental costs of this measure - PER feedback states that this will be covered by SSHCP permitting application fees.	Assuming no incremental costs of this measure - PER feedback states that this will be covered by SSHCP permitting application fees.	Assuming no incremental costs of this measure - PER feedback states that this will be covered by SSHCP permitting application fees.	Mitigation fees; CDBG
GHG-16	Expand the Use of Electric Construction and Agricultural Equipment	$250,000	N/A	N/A	$250,000	$50,000	No data provided; assumed 0.3 FTE per year for revising the bid process to prefer electric-powered equipment (GHG-16-a), providing information on zero-emission equipment at the building counter (GHG-16-b), providing information on zero-emission equipment on the County's website (GHG-16-c).	N/A	N/A	CPRG; General Fund[3]
Community Subtotal		**$7,780,000**	**$20,400,000**	**$25,860,000**	**$54,040,000**	**$10,810,000**				

Table F-1 Incremental Implementation Costs (Fiscal Years 2025-2030) for Community Measures and Government Operations Measures (*continued*)

Measure Number	Measure Description[1]	Personnel Cost	Capital Cost	Other Cost	Total Cost	Cost Per Fiscal Year	Personnel Cost Assumptions	Capital Cost Assumptions	Other Cost Assumptions	Potential Funding Source(s)[2]
GOV-01	Reduce Employee Commute VMT	$1,670,000	N/A	$5,460,000	$7,130,000	$1,430,000	Approximately 2 FTE per year for five years spread across DPS; CEO, SM; and DGS to implement all actions under GOV-01. In total this measure will require 1 FTE Personnel Analyst and 1 FTE Personnel Technician.	N/A	Approximately $1.08 M and $12,000 per year for costs spread over 5 years (2025-2026 fiscal year to the 2029-2030 fiscal year) when the measure is planned to be implemented. - $1.08M annually to double the ridership for the Transit Subsidy Program to cover the cost of a monthly pass; - DPS recommends a minimum of $12,000 annually for the incentive program for employees who use commute modes other than single-occupancy vehicles regularly.	CPRG; CDBG; General Fund[2]
GOV-02	Expand Fleet Conversion Program	$0	$5,410,000	$0	$5,410,000	$1,080,000	No additional cost is anticipated.	To achieve the target, 918 cars need to be transitioned to electric cars by 2030. The targeted number of cars was estimated using the Sacramento County Fleet Sustainability and Electrification document (County of Sacramento 2023). Assumed cost of EVs (AFDC n.d.): 2023 Ford F-150 Lightning EV: $39,974 2023 Hyundai Kona EV: $33,550 Assumed cost of gasoline/diesel cars (AFDC n.d.): 2023 Ford F-150 (Gasoline): $39,600 2023 Hyundai Kona (Gasoline): $22,140 The incremental cost of EVs as per the above cost of cars is the average of the price differentials shown above ($375 and $11,410).	No additional cost is anticipated. SMUD eFuel Team has already prepared a 2022 SMUD eFuel Advisor Report for Sacramento County (Sacramento County, 2023). The report proposes recommendations for vehicle replacements and infrastructure updates.	CEFP; CDBG; VWMT; CMAQP; General Fund[2]
GOV-03	Convert Airport Fleet	$0	$89,140,000	$0	$89,140,000	$17,830,000	N/A	Per SCAS, it would cost approximately $89,140,000 for the Airport Fleet Conversion Program.	N/A	CEFP; CDBG; VWMT; CMAQP; General Fund[2]

Table F-1 Incremental Implementation Costs (Fiscal Years 2025-2030) for Community Measures and Government Operations Measures (*continued*)

Measure Number	Measure Description[1]	Personnel Cost	Capital Cost	Other Cost	Total Cost	Cost Per Fiscal Year	Personnel Cost Assumptions	Capital Cost Assumptions	Other Cost Assumptions	Potential Funding Source(s)[2]
GOV-04	Decarbonize County Buildings	$0	$6,800,000	$0	$6,800,000	$1,360,000	N/A	Capital cost is estimated assuming that the cost per million therms for decarbonizing municipal buildings in the City of San Diego is equal to that in the County of Sacramento. Cost of decarbonizing municipal buildings and facilities per million therms for the City of San Diego was found to be approximately $3,100,000. This cost was estimated using the City of San Diego Climate Action Plan Implementation Cost Analysis report (City of San Diego 2023) and City of San Diego Climate Action Plan Measure 1.3: Decarbonize City Facilities (San Diego City 2022). This factor was used to estimate the total cost of replacing 2.19 million therms of natural gas use in 2030 in all airport and non-airport County buildings and facilities.	N/A	CEFP, CECIRL, SMUD business rebates; CPRG; ISRF; General Fund[2]
GOV-05	Improve Water Efficiency	$420,000	$15,960,000	$0	$16,370,000	$3,270,000	Approximately 0.5 FTE per year for five years spread across DGS and RP to conduct the landscape conditions and irrigation audit and develop the County Buildings and Facilities Water Efficiency Plan. Some actions under this measure are to be implemented by CEO, SM, but no additional staff requirement is anticipated.	The capital cost of these actions is estimated assuming that the cost of turf removal, irrigation modification, and installation of sprinkler head irrigation systems in the Sacramento County buildings is equal to the cost of conducting these activities in the City of Millbrae. The cost of these activities in the City of Millbrae was available from the City's Drought-tolerant Landscaping project conducted in two City-owned buildings (City of Millbrae 2022). It was estimated that the County owns 139 buildings in total (Lundgren, pers. comm., 2024). The cost was applied to all 139 City-owned buildings. The assumption is potentially an overestimate as all City-owned buildings may not have non-essential / non-functional turf. No incremental cost is anticipated to replace water fixtures with low-flow equivalents as this is an ongoing action.	See footnote 1	WRL; CDBG; ISRF; CPRG; General Fund[2]

Table F-1 Incremental Implementation Costs (Fiscal Years 2025-2030) for Community Measures and Government Operations Measures (*continued*)

Measure Number	Measure Description[1]	Personnel Cost	Capital Cost	Other Cost	Total Cost	Cost Per Fiscal Year	Personnel Cost Assumptions	Capital Cost Assumptions	Other Cost Assumptions	Potential Funding Source(s)[2]
GOV-06	Replace Streetlights with LEDs	N/A	N/A	N/A	N/A		Assuming there are no incremental costs for this measure because: 1. the replacement of streetlights is part of an already planned initiative that is not induced by the CAP. 2. RP feedback states that they would require approximately 1 FTE and a vehicle to implement all measures assigned to RP. This cost is included in Measure GHG-02.	N/A	See footnote 1	CECIRL; CDBG; General Fund[2]
Government Subtotal		$2,090,000	$117,300,000	$5,460,000	$124,850,000	$24,970,000	N/A	N/A	N/A	N/A
Grand Total		$9,870,000	$137,700,000	$31,320,000	$178,890,000	$35,780,000	N/A	N/A	N/A	N/A

Notes: AFDC = Alternative Fuels Data Center; ATP = Active Transportation Plan; CAP = Climate Action Plan; EV = electric vehicle; SMAQMD = Sacramento Metropolitan Air Quality Management District; SMUD = Sacramento Municipal Utility District; SSHCP = South Sacramento Habitat Conservation Plan; SAC = Sacramento International Airport; MHR = Sacramento Mather Airport; LED = Light-emitting diode; N/A = not applicable; VMT = Vehicle-Miles Traveled; FTE – full time equivalent; ZEV = zero emission vehicle; RP = Regional Parks, SM = Sustainability Manager; CEO = County Executives Office; PER = Planning and Environmental Review; SC = Community Development; AC = Agricultural Commissioner's Office; DGS = Department of General Services: SCAS = Sacramento County Department of Airports; SACDOT; = Sacramento County Department of Transportation; DPS = Department of Personnel Services; DMWR = Department of Waste Management and Recycling; CD = Community Development; DWMR = Department of Waste Management and Recycling; EMD = Environmental Management Department.

[1] Please see Chapter 2 for the full text and description of each measure and all associated implementing actions.

The Agricultural Commissioner's Office and Regional Parks would each need one light-duty vehicle to perform the activities associated with their roles in measure implementation. These activities include, but are not limited to, traveling to farms and ranches to assist in implementation of carbon farming practices (GHG-01), tree maintenance (GHG-02), conducting landscape auditing for County properties (GOV-05), and auditing existing outdoor County-owned lighting (GOV-06). For purposes of simplifying data presentation and avoiding double-counting, these light-duty vehicle costs are assigned to GHG-01 and GHG-02, although they would be used for the other measures listed.

[2]Definitions of the abbreviations used for potential funding sources can be found in Table F-4.

[3]Information regarding the County's General Fund as a potential funding source may be updated based on the availability of funds.

Source: **Compiled by Ascent in 2024**.

3 Potential Funding Sources

This section presents the results of a review conducted to identify potential sources for funding the implementation of the GHG reduction measures of the CAP. This review is intended to provide an understanding of the existing mechanisms that can support the successful implementation of the CAP, at the granularity of individual implementation actions for GHG reduction measures. Potential funding sources include the following funding structures:

- **External funding source**: Government or private funding programs like grants, loans, tax credits, or rebates
- **County's General Fund**: primary financial account used to manage the County's core services and operations including public safety, health, administrative services, etc. The general fund is primarily financed through revenues from local taxes (such as property taxes and sales taxes), fees for services, state and federal aid, and other miscellaneous sources. General funds can be allocated as needed to meet community needs and priorities.
- **Enterprise funds**: financial mechanism anticipated to be established through the GHG reduction measures. These funds are designed to be self-sustaining and are restricted for specific uses (for example the vehicle miles traveled [VMT] Impact Fee, established through Measure GHG-08, is exclusively allocated for funding VMT mitigation projects).

Table F-2 outlines potential funding sources for the community measures and actions and **Table F-3** outlines these details for the government operations measures and actions. **Table F-4** provides a detailed overview of the external funding sources identified for covering the County's implementation costs, including definitions of the acronyms used in **Table F-1 through Table F-3**. It includes brief descriptions of each source, the types of funds available, and relevant information such as the status, opening and closing dates, and the amount of funding available. The details provided in this section are based on research conducted in June 2024 and are subject to change based on further updates to the CAP's GHG reduction measures, revisions in funding allocations, or shifts in governmental priorities. The summary of **Table F-2** has been included in the Preliminary Cost Analysis results in **Table F-1,** such that the scale of funding needed from individual sources can be better assessed.

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
MEASURE GHG-01: Develop a Carbon Farming Program				**EQIP; HSP**
Action GHG-01-a	Develop a carbon farming program to share carbon farming best practices, provide grant application assistance for carbon farming practices, and track data on soil management practices	2025	Ongoing	EQIP; HSP; CPRG; RRGP
Action GHG-01-b	Establish support for the carbon farming program	2025	Ongoing	General Fund[3]
Action GHG-01-c	Develop a carbon farming reporting incentive	2025	Ongoing	CPRG
Action GHG-01-d	Encourage optional reporting of soil management practices	2025	Ongoing	RRGP
Action GHG-01-e	Develop and maintain a list of carbon farming and healthy soil grant opportunities on the County website	2025	Ongoing	HSP; RRGP
Action GHG-01-f	Develop a Carbon Sequestration Agricultural Practices study	2025	2026	HSP; CPRG; RRGP
Action GHG-01-g	Develop and share the study, information about reporting incentives and grant application assistance	2025	Ongoing	RRGP
Action GHG-01-h	Provide free or reduced-cost compost	Continued	Ongoing	HSP
Action GHG-01-i	Establish support for identifying finance mechanisms and funding sources	2025	Ongoing	General Fund[3]
MEASURE GHG-02: Expand the Urban Forest				**UCFG**
Action GHG-02-a	Develop and adopt an Urban Forest Management Plan	2025	2025	CPRG
Action GHG-02-b	Develop and annually update an urban forest work plan	2026	2026	CPRG; RRGP
Action GHG-02-c	Adopt an ordinance to require new development to plant an appropriate number of trees on site	2025	2025	General Fund[3]
Action GHG-02-d	Amend the Tree Preservation Ordinance	2025	2025	General Fund[3]

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
Action GHG-02-e	Continue partnership to use existing programs to increase the tree canopy	Continued	Ongoing	N/A
Action GHG-02-f	Establish partnership to organize tree-planting and maintenance events	2026	Ongoing	UCFG
Action GHG-02-g	Inform county residents and businesses of the availability of free trees	2025	Ongoing	RRGP
Action GHG-02-h	Conduct a targeted outreach campaign to promote the availability of free trees	2025	Ongoing	RRGP
Action GHG-02-i	Partner and jointly apply for grants for urban forest expansion	2025	Ongoing as grants are available	General Fund[3]
Action GHG-02-j	Track number of trees planted through County efforts and partner organizations	2025	2025	General Fund[3]
MEASURE GHG-03: Support the SMUD Zero Carbon Plan				
Action GHG-03-a	Identify potential sites for renewable energy and storage projects at County-owned properties	2025	2026	TCC
Action GHG-03-b	Identify potential sites for renewable energy and storage projects in the unincorporated county	2025	2030	TCC
Action GHG-03-c	Continue to streamline permitting process to address solar and battery storage projects, update as necessary.	Ongoing	Updates completed in 2025	General Fund[3]
Action GHG-03-d	Establish support for SMUD's plan through building reach codes	2025	2025	General Fund[3]
Action GHG-03-e	Establish support for SMUD's plan through County Zoning Code	2025	2025	General Fund[3]
Action GHG-03-f	Establish support for coordinating on decarbonization goals	2025	2025	General Fund[3]
MEASURE GHG-04: Accelerate Existing Building Energy Efficiency Retrofits and Decarbonization				**SMUD rebates; EECBD; CPRG**
Action GHG-04-a	Develop reach codes and associated cost-effectiveness studies that must be met by existing residential buildings	2025	2025	General Fund[3]

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
Action GHG-04-b	Implement a building performance standard for existing nonresidential buildings	2025	2026	General Fund[3]
Action GHG-04-c	Determine reach code compliance triggers for existing nonresidential buildings	2025	2025	General Fund[3]
Action GHG-04-d	Present the reach code options and solicit feedback	2025	2026	IRA CCGP
Action GHG-04-e	Implement existing buildings reach code	2025	2025	General Fund[3]
Action GHG-04-f	Submit the ordinance(s) and cost-effectiveness studies for state review and approval	2026	2026	General Fund[3]
Action GHG-04-g	Conduct reach code training for County permitting staff	2026	Ongoing as needed with every reach code update	CPRG
Action GHG-04-h	Implement the decarbonization strategy for nonresidential buildings	2026	Ongoing	General Fund[3]
Action GHG-04-i	Track reach code compliance	2025	2025	General Fund[3]
Action GHG-04-j	Develop an outreach program to encourage gas-to-electric conversions in residential and commercial buildings	2025	Ongoing	IRA CCGP; CDBG
Action GHG-04-k	Review the existing permitting processes to reduce complexity, cost, and processing time	2025	2025	General Fund[3]
Action GHG-04-l	Waive or reduce permitting fees for applicants for all-electric conversion of mixed-fuel buildings	2025	Ongoing	CPRG; IRA RERP; EoAP; LIWP
Action GHG-04-m	Develop a training program targeted towards developing knowledge and skills of contractors and construction workers	2025	Ongoing	CPRG
Action GHG-04-n	Develop a revolving loan fund to provide low-interest loans for gas-to-electric replacements	2025	Ongoing	IRA RERP
Action GHG-04-o	Review any County-adopted existing building reach codes at the release of each triennial building code cycle for updates	2028	Ongoing, implemented triennially	Action GHG-04-a and c

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
MEASURE GHG-05: Decarbonize New Buildings				**SMUD rebates; EECBD; CDBG; SB2P**
Action GHG-05-a	Develop cost-effective reach codes that must be met by all new construction	2025	2025	IRA AABEC; CDBG
Action GHG-05-b	Provide reductions or offsets and expedited permitting for all electric projects	2025	Ongoing	CPRG; EoAP; LIWP; BUILD; SB2P
Action GHG-05-c	Present the reach code options and solicit feedback	2026	2026	IRA CCGP
Action GHG-05-d	Implement new construction building reach code(s)	2026	2026	General Fund[3]
Action GHG-05-e	Submit the ordinance(s) and cost-effectiveness studies for state review and approval	2026	2026	General Fund[3]
Action GHG-05-f	Conduct reach code training for County permitting staff	2026	Ongoing as needed with every reach code update	CPRG; BUILD; SB2P
Action GHG-05-g	Engage with California Energy Codes and Standards Program to monitor legal and regulatory barriers to requiring all electric new construction	2026	Ongoing, implemented annually after CAP adoption	IRA AABEC; SB2P
Action GHG-05-h	Track new construction project compliance with the new reach code	2025	2025	General Fund[3]
Action GHG-05-i	Provide information regarding new reach code requirements and incentives	2025	Ongoing	IRA CCGP; SB2P
Action GHG-05-j	Develop a training program targeted towards developing knowledge and skills of contractors and construction workers	2025	Ongoing	CPRG; BUILD; SB2P
MEASURE GHG-06: Retire Fossil-Fuel-Powered Landscaping Equipment				**CDBG**
Action GHG-06-a	Implement a landscaping equipment trade-in program	2025	Ongoing	CPRG; EECBG; CDBG
Action GHG-06-b	Explore the feasibility of expanding the landscaping equipment trade-in program	2030	Ongoing, implemented every five years	CPRG; EECBG

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
Action GHG-06-c	Track equipment exchanged through the landscaping equipment trade-in program	2025	2025	General Fund[3]
Action GHG-06-d	Share information regarding incentives	2025	Ongoing	CPRG
MEASURE GHG-07: Increase EV Charging and ZEV Infrastructure				**CDBG; BIL**
Action GHG-07-a	Develop an ordinance to require EV charging capability in new developments	2025	2025	IRA AABEC
Action GHG-07-b	Develop an ordinance to require EV charging capability in existing non-residential developments	2025	2025	IRA AABEC
Action GHG-07-c	Develop an ordinance to require EV charging capability in existing multifamily residential developments	2025	2025	IRA AABEC
Action GHG-07-d	Develop a "Sacramento County Zero-Emission Vehicle Infrastructure Deployment Strategy"	2025	2025	CPRG
Action GHG-07-e	Include new EV charging infrastructure projects in the Capital Improvement Plan (CIP)	2025	Ongoing	CPRG; CEFP; BIL; ISRF
Action GHG-07-f	Adopt an ordinance requiring gas stations to install EV DC fast charging station	2025	2025	IRA AABEC
Action GHG-07-g	Track the number, type, and location of new EV chargers	2025	2025	General Fund[3]
Action GHG-07-h	Expand EV charging at county airports	2025	Ongoing	CPRG; CEFP; CDBG; BIL
Action GHG-07-i	Prepare educational materials and conduct educational workshops	2025	Ongoing	IRA CCGP
Action GHG-07-j	Secure additional funding for expanding the Our Community CarShare program	2025	Ongoing	CPRG; TCC
Action GHG-07-k	Coordinate the activities of different agencies and simplify or unify permitting processes for the installation of EV charging or hydrogen refueling infrastructure	2025	Ongoing	CPRG; TCC

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
Action GHG-07-l	Maintain consistency with regional permitting best practices	2028	Ongoing, implemented triennially as needed	IRA AABEC
Action GHG-07-m	Update ZEV infrastructure strategy to incorporate new market trends and technologies	2030	Ongoing	IRA AABEC; CEFP
Action GHG-07-n	Conduct a program feasibility study to encourage early retirement of internal combustion engine (ICE) vehicles	2025	2025	CPRG; TCC
Action GHG-07-o	Implement a program to facilitate early retirement of ICE vehicles	2026	2026	CPRG; CEFP; CDBG
MEASURE GHG-08: Develop a VMT Impact Fee Program				**CDBG**
Action GHG-08-a	Conduct a VMT Impact Fee Program nexus study	2025	2025	CDBG
Action GHG-08-b	Adopt an ordinance establishing the VMT Impact Fee Program	2026	2026	CDBG
Action GHG-08-c	Establish a VMT Impact Fee fund to invest in VMT mitigation projects	2026	2026	General Fund[3]
Action GHG-08-d	Create VMT monitoring program	2026	2026	CDBG
Action GHG-08-e	Reassess VMT Impact Fee Program every three years	2025	Ongoing, implemented every three years	CDBG
Action GHG-08-f	VMT Impact Fee Program education for project applicants and County staff	2025	Ongoing	VMT Impact fee
MEASURE GHG-09: Reduce VMT from New Developments				**STEP**
Action GHG-09-a	Adopt the ordinance amending Section 5.9.6 of the Zoning Code to update the TSM Plan requirements	2025	2025	IRA AABEC; CDBG; STEP
Action GHG-09-b	Track TSM plan compliance through annual reporting	2025	2025	General Fund[3]
Action GHG-09-c	Partner with SACOG to provide information about transportation demand management (TDM) programs	2025	Ongoing	IRA CCGP; AHSC; STEP
Action GHG-09-d	Conduct a nexus study for imposing a fee structure for projects that do not comply with the requirements.	2025	Ongoing	CPRG; AHSC; STEP

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
Action GHG-09-e	Develop an informational packet to enable compliance with new TSM plan requirements.	2025	Ongoing	IRA CCGP; AHSC; AHSC
MEASURE GHG-10: Revise Parking Standards				**CDBG**
Action GHG-10-a	Conduct a parking demand study	2025	2025	CPRG
Action GHG-10-b	Adopt an ordinance to amend the Zoning Code to update the current parking standards for new developments	2026	2026	IRA AABEC
Action GHG-10-c	Measure outcomes of parking standard revisions	2030	Ongoing, implemented every five years	IRA AABEC; CDBG
Action GHG-10-d	Reassess parking standards	2030	Ongoing, implemented every five years	CPRG; AHSC
Action GHG-10-e	Information and education for revised parking standards	2026	Ongoing, implemented whenever the parking standards are updated	IRA CCGP
MEASURE GHG-11: Increase Transit Ridership				**VMT mitigation fee; RAISE; FTAGP**
Action GHG-11-a	Update the Traffic Impact Analysis (TIA) Guidelines to include assessments of public transit	2025	2025	CPRG; TPGP
Action GHG-11-b	Update the TIA Guidelines to require projects near transit to prioritize VMT mitigation measure	2025	2025	CPRG; TPGP
Action GHG-11-c	Continue to include SacRT and other transit providers in development review processes	Continued	Ongoing	N/A
Action GHG-11-d	Dedicate one staff position to serve as Transit Coordinator	2025	Ongoing	General Fund[3]
Action GHG-11-e	Partner with regional agencies to discuss ways that the County can help improve access to transit	2025	Ongoing	CPRG; TPGP
Action GHG-11-f	Obtain transit ridership data within unincorporated Sacramento County	2025	Ongoing	CPRG; TPGP

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
Action GHG-11-g	Provide and improve connections to transit stations	Continued	Ongoing	N/A
Action GHG-11-h	Expand transit access when developing the VMT Mitigation Fee	Continued	Ongoing	N/A
Action GHG-11-i	Provide fare-free transit for youth in SacRT's service area	Continued	Ongoing	N/A
MEASURE GHG-12: Implement the Active Transportation Plan				**CSP; ATPP; STEP**
Action GHG-12-a	Develop and adopt an implementation plan for the 2022 ATP	Ongoing	2045	CSP; ATPP
Action GHG-12-b	Adopt an ordinance and/or design guidelines to clarify the preferred siting of employee bicycle parking	2025	2025	General Fund[3]
Action GHG-12-c	Continue to include active transportation projects in the transportation CIP	Continued	Ongoing	N/A
Action GHG-12-d	Implement Safe Routes to School programs and infrastructure improvements	Continued	Ongoing as funding is available	N/A
Action GHG-12-e	Provide updated policy and design guidance on the planning, design, and operation of County roadways	2025	2028	CSP; ATPP
MEASURE GHG-13: Advance Infill Development				**CPRG; CDBG**
Action GHG-13-a	Establish support to oversee implementation of the Infill Development Program	2025	Ongoing	General Fund[3]
Action GHG-13-b	Conduct a nexus study for imposing a fee structure for projects that do not meet defined standards	2025	2025	CPRG; AHSC
Action GHG-13-c	Establish an Infill Fee fund using payments from non-infill development projects	2025	2025	CPRG
Action GHG-13-d	Update the Zoning Code establishing the Infill Fee requirements	2025	2025	IRA AABEC
Action GHG-13-e	Continue to engage in regional planning efforts to secure funding and implement programs to increase infill and reduce VMT	Continued	Ongoing	N/A

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
Action GHG-13-f	Share information regarding new Infill Fee requirements and infill supportive policy and code changes	2025	Ongoing	CPRG; AHSC
MEASURE GHG-14: Increase Organic Waste Diversion and Landfill Gas Capture				**BIL; EGP**
Action GHG-14-a	Assess future needs of composting facility capacity	2025	2026	CPRG
Action GHG-14-b	Adopt an ordinance amending the zoning code to streamline permitting of composting facilities	2025	2025	EGP
Action GHG-14-c	Continue to implement and enforce organics diversion ordinances associated with SB 1383	Continued	Ongoing	N/A
Action GHG-14-d	Provide Backyard Composting Program information flyers	Continued	Ongoing	N/A
Action GHG-14-e	Continue to host workshops and provide educational materials on organic waste diversion.	Continued	Ongoing	N/A
Action GHG-14-f	Enhance sustainable waste management education in school students	2025	Ongoing	N/A
Action GHG-14-g	Continue food recovery services and educate residents and food-generating businesses	Continued	Ongoing	N/A
Action GHG-14-h	Apply for available grants to further education and implementation of organics diversion.	2025	Ongoing	CPRG
Action GHG-14-i	Conduct a waste characterization study every five years	2025	Ongoing, implemented every five years	CPRG; CDBG
Action GHG-14-j	Collect waste tonnage data from haulers	2025	Ongoing, implemented annually	General Fund[3]
Action GHG-14-k	Conduct engineering study for increasing landfill gas capture	2025	2026	CPRG; CDBG
Action GHG-14-l	Support food recovery banks and organizations	2025	Ongoing, implemented every five years	CPRG

Table F-2 Implementation Timeline and Potential Funding Sources for Community GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
MEASURE GHG-15: Implement the South Sacramento Habitat Conservation Plan (SSHCP)				**Mitigation fees**
Action GHG-15-a	Continue implementation of the SSHCP	Continued	Ongoing	N/A
Action GHG-15-b	Perform a carbon sequestration capacity analysis of lands covered under the SSHCP	2030	Ongoing, implemented with every CAP Update	CDBG
Action GHG-15-c	Track the acres of lands conserved under implementation of the SSHCP	2025	Ongoing	Mitigation fees
MEASURE GHG-16: Expand the Use of Zero-Emission Construction and Agricultural Equipment				**CPRG**
Action GHG-16-a	Update County's bid evaluation process to incorporate use of zero-emission construction and portable equipment	2025	Ongoing	General Fund[3]
Action GHG-16-b	Provide information about available incentives for zero-emission equipment	2025	Ongoing	CPRG
Action GHG-16-c	Provide information about available incentives for zero-emission agricultural equipment	2025	Ongoing	CPRG
Action GHG-16-d	Adopt ordinance requiring electric-powered or zero-emission construction equipment starting in 2035	2033	2033	General Fund[3]
Action GHG-16-e	Require the implementation of SMAQMD Basic Construction Emission Control Practices for project approval.	2025	Ongoing	General Fund[3]

Notes: ATP = Active Transportation Plan; CAP = Climate Action Plan; CIP = capital improvement project; DC = direct current; EV = electric vehicle; ICE = internal combustion engine; N/A = not applicable; SACOG = Sacramento Area Council of Governments; SB = Senate Bill; SMUD = Sacramento Municipal Utility District; SSHCP = South Sacramento Habitat Conservation Plan; SMAQMD = Sacramento Metropolitan Air Quality Management District; TDM = transportation demand management; TIA= Traffic Impact Analysis; TSM = transportation system management; VMT = vehicle miles traveled.

[1] Action descriptions included in this table are concise versions of the full action language that can be found in Chapter 2. Actions have been shortened for brevity, focusing on the intent of the action.

[2] Definitions of the abbreviations used for potential funding sources can be found in Table F-4. The actions that are already ongoing are not anticipated to have any incremental cost, hence no funding source has been identified for ongoing actions.

[3] Information regarding the County's General Fund as a potential funding source may be updated based on the availability of funds.

Source: **Compiled by Ascent in 2024**.

Table F-3 Implementation Timeline and Potential Funding Sources for Government Operations GHG Measures and Implementing Actions

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
MEASURE GOV-01: Reduce Employee Commute VMT				**General Fund[3]**
Action GOV-01-a	Conduct an employee commute survey every two years	2025	Ongoing, every two years	N/A
Action GOV-01-b	Continue to offer a work-from-home work policy	Continued	Ongoing	General Fund[3]
Action GOV-01-c	Inform and encourage employee participation in bike-to-work days/months	2025	Ongoing	CPRG
Action GOV-01-d	Conduct an EV infrastructure planning analysis every five years for County buildings and facilities	2026	Ongoing, every five years	General Fund[3]
Action GOV-01-e	Encourage County employees to utilize incentives for purchasing ZEVs	2025	Ongoing	CDBG
Action GOV-01-f	Install signage to establish priority parking spaces for employee carpools	2025	2026	N/A
Action GOV-01-g	Ensure that employees are provided TMA services	2025	Ongoing	CDBG
Action GOV-01-h	Increase the monthly subsidy of the Transit Subsidy Program	2026	Ongoing	General Fund[3]
Action GOV-01-i	Establish staff support for Employee Transportation Program and 50 Corridor TMA/Sacramento TMA services.	2025	Ongoing	CPRG
Action GOV-01-j	Create an incentive program for encouraging employees to regularly utilize commute modes other than single-occupancy vehicles	2026	Ongoing	CPRG
Action GOV-01-k	Install bicycle parking at all County buildings	2025	2030	CPRG; CDBG
Action GOV-01-l	Conduct an employee shuttle feasibility study	2026	2026	CPRG
Action GOV-01-m	Establish a ZEV shuttle service for County employees	2027	Ongoing	CPRG; CDBG

Table F-3 Implementation Timeline and Potential Funding Sources for Government Operations GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
MEASURE GOV-02: Non-Airport Fleet Conversion Program				**CEFP; CDBG; VWMT; CMAQP**
Action GOV-02-a	Meet or exceed the requirements of the California Advanced Clean Fleets Regulation	2025	2025	General Fund[3]
Action GOV-02-b	Update light-duty (below 8,500 GVWR) fleet acquisition policy for purchasing ZEVs	2025	2025	General Fund[3]
Action GOV-02-c	Update off-road equipment acquisition policy for purchasing battery electric or zero-emission technology equipment	2025	2025	General Fund[3]
Action GOV-02-d	Reimburse employees for charging County-owned vehicles at home	2025	Ongoing	General Fund[3]
Action GOV-02-e	Continue using renewable fuels where applicable	Continued	Ongoing	N/A
Action GOV-02-f	Prepare a Zero-Emission Fleet Transition Plan	2026	2026	General Fund[3]
Action GOV-02-g	Establish staff support for fleet conversion to ZEVs and installation of infrastructure	2025	Ongoing	General Fund[3]
Action GOV-02-h	Track existing ZEV fueling capacity and new ZEVs added to fleet	2025	Ongoing annually	General Fund[3]
MEASURE GOV-03: Airport Fleet Conversion Program				**CEFP; CDBG; VWMT; CMAQP**
Action GOV-03-a	Develop an Airport Fleet Conversion Program	2025	2025	General Fund[3]
Action GOV-03-b	Track existing ZEV fueling capacity and new ZEVs added to fleet	2026	Ongoing	General Fund[3]
MEASURE GOV-04: Reduce Natural Gas Usage in County Buildings				**CEFP, CECIRL, SMUD business rebates**
Action GOV-04-a	Conduct study of energy end uses, potential for solar PV, electrification projects, and other upgrades for decarbonizing County buildings and facilities	2025	2026	CPRG

Table F-3 Implementation Timeline and Potential Funding Sources for Government Operations GHG Measures and Implementing Actions (*continued*)

Action Identifier	Action Description[1]	Start Date	End Date	Potential Funding Source(s)[2]
Action GOV-04-b	Implement a Decarbonization Plan and include projects in the CIP	2027	Ongoing	CPRG, CECIRL; ISRF
Action GOV-04-c	Adopt an all-electric building policy for newly constructed County buildings	2025	2025	General Fund[3]
Action GOV-04-d	Annually engage with SMUD on electrification incentive options for existing County buildings	2025	Ongoing	CPRG
MEASURE GOV-05: Improve Water Efficiency				**WRL**
Action GOV-05-a	Develop and adopt a County Buildings and Facilities Water Efficiency Plan	2025	2025	General Fund[3]
Action GOV-05-b	Continue to replace water fixtures with low-flow equivalents	Continued	Ongoing	N/A
Action GOV-05-c	Continue to use recycled water for landscaping	Continued	Ongoing	N/A
Action GOV-05-d	Conduct a landscape conditions and irrigation audit	2025	2026	WRL; CPRG
Action GOV-05-e	Create drought-tolerant demonstration projects at County buildings	2025	2028	CDBG; ISRF
MEASURE GOV-06: Replace Outdoor Lights with LEDs				**CECIRL**
Action GOV-06-a	Replace remaining 2,200 high-pressure sodium and mercury-vapor streetlights with light-emitting diode (LED) technology	Continued	2030	N/A
Action GOV-06-b	Perform an audit of existing outdoor County lighting	2025	2026	General Fund[3]
Action GOV-06-c	Replace outdoor lighting with LED technology	2027	2035	CDBG

Notes: LED = light emitting diode; CIP = capital improvement project; EV = electric vehicle; GVWR = Gross Vehicle Weight Rating; N/A = not applicable; PV = photovoltaic; SMUD = Sacramento Municipal Utility District; TMA = Transportation Management Association; ZEV = zero emission vehicle;

[1] Action descriptions included in this table are concise versions of the full action language that can be found in Chapter 2. Actions have been shortened for brevity, focusing on the intent of the action.

[2] Definitions of the abbreviations used for potential funding sources can be found in Table F-4. The actions that are already ongoing are not anticipated to have any incremental cost, hence no funding source has been identified for ongoing actions.

[3] Information regarding the County's General Fund as a potential funding source may be updated based on the availability of funds.

Source: **Compiled by Ascent in 2024**.

Table F-4 Details of Potential External Funding Sources identified for funding the implementation of GHG Measures and Implementing Actions[1]

Funding Source Title[2]	Funding Source Description	Funding Type[3]	Notes[4]
Building Initiative for Low-Emissions Development (BUILD) Program	The Building Initiative for Low-Emissions Development (BUILD) Program is a residential building decarbonization program that provides incentives and technical assistance to support the adoption of advanced building design and all-electric technologies in new, low-income all-electric homes and multifamily buildings.	Incentive	Active
California Air Resources Board (CARB) Carl Moyer Memorial Air Quality Standards Attainment Program (CMAQP)	The Carl Moyer Program provides grant funds towards the replacement of old, high-polluting vehicles, engines, and equipment, with new technologies that are cleaner than required or earlier than required by rules and regulations. The Sacramento Metropolitan Air Quality Management District (SMAQMD) implements this program in the Sacramento region.	Grants	Active
California Department of Forestry and Fire Protection (CAL FIRE) Urban and Community Forestry Grants (UCFG)	The program can fund municipal government to increase the long-term benefits trees provide, improve the public's understanding and appreciation of urban trees, and advance urban forest management and tree care. Grants are available for projects and initiatives that support urban communities in ensuring equitable access to trees and their benefits.	Grants	The application period is currently closed.
California Department of Water Resources (DWR) Water Grant and Loans (WRL)	The California Department of Water Resources provides several grant and loan programs that support integrated watershed management. These funds can be used to address issues such as groundwater sustainability, drought, and water supply reliability. Programs include the Small Communities Drought Relief Program, the Riverine Stewardship Program, Delta Levees Special Flood Control Projects Program, and the LandFlex Program.	Grants and loans	Active
California Energy Commission 1 Percent Interest Rate Loans (CECIRL)	The California Energy Commission offers 1 percent interest rate loans to local jurisdictions to fund projects with proven energy savings like streetlights and LED traffic signals, building insulation, and energy storage systems at municipal facilities.	Loan	Active
CalRecycle Greenhouse Gas (GHG) Reduction Loan Program	The GHG Reduction loan program assists recycling manufacturers in financing machinery, equipment, and ancillary costs to site and expand in California.	Loan and competitive grants	An estimated $5,280,000 is available through June 30, 2024.
CalRecycle Local Enforcement Agency Grant Program (EGP)	CalRecycle administers a non-competitive grant program to assist local enforcement agencies with their solid waste facilities permit and inspection program.	Non-competitive grants	Active
California Volkswagen (VW) Mitigation Trust (VWMT)	This mitigation plan includes a variety of grant categories available to replace diesel vehicles registered throughout the state of California by funding specified eligible actions for the heavy-duty sector, including on-road freight trucks, transit and shuttle buses, school buses, forklifts and port cargo handling equipment, commercial marine vessels, and freight switcher locomotives.	Grants	Active

Table F-4 Details of Potential External Funding Sources identified for funding the implementation of GHG Measures and Implementing Actions[1] (*continued*)

Funding Source Title[2]	Funding Source Description	Funding Type[3]	Notes[4]
Caltrans (California Department of Transportation) Active Transportation Planning Program (ATPP)	This program provides competitive planning grants for jurisdictions working on planning projects to increase the proportion of trips accomplished by biking and walking and reduce community-wide vehicle miles traveled.	Competitive grants	Applications are due on June 17, 2024.
Caltrans Transportation Planning Grant Program (TPGP)	The Transportation Planning Grant Program provides competitive planning grants to help local jurisdictions in a variety of transportation planning efforts including development and implementation of regional transportation plans. The program also helps address multimodal transportation deficiencies with a focus on transit and support planning actions that advance climate adaptation efforts for local transportation systems.	Competitive grants	Fiscal Year (FY) 2025-26 call-for-applications may be released in October 2024.
Caltrans Sustainable Communities Program (SCP)	Grants are for transportation planning activities such as planning for active transportation, safe routes to schools, transit services, vision zero, complete streets, freight corridors, social equity, integrated land use, and transportation planning. The program is now closed but the funding is available for implementing County's Active Transportation Plan (ATP).	Competitive grants	Closed but the funding is available for implementing County's ATP.
DOE Energy Efficiency and Conservation Block Grant (EECBG) Program	The EECBG program provides formula grants to local governments to provide technical assistance and equipment rebates to reduce fossil fuel emissions, decrease total energy use, and improve energy efficiency. The funds will consist of a two-year budget period for local governments.	Formula and Competitive Grants	The deadline to apply for the current funding round is October 31, 2024
DOE Title 17 Clean Energy Financing Program (CEFP)	The program provides loans for accelerating clean energy adoption to projects that utilize commercially available clean energy technologies, such as renewable energy systems; carbon capture and sequestration technologies; efficient electrical generation, transmission, and distribution; efficient end-use energy technologies; energy storage; industrial decarbonization; hydrogen fuel cell technologies; and production facilities for the manufacture of fuel-efficient vehicles.	Loan	There is no solicitation period or funding opportunity announcement. Applicants can submit applications at any time.
Energy Efficient Commercial Buildings Deduction (EECBD)	The 179D commercial buildings energy efficiency tax deduction primarily enables building owners to claim a tax deduction for installing qualifying systems in buildings. The deduction is available to owners of qualified commercial buildings and designers of energy efficient commercial building property (EECBP) or energy efficient commercial building retrofit property (EEBRP).	Tax-deduction	Active

Table F-4 Details of Potential External Funding Sources identified for funding the implementation of GHG Measures and Implementing Actions[1] (*continued*)

Funding Source Title[2]	Funding Source Description	Funding Type[3]	Notes[4]
Energy for All Program (EoAP)	Under the Energy for All Program, GRID Alternatives works with low-income homeowners to install no-cost rooftop solar panels and also provides installation services for affordable housing owners and developers. It partners with cooperative, municipal, and investor-owned utilities and other community groups to develop shared solar arrays. In California, GRID Alternatives is a statewide program administrator for the Single-Family Affordable Solar Homes (SASH) program, the Disadvantaged Communities - Single-family Solar Homes (DAC-SASH) program, and the solar portion of the Low-Income Weatherization Program (LIWP).	Incentive	Active
Federal Infrastructure Investment and Jobs Act, aka Bipartisan Infrastructure Law (BIL)	BIL provides competitive grant funding to municipal governments. The grants can fund projects too large or complex for traditional funding programs like multijurisdictional and multimodal projects. The BIL invests in clean energy by modernizing the power grid, weatherizing and upgrading homes, schools, and businesses to make them cleaner and more affordable, and in the creation of new programs to support the development of clean energy technology. It also provides grants to improve post-consumer materials management infrastructure and recycling programs; recycling education and outreach programs and assist local waste management authorities in making improvements to local waste management systems.	Competitive grants	Active
Federal Transit Administration (FTA) Grant Programs (FTAGP)	FTA provides grants to public transit systems, including buses, subways, light rail, commuter rail, trolleys, and ferries. The program aims to improve economic development and ridership, foster multimodal connectivity and accessibility, improve transit access for pedestrian and bicycle traffic, and enable mixed-use development near transit stations.	Grants	Active
Healthy Soils Program (HSP)	The HSP has three components: the Incentives Program, the Demonstration Projects, and the Block Grant Pilot. The HSP Incentives Program provides financial assistance for the implementation of conservation management that improves soil health, sequesters carbon, and reduces GHG emissions. The HSP Demonstration Projects showcase farmers and ranchers' implementation of HSP practices. The Block Grant Pilot is designed to facilitate financial assistance to California agricultural operations through regional block grant administrators.	Grants	Now accepting proposals for new practices to be considered
HUD Community Development Block Grant (CDBG)	CDBG Program provides annual grants to municipal governments to support community development activities to build stronger and more resilient communities. Activities may address needs such as infrastructure, economic development projects, public facilities installation, community centers, housing rehabilitation, public services, clearance/acquisition, microenterprise assistance, code enforcement, and homeowner assistance.	Grants	Active
Infrastructure State Revolving Fund (ISRF)	The California Infrastructure and Economic Development Bank provides loans to local governments for infrastructure and economic development. ISRF has financed projects such as city and county street highway improvements, wastewater treatment plant construction and upgrades, and educational and cultural facilities.	Loan	Active

Table F-4 Details of Potential External Funding Sources identified for funding the implementation of GHG Measures and Implementing Actions[1] (*continued*)

Funding Source Title[2]	Funding Source Description	Funding Type[3]	Notes[4]
Inflation Reduction Act (IRA) Residential Energy Rebate Programs (IRA RERP)	IRA created two programs to encourage home energy retrofits: Home Efficiency Rebates (HOMES) to fund whole-house energy efficiency retrofits and the Home Electrification and Appliance Rebates (HEEHRA) to help low-moderate income households "go electric" through qualified appliance rebates.	Rebate	Program is under development by the CA Energy Commission
IRA Technical Assistance for the Adoption of Building Energy Codes (IRA AABEC)	The grants are available to local governments with code-making authority to adopt updated building energy codes, zero energy codes, or equivalent codes or standards. Funding awards will support states and local jurisdictions in adopting, implementing, and enforcing the latest model, zero energy codes, or equivalent codes and standards, improving residential and commercial new construction and retrofits, and transitioning the building stock to more efficient, decarbonized buildings for all.	Grant	Active, to remain available through 9/30/2029
IRA Community Change Grants Program (IRA CCGP)	The program funds environmental and climate justice activities to benefit disadvantaged communities through projects that reduce pollution, increase community climate resilience, and build community capacity to address environmental and climate justice challenges. The grants can be used for investments in low- and zero-emission and resilient technologies, workforce development, and facilitating the engagement of disadvantaged communities in workshops, rulemakings, and other public processes.	Grants	The application is currently open. The deadline to apply is November 21, 2024.
Low-Income Weatherization Program (LIWP)	LIWP provides low-income households with solar photovoltaic (PV) systems and energy efficiency upgrades at no cost to residents.	Incentive	Active
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grants	USDOT is offering grant funding through the RAISE discretionary grant program. The program uses a merit-based process to select projects to build and repair critical freight and passenger transportation networks.	Competitive grants	Active
Regional Resilience Planning and Implementation Grant Program (RRGP)	The RRGP program hosted by the Office of Planning and Research (OPR) funds local public entities that are planning and implementing projects that advance climate resilience and respond to the greatest climate risks in their regions including wildfires, rising sea levels, droughts, floods, increasing temperatures, and extreme heat events. The RRGP funds two project types: planning and implementation. The RRGP also funds capacity-building efforts that support projects with a regional focus and support communities most vulnerable to climate change. The awards for the first round of applications were announced in December 2023. The second round is yet to be announced.	Grants	The second round is yet to be announced.

Table F-4 Details of Potential External Funding Sources identified for funding the implementation of GHG Measures and Implementing Actions[1] (*continued*)

Funding Source Title[2]	Funding Source Description	Funding Type[3]	Notes[4]
SB 2 Planning Grant Program (SB2P)	This planning grant program provides financial and technical assistance to local governments to update planning documents and zoning ordinances, including general plans, community plans, specific plans, sustainable community strategies, and local coastal programs, to streamline housing production. The program does not use a competitive process to award funds. All localities that meet the eligibility requirements outlined in the grant application receive funding.	Grant	Active; a permanent source of funding
Sacramento Municipal Utility District (SMUD) Residential Rebates	SMUD provides residential rebates and special promotions for energy efficient appliances and products including induction cooktops/ranges, heat pump water heater upgrades, ENERGY STAR® clothes washers and refrigerators, smart thermostats, heating, ventilation, and air conditioning (HVAC) replacement with heat pump, smart lighting starter kits, energy savings kits, power strips, LED bulbs, faucet aerators, showerheads, water conservation kits, smart sprinkler controllers, and drip irrigation retrofit kits. SMUD also offers residents a discounted electric rate to support EV charging, making buildings electric-ready, and funding for home EV charging equipment and installation. SMUD also provides a whole-house approach that bundles energy-efficiency upgrades.	Rebate	Active
SMUD Business Rebates	SMUD provides business rebates for lighting, refrigeration, and heating or cooling (HVAC) systems through several different rebate programs, including a program specific to multifamily residential properties. It also provides electric equipment incentives for new construction, energy efficiency rebates for industrial projects, electric vehicle (EV) programs for commercial vehicles, and EV charging incentives for fleet, commercial customers, workplace employees, and multi-family buildings.	Rebate	Active
Strategic Growth Council (SGC) Affordable Housing and Sustainable Communities (AHSC) Program	This program funds affordable infill housing and transportation projects that help to advance statewide climate and equity goals. Funds are available in the form of loans and/or grants in three kinds of project areas: Transit-Oriented Development Project Areas, Integrated Connectivity Project Areas, or Rural Innovation Project Areas.	Grants/loans	Active
SGC Transformative Climate Communities (TCC)	The TCC Program funds development and infrastructure projects that achieve major environmental, health, and economic benefits in California's most disadvantaged communities and empowers communities most impacted by pollution to choose the strategies and projects best suited to achieve their community vision. TCC's Round 5 application cycle closed on Aug. 1, 2023. Round 6 application cycle is yet to be announced.	Grants	TCC's Round 6 application cycle is yet to be announced.
Sustainable Transportation Equity Project (STEP)	The STEP program provides grants for a variety of clean transportation and supporting projects, such as public transit and shared mobility services, active transportation infrastructure, land use planning and housing policy, workforce development, and clean transportation planning and education. Funded projects work together within low-income and disadvantaged communities to increase transportation equity.	Grants	Active

Table F-4 Details of Potential External Funding Sources identified for funding the implementation of GHG Measures and Implementing Actions[1] (*continued*)

Funding Source Title[2]	Funding Source Description	Funding Type[3]	Notes[4]
The Environmental Quality Incentives Program (EQIP)	The program provides technical and financial assistance to agricultural producers and forest landowners to integrate conservation into working lands to address natural resource concerns. Technical assistance is provided at no cost while financial assistance is provided through competitive grants through Conservation Innovation Grants (CIG), which is a competitive program that supports the development of new tools, approaches, practices, and technologies to further natural resource conservation on private lands.	Competitive grants	Technical assistance is provided at no cost, financial assistance is through Conservation Innovation Grants.
U.S. Environmental Protection Agency (EPA) Climate Pollution Reduction Grants (CPRG)	The Sacramento Metropolitan Air Quality Management District (SMAQMD) is leading the climate planning process for the Sacramento region to compete for the CPRG funding. SMAQMD worked with regional partners including the County to develop the regional climate plan and applied for funding under the CPRG program. If SMAQMD is selected for funding, the County can avail funds for implementing measures that align with SMAQMD's Capital Region Climate Priorities Plan.	Grant	EPA plans to announce the selection results in July 2024 and award the selected applicants in October 2024.

Notes: ATP = Active Transportation Plan; CARB = California Air Resources Board; DOE = Department of Energy; EV = electric vehicle; EPA = US Environmental Protection Agency; FY = Fiscal Year; GHG = greenhouse gas; HVAC = heating, ventilation, air conditioning; IRA = Inflation Reduction Act; LED = light emitting diode; OPR = Office of Research and Planning; SMAQMD = Sacramento Metropolitan Air Quality Management District; SMUD = Sacramento Municipal Utility District.

[1]The potential funding sources listed herein are the result of research conducted in June 2024. These potential sources may be subject to change, modification, or removal at a later date based on further updates, revisions in funding allocations, or shifts in organizational priorities.

[2]The acronyms used to refer to potential funding sources in this document are defined solely for this document. These may or may not correspond to the official acronyms of the respective funding sources. The definitions of the abbreviations used for potential funding sources are as follows:

1. AHSC = Strategic Growth Council Affordable Housing and Sustainable Communities Program
2. ATPP = Caltrans Active Transportation Planning Program
3. BIL = Federal Infrastructure Investment and Jobs Act, aka Bipartisan Infrastructure Law
4. BUILD = Building Initiative for Low-Emissions Development (BUILD) Program
5. CDBG = HUD Community Planning and Development
6. CMAQP = CARB Carl Moyer Memorial Air Quality Standards Attainment Program
7. CPRG = EPA Climate Pollution Reduction Grants
8. CECIRL = California Energy Commission 1 Percent Interest Rate Loans
9. CEFP = DOE Title 17 Clean Energy Financing Program
10. CSP = Caltrans Sustainable Communities Program
11. EECBG = DOE Energy Efficiency and Conservation Block Grant Program
12. EGP = CalRecycle Local Enforcement Agency Grant Program
13. EoAP = Energy for All Program
14. EQIP = The Environmental Quality Incentives Program
15. FTAGP = Federal Transit Administration Grant Programs
16. HSP = Healthy Soils Program
17. IRA RERP = IRA Residential Energy Rebate Programs
18. IRA AABEC = IRA Technical Assistance for the Adoption of Building Energy Codes
19. IRA CCGP = IRA Community Change Grants Program
20. ISRF = Infrastructure State Revolving Fund
21. LIWP = Low-Income Weatherization Program
22. RAISE = Rebuilding American Infrastructure with Sustainability and Equity Grants
23. RRGP = OPR Regional Resilience Planning and Implementation Grant Program
24. SB2P = SB 2 Planning Grant Program
25. STEP = Sustainable Transportation Equity Project
26. TPGP = Caltrans Transportation Planning Grant Program
27. UCFG = CAL FIRE's Urban and Community Forestry Grants
28. VWMT = California Volkswagen (VW) Mitigation Trust
29. WRL = California Department of Water Resources Water Grant and Loans

[3] This column shows the method through which financial resources can be obtained under the funding source.

[4] This column provides information on the current status of the funding source or other relevant information such as the opening and closing dates or the amount of funding available.

Source: **Research conducted by Ascent in 2024**.

References

Alternative Fuels Data Center, n.d. Vehicle Cost Calculator. Available: https://afdc.energy.gov/calc/.

California Air Resources Board. 2021. 2021 Carl Moyer Program Statistics. Available: https://ww2.arb.ca.gov/sites/default/files/2023-10/2021%20Moyer%20Statistics%20ADA1004_0.pdf. Accessed July 10, 2024.

City of Millbrae, 2022. Drought-tolerant Landscaping project. Available: https://www.usbr.gov/watersmart///swep/docs/2022/SWEP_075_City_of_Millbrae_508.pdf.

City of San Diego. 2022. *Climate Action Plan*. Available: https://www.sandiego.gov/sustainability-mobility/climate-action/cap.

———. 2023. Fiscal Years 2024-2028 Climate Action Plan Cost Analysis: A Preliminary Estimate of Known Costs and Staffing Impacts. Available: https://www.sandiego.gov/sites/default/files/city_of_san_diego_ica_report_draft_2-27-23.pdf. Accessed July 1, 2024.

———. 2024. BE-1.2: Decarbonize New Building Development. Available: https://climatedashboard.sandiego.gov/strategy/be-decarbonization-of-the-built-environment/be-12-decarbonize-new-building-development. Accessed July 10, 2024.

County of Sacramento. 2023. Fleet Sustainability and Electrification. Available: https://agendanet.saccounty.gov/OnBaseAgendaOnline/Documents/ViewDocument/CLIMATE_EMERGENCY_MOBILIZATION_TASK_FORCE_8158_Agenda_Packet_9_14_2023_6_00_00_PM.pdf?meetingId=8158&documentType=AgendaPacket&itemId=0&publishId=0&isSection=false. Accessed July 1, 2024.

———. 2024. Fiscal Year 2024-2025 Complete Recommended Budget. Available: https://bdm.saccounty.gov/FY2024-25BudgetInformation/Documents/Recomm.Budget/CompleteRecomm.Budget.pdf. Accessed July 2, 2024.

Kelly Blue Book. 2024. What is 5-Year Cost to Own? Available: https://www.kbb.com/new-cars/total-cost-of-ownership/. Accessed July 1, 2024.

Lundgren, John. Sustainability Manager. Sacramento, CA. May 2, 2024—transmittal of Excel dataset with list of County buildings.

Nicholas, Michael. 2019. Estimating electric vehicle charging infrastructure costs across major U.S. metropolitan areas. Available: https://theicct.org/sites/default/files/publications/ICCT_EV_Charging_Cost_20190813.pdf. Accessed July 1, 2024.

State of California Controller's Office. 2024. Government Compensation in California. Available: https://publicpay.ca.gov/Reports/Counties/County.aspx?entityid=27&year=2022. Accessed July 10, 2024.

US News and World Report, 2024. How Much Do Electric Cars Cost? Available: https://cars.usnews.com/cars-trucks/advice/electric-car-prices.