



City of St. Helena
Active Transportation and Sustainability
Committee
Regular Meeting
1088 College Avenue, St. Helena, CA 94574
Wednesday, September 3, 2025 @ 5:00 PM

PLEASE NOTE: Any person who wishes to speak regarding an item on the agenda or make a comment under the "Oral Communication" portion of the agenda may do so, but please observe the time limit of four minutes.

Members of the public and other parties are welcome to email their comments to the Staff Liaison Rebecca White at rwhite@cityofsthenela.gov. All public comments must be received three hours prior to the meeting. Public comments received after the deadline will be attached to the item the next business day or soon thereafter. Public comments will not be read out loud but will be publicly available and attached to the online agenda.

Page

1. CALL TO ORDER
2. ROLL CALL
Chair: Jeff Farmer
Vice Chair: John Zimmerman
Members: Glenn Smith, Richard Seiferheld, Shannon Nolan
Alternate Members: Tony Rabin, Emma Leggat
Staff Liaison: Rebecca White, Administrative Assistant
3. PUBLIC FORUM:
An opportunity for the public to directly address the Committee on items of interest to the public that are not listed on the agenda. Any person addressing the Committee should provide his or her name and address, and limit comments to four minutes. **Because of restrictions imposed by the Brown Act, the Committee may not engage in substantive discussion, nor take action on matters not described on the agenda.**
4. REPORTS BY STAFF AND COMMITTEE:
Reports by staff and/or committee on items of general interest. ***Brief questions for clarification may be posed and answered, and Committee may request that items be placed on a future agenda. Except under certain circumstances, the Brown Act prohibits any other discussion or action by the Active Transportation & Sustainability Committee.***
5. CONSENT CALENDAR:
Members of the Active Transportation Committee or the public may ask that any items be considered individually for purposes of considering alternative action, for extended discussion, or for public comment. Unless that is done, on motion may be used to adopt all recommendation actions.
 - 5.1. Active Transportation and Sustainability Committee Meeting Minutes of August 6, 2025.
[Active Transportation and Sustainability Committee - 06 Aug 2025 - Minutes](#)

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6. SCHEDULED MATTERS:

- 6.1. Review and Discussion of the Draft Napa Regional Climate Action and Adaptation Plan

5 - 205

[Draft Napa Regional Climate Action and Adaptation Plan](#)

7. FUTURE AGENDA ITEMS:

1. Review open trails/open spaces programs/engagement with Vine Trail: TBD
2. Revisit Pedestrian Safety Improvements: TBD
3. Landscaping for Wine Train Owned Property: TBD
4. Spring Street Striping West of Valley View: TBD
5. Discussion of Potential Bike Path Through Public Cemetery: TBD
6. NVTa Draft Active Transportation Plan: October

8. ADJOURNMENT

The next regular Active Transportation and Sustainability Committee meeting is scheduled for October 1, 2025, at 5:00 pm, City Hall, 1088 College Avenue, St. Helena.

This agenda was posted at City Hall, 1088 College Avenue, St. Helena on August 29, 2025.

Rebecca White, Administrative Assistant

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in the meeting, please contact City Hall at (707) 967-2792. Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to this meeting (28 CFR 35.102-35.104 ADA Title II). However, City staff will attempt to assist at any time with accessibility.

MINUTES
City of St. Helena
Active Transportation and Sustainability
Committee Meeting
Wednesday, August 6, 2025 @ 5:00 PM
City Hall, 1088 College Avenue, St. Helena
465 Main Street, St. Helena

1 CALL TO ORDER

Member Farmer called the meeting to order at 5:00p.m.

2 ROLL CALL

Present: Member Jeff Farmer, Member John Zimmerman, Member Glenn Smith, Member Richard Seiferheld, Member Shannon Nolan (5:02p.m. arrival), Member Tony Rabin

Staff Liaison: Rebecca White

Absent: Member Emma Leggat

3 PUBLIC FORUM:

Public comment was opened, and no comments were received. Public comment was closed.

4 REPORTS BY STAFF AND COMMITTEE:

Assistant Public Works Director, Eric Janzen, provided an update on the sidewalk improvement project on the portion of Main Street between Pine Street and Adams Street.

Public Works Director, Joe Leach, discussed the current pavement project and its progress.

5 CONSENT CALENDAR:

- a) Active Transportation and Sustainability Committee Meeting Minutes of June 4, 2025.

Member Seiferheld moved to approve the June 4, 2025, minutes. Member Zimmerman seconded the motion. All voted in favor.

6 SCHEDULED MATTERS:

- a) Nominations for Chair and Vice Chair for Fiscal Year 2025/2026

Member Farmer moved to postpone the vote on nominations to the September 2025 meeting.

Member Zimmerman seconded the motion.

All voted in favor to move the vote on nominations to September.

Member Zimmerman made a motion to nominate Member Farmer for the

Active Transportation and Sustainability Committee
August 6, 2025

position of Chair. Member Nolan seconded the motion.
Member Seiferheld made a motion to nominate Member Zimmerman as Vice Chair. Member Smith seconded the motion.

Member Smith moved to rescind the earlier motion to delay the vote on nominations and instead proceed with voting. Member Seiferheld seconded the motion. All voted in favor of proceeding with the vote.

Member Farmer made a motion to vote on the nominations for Chair and Vice Chair. Member Smith seconded the motion. All voted in favor. Member Farmer was elected Chair, and Member Zimmerman was elected Vice Chair.

- b) Countywide Active Transportation Plan Update
Prepared By: Patrick Band, NVTa

Diana Meehan from NVTa presented on the updated Active Transportation Plan at the County level.

- c) Safe Yield Analysis
Prepared By: Joseph Leach, Assistant City Manager/Director of Public Works,
City Engineer

Public Works Director, Joe Leach, presented on the Safe Yield Analysis.

7 FUTURE AGENDA ITEMS:

1. Review open trails/open spaces programs/engagement with Vine Trail: TBD
2. Revisit Pedestrian Safety Improvements: TBD
3. Landscaping for Wine Train owned property: TBD
4. Spring Street Striping West of Valley View: TBD
5. Discussion of Potential Bike Path Through Public Cemetery: TBD
6. Sidewalk Repair Program Update: September

8 ADJOURNMENT

Chair Farmer adjourned the meeting at 6:43p.m.

APPROVED:

ATTEST:

Jeff Farmer, Chair

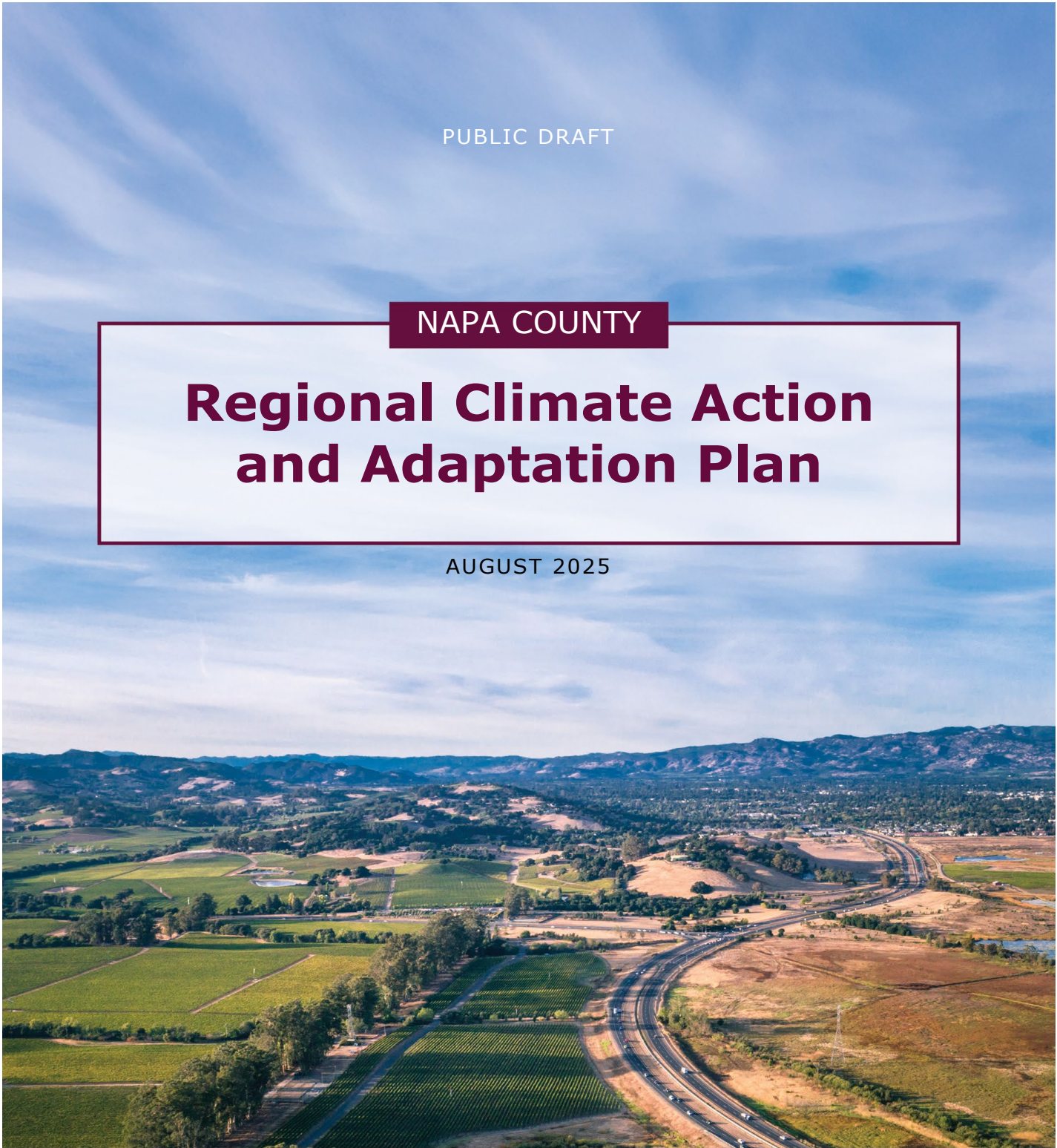
Rebecca White, Administrative Assistant

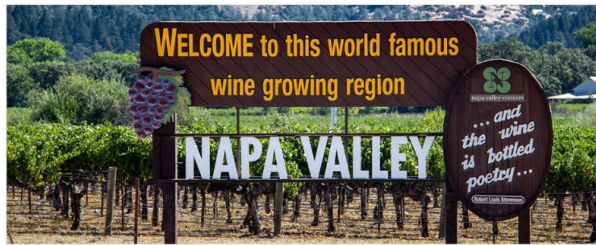
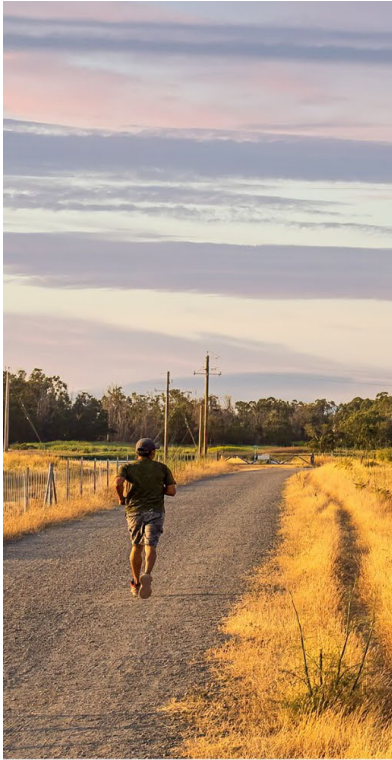
PUBLIC DRAFT

NAPA COUNTY

Regional Climate Action and Adaptation Plan

AUGUST 2025





ACKNOWLEDGEMENTS

Napa County Climate Action Committee

City of American Canyon

Melissa Lamattina
Mark Joseph
Pierre Washington (alternate)

City of Calistoga

Kevin Eisenberg (Vice-Chair)
Lisa Gift
Irais Lopez-Ortega (Alternate)

City of Napa

Beth Painter
Bernie Narvaez
Christopher DeNatale (Alternate)

County of Napa

Liz Alessio
Joelle Gallagher (Chair)
Amber Manfree (Alternate)

City of St Helena

Billy Summers
Michelle Deasy
Vacant (Alternate)

Town of Yountville

Hillery Bolt Trippe
Pamela Reeves
Eric Knight (Alternate)

County of Napa

Brian D. Bordona, Director, Planning,
Building, & Environmental Services
Jamison Crosby, Natural Resources
Conservation Manager
Jesse Gutierrez, Principal Planner
Ryan Melendez, Planner II

City of Napa

Deborah Elliott, Management Analyst II –
Climate Action

City of American Canyon

Brent Cooper, Community
Development Director

City of Calistoga

Greg Desmond, Planning &
Building Director
Antoinette Freeman, Planning Technician

City of Saint Helena

Maya DeRosa, Community
Development Director

Town of Yountville

Aaron Hecock, Planning & Building Director

Consultant Team

Ascent

Honey Walters, Principal
Erik de Kok, AICP, Project Manager
John Steponick, Assistant Project Manager
Brenda Hom, Senior Climate Change Analyst
Adam Qian, Climate Adaptation Analyst
Luis Montes, Engagement Specialist

Economic & Planning Systems

Amy Lapin, Principal
Jes Stevens, Project Manager

Jacobs

Doug Huxley, Principal
Andrea White, Senior Project Manager

Napa County Resource Conservation District

Frances Knapczyk, Program Director
Monique Byro, Community Engagement
Project Manager

Remy Moose Manley

Nathan George, Partner

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LIST OF ABBREVIATIONS

°F	degrees Fahrenheit
AB	Assembly Bill
ABAG	Association of Bay Area Governments
APG	<i>California Adaptation Planning Guide</i>
BAU	business-as-usual
BayREN	Bay Area Regional Energy Network
C&D	construction and demolition
CAC	Climate Action Committee
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Governor's Office of Emergency Services
CalEnviroScreen	California Communities Environmental Screening Tool
CalEPA	California Environmental Protection Agency
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBO	community-based organization
CDC	U.S. Centers for Disease Control and Prevention
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CESCP	Certified Electrical Safety Compliance Professional
CH ₄	methane
CO ₂	carbon dioxide

List of Abbreviations

CO ₂ e	carbon dioxide equivalent
Community Protocol	<i>U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions</i>
DOC	California Department of Conservation
DWR	California Department of Water Resources
EBMUD	East Bay Municipal Utility District
EV	electric vehicle
EVSE	electric vehicle supply equipment
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
gpcd	gallons per capita per day
gpscd	gallons per service connection per day
GWP	global warming potential
HFC	hydrofluorocarbon
hp	horsepower
HPI	California Healthy Places Index
IPCC	Intergovernmental Panel on Climate Change
ISW/GDE Workplan	<i>Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan: Napa Valley Subbasin</i>
JPA	Joint Powers Agreement
KBDI	Keetch-Byram Drought Index
LID	low-impact development
MAAS	mobility-as-a-service
MCE	Marin Clean Energy
MTC	Metropolitan Transportation Commission

List of Abbreviations

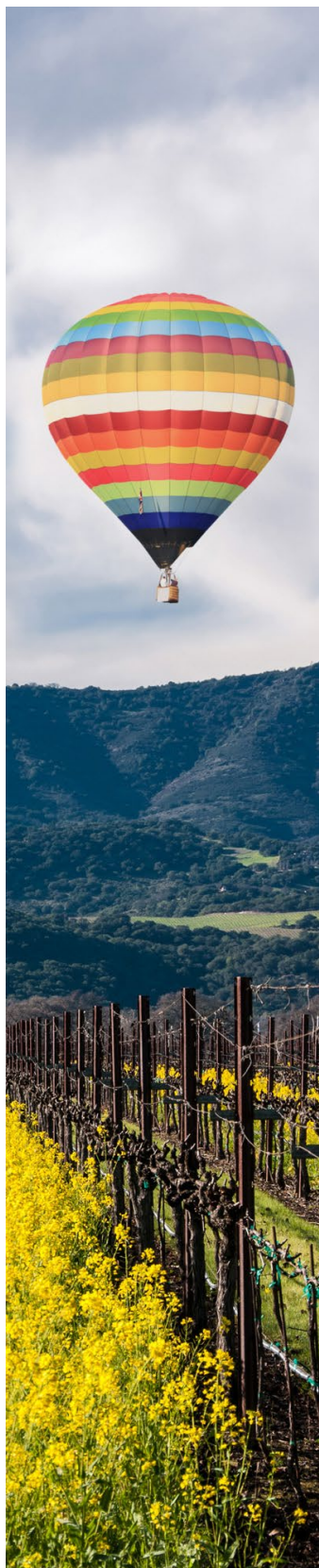
MTCO _{2e}	metric tons of carbon dioxide equivalent
N ₂ O	nitrous oxide
Napa County Jurisdictions	The collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville
Napa RCD	Napa County Resource Conservation District
NCFB	Napa County Farm Bureau
NCCF	Napa Communities Firewise Foundation
NCGSA	Napa County Groundwater Sustainability Agency
NFMA	Napa Farmers Market Association
NRCS	U.S. Natural Resources Conservation Service
NVTA	Napa Valley Transportation Authority
OEHHA	California Office of Environmental Health Hazard Assessment
PFC	perfluorocarbon
PG&E	Pacific Gas and Electric
PM _{2.5}	fine particulate matter measuring 2.5 micrometers or smaller
PSPS	Public Safety Power Shutoff
RCAAP	Napa County Regional Climate Action and Adaptation Plan
SB	Senate Bill
Scoping Plan	Climate Change Scoping Plan
SIP Certified	Sustainability in Practice Certified
SF ₆	sulfur hexafluoride
SLCP	short-lived climate pollutant
State	State of California government
SVI	Social Vulnerability Index

List of Abbreviations

TDM	transportation demand management
TRU	transportation refrigeration unit
UC ANR	University of California Agriculture and Natural Resources
UCCE	University of California Cooperative Extension
USACE	U.S. Army Corps of Engineers
VA	Vulnerability Assessment
VMT	vehicle miles traveled
WELO	water efficient landscaping ordinance
WUI	wildland-urban interface
WWTP	Wastewater Treatment Plant
ZEV	zero-emission vehicle



Executive Summary



EXECUTIVE SUMMARY

Local jurisdictions within Napa County (hereinafter referred to as “Napa County Jurisdictions” when describing the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville) are taking proactive steps to address the urgent challenges posed by climate change through this Napa County Regional Climate Action and Adaptation Plan (RCAAP). This plan was informed by robust technical analyses and extensive community engagement, demonstrating Napa County Jurisdictions’ ongoing commitment to sustainability and resilience in the face of climate change. The RCAAP aligns with recent legislation and best practices in climate action planning, and successful implementation of the plan will result in meaningful greenhouse gas (GHG) emissions reductions, effective adaptations, and equitable outcomes for the broader community.

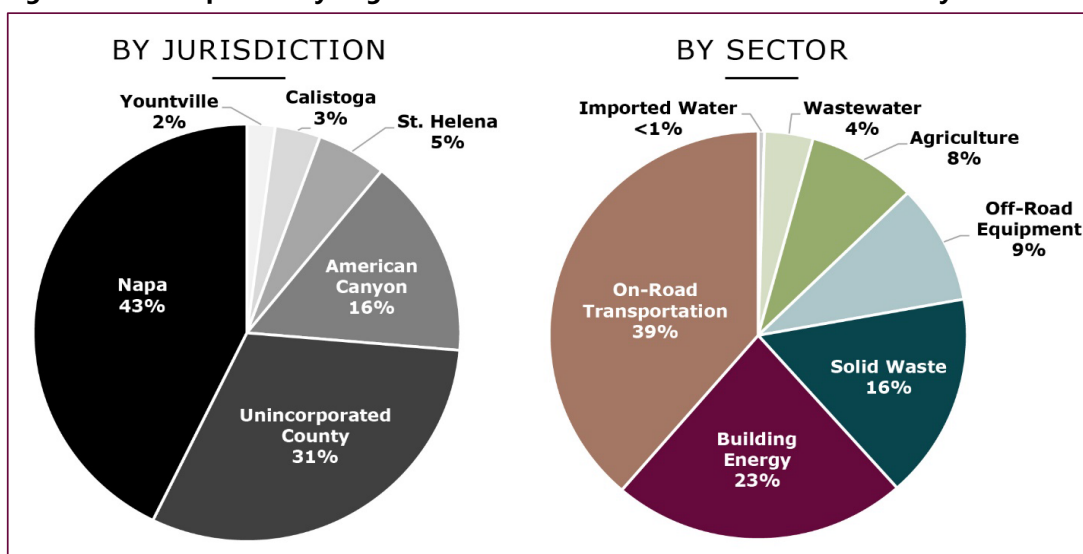
GREENHOUSE GAS EMISSIONS INVENTORY

Napa County Jurisdictions’ first step in preparing this RCAAP was to build an understanding of the regional GHG emissions profile by preparing a countywide emissions inventory. Using 2019 as the baseline year, total countywide GHG emissions were estimated at approximately 1,221,861 metric tons of carbon dioxide equivalent (MTCO₂e). The results of the 2019 GHG emissions inventory are displayed in **Figure ES.1** below, broken down by jurisdiction and sector. As displayed in the figure, the City of Napa accounted for the largest percentage of countywide emissions at 43 percent, followed by the unincorporated county at 31 percent, American Canyon at 16 percent, and St. Helena, Calistoga, and Yountville each at 5 percent or less. The three largest emissions sectors were on-road transportation, building energy, and solid waste, representing 39, 23, and 16 percent of total emissions, respectively. The four remaining sectors (i.e., off-road equipment, agriculture, wastewater, and imported water) in total accounted for approximately 22 percent of countywide emissions.

GREENHOUSE GAS EMISSIONS FORECASTS

Looking to the future, the RCAAP presents two distinct GHG emissions forecasts: (1) a business-as-usual (BAU) forecast, which assumes a continuation of current trends in activity, population, and job growth without federal, State, regional, or local action being taken to reduce emissions; and (2) a forecast with legislative reductions, which evaluates how countywide GHG emissions would change over time accounting for legislative and regulatory actions at the regional, State, and federal levels. For this RCAAP, each of these forecasts estimate emissions through 2045.

Figure ES.1 Napa County Regional 2019 Greenhouse Gas Emissions Inventory



Source: Analysis conducted by Ascent in 2022; figure developed by Ascent in 2025.

GREENHOUSE GAS EMISSIONS REDUCTION TARGETS

Napa County Jurisdictions also set countywide GHG emissions reduction targets for 2030, 2035, and 2045, which are aligned with the State's goals. They include:

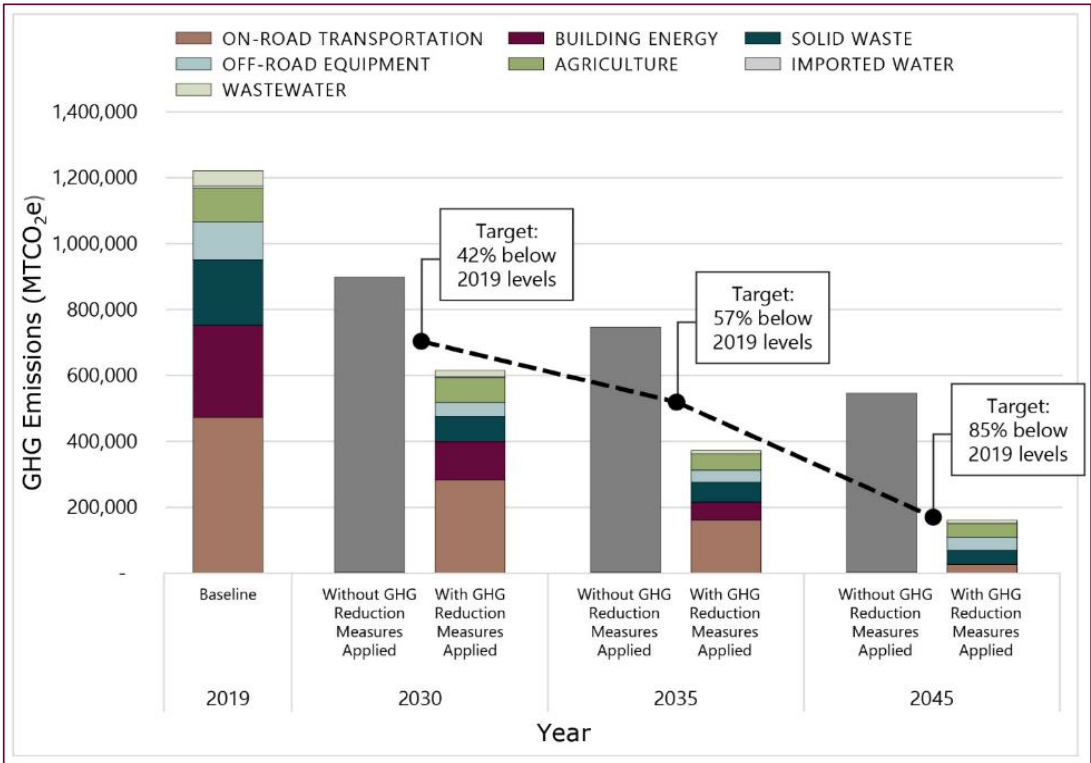
- ▶ 42 percent reduction below 2019 levels by 2030,
- ▶ 57 percent reduction below 2019 levels by 2035, and
- ▶ 85 percent reduction below 2019 levels by 2045.

In addition to these quantitative targets, Napa County Jurisdictions have set a goal in this RCAAP of achieving carbon neutrality by 2045 primarily through natural carbon sequestration, in addition to strategies and measures to reduce GHG emissions in furtherance of the 85 percent reduction target by 2045.

GREENHOUSE GAS REDUCTION MEASURES

While legislative and regulatory actions at the regional, State, and federal levels will result in notable GHG emissions reductions on their own, additional efforts need to be taken locally by Napa County Jurisdictions to fully achieve the established targets. These additional efforts come in the form of 46 distinct GHG reduction measures that were prepared for this RCAAP, where the outcome of implementing these measures are presented in **Figure ES.2**. The figure displays two different scenarios for each of the forecast years, one without GHG measures applied (which displays the total estimated emissions from the forecast with legislative reductions), and one with GHG measures applied. As shown, the successful implementation of the GHG reduction measures will enable Napa County Jurisdictions collectively to achieve the GHG reduction targets. Additionally, the successful implementation of measures that focus on enhancing carbon sequestration and storage in natural and working lands will result in achieving the 2045 carbon neutrality goal.

Figure ES.2 Estimated Greenhouse Gas Emissions With and Without Measures Applied through 2045



Notes: % = percent; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

Source: **Developed by Ascent in 2025.**

ADAPTING TO CLIMATE CHANGE

In addition to reducing GHG emissions, the RCAAP also has a strong focus on adapting to climate change, as climate change is already affecting the region and its impacts are expected to worsen over time. To effectively adapt to climate change, Napa County Jurisdictions first conducted a climate change vulnerability assessment (VA) to determine countywide vulnerabilities of people, the built environment, and natural resources to various climate hazards, which refers to natural hazards that are worsened or altered due to the effects of climate change. The VA directly informed the preparation of 40 distinct adaptation measures included in this RCAAP, which are organized into six different strategies and aimed at reducing vulnerability and adapting to the impacts of climate change. This dual approach of reducing GHG emissions and preparing for climate change impacts ensures that Napa County Jurisdictions are not only working to reduce their contributions to climate change, but also to build resilience to the challenges it presents.

IMPLEMENTATION AND MONITORING

As Napa County Jurisdictions move forward with adopting and implementing the RCAAP, sustained regional coordination and collaboration will be required to ensure adequate staffing is available to guide the many near-term actions necessary to implement the measures. Napa County Jurisdictions must also consider how to best leverage and prioritize existing local funding sources, while developing a strategy for securing new funding, such as state or federal grants, loans, or other special financing mechanisms, to support the longer-term investments required for successful RCAAP implementation. Implementation of the RCAAP will also require regular monitoring and updates to ensure the plan is on target to achieve its near-term and long-term targets, while also remaining adaptable to new challenges and opportunities. RCAAP monitoring efforts will also be tracked, shared, and reported regularly through updates on local websites or presentations to the Climate Action Committee (CAC) or other local governing bodies.

Overall, the RCAAP serves as a comprehensive roadmap for Napa County Jurisdictions to reduce their GHG emissions, adapt to climate change, and create more sustainable and resilient communities. It builds upon existing efforts, sets ambitious GHG reduction targets aligned with State goals, and outlines a clear path forward. With this plan, and through strong partnerships outlined in **Figure ES.3**, Napa County Jurisdictions are positioned to effectively address the challenges posed by climate change while enhancing the quality of life for all its residents.

Figure ES.3 Napa County Partnerships



Note: The list of partners presented in this figure is not meant to be exhaustive or all-encompassing.

Source: Developed by Ascent in 2025.



CHAPTER 1

Introduction

1 INTRODUCTION

With its famous valleys and hillsides, Napa County, part of the nine-county San Francisco Bay Area, ranks as one of the world's premier wine regions and is home to hundreds of wineries and thousands of acres of carefully cultivated vineyards. Beyond its viticultural prominence, the county's 789 square miles encompass a stunning variety of landscapes, from the Mayacamas Mountains in the west to the Vaca Mountains in the east, with the fertile valley floor nestled between. This diverse terrain supports the region's renowned wine industry and a rich mosaic of oak woodlands, grasslands, and other natural habitats that contribute to the county's biodiversity and scenic beauty. Additionally, the county's vitality extends to its robust hospitality sector, thriving culinary scene, and growing technology and manufacturing industries. Collectively, Napa County includes five incorporated municipalities—American Canyon, Calistoga, Napa, St. Helena, and Yountville—along with numerous unincorporated communities, hosting approximately 140,000 residents and nearly 4 million visitors per year (Visit Napa Valley 2025).

The county's Mediterranean climate, historically characterized by warm, dry summers and mild, wet winters, has long been one of its greatest assets, with many considering it an ideal climate. However, like many regions in California and across the world, climate change is already presenting and will continue to present challenges within the county. Climate change can manifest in many different forms, and locally, this may include effects such as prolonged heat waves, extended drought periods, altered frequency and severity of storm events, and increased wildfire risk caused by conditions that are more favorable for ignition and rapid spread of fires. These effects have already proven to adversely impact communities in the region and across the state due to their wide-ranging impacts on people, infrastructure, transportation, local economies, natural resources, and agriculture, among other assets.

Recognizing these challenges, local jurisdictions within Napa County (hereinafter referred to as "Napa County Jurisdictions" when describing the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville) have come together to develop this Napa County Regional Climate Action and Adaptation Plan (RCAAP). This collaborative effort, which serves as a comprehensive roadmap for reducing greenhouse gas (GHG) emissions and adapting to climate change impacts, reflects a shared understanding that addressing climate change requires bold and coordinated action across jurisdictional boundaries.

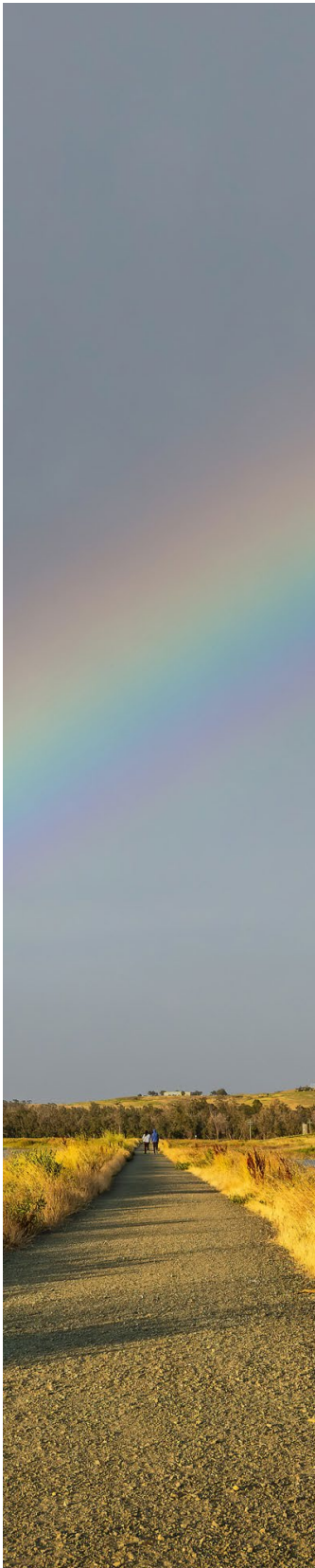




Photo Credit: County of Napa.

The RCAAP is organized into seven chapters.

- ▶ This chapter, **Chapter 1**, serves as an introduction to the RCAAP, providing important plan-specific context and other background information.
- ▶ **Chapter 2** outlines the county's GHG emissions profile, including the GHG emissions inventory, forecasts, and reduction targets.
- ▶ **Chapter 3**, informed by the contents of Chapter 2, summarizes the RCAAP's GHG emissions reduction strategies, measures, and actions.
- ▶ **Chapter 4**, shifting away from GHG discussions, presents the findings of the Vulnerability Assessment (VA) that was prepared for the RCAAP.
- ▶ **Chapter 5**, informed by the contents of Chapter 4, summarizes the RCAAP's climate adaptation strategies, measures, and actions.
- ▶ **Chapter 6** provides details for implementing and monitoring the RCAAP, along with how it will serve as a resource for California Environmental Quality Act (CEQA) streamlining.
- ▶ Lastly, all works cited throughout the RCAAP are listed in **Chapter 7**.

1.1 CLIMATE CHANGE OVERVIEW

To understand the need for this RCAAP, it is important to understand the basics of climate change, including what it is, the facts and science supporting it, its effects and range of impacts, and how to address it. Climate change is a complex issue, but it can be narrowed down to five key two-word facts, as presented in **Figure 1.1** and the list below (YPCCC n.d.):

- ▶ **It's real.** Data shows climate change is already happening and being observed, notably through rising temperatures and shifting weather patterns around the globe.
- ▶ **It's us.** Data shows that human activities, like burning fossil fuels, are the primary driver of climate change.
- ▶ **It's bad.** The impacts of climate change, many of which are already being experienced today, are harmful to people and the planet.
- ▶ **Scientists agree.** There is a strong, evidence-based [scientific consensus](#) that climate change is real and caused by human activities and that there is an urgent need for action.
- ▶ **There's hope.** The technology, knowledge, and capabilities to address climate change already exist—we just need to act.

The subsections below seek to provide a high-level overview of climate change, emphasizing these key facts.

Figure 1.1 Climate Change Key Facts



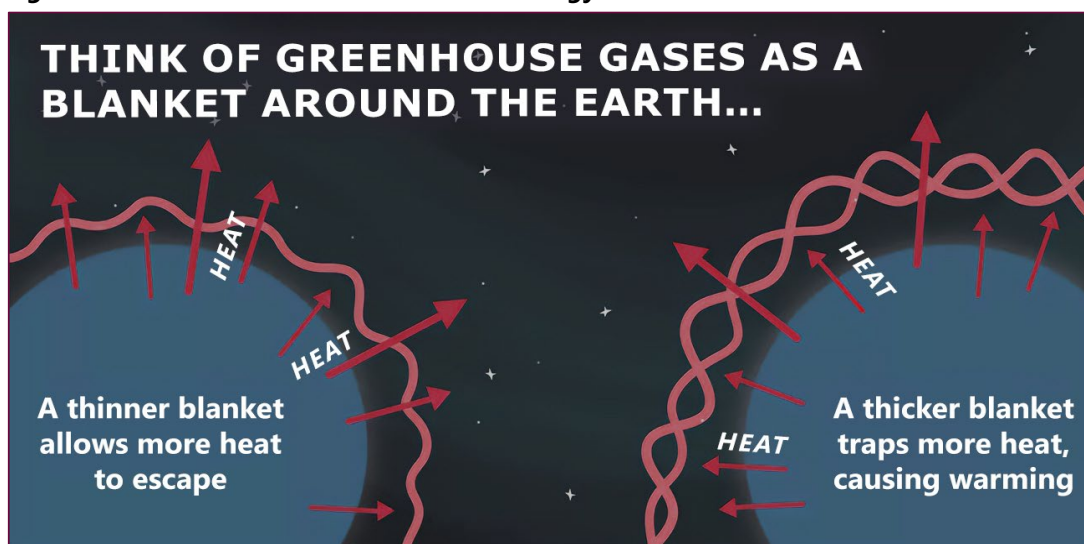
Source: Developed by Ascent in 2025.

Climate Change Science

The science behind climate change is rooted in the greenhouse effect, which 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 GHGs. These gases, which consist mainly of water vapor, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), 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. In other words, GHGs act as a blanket around Earth—the more GHGs there are in the atmosphere, the thicker the blanket will be (see **Figure 1.2** for an illustration). This phenomenon 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 effects that result in impacts on people, infrastructure, and natural systems.

Figure 1.2 Greenhouse Effect Blanket Analogy



Source: NPS 2021; modified by Ascent in 2025.

What Does Climate Change Look Like?

Climate change can manifest in many ways across the world. **Table 1.1** below presents various climate indicators and a qualitative description of the historical and future projected trends in California (OPR, CEC, and CNRA 2019).

These trends are already holding true, and many are being experienced locally. For example, in recent years, a series of devastating wildfires swept through Napa County and surrounding regions, including the Atlas, Tubbs, and Nuns fires in 2017; and the Glass Fire and the LNU Lightning Complex fires in August and September 2020. These wildfires, collectively, burned hundreds of thousands of acres (CAL FIRE 2017a, 2017b 2022, 2023), and destroyed thousands of structures, and resulted in an array of cascading public health, economic, and even viticultural impacts throughout the county—in the 2020 fires alone, eight percent of the season's wine grapes were left tainted by wildfire smoke, and thus, were unusable (Chroback and Zimmer

2022). Additionally, in September 2022, an unprecedented and uninterrupted 10-day heat wave, with temperatures exceeding triple digits across much of the state, led to hundreds of excess deaths, including some residents of Napa County (CDPH 2023). In general, climate-related hazard events like these can have an array of adverse impacts on populations, the built environment, and community functions and over time, these events will likely increase in frequency, intensity, and/or duration because of climate change.

Table 1.1 California Climate Indicators with Historical and Future Trends

Climate Indicator	Historical 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

Notes: The “Future Trend” associated with each “Climate Indicator” presented in this table is based on Medium-High to Very High confidence, per *California’s Fourth Climate Change Assessment: Statewide Summary Report*. / + = or more.

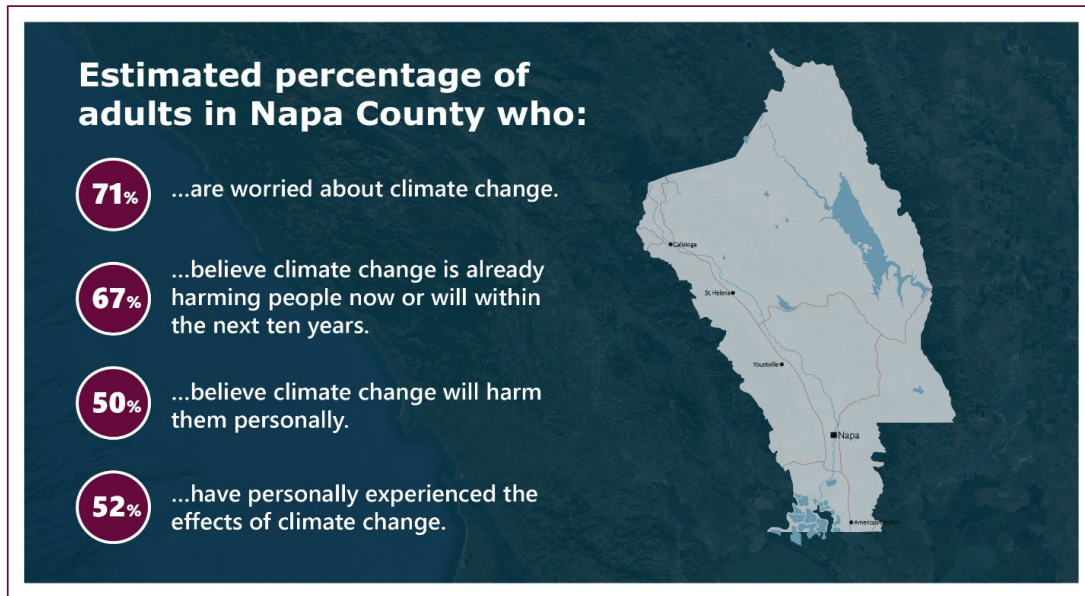
¹ There are many factors that play into the increasing amounts of area burned by wildfire in addition to climate change, including historic fire suppression regimes and inadequate levels of prescribed burning, among others. However, climate change has led to more favorable conditions for wildfire ignition 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.

As California continues to experience rising temperatures, increasingly severe storms, destructive wildfires, and prolonged periods of drought, among other climate-related hazards and their associated impacts, it has become more than evident that climate change is already occurring. Without immediate and intentional action, climate change has the potential to further harm current and future generations’ safety, health, economic opportunity, and quality of life. As shown in **Figure 1.3**, Napa County residents understand the threat of climate change, further underscoring how critical it is to act. Through the development and implementation of this RCAAP, the Napa County Jurisdictions are committed to their role in addressing the challenges that climate change presents.

“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” (CARB 2022: 13).

Figure 1.3 Climate Change Risk Perceptions Across Napa County

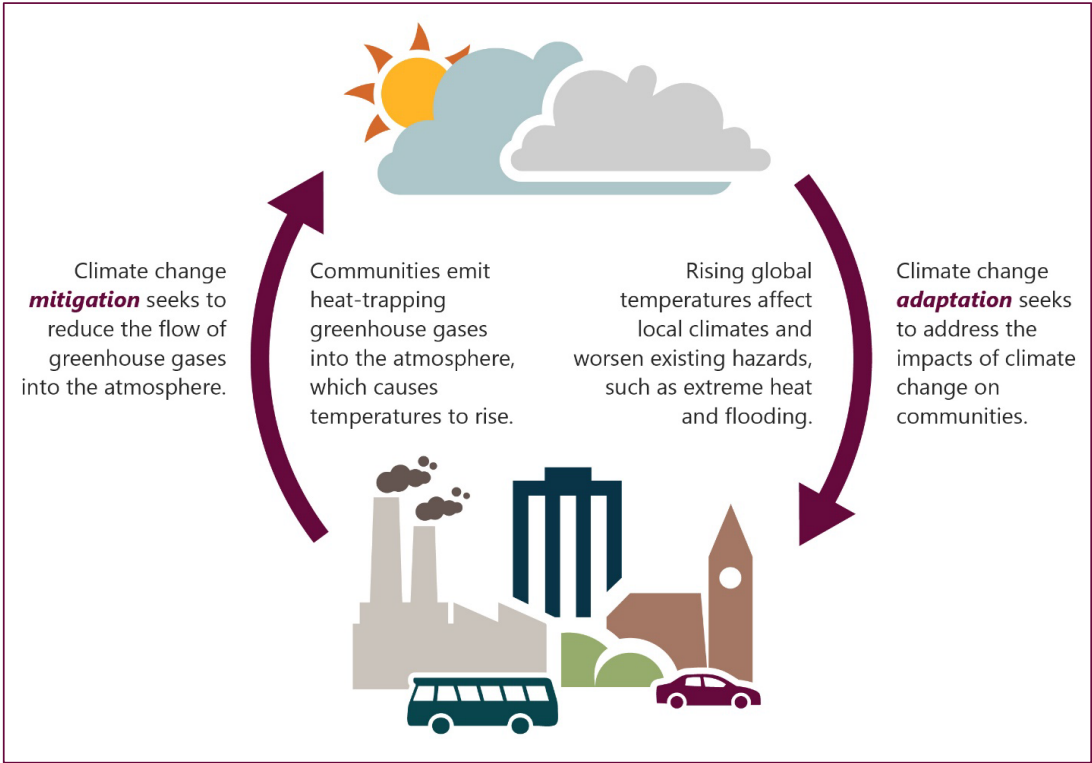


Source: YPCCC 2023; figure developed by Ascent in 2025.

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 at the local level. Addressing climate change requires an integrated approach that targets its sources and impacts. Targeting its sources is known as **climate change mitigation** and involves reducing the release of heat-trapping GHGs into the atmosphere. Targeting its impacts is known as **climate change adaptation** and involves efforts intended to reduce risk and build resilience to climate change. **Figure 1.4** below illustrates this integrated approach of climate change mitigation and adaptation. Although climate change mitigation and adaptation can sometimes be separate planning efforts, it is important to consider both components in climate action planning, which this RCAAP does.

Figure 1.4 Climate Change Mitigation and Adaptation



Source: Cal OES 2020; modified by Ascent in 2025.

1.2 PLAN BACKGROUND AND DETAILS

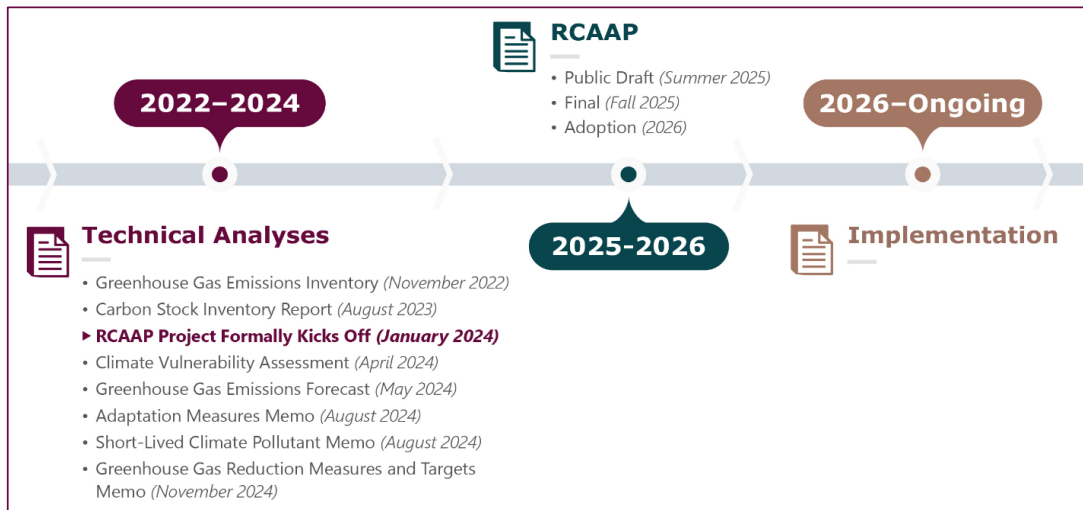
Purpose

Overall, this RCAAP serves as a comprehensive roadmap to address both the sources and impacts of climate change across Napa County, combining strategies to both reduce GHG emissions and enhance the region’s resilience to climate-related challenges. The plan, which is consistent with the methodologies and goals established by the State of California government (State) guidance and legislation, reflects regionally tailored solutions that are representative of the unique environmental, economic, and social characteristics of the county. Additionally, the RCAAP builds upon existing climate change and sustainability initiatives throughout the county (some of which are detailed in **Section 1.3**), seeking to coordinate and amplify these and future efforts through a unified regional framework.

Plan Development Process

The development of this RCAAP is rooted in the formation of the Climate Action Committee (CAC) in 2019. Originally known as the Regional Working Group on Climate Change, the CAC—which consists of two elected officials from each of the six Napa County Jurisdictions—was collaboratively established to act on a countywide commitment to address climate change. On October 16, 2020, the CAC approved a Joint Powers Agreement (JPA) to coordinate climate-related efforts across the county, and in 2021, the countywide commitment to address climate change was formalized through each jurisdiction adopting a resolution or proclamation. Specifically, these resolutions and proclamations acknowledge the existence of a climate emergency that threatens the region and recognize the need to work with residents, businesses, community organizations, and many other regional partners to achieve ambitious climate goals. These resolutions and proclamations, along with the establishment of the CAC and JPA, collectively laid the groundwork for developing this RCAAP. While not an exhaustive list, **Figure 1.5** below highlights many of the key milestones for the RCAAP, including the technical work that was prepared to inform the plan.

Figure 1.5 RCAAP Project Milestones



Notes: RCAAP = Napa County Regional Climate Action and Adaptation Plan.

Source: **Developed by Ascent in 2025.**

Community Engagement Summary

Community engagement is a vital component of any effective climate action and adaptation planning process, ensuring that the plan reflects the needs, priorities, and values of the people it serves. Meaningful engagement helps build public awareness, foster collaboration, and generate community-driven climate solutions. While ongoing engagement and community input will be essential throughout RCAAP implementation, the following list summarizes the outreach and

engagement efforts conducted during the plan's development, which consist of both direct and indirect engagement. Full community engagement details can be found in **Appendix A**.



Photo Credit: County of Napa.

- ▶ **July 2024 Community Meetings:** In July 2024, two community meetings were hosted to discuss the RCAAP: (1) an in-person community meeting at the Yountville Community Center on July 24; and (2) a virtual meeting via Zoom on July 30. Although each meeting was hosted in a different format, all meetings included a brief presentation followed by group activities. Primary areas of concern identified by attendees included: (1) lack of accessible and efficient public transit; (2) extreme weather impacts on public health, especially vulnerable populations; (3) wildfire risks and related air quality issues; (4) water supply concerns; (5) energy efficiency and affordability issues in buildings; and (6) limited access to parks, green spaces, and community gardens.
- ▶ **Climate Action Committee Meetings:** The CAC was critical in guiding the RCAAP's development, serving as a key advisory body. Regular (i.e., monthly) meetings provided a structured forum for members to discuss key issues, offer feedback and direction, and facilitate coordination between jurisdictions, ensuring that the ultimate plan reflected a cohesive, countywide approach to climate action while addressing the unique needs of each community.

- ▶ **Focus Groups:** In July 2024, a series of focused small-group engagement sessions (i.e., focus groups) were conducted with representatives from nearly 20 diverse community organizations across Napa County. The purpose of these sessions was to directly explore the needs of the community and discuss potential solutions to be included in the RCAAP that can best serve those needs. Participants highlighted common issues, such as extreme weather impacts, educational disruptions, environmental justice concerns, and youth involvement challenges, among other key issues. Key recommendations emerged around equitable engagement, immediate action through implementable solutions, and improved accessibility of climate-related resources.
- ▶ **Pop-Up Events:** In line with the principle of “meeting people where they are,” a series of pop-up events were hosted in the summer of 2024 to further engage residents and share information about the RCAAP, in collaboration with the Napa County Resource Conservation District (Napa RCD). By setting up information tables at community celebrations and events, such as the “Día de la Familia” celebration, which took place on July 21, 2024, these pop-ups made it easy for community members to learn about the RCAAP, share their perspectives, and stay connected with the planning process.
- ▶ **Survey:** A comprehensive survey, which closed in August 2024, was conducted to better understand how residents across the county feel about climate change and what they think should be done about climate change. Survey participants weighed in on what climate-related hazards and impacts concerned them most, what makes it challenging to adopt climate-friendly practices in their daily lives, and what actions they would like to see their local governments take—from expanding renewable energy and public transportation to reducing waste and promoting more sustainable land use. The insights gathered from the survey helped to inform various pieces of the RCAAP, including the development of the strategies, measures, and actions included in **Chapter 3** and **Chapter 5**.
- ▶ **Project Website:** A dedicated RCAAP website has served as a central hub for project updates, engagement opportunities, and access to key documents during development of the RCAAP. The website has provided an easy-to-navigate platform where residents could learn about the planning process, review draft materials, submit feedback, and stay informed about upcoming meetings and events. By offering a digital space for engagement, the website has helped to ensure transparency and accessibility for all community members, including those who may not have been able to participate in person.

Co-Benefits

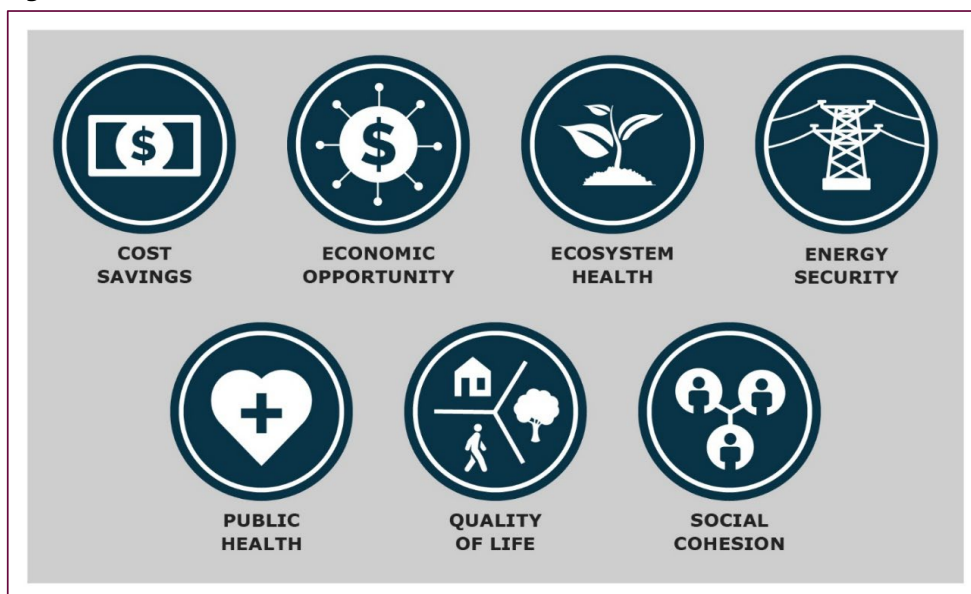
While the RCAAP is primarily geared toward reducing GHG emissions and adapting to climate change across Napa County, implementation of the plan will also result in an array of “co-benefits” beyond climate change mitigation and adaptation. The key co-benefits include:

- ▶ **Cost Savings:** Reduces longer-term costs for residents, businesses, and/or local government.
- ▶ **Economic Opportunity:** Creates new jobs, attracts investments, strengthens local businesses, and/or promotes sustainable economic growth in emerging green sectors.

- ▶ **Ecosystem Health:** Protects and/or enhances natural systems (e.g., watersheds, wetlands, forests), supporting biodiversity and maintaining vital ecosystem services.
- ▶ **Energy Security:** Increases local energy independence, resilience, and/or system reliability.
- ▶ **Public Health:** Improves community well-being through enhanced air quality, increased physical activity, reduced exposure to environmental hazards, and/or better access to healthy food.
- ▶ **Quality of Life:** Enhances community amenities, improves neighborhood livability, and/or creates more comfortable and enjoyable spaces for residents and visitors.
- ▶ **Social Cohesion:** Strengthens community connections, promotes equity and inclusion, and/or builds shared community identity through collaborative action.

Each GHG reduction measure presented in **Chapter 3** of this RCAAP, along with each adaptation measure presented in **Chapter 5**, may have 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 1.6** below.

Figure 1.6 Co-Benefits



Source: Developed by Ascent in 2025.

Advancing Equity

This RCAAP was developed with equitable outcomes in mind, and as such, plan implementation will prioritize and be rooted in the principles of environmental justice and climate equity. While there are no formal, regionally specific definitions for these terms, **Table 1.2** presents these terms as defined by the State and federal government, which will serve as guideposts for advancing equitable outcomes as part of this RCAAP.

Table 1.2 Environmental Justice and Climate Equity Defined

Term	Definition	As Defined By:
Environmental Justice	The fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice includes but is not limited to, the following: (1) the availability of a healthy environment for all people; (2) the deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities; (3) governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision-making process; and (4) at a minimum, the meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions.	California Government Code, Section 65040.12
Climate Equity	The fair and just distribution of the benefits of climate action and the burdens of climate impacts, ensuring that historically marginalized and frontline communities—who often face the greatest risks from climate change—are prioritized in decision-making, investments, and policy implementation. Climate equity acknowledges existing social, economic, and environmental disparities and seeks to correct them by providing resources, protections, and opportunities that enhance resilience and reduce vulnerabilities for all populations, especially those disproportionately affected. ¹	Cal OES & LCI

Notes: & = and; Cal OES = California Governor's Office of Emergency Services; LCI = California Governor's Office of Land Use and Climate Innovation.

¹ The State of California does not have a singular, formal definition for the term "climate equity," and as such, the presented definition is synthesized from various resources.

Source: **Compiled by Ascent in 2025.**

Keeping these terms in mind, various tools exist to help guide a strategic and prioritized approach for plan implementation to address unequal burdens and historical inequities exacerbated by climate change. These tools include, but are not limited to, the following:

- ▶ **[California Climate Investments Priority Population Map](#)**: This map, which aggregates data from multiple sources, can identify priority populations (i.e., disadvantaged and low-income communities) as defined for California Climate Investments.
- ▶ **[California Communities Environmental Screening Tool](#)**: This tool, also known as CalEnviroScreen for short, can be used to identify California communities that are disproportionately burdened by multiple sources of pollution. It was developed by the California Office of Environmental Health Hazard Assessment (OEHHA), an office within the California Environmental Protection Agency (CalEPA).
- ▶ **[California Healthy Places Index](#)**: This tool, developed by the Public Health Alliance of Southern California and known as HPI for short, can be used to explore the community conditions that impact life expectancy. It combines 25 unique community characteristics, like access to healthcare, housing, education, and more, into a single indexed HPI score for a particular community—the healthier a community, the higher the HPI score.

Advancing equity in climate action and adaptation is an ongoing process that requires intentionality, collaboration, and accountability. By using tools like these during plan implementation, where appropriate, and through targeted interventions, Napa County Jurisdictions can: (1) ensure that climate investments across the county provide meaningful benefits for those who need it most; and (2) build a future where all residents are better protected from climate change and have opportunities to thrive.

1.3 HOW IS CLIMATE CHANGE ALREADY BEING ADDRESSED?

State Climate Efforts

In response to the increase in anthropogenic GHG emissions and the risks posed by climate change, the State has already taken many steps to reduce GHG emissions and build resilience to climate change impacts, notably through legislation. **Table 1.3** below serves as a non-exhaustive list of important State climate legislation that provides policy direction and context for this RCAAP. All items are presented in chronological order, and newer legislation may supersede older legislation. Moreover, because this table is meant to serve as a snapshot, additional legislation may be referenced throughout this RCAAP that is not listed in the table.

Table 1.3 Snapshot of State of California Climate Legislation

Year	Legislation	Details
2006	AB 32	▶ Codified the targets 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.
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. ▶ Allowed jurisdictions that have adopted a climate action and/or adaptation plan separate from the general plan to 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.
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 statewide targets for reducing additional pollutants including HFCs and anthropogenic black carbon. ▶ Required CARB to approve and implement 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. Also known as the Global Warming Solutions Act of 2016.

Year	Legislation	Details
2017	AB 398	► Extended the State's Cap-and-Trade program—a key strategy in reducing statewide GHG emissions—from 2020 to 2030, which sets total allowable emissions for facilities and creates carbon offset credits through carbon sequestration projects.
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. It is also known as the California Climate Crisis Act.
2022	SB 905	► Required 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.
2022	AB 1757	► Required 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.

Notes: AB = Assembly Bill; CARB = California Air Resources Board; CNRA = California Natural Resources Agency; CO₂ = carbon dioxide; EO = Executive Order; HFC = hydrofluorocarbon; GHG = greenhouse gas; SB = Senate Bill; State = State of California government.

Source: **Compiled by Ascent in 2025.**

"Many of California's environmental policies have served as models for similar policies in other U.S. states, and at national and international levels. Moving forward, California will continue its pursuit of collaborations and advocacy for action to address climate change at all levels of government" (CARB 2022: 15).

In addition to legislation, the State has adopted other plans and guidance documents to support local and regional government efforts. For example, and perhaps most notably, the Climate Change Scoping Plan (Scoping Plan), adopted by the California Air Resources Board (CARB), serves as the State's sector-by-sector roadmap for reducing GHG emissions in line with codified GHG emissions reduction targets, and additionally, serves as an important guidance document for local governments in reducing their local emissions. The most recent iteration of the Scoping Plan—the *2022 Scoping Plan for Achieving Carbon Neutrality*—outlines a technologically feasible, cost-effective, and equity-focused path to achieve the GHG reduction and carbon neutrality targets established in AB 1279. Additionally, the *California Adaptation Planning Guide* (APG), developed by the California Governor's Office of Emergency Services (Cal OES), serves as California's official climate change adaptation planning guidance document intended for use by local governments. These documents, along with other climate-related efforts being led by the State, underscore the importance of addressing climate change at all levels of government.

Climate Efforts Across Napa County

To complement the State's efforts, numerous climate-related efforts are already happening across Napa County. This RCAAP both recognizes and builds on previous and ongoing climate change mitigation and adaptation efforts in the region. Notably, several Napa County Jurisdictions previously adopted some local form of a climate action plan or related policies aimed at reducing GHG emissions, including:

- ▶ the [City of Napa Sustainability Plan](#), adopted in 2012,
- ▶ the [City of American Canyon Energy Efficiency Climate Action Plan](#), adopted in 2013,
- ▶ the [City of Calistoga Climate Action Plan](#), adopted in 2014, and
- ▶ the [Town of Yountville Climate Action Plan](#), adopted in 2016.

In 2021 and early 2022, following the formation of the CAC and JPA described earlier in this chapter, the Cities of American Canyon, St. Helena, Calistoga, and Napa, along with the County of Napa, adopted resolutions establishing goals to achieve carbon neutrality by 2030. The Town of Yountville also adopted a proclamation with the same goal. However, these goals were set prior to AB 1279 becoming law in October 2022 and CARB's adoption of the 2022 Scoping Plan in December 2022, which established a statewide goal of carbon neutrality by 2045. Updated targets and goals established in this RCAAP are discussed in further detail in **Chapter 2**.

Additionally, while neither the City of St. Helena or the County of Napa have an adopted local climate action plan, climate change is addressed in each jurisdiction's general plan (i.e., Climate Change Element of the [St. Helena General Plan Update 2040](#); Conservation and Safety Elements of the [Napa County General Plan](#)). In addition to these planning efforts, and sometimes directly informed by them, the Napa County Jurisdictions have implemented or adopted an array of projects, policies, programs, ordinances, and other initiatives aimed at reducing GHG emissions and building resilience to climate change impacts within their purview. Examples include, but are not limited to, [rebate programs](#) for battery-powered leaf blowers, [regulations](#) aimed at reducing pollution from plastic and single-use food ware to [energy-friendly permit sales](#), [enforcement](#) of Senate Bill (SB) 1383 provisions, ordinances prohibiting new gas stations, and numerous other initiatives.



Photo Credit: Napa Valley Transportation Authority.

In addition to jurisdiction-specific efforts related to climate change, there is a suite of coordinated, countywide efforts that span jurisdictional boundaries. For example, the Napa Valley Transportation Authority (NVRTA), in coordination with each of the Napa County Jurisdictions, has prepared (or is in the process of preparing) a range of plans and programs aimed at promoting sustainable transportation throughout the county, including [Advancing Mobility 2045: Napa Valley Countywide Transportation Plan](#), the [NVRTA Vision Zero Plan](#), and the countywide Active Transportation Plan, which is currently under development. Additionally, the Napa Communities Firewise Foundation (NCFF), in coordination with each of the Napa County Jurisdictions, has prepared the [Napa County Community Wildfire Protection Plan](#), which aims to provide countywide wildfire protection and resilience. Further, each of the six Napa County Jurisdictions are [MCE](#) member communities. MCE provides renewable and affordable electricity for its customers. Ratepayers within each jurisdiction are automatically enrolled in MCE's Light Green 60 percent renewable option, with options to either upgrade to Deep Green 100 percent renewable or opt out of MCE altogether.

Together, each of the jurisdiction-specific and countywide efforts discussed above (along with the numerous additional efforts not discussed here) represent significant progress in addressing climate change across Napa County. The Napa County Jurisdictions are already laying the groundwork for a more sustainable and resilient future by spearheading initiatives intended to reduce GHG emissions and adapt to climate change. However, as climate change presses on, the need for a strategic and unified regional approach is becoming increasingly critical. This RCAAP builds upon this strong foundation of climate action by aligning and expanding upon existing efforts, fostering greater collaboration across jurisdictions, and

identifying new opportunities to accelerate climate solutions. Through this plan, the Napa County Jurisdictions will work collectively to maximize impact and achieve a shared vision for long-term sustainability and resilience.



Photo Credit: **Visit Napa Valley.**



CHAPTER 2

Greenhouse Gas Emissions



2 GREENHOUSE GAS EMISSIONS

This chapter presents the countywide greenhouse gas (GHG) emissions inventory, forecasts, and reduction targets, which are inclusive of all six local jurisdictions within Napa County (hereinafter referred to as “Napa County Jurisdictions” when describing the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville). Additionally, it includes a brief discussion on the county’s carbon stock and short-lived climate pollutants (SLCPs), which technically fall outside the scope of the GHG inventory and forecasts, but are still important to appropriately contextualize in the broader scope of this Napa County Regional Climate Action and Adaptation Plan (RCAAP).

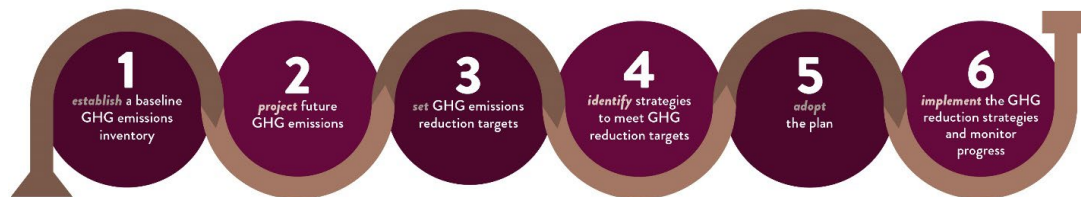
2.1 WHY PREPARE A GREENHOUSE GAS EMISSIONS INVENTORY?

The critical first step in the overall climate action planning process—specifically, the planning process for reducing GHG emissions—is to prepare a GHG emissions inventory, as shown in **Figure 2.1**. To develop and implement a climate action plan 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 local governments a framework to track emissions over time and assess the effectiveness of plan implementation. The GHG inventory encompassing all the Napa County Jurisdictions is presented and discussed further in **Section 2.2**.

A GHG emissions inventory is a snapshot of the emissions associated with a jurisdiction’s community-wide activities, or in the case of this RCAAP, the community-wide emissions associated with all the Napa County Jurisdictions.

The standard GHG emissions inventory in climate action planning processes estimates GHG emissions generated from sources and activities within a defined geographic boundary during a specified year. It identifies the sectors in which activities are producing these emissions and their relative contributions, while also providing a baseline for forecasting future emissions trends. This information is used to set reduction targets consistent with the State of California government (State) objectives and, ultimately, to develop, memorialize, and implement strategies and measures for reducing emissions consistent with the established targets.

Figure 2.1 Planning Process for Reducing Greenhouse Gas Emissions



Note: GHG = greenhouse gas.

Source: **Developed by Ascent in 2025.**

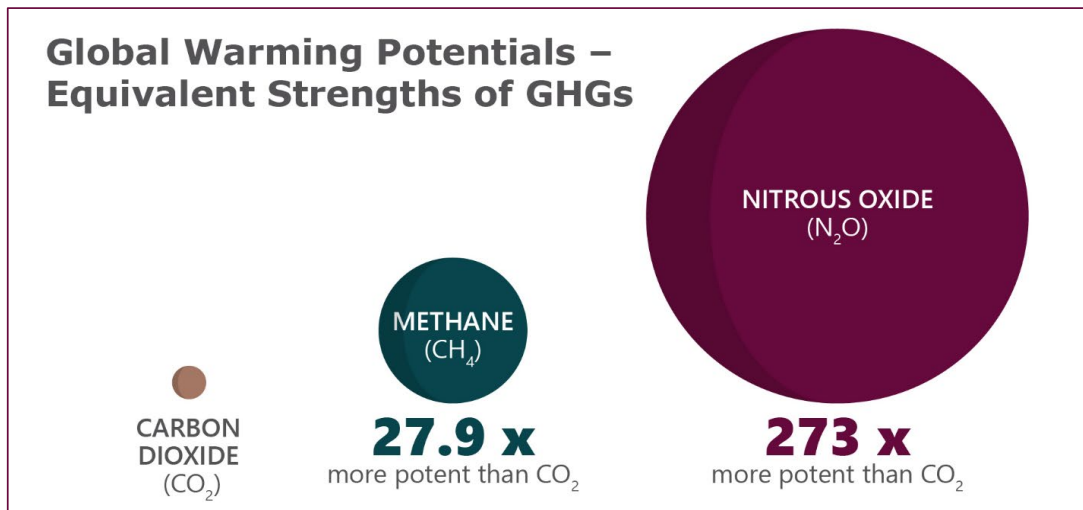
2.2 BASELINE GREENHOUSE GAS EMISSIONS INVENTORY

Generally, GHG emissions inventories identify the sources, activities, and sectors that represent emissions within a jurisdiction and the relative contributions of each. This RCAAP uses 2019 as the baseline year for its GHG inventory, which provides a snapshot of GHG emissions and may influence related policy decisions to reduce emissions. The GHG inventory was prepared in accordance with the *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions* (Community Protocol), developed by the International Council for Local Environmental Initiatives – Local Governments for Sustainability (ICLEI). The California Air Resources Board (CARB) advises local governments to utilize the Community Protocol for GHG emissions assessments and climate action planning processes. The basic calculation for estimating GHG emissions involves two primary inputs: (1) activity data; and (2) emissions factors. Activity data refer to the relevant measurement of an activity resulting in GHG emissions within the county, while emissions factors represent the amount of GHGs emitted per unit of activity. Emissions factors are applied to activity data (i.e., the two values are multiplied) to estimate GHG emissions. See **Appendix B** for more details on the methods used to prepare the GHG inventory.

The three primary GHGs included in the countywide GHG inventory are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Emissions of these gases were converted to a comparable unit by multiplying each non-CO₂ gas by its global warming potential (GWP), which enables the reporting of emissions in terms of carbon dioxide equivalent (CO₂e). For example, CH₄ has a GWP value of 27.9, meaning it is 27.9 times more potent than CO₂—which has a GWP value of one—over a 100-year period. The GWPs of each GHG are visualized in **Figure 2.2** below. This conversion allows consideration of all GHGs in comparable terms and makes it easier to communicate how various types of GHG emissions contribute to climate change. GHG emissions are reported in metric tons of CO₂e (MTCO₂e), the standard measurement for the amounts of GHG emissions created and released into the atmosphere, using the GWP values derived from the Intergovernmental Panel on Climate Change (IPCC) *Sixth Assessment Report*.

GWPs are used to allow comparisons of the global warming impacts of different GHGs and to allow policymakers to compare reduction opportunities across different sectors and gases—the larger the GWP, the more that a given gas warms the Earth compared to CO₂ over a given period.

Figure 2.2 Global Warming Potentials Visualization



Note: GHG = greenhouse gas; x = times.

Source: **Developed by Ascent in 2025.**

The 2019 GHG emissions inventory results, as summarized in **Table 2.1** and **Figure 2.3** below, show that total countywide emissions were 1,221,861 MTCO₂e. When broken down by sector, the three largest were on-road transportation, building energy, and solid waste, representing 39, 23, and 16 percent of total emissions, respectively. The four remaining sectors (i.e., off-road equipment, agriculture, wastewater, and imported water), in total, accounted for about 22

percent of countywide emissions. Comparatively, when broken down by jurisdiction, the City of Napa accounted for the largest percentage of countywide emissions at 43 percent, followed by the unincorporated county at 31 percent, American Canyon at 16 percent, and each of St. Helena, Calistoga, and Yountville at 5 percent or under.

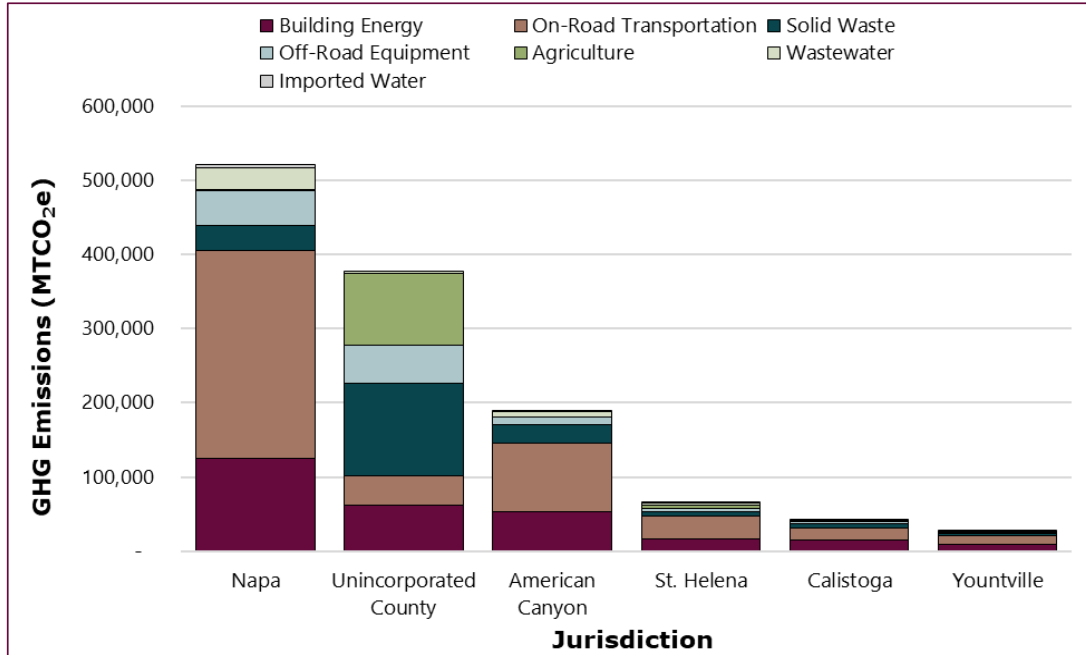
Table 2.1 Napa County Regional 2019 Greenhouse Gas Emissions Inventory by Sector and Jurisdiction

Sector or Jurisdiction	2019 GHG Emissions (MTCO ₂ e)	Percent of Total GHG Emissions
By Sector		
On-Road Transportation	472,677	39%
Building Energy	279,592	23%
Solid Waste	198,862	16%
Off-Road Equipment	115,548	9%
Agriculture	103,381	8%
Wastewater	45,858	4%
Imported Water	5,943	<1%
Total	1,221,861	100%
By Jurisdiction		
Napa	522,363	43%
Unincorporated County	377,731	31%
American Canyon	189,156	16%
St. Helena	64,575	5%
Calistoga	41,990	3%
Yountville	26,047	2%
Total	1,221,861	100%

Notes: Individual percentages displayed in this table have been rounded to the nearest whole percent and were conducted independently after all calculations were made; thus, the total sum of individual percentages may not equate exactly to 100 percent. % = percent; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

Source: **Analysis conducted by Ascent in 2022.**

Figure 2.3 Napa County Regional 2019 Greenhouse Gas Emissions Inventory by Sector and Jurisdiction



Notes: GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

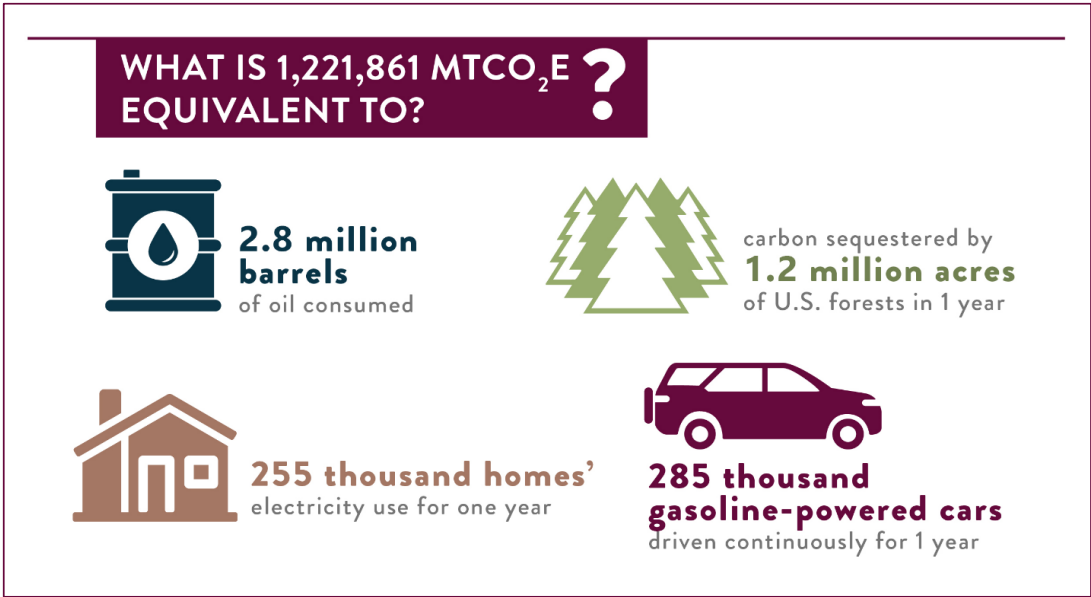
Source: **Developed by Ascent in 2025.**



Photo Credit: **City of American Canyon.**

As shown in **Figure 2.4** below for illustrative purposes, Napa County’s total GHG emissions in 2019 of approximately 1,221,861 MTCO₂e are equivalent to: (1) roughly 2,800,000 barrels of oil consumed; (2) about 255,000 homes’ electricity use for one year; (3) the carbon sequestered by 1,200,000 acres of forest in one year; and (4) about 285,000 gasoline-powered cars driven continuously for one year (EPA 2024).

Figure 2.4 Greenhouse Gas Emissions Equivalencies



Note: MTCO₂e = metric tons of carbon dioxide equivalent.

Source: **EPA 2024; developed by Ascent in 2025.**

Carbon Stock

Preserving and enhancing the county’s carbon stock plays a critical role in mitigating climate change. Carbon stock refers to the amount of carbon stored in vegetation, soils, and other natural systems, while carbon sequestration is the process by which these systems absorb and store atmospheric CO₂ over time. Maintaining and expanding carbon stock can provide long-term climate benefits by offsetting emissions from human activities. However, due to the complexities of forecasting carbon stock changes and the current limitations in standardized GHG accounting methodologies, carbon stock and sequestration are not included in the GHG emissions inventory or forecasts presented in this chapter.

Unlike emissions from traditional GHG sectors (e.g., building energy, transportation), which follow relatively predictable trends, carbon stock and sequestration rates are highly variable and influenced by numerous dynamic factors, including land use changes, climate conditions, soil health, and vegetation growth or loss. Additionally, while GHG inventories focus on emissions generated within a specific reporting year, carbon stock changes can occur gradually over

decades, making them difficult to measure within accounting frameworks used for climate action planning. Furthermore, land-based carbon sequestration is inherently reversible; disturbances such as wildfires, land conversion, or extreme drought can release stored carbon back into the atmosphere, adding further uncertainty to long-term sequestration forecasts.

Despite these challenges, the *Regional Carbon Stock Inventory Report for Napa County*, prepared in 2023 (which can be found in **Appendix C**), provides valuable insights into the county's existing carbon stocks and sequestration potential. The report quantifies the amount of carbon stored in vegetation and soils across different land cover types, including forests, grasslands, shrublands, wetlands, and more. By understanding the distribution of stored carbon, the Napa County Jurisdictions can better identify opportunities to enhance sequestration through conservation, reforestation, regenerative agricultural practices, and improved land management. While carbon stock is not included in the RCAAP's GHG inventory, the findings from the carbon stock inventory helped inform the sequestration-related measures included in **Chapter 3**.

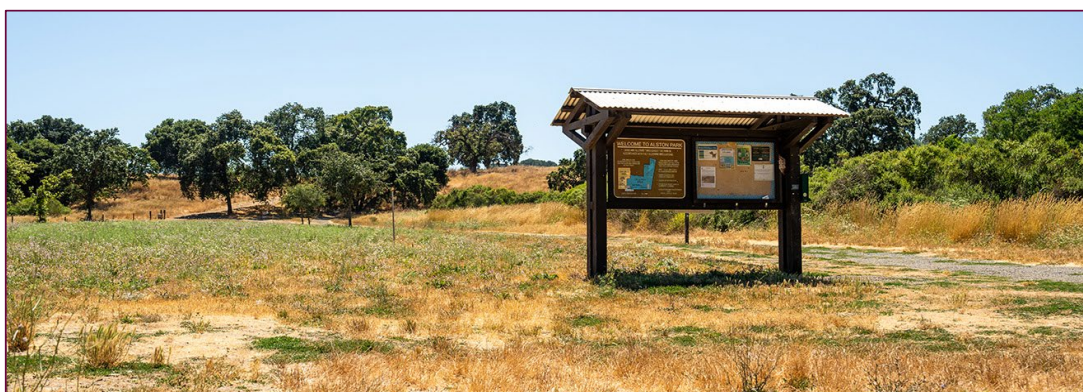


Photo Credit: City of Napa.

Short-Lived Climate Pollutants

Short-lived climate pollutants (SLCPs) are a group of highly potent GHGs that remain in the atmosphere for a much shorter duration than CO₂ but have a significantly higher GWP over a 20-year period. These pollutants, which include methane (CH₄), black carbon, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), also contribute to degraded air quality and associated public health risks. While SLCPs play a major contributing role to near-term climate change, most SLCPs are not included in the GHG emissions inventory or forecasts presented in this chapter due to several key factors.

First, standard GHG inventories, including those developed at the State level, are designed to align with reporting protocols that focus primarily on long-lived climate pollutants (e.g., CO₂). Apart from CH₄ (due to its well-established anthropogenic sources and inclusion in global accounting frameworks), SLCPs are not accounted for in the State's GHG reduction goals established by Senate Bill (SB) 32 or Assembly Bill (AB) 1279. Black carbon, for example, is difficult to quantify with the same level of accuracy as long-lived GHGs, as it is not a single

chemical compound but a component of fine particulate matter, making its measurement and long-term forecasting more complex. Additionally, a significant portion of black carbon emissions in Napa County originates from wildfires, which are categorized as non-anthropogenic under State and international GHG accounting methodologies. Other SLCPs, such as HFCs, PFCs, and SF₆, largely stem from industrial and commercial sources, which are often regulated at the State level rather than through local or regional climate action planning efforts. However, even though SLCPs are technically out of the scope of this RCAAP: (1) a separate technical memorandum inventorying SLCPs within the county was prepared, which can be found in **Appendix D**; and (2) several of the measures presented in **Chapter 3** and **Chapter 5** would inherently result in the reduction of SLCPs within the county.



Photo Credit: County of Napa.

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 regional, 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 RCAAP includes two forecast scenarios. The first scenario is a “business-as-usual” (BAU) forecast based on various scaling factors for each sector, which assumes no additional legislative or regulatory actions will occur in the future. 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 (which are discussed further in **Section 2.4**). The second scenario is a forecast with legislative reductions, where the BAU forecast is adjusted to account for the effects of regional, State, and federal regulations on forecasted emissions. Each forecast scenario estimates emissions for 2030, 2035, and 2045.

Business-As-Usual Greenhouse Gas Emissions Forecast

The BAU forecast estimates GHG emissions based on assessing how emissions generated by community activities will change over time without federal, State, regional, or local action. The BAU forecast considers projected population, housing, and job growth changes within the county. Based on 2019 GHG emissions levels (i.e., 1,221,861 MTCO₂e), the BAU forecast (as shown in **Table 2.2**) estimates annual GHG emissions in the county to increase slightly to 1,277,959 MTCO₂e by 2030, 1,263,720 MTCO₂e by 2035, and 1,265,143 MTCO₂e by 2045. In other words, if all activities in the county continued as usual without any additional governmental interventions, GHG emissions would increase over time, compared to 2019 baseline emissions.

Table 2.2 Napa County Regional Business-As-Usual Greenhouse Gas Emissions Forecast by Sector for 2030, 2035, and 2045

Sector	2019 GHG Emissions (MTCO ₂ e)	2030 GHG Emissions (MTCO ₂ e)	2035 GHG Emissions (MTCO ₂ e)	2045 GHG Emissions (MTCO ₂ e)
GHG Emissions (MTCO₂e)				
On-Road Transportation	472,677	450,387	438,275	430,763
Building Energy	279,592	326,969	324,880	327,387
Solid Waste	198,862	217,407	215,942	216,139
Off-Road Equipment	115,548	118,539	118,318	119,557
Agriculture	103,381	105,244	106,690	109,538
Wastewater	45,858	52,621	52,772	54,585
Imported Water	5,943	6,793	6,845	7,174
Total	1,221,861	1,277,959	1,263,720	1,265,143
Percent Change from 2019				
On-Road Transportation	N/A	-5%	-7%	-9%
Building Energy	N/A	+17%	+16%	+17%
Solid Waste	N/A	+9%	+9%	+9%

Sector	2019 GHG Emissions (MTCO ₂ e)	2030 GHG Emissions (MTCO ₂ e)	2035 GHG Emissions (MTCO ₂ e)	2045 GHG Emissions (MTCO ₂ e)
Off-Road Equipment	N/A	+3%	+2%	+3%
Agriculture	N/A	+2%	+3%	+6%
Wastewater	N/A	+15%	+15%	+19%
Imported Water	N/A	+14%	+15%	+21%
Total	N/A	+5%	+3%	+4%

Notes: Individual percentages displayed in this table have been rounded to the nearest whole percent and were conducted independently after all calculations were made. / % = percent; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent; N/A = not applicable.

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

Greenhouse Gas Emissions Forecast with Legislative Reductions

The forecast with legislative reductions evaluates how countywide GHG emissions would change over time, accounting for legislative and regulatory actions at the regional, State, and federal levels, such as requirements to increase vehicle fuel efficiency. This forecast provides the Napa County Jurisdictions with the information needed to focus efforts on specific emissions sectors and sources with the most GHG reduction opportunities. **Table 2.3** includes the regional, State, and federal regulations that will result in quantifiable GHG emissions reductions for this RCAAP's forecast years of 2030, 2035, and 2045. Further details on these federal and State regulations can be found in **Appendix E**.

Table 2.3 Regional, State, and Federal Regulations Applied as Legislative Reductions

Laws or Regulations ¹	Description	Applicable Sector
Regional		
MCE Power Procurements	MCE aims to continue procuring 95 percent of its energy from GHG-free sources.	Building Energy
Bay Area Air District Zero NOx Appliance Rule	Prohibits the sale and installation of NOx-emitting water heaters by 2027, furnaces by 2029, and large commercial water heaters by 2031 in the Bay Area Air District's jurisdiction. Currently, the only technology available to meet these rules is electric.	Building Energy
State		
California's Building Energy Efficiency Standards	Requires all new buildings in California to comply with energy efficiency standards established by the CEC. Accounts for the energy efficiency gains associated with lighting, heating, cooling, ventilation, and water heating improvements, as well as onsite solar photovoltaic requirements for low-rise residential.	Building Energy

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Laws or Regulations ¹	Description	Applicable Sector
Renewables Portfolio Standard	Requires California energy utilities to procure 60 percent of electricity from renewable sources by 2030 and 100 percent carbon-free electricity by 2045.	Building Energy
SB 1020: Clean Energy, Jobs, and Affordability Act	Requires that 90 percent of retail electricity be procured from zero-carbon sources by 2035 and 100 percent renewable electricity be procured to serve all State agencies by December 31, 2035. This also affects water imported from DWR.	Imported Water
AB 1346: Small Off-Road Engines	Prohibits exhaust or evaporative emissions from new small off-road engines produced on or after January 1, 2024. It also requires CARB to fund commercial rebates or similar incentives through local air districts.	Off-Road Equipment
Advanced Clean Car Regulations	Establishes GHG emission reduction standards for model years 2017-2025 that are more stringent than federal CAFE standards.	On-Road Transportation
Advanced Clean Cars II Regulations	Assumes 100 percent of new light-duty vehicles would be ZEV or PHEV by model year 2035. Requirements begin at a 35 percent ZEV or PHEV for the 2026 model year.	On-Road Transportation
Advanced Clean Fleets (ACF) Regulation²	Establishes zero-emissions targets for heavy-duty vehicles in fleets operating in California.	On-Road Transportation
Truck and Bus Regulation	Requires diesel trucks and buses that operate in California to be upgraded to reduce GHG emissions.	On-Road Transportation
Federal		
Fuel Efficiency Standards for Medium- and Heavy-Duty Vehicles	Establishes fuel efficiency standards for medium- and heavy-duty engines and vehicles.	On-Road Transportation
EPA Off-Road Compression Ignition Engine Standards	Establishes standards for phasing of EPA diesel engine tiers for off-road compression-ignition equipment.	Off-Road Equipment

Notes: SB 1383, described previously in Table 1.3 in Chapter 1, is anticipated to reduce emissions of methane from the solid waste sector by requiring local jurisdictions to separately collect organic waste statewide by 2022. However, waste collection services in the region have already begun to collect organics separately. Because of the bill's reliance on local compliance, the impact of SB 1383 is excluded from the legislative-adjusted BAU forecasts for the region. See Appendix E for further details. / AB = Assembly Bill; ACF = Advanced Clean Fleets; CAFE = Corporate Average Fuel Economy; CARB = California Air Resources Board; CEC = California Energy Commission; DWR = California Department of Water Resources; EPA = United States Environmental Protection Agency; GHG = greenhouse gas; MCE = Marin Clean Energy; NOx = nitrogen oxide; PHEV = plug-in hybrid electric vehicle; SB = Senate Bill; State = State of California government; ZEV = zero-emission vehicle.

¹ The U.S. Congress voted in Spring 2025 to limit California's authority to regulate vehicle emissions under existing programs provided through a waiver of the Clean Air Act. As of June 2025, the State of California is challenging the legality of Congress' action, and given the pending litigation, it is assumed CARB will continue to enforce these programs for the purpose of the legislative-adjusted forecasts in the RCAAP.

² As of June 2025, CARB is evaluating next steps regarding the ACF Regulation and is not enforcing the existing portions of the ACF Regulation that require a federal waiver or authorization, such as the portions of the ACF Regulation that apply to high priority and drayage fleets. However, not all elements of the ACF Regulation require a federal waiver or authorization and the State and local government fleets portion of the ACF Regulation remains unaffected.

Source: **Compiled by Ascent in 2025.**

The adjusted forecast after applying these legislative reductions from regional, State, and federal regulations (as shown in **Table 2.3**) can be found in **Table 2.4** and **Figure 2.5** below. As shown, the forecast with legislative reductions results in much lower emissions estimates for 2030, 2035, and 2045 compared to the BAU forecast. For comparison, BAU emissions for 2030, 2035, and 2045 all fall between 1,200,000 and 1,300,000 MTCO₂e, while the forecast with legislative reductions estimates emissions for the same years at 898,904, 747,956, and 547,378 MTCO₂e, respectively.

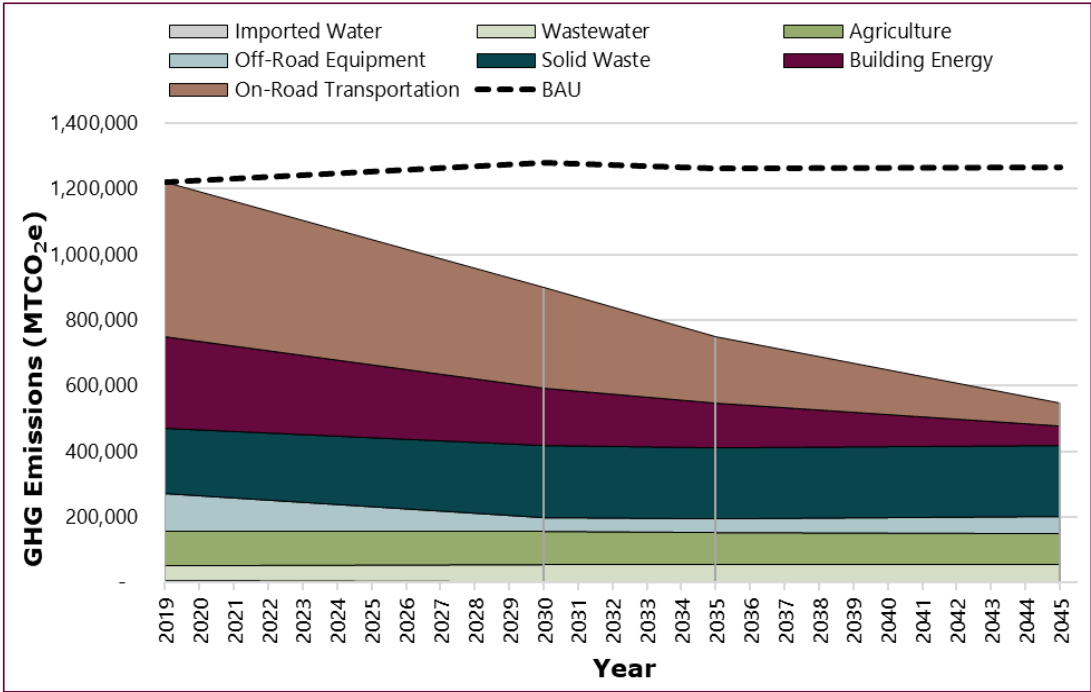
Table 2.4 Napa County Regional Greenhouse Gas Emissions Forecast with Legislative Reductions by Sector for 2030, 2035, and 2045

Sector	2019 GHG Emissions (MTCO ₂ e)	2030 GHG Emissions (MTCO ₂ e)	2035 GHG Emissions (MTCO ₂ e)	2045 GHG Emissions (MTCO ₂ e)
GHG Emissions (MTCO₂e)				
On-Road Transportation	472,677	307,817	201,923	71,157
Building Energy	279,592	174,638	134,828	59,733
Solid Waste	198,862	217,407	215,942	216,139
Off-Road Equipment	115,548	43,886	43,767	49,694
Agriculture	103,381	99,240	98,018	96,070
Wastewater	45,858	52,621	52,772	54,585
Imported Water	5,943	3,296	707	0
Total	1,221,861	898,904	747,956	547,378
Percent Change from 2019				
On-Road Transportation	N/A	-35%	-57%	-85%
Building Energy	N/A	-38%	-52%	-79%
Solid Waste	N/A	+9%	+9%	+9%
Off-Road Equipment	N/A	-62%	-62%	-57%
Agriculture	N/A	-4%	-5%	-7%
Wastewater	N/A	+15%	+15%	+19%
Imported Water	N/A	-45%	-88%	-100%
Total	N/A	-26%	-39%	-55%

Notes: Individual percentages displayed in this table have been rounded to the nearest whole percent and were conducted independently after all calculations were made. / % = percent; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent; N/A = not applicable.

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

Figure 2.5 Napa County Regional Greenhouse Gas Emissions Forecast with Legislative Reductions by Sector through 2045



Notes: BAU = business-as-usual; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

Source: Developed by Ascent in 2025.

2.4 GREENHOUSE GAS EMISSIONS REDUCTION TARGETS

A core component of this RCAAP is establishing GHG reduction targets to determine the reductions needed from the GHG reduction measures prepared for this plan, which are detailed in **Chapter 3**. The RCAAP targets were developed to align with the statewide GHG reduction targets established by SB 32 and AB 1279. As directed in SB 32 and AB 1279, the State aims to reduce annual GHG emissions to:

- ▶ **40 percent below 1990 levels by 2030**, and
- ▶ **85 percent below 1990 levels by 2045**, with net-zero emissions achieved through CO₂ removal.

While State legislative targets are based on 1990 statewide GHG emissions levels, the Napa County Jurisdictions do not have a countywide inventory from the year 1990 and must apply the 2019 inventory prepared for this RCAAP to 1990 levels using statewide GHG emissions data. As such, and consistent with the State's targets, the Napa County Jurisdictions aim to reduce annual countywide GHG emissions to:

- ▶ **42 percent below 2019 levels by 2030** (aligned with SB 32); and
- ▶ **85 percent below 2019 levels by 2045** (aligned with AB 1279), with a goal of carbon neutrality that would be achieved primarily through natural carbon sequestration.

See **Appendix F** for further explanations of how these locally specific targets were established. These targets, along with the reductions needed to achieve the targets, are detailed further in **Table 2.5** below. Two scenarios are presented in the table related to the 2045 target year, one without carbon neutrality and one with carbon neutrality. The scenario without carbon neutrality shows the reductions that would be needed to reduce countywide GHG emissions to 85 percent below 2019 levels by 2045. In contrast, the scenario with carbon neutrality shows the net reductions that would be needed to achieve net-zero GHG emissions by 2045. The Napa County Jurisdictions will need to undertake additional efforts to close the "gap" in reductions that are still needed to achieve its targets, and these additional efforts come in the form of the GHG reduction strategies, measures, and actions presented in **Chapter 3**.

The RCAAP's GHG emissions reduction targets are aligned with the State's targets, despite being based on different baseline years.



Photo Credit: City of American Canyon.

Table 2.5 Napa County Regional Greenhouse Gas Emissions Reduction Targets for 2030, 2035, and 2045

Analysis	2030	2035	2045
Without Carbon Neutrality by 2045:			
Total Forecasted GHG Emissions with Legislative Reductions (MTCO₂e)	898,904	747,956	547,378
Target GHG Emissions Levels (MTCO₂e)	709,685	520,547	178,836
Target GHG Emissions Levels Below 2019 Levels	42%	57%	85%
Total Reductions Needed to Meet Target (MTCO₂e)	189,219	227,410	368,542
With Carbon Neutrality by 2045:			
Total Forecasted GHG Emissions with Legislative Reductions (MTCO₂e)	898,904	747,956	547,378
Goal Net-GHG Emissions Levels (MTCO₂e)	709,685	520,547	0
Goal Net-GHG Emissions Levels Below 2019 Levels	42%	57%	100%
Total Net Reductions Needed to Meet Goal (MTCO₂e)	189,219	227,410	547,378

Notes: % = percent; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

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



CHAPTER 3

Greenhouse Gas Reduction Measures

3 GREENHOUSE GAS REDUCTION MEASURES

This chapter presents a set of greenhouse gas (GHG) reduction strategies, measures, and actions that will reduce emissions across all sectors to achieve countywide GHG reduction targets. Specifically, it includes the following:

- ▶ A description of the GHG reduction framework and the applicability of the GHG reduction strategies, measures, and actions across local jurisdictions within Napa County (hereinafter referred to as “Napa County Jurisdictions” when pertaining to the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville), as detailed in **Section 3.1**;
- ▶ An overview of the GHG reduction potential of the quantified measures and a discussion of the most effective measures, presented in **Section 3.2**;
- ▶ A detailed assessment of the individual GHG reduction measures, both quantitative and qualitative, including estimated GHG reductions, supporting actions, potential implementation partners, and co-benefits, analyzed in **Section 3.3**.

3.1 REGIONAL GREENHOUSE GAS REDUCTION FRAMEWORK

The plan for reducing GHG emissions across Napa County is based on a policy framework that includes **strategies, measures, and actions**.

- ▶ **Strategies** are broadly stated goals for reducing GHG emissions within a given GHG emissions sector.
- ▶ **Measures** are the specific objectives or policies that need to be achieved and implemented under each strategy to reduce GHG emissions.
- ▶ **Actions** are the more detailed steps that various actors will take to implement the GHG reduction measures.

This framework aligns with the GHG inventory's sectors, like building energy and transportation. Each strategy has several measures, which include estimates of GHG reductions that would be achieved for quantifiable GHG reduction measure, and each measure has specific actions that jurisdictions will take to implement the measure.

Across the six emissions sectors, 21 different GHG reduction strategies are supported by 46 measures and 107 actions. The measures are organized by emissions sector and identified by a unique set of letters and numbers corresponding to each emissions sector (e.g., BE-1 for the first measure under the building energy emissions sector).

The GHG reduction measures reduce emissions from human activities (e.g., building energy use and transportation), and enhance carbon storage (e.g., carbon farming and restoring wildfire-affected areas). As discussed in **Chapter 2**, the GHG reduction targets established for this Napa County Regional Climate Action and Adaptation Plan (RCAAP) include a 42 percent reduction in emissions below 2019 levels by 2030 and 85 percent by 2045, with a goal of carbon neutrality by 2045. Measures that increase carbon sequestration will only count toward the 2045 carbon neutrality goal. Both sets of measures—those that reduce human-caused emissions and those that sequester carbon—will help achieve overall GHG reduction goals.

The GHG reduction framework is designed for countywide application, and many measures will be applied and implemented consistently across all Napa County Jurisdictions, addressing broad issues and emissions sources that are shared across multiple jurisdictions. However, some GHG reduction measures do not apply uniformly across all jurisdictions and only apply to specific local contexts and needs. For example, measures focusing on open space and agricultural lands may be pertinent primarily to the unincorporated area. By recognizing these distinctions, the RCAAP ensures that each jurisdiction can effectively contribute to the overall GHG reduction goals while addressing their unique challenges and opportunities.

Each measure includes at least one or more actions identifying the implementation mechanisms and specific steps the Napa County Jurisdictions will take to implement the measure, such as developing and adopting ordinances, programs, partnerships, and ongoing outreach and education. Short- and long-term actions are included under each measure to facilitate implementation. Short-term actions are designed to be completed within five years of the RCAAP's adoption. Long-term actions ensure measures meet their long-term goals by maintaining funding, increasing participation, or adjusting for changes in local or regulatory circumstances. Additional implementation details for all GHG reduction measures are included in **Chapter 6**.

3.2 OVERVIEW OF GREENHOUSE GAS REDUCTION MEASURES ANALYSIS

A total of 46 GHG reduction measures will lower emissions from all sectors evaluated in the GHG emissions inventory, including on-road transportation, building energy use, off-road equipment, agriculture, solid waste, and water and wastewater. The GHG reduction potential of the measures was quantified for 17 of the 46 measures. The remaining measures were not quantified for one or more reasons, including lack of available data or quantitative methods, the qualitative nature of some measures, uncertainty regarding the effectiveness of some measures, or limitations on local jurisdictions’ control over the impact of the measure (e.g., education, encouragement, supporting local partners). The GHG reduction measures aim to reduce human-caused emissions and increase carbon sequestration to achieve the 2030 and 2045 targets, as well as the 2045 carbon neutrality goal. If all GHG reduction measures are implemented as planned and regional growth aligns with projections, the reductions should meet both the 2030 and 2045 targets and the 2045 carbon neutrality goal. Actual reductions may be greater, as many measures are not quantified and could have additional reduction potential.

Table 3.1 summarizes the 46 GHG reduction measures along with any estimated annual reductions in 2030, 2035, and 2045, organizing them by sector and strategy. The annual estimated GHG reductions are shown relative to future forecasted emissions in each respective year (e.g., a 1,000 metric tons of carbon dioxide equivalent [MTCO₂e] reduction in 2030 would be subtracted from the forecasted emissions in 2030). Emissions reductions from increased carbon sequestration are assumed to lower total countywide emissions across all sectors. Table 3.1 also shows that the GHG reduction measures, combined, will meet and exceed estimated reductions compared to the 2030 and 2045 targets and 2045 carbon neutrality goal. The quantification assumptions and methods used to estimate the emissions reductions are discussed in **Appendix F**.

Table 3.1 Greenhouse Gas Emissions Reductions by Measure and Strategy (MTCO₂e)

Measure ID	Strategy/Measure Title	2030	2035	2045
Strategy: Clean and Efficient Energy Use in Existing Buildings				
BE-1	Retrofit Existing Buildings to Zero Carbon	38,703	57,957	36,412
BE-2	Energy Audits for Existing Non-Residential Buildings	N/A	N/A	N/A
BE-3	Increase Renewable Energy Generation	1,875	3,510	0
BE-4	Increase Sustainable Winery Certification	N/A	N/A	N/A
Strategy: Zero Carbon Development				
BE-5	Decarbonize New Buildings	19,418	18,428	21,963
Strategy: Energy Education, Awareness, and Behavior Change				
BE-6	Empower Community to Reduce Building Energy Emissions	N/A	N/A	N/A
Strategy: Low Vehicle Miles Traveled				
TR-1	Reduce Vehicle Miles Traveled Countywide	N/A	N/A	N/A
Strategy: Reduce Commercial VMT				
TR-2	Reduce Winery Wastewater Hauling Emissions	520	415	215
Strategy: Zero Carbon Fuels				
TR-3	Expand Electric Vehicle Charging Infrastructure	N/A	N/A	N/A
TR-4	Leverage New Development to Support Zero-Emission Vehicles	N/A	N/A	N/A
TR-5	Increase Municipal Zero-Emission Vehicle Adoption	N/A	N/A	N/A
TR-6	Increase Commercial Zero-Emission Vehicle Adoption	N/A	N/A	N/A
TR-7	Increase Residential Zero-Emission Vehicle Adoption	N/A	N/A	N/A
TR-8	Restrict Development of New Fossil Fuel Pumps	N/A	N/A	N/A
TR-9	Expand Renewable Diesel Availability	17,830	36,228	43,785
Strategy: Active Transportation				
TR-10	Implement the Active Transportation Plan	1,829	1,708	748
Strategy: Transportation Demand Management (TDM)				
TR-11	Expand Transportation Demand Management Programs	3,689	2,351	673
TR-12	Fund Local Transportation Infrastructure Improvements	N/A	N/A	N/A

Chapter 3 | Greenhouse Gas Reduction Measures

Measure ID	Strategy/Measure Title	2030	2035	2045
Strategy: Visitor TDM				
TR-13	Reduce Vehicle Miles Traveled of Visitors to Napa County	N/A	N/A	N/A
Strategy: Parking				
TR-14	Reduce or Eliminate Parking Requirements	N/A	N/A	N/A
Strategy: Transportation Education				
TR-15	Empower Community to Choose Active Transportation Options	N/A	N/A	N/A
Strategy: Electrification and Clean Alternatives				
OF-1	Reduce Landscaping-Related Emissions	290	149	12
OF-2	Zero-Emission Loading Docks	271	541	820
OF-3	Zero Carbon Construction Equipment - Community	0	5,944	10,221
OF-4	Zero Carbon Construction Equipment - Municipal	236	472	472
Strategy: Promote Zero Waste				
SW-1	Increase Solid Waste Diversion	47,342	56,974	68,072
SW-2	Reduce Construction and Demolition Waste	N/A	N/A	N/A
SW-3	Waste Education and Awareness	N/A	N/A	N/A
Strategy: Reduce Landfill Emissions				
SW-4	Increase Landfill Methane Capture Capacity	93,048	98,772	104,985
SW-5	Support Increased Methane Capture Efficiency at Regional Landfills	N/A	N/A	N/A
SW-6	Support Waste-to-Energy Facilities	N/A	N/A	N/A
Strategy: Wastewater Treatment				
WW-1	Reduce Methane Emissions from Wastewater Treatment Plants	32,739	43,227	45,412
Strategy: Promote Recycled Water				
WW-2	Explore Recycled Water Opportunities	N/A	N/A	N/A
Strategy: Water Use Efficiency Conservation				
WW-3	Reduce Residential Water Use	N/A	N/A	N/A
WW-4	Prioritize Native Drought Tolerant Plants in Municipal Landscaping	N/A	N/A	N/A
WW-5	Reduce Wasteful Potable Water Use	N/A	N/A	N/A
WW-6	Reduce Public Distribution System Water Loss	N/A	N/A	N/A

Chapter 3 | Greenhouse Gas Reduction Measures

Measure ID	Strategy/Measure Title	2030	2035	2045
Strategy: Reduce Water Loss				
WW-7	Improve Water Efficiency and Conservation	N/A	N/A	N/A
Strategy: Reduce GHGs from Agricultural Equipment				
AG-1	Reduce Fossil Fuel Consumption in Field Equipment	25,316	49,020	52,862
AG-2	Promote Sustainable Agricultural Equipment	N/A	N/A	N/A
Strategy: Increase Carbon Storage				
AG-3	Expand Carbon Farming Practices†	N/A	N/A	N/A
AG-4	Report on Carbon Farming Practices†	N/A	N/A	N/A
AG-5	Expand the Urban Forest†	N/A	N/A	N/A
AG-6	Accelerate Woodland and Forest Habitat Restoration and Stewardship in Rural Areas†	82,201	123,302	164,403
Strategy: Reduce Emissions from Vineyard Management				
AG-7	Increase Sustainable Vineyard Certification†	20,778	63,556	167,444
Strategy: Reduce Emissions from Livestock				
AG-8	Enhance Sustainable Livestock Practices	N/A	N/A	N/A
Strategy: Avoid or Minimize Carbon Sequestration Loss				
AG-9	Avoid or Minimize Carbon Sequestration Losses Associated with Development Projects	N/A	N/A	N/A
	Total Annual Reductions from human-caused sources only	283,105	375,696	386,653
	Reductions Needed to Meet 2030 and 2045 Targets ¹	189,219	227,410	368,542
	On Track to Meet Target?	Yes	Yes	Yes
	Total Annual Reductions from all sources	386,084	562,553	718,500
	Reductions Needed to Meet the 2045 Carbon Neutrality Goal ¹	189,219	227,410	547,378
	On Track to Meet 2045 Carbon Neutrality Goal?	Yes	Yes	Yes

Notes: N/A = not available. Refers to a qualitative measure. MTCO₂e = metric tons of carbon dioxide equivalent.

Values may not sum due to rounding.

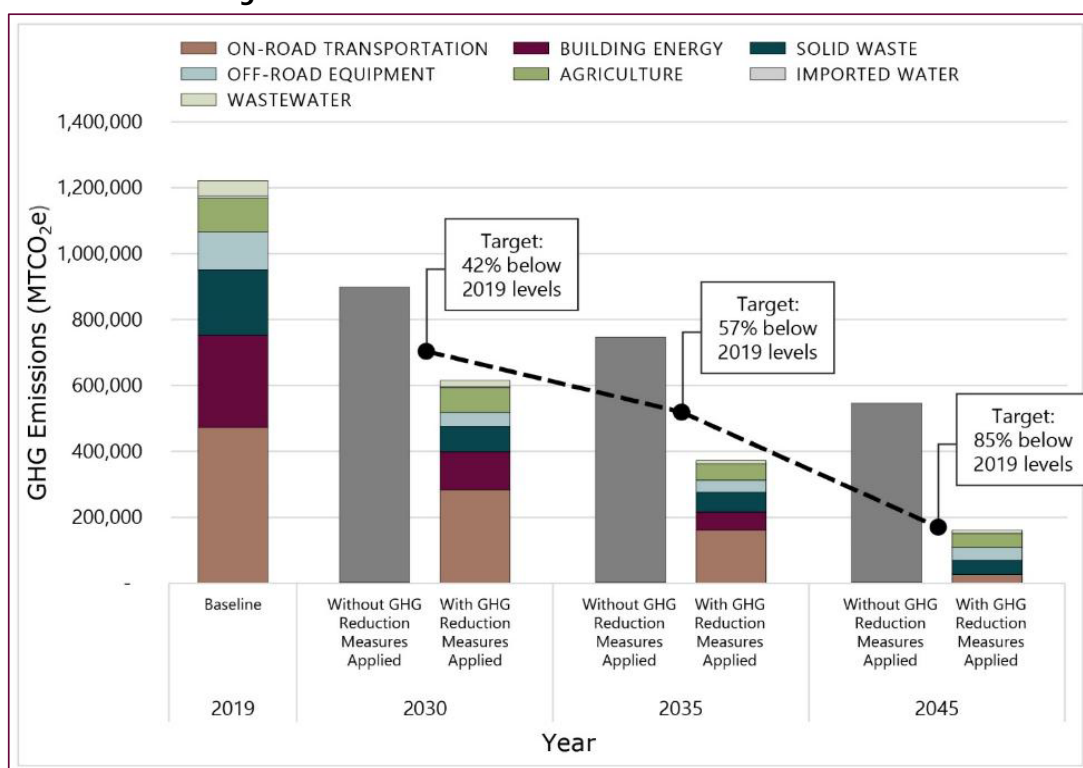
† Refers to GHG reduction through non-anthropogenic source.

¹ See Table 2.5

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

Figure 3.1 illustrates the impact of the GHG reduction measures on future forecasted emissions relative to the emission reduction targets. With the carbon sequestration-related measures, the combined effects of future legislation with the reductions from the GHG reduction measures would result in substantial reductions in emissions from on-road transportation, building energy, and agriculture. The majority of these reductions are attributable to measures that reduce solid waste emissions, retrofit existing buildings, reduce wastewater treatment emissions, and encourage the use of renewable diesel.

Figure 3.1 Estimated Greenhouse Gas Emissions With and Without Measures Applied through 2045



Notes: % = percent; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.

Source: Developed by Ascent in 2025.

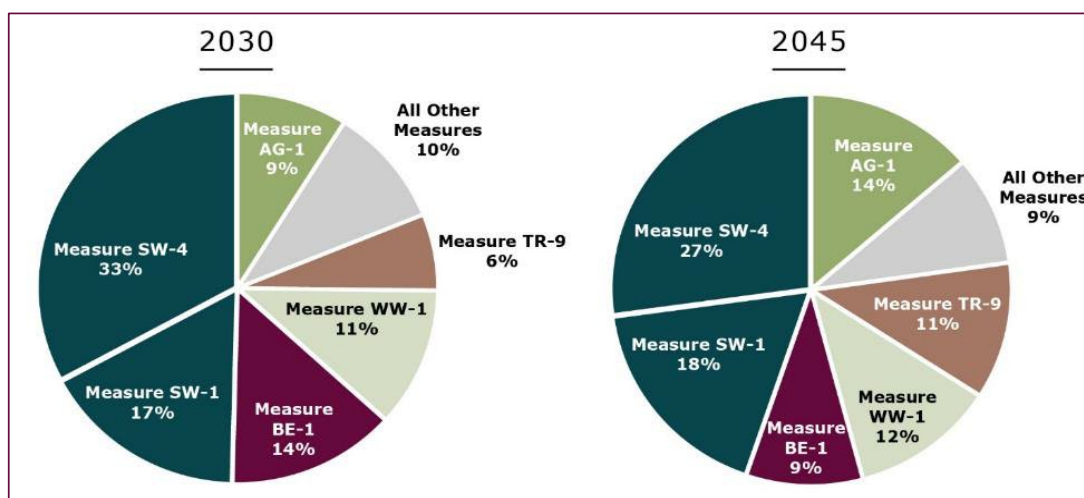
Although 46 GHG reduction measures are included, a few specific measures are projected to account for the vast majority of reductions from human-caused emissions by 2045. These include:

- ▶ BE-1: Retrofit Existing Buildings to Zero Carbon
- ▶ TR-9: Expand Renewable Diesel Availability
- ▶ AG-1: Reduce Fossil Fuel Consumption in Field Equipment

- ▶ SW-1: Increase Solid Waste Diversion
- ▶ SW-4: Increase Landfill Methane Capture Capacity
- ▶ WW-1: Reduce Methane Emissions from Wastewater Treatment Plants

Figure 3.2 illustrates the six measures' percent contribution to the total annual reductions by percent of total reductions from human-caused emissions. As shown in the pie charts, SW-1 and SW-4, which reduce emissions through increasing waste diversion from landfills and limiting fugitive methane (CH₄) emissions from landfills, together represent about half of the total reductions from across all GHG reduction measures addressing human-caused emissions, emphasizing the significant role of the solid waste sector in aiding the county to achieve its 2030 and 2045 targets. The remaining measures account for the other half of the reductions. Altogether, the six measures account for approximately 91 percent of total emissions reductions in 2045.

Figure 3.2 Percent Breakdown of Greenhouse Gas Emissions Reductions by Measure for 2030 and 2045



Note: The total GHG emissions reductions from all measures for 2030 and 2045 are 283,105 MTCO₂e and 386,653 MTCO₂e, respectively.

Source: Developed by Ascent in 2025.

Solid waste measures are key to reducing future emissions, as solid waste is expected to account for a larger share of the county's emissions by 2045. Current regulations are set to cut building energy and transportation emissions by about 80 percent from 2019 levels. However, solid waste emissions are only scaled up by the anticipated change in population, making solid waste nearly 40 percent of emissions in 2045, up from 16 percent in 2019. The solid waste measures also significantly reduce CH₄, a harmful SLCP with a much higher global warming potential than carbon dioxide (CO₂).

While short-lived climate pollutants (SLCPs) are not included in the countywide GHG inventory, many GHG reduction measures indirectly reduce them, especially methane (CH₄). CH₄ is a potent GHG with almost 28 times the warming potential of CO₂ in the 100-year term and around 80 times in the 20-year term, according to the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report. Measures that lower transportation-related emissions (e.g., TR-3, TR-10, TR-11) and those that reduce fugitive emissions from landfills contribute to significant CH₄ reductions.

Carbon Sequestration Measures

The GHG reduction measures that have the potential to increase carbon sequestration include:

- ▶ AG-3: Expand Carbon Farming Practices
- ▶ AG-4: Report on Carbon Farming Practices
- ▶ AG-5: Expand the Urban Forest
- ▶ AG-6: Restore Woodland and Forest Habitat
- ▶ AG-7: Increase Sustainable Vineyard Certification

Of these measures, only AG-6 and AG-7 are quantified. AG-6 increases carbon storage and sequestration by restoring wildfire-affected areas, while AG-7 does so through carbon farming and sustainability efforts at vineyards. Combined, AG-6 and AG-7 account for over 330,000 MTCO₂e in reductions, or 44 percent of all estimated reductions in 2045. When bundled with other GHG reduction measures, these would help the county meet or exceed its carbon neutrality goal by 2045 and allow additional flexibility to meet the region's carbon neutrality goal by providing a buffer for future variability and uncertainty when implementing the RCAAP.

3.3 INDIVIDUAL GREENHOUSE GAS REDUCTION MEASURES

The following pages detail the individual GHG reduction measures. Each page includes a brief description of the measure; the strategy it is associated with; applicable jurisdictions in which the measure will be implemented; potential implementation partners (e.g., local community-based organizations); estimated GHG reduction potential, if applicable; co-benefits (e.g., public health); and measure objectives. Additionally, specific short- and long-term actions that would be needed to implement each measure are identified. Additional implementation details can be found in **Chapter 6**.

MEASURE BE-1: Retrofit Existing Buildings to Zero Carbon

With Napa County's population expected to grow by 18 percent from 2019 to 2045, existing buildings will constitute most building energy-related emissions in the future. Napa County Jurisdictions will develop and implement energy retrofit programs for existing residential and non-residential buildings to transition 25 percent of existing buildings to zero carbon by 2030 and 100 percent by 2045. These programs include financial incentives, streamlined permitting, and community outreach to facilitate the transition to cleaner energy use.

Strategy

Clean and Efficient Energy Use in Existing Buildings

Applicable Jurisdictions

All

GHG Reduction Potential

2030 38,703 MTCO₂e

2035 57,957 MTCO₂e

2045 36,412 MTCO₂e

Partners

- ▶ Bay Area Air District
- ▶ Bay Area Regional Energy Network (BayREN)

- ▶ Metropolitan Transportation Commission (MTC)/Association of Bay Area Governments (ABAG)
- ▶ Pacific Gas and Electric Company (PG&E), Marin Clean Energy (MCE), and other utilities
- ▶ Certified Electrical Safety Compliance Professional (CESCP)
- ▶ BayREN Codes & Standards
- ▶ Chambers of Commerce

Targets

- ▶ 25 percent of existing buildings are zero carbon by 2030
- ▶ 100 percent of existing buildings are zero carbon by 2045

Co-Benefits



Cost Savings



Economic Opportunity



Energy Security



Public Health & Wellbeing

SHORT-TERM ACTIONS

BE-1-A: Secure funding to support the implementation of energy efficiency and electrification actions.

BE-1-B: To prepare for building electrification, work with local and regional agencies such as Bay Area Air District, BayREN, MTC/ABAG, PG&E, MCE, or others, to create a pre-electrification program that provides affordable financing or rebates or other incentives, depending on funding available, for electric panel upgrades. Begin by annually identifying buildings with natural gas water heaters or furnaces within 2 years of their average service lifetime, based on dates of original permits. Once identified, reach out to property owners to present the available incentives. Identify if electric panel upgrades are needed to support full building electrification. Also, determine if the building is suitable for on-site renewable energy (e.g., solar) and battery storage. Confirm with PG&E that the electric infrastructure will be able to support widespread or neighborhood-level electrification, and if not, work with PG&E to identify a timeline for upgrades.

BE-1-C: Reach Codes: Work with the CECSP to develop reach codes and associated cost-effectiveness studies that must be met for existing buildings. The reach codes will include the following performance standards or other similar standards that achieve equivalent GHG emission reductions:

- i) Existing residential buildings' modeled energy efficiency score must meet or exceed half of the maximum cost-effective score at time-of-retrofit (note: "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.)
- ii) Existing nonresidential buildings must reduce their non-electricity-related emissions by 19 percent by 2030, and 75 percent by 2045.

BE-1-D: Reach Codes: Determine reach code compliance triggers for retrofits, which may be based on one or more metrics such as percent of existing floor area, building permit valuation, or project valuation.

BE-1-E: Reach Codes: Conduct stakeholder outreach with building industry members, contractors, residents, businesses, and other interest groups to present the reach code options and solicit feedback.

BE-1-F: Reach Codes: Adopt an ordinance(s) to implement and enforce the new reach code(s) for existing buildings. Pursuant to new statewide residential building code update limitations in Assembly Bill (AB) 130 (signed into law on June 30, 2025), a residential reach code may not be adopted and enforced until in 2031; however, nonresidential reach code adoption and enforcement may proceed starting in 2026.

BE-1-G: Reach Codes: Conduct training for permitting staff to understand the reach code requirements for existing buildings and how compliance will be demonstrated.

BE-1-H: Reach Codes: 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.

BE-1-I: Streamlined Permitting for Electrification: Review the existing permitting processes for building owners seeking to replace fossil-fueled equipment with electric equipment and modify as needed to reduce complexity, cost, and processing time for any required permits.

BE-1-J: Streamlined Permitting for Electrification: Waive or reduce permitting fees for building retrofit projects that convert mixed-fuel buildings to all-electric and cap natural gas lines, to encourage exceedance of existing code requirements. Additionally, waive or reduce penalties/fees for prior non-permitted work that is upgraded for code compliance. Fee reduction may require modification of local fee ordinances.

BE-1-K: Community Outreach and Education: Develop a community 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. Program elements could include developing and/or sharing existing online educational materials targeted to building owners and tenants that are hosted on the jurisdiction's websites on energy efficiency and building electrification; promoting training, fact sheets, information on available incentives, video tutorials, and links to existing content (such as The Switch is On). Educational materials and resources should also be provided as part of routine regulatory processes, such as applying for or renewing licenses or permits. Examples of incentives currently available (and subject to change) include:

- i) MCE's Residential and Commercial energy efficiency programs.

- ii) Energy Efficient Commercial Buildings Deduction tax credits program (179D).
- iii) Homeowner Managing Energy Savings (HOMES) rebate program.
- iv) High-Efficiency Electric Home Rebate (HEEHRA) program.

BE-1-L: Develop a revolving loan fund to provide low-interest loans to low-income residents to cover the time-of-replacement/emergency replacement of natural gas water heaters and/or HVAC units with electric options, ensuring that loans can be processed quickly and efficiently with equitable procedural access. Pursue grant funding opportunities to seed the revolving loan fund.

BE-1-M: For non-agricultural and agricultural operations, work with MCE to improve participation in the Commercial Energy Efficiency, Strategic Energy Management (SEM), and Agricultural and Industrial Resource (AIR) programs. Identify barriers that limit the current participation rate (e.g., knowledge about the program, program funding). Develop a plan to address the barriers to the program with the aim to reduce non-residential energy use by 25 percent by 2030 from 2019 levels.

LONG-TERM ACTIONS

BE-1-N: Secure long-term funding to continue offering energy efficiency, electrification, and other net zero carbon rebates based on demand and progress toward the measure goal.

BE-1-O: Provide a sliding schedule of rebates that offers more rebates in the short term and less in the long term, with a sunseting date that expires unless renewed. The schedule will depend on the amount of funding available.

Continue implementation of the pre-electrification program, adjusting for any improvements needed to increase participation such that 100 percent of buildings have the electric infrastructure to support full electrification.

BE-1-P: Reach Codes: Each jurisdiction will review their existing building reach codes at the release of each triennial building code cycle to ensure that the reach codes do not conflict with new cost-effective electrification pre-wiring and energy efficiency measures, such that the existing building reach codes are in line with the most recent decarbonization guidance and cost-effectiveness data.

BE-1-Q: Continue to streamline permitting and electrification program outreach, making any improvements in light of any challenges presented from implementation of other actions to achieve the goal of 100 percent electrification by 2045.

BE-1-R: For homes not eligible for BayREN/MCE programs, research opportunities to work with local financial institutions (e.g., credit unions, banks) to offer zero or low percent financing for a limited time (e.g., 24 months) or on a sliding scale based on income (e.g., 24 months for income over 50 percent of median, 48 month for income less than 50 percent, with increasing APRs after). Jurisdictions may consider helping to pay for interest for the first two years to fund loans.

MEASURE BE-2: Energy Audits for Existing Non-Residential Buildings

Energy audits provide property owners and operators with insight into the most cost-effective solutions to increase building energy efficiency. Napa County Jurisdictions will require existing non-residential buildings at the time of sale to disclose an energy score based on local energy benchmarks, where available. Jurisdictions will also encourage the development of a local energy benchmarking program. These energy scores would be identified through individual property energy audits that identify opportunities for improving energy efficiency and reducing GHG emissions. These audits will also assist in the implementation of BE-1.

Strategy

Clean and Efficient Energy Use in Existing Buildings

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

► BayREN

Targets

► N/A

Co-Benefits



Cost Savings



Energy Security

SHORT-TERM ACTIONS

BE-2-A: Encourage a local energy benchmarking program, similar to BayREN's Home Energy Score Assessor, for existing non-residential buildings, consistent with regulatory benchmarking programs and existing green building standards to help close the energy efficiency information gap. The benchmarking should develop locally applicable energy score benchmarks by building type and size.

BE-2-B: Require an energy score disclosure at time of listing property sale.

MEASURE BE-3: Increase Renewable Energy Generation

Renewable energy generation, such as on-site solar panels, enables residents and businesses to produce their own electricity, reducing dependency on utility companies. As of 2024, only 14 percent of households in the region have on-site renewable energy generation. Napa County Jurisdictions will collaborate with regional partners and the community to increase renewable energy generation such as solar and wind power at existing land uses to reduce GHG emissions by offering rebates and incentives for renewable energy solutions, including energy storage solutions. Starting in 2026, the jurisdictions aim to have households across the region install on-site renewable energy generation and battery storage every year, until at least 34 percent of households have had installations by 2030 and 59 percent by 2035. This is equivalent to installing these systems on five percent of households annually.

Strategy

Clean and Efficient Energy Use in Existing Buildings

Applicable Jurisdictions

All

GHG Reduction Potential

2030	1,875 MTCO ₂ e
2035	3,510 MTCO ₂ e
2045	N/A

Partners

- ▶ Bay Area Air District
- ▶ PG&E
- ▶ MCE

Targets

- ▶ 34 percent of households have on-site renewable energy generation and storage by 2030
- ▶ 59 percent of households have on-site renewable energy generation and storage by 2035.

Co-Benefits



Cost Savings



Energy Security

SHORT-TERM ACTIONS

BE-3-A: Collaborate with regional partner agencies and utilities, such as Bay Area Air Quality Management District (Bay Area Air District), PG&E, and MCE to offer rebates and incentives for renewable energy and storage (e.g., solar and battery storage).

BE-3-B: Prioritize outreach to non-residential vs residential property owners according to the contribution by jurisdiction. For example, 75 percent of City A's electricity use is consumed by non-residential customers, while 75 percent of City B's electricity use is consumed by residential customers. Thus, City A should focus on outreach to non-residential customers, while City B focuses on residential customers.

LONG-TERM ACTIONS

BE-3-C: Continue to seek funding to sustain local programs in tandem with retrofit efforts under BE-1.

MEASURE BE-4: Increase Sustainable Winery Certification

As a global center for winemaking with more than 450 wineries, Napa County possesses significant influence over sustainable wine practices and has the potential to lead globally in low-carbon wine production methods. Napa County Jurisdictions will support local winemaking organizations and businesses to reduce GHGs through increasing sustainability certification rates and supporting clean and efficient energy use, while also supporting and enhancing existing programs. Napa County Jurisdictions will target 75 percent of all wineries, new and existing, to have an eligible sustainability certification by 2030 and 90 percent by 2045. Additionally, all jurisdictions will require that all new wineries be certified by 2030.

Strategy

Clean and Efficient Energy Use in Existing Buildings

Applicable Jurisdictions

All

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

- ▶ Napa Green

- ▶ California Sustainable Winegrowing Alliance
- ▶ Sustainability in Practice (SIP) Certified, or others
- ▶ Other sustainable winery certification programs

Targets

- ▶ Certify 75 percent of all wineries by 2030.
- ▶ Certify 90 percent of all wineries by 2045.
- ▶ Starting in 2030, certify 100 percent of new wineries.

Co-Benefits



Economic Opportunity



Ecosystem Health



Energy Security

SHORT-TERM ACTIONS

BE-4-A: County and cities will support sustainability certification of wineries (e.g., Napa Green) to reach a target of 75 percent of wineries certified by 2030.

BE-4-B: Require new wineries, winery retrofits, and winery additions greater than 10 percent of existing square footage to attain sustainability certification.

BE-4-C: Work with sustainability certification entities (e.g., Napa Green) to quantify GHG reductions. Ensure GHG reductions are within the scope of the RCAAP GHG emission inventory and forecast (e.g., production-based emissions).

BE-4-D: Work with sustainability certification programs to determine funding needs for increased certification targets. Examples of eligible certification programs include Napa Green, California Sustainable Winegrowing Alliance, and Sustainability in Practice (SIP). Additional programs may be considered on a case-by-case basis.

LONG-TERM ACTIONS

BE-4-E: Target 90 percent of wineries in the County to become certified in sustainability, including all new wineries, by 2045.

MEASURE BE-5: Decarbonize New Buildings

New building construction offers an opportunity to integrate zero-carbon design, improve energy efficiency and renewable energy use, and maintain comfort. Napa County Jurisdictions will promote zero carbon development by adopting and implementing energy efficiency and renewable energy building reach codes for both residential and non-residential buildings so that 90 percent of energy use from new construction is sourced from zero carbon sources starting in 2030 and, for residential land uses, 97 percent is sourced from zero carbon sources by 2045. It prioritizes energy efficiency, zero carbon energy, and includes the use of low carbon materials to reduce GHG emissions.

Strategy

Zero Carbon Development

Applicable Jurisdictions

All

GHG Reduction Potential

2030	19,418 MTCO ₂ e
2035	18,428 MTCO ₂ e
2045	21,963 MTCO ₂ e

Partners

- ▶ MCE
- ▶ BayREN
- ▶ Bay Area Air District

Targets

- ▶ 90 percent of energy use from new residential and non-residential buildings is zero carbon by 2030

- ▶ 97 percent of energy use from new residential buildings is zero carbon by 2045

Co-Benefits



Energy Security



Public Health & Wellbeing

SHORT-TERM ACTIONS

BE-5-A: Adopt and implement a regionally-consistent energy efficiency and renewable energy building reach code for new construction of residential and non-residential buildings, including major additions. The code should prioritize energy efficiency first and zero carbon energy second, and require new nonresidential development that cannot meet electricity demand through onsite renewable energy generation and storage to purchase 100 percent carbon-free electricity from MCE. Pursuant to new statewide residential building code update limitations in AB 130 (signed into law on June 30, 2025), a residential reach code may not be adopted and enforced until 2031; however, nonresidential reach code adoption and enforcement may proceed starting in 2026.

BE-5-B: Track progress of state codes and bills related to climate and energy to inform the region's reach code. The California Air Resources Board (CARB) recently recommended that the state adopt mandatory zero-emission residential new construction standards in the 2024 triennial CALGreen code cycle. See California Climate & Energy Collaborative's Legislative Tracker Database as a resource.

BE-5-C: Develop reach codes requiring Low Carbon Concrete and materials with low embodied carbon, such as wood fibers or cellulose insulation. Refer to Marin County's Carbon Concrete Requirements as an example. Pursuant to new statewide residential building code update limitations in AB 130 (signed into law on June 30, 2025), a residential reach code may not be adopted and enforced until 2031; however, nonresidential reach code adoption and enforcement may proceed starting in 2026.

LONG-TERM ACTIONS

BE-5-D: Regularly update the reach code in line with the state's building energy code cycles and legislation. According to BayREN, "If a jurisdiction has a reach code in effect and would like to continue it into the next code cycle, the local process needs to be completed early enough that it can be approved by the California Energy Commission (CEC) before the start of the new code cycle, usually no later than September in the year before the updated code takes effect".

MEASURE BE-6: Encourage Community to Reduce Building Energy Emissions

To support building energy measures, Napa County Jurisdictions will encourage energy efficiency, energy conservation, electrification, and clean energy solutions through increased education, incentives, and partnerships with regional partners, local contractors, and marketing platforms.

Strategy

Energy Education, Awareness, and Behavior Change

Applicable Jurisdictions

All

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

- ▶ MCE
- ▶ PG&E
- ▶ BayREN
- ▶ Switch is On
- ▶ Local contractors and news outlets
- ▶ Community-Based Organizations (CBOs)

Targets

- ▶ N/A

Co-Benefits



Cost Savings



Economic Opportunity



Energy Security



Public Health & Wellbeing

SHORT-TERM ACTIONS

BE-6-A: Increase education, awareness, and access to available rebates and incentives for energy efficiency through radio, social media, and other marketing platforms, gaining the trust and confidence of residents in the program (e.g., comes from trustworthy sources like local leaders).

Provide education on how to improve current energy efficiency (e.g., cleaning refrigerator coils, air sealing, adding insulation). Provide information on incentives/recognition for verified energy reduction.

BE-6-B: Develop a dedicated website for all things electrification and renewable energy for residents and businesses in Napa County. The website should contain user-friendly resources identifying incentives, rebates, and programs available to the residents and business owners in the region. Ensure that the websites of each jurisdiction in the county have links that redirect to the dedicated website or app.

BE-6-C: Partner with contractors to inform customers about Napa County's rebate website/app at the time of replacement or remodel. Work with local news outlets to broadcast updates to the available rebates for Napa County residents and businesses and promote the program.

BE-6-D: Use partnerships to promote appliance upgrades to energy-efficient technologies and products through campaigns targeted at residents and local businesses, ENERGY STAR® appliance change-out programs, and promote incentives (e.g., giveaways, federal/state/utility rebates).

BE-6-E: Promote alternatives to natural gas in all commercial sectors.

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BE-6-F: Promote use of electric cooking appliances in commercial kitchens (e.g., benefits of induction cooktops). Use resources such as <https://frontierfstc.com/>.

BE-6-G: Create a pilot or a series of exhibitions for local restaurants to demonstrate the effectiveness and benefits of induction cooktops. Work with restaurants across all tiers to demonstrate applicability at all levels and cuisines.

LONG-TERM ACTIONS

BE-6-H: Evaluate the effectiveness of short-term outreach and adjust and continue actions, as needed.

BE-6-I: Evaluate regionwide transition away from natural gas use and increase or adjust outreach, as needed.

MEASURE TR-1: Reduce Vehicle Miles Traveled Countywide

On-road transportation accounts for approximately 30 to 40 percent of Napa County’s emissions and will continue to do so through 2045. To ensure that land use planning is consistent with the RCAAP emission reduction goals for transportation, Napa County Jurisdictions will work with Napa Valley Transportation Authority (NVTA) to reduce vehicle miles traveled (VMT) and associated GHG emissions. Starting with a set of Transit First policies developed in conjunction with NVTA, each jurisdiction will incorporate VMT reduction targets and related policies in local and countywide planning, such as via general plans, transportation plans, active transportation plans, and transit plans.

Strategy

Low Vehicle Miles Traveled

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ NVTA

Targets

- ▶ N/A

Co-Benefits



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-1-A: Work with NVTA to develop and adopt a set of Transit First policies for all jurisdictions. These policies are intended to address mobility needs along key arterials & collectors served by transit, and should be incorporated into updates of relevant General/Specific Plans. In land use project planning, a “Transit First” policy prioritizes the enhancement of quality access to nearby transit amenities to encourage visitors, workers, and residents to utilize transit as a means of travel to and from a location. The Transit First policies should ensure that development projects located within ¼ mile of a transit line integrate transit service and associated connectivity requirements (e.g., passengers do not have to travel through private property to access transit) as part of the entitlement process. This may include project-level improvements and/or jurisdiction-level improvements outside the project area, such as lighting design criteria, bus pull-outs, sidewalk gap closures, shelters, and planning for future Transit Signal Priority (TSP) implementation. As part of the Transit First policies, require development projects to ensure that any building and development features (e.g., off-street parking, building front entrances, sidewalks, landscaping, buildings, walls or barriers, drainage areas) do not obstruct or unnecessarily elongate access to transit amenities (e.g., bus stops, loading zones) or access to mobility-as-a-service (MAAS) parking areas.

TR-1-B: Support expanded analysis of VMT for passenger and commercial vehicle trips in NVTA Travel Behavior Study.

LONG-TERM ACTIONS

TR-1-C: Implement VMT reduction strategies (Actions) as part of discretionary land-use and community development efforts. During the development of each travel behavior study, request that NVTA identify the greatest sources of VMT (such as between specific locations or by trip purpose) and work with local jurisdictions to develop strategies to mitigate those sources of VMT.

MEASURE TR-2: Reduce Winery Wastewater Hauling Emissions

Between 2019 and 2023, Napa County hauled between 12 to 20 million gallons of winery wastewater annually to wastewater treatment facilities at East Bay Municipal Utility District (EBMUD). Napa County Jurisdictions will reduce GHG emissions associated with wastewater transportation by working with regional partners to study winery wastewater demands across the county to increase local winery wastewater treatment capacity and encourage the use of zero-emission vehicles (ZEVs) to hold-and-haul wastewater transport. The jurisdictions intend to address this in two ways: 1) divert five percent of exported winery wastewater to local treatment facilities by 2030, 10 percent by 2035, and 20 percent by 2045 compared to 2019 levels and 2) ensure that the remaining exported wastewater is fueled by either renewable diesel or electric or other zero-carbon alternatives starting in 2030.

Strategy

Reduce Commercial VMT

Applicable Jurisdictions

All

GHG Reduction Potential

2030 520 MTCO₂e

2035 415 MTCO₂e

2045 215 MTCO₂e

Partners

- Bay Area Air District
- Napa Green
- California Sustainable Winegrowing Alliance

- Sustainability in Practice (SIP) Certified, or others

Targets

- Five percent of exported winery wastewater is diverted for local treatment by 2030 compared to 2019 levels
- 10 percent of exported winery wastewater is diverted for local treatment by 2035 compared to 2019 levels
- 20 percent of exported winery wastewater is diverted for local treatment by 2045 compared to 2019 levels
- 85 percent of exported wastewater shipping is fueled by renewable diesel and 15 percent by zero-carbon alternatives by 2030.

- 25 percent of exported wastewater shipping is fueled by renewable diesel and 75 percent by zero-carbon alternatives by 2045.

Co-Benefits



Cost Savings



Economic Opportunity



Ecosystem Health

SHORT-TERM ACTIONS

TR-2-A: Identify funding to conduct a study on winery wastewater treatment demands to better understand winery wastewater treatment method and location. The study would determine cost-effective solutions for reducing winery wastewater treatment hauling emissions for the region (e.g., on-site winery wastewater management or pre-treatment, zero-emission vehicles (ZEVs) for hold and haul trucks, a new or expansion of existing municipal wastewater facility(s)).

TR-2-B: Partner with Napa Green, California Sustainable Winegrowing Alliance, SIP Certified, or other comparable programs to help gather data.

LONG-TERM ACTIONS

TR-2-C: Coordinate with the Climate Action Committee (CAC) to consider implementation options and/or seek funding for the solution(s) recommended by the study.

TR-2-D: Continue to monitor winery wastewater treatment trends to identify opportunities to reduce hauling VMT.

MEASURE TR-3: Expand Electric Vehicle Charging Infrastructure

Easily accessible electric vehicle (EV) charging infrastructure is essential to support the transition to EVs and reduce emissions from fossil fuels. Napa County Jurisdictions will work with MTC's Regional Transportation Electrification Assistance Program and Bay Area Air District's Charge! Program to increase EV charging station availability across the county, facilitating the county's transition to ZEVs and reducing GHG emissions. The jurisdictions will collaborate with MTC, NVTA, and others to identify optimal locations for charging infrastructure and incentivize private parking lot owners to install EV chargers.

Strategy

Zero Carbon Fuels

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ MTC
- ▶ NVTA
- ▶ Bay Area Air District

Targets

- ▶ At least 10 percent of existing private parking spaces have electric vehicle supply equipment (EVSE), and another 10 percent are EV-ready by 2030.

Co-Benefits



Economic Opportunity



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-3-A: Work with MTC, Bay Area Air District, and other local partners and available local EV charging programs to identify areas and opportunities to install chargers for medium and heavy-duty fleet (e.g., depots, charging en route, fleet managers)

TR-3-B: Analyze existing private parking lots and educate/incentivize owners to take advantage of funding opportunities such that at least 10 percent of their spaces have EVSE and at least an additional 10 percent are EV-ready.

LONG-TERM ACTIONS

TR-3-C: Review the requirements every 5 years and update the requirements to increase the percentage of parking lots with EV chargers and the number of EVSE in the lots.

MEASURE TR-4: Leverage New Development to Support Zero-Emission Vehicles

New developments have the unique opportunity to integrate EV charging and hydrogen fueling infrastructure without costly renovations. Napa County Jurisdictions will support the adoption of ZEVs in new development by implementing expedited permitting for zero-carbon fueling stations (e.g., renewable diesel, EV charging), establishing hydrogen fueling stations, and requiring EV-capable parking spaces in new constructions, thus promoting sustainable transportation infrastructure.

Strategy

Zero Carbon Fuels

Applicable Jurisdictions

All

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

► NVTa

► Hydrogen Fuel Cell Partnership

► BayREN

Targets

► Install at least one hydrogen fueling station by 2030

► Require 50 percent of parking spaces in new developments to be EV-capable by 2030

► Require that multi-family units with more than four units to have a minimum of one shared charger or 10 percent of spaces to have EV chargers, whichever is greater

Co-Benefits



Economic Opportunity



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-4-A: Work with the Hydrogen Fuel Cell Partnership and NVTa to evaluate the need for stations based on the State's forecasted growth of hydrogen vehicles. In their 2024 staff report, CEC staff anticipates that 119 hydrogen fueling stations will be built statewide under current public and private investments to support 180,000 fuel cell electric vehicles (FCEVs).

TR-4-B: Identify locations where hydrogen fueling stations could be built (e.g., at existing gas stations, rest stops, major tourist centers).

TR-4-C: Install at least one hydrogen station in the region by 2030.

TR-4-D: Adopt an ordinance that expedites scaled permitting of fuel stations that offer renewable fuels.

TR-4-E: Require expedited EV charging permitting in all jurisdictions.

TR-4-F: Require 50 percent of parking spaces in new development to be EV-capable by 2030. CALGreen defines "EV-Capable" as: "... spaces [that] include the electrical panel capacity [e.g., dedicated breaker] and raceway (conduit) to support future installation of an EV charging station." (Title 24, Part 11 (CALGreen), Chapter 5, Section 5.106.5.3.2).

TR-4-G: Adopt an EV charging station reach code that establishes minimum EV charging standards for all new residential and nonresidential development. Require that any new construction or major renovations at multi-family units of greater than four units have at least a shared charger or 10 percent of spaces to have chargers (not just be EV-capable), whichever is greater, as consistent with the Voluntary CALGreen Building Code.

LONG-TERM ACTIONS

TR-4-H: Provide incentives for new hydrogen fueling installations in the identified locations noted in the short-term actions (e.g., expedited or discounted permitting, high-quality signage). Reassess demand for hydrogen fueling infrastructure by 2030 and adjust the number of stations accordingly to meet demand.

TR-4-I: Evaluate the feasibility of the ordinance at least once every five years and update, as necessary.

TR-4-J: Review the requirements at least once every five years and make requirements more stringent if feasible, in accordance with the recommendations set forth in the Voluntary CALGreen Building Code.

MEASURE TR-5: Increase Municipal Zero-Emission Vehicle Adoption

Municipalities that have ZEV fleets lead their communities in promoting the adoption of ZEVs. Napa County Jurisdictions will transition municipal vehicle fleets to ZEV by setting targets and policies that support adopting ZEVs and using carbon-neutral fuels. By 2030, all municipalities in the county are required to purchase ZEVs for any new light- and medium-duty municipal fleet vehicles. By 2035, all heavy-duty municipal fleet vehicles must either be fueled by a carbon-neutral fuel (e.g., renewable diesel) or electricity. With the help of funding partners such as MTC and the Bay Area Air District, these requirements will reduce GHG emissions and promote cleaner air through strategic fleet management and partnerships.

Strategy

Zero Carbon Fuels

Applicable Jurisdictions

All

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

► Bay Area Air District

► MTC

Targets

► 100 percent of new light- and medium-duty municipal vehicle fleet purchases must be ZEVs by 2030.

► 100 percent of heavy-duty municipal fleet vehicles must use renewable diesel or electricity as a primary fuel source by 2035.

Co-Benefits



Cost Savings



Economic Opportunity



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-5-A: Adopt a policy to support the requirements of Advanced Clean Fleet regulations as they relate to municipal fleets. By 2030, 100 percent of new light and medium-duty municipal vehicle fleet purchases must be ZEV. By 2035, 100 percent of diesel-powered heavy-duty municipal fleets must use carbon-neutral fuel (e.g., renewable diesel) or electricity as a regular source of fuel, with exceptions for emergencies (e.g., difficult access during wildfires).

TR-5-B: Work with municipal fleet operators across the region to identify and mitigate any barriers that hinder ZEV adoption (e.g., cost, infrastructure concerns, workforce training).

TR-5-C: Partner with the Bay Area Air District, MTC, and others to pursue funding for EV deployment projects in municipalities, including finding resources and funding to procure ZEV heavy-duty fleet (e.g., fire trucks), as feasible. Apply for grants from MTC's Public Fleet Electrification Planning Assistance Program.

LONG-TERM ACTIONS

TR-5-D: Review and address any barriers to achieving the 2030 targets and adjust the target if needed.

MEASURE TR-6: Increase Commercial Zero-Emission Vehicle Adoption

Commercial transportation emissions, such as heavy-duty diesel-powered trucks, account for more than a fifth of the county's emissions. Napa County Jurisdictions will support local efforts to increase the adoption of ZEVs in commercial fleets by providing information on incentives, funding for EV rebates, and requiring replacement of fossil-fueled vehicles in favor of ZEV or carbon-neutral fuel alternatives.

Strategy

Zero Carbon Fuels

Applicable Jurisdictions

All

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

- ▶ Chamber of Commerce
- ▶ Napa County Farm Bureau
- ▶ Local Commercial Fleet Operators
- ▶ Bay Area Air District

Targets

- ▶ N/A

Co-Benefits



Cost Savings



Economic Opportunity



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-6-A: Conduct outreach to local commercial fleet operators, including the agriculture/wine industry, tour companies, contractors, and delivery services, to provide information on existing incentives, support the retirement of older vehicles, and requirements to replace fossil-fueled vehicles or engines with ZEV or carbon-neutral fuel alternatives.

TR-6-B: Educate and provide resources to commercial fleet operators, vehicle manufacturers, or leasing companies regarding available funding for fleet owners for EV rebates from all available sources (e.g., federal, state, local) for both new and used EVs.

LONG-TERM ACTIONS

TR-6-C: Review and address any barriers to achieving the short-term actions and adjust if needed.

MEASURE TR-7: Increase Residential Zero-Emission Vehicle Adoption

As of 2023, only about four percent of light-duty vehicles registered in the county are ZEVs (CEC 2023). Although this is on par with the state average, Napa County Jurisdictions will increase the adoption of ZEVs among residents by providing additional funding and incentives, such as for those who do not meet the income criteria of existing programs. Jurisdictions will review the Bay Area Air District’s Clean Cars for All program and other similar local programs to increase available funding for regional residents for assistance in purchasing either a new or used ZEV.

Strategy

Zero Carbon Fuels

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- Bay Area Air District

Targets

- N/A

Co-Benefits

-  Cost Savings
-  Economic Opportunity
-  Public Health & Wellbeing
-  Quality of Life

SHORT-TERM ACTIONS

TR-7-A: Partner with the Bay Area Air District and others to pursue funding for residents for additional EV rebates beyond what is currently offered by the federal and state governments, for both new and used ZEVs.

TR-7-B: Evaluate income limits and consider providing additional incentives for residents who do not meet the income criteria of existing incentives.

LONG-TERM ACTIONS

TR-7-C: Continue short-term actions, and evaluate and adjust incentive programs as needed.

MEASURE TR-8: Restrict Development of New Fossil Fuel Pumps

Currently, nearly all jurisdictions except the City of Napa and Napa County have permanent bans on new fossil fuel pumps. The City of Napa is considering further restrictions on new and/or expanded fossil fuel service stations as part of the comprehensive zoning code update. To uniformly discourage continued use of fossil fuels and encourage the transition to zero-carbon or carbon-neutral fuels across the county, the Napa County Jurisdictions will adopt consistent ordinances across all jurisdictions to permanently ban or restrict the development of new fossil fuel pumps.

Strategy

Zero Carbon Fuels

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

► N/A

Targets

► N/A

Co-Benefits



Economic Opportunity



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-8-A: Adopt an ordinance in all jurisdictions that permanently bans or phases out the development of new and existing fossil fuel pumps by transitioning toward non-carbon based fuels.

LONG-TERM ACTIONS

TR-8-B: Evaluate the feasibility of the ordinance at least once every five years and update it, as necessary.

MEASURE TR-9: Expand Renewable Diesel Availability

Renewable diesel (R99 or R100) is a carbon-neutral fuel derived from renewable biogenic sources and chemically identical to conventional diesel, allowing it to be used as a direct fuel replacement in diesel vehicles. In California, the sale of renewable diesel has recently increased exponentially. In 2023, renewable diesel sales were nearly double those in 2021 and triple those in 2019 (USDA 2024). Napa County Jurisdictions will increase the availability of renewable diesel in the county by incentivizing its sale, with a target of having at least five stations offering renewable diesel (R99 or R100) by 2030.

Strategy

Zero Carbon Fuels

Applicable Jurisdictions

All

GHG Reduction Potential

2030	17,830 MTCO ₂ e
2035	36,228 MTCO ₂ e
2045	43,785 MTCO ₂ e

Partners

► N/A

Targets

► Offer R99 or R100 at five stations countywide by 2030.

Co-Benefits



Economic Opportunity



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-9-A: Incentivize the sale of renewable diesel in the region, targeting a minimum of five stations offering R99 or R100 by 2030. There is currently one renewable diesel station in Napa County, Allied Clean Fuels Plaza.

MEASURE TR-10: Implement the Active Transportation Plan

NVTA is currently finalizing its Active Transportation Plan, which was last updated in 2019. Napa County Jurisdictions will support the adoption and implementation of NVTA's Active Transportation Plan countywide, as it is updated, to enhance multimodal safety and infrastructure and promote the use of bicycles and other forms of active transportation to reduce GHG emissions. Based on data from MTC, NVTA, and the National Housing and Transportation Survey, 0.6 percent of miles traveled in the county in 2019 were either by bicycling or walking (See **Appendix F**). Under this measure, the jurisdictions target a seven percent bicycle and pedestrian mode share by 2030, 10 percent by 2035, and 15 percent by 2045 by miles traveled.

Strategy

Active Transportation

Applicable Jurisdictions

All

GHG Reduction Potential

2030	1,829 MTCO ₂ e
2035	1,708 MTCO ₂ e
2045	748 MTCO ₂ e

Partners

- ▶ NVTA

Targets

- ▶ Seven percent bicycle or pedestrian mode share countywide by 2030 by miles traveled
- ▶ 10 percent bicycle or pedestrian mode share countywide by 2035 by miles traveled

- ▶ 15 percent bicycle or pedestrian mode share countywide by 2045 by miles traveled

Co-Benefits



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-10-A: Support NVTA's adoption and implementation of the forthcoming NVTA Countywide Active Transportation Plan (est. 2025).

TR-10-B: Support NVTA's efforts to secure funding for and consider opportunities to implement projects, programs, and policies of the Countywide Vision Zero Plan (2023), Local Roadway Safety Plans (LSRPs), and other documents that address multimodal safety improvements.

TR-10-C: Support NVTA's efforts to report annual jurisdiction-level progress toward targets for active transportation infrastructure (bike facilities, sidewalks) and policies to advance mode shift.

TR-10-D: Update municipal codes to incorporate comprehensive bicycle, e-bike, and micromobility parking and charging standards.

TR-10-E: Support NVTA's efforts to evaluate opportunities and deploy secure bicycle parking in downtowns and key retail and employment destinations where large-scale redevelopment is unlikely in the medium-term.

TR-10-F: Establish and/or update & implement policies addressing active transportation facility maintenance and access.

TR-10-G: Support and coordinate with NVTa efforts to develop the Active Transportation Plan, ensure consistency with the Active Transportation Plan in local planning efforts, and avoid unnecessary or duplicative work.

TR-10-H: Encourage cross-agency collaboration between Caltrans, MTC/ABAG, NVTa, and local jurisdictions in the county to identify, prioritize, and secure funding for active transportation projects consistent with local and regional plans.

LONG-TERM ACTIONS

TR-10-I: Continue updating the plans and evaluating the effectiveness of previous strategies and measures in reducing VMT and increasing the shift to active transportation modes.

TR-10-J: Evaluate progress and effectiveness of requirement and modify as necessary to meet policy goals and priorities.

MEASURE TR-11: Expand Transportation Demand Management Programs

Transportation demand management (TDM) helps commuters or travelers reduce reliance on cars by carpooling, vanpooling, and using transit, shuttles, and micromobility (e.g., shared e-scooters). Commute.org is a public program in the Bay Area. Some private companies have TDM programs that serve commuters, such as dedicated shuttles. Napa County Jurisdictions will partner with NVTa and others to expand the availability of TDM programs to reduce VMT and related GHG emissions through active transportation incentives, increased funding, and adoption of local TDM ordinances. Under this measure, the jurisdictions seek to have TDM ordinances adopted such that half of the employees in businesses with 50 or more employees can be eligible for the programs by 2030. The TDM programs must report annual participation metrics.

Strategy

Transportation Demand Management (TDM)

Applicable Jurisdictions

All

GHG Reduction Potential

2030	3,689 MTCO ₂ e
2035	2,351 MTCO ₂ e
2045	673 MTCO ₂ e

Partners

- ▶ NVTa
- ▶ BAAQMD

Targets

- ▶ By 2030, 50 percent of employees in businesses with more than 50 employees are to be eligible for a local TDM program with required annual reporting

Co-Benefits



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-11-A: Support NVTa's efforts to secure additional funding to support existing active transportation mobility incentives (e.g., bike, e-bike) and rebate programs.

TR-11-B: Consider increasing funding support to expand current TDM programs (e.g., V-Commute) through increased and regular outreach to employers and existing participants about program benefits and updates.

TR-11-C: Develop & adopt local TDM ordinances in all jurisdictions by 2028. Ordinance should further the VMT and GHG reduction goals of the Countywide Transportation Plan, local General Plans, the Bay Area Clean Air Plan, and the RCAAP. Ordinances should require that TDM programs report annual metrics (e.g., participation, VMT reduction, mode shift, funding). Consider Sonoma County and Contra Costa County ordinances as examples.

TR-11-D: Support feasibility analysis for MAAS (e.g., e-bike sharing), particularly in urban areas. Identify policies and programs that would help spur adoption and use of these services (e.g., parking rules and allowances, safety requirements). See the City of Davis's parking policy for micromobility solutions as an example.

LONG-TERM ACTIONS

TR-11-E: Evaluate the progress and effectiveness of the ordinance and TDM program and modify as necessary to meet policy goals & priorities, including renewing or amending agreements & partnerships (e.g., City of Davis agreement with Spin Bikes).

MEASURE TR-12: Fund Local Transportation Infrastructure Improvements

With the reduction in future gasoline sales, alternatives to gas tax revenue must be found to improve local transportation infrastructure, including active transportation solutions and EV charging infrastructure. Napa County Jurisdictions will develop innovative funding solutions for improvements in local transportation infrastructure, including active transportation and EV charging infrastructure, considering options such as tourist taxes and paid parking requirements.

Strategy

Develop solutions to fund local transportation infrastructure improvement.

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ NVTA

Targets

- ▶ N/A

Co-Benefits



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-12-A: Consider funding options to improve local transportation infrastructure. Examples of options could include, but are not limited to: reallocating or expanding transient occupancy taxes (TOT), paid parking requirements at wineries or events (with exceptions for ZEVs, low income, or advanced reservations), road congestion fees, modifying or improving new transportation development impact fees, or other options.

MEASURE TR-13: Reduce Vehicle Miles Traveled of Visitors to Napa County

According to a study by Visit Napa Valley, in 2023, Napa received 3.7 million visitors, many of whom travel by car (Visit Napa Valley 2024). These recreational trips are a major source of the county's on-road transportation emissions. Napa County Jurisdictions will develop strategies to reduce VMT for recreational purposes, such as those associated with tourism, focusing on creating a visitor TDM program in partnership with NVTa and Visit Napa Valley. Efforts under this measure could also be paired with other measures in the RCAAP related to green and zero-carbon buildings, reducing waste, water conservation, increasing sustainable vineyard or winery certifications, and other measures that promote or support sustainable tourism.

Strategy

Visitor TDM

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ NVTa
- ▶ Visit Napa Valley

Targets

- ▶ N/A

Co-Benefits



Economic Opportunity



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-13-A: Support NVTa in developing a visitor TDM program that targets recreational trips.

MEASURE TR-14: Reduce Minimum Parking Requirements

Studies show that limiting parking supply can incentivize the use of public transit and other modes apart from personal vehicles (CAPCOA 2024: 122). Napa County Jurisdictions will consider the feasibility of either reducing minimum parking requirements, or implementing maximum parking requirements, for new development or redevelopment projects, thereby promoting alternative modes of transportation (e.g., transit, carpooling) and reducing the VMT and related GHG emissions. This measure includes studying the feasibility of modifying zoning codes and managing parking supply with strategies such as permit parking and metered parking.

Strategy

Parking

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Targets

- For existing parking supply, enact solutions that disincentivize their use.

Applicable Jurisdictions

All

Co-Benefits



Public Health & Wellbeing

Partners

- NVTA

SHORT-TERM ACTIONS

TR-14-A: Consider the feasibility of reducing minimum parking standards or establishing maximum parking standards. If determined to be feasible and appropriate, develop and adopt ordinances amending parking standards in local zoning codes.

LONG-TERM ACTIONS

TR-14-B: Manage the parking supply by implementing measures such as permit parking, parking time limits, and metered parking.

TR-14-C: Consider modifying the jurisdictions' zoning codes to unbundle parking from rent for all new multi-family residential developments with 16 or more units located within ¼ mile of arterials or collectors with fixed route service.

MEASURE TR-15: Empower Community to Choose Active Transportation Options

Unified action across the community is needed to realize progress toward the RCAAP’s goal of reducing transportation emissions. Napa County Jurisdictions will enhance community engagement and awareness of alternative modes to increase the use of active transportation options and reduce VMT. This includes marketing existing transit and active transportation services and infrastructure and exploring the implementation of pilots for local deliveries by e-bike or electric cargo bikes.

Strategy

Transportation Education

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ NVTA
- ▶ Visit Napa Valley
- ▶ Napa County Bike Coalition

Targets

- ▶ N/A

Co-Benefits



Economic Opportunity



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

TR-15-A: Market existing transit/transportation options (Vine Transit, V-Commute) to support mode shift and GHG reduction goals.

TR-15-B: Consider bike delivery pilot programs to demonstrate the effectiveness of zero-emission local deliveries.

LONG-TERM ACTIONS

TR-15-C: Continue to expand awareness, education, and community action.

MEASURE OF-1: Reduce Landscaping-Related Emissions

Landscaping equipment accounted for a quarter of the county's off-road emissions in 2019 and is relatively inexpensive to replace with low- or zero-emission alternatives such as renewable diesel or small electric equipment. Small Off-Road Engine Regulation (SORE) requires that new small off-road engines under 25 horsepower be zero-emissions starting in 2024. Napa County Jurisdictions will support SORE and accelerate this transition by implementing a countywide ban on all fossil-fueled landscaping equipment, both new and existing, under 25 horsepower by 2030.

Strategy

Electrification and Clean Alternatives

Applicable Jurisdictions

All

GHG Reduction Potential

2030	290 MTCO ₂ e
2035	149 MTCO ₂ e
2045	12 MTCO ₂ e

Partners

- ▶ Bay Area Air District

Targets

- ▶ 25 percent of existing landscaping equipment are zero-emissions by 2030.
- ▶ 100 percent of new landscaping equipment are zero-emissions by 2035.

Co-Benefits



Economic Opportunity



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

OF-1-A: Promote regional and State incentive programs to encourage residents and business owners to convert or replace their fossil fuel-powered gardening equipment, such as lawnmowers, leaf blowers, and edge trimmers, with electric alternatives.

OF-1-B: Implement a countywide ban on fossil-fueled landscape equipment under 25 horsepower by 2030.

OF-1-C: To expedite turnover of older gas/diesel-powered equipment, develop a "Lawn and garden equipment trade-in program" to provide vouchers or rebates for purchasing electric landscape equipment to residents and businesses that trade-in fossil fuel-powered landscaping equipment. Identify and plan for convenient drop off locations, promoting awareness of these locations.

An example of a lawn equipment trade-in program is San Diego Air Pollution Control District's Electric Landscape Equipment Assistance Funding program and Bay Area Air District's (closed) Residential and Public Sector Lawn and Garden Equipment Exchange Programs.

OF-1-D: Explore opportunities to provide more funding through extending the Bay Area Air District's incentives or develop a new incentive program tailored for the region using Natural Resources Conservation Service's (NRCS's) Environmental Quality Incentives Program for buying electric off-road equipment.

LONG-TERM ACTIONS

OF-1-E: Continue action until all gardening equipment has been electrified or use zero-carbon alternatives.

OF-1-F: Evaluate the progress of the program and number of equipment replaced and track implementation via updates through the California Air Resources Board's (CARB's) OFFROAD model.

MEASURE OF-2: Zero-Emission Loading Docks

Diesel-powered commercial trucks often idle while docked at loading bays during unloading and loading of freight. Additionally, many refrigerated trucks have a separate unit called a transportation refrigeration unit (TRU) that runs on the same fuel as the engine to keep perishable items cold. TRU emissions are expected to account for six percent of the county's offroad emissions starting in 2030. By working with local partners such as NVTA, Napa Green, and local chambers of commerce, Napa County Jurisdictions aim to electrify 33 percent of existing commercial loading docks to reduce emissions from commercial trucks and TRUs by 2030, 66 percent by 2035, and 100 percent by 2045.

Strategy

Electrification and Clean Alternatives

Applicable Jurisdictions

All

GHG Reduction Potential

2030	271 MTCO ₂ e
2035	541 MTCO ₂ e
2045	820 MTCO ₂ e

Partners

- ▶ NVTA
- ▶ Napa Green
- ▶ Chambers of Commerce, or others

Targets

- ▶ Electrify 33 percent of existing commercial loading docks by 2030.
- ▶ Electrify 66 percent of existing loading docks by 2035.

- ▶ Electrify 100 percent of existing loading docks by 2045.

Co-Benefits



Public Health & Wellbeing

SHORT-TERM ACTIONS

OF-2-A: Electrify 33 percent of existing commercial loading docks to include electric charging ports for trucks and Transport Refrigeration Units (TRUs) by 2030.

OF-2-B: Coordinate with Napa Green or other similar program to include electrification of loading docks as a criterion for certification.

LONG-TERM ACTIONS

OF-2-C: Electrify 100 percent of existing commercial loading docks to include electric charging ports for trucks and TRUs.

OF-2-D: Evaluate progress and effectiveness of requirement and modify as necessary to meet policy goals & priorities.

MEASURE OF-3: Zero Carbon Construction Equipment - Community

Construction equipment is typically powered by diesel fuel and in Napa County, it accounts for 10 percent of off-road emissions. Napa County Jurisdictions will support local efforts to transition all construction equipment within the community to zero-carbon alternatives by publicizing information about available incentives for electric construction equipment. The jurisdictions will target 60 percent of construction equipment in the community will use zero-carbon alternatives by 2035 and 100 percent by 2045.

Strategy

Electrification and Clean Alternatives

Applicable Jurisdictions

All

GHG Reduction Potential

2030	0 MTCO ₂ e
2035	5,944 MTCO ₂ e
2045	10,221 MTCO ₂ e

Partners

► N/A

Targets

- Transition 60 percent of all construction fuel use to zero-carbon alternatives by 2035.
- Transition 100 percent of all construction fuel use to zero-carbon alternatives by 2045.

Co-Benefits



Economic Opportunity



Public Health & Wellbeing

SHORT-TERM ACTIONS

OF-3-A: Provide information about available incentives for electric construction and portable equipment to contractors at the building permit counter through informational brochures, such as CARB's Clean Off-Road Equipment Vouchers, and Carl Moyer program. For discretionary projects, the use of electric construction and portable equipment will be a requirement after 2030.

MEASURE OF-4: Zero Carbon Construction Equipment - Municipal

While OF-3 focuses on construction equipment at the community level, municipalities control their own construction equipment fleet. Municipalities require construction equipment for capital improvements, such as infrastructure projects. Napa County Jurisdictions aim to transition 50 percent of fuel use in construction equipment in each jurisdiction's municipal fleet to zero-carbon by 2030 and 100 percent by 2045.

Strategy

Electrification and Clean Alternatives

Applicable Jurisdictions

All

GHG Reduction Potential

2030	236 MTCO ₂ e
2035	472 MTCO ₂ e
2045	472 MTCO ₂ e

Partners

- ▶ N/A

Targets

- ▶ Transition 50 percent of all municipal construction fuel use to zero-carbon alternatives by 2030.
- ▶ Transition 100 percent of all municipal construction fuel use to zero-carbon alternatives by 2035.

Co-Benefits



Economic Opportunity



Public Health & Wellbeing

SHORT-TERM ACTIONS

OF-4-A: Consider incorporating the use of electric construction and portable equipment in the city and county bid evaluation processes for capital improvement projects, providing preference to contractors that utilize electric-powered equipment. For discretionary projects, this will be a requirement after 2030.

LONG-TERM ACTIONS

OF-4-B: Evaluate progress and effectiveness of requirement and modify as necessary to meet policy goals & priorities.

MEASURE SW-1: Increase Solid Waste Diversion

Solid waste will increasingly become a significant source of the county's emissions through 2045, with the projected reduction of emissions in other sectors. About half of these emissions will come from waste generated by the community and the other half will come from waste that has been accumulated in landfills over time. The county's 2019 diversion rate was approximately 51 percent, which means 49 percent of countywide waste generated in 2019 was sent to landfills. Napa County Jurisdictions will work with regional partners to substantially reduce the amount of waste that is landfilled per year to achieve a 75 percent diversion rate by 2030, 80 percent by 2035, and 85 percent by 2045. This will be supported by various programs like backyard composting, food waste recovery, and mandatory commercial composting.

Strategy

Zero Waste

Applicable Jurisdictions

All

GHG Reduction Potential

2030 47,342 MTCO₂e

2035 56,974 MTCO₂e

2045 68,072 MTCO₂e

Partners

- ▶ Upper Valley Waste Management Agency

- ▶ Upper Valley Disposal Services
- ▶ Napa County Recycling and Waste Services
- ▶ Berryessa Garbage Service
- ▶ Recology American Canyon
- ▶ Napa County Office of Education

Targets

- ▶ Increase the countywide waste diversion rate to 75 percent by 2030
- ▶ Increase the countywide waste diversion rate to 80 percent by 2035
- ▶ Increase the countywide waste diversion rate to 85 percent by 2045.

Co-Benefits



Economic Opportunity



Public Health & Wellbeing

SHORT-TERM ACTIONS

SW-1-A: Expand the Residential Backyard Composting Program for single-family residences by sharing information through social media and print media for optional sign-ups and providing a start kit, information pamphlet, and free composting bins to residents who sign up.

SW-1-B: Adopt and implement the draft Reusable Food Ware and Waste Reduction Ordinance, as recommended by the CAC in March 2024.

SW-1-C: Develop a feasibility study to adopt a similar ordinance in all cities in the region.

SW-1-D: Pursuant to Senate Bill (SB) 1383, implement an Edible Food Recovery Program. Collaborate with jurisdictions to meet SB 1383 requirements by partnering with local food banks and waste collection services. This helps hotels and restaurants donate edible food to disadvantaged communities, reducing waste and hunger.

SW-1-E: Implement a Mandatory Commercial Food Waste Diversion Program. Require all food facility health permit holders to ensure that at least 80 percent of compostable waste is disposed of in curbside or commercial compost containers.

SW-1-F: In support of SB 1383 requirements, conduct annual random Waste Bin Audits with local waste collection operators to check compliance. Non-compliant permit holders will face up to three follow-up audits, receive up to two warnings, and may be required to attend composting training. Permits may be rescinded after the third audit if requirements are not met, with allowances for appeals or extensions in special circumstances.

LONG-TERM ACTIONS

SW-1-G: Continue to implement the program and support backyard composting.

SW-1-H: Monitor progress of ordinance implementation and enforcement in Napa County.

As per the feasibility study's results, consider developing an ordinance for all cities or updating the current ordinance to be applicable to the whole region.

SW-1-I: Evaluate progress and effectiveness of requirements and modify as necessary to meet policy goals & priorities.

MEASURE SW-2: Reduce Construction and Demolition Waste

According to the California Department of Resources Recycling and Recovery (CalRecycle), construction and demolition waste can easily be reused or recycled, and doing so can be more economical than disposal. Examples of construction and demolition waste include lumber, drywall, metals, masonry (e.g., concrete, bricks), pipes, carpet, and green waste associated with landscaping. Many jurisdictions in the state currently require that projects recycle or reuse a minimum of 65 percent of their construction and demolition waste (e.g., County of Los Angeles, City of Davis, City of Mountain View). Napa County Jurisdictions will develop a unified Construction Waste Management Plan to ensure that construction and demolition projects recycle or reuse at least 70 percent of waste materials by 2035, promoting sustainable building practices and reducing landfill use.

Strategy

Zero Waste

Applicable Jurisdictions

All

GHG Reduction Potential

2030 N/A
2035 N/A
2045 N/A

Partners

- ▶ Upper Valley Disposal Services
- ▶ Napa Recycling and Waste Services
- ▶ Napa County Recycling and Waste Services
- ▶ Berryessa Garbage Service
- ▶ Recology American Canyon

Target

- ▶ Recycle or reuse at least 70 percent of construction and demolition waste by 2035.

Co-Benefits



Public Health & Wellbeing

SHORT-TERM ACTIONS

SW-2-A: Develop a unified Construction Waste Management Plan applicable to all jurisdictions to require and achieve recycle or reuse of at least 70 percent of construction and demolition (C&D) waste from every project starting from 2035 without compromising building integrity and quality.

LONG-TERM ACTIONS

SW-2-B: Review the plan every 10 years to incorporate state-of-the-art construction waste management practices and identify new construction waste management facilities in the region.

MEASURE SW-3: Waste Education and Awareness

Communitywide knowledge of the available waste management resources (e.g., recycling, composting, reuse) and programs, and understanding of waste reduction solutions can support the RCAAP's solid waste goals. Napa County Jurisdictions will require mandatory information dissemination and update curriculums on solid waste programs to increase public awareness and education on sustainable waste management, partnering with local schools to promote sustainable practices and reduce waste at the community level. Communitywide waste reduction will help in reducing CH₄ emissions generated from landfilled waste.

Strategy

Zero Waste

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ Upper Valley Waste Management Agency
- ▶ Napa Recycling and Waste Services
- ▶ Recology American Canyon
- ▶ Napa County Office of Education
- ▶ Napa Valley Unified School District
- ▶ Napa County Recycling and Waste Services
- ▶ Upper Valley Disposal Services
- ▶ Berryessa Garbage Service

Target

- ▶ N/A

Co-Benefits



Public Health & Wellbeing

SHORT-TERM ACTIONS

SW-3-A: Require that all jurisdictions inform residents and businesses regarding available local programs and information of type of waste accepted as recyclables/solid waste/compostables through print media and social media twice a year or when a new program is launched.

SW-3-B: Update the Napa Countywide Waste Reduction and Recycling Curriculum to reflect current policies, methods, and technologies.

SW-3-C: Partner with School Districts to require that schools in all jurisdictions use the Napa Countywide Waste Reduction and Recycling Curriculum.

LONG-TERM ACTIONS

SW-3-D: Evaluate progress and effectiveness of requirement and modify as necessary to meet policy goals & priorities.

SW-3-E: Review the Waste Reduction and Recycling Curriculum for its applicability for the whole community and update, as necessary. Organize workshops at schools (at least one every year to encompass all locations) targeted at the whole community. Implement the recommended curriculum.

MEASURE SW-4: Increase Landfill Methane Capture Capacity

As emissions are reduced from other emissions sources, reducing emissions from the solid waste sector will become increasingly important. More than half of solid waste emissions come from waste accumulated in landfills within the county. By 2045, CH₄ emissions from landfills would account for 20 percent of countywide emissions if no further action is taken. As of 2019, the CH₄ capture efficiency at landfills is assumed to be 75 percent. Napa County Jurisdictions will collaborate with regional partners to increase the CH₄ capture efficiency at local landfills to 85 percent by 2035 and 95 percent by 2045, reducing GHG emissions.

Strategy

Landfill Emissions

Applicable Jurisdictions

Unincorporated County

GHG Reduction Potential

2030	93,048 MTCO ₂ e
2035	98,772 MTCO ₂ e
2045	104,985 MTCO ₂ e

Partners

- ▶ American Canyon Landfill and Clover Flat Landfill
- ▶ Upper Valley Disposal Services/Recology American Canyon

Target

- ▶ Increase CH₄ capture efficiency at regional landfills to 85 percent by 2035

- ▶ Increase CH₄ capture efficiency at regional landfills to 95 percent by 2045

Co-Benefits



Public Health & Wellbeing

SHORT-TERM ACTIONS

SW-4-A: Work with American Canyon Landfill and Clover Flat Landfill to confirm current landfill gas collection efficiency.

SW-4-B: For landfills that may have halted CH₄ capture since 2019, conduct a feasibility study to determine solutions to restart CH₄ capture and either flare, collect, or generate electricity from the CH₄ to reduce the intensity of GHGs emitted. Additionally, if the landfill has less than 80 percent landfill gas collection efficiency, a feasibility study should be undertaken to determine solutions to capture additional CH₄ and increase the landfill gas collection efficiency to at least 85 percent.

SW-4-C: Establish requirements that both landfills provide evidence to substantiate that their collection efficiency improvements are being achieved through regular reports to local agencies (e.g., every 5 years).

LONG-TERM ACTIONS

SW-4-D: Require that both landfills provide evidence to substantiate their collection efficiency in a report by the end of 2046.

MEASURE SW-5: Support Increased Methane Capture Efficiency at Regional Landfills

In 2019, approximately 81 percent of the waste generated in the county was exported beyond the boundary of the county, and 99 percent of the exported waste was delivered to Potrero Hill Landfill. After the anticipated closure of Clover Flat Landfill in 2027, nearly all future waste generated in the county will be sent to landfills outside the county. The emissions generated by the exported waste are influenced by the level of CH₄ capture efficiency at those external landfills. Despite not having jurisdictional control over the Potrero Hills Landfills, Napa County Jurisdictions will work with Potrero Hills Landfill to reduce GHG emissions associated with the county's exported waste by increasing fugitive CH₄ capture rates, such that the landfill captures at least 85 percent of the CH₄ produced by the landfill by 2035, and 95 percent by 2045.

Strategy

Landfill Emissions

Applicable Jurisdictions

All

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

- ▶ Potrero Hills Landfill

Target

- ▶ Increase CH₄ capture efficiency at Potrero Hill Landfill to at least 85 percent by 2035 and 95 percent by 2045.

Co-Benefits



Public Health & Wellbeing

SHORT-TERM ACTIONS

SW-5-A: Partner with landfills outside of Napa County that receive waste from the Napa region to increase CH₄ capture. Prioritize partnering with Potrero Hills Landfill, which took in 99 percent of the region's exported waste in 2019, to increase fugitive CH₄ emission capture rate to a minimum of 85 percent by 2035. This action assumes that the region will continue to send the majority of its waste to Potrero Hills Landfill.

MEASURE SW-6: Support Waste-to-Energy Facilities

Waste-to-energy facilities convert compost, agricultural cuttings, biomass, or other organic waste into usable fuel that can be used as an energy source to generate electricity or portable fuels (e.g., biogas) and even soil amendments that increase soil carbon (e.g., biochar). Some waste-to-energy systems are already being implemented in Napa County. Additionally, the City of Napa is actively reviewing and evaluating a biomass gasification project at the City-owned Materials Diversion Facility. Napa County Jurisdictions will work with regional partners to promote the use of waste-to-energy systems at regional landfills to capture and utilize the inherent energy in CH₄, reducing GHGs.

Strategy

Landfill Emissions

Applicable Jurisdictions

Unincorporated County

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

- ▶ Upper Valley Disposal services
- ▶ Waste Connections
- ▶ Recology American Canyon

Targets

- ▶ N/A

Co-Benefits



Public Health & Wellbeing

SHORT-TERM ACTIONS

SW-6-A: Support waste management providers and jurisdictions in installing waste-to-energy systems. For example: streamline permitting and/or provide low-interest loans for eligible systems. Technologies considered may include, but are not limited to, anaerobic digestion, gasification, plasma gasification, hydrothermal carbonization, and low- or zero-emission incineration.

LONG-TERM ACTIONS

SW-6-B: Review permitting process and loans at least once every 5 years for feasibility.

SW-6-C: Coordinate with other local agencies and jurisdictions to develop and implement decentralized waste-to-energy systems.

MEASURE WW-1: Reduce Methane Emissions from Wastewater Treatment Plants

In 2019, wastewater accounted for four percent of countywide emissions and is generated by both on-site septic systems and centralized wastewater treatment plants (WWTPs), but 93 percent of those emissions were from WWTPs. WWTPs generate CH₄ that often escapes into the atmosphere rather than being captured as a resource. Napa County Jurisdictions will require WWTPs to conduct periodic evaluations and develop solutions to reduce fugitive CH₄ emissions for those that do not already have waste-to-energy systems in place. The cities of Napa and American Canyon, the two most populous jurisdictions in the county, are either currently implementing or planning to implement such systems. American Canyon’s Waste Recovery Facility is currently exploring a high-strength waste project that will capture CH₄ emissions no later than 2035.

Strategy

Wastewater Treatment

Applicable Jurisdictions

All

GHG Reduction Potential

2030	32,739 MTCO ₂ e
2035	43,227 MTCO ₂ e
2045	45,412 MTCO ₂ e

Partners

- ▶ Local wastewater agencies

Targets

- ▶ Implementation of waste-to-energy facilities for the cities of Napa and American Canyon, at the minimum, by 2035.

Co-Benefits



Public Health & Wellbeing

SHORT-TERM ACTIONS

WW-1-A: For WWTPs that do not have waste-to-energy systems in place, require public and private WWTPs located in the region to conduct a full evaluation of the WWTPs and report to the Napa County’s Environmental Health division every three years to investigate and propose solutions to reducing fugitive CH₄ emissions that are not captured by existing waste-to-energy systems.

LONG-TERM ACTIONS

WW-1-B: Evaluate progress and effectiveness of requirement and modify as necessary to meet policy goals and priorities.

MEASURE WW-2: Explore Recycled Water Opportunities

Recycled water has significant potential for offsetting potable water demand for non-drinking applications throughout Napa County. Napa County Jurisdictions will work with local wastewater agencies to expand the production capacity, distribution infrastructure, and applications for recycled water across the county through feasibility studies, strategic planning, and the pursuit of external funding opportunities.

Strategy

Recycled Water

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Targets

► N/A

Applicable Jurisdictions

Unincorporated County

Co-Benefits



Economic Opportunity

Partners

► Local wastewater agencies

SHORT-TERM ACTIONS

WW-2-A: Encourage wastewater agencies to conduct a feasibility study to expand the supply of recycled water and infrastructure (e.g., pipelines) to areas of demand, prioritizing agricultural applications and large outdoor irrigation uses. Incorporate results into wastewater agencies' master plans.

LONG-TERM ACTIONS

WW-2-B: Plan the expansion of recycled water pipelines to meet demand, including in high-density areas. Pursue grant funding for eligible projects.

WW-2-C: Reevaluate the feasibility of Purified Water based on updated cost estimates. Pursue grant funding and implementation of project(s) if determined to be cost-effective and publicly acceptable.

MEASURE WW-3: Reduce Residential Water Use

A major component of water consumption throughout Napa County comes from residential water use. Napa County Jurisdictions will establish specific water use performance targets of 47 gallons per capita per day (gpcd) aligned with State standards by 2029 and 42 gpcd by 2030. The jurisdictions will also provide the tools and incentives needed to achieve these targets and ultimately reduce water use from both single-family and multi-family residential properties.

Strategy

Water Use Efficiency
Conservation

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ Napa County Flood Control & Water Conservation District

Targets

- ▶ Achieve average indoor residential water use of 47 gpcd or less for all jurisdictions between 2025 and 2029.
- ▶ Reduce average indoor residential water use to 42 gpcd or less by 2030 and beyond.
- ▶ Increase residential adoption of water-efficient fixtures, appliances, and landscaping.

Co-Benefits



Cost Savings



Economic Opportunity



Ecosystem Health

SHORT-TERM ACTIONS

WW-3-A: All jurisdictions strive to achieve average indoor residential water use of 47 gpcd or less for 2025-2029 (SB 606/AB 1668 standard).

WW-3-B: All jurisdictions offer a selection of rebate incentives for their residential customers based on available funding, local cost-effectiveness, and market penetration, choosing from among the following products and practices:

- ▶ High-Efficiency Toilet,
- ▶ High-Efficiency Residential Clothes Washer,
- ▶ Hot Water Recirculation Pump,
- ▶ Smart Home Water Monitor,
- ▶ Customer-Side Leak Repair,
- ▶ Multi-Family Submetering,
- ▶ "Cash For Grass" Water-Efficient Landscape Conversion,
- ▶ Smart Irrigation Controller,
- ▶ Drip Irrigation Conversion,
- ▶ Pool Cover,
- ▶ Laundry-to-Landscape Greywater,

- ▶ Rainwater Harvesting, and
- ▶ Pursue grant funding for rebate programs.

WW-3-C: Consider increasing “Cash for Grass” rebate amounts to accelerate the conversion of unwanted high-water-use residential lawn areas to water-efficient landscaping.

WW-3-D: Consider special direct installation programs for low-income customers to overcome the barriers of traditional rebate programs, providing water efficiency upgrades for an underserved segment of the community.

WW-3-E: Incorporated jurisdictions either implement advanced metering infrastructure or offer Smart Home Water Monitor rebates to empower customers to manage their water use and receive timely leak alerts.

LONG-TERM ACTIONS

WW-3-F: All jurisdictions strive to achieve average indoor residential water use of 42 gpcd or less for 2030 and beyond (SB 606/AB 1668 standard).

WW-3-G: Reduce or eliminate rebates in the long term based on available funding, changes in cost-effectiveness, or market saturation; and add new rebates as innovative, proven water-saving products arise.

WW-3-H: Continue to seek funding for residential water conservation rebates.

MEASURE WW-4: Prioritize Native Drought Tolerant Plants in Municipal Landscaping

Municipal landscaping can serve as a model for sustainable water practices that can be applied to the broader community. Napa County Jurisdictions will transform public spaces across Napa County by prioritizing native, drought-tolerant plantings in landscaped areas at municipal facilities, in compliance with AB 1572, which requires eliminating non-functional turf at municipal properties by 2027.

Strategy

Water Use Efficiency
Conservation

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ Napa County Flood Control & Water Conservation District
- ▶ Napa County Resource Conservation District (Napa RCD)

Targets

- ▶ Achieve full compliance with AB 1572 requirements for eliminating non-functional turf at municipal properties by 2027.

Co-Benefits



Cost Savings



Economic Opportunity



Ecosystem Health

SHORT-TERM ACTIONS

WW-4-A: Identify priority municipal landscaping areas for replacement with native, drought-tolerant alternatives. Prioritize project areas based on size and the greatest water savings opportunities.

WW-4-B: To facilitate implementation, consider certification of at least one public works staff member from each jurisdiction to implement sustainable and climate-smart landscapes (e.g., ReScape certification).

WW-4-C: All jurisdictions adopt regionally consistent ordinances to implement and enforce AB 1572, which phases in a ban on the use of potable water for irrigation of non-functional turf at municipal properties in 2027. Ordinance must include exemptions to ensure the health of trees. See related action WW-7-E for application of AB 1572 to the rest of the community.

LONG-TERM ACTIONS

WW-4-D: Maintain sustainable landscape training regimen for public works staff.

WW-4-E: Continue local enforcement of AB 1572 non-functional turf irrigation ban and encourage affected jurisdictions to certify their compliance with the State Water Board every three years (as required by law).

MEASURE WW-5: Reduce Wasteful Potable Water Use

Potable water waste represents an unnecessary drain on Napa County's water resources, particularly for outdoor uses where non-potable alternatives may be available. To reduce wasteful potable water use, Napa County Jurisdictions will establish specific prohibitions against common wasteful practices that persist even outside of drought conditions, including daytime irrigation, post-rainfall irrigation, and uncontrolled runoff, among others. Napa County Jurisdictions will encourage reductions in commercial and agricultural water use through a suite of incentives, requirements, and educational initiatives.

Strategy

Water Use Efficiency Conservation

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

► Napa County Flood Control & Water Conservation District

Targets

► N/A

Co-Benefits

-  Cost Savings
-  Economic Opportunity
-  Ecosystem Health

SHORT-TERM ACTIONS

WW-5-A: Establish and enforce local regulations that prohibit certain wasteful uses of potable water permanently, not just during declared water shortages.

WW-5-B: Adopt at minimum a core set of permanent water waste prohibitions with an aim to reduce the use of potable water for outdoor activities. Core set shall include bans on:

- daytime irrigation (with specified hours),
- irrigation during and within 48 hours after measurable rainfall,
- excessive irrigation runoff,
- using water to wash driveways and sidewalks (with health and safety exception), and
- using hose without a shutoff nozzle to wash vehicles.

LONG-TERM ACTIONS

WW-5-C: Expand core set of permanent water waste prohibitions as warranted.

MEASURE WW-6: Reduce Public Distribution System Water Loss

Water lost through aging or damaged public distribution systems can result in a significant waste of resources and undermine necessary water conservation efforts across Napa County. To minimize water loss, cities of Napa and American Canyon must not lose more than 23 gallons per service connection per day (gpscd) per requirements under SB 555. Additionally, the Napa County Jurisdictions will use a prioritization approach with respect to managing public water systems such that changes to individual assets are based on their likelihood of failure or consequence of failure.

Strategy

Water Use Efficiency Conservation

Applicable Jurisdictions

All

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ Napa County Flood Control & Water Conservation District

Targets

- ▶ City of Napa to meet a loss standard of no more than 22.9 gpscd by 2028
- ▶ City of American Canyon to meet a loss standard of no more than 21.4 gpscd by 2028

Co-Benefits



Cost Savings



Economic Opportunity



Ecosystem Health



Public Health & Wellbeing

SHORT-TERM ACTIONS

WW-6-A: Require Cities of Napa and American Canyon to meet their SB 555 Maximum Real Loss Standards of 22.9 gpscd and 21.4 gpscd, respectively, by January 1, 2028, and maintain these standards in subsequent years, employing proactive leak detection using acoustic monitoring or other advanced technologies if needed and cost-effective.

WW-6-B: All jurisdictions with public water systems use a prioritization approach to asset management which prioritizes the replacement, rehabilitation, or protection of distribution infrastructure components (e.g., pipes) based on their break/failure/leak history, material, age, and size (i.e., likelihood of failure and consequence of failure).

LONG-TERM ACTIONS

WW-6-C: Evaluate progress and effectiveness of requirement and modify as necessary to meet policy goals and priorities.

MEASURE WW-7: Improve Water Efficiency and Conservation

Public engagement and comprehensive behavior change are necessary components of sustainable water management, especially in Napa County's drought-prone climate. To support this behavior change and foster a culture of water consciousness throughout the county, Napa County Jurisdictions will offer rebates and incentives to the community for water-efficient solutions, establish water-efficient landscaping requirements, and establish a consistent coordinated regional approach to water conservation awareness, education, and engagement through multiple modes, from digital platforms and media campaigns to hands-on workshops and educational programs.

Strategy

Water Loss

Applicable Jurisdictions

All

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

- ▶ Napa County Flood Control & Water Conservation District
- ▶ Napa County Office of Education

- ▶ Napa RCD
- ▶ University of California Cooperative Extension (UCCE) Master Gardeners
- ▶ Sonoma-Marín Saving Water Partnership
- ▶ Project WET Foundation
- ▶ ZunZun

Targets

- ▶ Train and certify 100 local Qualified Water Efficient Landscaper (QWEL) professionals by 2030
- ▶ Train 60 local K-12 teachers in Project WET curriculum by 2030

Co-Benefits



Cost Savings



Economic Opportunity



Ecosystem Health



Public Health & Wellbeing

SHORT-TERM ACTIONS

WW-7-A: All jurisdictions to offer a selection of rebate incentives for their non-residential customers based on available funding, local cost-effectiveness, and market penetration, choosing from among the following products and practices:

- ▶ High-Efficiency Toilets and Urinals,
- ▶ High-Efficiency Commercial Clothes Washer,
- ▶ Pre-Rinse Spray Valve,
- ▶ Air-Cooled Ice Maker,
- ▶ Connectionless Food Steamer,
- ▶ Cooling Tower Controller,
- ▶ "Cash For Grass" Water-Efficient Landscape Conversion,
- ▶ Smart Irrigation Controller,
- ▶ Drip Irrigation Conversion, and
- ▶ Green Business Stipend.

WW-7-B: Increase “Cash For Grass” rebate amounts to accelerate the conversion of non-functional non-residential turf areas to water-efficient landscaping.

WW-7-C: Pursue grant funding for rebate programs.

WW-7-D: Increase both awareness of and access to available rebates and techniques for water use efficiency by taking a regional approach to public outreach. Coordinate across jurisdictions on periodic countywide outreach campaigns, outreach materials, events, and workshops. Consistent regional messaging through a coordinated campaign (e.g., press releases, social media, radio, billboards) will improve public involvement and disseminate useful tools designed to ensure efficient use of Napa County’s water resources.

WW-7-E: All jurisdictions adopt regionally consistent ordinances to implement and enforce AB 1572, which phases in a ban on the use of potable water for irrigation of non-functional turf at institutional properties, commercial, and industrial properties in 2028, and homeowners association common areas in 2029. Ordinance must include exemptions to ensure the health of trees. See related action WW-4-B for application to municipal properties.

WW-7-F: Study the feasibility of applying tiered water rates to non-residential customers for agencies that currently apply uniform volumetric rates for non-residential water consumption.

WW-7-G: Rank non-residential customers by annual water use and require top users to undergo periodic water audits to identify areas for improvement. Work with County to provide audits for large non-residential users in the unincorporated area.

WW-7-H: All jurisdictions aggressively enforce water efficient landscaping ordinance (WELO) for covered projects, ensuring the installation of climate-appropriate plants and efficient irrigation systems. Periodic changes to the State Model WELO should be tracked so that local ordinances and enforcement reflect all current requirements.

WW-7-I: Upon each triennial CALGreen adoption, all jurisdictions will adopt regionally consistent local amendments that include more stringent water efficiency and conservation measures. This reach code should advance new water-saving technology by requiring reduced fixture flow rates and more efficient appliance standards for non-residential projects and consider water reuse systems for all projects. Pursuant to new statewide residential building code update limitations in AB 130 (signed into law on June 30, 2025), a residential reach code may not be adopted and enforced until 2031; however, nonresidential reach code adoption and enforcement may proceed starting in 2026.

WW-7-J: Develop a regularly updated and maintain a regional water conservation web page with a memorable URL (e.g., “NapaValleySavesWater.org” or “NVSavesWater.org”) that links all County residents and business owners to their water provider’s conservation web page and rebate offerings via address entry or map clicking. Page can be adapted from existing Watershed Information & Conservation Council page (napawatersheds.org/water-conservation). Among other user-friendly resources, it should contain prominent links to the Alliance for Water Efficiency’s home waterworks website and its water calculator, and to the state’s Save Our Water website.

WW-7-K: Encourage growers to take advantage of Napa RCD water distribution uniformity testing, which identifies opportunities to improve water use efficiency and performance of irrigation systems for vines.

WW-7-L: Partner with Napa RCD and UCCE Master Gardeners to expand free Water-Wise Landscaping Workshops countywide via webinar offerings and/or additional in-person sessions up valley and in American Canyon.

WW-7-M: Partner with Napa RCD and UCCE Master Gardeners to expand the Climate-Friendly Garden Tour to multiple days and jurisdictions, providing all County residents the opportunity to see local real-life examples of outdoor water efficiency.

WW-7-N: Target training and certification of 100 local QWEL professionals by 2030. Pursue grant funding for training classes.

WW-7-O: Target the training of 60 local K-12 teachers in Project WET by 2030, greatly expanding the use of the Project WET Curriculum and Activity Guide in local classrooms.

WW-7-P: Partner with ZunZun program (active in Sonoma and Mendocino counties) to expand Musical Water Education Assemblies countywide.

WW-7-Q: Leverage an annual video contest winner as a countywide public service announcement for water conservation. Celebrate winning videos at board or council meetings to gain more public awareness.

LONG-TERM ACTIONS

WW-7-R: Reduce or eliminate rebates in the long term based on available funding, changes in cost-effectiveness, or market saturation.

WW-7-S: Add new customized rebates as innovative, proven water-saving products arise.

WW-7-T: Continue to seek funding for non-residential water conservation rebates.

WW-7-U: Continue local enforcement of AB 1572 non-functional turf irrigation ban and encourage affected non-residential entities to certify their compliance with the State Water Board every three years (as required by law).

WW-7-V: Adopt tiered water rates for non-residential customers, if deemed feasible.

WW-7-W: Offer free water audits to all non-residential customers.

WW-7-X: Implement formal water conservation program for top 20 percent of non-residential water users, employing at least five best management practices (BMPs) from SB 606/AB 1668 regulations. Top 2.5 percent of users must adopt at least ten of the BMPs.

WW-7-Y: Work with Napa County Green Business, Napa Green Certified Winery, and other similar sustainability programs to include the highest level of water efficiency measures as technology evolves.

WW-8-Z: Consider establishment of a Water Building Performance Ordinance similar to the City of San Jose. If large non-residential buildings do not meet water efficiency benchmarking standards, they would be required to make targeted efficiency upgrades to improve performance.

MEASURE AG-1: Reduce Fossil Fuel Consumption in Field Equipment

The County of Napa will establish a framework to phase out fossil fuel consumption in agricultural equipment through financial incentives, trade-in programs, and strategic information dissemination via multiple channels. With a goal of fully converting both general field equipment and irrigation pumps to clean energy alternatives by 2045, the County of Napa sets specific targets for the conversion of fossil-fueled agricultural field equipment. For existing equipment (2019 and older), the County of Napa aims to convert 25 percent of agricultural field equipment over 25 horsepower (hp) to carbon-neutral alternatives by 2030, 50 percent by 2035, and 100 percent by 2045 and convert 50 percent of diesel irrigation pumps to carbon-neutral alternatives by 2030 and 100 percent by 2035. For new equipment, the County of Napa aims to have 50 percent of new agricultural equipment over 25 hp and 75 percent of new irrigation pumps be carbon-neutral by 2030 and both types of new equipment be 100 percent carbon neutral by 2035.

Strategy

Reduce GHGs from Agricultural Equipment

Applicable Jurisdictions

Unincorporated County

GHG Reduction Potential

2030	25,316 MTCO ₂ e
2035	49,020 MTCO ₂ e
2045	52,862 MTCO ₂ e

Partners

- ▶ Bay Area Air District
- ▶ NRCS
- ▶ Napa RCD
- ▶ Napa County Farm Bureau (NCFB)
- ▶ Napa Farmers Market Association (NFMA)

Targets

- ▶ 25 percent of existing agricultural field equipment over 25 hp is carbon-neutral by 2030
- ▶ 50 percent of existing agricultural field equipment over 25 hp is carbon-neutral by 2035
- ▶ 100 percent of existing agricultural field equipment over 25 hp is carbon-neutral by 2045
- ▶ 50 percent of existing irrigation pumps are carbon-neutral by 2030
- ▶ 100 percent of existing irrigation pumps are carbon-neutral by 2035
- ▶ 50 percent of new agricultural equipment over 25 hp and irrigation pumps are carbon-neutral starting in 2030
- ▶ 100 percent of new agricultural equipment over 25 hp and irrigation pumps are carbon-neutral starting in 2035

Co-Benefits



Cost Savings



Economic Opportunity



Energy Security



Public Health & Wellbeing

SHORT-TERM ACTIONS

AG-1-A: Explore opportunities to provide more funding through extending the Bay Area Air District's incentives or develop a new incentive program tailored for the region for buying electric agricultural equipment to achieve 100 percent transition of eligible equipment to electric.

AG-1-B: Encourage retirement of fossil-fueled equipment and use of fossil fuels.

AG-1-C: Include a list of available incentives to support the purchase of electric agricultural equipment on the County's Agricultural Commissioner Website, on the RCAAP website/app, through print and social media, and through local agricultural associations such as the NCFB, NFMA, and Napa RCD.

AG-1-D: Develop an irrigation pump replacement program to achieve 100 percent transition to electric, solar, or renewable diesel. The program can be similar to the lawn and garden trade-in program.

AG-1-E: Provide vouchers or rebates for the installation of solar electric irrigation pumps or the purchase of carbon-neutral fuels (e.g., biofuels) to power internal combustion irrigation pumps when replacing a fossil-fuel powered irrigation pump.

LONG-TERM ACTIONS

AG-1-F: Continue the funding program to achieve 100 percent transition of eligible equipment to electric or solar. Update the information as new incentives become available.

AG-1-G: Continue the replacement program to achieve 100 percent of irrigation pumps transitioned to electric or renewable fuels.

MEASURE AG-2: Promote Sustainable Agricultural Equipment

Agricultural operations rely heavily on off-road equipment that traditionally depends on fossil fuels, contributing to both local air pollution and GHG emissions. To expand the adoption of cleaner technologies across Napa County's diverse agricultural landscape, the County of Napa will implement targeted outreach campaigns, along with promotion and educational support on equipment electrification and maintenance.

Strategy

Reduce GHGs from Agricultural Equipment

Applicable Jurisdictions

Unincorporated County

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ Napa RCD
- ▶ NCFB
- ▶ Napa Green

Targets

- ▶ N/A

Co-Benefits



Cost Savings



Economic Opportunity



Energy Security



Public Health & Wellbeing

SHORT-TERM ACTIONS

AG-2-A: Support the agricultural community in converting to alternatively fueled offroad equipment or renewable diesel by organizing outreach campaigns.

AG-2-B: Encourage maintenance and operations of field equipment, (optimizing loads, using effective travel patterns, reducing tire slippage, optimizing irrigation pumps). Provide education on:

- ▶ benefits of using electric equipment,
- ▶ benefits of maintaining equipment, and
- ▶ available resources (incentives).

LONG-TERM ACTIONS

AG-2-C: Evaluate the effectiveness of short-term actions, and adjust and continue actions as warranted.

MEASURE AG-3: Expand Carbon Farming Practices

Agricultural lands across Napa County hold considerable potential for climate mitigation through practices that enhance soil carbon sequestration and ecosystem health. The County will collaborate with regional partners to accelerate carbon farming adoption through strategic partnerships with technical experts, targeted education featuring local practitioners, customized implementation support, and development of regional supply chains for essential materials like compost and native plants. The County will work with local partners to provide both the necessary carbon farming best practices, knowledge, and resources to land managers and farmers as well as create public recognition opportunities to transform agricultural lands into effective carbon sinks.

Strategy

Increase Carbon Storage

Applicable Jurisdictions

Unincorporated County

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

► University of California
Agriculture and Natural
Resources (UC ANR)

► Napa RCD

► NCFB

Targets

► N/A

Co-Benefits



Cost Savings



Economic Opportunity



Ecosystem Health



Public Health &
Wellbeing

SHORT-TERM ACTIONS

AG-3-A: Establish partnership with UC ANR, Napa RCD, and other community agencies and organizations that assist growers in implementing carbon farming practices.

AG-3-B: Work with community organizations to develop and distribute educational resources on best practices for increasing carbon sequestration, including local examples of land managers in the region who are currently practicing carbon farming. This can include:

- Annual workshops that engage the region's farmers, ranchers, and land managers to share carbon farming and soil management best practices.
- Educating land managers on the quantified carbon capture opportunities provided through conservation easements for natural areas associated with agricultural lands.

AG-3-C: Support local partners (e.g., farmers, vintners, landowners) as they deliver or develop Carbon Farming Plans and provide technical and financial assistance to support implementation of these plans. Examples include:

- Identifying local funding to provide financial and technical assistance to agricultural landowners in developing and implementing Carbon Farming Plans.

- ▶ Developing grants for participating in carbon farming practices prioritizing compost instead of fertilizers, grazing management, reduced synthetic fertilizer use, reduced tillage, increasing tree and shrub planting on farm landscapes.
- ▶ Providing grant application assistance to income-qualified farmers and ranchers.
- ▶ Developing a reporting incentive in which additional assistance will be provided in preparation of carbon farming grant applications if the applicant commits to annual reporting on soil management and carbon farming practices.

AG-3-D: Support local supply chain solutions that support carbon farming efforts, such as: development of local supply chain for native plant stock to support tree and shrub planting on farm landscape
development of resources for on-farm composting and local compost supply chain

LONG-TERM ACTIONS

AG-3-E: On the RCAAP website, develop a webpage dedicated to carbon farming and list the farmers, wineries, ranchers, and land managers who are currently practicing carbon farming, and update the list every year with crop report results (see crop reporting related measure below). Add details necessary for agricultural community engagement (e.g., a farm's website link).

MEASURE AG-4: Report on Carbon Farming Practices

Systematic reporting of carbon farming practices can increase the visibility of successful implementation, encourage more widespread adoption, facilitate knowledge sharing among agricultural stakeholders, and create accountability mechanisms to ensure ongoing improvement and expansion of these methods. Accordingly, the County will update the annual crop report to include information on the current carbon farming practices being implemented each year, showcasing carbon farming throughout Napa County.

Strategy

Increase Carbon Storage

Applicable Jurisdictions

Unincorporated County

GHG Reduction Potential

2030 N/A

2035 N/A

2045 N/A

Partners

► Napa Green

► Napa RCD

Targets

► N/A

Co-Benefits



Cost Savings



Economic Opportunity



Ecosystem Health



Public Health & Wellbeing

SHORT-TERM ACTIONS

AG-4-A: Update the annual crop report to include carbon farming practices.

LONG-TERM ACTIONS

AG-4-B: Review the crop reporting format after the Carbon Farming Program study is complete for any gaps in things to report. Afterwards, report every five years on any new carbon farming practices in the region.

Use the reporting results to update the list of farmers, winery and vineyard operators, ranchers, and land managers who practice carbon farming at a large scale on the County webpage (aimed to facilitate voluntary engagement between the agricultural community).

MEASURE AG-5: Expand the Urban Forest

Napa County's incorporated jurisdictions will strategically expand and manage trees within Napa County's urban areas. Expanding the urban forest represents a valuable opportunity to address climate change at the community level. To increase carbon sequestration in the urban forest, jurisdictions will prepare and implement local urban forest management plans to expand the urban tree canopy, targeting a 20 percent expansion from 2019 levels by 2035. An effectively managed expanded urban tree canopy can also reduce energy consumption through natural cooling and enhance air quality—all while creating more livable and aesthetically pleasing urban spaces for residents and visitors.

Strategy

Increase Carbon Storage

Applicable Jurisdictions

American Canyon, Calistoga, Napa, St. Helena, Yountville

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ Napa RCD

Targets

- ▶ Expand the urban forest by 20 percent in all incorporated jurisdictions by 2035 from 2019 conditions.

Co-Benefits



Cost Savings



Ecosystem Health



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

AG-5-A: If not already adopted by 2030, create, adopt, and implement urban forest management plans in all incorporated jurisdictions.

AG-5-B: Target a 20 percent expansion of the urban forest by 2035 from 2019 levels.

AG-5-C: Consider having consistent replacement requirements for tree removals across all jurisdictions (e.g., Napa County's 3:1 tree replacement requirement).

LONG-TERM ACTIONS

AG-5-D: Evaluate the effectiveness of short-term actions, and adjust and continue actions as warranted.

MEASURE AG-6: Restore Woodland and Forest Habitat

Woodland and forest ecosystems across Napa County provide critical carbon sequestration services that have been diminished by historic land use changes and recent wildfires. The County of Napa will work with Napa RCD to accelerate woodland and forest habitat restoration by establishing a coordinated countywide habitat restoration program, leveraging existing initiatives, engaging private landowners, and implementing strategic reforestation efforts. This comprehensive approach—which prioritizes native ecosystems and holistic restoration methods—will help rebuild natural carbon sinks essential to countywide climate goals. The County of Napa aims to restore 10 percent of areas affected by wildfires since 2017 by 2030, 15 percent by 2035, and 20 percent by 2045.

Strategy

Increase Carbon Storage

Applicable Jurisdictions

Unincorporated County

GHG Reduction Potential

2030	82,201 MTCO ₂ e
2035	123,302 MTCO ₂ e
2045	164,403 MTCO ₂ e

Partners

- ▶ Napa RCD

Targets

- ▶ Restore 10 percent of areas affected by wildfire since 2017 by 2030
- ▶ Restore 15 percent of areas affected by wildfire since 2017 by 2035
- ▶ Restore 20 percent of areas affected by wildfire since 2017 by 2045

Co-Benefits



Ecosystem Health



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

AG-6-A: Develop a dedicated countywide watershed management and habitat restoration program that coordinates with relevant stakeholders and departments (e.g., local communities, Napa RCD, PBES & Fire Administrator) to accelerate habitat restoration, focusing on historical oak woodlands and coniferous forests. Watershed management and habitat restoration includes a holistic approach to increasing natural carbon sequestration, in balance with other management efforts such as fuel reduction strategies, biological resources, fisheries, and water quality.

To prevent duplicative work, the program should work with existing restoration programs (e.g., Re-Oaking North Bay Plan, Acorns-to-Oaks, watershed restoration programs) to identify the status of existing programs, their effectiveness in restoring habitats, and any challenges they face that limit their effectiveness.

Based on input from Napa RCD, the program should:

- ▶ Assist local conservation programs in identifying private and public lands in rural areas suitable for habitat restoration, prioritizing those affected by recent wildfires.
- ▶ Secure and distribute funding for program implementation.
- ▶ Provide technical assistance, outreach support, and other resources for tree planting plans and programs.
- ▶ Facilitate the connection with landowners who would like to plant trees and incentivize landowners to participate.

- ▶ Support reforestation research and planning by collaborating on data and knowledge exchange.
- ▶ Track all tree and other vegetative plantings annually, including species, size (measured in diameter at breast height [DBH]) at planting, location, ownership, and number.
- ▶ Educate the community regarding the significance of native trees in Napa County by partnering with Napa RCD community education or other similar programs.

LONG-TERM ACTIONS

AG-6-B: Evaluate the effectiveness of short-term actions and adjust, as needed.

MEASURE AG-7: Increase Sustainable Vineyard Certification

Vineyards constitute a significant portion of Napa County's agricultural landscape and represent opportunities for meaningful climate action through sustainable management practices. Napa County Jurisdictions will increase sustainable vineyard certification across the county by incentivizing vineyard certification programs like Napa Green, tracking quantifiable GHG reductions from these certifications, expanding program reach through collaboration, and implementing regular review processes. Napa County Jurisdictions aim to certify 75 percent of vineyards by 2030 and 90 percent by 2045, and certify all new vineyards starting in 2030. Ultimately, these efforts reflect the region's collective commitment to climate-smart viniculture while upholding Napa County's reputation for high-quality wine production.

Strategy

Reduce Emissions from
Vineyard Management

Applicable Jurisdictions

All

GHG Reduction Potential

2030	20,778 MTCO ₂ e
2035	63,556 MTCO ₂ e
2045	167,444 MTCO ₂ e

Partners

- ▶ Napa Green
- ▶ Wine Institute, etc.

Targets

- ▶ Certify 75 percent of vineyards by 2030.
- ▶ Certify 90 percent of vineyards by 2045.
- ▶ Certify 100 percent of new vineyards starting in 2030.

Co-Benefits



Cost Savings



Economic Opportunity



Ecosystem Health



Public Health &
Wellbeing

SHORT-TERM ACTIONS

AG-7-A: County will encourage and incentivize all vineyards to apply for, and achieve, sustainable vineyard certification.

AG-7-B: County and cities will support sustainability certification of vineyards (e.g., Napa Green) to reach a target of 75 percent of existing vineyard acreage to become certified by 2030.

AG-7-C: County to collaborate and incentivize sustainability certification programs (e.g., Napa Green) to expand their reach, quantify the metrics they track for all its participants, especially GHG reductions. Ensure reductions are within the scope of the RCAAP GHG emission inventory and forecast (e.g., production-based emissions).

AG-7-D: Work with sustainability certification program administrators to determine additional funding needs for increased certification targets.

Examples of eligible certification programs include: Napa Green, SIP Certified, California Sustainable Winegrowing Alliance, and Demeter Biodynamic Certification.

LONG-TERM ACTIONS

AG-7-E: Review the short-term actions every five years to include more community groups in target audience list.

AG-7-F: Begin certifying all new vineyard acres in the County starting in 2030.

MEASURE AG-8: Enhance Sustainable Livestock Practices

Livestock, particularly cattle, contribute significantly to regional GHG emissions through both enteric fermentation and how manure is managed. The County of Napa will work with regional partners to promote innovative feed additives that naturally suppress CH₄ production, adopt ordinances that discourage or prohibit anaerobic manure management, and require regular reviews of the ordinance. These efforts will enhance sustainable livestock practices that reduce GHG emissions while maintaining agricultural productivity.

Strategy

Reduce Emissions from Livestock

Applicable Jurisdictions

Unincorporated County

GHG Reduction Potential

2030 N/A
2035 N/A
2045 N/A

Partners

- ▶ Napa RCD
- ▶ Local chapter of California Cattleman's Association
- ▶ UC ANR

Targets

- ▶ N/A

Co-Benefits



Ecosystem Health



Public Health & Wellbeing

SHORT-TERM ACTIONS

AG-8-A: Encourage livestock owners to include feed additives that reduce CH₄ emissions from cattle (e.g., seaweed additives).

AG-8-B: Adopt ordinances that discourage or prohibit anaerobic manure management (e.g., feedlots) in favor of pasture-managed or composted manure.

LONG-TERM ACTIONS

AG-8-C: Review and update ordinances every five years to apply more stringent regulations.

MEASURE AG-9: Avoid or Minimize Carbon Sequestration Losses Associated with Development Projects

The County will continue to require the avoidance or minimization of carbon sequestration losses attributable to land use development activities, including vineyard conversions, consistent with General Plan Policy CON-24 and the County's Conservation Regulations in Chapter 18.108 of the County Code.

Strategy

Avoid or Minimize Carbon Sequestration Loss

Applicable Jurisdictions

Unincorporated County

GHG Reduction Potential

2030	N/A
2035	N/A
2045	N/A

Partners

- ▶ Developers
- ▶ Land owners/managers

Targets

- ▶ Specific mitigation ratios are established in regulations and vary depending on project location and context. See the Conservation Regulations in Chapter 18 of the County Code.

Co-Benefits



Ecosystem Health



Public Health & Wellbeing



Quality of Life

SHORT-TERM ACTIONS

AG-9-A: The County will explore the potential benefits of establishing a mitigation program and update the Conservation Regulations in Chapter 18 of the County Code, if needed.

AG-9-B: The County will apply the mitigation program to proposed land development projects subject to County review and approval.

LONG-TERM ACTIONS

AG-9-C: The County will monitor replanting projects required as mitigation for proposed projects on an ongoing basis to ensure that carbon sequestration and storage benefits under this program are achieved over the long-term.



CHAPTER 4

Climate Change Vulnerability

4 CLIMATE CHANGE VULNERABILITY

Climate change is not a distant or abstract issue. Whether it's smoky air from a nearby wildfire, higher energy bills from air conditioning needs during a prolonged, unseasonal heat wave, or crops that do not grow like they used to, climate change is already affecting the daily lives of Napa County residents. As such, this chapter describes climate change vulnerability across Napa County, including all six local jurisdictions within the county (hereinafter referred to as "Napa County Jurisdictions" when describing the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville). Specifically, this chapter provides an overview of the adaptation planning process and summarizes the results of the Vulnerability Assessment (VA) prepared to inform this Napa County Regional Climate Action and Adaptation Plan (RCAAP), exploring how climate change affects Napa County communities. The entire VA can be found in **Appendix G**.

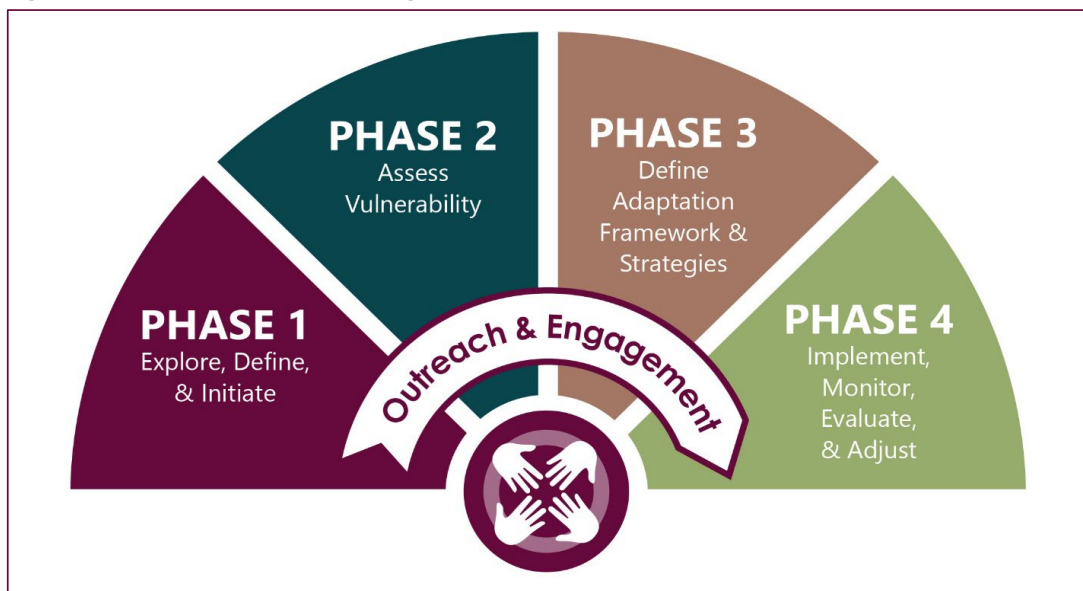
4.1 ADAPTATION PLANNING PROCESS

The adaptation planning process aims to improve community resilience in the context of climate change. A climate-resilient community is one: (1) that can effectively cope with, manage, and minimize the impacts of current and future climate hazards (and climate change more broadly); and (2) that can recover efficiently and equitably when adverse impacts are experienced. To assist local governments and other entities through the adaptation planning process and ultimately build more climate-resilient communities, the California Governor's Office of Emergency Services (Cal OES) prepared the *California Adaptation Planning Guide* (APG), which provides comprehensive vulnerability assessment and adaptation planning guidance (Cal OES 2020). Most recently updated in June 2020, the APG includes a step-by-step process (illustrated in **Figure 4.1**) that entities may use to help plan for and adapt to the impacts of climate change, and as such, all adaptation components of this RCAAP were prepared in accordance with the APG. The four phases of this process are described further below:

- **Phase 1 – Explore, Define, and Initiate:** Includes scoping and defining the adaptation planning effort. This involves identifying key stakeholders, potential climate change effects, and important physical, social, and natural assets in the community.

- ▶ **Phase 2 – Assess Vulnerability:** Includes an analysis of the potential impacts and adaptive capacity associated with climate change hazards to determine the vulnerability of populations and community assets and, ultimately, to identify how climate change could affect the community.
- ▶ **Phase 3 – Define Adaptation Framework and Strategies:** Focuses on creating an adaptation framework and developing adaptation strategies based on the results of the vulnerability assessment—that is, how the community will address the potential for harm identified in the vulnerability assessment, given the community’s resources, goals, values, needs, and regional context.
- ▶ **Phase 4 – Implement, Monitor, Evaluate, and Adjust:** In this phase, the adaptation framework is implemented, consistently monitored and evaluated, and adjusted based on continual learning, feedback, and/or indicators.

Figure 4.1 Adaptation Planning Process



Source: Cal OES 2020; modified by Ascent in 2025.

4.2 VULNERABILITY ASSESSMENT OVERVIEW

The VA prepared in advance of this RCAAP, which can be found in its entirety in **Appendix G**, provides a comprehensive analysis of vulnerability to climate change across Napa County. The VA was conducted in accordance with Phase 2 of the Adaptation Planning Process (see **Figure 4.1**) and includes distinct analyses that determine exposure, sensitivity, potential impacts, adaptive capacity, and vulnerability in the context of climate change. Each of these terms, as defined by the APG, are presented below (Cal OES 2020):

- ▶ **Exposure:** The presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas subject to harm.
- ▶ **Sensitivity:** The degree to which a species, natural system, community, government, or other associated systems would be affected by changing climate conditions.
- ▶ **Potential Impacts:** A specific negative result of a climate change effect, generally on a particular population or asset. The combination of exposure and sensitivity often determines potential impacts.
- ▶ **Adaptive Capacity:** The combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities.
- ▶ **Vulnerability:** The degree to which natural, built, and human systems are at risk from climate change impacts. Overall, vulnerability is considered a function of exposure, sensitivity, potential impacts, and adaptive capacity.

Several tools and resources were used to obtain relevant data and information to conduct these analyses, including [Cal-Adapt](#), *California's Fourth Climate Change Assessment: San Francisco Bay Area Region Report*, and several others. For more details on data and information used, or VA methodologies more broadly, please refer to **Appendix G**.

What Does the Vulnerability Assessment Consider?

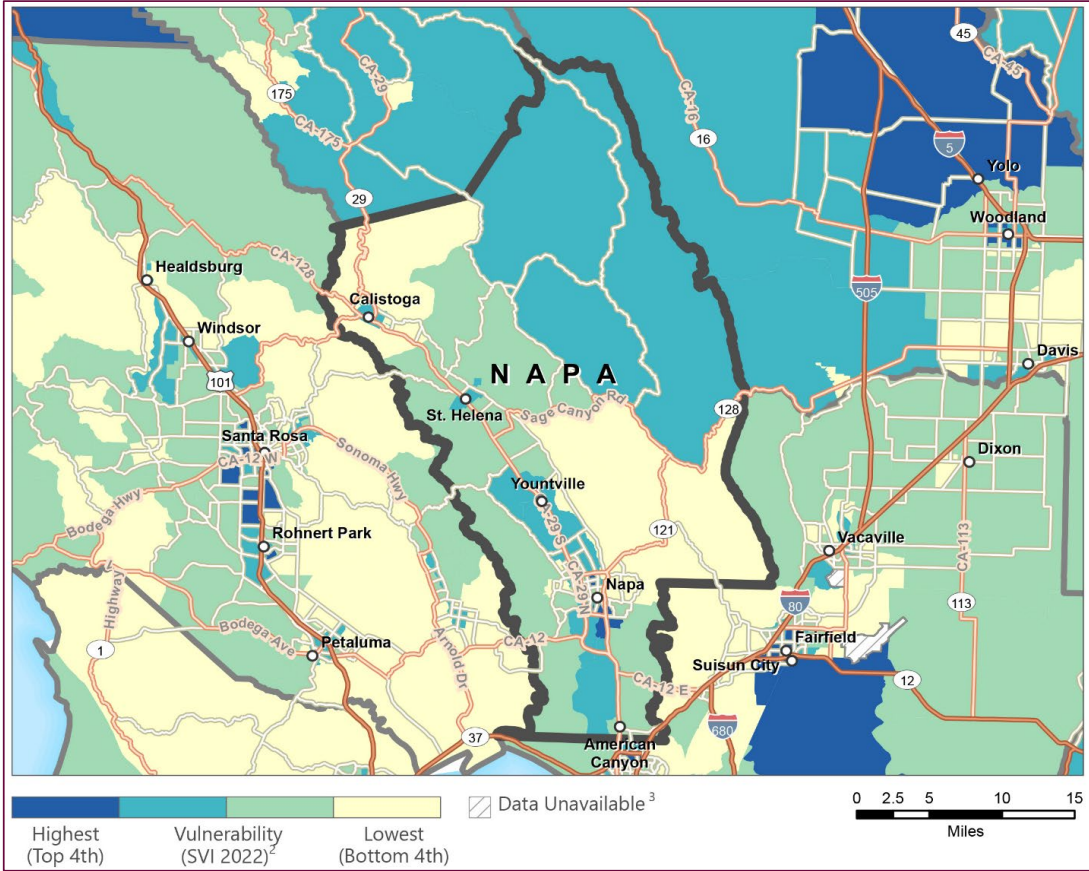
While the VA is intended to comprehensively assess countywide vulnerability to climate change across multiple climate change effects, the VA includes specific discussions and considerations pertaining to three broad categories: (1) populations; (2) built environment; and (3) community functions. While not addressed as a separate category in the VA, natural resources will also be affected by climate change, and impacts on natural resources are discussed to some extent regarding effects on tourism, agriculture, and other community functions.



Photo Credit: County of Napa.

Populations refer to all people within Napa County, residents and visitors alike, with emphasis on vulnerable populations, or those who “experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts” (OPR 2018). These disproportionate realities that vulnerable populations face are often caused by physical, social, political, and economic factors (e.g., race, national origin, income inequality, sexual orientation), which are then exposed or worsened by climate impacts. While many tools exist to identify vulnerable populations within the county, one such tool used in the VA is the Social Vulnerability Index (SVI) tool developed by the U.S. Centers for Disease Control and Prevention (CDC). See **Figure 4.2** below for Napa County’s SVI map, where populations in areas with a high social vulnerability may also be particularly vulnerable to climate impacts.

Figure 4.2 Napa County Social Vulnerability Index



Source: CDC 2022.

Napa County’s built environment includes assets essential to the health and welfare of residents and visitors and are especially vital in the context of climate change. These assets range from residential and commercial buildings to an array of critical infrastructure, including essential facilities (e.g., fire stations, medical facilities, schools), transportation infrastructure (e.g., roadways, bridges, railroads), and utility infrastructure (e.g., energy, communications, water, and wastewater). And lastly, community functions are the resources, assets, operations, economic sectors, and services that are created or influenced between populations and the built environment, which include agriculture (including viticulture and viniculture), tourism and recreation, transportation and mobility, energy delivery, and housing, among others. Collectively, the county’s populations, the built environment, and community functions are the primary categories accounted for when considering countywide vulnerability to climate change.

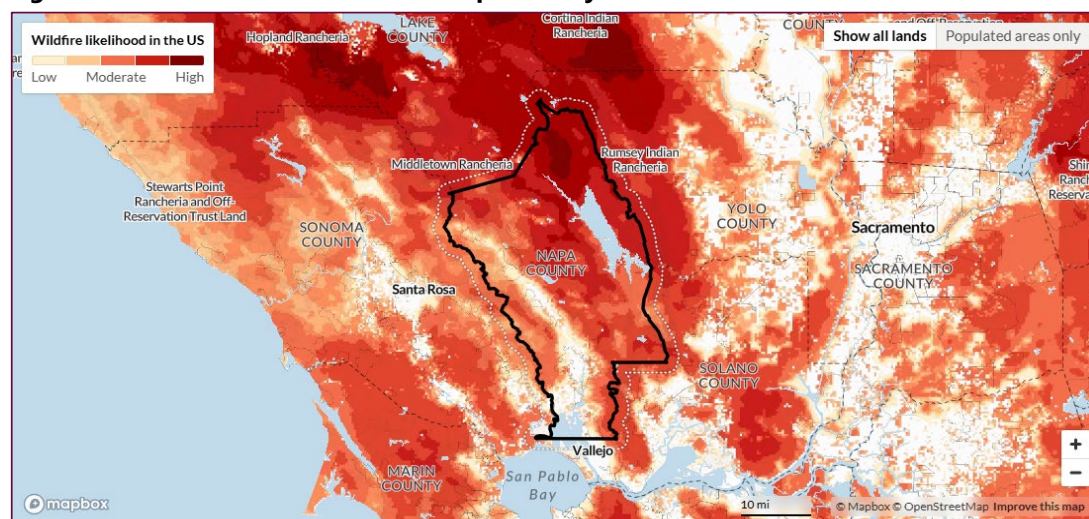
Climate Change Effects

The subsections below discuss some of the key findings for each of the five climate change effects evaluated in the VA: (1) wildfire; (2) increased temperatures and extreme heat; (3) extreme precipitation, sea level rise, and flooding; (4) drought; and (5) energy grid impacts. It should be noted that the first four climate change effects pertain to hazards that will be altered or worsened by climate change, while the last one (i.e., energy grid impacts) does not relate to a specific hazard, but rather an important topical area warranting discussion and analysis in the VA.

Wildfire

Historically, attention to wildfire in California has mostly focused on the Sierra Nevada region and Southern California, but recent large and destructive wildfires across the San Francisco Bay Area and in Napa County, such as the Tubbs, Nuns, and Atlas Fires in 2017 and the LNU Lighting Complex Fires in 2020, have rapidly shifted attention to ongoing risks in the region. In fact, Napa County has greater wildfire likelihood (i.e., the probability of wildfire burning in any given year) than 95 percent of counties in the United States, on average, which is illustrated in **Figure 4.3** below (USFS 2024).

Figure 4.3 Wildfire Likelihood in Napa County



Note: Wildfire likelihood refers to the probability of wildfire burning in any given year based on fire behavior modeling across thousands of simulations of possible fire seasons. It does not consider fire intensity, is not predictive, and does not reflect any currently forecasted weather or fire danger conditions.

Source: **USFS 2024.**

While many factors play into wildfire likelihood, and wildfire risk more broadly, including development patterns and historical fire suppression regimes, among others, climate change is one of the contributing factors. Wildfire activity has always been intricately connected to climate and continues to be an endemic part of natural systems across the state (CAL FIRE 2018). As climate change presses on, it 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 (MacDonald et al. 2023). **Table 4.1** demonstrates this notion. Specifically, it displays historical data and future projections for the average number of days per year in Napa County, where the Keetch-Byram Drought Index (KBDI) exceeds 600, representing a severe drought. Generally, while not a predictor of wildfire, the KBDI represents a simplified proxy for favorability of occurrence and spread of wildfire.

Table 4.1 Historical and Future Projected Number of Days Where the Keetch-Byram Drought Index Exceeds 600 in Napa County

Annual Averages	Historical (1961-1990)	Near-Term ¹ (Present-2050)	Mid-Term ¹ (2035-2064)	Long-Term (2070-2099) RCP 4.5 ²	Long-Term (2070-2099) RCP 8.5 ³
Number of Days where KBDI Exceeds 600	102.1	113.0	120.1	121.8	140.3
Number of Days where KBDI Exceeds 600 Change from Historical (±)	N/A	+10.9	+18	+19.7	+38.2

Notes: KBDI = Keetch-Byram Drought Index; RCP = Representative Concentration Pathway.

¹ Projections for the "Near-Term" and "Mid-Term" timescales are based on RCP 8.5.

² RCP 4.5 represents a lower greenhouse gas emissions scenario.

³ RCP 8.5 represents a high greenhouse gas emissions scenario.

⁴ KBDI, while not a predictor of wildfire, represents a simplified proxy for favorability of occurrence and spread of wildfire.

Source: CEC 2024a.

The potential impacts of wildfire on Napa County's people, built environment, and community functions are wide-ranging. First, the risk of direct exposure of people and the built environment to wildfire is especially worrisome for those located in the wildland-urban interface (WUI). Direct exposure can result in severe injuries to people and can cause significant damage to residential and non-residential buildings, critical facilities, roadways, and bridges. Additionally, smoke and air pollution linked to wildfire can be a severe human health hazard, potentially leading to cognitive impairment, premature births, respiratory illnesses, and the worsening of pre-existing conditions. Wildfires can also create hazardous conditions even after they are suppressed, notably through destructive debris flows triggered by extreme post-fire precipitation, lost vegetation, and exposed soil. Further, a Public Safety Power Shutoff (PSPS) event may be activated during high wildfire risk conditions. While PSPS events are meant to prevent the ignition of potentially widespread, devastating wildfires, vulnerable populations without alternate power options may be adversely affected by the PSPS event itself, for example, if they lose air conditioning or refrigeration during extreme heat conditions. More potential impacts of wildfire are discussed in **Appendix G**.



Photo Credit: Adobe Stock.

Increased Temperatures and Extreme Heat

Napa County has experienced, and is projected to continue experiencing, increases in temperature and extreme heat because of climate change. According to Cal-Adapt, the average annual maximum and minimum temperatures across the county are projected to rise between 5- and 8-degrees Fahrenheit (°F) from their historical averages by the end of the century, depending on current and future global GHG emissions levels (CEC 2024b). Similarly, there will be notable increases in extreme heat events.

Table 4.2 displays historical data and future projections for increased temperatures and extreme heat in Napa County across multiple timescales through 2099. Acknowledging that the data in the table represents Napa County as a whole, it should be noted that both temperature and extreme heat can vary slightly depending on location within the county due to various geographic, topographic, and climatological factors. However, the general increasing trends hold true regardless of location.

Extreme heat thresholds are unique to any location. Napa County's threshold is 98.6 °F, which means that 98 percent of daily maximum temperatures in the county between the months of April and October from 1961 to 1990 were below this temperature.

Table 4.2 Historical and Future Projected Temperatures and Extreme Heat in Napa County

Annual Averages	Historical (1961-1990)	Near-Term ¹ (Present-2050)	Mid-Term ¹ (2035-2064)	Long-Term (2070-2099) RCP 4.5 ²	Long-Term (2070-2099) RCP 8.5 ³
Temperature					
Maximum Temperature (°F)	71.1	74.7	76.0	76.4	79.2
Maximum Temperature Change from Historical (±°F)	N/A	+3.6	+4.9	+5.3	+8.1
Minimum Temperature (°F)	43.6	47.2	48.3	48.7	51.9
Minimum Temperature Change from Historical (±°F)	N/A	+3.6	+4.7	+5.1	+8.3
Extreme Heat					
Number of Extreme Heat Days⁴	4.3	15.9	22.1	24.0	40.0
Number of Heat Waves⁵	0.2	1.5	2.5	2.6	5.4
Number of Days in Longest Stretch of Consecutive Extreme Heat Days	2.1	5.0	6.2	6.2	10.1

Notes: °F = degrees Fahrenheit; N/A = not applicable; RCP = Representative Concentration Pathway.

¹ Projections for the “Near-Term” and “Mid-Term” timescales are based on RCP 8.5.

² RCP 4.5 represents a lower greenhouse gas emissions scenario.

³ RCP 8.5 represents a high greenhouse gas emissions scenario.

⁴ The threshold for an extreme heat day in Napa County is 98.6 °F.

⁵ Heat waves are defined by Cal-Adapt as four or more consecutive extreme heat days.

Source: **CEC 2024b, 2024c.**

People across Napa County 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 specific vulnerable populations, such as the medically fragile or chronically ill (LAO 2022). Additionally, extreme heat and rising temperatures can heighten allergies and intensify the photochemical reactions that produce smog, ground-level ozone, and fine particulate matter measuring 2.5 micrometers or smaller (PM_{2.5}), which can be detrimental to human health. Further, increased temperatures and extreme heat may lead to a substantial increase in air conditioning demand across the county, placing more stress on the electrical grid, leading to higher electricity bills for residents who have air conditioning and causing disproportionate impacts on individuals or families residing in units that do not have air conditioning. Further, the county’s transportation systems risk 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 (Caltrans 2018; Cambridge Systematics 2015). Further details on the potential impacts of increased temperatures and extreme heat can be found in the VA, located in **Appendix G**.

Extreme Precipitation, Sea Level Rise, and Flooding

Similar to increased temperatures and extreme heat, Napa 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 in the form of extreme precipitation events. According to Cal-Adapt, the historical average annual precipitation in Napa County is 31.3 inches, and the historical average annual number of extreme precipitation events is 3.3. As shown in **Table 4.3**, the average annual precipitation across the county may rise to 41 inches, with the number of extreme precipitation events potentially exceeding 5 per year by the end of the century, depending on the level of current and future GHG emissions (CEC 2024b, 2024d).

Like extreme heat thresholds, extreme precipitation thresholds are unique to any location. Napa county's threshold is 1.47 inches of precipitation over a two-day period.

Table 4.3 Historical and Future Projected Precipitation and Extreme Precipitation in Napa County

Annual Averages	Historical (1961-1990)	Near-Term ¹ (Present-2050)	Mid-Term ¹ (2035-2064)	Long-Term (2070-2099) RCP 4.5 ²	Long-Term (2070-2099) RCP 8.5 ³
Precipitation					
Precipitation	31.3	36.2	36.9	34.0	41.0
Precipitation Change from Historical (±)	N/A	+4.9	+5.6	+2.7	+9.7
Extreme Precipitation					
Number of Extreme Precipitation Events⁴	3.3	3.9	4.3	4.2	5.4
Number of Extreme Precipitation Events⁴ Change from Historical (±)	N/A	+0.6	+1.0	+0.9	+2.1

Notes: N/A = not applicable; RCP = Representative Concentration Pathway.

¹ Projections for the "Near-Term" and "Mid-Term" timescales are based on RCP 8.5.

² RCP 4.5 represents a lower greenhouse gas emissions scenario.

³ RCP 8.5 represents a high greenhouse gas emissions scenario.

⁴ The threshold for an extreme precipitation event in Napa County is 1.47 inches over a two-day period.

Source: **CEC 2024b, 2024d**.

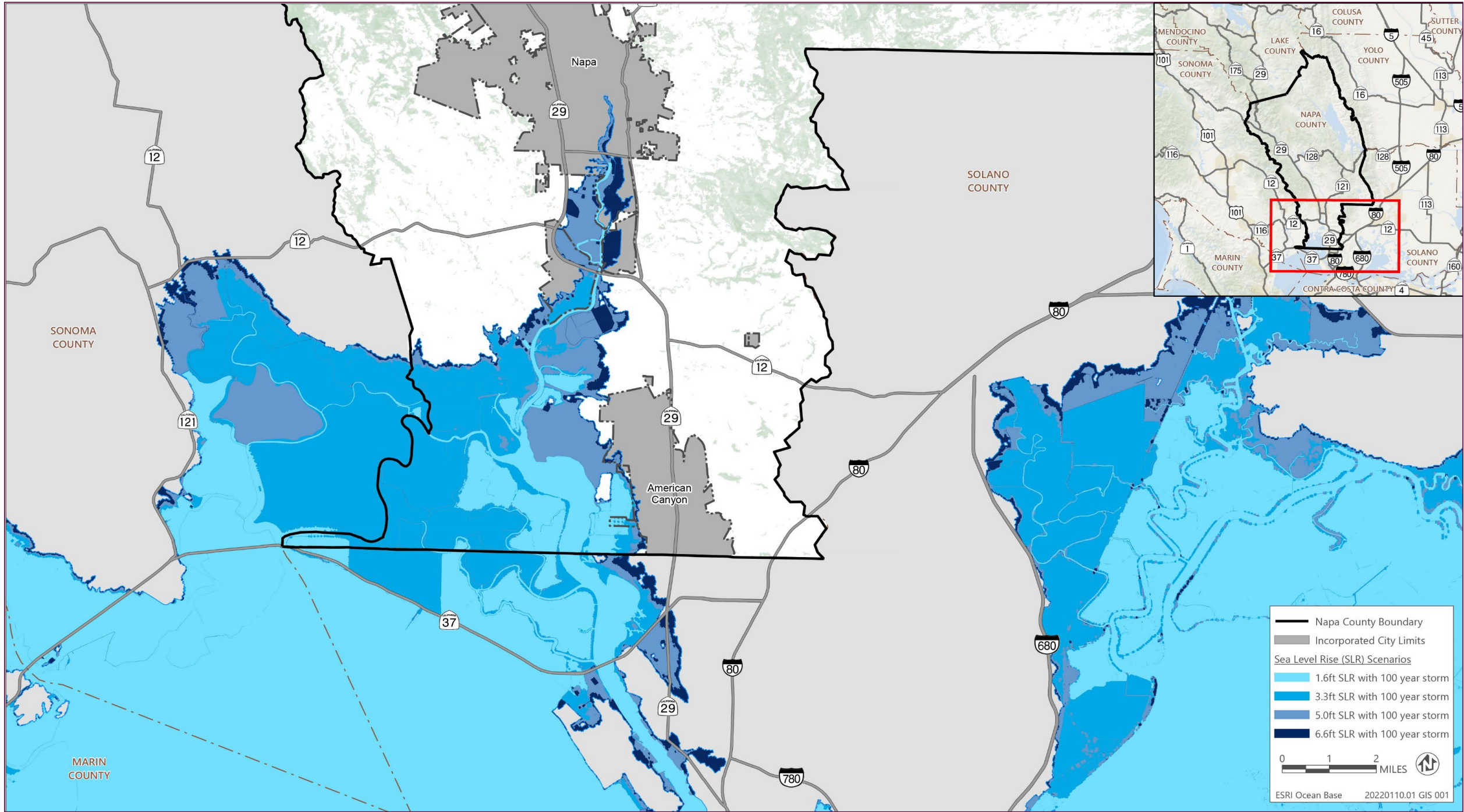


Photo Credit: Adobe Stock

In general, the San Francisco Bay Area 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 Napa County (OPR, CEC, and CNRA 2018). Extreme precipitation from these atmospheric rivers may prove to be more variable, volatile, and potentially more severe. In addition to extreme precipitation, a portion of the county is exposed to sea level rise, namely the southwestern portion of the county that includes areas of American Canyon, Napa, and the unincorporated county. While most of these areas are undeveloped, some developed areas are at risk. **Figure 4.4** displays various sea level rise scenarios coupled with the presence of a 100-year storm, showing where inundation would occur (Our Coast Our Future 2024).

Increased annual precipitation, extreme precipitation events, and sea level rise can all expose the county to various coastal and inland flood impacts through temporary flooding and permanent inundation. While thousands of residents and almost \$2 billion worth of residential property are located within the county’s 100- and 500-year floodplains, putting them at direct risk and exposure to flood impacts, the range of potential impacts associated with flooding in the county is much broader. These potential impacts range from public health concerns (e.g., overflow of sewage systems which can promote water- and food-borne illnesses), transportation network disruptions, and adverse impacts on local businesses, to recreation and tourism challenges, disproportionate impacts on vulnerable populations, and compromising critical infrastructure integrity—among many others. Further details on potential impacts can be found in **Appendix G**.

Figure 4.4 Napa County Sea Level Rise Scenarios



Source: Data downloaded from Our Coast Our Future in 2024; adapted by Ascent in 2024.

Drought

California, inclusive of Napa County, has a highly variable climate that is susceptible to prolonged periods of droughts, and recent research suggests that extended drought occurrences (or “mega-droughts”) could become more common in future decades (CEC 2024a). As discussed previously, wet years in the state are likely to become wetter, while dry years will likely become drier, but dry years are likely to be followed by additional dry years. According to Cal-Adapt, the maximum length of a dry spell in Napa County, which is defined as the maximum number of consecutive days with precipitation less than 1 millimeter, is projected to increase through the end of the century if current GHG emissions trends continue (see **Table 4.4**). While the actual precipitation amounts will change year-to-year, this supports the general notion that drought may become more pervasive in the county.

Table 4.4 Historical and Future Projected Length of Dry Spells in Napa County

Annual Averages	Historical (1961-1990)	Near-Term ¹ (Present-2050)	Mid-Term ¹ (2035-2064)	Long-Term (2070-2099) RCP 4.5 ²	Long-Term (2070-2099) RCP 8.5 ³
Maximum Length of Dry Spell ⁴ (days)	110.8	111.2	111.2	110.3	116.4
Maximum Length of Dry Spell ⁴ Change from Historical (± days)	N/A	+0.4	+0.4	-0.5	+5.6

Notes: °F = degrees Fahrenheit; N/A = not applicable; RCP = Representative Concentration Pathway.

¹ Projections for the “Near-Term” and “Mid-Term” timescales are based on RCP 8.5.

² RCP 4.5 represents a lower greenhouse gas emissions scenario.

³ RCP 8.5 represents a high greenhouse gas emissions scenario.

⁴ A dry spell refers to the maximum number of consecutive days with precipitation less than 1 millimeter.

Source: **CEC 2024a**.

When it comes to the potential impacts of drought, one of the most notable impacts is on the county’s water supply. While local drought trends are important to consider for the county’s water supply, it should be noted that most of the municipal water supply in the county is sourced from the State Water Project and local reservoirs, which can be affected by broader statewide drought trends. Much of the agriculture industry and many residents in the unincorporated portions of the county rely on groundwater as their only water source. The Napa Valley Subbasin is highly responsive to wet and dry conditions, and successive years of drought could have a major impact on residents and the economy. Limited water supplies, and drought more broadly, can result in an array of cascading impacts throughout the county, including (but not limited to) potential water restrictions, higher water and food prices, reduced air and water quality, increased tree mortality, and wine industry impacts. Each potential impact is discussed further in **Appendix G**.



Photo Credit: **Adobe Stock**.

Energy Grid Impacts

Unlike the previous four subsections, which discuss climate change effects that each pertain to a specific climate hazard, this subsection pertains to an important topical area warranting discussion and analysis in the VA. In general, all climate hazards, namely extreme heat, flooding, and wildfire, can have significant potential impacts on the energy grid. Some of these potential impacts include increased energy demand (e.g., during periods of extreme heat), damage to energy grid infrastructure (e.g., power plants, substations, transmission lines), decreased grid reliability, and grid failure, which can all result in a spectrum of cascading impacts throughout the county. More details of the potential impacts to the energy grid are discussed in **Appendix G**.

Scoring for Potential Impacts, Adaptive Capacity, and Vulnerability

Based on guidance from the APG, potential impacts and adaptive capacity for each climate change effect are scored on a qualitative scale of Low to High. Descriptions of each qualitative score for potential impacts and adaptive capacity are provided in **Table 4.5**.

Table 4.5 Potential Impact and Adaptive Capacity Scoring Descriptions

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.	Napa County Jurisdictions lack 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.	Napa County Jurisdictions have 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.	Napa County Jurisdictions have high capacity to manage climate change effect; minimal to no changes are required.

Note: Napa County Jurisdictions = the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville.

Source: Cal OES 2020.

After scores are determined for potential impacts and adaptive capacity, vulnerability to each climate change effect can be characterized with a score from 1 to 5. **Table 4.6** presents the rubric used to determine overall vulnerability scores based on the magnitude of potential impacts on populations, the built environment, and community functions while considering the current adaptive capacity in place to mitigate potential impacts.

Table 4.6 Vulnerability Scoring Rubric

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

Source: Cal OES 2020.

Potential impact scores, adaptive capacity scores, and overall vulnerability scores for each climate change effect—wildfire; increased temperatures and extreme heat; extreme precipitation, sea level rise, and flooding; drought; and energy grid resiliency—are included in **Table 4.7** below. The VA, located in **Appendix G**, provides a detailed account of how each score was determined. The table shows that increased temperatures, extreme heat, and drought had the highest vulnerability scores at 4, meaning that these climate change effects should be highly prioritized within Napa County. However, all the climate change effects that were evaluated ranked Medium to High in potential impacts, meaning that despite any current adaptive capacity already in place to manage those climate change effects, there is some level of risk for experiencing negative potential impacts, especially if current adaptive measures fail. Noting that,

the adaptation strategies presented in **Chapter 5** of this RCAAP are directly informed by the results of the VA and aim to further bolster adaptive capacity and resilience across the county to all climate change effects.

Table 4.7 Potential Impact, Adaptive Capacity, and Vulnerability Scoring Summary for Napa County

Climate Change Effect	Potential Impact Score	Adaptive Capacity Score	Vulnerability Score
Wildfire	High	High	3
Increased Temperatures and Extreme Heat	High	Medium	4
Extreme Precipitation, Sea Level Rise, and Flooding	Medium	Medium/High	2-3
Drought	High	Medium	4
Energy Grid Impacts	Medium	Medium	3

Source: Evaluated by Ascent in 2024.



CHAPTER 5

Climate Adaptation Measures

5 CLIMATE ADAPTATION MEASURES

This chapter presents strategies, measures, and actions to reduce risk, adapt, and build resilience to the effects of climate change.

5.1 WHY MUST WE ADAPT?

The effects of climate change are already occurring on global, regional, and local scales and will continue to worsen throughout Napa County. As discussed in the previous chapter, climate change effects in Napa County include: increased wildfire risk; increased temperatures and extreme heat; extreme precipitation, sea level rise, and flooding; drought and water supply impacts; and energy grid impacts. 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 impact from climate change will vary across the county based on physical, social, and economic characteristics.

As local jurisdictions within Napa County (hereinafter referred to as “Napa County Jurisdictions” when describing the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville) and other regional or local agencies continue to reduce local greenhouse gas (GHG) emissions, communities must also be prepared to withstand and adapt to the impacts of climate change. Climate change adaptation involves adjusting to effects that are already occurring and making preparations for those that are anticipated to occur in the future. Climate change adaptation planning enhances community resilience by evaluating jurisdiction-specific vulnerabilities and developing measures to respond to and prepare for current and future impacts.

For Napa County Jurisdictions and other regional or local agencies, existing plans, policies, and programs address climate-related hazards and risks. These may be sufficient for the time being, but new policies are needed to address policy gaps. This Napa County Regional Climate Action and Adaptation Plan (RCAAP) aims to address those gaps.



5.2 CLIMATE ADAPTATION FRAMEWORK AND SUMMARY

The RCAAP's adaptation framework consists of a three-pronged approach: 1) high-level strategies; 2) overarching adaptation strategies; and 3) a suite of measures and actions associated with each strategy. The definitions of strategies, measures, and actions are explained below:

- ▶ **Strategies** are overarching goals and guidelines for adapting to changing climate conditions and climate change effects.
- ▶ **Measures** refer to more specific policies or categories of action intended to achieve the strategies and overarching goals.
- ▶ **Actions** are more detailed implementation steps that various actors will take to realize the measures. Actions help break down measures into specific actionable steps, such as programs, projects, etc. Action(s) may not be necessary if the corresponding measure is already sufficiently specific for implementation.

Based on this approach, six adaptation strategies address climate change vulnerability or specific climate impacts. The first strategy enhances regional climate resilience, irrespective of specific climate impacts. The remaining five strategies directly address specific climate change effects identified in the RCAAP Climate Vulnerability Assessment and summarized in **Chapter 4**. The measures and actions within each strategy define the programs, policies, and regulations that the Napa County Jurisdictions and other regional or local agencies will need to implement to prepare for and adapt to climate change.

5.3 CLIMATE ADAPTATION STRATEGIES, MEASURES, AND ACTIONS

Napa County Jurisdictions' existing hazard mitigation plans and general plan safety elements were reviewed to identify gaps in addressing climate-related hazards and risks (see **Appendix K**). The climate adaptation strategies, measures, and actions in this chapter fill gaps to enhance Napa County Jurisdictions' climate resilience.

Table 5.1 below lists these six adaptation strategies, providing further descriptions and context for each strategy.

Table 5.1 Climate Adaptation Strategies

Strategy ID	Strategy	Strategy Description
ALL	Improve Napa County Jurisdictions' Overall Climate Resilience	Measures under this strategy prepare Napa County Jurisdictions for impacts from more than one climate hazard or related stressors. Napa County Jurisdictions already have 50+ existing hazard mitigation actions and safety element measures that target multiple hazards (see Appendix K). Eight measures are proposed for Strategy 1. Measures and actions proposed for Strategy 1 start with "Measure/Action All", followed by measure and action numbers.
FIRE	Prepare for and Adapt to Increased Wildfire Risk	Measures under this strategy prepare Napa County Jurisdictions for more frequent and severe wildfire events, while also reducing risk in communities and recognizing the role that beneficial fire plays in the county's ecosystems. Napa County Jurisdictions already have around one hundred existing wildfire-focused hazard mitigation actions and safety element measures, and other relevant local plans, such as community wildfire protection plans, also contribute to fire hazard mitigation and risk reduction. Wildfire risk reduction measures, especially those focused on vegetation management, fuel modification, fuel breaks, prescribed burns, and similar activities, help to reduce the spread and severity of wildfires. These types of hazard mitigation measures and their implementing actions may also have important GHG emissions reduction co-benefits, including the reduction of black carbon, which, although non-anthropogenic, is considered a short-lived climate pollutant. Six measures are proposed for Strategy 2. Measures and actions proposed for Strategy 2 start with "Measure/Action Fire", followed by measure and action numbers.
TEMP	Prepare for Increased Temperatures and More Frequent Extreme Heat Events	Measures proposed under this strategy focus on preparing Napa County Jurisdictions for increased temperatures and more frequent extreme heat events. Napa County Jurisdictions already have around six existing hazard mitigation actions and safety element measures that address increased temperatures and extreme heat. Five measures are proposed for Strategy 3. Measures and actions proposed for Strategy 3 start with "Measure/Action Temp", followed by measure and action numbers.
FLOOD	Prepare for More Frequent Extreme Precipitation and Flooding Events, Combined with Sea Level Rise Threats	Measures proposed under this strategy focus on improving Napa County Jurisdictions' resilience against more frequent and extreme precipitation and flooding events, as well as the threat posed by sea level rise. Napa County Jurisdictions already have around 90 existing hazard mitigation actions and safety element measures targeting these climate stressors. 12 measures are proposed for Strategy 4. Measures and actions proposed for Strategy 4 start with "Measure/Action Flood", followed by measure and action numbers.

Strategy ID	Strategy	Strategy Description
DROUGHT	Prepare for More Frequent Drought Events and Enhance the Region's Overall Water Supply Resilience	Measures proposed under this strategy focus on preparing Napa County Jurisdictions for more frequent drought events and enhancing the region's overall water supply resilience. Napa County Jurisdictions already have around 23 existing hazard mitigation actions and safety element measures that address drought events and water supply resilience. Five measures are proposed for Strategy 5. Measures and actions proposed for Strategy 5 start with "Measure/Action Drought", followed by measure and action numbers.
ENERGY	Improve the Region's Energy Grid Resilience	Measures proposed under this strategy focus on improving Napa County Jurisdictions' energy grid resilience. Some of the measures are also related to other strategies. Wildfire, extreme heat, and flooding hazards can impact energy grids. Napa County Jurisdictions already have around 10 existing hazard mitigation actions and safety element measures for energy grid resilience. Four measures are proposed for Strategy 6. Measures and actions proposed for Strategy 6 start with "Measure/Action Energy", followed by measure and action numbers.

The adaptation measures and actions under each strategy are presented below.

MEASURE ALL-1: Implement and Monitor Existing Plans

Napa County Jurisdictions will implement and continuously monitor the effectiveness of existing policies, actions, and measures outlined in existing local and regional hazard mitigation plans and general plan safety elements. This process is essential to maintaining adaptive, data-driven solutions that strengthen the region's long-term climate preparedness as well as hazard mitigation efforts. Regular evaluations will also help refine approaches, ensure alignment with best practices, and enhance community resilience.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Energy Security



Public Health & Wellbeing



Quality of Life

ACTIONS

ALL-1.1: Collaborate among departments and jurisdictions to ensure progress on existing actions and measures already included in other plans.

ALL-1.2: Monitor, evaluate, and update the County's Multi-Jurisdictional Hazard Mitigation Plan and the City of Napa's Local Hazard Mitigation Plan to ensure progress is made on proposed hazard mitigation actions, especially extreme and high priority actions during the hazard mitigation planning processes. Make changes and updates to these actions if necessary.

MEASURE ALL-2: Promote Region-Wide Implementation of Relevant Measures and Actions

Napa County Jurisdictions will implement measures and actions applicable throughout the region to ensure a coordinated and effective response to the effects of climate change. A consistent approach across jurisdictions enhances community resilience, reduces duplication of efforts, and maximizes resource efficiency. It also fosters regional collaboration, allowing local governments, agencies, and stakeholders to share best practices, leverage funding opportunities, and address cross-boundary climate risks.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Public Health & Wellbeing



Quality of Life



Social Cohesion

ACTIONS

ALL-2.1: Advocate for countywide measures and actions, regardless of whether they have been identified in the existing planning mechanisms of individual jurisdictions. Such measures and actions include initiatives such as extensive outreach to vulnerable communities and the development and implementation of public campaigns aimed at raising awareness about climate change adaptation.

MEASURE ALL-3: Increase the Climate Resilience of Existing and New Residential and Commercial Development

Napa County Jurisdictions will increase climate resilience of residential and commercial development through structural strengthening and hardening, which is essential to safeguarding communities and economic stability from multiple climate stressors, such as extreme heat, wildfires, and flooding. Strengthening buildings reduces the risk of damage and costly repairs, minimizes displacement of residents and businesses, and enhances public safety during disasters. Moreover, by integrating resilient design and materials, developments can better withstand climate hazards while lowering long-term maintenance and insurance costs.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- ▶ California Department of Forestry and Fire Protection (CAL FIRE)
- ▶ Napa Communities Firewise Foundation (NCFF)

ACTIONS

ALL-3.1: Require owners/developers of existing and new residential and commercial developments in Federal Emergency Management Agency (FEMA) 100-year and 500-year floodplains to waterproof structures and foundations, use flood-resistant materials, retrofit existing structures with flood-resistant features, or other appropriate flooding mitigation measures. This action builds on the County's floodplain management ordinance codified in Section 16.04.690.

ALL-3.2: Reduce wildfire risk in existing and new residential and commercial developments by requiring owners/developers to create and maintain defensible space and fire breaks; harden structures with fire-resistant materials; or other appropriate wildfire risk reduction measures.

ALL-3.3: Encourage and incentivize the use of pervious and reflective paving surfaces, climate-smart landscaped surfaces in new and existing developments to prepare for more frequent extreme heat, drought, and flooding events.

MEASURE ALL-4: Integrate Climate Change and Health Equity Into All Government Initiatives and Operations

Napa County Jurisdictions will incorporate climate change and health equity into all governmental initiatives and operations to ensure that policies are environmentally sustainable and socially just. Actions under this measure include establishing a structural framework, working on public health initiatives, and collaborating with local medical providers. This effort helps address the disproportionate impacts of climate change on vulnerable communities, ensuring they have access to resources, services, and protections in the face of climate risks. Moreover, this approach promotes inclusive decision-making, reduces inequities, and strengthens resilience, ensuring everyone, regardless of socioeconomic status, can adapt to and thrive in a changing climate.

Applicable Jurisdictions

All

Partners

- ▶ California Department of Public Health (CDFH)
- ▶ Live Healthy Napa County

Co-Benefits



Public Health & Wellbeing



Quality of Life

ACTIONS

ALL-4.1: Adopt a "Health in All Policies" approach through a resolution adopted by all jurisdictions, establishing a structural framework that integrates health considerations, including climate change and health equity, into regional policies, considerations, and practices. Multiple sectors must collaborate to address global issues that transcend geographical, political, and jurisdictional boundaries, such as climate change. This approach aims to improve regional health while simultaneously advancing other goals.

ALL-4.2: Ensure that public health initiatives serving vulnerable communities address the disproportionate impacts of climate stressors on these communities. Such public health initiatives may include the Community Organizations Active in Disaster and those initiated by Live Healthy Napa County (e.g., Community Health Improvement Plan, Community Health Assessment).

ALL-4.3: Work with local medical providers and hospitals to ensure that medical facilities are prepared to meet increased demand because of more frequent hazardous events.

MEASURE ALL-5: Improve the Resilience of the Region's Transportation Infrastructure

Napa County Jurisdictions will improve the resilience of the region's transportation infrastructure. Jurisdictions will revise maintenance protocols for transportation systems by considering climate vulnerabilities, as well as collaborating with regional partners to identify vulnerable populations and alternative routes and stops to prepare for extreme events. A resilient transportation network ensures that critical routes remain operational during disasters, allowing for efficient evacuation, access to emergency services, and continued movement of goods. Moreover, strengthening infrastructure also reduces the long-term costs of repairs and disruptions, and enhances community well-being by providing reliable, safe travel options.

Applicable Jurisdictions

All

Partners

- ▶ California Department of Transportation (Caltrans)
- ▶ Napa Valley Transportation Authority

Co-Benefits



Social Cohesion

ACTIONS

ALL-5.1: Revise maintenance protocols for transportation systems to integrate considerations of climate vulnerabilities, such as reducing fuel load regularly for wildfire events and inspecting stormwater collection systems regularly for flooding events. Ensure sufficient funding and capacity to routinely conduct maintenance measures.

ALL-5.2: Coordinate with community members, transportation agencies, and private entities to identify vulnerable populations served by local and regional transportation, transit, and active transportation corridors in the face of climate change impacts.

ALL-5.3: Collaborate with regional transportation agencies to identify alternative routes and stops to mitigate disruptions in vital transportation routes in case of damage or closure of primary infrastructure due to extreme events.

MEASURE ALL-6: Improve the Resilience of the Region's Agricultural Industry

Climate change threatens Napa County's agricultural industry by impacting crop yields, quality, and overall productivity. Adapting to climate change is essential to preserving Napa County's agricultural heritage, ensuring the long-term sustainability of wine production, and maintaining the regional economy. Napa County Jurisdictions will enhance agricultural climate resilience through regulatory adaptation to ensure the ongoing viability of agriculture as conditions change, as well as the implementation of workforce protection and heat resilience programs.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Economic Opportunity



Public Health & Wellbeing

ACTIONS

ALL-6.1: Develop and enforce agricultural heat and other safety standards tailored to the agricultural workforce (e.g., shaded rest stations, hydration protocols, flexible work hours, evacuation plans and protocols).

ALL-6.2: Provide bilingual training programs for the agricultural workforce on heat and smoke exposure risks, as well as first aid and emergency responses.

ALL-6.3: Install or retrofit shade structures, cooling misters, and ventilated barns to reduce heat stress on livestock.

ALL-6.4: Create and maintain livestock evacuation plans, including shelter locations and rapid deployment logistics during wildfires and other climate hazard events.

MEASURE ALL-7: Protect the Region's Biodiversity and Ecosystems from Climate Stressors

Napa County Jurisdictions will guard Napa County's biodiversity and ecological habitats from climate stressors, which is essential for preserving the region's natural resources, ecosystem services, and overall environmental health. Climate change can disrupt habitats, alter species distribution, and threaten biodiversity, which in turn affects agriculture, water resources, and tourism. By protecting ecosystems from these impacts, Napa County Jurisdictions can maintain resilient natural systems that support carbon sequestration, water filtration, and biodiversity, contributing to climate adaptation efforts and long-term sustainability for both human and wildlife communities.

Moreover, this measure and action ALL-7.4 below align with GHG reduction measure AG-3: Enhance Carbon Farming Practices in the Region and its associated actions.

Applicable Jurisdictions

All

Partners

- ▶ California Department of Fish and Wildlife (CDFW)
- ▶ California Department of Conservation (DOC)
- ▶ Napa County Groundwater Sustainability Agency (NCGSA)
- ▶ Napa Green

Co-Benefits



Ecosystem Health

ACTIONS

ALL-7.1: Promote biodiversity and enhance species' climate resilience by implementing nature-based solutions, green infrastructure (e.g., bioswales in parking lots), and best management practices to reduce runoff, enhance infiltration, and increase recharge, as well as wetland and riparian corridor restoration.

ALL-7.2: Coordinate with the NCGSA to fully implement the Interconnected Surface Water and Groundwater Dependent Ecosystems Workplan: Napa Valley Subbasin (ISW/GDE Workplan).

ALL-7.3: Consider expanding the geographic scope of the ISW/GDE Workplan to areas outside the Napa Valley Subbasin and potentially the entire County.

ALL-7.4: Encourage carbon farming and other sustainable land management activities that improve soil health and water quality, improve habitat quality, reduce invasive species, and restore the health and diversity of species native to Napa County.

MEASURE ALL-8: Integrate Climate Change into Emergency Management Planning & Response

Incorporating climate change considerations into emergency management planning helps communities proactively address evolving risks. Napa County Jurisdictions will identify emerging threats and adjust emergency plans accordingly by using climate data and future projections. This measure also involves siting “resilience hubs.” Integrating climate change into emergency management planning can also help jurisdictions allocate resources effectively and develop more robust emergency response protocols, ultimately safeguarding communities and reducing damage. Furthermore, this integration promotes proactive planning by shifting from a reactive to a forward-thinking approach, ensuring that emergency management remains effective as climate and environmental conditions change.

Applicable Jurisdictions

All

Partners

- ▶ FEMA
- ▶ California Office of Environmental Health Hazard Assessment (OEHHA)

Co-Benefits



Public Health & Wellbeing

ACTIONS

ALL-8.1: Incorporate insights from the Climate Vulnerability Assessment across all stages of emergency management planning, encompassing mitigation, preparedness, response, and recovery endeavors.

ALL-8.2: Ensure that emergency management activities are executed equitably by prioritizing the safety of identified vulnerable communities within the county.

ALL-8.3: Identify potential locations throughout the county for siting new community resilience centers or “resilience hubs” through new construction or repurposing of existing facilities.

MEASURE FIRE-1: Map and Identify Areas with Increasing Risk to Fire Hazards

Napa County Jurisdictions will map and identify locations that are newly at risk, or at higher risk for fire hazards because of climate change. This effort improves awareness by helping communities understand where wildfire risk is growing, allowing them to prepare and respond more effectively. Such mapping and identification process also guides resource allocation by informing planners and emergency services on where to prioritize mitigation measures, infrastructure investments, and enhanced emergency preparedness and response efforts. Furthermore, this process can provide essential data for early warning systems and fire prevention strategies, potentially reducing damage and saving lives.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- ▶ CAL FIRE
- ▶ NCFF

ACTIONS

FIRE-1.1: Work with CAL FIRE, Napa County Fire Marshall, NCFF, American Canyon Fire Protection District, and fire departments within the county to map and identify locations that are newly at risk, or at higher risk, for wildfire hazards as a result of climate change and its impacts; implement wildfire mitigation best practices such as the ones mentioned in Action ALL-3.2 in these mapped and identified locations.

MEASURE FIRE-2: Establish Post-Fire Ecological Recovery Programs

Napa County Jurisdictions will coordinate with State agencies or other partners to establish post-fire ecological recovery programs that rebuild and strengthen ecosystems damaged by wildfires, ensuring they can better withstand future climate stressors. Such post-fire ecological recovery programs can also promote the recovery of vegetation and soil health, which minimizes erosion, flooding, and subsequent fire hazard risks. Moreover, multi-agency coordination will leverage combined knowledge and funding to improve effective recovery plans.

Applicable Jurisdictions

All

Partners

- ▶ CAL FIRE
- ▶ NCCF
- ▶ CDFW

- ▶ US Fish and Wildlife

- ▶ Napa Resource Conservation District (RCD)

Co-Benefits



Ecosystem Health

ACTIONS

FIRE-2.1: Coordinate with CAL FIRE, NCCF, Napa County Resource Conservation District (RCD), and related agencies to establish post-fire ecological restoration programs. Ecological restoration endeavors may reintroduce native species and ecologically beneficial vegetation management techniques (e.g., prescribed burns, invasive species removal) to reduce the potential for high-intensity wildfires and improve the resilience of the county's wildlands.

MEASURE FIRE-3: Apply Wildfire Mitigation Best Practices Countywide

Consistent with the intent of Measure All-2, application of wildfire mitigation best practices such as creating defensible space, home hardening, and fuel modification across the landscape can enhance community and ecosystem resilience while minimizing the potential for future wildfires. Napa County Jurisdictions will ensure that the best practices for wildfire mitigation that apply to the region are implemented consistently throughout the county. In addition, uniform standards across the county also enable better coordination of resources and response efforts. Moreover, regional preventative actions reduce the need for expensive, reactive recovery efforts after wildfires and, therefore, help to avoid potentially high long-term rebuilding and disaster recovery costs.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- ▶ CAL FIRE
- ▶ NCCF

ACTIONS

FIRE-3.1: Ensure that wildfire mitigation best practices, such as creating defensible space, home hardening, and fuel reduction projects are planned and implemented regularly and consistently in all jurisdictions in the region. This may require developing regionally consistent local plans, zoning and building codes, or programs that help to address gaps in local planning, code compliance, or project development, or providing regional access to funding sources to ensure local needs are met. Wildfire mitigation best practices should also be implemented with caution to prevent increases in erosion and runoff, impacts to sensitive species and water quality.

MEASURE FIRE-4: Plan New Development Strategically in High or Very High Fire Hazard Severity Zones

As discussed in the RCAAP Climate Vulnerability Assessment, High or Very High Fire Hazard Severity Zones are areas identified by CAL FIRE as having a significant wildfire risk. Napa County Jurisdictions will direct growth away from or require enhanced safety measures in high-risk wildfire areas. This planning effort would ensure that new infrastructure and other developments are designed and built to withstand increasing fire hazards. In addition, strategic development planning would mitigate future expenses related to emergency response, recovery, and rebuilding in fire-prone areas.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- ▶ CAL FIRE
- ▶ NCCF

ACTIONS

FIRE-4.1: Plan and design new development to avoid or minimize risk in High or Very High Fire Hazard Severity Zones throughout the county

FIRE-4.2: Consider projections of future climate change when planning future land uses. For example, the City of St. Helena already has an existing action to limit development in High or Very High Fire Hazard Severity Zones.

MEASURE FIRE-5: Strengthen Forests by Managing Beetle Infestations

Napa County Jurisdictions will collaborate with regional partners to enhance forest resilience, reduce tree mortality, and manage beetle infestations. This effort is critical to reduce widespread tree mortality and related conditions that can lead to more severe fires. Healthy trees decrease the amount of dead material that can fuel wildfires. Healthy forests also better withstand and recover from wildfire events and other climate-related stresses. Therefore, this measure and the actions developed below collectively help mitigate wildfire risks and support long-term forest health in a changing climate.

Applicable Jurisdictions

All

- ▶ Napa County Agricultural Commissioner
- ▶ Napa County RCD

Partners

- ▶ US Forest Service
- ▶ California Department of Food and Agriculture

Co-Benefits



Ecosystem Health

ACTIONS

FIRE-5.1: The Napa County Agricultural Commissioner shall set up a network of monitoring stations to detect beetle infestations early. Utilize satellite imagery and drone technology to monitor large forest areas for signs of beetle activity and tree health.

FIRE-5.2: Implement selective thinning and pruning to reduce tree density and remove infested or weakened trees, making forests less susceptible to beetle outbreaks.

MEASURE FIRE-6: Minimize Wildfire Smoke Exposure

Napa County Jurisdictions will collaborate with regional partners to increase public awareness and community resilience against wildfire smoke, supporting residents to take protective actions during wildfires. Increased awareness can also minimize exposure to potentially harmful air quality conditions. Moreover, informed communities can support and coordinate with emergency services during wildfire events. Increased awareness can help communities adapt to the increased frequency of wildfires and smoke hazards.

Applicable Jurisdictions

All

Partners

- ▶ California Division of Occupational Safety and Health
- ▶ Bay Area Air District
- ▶ Businesses that employ outdoor workers

Co-Benefits



Public Health & Wellbeing

ACTIONS

FIRE-6.1: Partner with the California Division of Occupational Safety and Health and other regional agencies to promote educational campaigns on the health effects of wildfire smoke and preventative measures.

FIRE-6.2: Enhance and promote early warning systems that alert the public to upcoming smoke events via multiple media forms (e.g., radio, text messaging, ALERT Napa County). Provide real-time updates on air quality.

FIRE-6.3: Protect outdoor workers from wildfire smoke by establishing policies that limit outdoor work during periods of poor air quality. Provide training on how to use personal protective equipment and recognize smoke-related health symptoms, such as respiratory problems and irritations. Whenever possible, modify work processes to allow tasks to be performed in controlled indoor environments with adequate ventilation.

MEASURE TEMP-1: Protect Outdoor Workers from Extreme Heat

Napa County Jurisdictions will work with the California Division of Occupational Safety and Health and employers to provide outdoor workers with sufficient protection from extreme heat conditions, ensuring healthy and safe working environments. Offering outdoor workers sufficient protection from extreme heat conditions reduces the risks of heat stress, dehydration, and heat-related illnesses. Healthy and safe working environments ensure workers can perform tasks safely and efficiently. Such efforts will also help build a more adaptable workforce prepared for increasing extreme heat events. Furthermore, these efforts promote equity by safeguarding vulnerable populations most exposed to extreme weather conditions.

Applicable Jurisdictions

All

Partners

- ▶ California Division of Occupational Safety and Health
- ▶ Businesses that employ outdoor workers

Co-Benefits



Public Health & Wellbeing

ACTIONS

TEMP-1.1: Establish and implement standardized protocols, consistent with existing heat-related illness prevention regulations (CA Code of Regulations, Title 8), to regulate outdoor workers' activities during extreme heat events, such as a threshold of maximum temperature allowed or mandatory breaks after a certain period.

TEMP-1.2: Expand employer and worker training in industries with outdoor work, including assurance of adequate water, shade, protection from poor air quality, training of heat impacts, and vector-borne diseases.

MEASURE TEMP-2: Create or Enhance Urban Greening and Agriculture Programs

Napa County Jurisdictions will create or enhance urban greening and urban agriculture programs and engage community-based organizations as partners on these programs. Urban greening and urban agriculture programs can further extreme heat adaptation by promoting and expanding tree planting, landscaping, parks, or gardens, all of which increase vegetation that cools urban areas by providing shade, increasing evapotranspiration, and reducing the urban heat island effect. Urban agriculture also supports local food production and sustainable resource use. Moreover, community-driven programs ensure adaptation strategies meet local needs and build social cohesion.

Applicable Jurisdictions

All

Partners

- California Urban Forests Council

Co-Benefits



Quality of Life



Social Cohesion

ACTIONS

TEMP-2.1: Develop policies and management strategies to foster the growth and preservation of urban forests, include best practices for removing unhealthy, dangerous, or destructive trees, and the planting and long-term maintenance of site-appropriate trees.

TEMP-2.2: Identify communities lacking access to parks and prioritize the establishment of new urban parks and trail systems within walking distance of underserved populations.

TEMP-2.3: Ensure newly established urban parks and trail systems are connected to high-density residential areas, workplaces, and offices.

TEMP-2.4: Increase parking lot shading by revising local parking lot standards to require larger minimum tree planter sizes for better tree health. Prioritize tree species in parking lots that maximize carbon sequestration potential. For example, native trees adapted to Napa County that are resistant to disease and insects are better at sequestering carbon than trees not adapted to Napa County's climate.

TEMP-2.5: Enhance shading and reduce heat island effects for active commuters by increasing greenery along bike paths, sidewalks, pathways, and streets.

MEASURE TEMP-3: Alleviate Extreme Heat Effects on Vulnerable Populations

Napa County Jurisdictions will collaborate with regional transportation partners to alleviate the effects of extreme heat on populations dependent on walking and/or public transportation. Extreme heat adversely and disproportionately impacts vulnerable populations dependent on walking and/or public transportation. Reducing heat impacts through shade structures, urban greening, improving access to drinking water in public places, and other actions in the region's transportation system will provide more equitable extreme heat protection. Furthermore, protecting these vulnerable populations strengthens overall public health and ensures that essential transportation remains safe and reliable as extreme heat events become more frequent.

Applicable Jurisdictions

All

Partners

- ▶ Caltrans
- ▶ Napa Valley Transportation Authority

Co-Benefits



Public Health & Wellbeing



Quality of Life

ACTIONS

TEMP-3.1: Partner with public works departments and regional transit providers to provide heat-mitigating materials on pedestrian walkways and transit stops, such as site-appropriate shade trees and/or shade structures.

TEMP-3.2: Collaborate with regional partners to identify cool pavement technologies best suited for different applications in the county.

TEMP-3.3: Install water fountains at transit stops if possible.

TEMP-3.4: Improve shading in high pedestrian traffic areas such as downtown Napa.

MEASURE TEMP-4: Protect Critical Infrastructure from Extreme Heat

Napa County Jurisdictions will improve the resilience of critical facilities and infrastructure vulnerable to extreme heat events. This measure ensures the reliability of hazard-prone critical facilities and infrastructure by keeping essential services like power, water, and transportation functioning during extreme heat events. This measure also prevents cascading failures by avoiding breakdowns in one system that could trigger failures in others.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

► N/A

ACTIONS

TEMP-4.1: 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-5: Promote Cool Roofs, Passive Solar Design, Green Roofs, and Rooftop Gardens

Napa County Jurisdictions will encourage or require the installation or use of cool-roof technologies, passive solar home design, green roofs, and rooftop gardens via building code mandates and developing incentive programs. Encouraging or requiring these technologies helps reduce heat absorption by reflecting or dissipating heat, lowering indoor and outdoor temperatures. They also boost energy efficiency by cutting cooling demands and reducing energy costs during heat events. Moreover, these technologies support stormwater management and increase urban greenery, contributing to broader sustainability.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Energy Security



Quality of Life

ACTIONS

TEMP-5.1: Consider adopting a mandatory green building code that requires installation of cool roof technologies for new development consistent with the upcoming 2025 Building Energy Efficiency Standards for Residential and Nonresidential Buildings (California Building Code, Title 24, Part 6). Cool roofs counteract the urban heat island effect from roof exposure to sunlight.

TEMP-5.2: Consider developing incentive programs such as 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. The use of these design elements provides natural cooling and heating and reduces energy demand. Emphasize education that demonstrates that passive solar design will yield long-term energy savings for the building lifetime.

TEMP-5.3: Consider developing incentive programs such as permit streamlining, permit fee reductions, or tax rebates to encourage the use of rooftop gardens and green roofs in residential and commercial buildings. Rooftop gardens are gardens on rooftops, and green roofs (or living roofs) are rooftops that are partially or completely covered by vegetation. These forms of roofing lower the amount of heat absorbed by a building and reduce the energy demand associated with air conditioning. Emphasize education that demonstrates that rooftop gardens and green roofs can yield long-term energy savings for the building lifetime.

MEASURE FLOOD-1: Implement Low-Impact Development to Reduce Local Flooding

Napa County Jurisdictions will consider the implementation of low-impact development (LID) to reduce local flooding. As discussed in the Climate Vulnerability Assessment prepared for this RCAAP, the county may experience an increase in the frequency and intensity of flood events due to the increasing occurrence of extreme precipitation events. LID techniques absorb and slow down stormwater, reducing runoff. By capturing water where it falls, LID also decreases the volume and speed of water reaching drainage systems to reduce peak flows. Moreover, LID can support the restoration of natural hydrology, which helps prevent water from overwhelming local infrastructure. In addition, natural filtration processes in LID systems help remove pollutants from stormwater before entering waterways and can then improve water quality.

Applicable Jurisdictions

All

Partners

► N/A

Co-Benefits



Quality of Life

ACTIONS

FLOOD-1.1: Continue to implement the Phase II Small MS4 Permit which requires green infrastructure on all new and redevelopment projects creating or replacing >5,000 square feet (sq ft) of impervious surface to capture, infiltrate, and treat stormwater close to its source, such as rain gardens, bioswales, permeable pavement, green roofs, and constructed wetlands.

FLOOD-1.2: Jurisdictions may consider implementing a “reach code” for LID by requiring LID to be installed on all new and redevelopment projects creating or replacing <5,000 sq ft of impervious surface.

MEASURE FLOOD-2: Assess and Upgrade Stormwater Systems for Intense Rainfall Events

Napa County Jurisdictions will upgrade stormwater systems to prepare for more intense rainfall events by investing in green infrastructure and implementing regular maintenance and clean-ups. Evaluating and improving stormwater infrastructure ensures that such systems can handle extreme rainfall, reduce flood risks, minimize damage, and enhance community resilience amid more frequent severe storm and flood events.

Applicable Jurisdictions

All

► Homeowners

Co-Benefits

Partners

► Private developers



Ecosystem Health

ACTIONS

FLOOD-2.1: Invest in green infrastructure, such as rain gardens, bioswales, stormwater tree trenches, green roofs, and detention basins to reduce peak runoff, filter stormwater, and increase groundwater recharge.

FLOOD-2.2: Maintain flood control infrastructure, such as gutters, drainage ditches, and culverts to maximize drainage capacity.

FLOOD-2.3: Invest in and enhance the capacity of stormwater infrastructure to manage high-intensity rainfall events. Continue implementing the Phase II Small MS4 Permits.

MEASURE FLOOD-3: Improve Sewage and Solid-Waste Management Infrastructure

Napa County Jurisdictions will collaborate with regional sanitation districts and waste management agencies to upgrade sewage and solid-waste management infrastructure. Improving such infrastructure helps prevent contamination and ensures wastewater and litter do not enter the storm drain system, preventing contamination during flooding events and minimizing the public's exposure to infectious hazards during such events. Hardening such infrastructure will also help keep essential services running during extreme weather, supporting community safety and well-being.

Applicable Jurisdictions

All

Partners

- Napa Sanitation District

Co-Benefits



Public Health & Wellbeing

ACTIONS

FLOOD-3.1: Coordinate with sanitation districts and waste management agencies in the region to improve sewage and solid-waste management infrastructure. The evaluation and improvement of existing undersized or inadequate sewage and solid-waste management infrastructure could lessen the occurrences of floodwater contamination, thereby reducing the spread of pollution and degraded water quality.

MEASURE FLOOD-4: Identify Flood Control Sites, Prioritizing Green Infrastructure

Napa County Jurisdictions will collaborate with regional partners to identify new flood control sites, prioritizing green infrastructure solutions. Green infrastructure solutions absorb and slow stormwater, reducing peak flows and enhancing stormwater management, while also allowing for groundwater infiltration and recharge. In addition, proactively locating flood control sites also minimizes damage and economic impacts, which lead to more resilient communities. Moreover, green infrastructure offers multiple benefits, such as improved air quality, enhanced biodiversity, and more recreational spaces.

Applicable Jurisdictions

All

Partners

- ▶ Napa County Flood Control and Water Conservation District
- ▶ Napa County Resource Conservation District
- ▶ NCGSA

- ▶ Napa Green
- ▶ Other agricultural and environmental organizations

Co-Benefits



Ecosystem Health

ACTIONS

FLOOD-4.1: Identify new locations suitable for multi-benefit flood control (e.g., underused agricultural areas, small streams) that encourage groundwater recharge, and habitat restoration (e.g., wetlands); identify priority projects in coordination with Napa County Flood Control and Water Conservation District, the Napa County Resource Conservation District, the NCGSA, Napa Green, and other agricultural and environmental organizations.

MEASURE FLOOD-5: Upgrade or Relocate Flood-Exposed Infrastructure and Facilities Identified via GIS Analysis

Napa County Jurisdictions will upgrade or relocate flood-exposed infrastructure and critical facilities via GIS analysis. GIS analysis is essential because GIS-based data pinpoints where upgrades or relocations are most needed. Upgrading or relocating such infrastructure enhances its resilience during flood events and ensures that essential infrastructure remains operational during disasters.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- Napa County Flood Control and Water Conservation District

ACTIONS

FLOOD-5.1: Upgrade and/or relocate infrastructure and critical facilities exposed to flooding hazards to make them more resilient to flooding, based on GIS-based spatial analyses already identified in local hazard mitigation planning efforts.

MEASURE FLOOD-6: Replant Bare or Disturbed Areas

Napa County Jurisdictions will replant areas with bare soil or significant disturbance due to natural hazards and/or human factors. The restoration of such bare or disturbed areas is important because it stabilizes soil, reduces erosion, and increases water absorption, which helps mitigate flood risks and enhances ecosystem resilience.

Applicable Jurisdictions

All

Partners

- ▶ CAL FIRE
- ▶ Napa County Resource Conservation District
- ▶ CDFW

- ▶ US Army Corps of Engineers
- ▶ USDA Farm Service Agency

Co-Benefits



Ecosystem Health

ACTIONS

FLOOD-6.1: Assess and map areas with bare soil or significant disturbance due to natural hazards such as wildfire events and/or anthropogenic changes to prioritize restoration effort. Analyze the potential for runoff, erosion, and sedimentation in identified sites. Implement targeted restoration activities where feasible by selecting appropriate vegetation, applying erosion control measures, and following best management practices.

MEASURE FLOOD-7: Protect Freshwater from Contamination, Degradation, or Loss

Napa County Jurisdictions will collaborate with regional partners to safeguard the region's freshwater supply against contamination, degradation, or loss via infrastructure improvements and watershed protections. Safeguarding freshwater is crucial because floods can introduce contaminants, overwhelm treatment systems, and degrade water quality, risking public health and essential water services.

Applicable Jurisdictions

All

Partners

- ▶ Napa County Flood Control and Water Conservation District

Co-Benefits



Public Health & Wellbeing

ACTIONS

FLOOD-7.1: Support investments in new and/or upgraded existing infrastructure to ensure that freshwater supplies are not contaminated, degraded, or lost during flood or fire events. Safeguarding freshwater supply sources through infrastructure improvements and watershed protections would improve the Napa County Jurisdictions' ability to provide drinking water to its residents during flood events.

MEASURE FLOOD-8: Enhance Flood Warnings and Information Sharing

Napa County Jurisdictions will work with regional partners to improve flood warning and information dissemination. Timely alerts allow communities to prepare and evacuate if necessary. Early warnings help minimize property damage and personal harm. In addition, clear communication enables authorities and emergency services to respond more effectively. Moreover, quick and accurate information is key to protecting lives during flood events.

Applicable Jurisdictions

All

Partners

- ▶ Napa County Office of Emergency Services
- ▶ Napa County Flood Control and Water Conservation District

- ▶ Napa County Resource Conservation District
- ▶ National Weather Service

Co-Benefits



Public Health & Wellbeing

ACTIONS

FLOOD-8.1: Partner with the Napa County Flood Control and Water Conservation District and National Weather Service to deliver robust multi-lingual education and outreach materials accessible across multiple media forms (e.g., radio, text messaging). When appropriate, publicize information regarding potential flood risk, how to sign up for the ALERT Napa County and access Napa County's real-time rainfall and river-stream level monitoring website (napa.onerain.com), emergency supplies, pet protection, key terminology, electrical safety, and learn Napa County's evacuation procedures in the case of flooding.

FLOOD-8.2: Invest resources and personnel to regularly update the Ready Napa County webpage (<https://readynapacounty.org/>) to include current information.

MEASURE FLOOD-9: Adapt to the Long-Term Impacts of Sea Level Rise

Adapting to the long-term impacts of sea level rise is critical for Napa County and can be achieved by reducing risks to coastal roads, utilities, and public facilities. Napa County Jurisdictions will conduct a detailed asset-level sea level rise vulnerability assessment to identify at-risk infrastructure and properties. Based on the vulnerability assessment, jurisdictions will develop a regional sea level rise adaptive management plan. Moreover, minimizing flood damage when combined with coastal flooding is also crucial. Such adaptation efforts support long-term economic stability, particularly in coastal tourism.

Applicable Jurisdictions

American Canyon, Napa, Unincorporated County

- ▶ California Coastal Commission
- ▶ California Ocean Protection Council

Partners

- ▶ San Francisco Bay Conservation and Development Commission
- ▶ Metropolitan Transportation Commission

Co-Benefits

N/A

ACTIONS

FLOOD-9.1: Prepare a detailed asset-level assessment of local vulnerability against sea level rise, including at-risk critical facilities, infrastructure, and properties such as roads, bridges, airport facilities, and water reclamation facilities, as well as buildings and properties in inundation areas.

FLOOD-9.2: Develop a regional adaptive management plan to address the long-term impacts of sea level rise based on the asset-level vulnerability assessment. Collaborate with regional partners in addressing sea level rise, such as the San Francisco Bay Conservation and Development Commission and the Metropolitan Transportation Commission.

MEASURE FLOOD-10: Monitor Sea Level Rise Data and Steer Development away from Vulnerable Areas

Napa County and the City of American Canyon will continue their collaboration on sea level rise data analysis, as well as coordinate with NCGSA to evaluate and monitor sea level rise. Ongoing sea level rise analysis informs data-driven planning, ensuring new development avoids high-risk zones. This effort also reduces flood damage when combined with future sea level rise, minimizes costly future adaptations, and protects communities and infrastructure as sea levels rise.

Moreover, Senate Bill (SB) 272, enacted in 2023, requires a local government within the coastal zone or within the jurisdiction of the San Francisco Bay Conservation and Development Commission to develop a sea level rise plan as part of either a local coastal program or a subregional San Francisco Bay shoreline resiliency plan on or before January 1, 2034. These plans aim to coordinate local efforts to address the impacts of rising sea levels on communities, infrastructure, and ecosystems. Implementation of Measure Flood-10 and the implementing actions below can serve as initial steps to developing sea level rise plans for American Canyon and unincorporated Napa County.

Applicable Jurisdictions

American Canyon, Napa, Unincorporated County

Co-Benefits

N/A

Partners

- ▶ California Coastal Commission
- ▶ California Ocean Protection Council
- ▶ NCGSA

ACTIONS

FLOOD-10.1: Napa County's current planning mechanisms already include supporting the ongoing analysis of sea level rise data as an existing action. Napa County and the City of American Canyon should further collaborate on the effort, and guide future development out of exposed areas based on the analysis.

FLOOD-10.2: Coordinate with the NCGSA regarding the evaluation of sea level rise. The NCGSA's Groundwater Sustainability Plan (GSP) Section 12 recommends installing two additional monitoring wells to enhance the region's seawater intrusion monitoring network. This will improve the spatial and temporal resolution of groundwater salinity monitoring, helping to track the saline/freshwater interface more accurately.

MEASURE FLOOD-11: Factor in Sea Level Rise When Planning Capital Improvements and New Developments

Napa County Jurisdictions will consider the implications of sea level rise when planning future capital improvement and new development projects. Factoring in sea level rise during the planning process is crucial because it ensures infrastructure and new developments are resilient over time, minimizes costly future retrofits, and protects communities from increasing coastal hazards. Jurisdictions will implement this measure by updating capital improvement plans using sea level rise data and requiring new development projects to implement sufficient protective measures.

Applicable Jurisdictions

American Canyon, Napa, Unincorporated County

Co-Benefits

N/A

Partners

- ▶ California Coastal Commission
- ▶ California Ocean Protection Council

ACTIONS

FLOOD-11.1: Update capital improvement plans for critical infrastructure to address the effects of future sea level rise and associated hazards in potentially affected areas, including the southwestern portion of the county, the western portion of the City of American Canyon, and certain low-lying areas along the Napa River in the City of Napa, where tidal influence extends to Third Street.

FLOOD-11.2: Design and locate future critical infrastructure projects accordingly and away from potential inundation areas such as those mentioned in FLOOD-12.1, using sea level rise data.

FLOOD-11.3: Require that all new development applications consider projected sea level rise and implement sufficient protective measures such as installing flood barriers, retrofitting stormwater drainage systems, and implementing green infrastructure as mentioned in Measure Flood-1; and avoid siting new development projects in areas subject to permanent inundation. Avoid adaptation measures that increase filling land in areas subject to sea level rise because it can cause more flooding elsewhere

MEASURE FLOOD-12: Preserve Undeveloped Land to Help Ecosystems Adapt to Sea Level Rise

Napa County and the City of American Canyon will collaborate with regional partners to preserve undeveloped land to help ecosystems adapt to sea level rise impacts. Providing space for natural buffers like coastal wetlands helps reduce the impact of coastal flooding and erosion. This preservation effort also supports habitat migration by allowing ecosystems to shift inland as sea levels rise, protecting biodiversity. Moreover, the preservation of undeveloped land also offers a cost-effective and natural alternative to expensive engineered solutions.

Applicable Jurisdictions

American Canyon, Napa, Unincorporated County

Partners

- ▶ California Coastal Commission
- ▶ California Ocean Protection Council
- ▶ DOC

Co-Benefits



Ecosystem Health

ACTIONS

FLOOD-12.1: Conserve undeveloped land where sea level rise is anticipated, such as the southwestern portion of Napa County and western American Canyon. As sea level rise inundates wetlands, ecosystem adaptation allows coastal wetland habitats and the species that depend upon them to migrate to new wetlands further inland.

MEASURE DROUGHT-1: Implement Water Conservation and Explore Water Reuse Options

Napa County Jurisdictions will endeavor to implement water conservation and explore new options for water reuse and recycling. Water conservation helps lower water usage during drought events. Jurisdictions will raise the region's public awareness of water conservation, develop incentive programs, and expand the use of recycled water. These efforts will also prepare the region for prolonged water shortages and support long-term water security.

Applicable Jurisdictions

All

Partners

- ▶ Napa County Flood Control and Water Conservation District
- ▶ Napa Sanitation District
- ▶ NCGSA

Co-Benefits



Cost Savings



Quality of Life

ACTIONS

DROUGHT-1.1: Raise public awareness of water conservation and expand incentives such as rebates for water-saving devices and "Cash for Grass" landscape conversion. Further incentivize water conservation infrastructure upgrade projects, such as leak detection programs and conversion of non-functional turf to water-efficient landscaping.

DROUGHT-1.2: Implement regional and local water conservation opportunities. For water conservation in the building sector, consider adopting the California Plumbing Code Appendix M. This code appendix supports the use of smaller diameter pipes and fittings, valves, pumps, and other equipment, as well as smaller inside diameter pipe insulation. Additionally, it advocates for a smaller water service entrance size, leading to a reduced water meter size and lower connection fees.

DROUGHT-1.3: Increase on-site greywater and rainwater reuse, stormwater reuse, managed aquifer recharge, and expand the use of recycled water.

DROUGHT-1.4: Determine the feasibility of incentive programs that promote the deployment of on-site 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.

DROUGHT –1.5: Consider County-wide implementation of the American Canyon Zero Water Footprint program, which requires new development to offset its potable water demand by funding water conservation programs elsewhere in the water service area.

MEASURE DROUGHT-2: Support Agriculture in Adapting to More Frequent and Severe Droughts

Agriculture is a key economic driver in Napa County. Napa County Jurisdictions will collaborate with regional partners to support the region's agricultural industry to adapt to more frequent and severe drought events. Jurisdictions and their partners will promote agricultural water conservation practices and improve water use efficiency. They will also enhance the region's groundwater recharge. Adapting to more frequent and severe droughts ensures that farmers can continue to operate amid changing climate conditions. Moreover, innovations in water management and crop selection safeguard the region's future.

Applicable Jurisdictions

All

Partners

- ▶ Napa County Resource Conservation District
- ▶ NCGSA

Co-Benefits



Cost Savings

ACTIONS

DROUGHT-2.1: Promote and incentivize industry adoption of state-of-the-art water conservation practices in the cultivation of wine grapes and other crops and breeding of livestock that are better suited to thrive in warmer temperatures and increased precipitation variability. Incentivize growers to perform regular (e.g., at least every 5 years) irrigation distribution uniformity testing and implement upgrades to their irrigation systems as indicated by uniformity testing results. Expand the use of drip irrigation or other efficient irrigation practices countywide and consider expanding prohibitions on mid-day urban watering practices to minimize evaporation loss.

DROUGHT-2.2: Incentivize broad-scale groundwater recharge by promoting soil health through best management practices. Implement cover crops, apply organic compost, and adopt measures that enhance water infiltration into vineyard soils.

DROUGHT-2.3: Napa County GSA should collaborate with representatives of the agricultural community to develop incentives for grape growers, winemakers and other users to adopt water conservation practices beyond drip irrigation. Comprehensively implement the NCGSA's Napa County Water Conservation Workplan: a Guide for Vineyards, Wineries and Other Water Users (WC Workplan) and Groundwater Pumping Reduction Workplan: Napa Valley Subbasin (GPR Workplan).

DROUGHT-2.4: The Napa County Board of Supervisors could consider expanding the geographic scope of the aforementioned Napa County WC Workplan and GPR Workplan to areas outside the Napa Valley Subbasin and potentially the entire unincorporated county.

MEASURE DROUGHT-3: Evaluate Water Supply Vulnerabilities and Develop Resilience Strategies

Napa County Jurisdictions will identify water supply system reliability weakness and networks via water supply vulnerability assessment and resilience planning. Jurisdictions should then direct investments to where they are most needed, such as the maintenance and improvement of water infrastructure that are identified to have weaknesses. Jurisdictions should also consider adopting municipal codes to enforce resiliency standards for water-related infrastructure. Such strategies to improve water supply resilience will keep water systems operational during drought events and help the region build long-term resilience against water supply disruptions.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- ▶ Local water providers
- ▶ Local water agencies
- ▶ Napa Sanitation District

ACTIONS

DROUGHT-3.1: Evaluate the local water supply system and network vulnerability to climate impacts and develop strategies to increase the resilience of these systems. Resilient water supply systems must be able to deliver services during disruptive events (e.g., storms, drought).

DROUGHT-3.2: Work with local water providers to adopt municipal codes to enforce resiliency standards for water-related infrastructure for all future development. Municipal codes may include but are not limited to standards related to the 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 extreme storms or related weather events.

DROUGHT-3.3: Encourage and support local water agencies' efforts to conduct ongoing maintenance of existing water supply-related infrastructure to identify potential weaknesses and deterioration.

DROUGHT-3.4: Implement feasible drought mitigation measures proposed in the 2022 Napa Valley Drought Contingency Plan and the Drought Resilience Plan currently under development in response to SB 552.

MEASURE DROUGHT-4: Enhance Water Conservation Outreach for Residents and Businesses

Napa County Jurisdictions will expand upon existing water conservation education and outreach programs, which will help guide residents and businesses to adopt sustainable water conservation practices, leading to an overall water demand decrease. Jurisdictions will leverage multiple media platforms and utilize different channels to enhance public awareness of water conservation. By improving education and outreach, communities can improve water efficiency, reduce strain on resources, and better prepare for future shortages. This adaptation is crucial for managing drought conditions and ensuring long-term water supply resilience.

Applicable Jurisdictions

All

Partners

- ▶ Local water providers
- ▶ Local water agencies

Co-Benefits



Social Cohesion

ACTIONS

DROUGHT-4.1: Expand 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. Ensure that “Water Conservation as a Way of Life” becomes deeply ingrained in the community.

DROUGHT-4.2: Expand educational materials available to water users through websites, consider developing a regional hub (e.g., NapaValleySavesWater.org) and disseminate conservation messages through customer bills. Expand the audience to include self-supplied users of groundwater, particularly in the Napa Valley Subbasin.

MEASURE DROUGHT-5: Partner with Agencies to Secure Future Water Supplies, Explore Alternatives, and Enhance Capacity

Napa County Jurisdictions will collaborate with federal, State, and local agencies and organizations to identify future water supplies, explore alternative supply sources, and improve capacity. This collaboration effort will leverage regional expertise, funding, and resources. Identifying future water sources and exploring alternatives, such as groundwater recharge, increases the region's resilience to droughts. Moreover, improving capacity ensures efficient water management, reducing vulnerability to supply disruptions, and ensuring long-term sustainability in the face of changing climate conditions.

Applicable Jurisdictions

All

Co-Benefits

N/A

Partners

- ▶ State Water Resources Control Board (SWRCB)
- ▶ California Department of Water Resources (DWR)
- ▶ Bureau of Reclamation (Reclamation)
- ▶ US Army Corps of Engineers (USACE)
- ▶ Abuelita's Foundation

ACTIONS

DROUGHT-5.1: Pursue grant funding opportunities from SWRCB, DWR, Reclamation, USACE and other State and federal agencies related to water recycling projects and/or other water resource planning projects.

DROUGHT-5.2: Explore water supply options for the future and collaborate on water conservation strategies to improve regional water supply capacity; engage with SWRCB, DWR, Reclamation, USACE, groundwater sustainability agencies, flood control agencies, and other local, State, and federal agencies to identify new sources of water supply and groundwater recharge. Support ongoing efforts by entities (e.g., the Abuelitos Foundation) to rehydrate the Napa River Watershed.

MEASURE ENERGY-1: Transition to Climate-Smart Energy

Napa County Jurisdictions will consider transitioning to climate-smart sources of energy, such as renewable sources and energy storage. This measure will enhance grid resilience by reducing reliance on vulnerable fossil fuel infrastructure. In addition to diversified energy supply sources, transitioning to climate-smart energy sources also helps decrease strain during peak demand, and mitigates disruptions from extreme weather events, ensuring a more reliable and sustainable energy system.

Applicable Jurisdictions

All

Partners

- ▶ MCE
- ▶ PG&E

Co-Benefits



Energy Security

ACTIONS

ENERGY-1.1: Evaluate opportunities to transition to decentralized renewable energy sources, reducing reliance on centralized generation sources and long-range transmission (e.g., see MCE's Virtual Power Plant Pilot Program).

MEASURE ENERGY-2: Strengthen Energy Infrastructure Resilience and Enhance Redundancy via Collaboration

Napa County Jurisdictions will enhance the resilience of energy infrastructure systems against climate-related impacts. Strengthening redundancy improves the grid's ability to withstand and recover from disruptions, supporting long-term energy security. Jurisdictions will also collaborate with PG&E and MCE to bolster redundancy in the energy network by integrating backup systems to reduce the risk of outages.

Applicable Jurisdictions

All

Partners

- ▶ MCE
- ▶ PG&E

Co-Benefits



Energy Security

ACTIONS

ENERGY-2.1: Harden energy infrastructure against climate stressors, such as undergrounding overhead electrical transmission lines for wildfire events and installing barriers and floodgates for flooding hazards.

MEASURE ENERGY-3: Reduce Energy Grid Strain During Extreme Heat

Napa County Jurisdictions will work with MCE and PG&E to minimize stress on the region's energy grids during extreme heat events, which will help prevent overloads, reduce the risk of blackouts, and ensure reliable power for critical services. Actions under this measure include managing demand through education campaigns and expanding the use of energy storage technologies to improve backup power supply availability. In addition, this measure supports long-term energy security in a warming climate.

Applicable Jurisdictions

All

Partners

- ▶ MCE
- ▶ PG&E

Co-Benefits



Energy Security

ACTIONS

ENERGY-3.1: Reduce stress on the electrical grid by educating the public on behavior changes such as time-of-use awareness or reducing electric usage during statewide or regional "Flex Your Power" alerts. Partner with PG&E and MCE to promote educational campaigns that encourage such behavior changes.

ENERGY-3.2: Expand the use of home batteries, vehicle-to-grid integration technology, and other energy storage technologies in residential and non-residential buildings to improve backup power supply availability while also improving the viability of on-site renewable energy. This action aligns with the GHG reduction action BE-1-b(ST), which encourages on-site renewable energy and battery storage, as well as GHG reduction action BE-3-a(ST), which discusses rebates and incentives for renewable energy and storage, including battery storage.

MEASURE ENERGY-4: Install Backup Power at Critical Facilities, Resilience Centers, and Shelters

Napa County Jurisdictions will partner with MCE to install backup batteries, generators, or microgrids at critical facilities (e.g., fire stations, hospitals, campuses), community resilience centers, or similar sheltering locations. This measure also involves identifying existing facilities that can serve as emergency shelters and upgrading these facilities with backup power. Installing backup power at critical facilities ensures continuous operations during grid failures, protecting public safety and essential services. Batteries, generators, and microgrids provide emergency power, reduce dependence on the main grid, and enhance the overall community's energy resilience during extreme weather or disasters.

Applicable Jurisdictions

All

Partners

► MCE

Co-Benefits



Energy Security

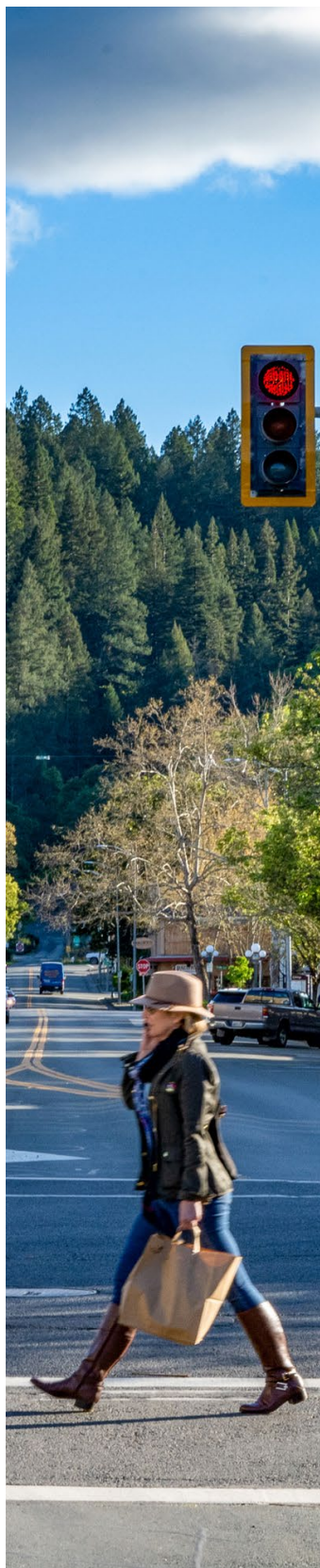
ACTIONS

ENERGY-4.1: Identify existing facilities that can serve as emergency shelters and ensure they have sufficient backup power using batteries or generators. Secure additional funding to conduct building improvements and enhance the resilience of these facilities.

ENERGY-4.2: Partner with MCE and explore microgrid installation feasibility and/or virtual power plant opportunities at local government agency-owned facilities, school or college campuses, hospital campuses, or other types of facilities where the use of microgrids or similar systems would be cost-effective and appropriate for supporting both energy grid and community resilience.



CHAPTER 6 **Implementation and Monitoring**



6 IMPLEMENTATION AND MONITORING

This chapter describes how the Napa County Regional Climate Action and Adaptation Plan (RCAAP) will be implemented and monitored. The six local jurisdictions within Napa County (hereinafter referred to as “Napa County Jurisdictions” when pertaining to the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville) have a responsibility in successfully implementing the RCAAP. As such, this chapter includes further details on a coordinated regional implementation strategy, a summary of the cost and funding analyses conducted for some of the RCAAP’s GHG reduction and adaptation measures, monitoring and reporting considerations, future plan updates, California Environmental Quality Act (CEQA) tiering and streamlining, and ongoing community engagement.

6.1 IMPLEMENTATION STRATEGY

Successful RCAAP implementation will require a coordinated approach that leverages regional and local collaboration across the Napa County Jurisdictions and other partner agencies and organizations.

The County of Napa may lead and coordinate overall RCAAP implementation efforts as the designated “Administering Agency” per the Joint Powers Agreement in close collaboration with each of the incorporated jurisdictions. In some instances, an individual jurisdiction may assume sole responsibility for implementing a measure and its associated actions, especially if a specific measure applies only to a particular jurisdiction (e.g., measures in the agricultural sector will apply only to the unincorporated county). However, individual jurisdictions may tailor the implementation of measures or specific actions that apply to all jurisdictions to account for the unique needs and characteristics of each of the Napa County Jurisdictions. A single jurisdiction, such as the County, may also take the lead in implementing specific actions that will have regional benefit and inform measure implementation efforts across jurisdictions (e.g., conducting feasibility studies, or developing model ordinances that all jurisdictions will eventually adopt). In all cases, however, if specific actions are implemented primarily by one jurisdiction, close coordination with other jurisdictions will be required to ensure consistent results are achieved across jurisdictions.

Specific implementation details for all measures and actions identified in Chapters 3 and 5 can be found in **Appendix H**. For each action, the matrices provide a short description, applicable jurisdictions, potential partners, the implementation mechanism, and estimated start and end dates.

6.2 IMPLEMENTATION COSTS AND POTENTIAL FUNDING SOURCES

RCAAP implementation will require substantial funding, and a coordinated regional investment strategy is needed. Accordingly, a series of cost and funding assessments were prepared to inform the public and decision-makers regarding potential costs and options for funding and financing implementation, as described in this section.

Implementation Cost Estimates

A preliminary cost assessment, prepared by Jacobs, estimated and classified Napa County Jurisdictions' potential implementation costs for nine priority GHG reduction measures and 10 climate adaptation measures. The specific measures included were prioritized either because of the magnitude of potential GHG reductions associated with the selected GHG measures relative to others, or because of the potential degree or scale of impact in the case of the selected climate adaptation measures. This assessment does not include cost estimates for all RCAAP measures. A complete cost estimate for the entire RCAAP would require further study.

The Napa County Jurisdictions collectively have a responsibility to successfully implement the RCAAP, and as such, the preliminary cost assessment includes total costs regionwide for implementation of the selected measures as presented in the RCAAP, and costs are not estimated individually for any one jurisdiction, unless specifically noted. No cost-sharing analysis was included in the scope of the preliminary cost assessment.

The preliminary cost assessment to implement nine GHG reduction and 10 adaptation measures over a 20-year horizon (i.e., 2025-2045) includes labor (i.e., public agency staffing), capital costs (i.e., construction costs related to physical assets), and other costs (i.e., non-capital expenses, such as consultants, rebates, or special studies).

- ▶ Some measures are one-time activities such as developing a program or plan, or the adoption of an ordinance.
- ▶ Other measures are ongoing, such as comprehensive electrification of existing buildings, structure hardening, or certain infrastructure projects, that have a longer timeframe.
- ▶ Potential cost savings may offset public agency costs to the Napa County Jurisdictions (e.g., through reduced municipal utility bills associated with more efficient buildings and vehicles), and private community cost savings (e.g., reduced utility bills through home electrification or fuel costs through vehicle electrification).

Key findings from the preliminary cost assessment, included in **Appendix I**, are as follows:

- ▶ If all 19 measures selected for analysis were fully implemented, total implementation costs would be approximately \$1.1 billion over 20 years, or approximately \$57 million per year. Approximately seven percent of total costs would be labor or administrative costs incurred by local agencies.
- ▶ Implementation of nine priority GHG reduction measures would cost approximately \$772 million over 20 years. Over 90 percent of these estimated costs are associated with rebates, incentives, or other program costs. For GHG measure BE-1 alone, the estimated cost of residential and commercial rebates or other incentives for electrification of all existing buildings countywide could cost over \$400 million over 20 years.
- ▶ Implementation of 10 priority climate adaptation measures would cost approximately \$359 million over 20 years. Approximately 66 percent of these estimated costs are associated with rebates, incentives, or other program costs, while 28 percent would be for capital costs.

These preliminary cost estimates are based on planning-level, order-of-magnitude estimates with an accuracy range of -30 to +50 percent of actual costs. These preliminary cost estimates are subject to change based on a variety of factors. Examples of such factors include potential revisions to RCAAP measures, actual implementation or program details that are defined later during implementation but are unknown or undefined during the planning stage, changes in market conditions, the availability and cost of zero-emission technology, and Napa County Jurisdictions' staff availability and workload.

Funding and Financing Options

Economic & Planning Systems prepared a funding and financing options assessment that identifies potential funding sources and financing mechanisms to support RCAAP implementation (see **Appendix I** for a more detailed discussion and copy of the full assessment). The funding and financing options assessment focused on nine priority GHG measures and 10 climate adaptation measures analyzed in the preliminary cost assessment. The funding & financing assessment identified the following potential options:

- ▶ **Local funding sources** (e.g., general fund revenues, new taxes or assessments, new fees);
- ▶ **Grants** (e.g., federal, state, regional, or local grant programs);
- ▶ **Loans** (e.g., California Infrastructure and Economic Development Bank [Iban] products, on-bill financing available through utilities);
- ▶ **Debt financing mechanisms** (e.g., general obligation bonds, revenue bonds, certificates of participation, Mello-Ros community facilities districts, enhanced infrastructure financing districts, climate resilience districts); and
- ▶ **Other sources** (e.g., carbon credits, public-private partnerships, development or operating agreements; and regional programs such as Marin Clean Energy Flex Market Programs, Bay Area Regional Energy Network incentives, Transportation Fund for Clean Air).

Implementing the RCAAP will require a **coordinated, long-term investment strategy** that draws upon both existing and new sources of funding from public and private entities. While a wide range of funding mechanisms exist, accessing and managing them presents several challenges. Limited public budgets, fragmented and competitive funding sources, and shifting state and federal priorities can constrain the availability and consistency of financial support. Additionally, many GHG reduction measures and climate adaptation measures demand high upfront costs and significant administrative effort, requiring jurisdictions to prioritize actions that align with local capacity and offer the greatest long-term benefits. In this context, successful implementation will depend on the Napa County Jurisdictions' ability to strategically sequence investments, pursue diverse funding streams, and build partnerships with organizations across sectors—including public agencies, private businesses, nonprofit groups, and community stakeholders—to expand capacity and strengthen support for climate initiatives.

The funding and financing assessment identified the following specific steps that Napa County Jurisdictions can take in developing a long-term RCAAP investment strategy:

- ▶ Develop a **phased funding roadmap** that sequences implementation based on funding availability, project readiness, and potential for maximizing GHG reduction and community co-benefits.
- ▶ **Prioritize actions that can be implemented relatively easily** by identifying projects that have the following characteristics:
 - Lower cost-barriers,
 - Existing staffing capacity to redirect toward implementation,
 - Capital improvements that can be included in respective jurisdictional capital improvement plans.
- ▶ Determine if any **General Fund revenues** can be made available to fund any short- or long-term actions.
- ▶ **Evaluate the feasibility of establishing new or dedicated local funding sources**, including new taxes, assessments, fees, or utility surcharges earmarked for GHG reduction or climate adaptation efforts.
- ▶ **Pursue state and federal grants** by actively monitoring funding opportunities from existing or new programs. This may require jurisdictions to **build internal capacity or hire grant specialists** and **collaborate** across public agencies to increase competitiveness.
- ▶ **Utilize public financing tools**, such as climate resilience districts or other mechanisms.
- ▶ Attract private investment by pursuing **public-private partnerships** for targeted actions.
- ▶ **Coordinate via the Climate Action Committee (CAC) and corresponding joint powers agreement** to align local funding priorities, pool match funding, and develop joint applications for regional-scale investments.

6.3 MONITORING AND REPORTING

Napa County Jurisdictions will regularly monitor and report on the implementation status of all GHG reduction and climate adaptation measures in the RCAAP. The effectiveness of all quantifiable GHG measures and progress in achieving GHG reductions, along with progress towards meeting established GHG targets and goals for 2030 and 2045, will also be monitored regularly and shared with the public. Monitoring and reporting efforts will also inform future RCAAP updates in the event adjustments to measures are required. Future RCAAP updates are addressed further under Section 6.4 below.

Monitoring

Monitoring efforts for the RCAAP 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:** Napa County Jurisdictions will track the status of all GHG reduction and climate adaptation measures identified in **Chapters 3 and 5** and their specific actions quarterly. Agency staff will maintain and update tracking tables, using consistent implementation 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. Agency staff will also include the most current/available data on implementation status in annual monitoring reports.
- ▶ **GHG Performance Monitoring:** Napa County Jurisdictions 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 performance targets established for applicable quantified GHG reduction measures, as presented in **Chapter 3**. Agency staff will identify the specific tracking metrics or KPIs that will be monitored for applicable GHG reduction measures. Data will be gathered annually for each set of KPIs unless otherwise noted, and results will be included in an annual monitoring report for the RCAAP.

Reporting

Napa County Jurisdictions will post regular updates online regarding implementation status and performance monitoring efforts. The latest available data on progress in achieving measure-specific performance targets, estimated GHG reductions to date, and overall progress in achieving the RCAAP's GHG targets will be shared publicly via an interactive RCAAP "Dashboard" that will be developed and launched shortly after RCAAP adoption.

Agency staff will also prepare annual RCAAP monitoring reports and present these reports to the Napa County CAC or individual local governing bodies. The purpose of these annual reports is to report on the implementation progress and performance of the RCAAP and to identify where further efforts and additional resources may be needed to ensure effective implementation. The first annual RCAAP monitoring report will be issued in 2027, approximately one year after the approval of the RCAAP. Annual monitoring reports will include the status of

each GHG reduction and climate adaptation measure, along with the associated implementation actions. These reports will also provide a summary of the latest data on the performance of GHG reduction measures and overall progress toward achieving the regional GHG targets, based on the identified metrics and KPIs.

6.4 FUTURE PLAN UPDATES

Napa County Jurisdictions will update the RCAAP approximately every five years; however, minor updates or adjustments to implementing actions associated with individual measures may occur without updating the full RCAAP document, in response to annual monitoring and reporting activities.

Comprehensive five-year RCAAP updates will include updates to regional GHG emissions inventories and forecasts, a full review and any necessary adjustments of GHG reduction measures and actions, and updates to the implementation strategy as necessary. Refined cost estimates and funding sources may also be identified as necessary. Future updates to the RCAAP will also comply with CEQA Guidelines 15183.5. **Table 6.1** provides a schedule of planned activities for future RCAAP updates and related activities, including monitoring and reporting efforts.

Table 6.1 RCAAP Updates and Monitoring Schedule

Year	Activity	Description
2026	RCAAP Adoption	► Each of the Napa County Jurisdictions' governing bodies will adopt the RCAAP in 2026.
2026-Ongoing	Implementation	► Implementation of the RCAAP will begin in 2026 following adoption.
2026-Ongoing	Annual Monitoring and Reporting	► RCAAP monitoring efforts will begin in 2026. ► The first annual monitoring report would be published in 2027, approximately one year following RCAAP adoption.
2030-Ongoing	Annual GHG Emissions Inventory Updates	► The regional GHG emissions inventory will be updated every five years. The next inventory update will be completed by the year 2030 to inform the first five-year RCAAP update.
2031	RCAAP Update	► The RCAAP will be updated every 5 years, with the first update completed by 2031.

Notes: GHG = greenhouse gas; RCAAP = Napa County Regional Climate Action and Adaptation Plan; Napa County Jurisdictions = the collective government entities of the County of Napa, the Cities of American Canyon, Calistoga, Napa, and St. Helena, and the Town of Yountville.

Source: **Compiled by Ascent in 2025.**

6.5 CEQA GHG ANALYSIS TIERING AND STREAMLINING

Napa County Jurisdictions may use the RCAAP to streamline GHG analysis and mitigation for future discretionary projects undergoing environmental review. This streamlining benefit is enabled because the RCAAP meets the criteria for a qualified “plan for the reduction of greenhouse gases” under the CEQA Guidelines (i.e., Title 14, Division 6, Chapter 3 of the California Code of Regulations), which are summarized in **Table 6.2** below.

Napa County Jurisdictions’ existing development review processes will demonstrate an individual project’s consistency with applicable GHG measures in the RCAAP. A project’s incremental contribution to cumulative GHG emissions may be determined not to be cumulatively considerable based on consistency with the forecasts and GHG reduction measures presented within the RCAAP.

Table 6.2 RCAAP Compliance with Elements of a Qualified Greenhouse Gas Reduction Plan Under the CEQA Guidelines, Section 15183.5(b)

Element	Element Description	How Does the RCAAP Meet the Criterion?
A	Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.	The RCAAP is based on the region’s 2019 inventory of existing GHG emissions, and forecasts for 2030 and 2045, for both the unincorporated area and incorporated jurisdictions in Napa County. GHG emissions for all years include emissions associated with all countywide activities. 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 Napa County Jurisdictions have some level of jurisdictional control or influence and exclude those sources over which the County has no jurisdictional control or influence. See RCAAP Chapter 2 and Appendix B for further technical details.
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 RCAAP establishes 2030 and 2045 targets GHG emissions reductions in alignment with legislative targets for statewide emissions reductions and the state’s 2022 Scoping Plan for Achieving Carbon Neutrality. 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 RCAAP’s 2030 and 2045 targets represent the level below which GHG emissions would not be cumulatively considerable. See RCAAP Chapter 2 and Appendices B, E, and F for further technical details.

Element	Element Description	How Does the RCAAP Meet the Criterion?
C	Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.	The regional GHG emissions inventory, along with emissions forecasts prepared for 2030 through 2045, account for both existing emissions and estimated changes in emissions over time. 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 RCAAP includes a broad suite of GHG reduction measures and associated implementation actions to reduce GHG emissions countywide to achieve regional 2030 and 2045 targets. See RCAAP Chapters 2 and 3 , and Appendices E and F for further technical details.
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 RCAAP includes GHG reduction strategies, measures, and implementing actions and presents analysis demonstrating that their collective implementation would achieve the 2030 and 2045 targets. The RCAAP also identifies how, if certain GHG measures were implemented on a project-by-project basis, the measures collectively would achieve the 2030 and 2045 targets. The RCAAP includes measures that address the largest GHG emissions sources (such as building energy use and transportation), core measures that are likely to reduce large amounts of emissions based on substantial evidence, and transparency in methods of quantification. See RCAAP Chapter 3 and Appendix F for further technical details.
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 RCAAP includes a regional strategy for implementing, monitoring, and reporting, including how the RCAAP and various technical components will be updated periodically. Napa County Jurisdictions will evaluate the effectiveness of GHG measures and actions and include regular emissions inventory updates to ensure the region is on track to meet the regional 2030 and 2045 GHG reduction targets. The implementation strategy also includes details regarding applicability of specific actions under each measure, estimated costs and funding and financing options, and matrices summarizing implementation assumptions. See RCAAP Chapter 6 and Appendices H and I for details.
F	Be adopted in a public process following environmental review.	Napa County Jurisdictions will conduct environmental review and prepare an Initial Study for the RCAAP, pursuant to CEQA. The County of Napa will serve as lead agency for the preparation of the Initial Study, with other incorporated jurisdictions acting as responsible agencies. The Initial Study will evaluate the potential environmental effects of the proposed RCAAP and its implementation, and the County and responsible agencies will make the appropriate environmental determination following completion of the Initial Study. Following completion of the environmental review process, each governing body will certify the CEQA document and adopt the RCAAP following a public hearing.

Notes: GHG = greenhouse gas; RCAAP = Napa County Regional Climate Action and Adaptation Plan.

Source: **Compiled by Ascent in 2025.**

Projects eligible for streamlining include discretionary projects subject to environmental review that are determined by Napa County Jurisdictions to be consistent with their respective General Plan and the GHG forecast assumptions used in the RCAAP. 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. A project that a local lead agency determines to be eligible for GHG analysis tiering and streamlining using the RCAAP must demonstrate consistency with the RCAAP 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 RCAAP's programmatic review of GHG emissions in their CEQA analysis of cumulative GHG emissions. However, if there is substantial evidence that the effects of a particular project may be cumulatively considerable notwithstanding the project's compliance with the specified requirements in the plan for the reduction of greenhouse gas emissions, an EIR must be prepared for the project, pursuant to CEQA Guidelines Section 15183.5(b)(2).

Napa County Jurisdictions will use an RCAAP Consistency Review Checklist to assist with determining GHG streamlining eligibility pursuant to CEQA Guidelines Section 15183.5, and to ensure that eligible projects are reviewed for consistency with applicable GHG reduction measures and incorporate appropriate mitigation measures into their environmental documents. A preliminary example of the RCAAP Consistency Review Checklist ("Checklist") is provided as **Appendix J**. The Checklist will be finalized following the adoption of the RCAAP and will serve as an administrative document used during the development review process, which is separate from the RCAAP itself. Napa County Jurisdictions may customize the Checklist for individual jurisdictions' use to reflect applicable measures and performance standards that are appropriate in each individual jurisdiction. The Checklist will also be updated over time, if necessary, as the RCAAP is updated every five years. The Checklist will not apply to ministerial projects or other actions that are not considered a "project" and therefore are not subject to environmental review under CEQA.

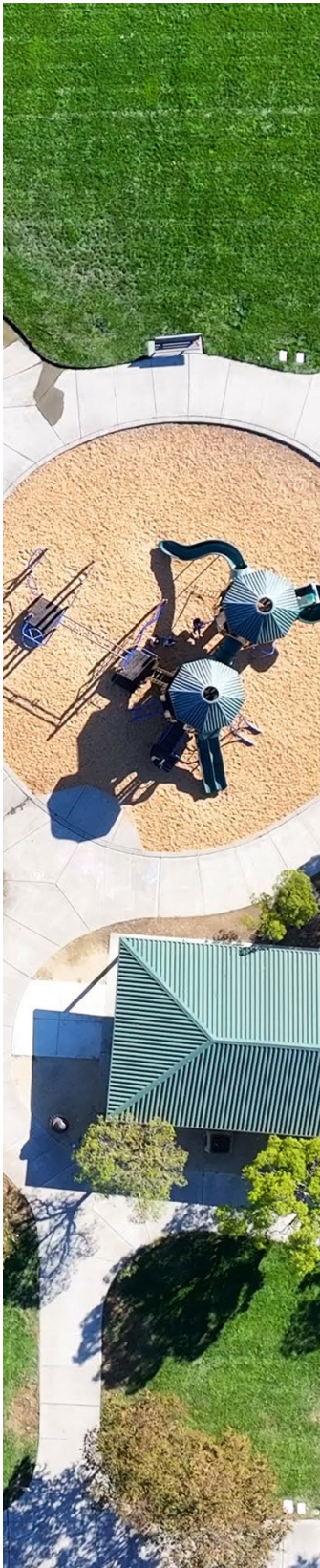
6.6 ONGOING COMMUNITY ENGAGEMENT

Continued engagement with and active participation by the community is critical for the successful implementation of the RCAAP. As Napa County Jurisdictions implement and monitor 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 RCAAP's goals. While some measures may be led solely by an individual jurisdiction, many will require cross-agency collaboration, as well as partnerships and collaboration with other organizations, as noted in previous chapters.

Many of the measures and implementing actions in the RCAAP focus on increasing community awareness and participation in existing programs, as well as connecting the community with new information, tools, funding, and resources. Effective and long-term climate action and resilience building in the community depend on ongoing efforts that change the way individuals and businesses interact with the environment. Numerous measures require participation from residents, businesses, and visitors to be fully implemented, and the Napa County Jurisdictions are committed to continuing outreach and engagement efforts through implementation, monitoring, and future plan updates, as outlined above.



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7 WORKS CITED

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CHAPTER 5: ADAPTATION MEASURES

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CHAPTER 6: IMPLEMENTATION AND MONITORING

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