Climate Resilience Comprehensive Action Plan

County of Sonoma

County Administrator's Office

Climate Action and Resiliency Division

August 2024

COUNTY OF SONOMA

Climate Action and Resiliency

Acknowledgments

These organizations participated in collaborative project scoping, design, and draft-editing sessions. The time and expertise they dedicated brought needed insight into the Climate Plan and informed the development of measures for County operations and community climate resilience.

County of Sonoma

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Land Acknowledgment

Sonoma County and the County of Sonoma are located within the ancestral, traditional, and contemporary land relationships of the Kashia (also spelled Kashaya) Pomo and Southern Pomo, Wappo, and Coast Miwok Tribal Nations, which include the federally recognized Cloverdale Rancheria of Pomo Indians, the Kashia Band of Pomo Indians of the Stewarts Point Rancheria, the Dry Creek Rancheria Band of Pomo Indians, the Federated Indians of Graton Rancheria, and Lytton Rancheria of California.

The County of Sonoma is dedicated to understanding and educating the public about historical and ongoing connections between land conservation and social injustices. This includes the histories of genocide, forced removal and displacement, and broken promises with Indigenous peoples as a part of American history, past and present. While recognizing the past, we honor the resiliency of Native people in their ancestral territories in relationship with their land and culture. This acknowledgment does not take the place of authentic relationships with Indigenous communities, but serves as a gesture in respect to the land we are on.

Executive Summary

The County of Sonoma Climate Resilience Comprehensive Action Plan (Climate Plan) provides a road map to reduce greenhouse gas emissions from the County's operations and increase resilience to climate hazards that threaten Sonoma County. The Climate Plan also presents a strategy to more fully engage with Sonoma County communities, with a focus on unincorporated, climate justice, and environmental justice communities, to better understand their climate resilience priorities and how they can be most effectively supported.

In 2019, the County of Sonoma joined the Sonoma County Regional Climate Protection Authority, the cities in Sonoma County, and 2,359 jurisdictions in 40 countries that have declared a Climate Emergency. The County's 5-year Strategic Plan, adopted in 2021, has a Climate Action and Resiliency Pillar with an overarching goal to "Make Sonoma County carbon neutral by 2030." The pillar has five specific goals, including Goal 3 to "Make County facilities carbon free, zero waste, and resilient."

The Intergovernmental Panel on Climate Change *Sixth Assessment Report on Climate Change* concluded that widespread and rapid changes in the atmosphere, ocean, glacier regions, and everywhere life exists, have already occurred, and that human-caused climate change is affecting every region of the globe. It predicts that in the near term every region of the world will face further increases in climate hazards. And it also concludes that future changes are unavoidable, and may be irreversible unless very deep, rapid, and sustained reductions to global greenhouse gas emissions are achieved.

The Fourth Assessment of Climate Change in California found that average temperatures have already risen by 1 °F, with some areas of the state rising by an average of 2 °F since 1900. It predicts

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temperatures in California could rise 5.8 °F in the next 25 years, and by almost 9 °F by the end of the century. Rising temperatures will cause more and longer-lasting extreme heat events, prolonged drought, more frequent and severe wildfires, extreme rain events, flooding, and sea level rise between 1 and 2 feet by 2050, and by as much as 7 feet by the end of the century.

Analysis performed for the 2022 Sonoma County Multi-Jurisdictional Hazard Mitigation Plan predicts that the average daily maximum temperatures in Sonoma County will rise by up to 11.7 °F, with a minimum temperature increase of 8.4 °F. The frequency, intensity, and duration of extreme heat events in Sonoma County are expected to increase, causing more heat-related injuries, illnesses, and deaths.

The changing climate in California drives a dramatic increase in the number and the severity of wildfires. Three of the ten most destructive wildfires in the state's history occurred in Sonoma County in the last ten years. By the end of the century, the number of large wildfires will increase by 40 to 90%, depending on how much rain Sonoma County receives. Modeling predicts that rain will occur in bursts of extreme precipitation with prolonged dry periods in between. Run-off and groundwater recharge will both decrease in dry periods, resulting in a 22% greater water deficit in Sonoma County. In wet periods, extreme precipitation could cause runoff to increase by as much as 91%, resulting in flooding, erosion, mud flows, and other damage. Rising seas will also cause salt intrusion into groundwater resources and coastal erosion.

There are many statewide and regional climate strategies, plans, programs, and regulations that form the foundation for the County's Climate Plan. Key among these are the state's Climate Change Scoping Plan to Achieve Carbon Neutrality, regulations that shift the power grid to renewable energy, drive cars, trucks, and buses to zero and near-zero emissions, remove compostable materials from the waste stream, and set statewide targets for carbon sequestration through nature-based solutions. In Sonoma County, the Regional Climate Protection Authority's Climate Mobilization Strategy, and the Sonoma County Transportation Authority's Moving Forward 2050 plan serve to unify the jurisdictions in Sonoma County in approaches to reduce emissions from energy use and transportation, and in increasing resilience in our communities and landscapes.

The Climate Plan builds on this strong foundation. It relies on the 2024 community-wide greenhouse gas inventory developed by the Regional Climate Protection Authority, and the County of Sonoma 2023 Greenhouse Gas Inventory to establish a baseline for emissions from the built environment. It also relies on the County's 2023 Carbon Inventory and Potential Sequestration Study to characterize the carbon held in Sonoma County's natural and working lands. In 2021, County operations emitted 31,700 metric tons of greenhouse gases, measured as carbon dioxide equivalents, or CO_2e. Greenhouse gas emissions attributed to the unincorporated areas of Sonoma County were 817.2 thousand metric tons of CO_2e in 2022. In 2022, the natural and working lands in Sonoma County held 105.4 million metric tons of carbon, measured as CO_2e, and the lands owned by the County held about 2.2 million metric tons of CO_2e. The study demonstrated substantial opportunities for increasing the amount of stored

Executive Summary

carbon by applying nature-based solutions, or practices, on the landscape. If Sonoma County as a whole achieves a proportionate share of the statewide carbon storage targets, by 2030 there will be 477,000 additional tons of CO_2e sequestered. The study also demonstrated substantial opportunities for increasing the amount of carbon stored in the landscape every year. The analysis considered only lands held by the County, which are primarily Regional Parks lands, however the County will coordinate and collaborate with the Sonoma County Water Agency (Sonoma Water) and the Sonoma County Agricultural Preservation & Open Space District (Ag + Open Space) on prioritizing and implementing nature-based solutions, to support shared resilience objectives.

The Climate Plan includes 54 measures and actions to reduce carbon emissions from County operations and to increase carbon storage on County-owned lands. The measures and actions were informed by climate-related studies, strategies, and plans developed by the County and its partners, and align with their recommendations. Key among these are the Regional Climate Protection Authority's 2021 Climate Mobilization Strategy, Sonoma Water's 2021 Climate Adaptation Plan, the 2021 Sonoma County Multi-Jurisdictional Hazard Mitigation Plan, the 2022 Sonoma County Climate Resilient Lands Strategy, the 2023 Sonoma County Community Wildfire Protection Plan, transportation studies, fleet transition plans, energy audits, and other documents, including a Climate Action and Resiliency Plan being developed for Regional Parks. The measures and actions are organized under six sectors: Energy (10 measures), Transportation (13 measures), Waste (10 measures), Water (8 measures) Wildfire (7 measures), and Natural & Working Lands (7 measures). There is a description of important background and policy considerations for each sector. A complete list of all measures and actions is provided in the Appendix of the Climate Plan.

The County evaluated direct costs and benefits of measures where sufficiently bounded to support estimates (21 measures). Estimates for measures involving nature-based practices were based on achieving a proportionate share of the statewide carbon storage targets on County-owned lands. The analysis showed that the net cost-effectiveness over the life of the measures ranged from a net savings of $238,584 per metric ton of CO_2e reduced to a net cost of $1,735 per ton of CO_2e reduced.

A multi-criteria analysis, which applied a quantitative score to qualitative benefits, considered climate resilience, co-benefits, environmental equity and justice, cross strategic plan alignment, and state and federal funding potential, and greenhouse gas mitigation achieved. The analysis showed that nature-based solutions delivered the greatest overall benefit, relative to other measures. The County had a cost benefit analysis prepared, showing the relative value (calculated as the total social cost of carbon) to communities of the benefits from a measure (calculated as the total greenhouse gas emissions reduced). The analysis was performed for 17 measures, including six of the potential community progress measures. The analysis found that community microgrids have the highest relative value, followed by decarbonizing the County's light-duty fleet, deploying charging infrastructure, and implementing a suite of near-term energy upgrades to County facilities. Of the measures analyzed, those with the lowest value were the measures decarbonizing the heavy-duty fleet and off-road engines.

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Over the last two years, the County has secured over $16.9 million in state and federal climate resilience funding, including expected direct pay tax credits and other incentives for solar generation and storage. This is in addition to roughly $60 million in federal funding secured for hazardous fuels reduction and community wildfire hardening. However, full implementation of the Climate Plan will require significant additional funding. The County tracks many funding opportunities, and prepared specific funding strategies for 10 measures in the Climate Plan and one of the potential community measures that directly corresponds to an objective in the Strategic Plan. The strategies map out best-fit funding opportunities for each of the measures in 2025 and 2026.

In developing the Climate Plan, the County began with the Racial Equity Toolkit Analysis, which is modeled on the analysis developed through the Government Alliance on Race and Equity. The County actively considered racial and social justice in community engagement for the development of the Climate Plan, and intentionally incorporated climate justice and just transition in specific measures and actions. Community engagement for the Climate Plan was iterative and incorporated different modes of engagement. Materials, interviews, focus groups, surveys, and meetings were offered in English and Spanish. The Climate Plan incorporated community-focused engagement to further identify and refine potential actions the County could take to advance community climate resilience progress.

The County reviewed the comments received during the 2021 Climate Action and Resilience Town Hall meeting, as well as comments from partners, tribes, stakeholders, and community members on the key studies, strategies, and plans that underpin this Climate Plan. The County also sought input through surveys, focus group conversations, tabling at community events, interviews of community members and organizations, and two workshops with the Board of Supervisors. A recurring theme of the comments received was the need for deeper engagement with communities, especially those that have historically not had access to climate resilience policymaking.

The Climate Plan embraces that input and sets out an equity-centered strategy for engaging communities across Sonoma County, with an emphasis on climate justice and unincorporated communities. The strategy includes an advisory committee of community-based organizations that will guide and help conduct engagement. The engagement will help the County understand the climate resilience priorities of different communities in Sonoma County, the barriers they face, and the most effective actions the County could take to advance climate resilience progress in communities. With advice from the advisory committee, the County will prepare recommendations for measures and actions to support community progress for the Board's consideration by the end of 2026. A list of potential measures and actions is included in the engagement strategy, with the expectation that the list and the individual measures will change as community priorities and needs are better understood.

The County will continue collaboration with partners on the development of a unified and integrated climate resilience reporting dashboard that will allow seamless navigation between countywide and jurisdiction-specific progress. County staff will return to the Board in 2026, after the next level of community engagement is completed, to recommend priority measures and actions in support of community climate resilience progress.

Key Terms and Glossary

ADAPTATION
Adjustment in natural or human systems to a new or changing environment that exploits beneficial opportunities or moderates negative effects.

CARBON SEQUESTRATION/STORAGE
A process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form.

CLIMATE ADAPTATION
Actions taken at the individual, local, regional and national levels to reduce risks from today's changed climate conditions and to prepare for impacts from additional changes projected for the future.

CLIMATE CHANGE
Changes in average weather conditions that persist over multiple decades or longer. Climate change encompasses both increases and decreases in temperature, as well as shifts in precipitation, changing risk of certain types of severe weather events and changes to other features of the climate system. Climate change may be caused by natural internal processes or by external forces, such as volcanic eruptions or persistent human actions

CLIMATE JUSTICE
Links human rights and development in order to achieve a people-centered approach, protecting the rights of those who are most vulnerable to the effects of climate change. The concept also proposes that the burdens, impacts and benefits of climate change be shared in an equitable and fair manner. Climate justice responds to science and also recognizes the need for an equitable 1 distribution of the world's resources.

CLIMATE RESILIENCE
The ability to respond to and recover rapidly from climate-related disruptions, challenges and risks through adaptability, innovation and preparedness.

ENVIRONMENTAL JUSTICE
The fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

ENVIRONMENTAL RACISM
The systemic and disproportionate exposure of racial and ethnic communities to environmental hazards, pollutants, and adverse conditions. This can manifest through the placement of hazardous waste sites, landfills, factories, and other sources of pollution in or near these communities, as well as the lack of access to clean air, water, and other natural resources. Additionally, it includes the neglect of these communities in environmental policy-making and enforcement, often resulting in poorer health outcomes, reduced quality of life, and greater vulnerability to environmental disasters.

Key Terms and Glossary

EQUITY
Equity is an outcome whereby you can't tell the difference in critical markers of health, well-being, and wealth by race or ethnicity, and a process whereby we explicitly value the voices of people of color, low income, and other communities who identify solutions to achieve that outcome.

GREENHOUSE GAS (GHG)
Gases in the atmosphere (water vapor, carbon dioxide, nitrous oxide, and methane, etc.) that trap energy from the sun that would otherwise escape back into space

HAZARD MITIGATION
Any action taken to reduce or eliminate the long-term risk to human life and property from hazards. The term is sometimes used in a stricter sense to mean cost-effective measures to reduce the potential for damage to a facility or facilities from a disaster or incident

MITIGATION
Capabilities necessary to reduce loss of life and property by lessening the impact of disasters. Mitigation capabilities include, but are not limited to, community-wide risk reduction projects; efforts to improve the resilience of critical infrastructure and key resource lifelines; risk reduction for specific vulnerabilities from natural hazards or acts of terrorism; and initiatives to reduce future risks after a disaster has occurred.

NATURE-BASED SOLUTIONS
NBS are strategies that utilize natural processes and ecosystem services to address societal challenges such as climate change, food and water security, disaster risk reduction, and biodiversity loss. NBS aim to deliver environmental, social, and economic benefits by working with and enhancing nature, rather than relying solely on engineered or technological approaches.

RESILIENCE
The ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies.

I. Introduction

Introduction

Sonoma County's communities and natural and working lands are already impacted by the effects of climate change. By making strategic investments County operations, infrastructure, and natural and working lands will become more resilient and reduce risks from heat, drought, wildfires, extreme weather, flooding, and sea level rise. (CRLS, 2022)

In 2019, the County of Sonoma Board of Supervisors declared a Climate Emergency in Sonoma County. The Board's Five-Year Strategic Plan, adopted in 2021, includes a Climate Action and Resiliency pillar that has an overarching goal to make Sonoma County carbon neutral by 2030. The pillar sets goals to 1) continue to invest in wildfire preparedness and resiliency; 2) continue to invest in community resilience and carbon neutrality; make all County facilities carbon free, zero waste and resilient; 3) maximize sustainability and emissions reductions in all County fleet vehicles; and 4) maximize opportunities for mitigation of climate change and adaptation through land conservation work and land use policies. The Board has dedicated considerable resources to advance these goals, and the County's departments and associated agencies have leveraged those resources with significant grants and other outside funding. More than $100 million is supporting the County's climate resilience efforts.

This Climate Plan implements the Strategic Plan pillar by setting out the actions needed to reduce or mitigate the County's operational greenhouse gas (GHG) emissions and increase the resilience of County facilities and operations to the impacts of climate change. It also provides a road map to engage communities in Sonoma County, with an emphasis on unincorporated and climate justice communities, to identify the most impactful actions the County can undertake to support community progress to a carbon neutral and resilient future. Costs and benefits associated with the Climate Plan are presented along with a funding and financing strategy.

II. Sonoma County

Sonoma County

The Place

Sonoma County, comprising over 1.1 million acres, hosts a diverse landscape with coastal geography, varied topography, and a range of microclimates. Collectively, the landscape supports an array of ecological zones, plant, and animal species, working lands, waters, and communities. (CRLS, 2022)

According to the U.S. Census Bureau, in 2022, Sonoma County had a population of 488,863 people with a median age of 43.2. There were 204,742 total housing units and 194,698 total households. The median property value was $748,500, and the homeownership rate was 61.6%. Most people drove alone to work, and the average commute time was 25.4 minutes. The average car ownership in Sonoma County was 2 cars per household. There are nine incorporated cities in Sonoma County: Santa Rosa (2012 population of 168,841), Petaluma (58,165), Rohnert Park (40,846), Windsor (27,003), Healdsburg (11,442), Sonoma (10,665), Cloverdale (8,629), Cotati (7,276), and Sebastopol (7,405). The unincorporated areas of Sonoma County include small communities as well as dispersed rural homes with an aggregated population in 2012 of 146,739. (Sonoma County Demographics, 2020)

Ethnic groups in Sonoma County include non-Hispanic White (60.9%), Hispanic or Latino (28.9%), Asian & Pacific Islands (5.0%), Native American/First Nations Peoples (1.8%), and Black or African American (1.6%). About 91.5% of Sonoma County residents are U.S. citizens. (U.S. Census Bureau, 2022) It is important to note that these numbers may not accurately reflect all community member demographics in Sonoma County.

The American Human Development Index (HDI) is an index measure used to quantify well-being, access to education, life expectancy, and earnings indicators. The index is on a scale of 0 to 10. The "2021 Portrait of Sonoma County HDI" provides an estimate of community well-being, reveal relative inequalities between groups and allow for tracking changes over time. Sonoma County's HDI score is 6.19 out of a possible total of 10, up from 5.42 in 2012. This score is well above the United States' HDI score of 5.33 and the California HDI score of 5.85. Sonoma's HDI lead over California's is primarily due to high Health and Education Index scores. Overall, Sonoma residents can expect to live 82.2 years—one year longer than the statewide life expectancy—and attain high school, college, and graduate school degrees at higher rates than is typical in California. (Lewis et al., 2022)

There is inequity in earnings in Sonoma County and standard of living, with almost 9% of residents living below the poverty threshold in 2022. While the median household income in Sonoma County was $96,830 in 2022, individual median earnings were highest for White males ($52,989) followed by Black males ($44,958), and Asian males ($38,927). Whereas Black women earned significantly less ($31,380) than White males, or 40% of a White male's earnings. (Sonoma County Economic Indicators Report, 2023)

The 2023 Sonoma County Local Economic Indicators Report provides a glimpse at other regional comparisons, as Sonoma County fares better than national and state averages when it comes to unemployment rates. Unemployment has been declining since the pandemic high rate of 8.0%. As of 2022, the economy of Sonoma County, employed 248,000 people. In 2022, Sonoma County's annual unemployment rate was measured at 3.1%. This is in part due to business locations (1,900) and jobs (more than

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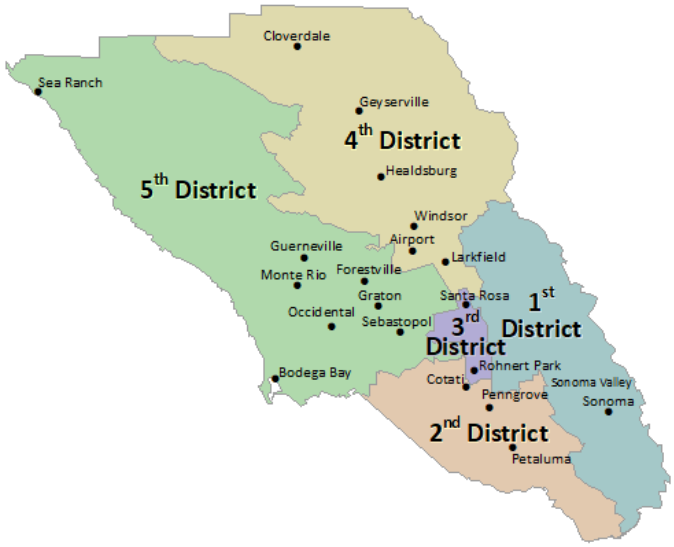
62,000) added to the region in 2022. Sonoma County's Gross Regional Product continues to grow in part due to manufacturing contributing 18.1%, followed by other key sectors such as Healthcare & Social Assistance (11.6%), Government (9.9%), Retail Trade (7.8%), and Construction (7.4%). Health Care and Social Assistance experienced the largest growth compared to other industries in Sonoma County following the pandemic. Other influential industries in Sonoma County include local agriculture, the wine industry, and tourism and hospitality. This also aligns with employment statistics. Government jobs represent 11.7% with 28,275 jobs, followed by Manufacturing (10.3%) with 24,941 jobs, Retail (10%) with 23,081 jobs, and Accommodation and Food Services (9.4%) with 22,668 jobs. (SCLEIR, 2023)

County of Sonoma

The County of Sonoma (County) has five supervisory districts. The 1st Supervisorial District includes the eastern portion of Santa Rosa and the Sonoma Valley south to San Pablo Bay. Population is concentrated in the City of Santa Rosa (Bennett Valley, Rincon Valley & the community of Oakmont), the City of Sonoma and the adjacent unincorporated communities of Kenwood, Agua Caliente, Glen Ellen, El Verano, Boyes Hot Springs, Schellville & Vineburg. The 2nd Supervisorial District includes all of the cities of Petaluma and Cotati and a portion of Rohnert Park, as well as the unincorporated communities of Penngrove, Two Rock, Bloomfield, and a portion of the unincorporated community south of Sebastopol; it encompasses the Petaluma River valley as well as a large portion of the San Pablo Bay frontage. The 3rd Supervisorial District includes central Santa Rosa, the Roseland and Moorland areas of Santa Rosa, and most of Rohnert Park east of Highway 101. The 4th Supervisorial District includes areas of northern Santa Rosa, northeast Fulton, the Larkfield-Wikiup-Mark West area, northeast Fulton, the Town of Windsor, the City of Healdsburg, the community of Geyserville, and the City of Cloverdale. The 5th Supervisorial District encompasses the west county, including the entire Sonoma County coast, the lower Russian River area, Sebastopol, and portions of northwest and southwest Santa Rosa. The district includes the coastal towns of Bodega Bay, Jenner, and Sea Ranch, and the Russian River valley towns of Forestville and Guerneville. (Supervisorial Districts, n.d.)

With 4,502 employees, the County is the largest employer in Sonoma County. The County maintains 1,370 miles of roads supporting about 2.4 million vehicle miles traveled each day, and 328 bridges serving over 800,000 trips per day on average. Most County offices are in Santa Rosa, with others throughout Sonoma County. The County also owns over 18,000 acres of land, primarily in Regional Parks. The County budget for FY 2024-25 is $2.46 billion, of which about 17.5%, or $430 million is General Fund.

Figure 1: Districts in Sonoma County



III. A Changing Climate

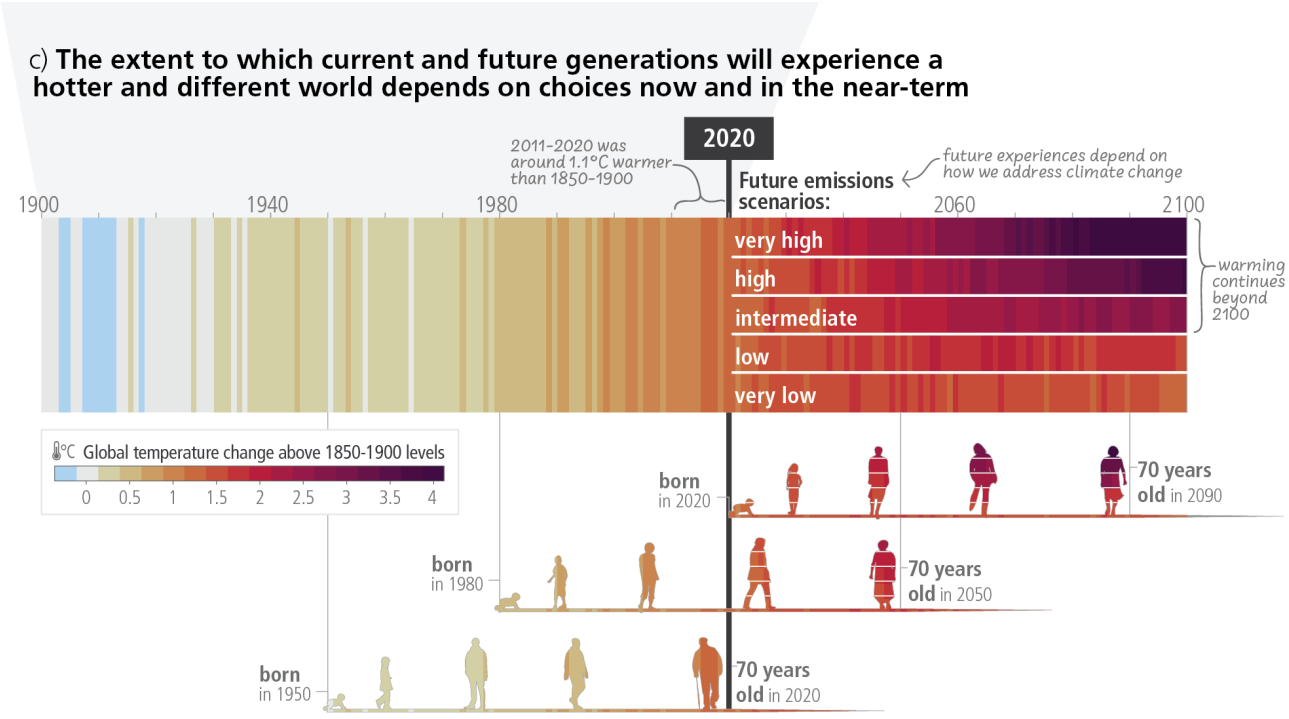
A Changing Climate

The Changing Global Climate

In 2023 the Intergovernmental Panel on Climate Change (IPCC), which includes more than 1,300 scientists from the United States and other countries, released its Synthesis Report for the "Sixth Assessment Report on Climate Change". The report summarizes the findings of more than 66,000 peer-reviewed scientific studies of climate change. The report found that human activities have unequivocally caused global warming, with the average surface temperature of the earth having increased by 1.1 °C (just under 2 °F) since the pre-industrial era. (IPCC, 2021) Findings indicate that in 2019, concentrations of carbon dioxide (CO_2) were higher than at any time in at least 2 million years, and concentrations of methane and nitrous oxide were higher than at any time in at least 800,000 years. Global efforts may be responsible for the observed slowing in the rate at which they are increasing but have not stopped the rise in emissions (IPCC, 2021).

The changing climate has led to losses and damages to nature and people, with vulnerable communities (who have historically made the smallest contribution to climate change) disproportionately affected (IPCC, 2021). “Impacts on some ecosystems are approaching a level beyond which they will not be reversible, such as the effect of retreating glaciers on freshwater systems and supplies, and the thawing of permafrost in Arctic ecosystems.

Figure 2: Changes in Global Temperature 1900-2100



Observed (1900–2020) and projected (2021–2100) changes in global surface temperature (relative to 1850-1900), which are linked to changes in climate conditions and impacts, illustrate how the climate has already changed and will change along the lifespan of three representative generations (born in 1950, 1980 and 2020). Future projections (2021–2100) of changes in global surface temperature are shown for very low, low, intermediate, high, and very high GHG emissions scenarios. Changes in annual global surface temperatures are presented as ‘climate stripes’, with future projections showing the human-caused long-term trends and continuing modulation by natural variability (represented here using observed levels of past natural variability). Colors on the generational icons correspond to the global surface temperature stripes for each year, with segments on future icons differentiating possible future experiences. (IPCC Sixth Assessment Report)

A Changing Climate

If global goals to reduce GHG emissions are met, global temperatures will likely increase by 1.5 °C, or 2.7 °F in the near term (IPCC, 2021). The report finds that in the highest emissions scenario evaluated, average global temperatures would increase by more than 4.4°C, or 7.9 °F. While the report considers average global temperatures, we know from recent years that climate change presents itself differently in each region. Climate change impacts are seen most acutely in extreme weather events.

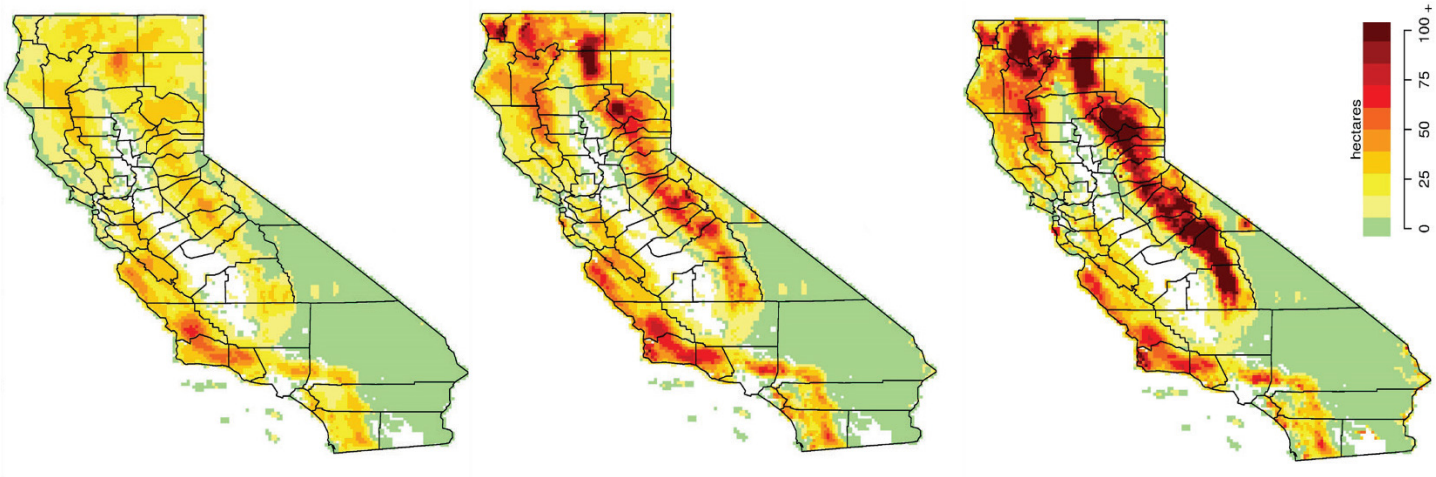
The Changing Climate in California

California's "Fourth Assessment of Climate Change" reported that annual temperature increases align with the national average. (Bedsworth et. al., 2019) The daily maximum average temperature, an indicator of extreme temperature shifts, is expected to be higher, rising to 4.4°F–5.8°F by mid-century and 5.6°F–8.8°F by late century. (Bedsworth et. al., 2018)

California has a highly variable precipitation regime. Because of this and the extreme weather events due to climate change, it is difficult to predict future precipitation based on historic data. Recently, California has experienced storms of short duration but high intensity. This sort of precipitation regime can in turn cause severe drought and increase the duration of drought.

Over the past 8 years, one of the largest sources of GHG emissions from California's landscape is from catastrophic wildfire, due to more area burning at a higher intensity. "The 2020 California wildfire year was characterized by record-setting wildfires... nearly 10,000 fires had burned over 4.2 million acres, more than 4% of the state's roughly 100 million acres of land". (2020 Incident Archive, n.d.) California's "Fourth Climate Change Assessment" projected an increase in average area burned (+77 % by 2050), and an increase in the frequency (+50%) of large fires (exceeding 25,000 acres) by 2100, as shown in Figure 3 below. (Ackerly et al., 2019)

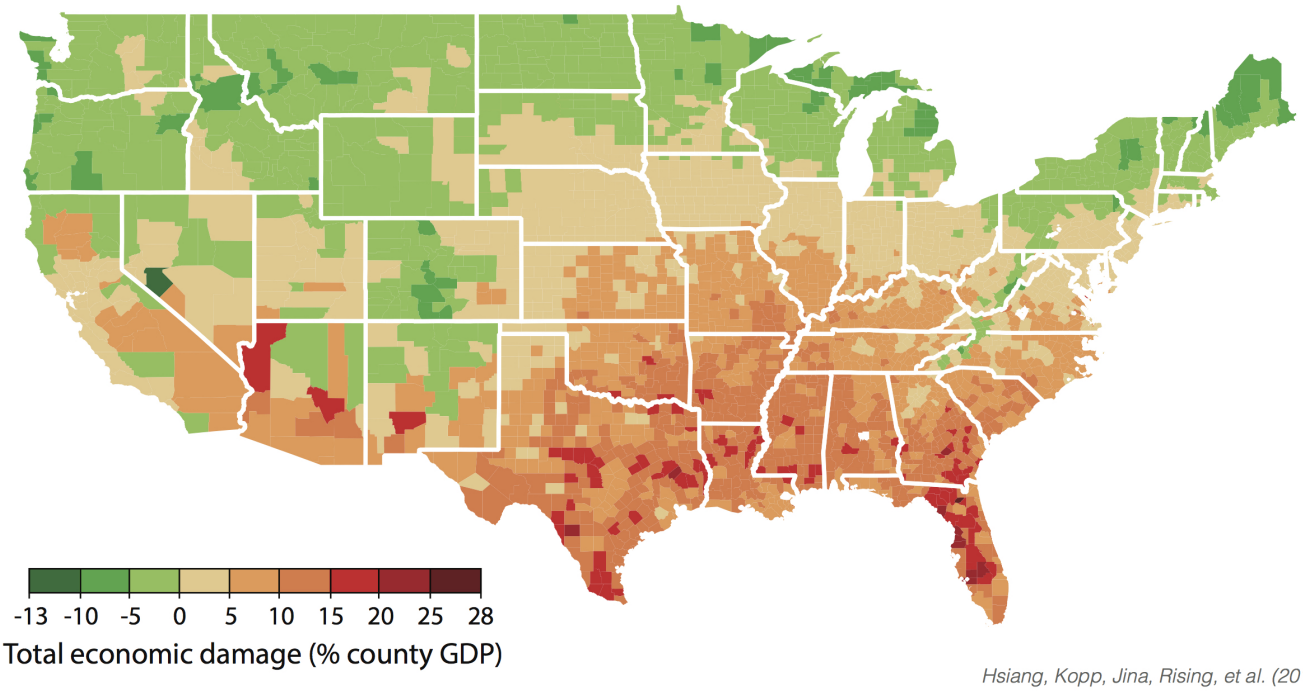
Figure 3: Projected Average Annual Area Burned by Wildfire



Average annual area in hectares burned using four GCMs and 30-year periods for RCP 8.5, mid-range population growth. (a) 1961-1990; (b) 2035–2064; (c) 2070–2099. Source: Westerling, 2018

A Changing Climate

Figure 4: County-level Economic Damages from Climate Change, 2080-2099



Hsiang, Kopp, Jina, Rising, et al. (2017)

County-level annual damages in median scenario for climate during 2080-2099 under business-as-usual emissions trajectory (RCP8.5). Negative damages indicate economic benefits. Map corresponds with Figure 2I in main article. (Hsiang, et. al, 2017)

California has approximately 3,427 miles of coastline subject to sea level rise, which is accelerating. (V.W., et al., 2022) Best available science predicts that California's statewide averaged sea levels are expected to rise between 1.6 ft - 6.6 ft by 2100. (CA Sea Level Rise Guidance, 2024) Rising sea levels may also impact coastal groundwater wells by causing salt and raised groundwater tables, adding to increased flooding. Finally, rising water levels and increased storm activity will increase coastal erosion, impacting beaches, cliffs, bluffs, dunes, and other coastal landforms throughout the state. A projected 20-60% of beaches could be lost by the end of the century if adaptation actions are not implemented. (California Sea Level Rise Guidance, 2024).

Climate change is considered the greatest global public health threat of the 21st century and affects virtually all aspects of health and well-being, including access to clean air, food, water, shelter, and physical safety. Examples include injury, illness, and death from wildfires and wildfire smoke, extreme heat, drought, landslides, extreme weather events, vector-borne diseases, and associated mental health impacts. Climate-driven disasters directly result in injuries, deaths, and displacement, but also loss of livelihoods, businesses, crops, and homes - contributing to unemployment, poverty, and the housing crisis. Emerging findings for California show that direct climate impact costs by the middle of this century are dominated by human mortality, damages to coastal properties, and the potential for droughts and damaging floods. The costs have been estimated at tens of billions of dollars. (Bedsworth et. al., 2019)

A Changing Climate

Sonoma County's Changing Climate

Sonoma County has been experiencing an increase in temperature since the late 1990s, and further increases are expected. Average annual temperatures have increased in Sonoma County by 2.7 degrees since 1900. The average daily maximum is expected to increase by 3 degrees Fahrenheit in the 2040s and nearly 5 degrees Fahrenheit in the 2060s (as compared to the observed baseline, according to the U.S. Federal Government, 2021). Moving forward, average summer high temperatures and the number of high-heat days (over 93 degrees Fahrenheit) are also expected to rise. Higher temperatures will result in increased rates of evapotranspiration, drying out plants and soil and increasing the likelihood of drought conditions. Winter temperatures are projected to increase over the coming century, and the number of nights where temperatures reach freezing is projected to decline.

California's Fourth Climate Change Assessment San Francisco Region Report notes that several studies suggest that coastal fog occurs less frequently in the San Francisco Bay region, and that the frequency may continue to decrease. Even with substantial global efforts to reduce greenhouse gas emissions, the Bay Area will likely see a significant temperature increase by mid-century. By the end of the century, the difference between lower and higher global emissions scenarios will make a major difference in how much Bay Area temperatures rise. Precipitation in the Bay Area will continue to exhibit high year-to-year variability - "booms and busts" - with very wet and very dry years. The Bay Area's largest winter storms will likely become more intense, and potentially more damaging, in the coming decades.

Key Local Climate Hazards:
There are five key climate hazards that will increasingly challenge Sonoma County. These include: (1) Rising average temperatures and extreme heat events, (2) increasing wildfires, (3) increasing drought, (4) extreme precipitation and flooding, and (5) sea level rise, inundation, and coastal erosion. Each of these hazards is discussed below.

Temperature & Heat:
The 2021 Sonoma County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP, or Hazard Plan) reported that average monthly maximum temperatures in Sonoma County have increased an estimated 2.7° F since 1900 (MJHMP, 2021). During this time average maximum temperatures have increased approximately 1.0 °F while average minimum temperatures have increased approximately 1.7 °F. The Hazard Plan includes projections for a "high-emissions" scenario show average maximum temperatures would rise by up to 11.7 °F, and average minimum temperatures would rise by 8.4 °F by the end of the century. (MJHMP, 2021)

Higher summer temperatures and more high-heat days create major public health concerns. When air conditioning is available, the high demand places strain on the electrical grid, impacting grid reliability and the cost of electricity, which in turn can amplify impacts on lower income and climate justice communities. Increased temperatures also lead to higher concentrations of ground-level ozone which can aggravate chronic respiratory illnesses. (MJHMP, 2021)

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People who are adapted to California's traditionally dry daytime heat and nighttime cooling are less able to recover from extreme heat, especially when humidity levels are high. The frequency, intensity, and duration of extreme heat events in Sonoma County are projected to increase due to climate change. In addition, heat waves have become increasingly more humid since the 1980s. The county experienced its largest heat wave in over 50 years during the statewide heat wave in July 2006. While typical summer temperatures in California contribute to the death of an average of 20 people per year, the 2006 heat wave caused the death of at least 140 people statewide over a 13-day period. During that time, many counties and cities saw an increase in emergency department visits for heat-related illnesses. (CRLS, 2022; Cornwall et. al., 2014)

Natural and working lands are already experiencing the impacts of high-heat events, such as reduced water quality, heat-related death of wildlife and stress on plant life, and reduced groundwater runoff. For example, during the summer and spring of 2021, Santa Rosa and other towns in the county experienced record-breaking daily high temperatures, and harmful algal blooms were detected on the Russian River, Salmon Creek, and Gualala River. In the agricultural sector, heat waves and subsequent heat stress on livestock led to declines in dairy and beef production. Increasing average temperatures also affect cultivated crops and ecosystems by disrupting dormancy, blooming, and pollination, and even changing where they can survive. Insects rely on the temperature of their environment to regulate their own body temperature, so any increases in temperature will change insect range, behavior, and populations. Wildlands and agricultural lands are expected to be impacted by an anticipated increase in pests that will no longer die off annually due to winter weather, a process known as overwintering.

Wildfire

A wildfire is an unplanned, unwanted, uncontrolled fire in an area of combustible vegetation. Wildfires typically start in rural areas but can burn into urban areas. Wildfires can generate a range of secondary effects, which in some cases may cause more widespread and prolonged damage than the fire itself. Fires can cause direct economic losses in the reduction of harvestable timber and indirect economic losses in reduced tourism. Wildfires cause the contamination of reservoirs, destroy transmission lines and contribute to flooding. They strip slopes of vegetation, exposing them to greater amounts of runoff. This in turn can weaken soils and cause failures on slopes. Major landslides can occur several years after a wildfire. Most wildfires burn hot and for long durations that can bake soils, especially those high in clay content, thus increasing the imperviousness of the ground. This increases the runoff generated by storm events, thus increasing the chance of flooding. These secondary impacts of wildfire can also affect the quantity and quality of water, which can pose a significant challenge to drinking water utilities.

A history of aggressive fire suppression in the American West has led to a buildup of highly flammable, dense fuels across the western landscape that can cause or contribute to high-intensity wildfires. Prolonged periods of extreme drought in California coupled with increasing temperatures have also led to increased frequency and severity of wildfires. Changes in land use and development in Sonoma County, including development in the wildland-urban interface and low-density development patterns, have led to loss of life, property, and infrastructure due to fire. Since 2015, three of the top ten most destructive wildfires in California history in terms of number of structures burned occurred in Sonoma County.

A Changing Climate

Expected changes in the climate in Northern California suggest that a hotter, drier climate could increase the flammability of vegetation in northern California and promote up to a 90 percent increase in large wildfires by the end of the century. A hotter, wetter climate would also lead to an increase of wildfires in northern California, but to a lesser extent—about a 40 percent increase by century's end.

Virtually all of Sonoma County is at risk to wildfire. Key risks include: extensive building in wildland urban interface/intermix (WUI) areas; lack of vegetation management near homes and in wildland areas; structures that are not built or retrofitted with ignition-resistant building materials designed to increase resistance to a wildfire's heat and embers; and a significant likelihood of high wind events during the dry fall months. Common fire causes in Sonoma County include electrical transmission line failures, equipment use, vehicle fires spreading into wildlands, and accidental starts from warming or debris fires. Due to heavy fuel loading, when fires start during high wind conditions, rapid rates of wildfire spread can result.

As part of the Hazard Plan a Wildfire Hazard Index was developed to quantify the relative wildfire hazard within Sonoma County. The Wildfire Hazard Index predicts the likelihood that a wildfire will occur, and is based on five key factors: the predicted flame length; the likelihood of extreme fire weather; the proximity of development, like housing; the location of electrical transmission lines, a key ignition source; and how difficult fire suppression is expected to be during a fire.

The map of the Wildfire Hazard Index shows highest likelihood that wildfires will occur in areas on the hills and mountains of the Coast and Mayacamas ranges. Lower-hazard areas line the Pacific coast, San Pablo Bay, and the Sonoma valley. Is important to keep in mind that the Wildfire Hazard Index does not show potential harm that a wildfire would cause if it occurred. While a significant portion of the landscape in Sonoma County shows a very high likelihood that a wildfire will occur, 1% of structures are in very high hazard areas, 2% are in high hazard areas, and 97% of the structures in Sonoma County are in areas where the risk of wildfires occurring is moderate.

The Sonoma County Community Wildfire Protection Plan (CWPP) update in 2022 developed a prediction of the relative risk of harm to areas in Sonoma County from a wildfire if it occurred. This Wildfire Risk Index used the Wildfire Hazard Index along with (1) the ember load index, (2) the density of structures, and (3) a ranking of the road network.

Drought

Drought is a reoccurring feature of California's climate, with severe droughts recorded five times in the past 60 years. The most recent drought in California set several state records including the lowest precipitation in three consecutive years, lowest water allocations from the state and federal water sources, and high average temperatures. (MJHMP, 2021) Climate change has led to more frequent, intense, and prolonged droughts in Sonoma County, and these conditions are anticipated to continue in the coming decades. The entire population of the county is vulnerable to drought events.

Drought can affect people's health and safety, including health problems related to low water flows, poor water quality, or dust. Droughts can also lead to loss of human life. Other possible impacts include recreational risks; effects on air quality; diminished living conditions related to energy, air quality, and hygiene; compromised food and nutrition; and increased incidence of illness and disease.

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Principal water sources in Sonoma County include the Russian River, groundwater and diversions from small streams and springs and numerous reservoirs. This water is utilized for many beneficial uses including residential, commercial, industrial, agricultural, and environmental use. (MJHMP, 2021) About 73 % of Sonoma County residents live in cities served by public water systems. (MJHMP, 2021) Most residents of the unincorporated rural areas are outside urban service areas and depend on individual onsite wells or small-scale shared water supply systems making them vulnerable to water shortages. (MJHMP, 2021). In Mid-October 2021, Lake Sonoma and Lake Mendocino, the two major reservoirs supplying the Russian River watershed, both experienced significantly reduced supply. Lake Sonoma was 43% full and Lake Mendocino was less than 16% full. (Current Water Supply Levels, n.d.)

Modeling with CalAdapt for the Hazard Plan projected warmer temperatures are expected to increase the rate water evaporates from bodies of water, further decreasing the amount of available water (MJHMP, 2021). All model predictions agree that precipitation will be more variable, with unusual amounts of rain at unusual times, including intense rain events interspersed with longer periods of low or no rain, contributing to increased drought. (MJHMP, 2021) With longer periods when soils are drier and less rain running off into reservoirs there will be less freshwater stored for use, less groundwater, and an increased water deficit in Sonoma County. Prolonged conditions will reduce local water supply, stress regional supplies, and limit the availability of statewide water sources.

Extreme weather:
The Hazard Plan defines “severe weather” as any “dangerous meteorological phenomena with the potential to cause damage, serious social disruption, or loss of human life”. In addition to more intense versions of more common severe weather, Sonoma County is now seeing snow events where the snow accumulates and requires removal in some areas, cyclones, and hurricane force winds. While these events are still uncommon, climate projections suggest their frequency will increase. Extreme precipitation can result in flooding, and can also cause mud and debris flows, and large scale landslides if the ground is over-saturated. This is especially true in areas previously burned by wildfires if the vegetation has not recovered.

Flooding:
The Hazard Plan identifies four types of natural flood events that pertain to Sonoma County and are impacted by climate change: riverine flooding, urban flooding, coastal flooding, and flooding from sea level rise. (MJHMP, 2021) Urban flooding results from a lack of capacity of stormwater conveyance, which can result when water inundates systems at unexpectedly high volumes. Stormwater conveyance systems are designed to convey rainfall runoff to creeks, streams, and rivers. However, when drainage facilities are overwhelmed, impermeable nearby surfaces, such as roads and transportation corridors can act as conveyance facilities. (MJHMP, 2021)

The extent of riverine and coastal flooding is determined by the capacity of adjacent floodplains. However, if there is not sufficient floodplain, or if infrastructure is within the floodplain, water flows can cause severe damage. Riverine floods occur in winter months and several communities have experienced

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considerable flooding. In 2019, flooding caused an estimated $155 million in damages across the county. (CRLS, 2022) Recent floods of the Petaluma fiver in 2021 and 2023 showcased the vulnerability of the watershed to flooding. (Upper Petaluma River Watershed Flood Control Project, 2024)

Coastal flooding along the Pacific coast is often associated with the simultaneous occurrence of very high tides, large waves, and storm swells during the winter. The result can be waves that extend further inland, causing damage to development. Rising seas increase the risk of coastal flooding, storm surge inundation, bluff and coastal erosion, shoreline retreat, saltwater intrusion, and wetland loss or migration. (Sonoma County Local Coastal Plan, 2023)

Storms and sea level rise are causing California coastal bluffs, beaches, and dunes to retreat at rates from a few inches to several feet per year and are predicted to retreat more than 100 feet by 2100. (MJHMP, 2021) Coastal bluff erosion results in rapid bluff erosion around the road due to wave action, sea level rise, groundwater intrusion, and runoff from land uses. For example, in 2023 Caltrans completed a $26 million project to realign Highway 1 near Gleason Beach and move it eastward to avoid bluff erosion. (CRLS, 2022)

Sea Level Rise & Coastal Impacts:
Sonoma County's Ocean Coast regularly experiences erosion, flooding, and significant storm events, and sea level rise would exacerbate these processes. Sea level at the San Francisco tide gauge has risen 8 inches over the past century. (MJHMP, 2021) National Oceanic and Atmospheric Administration predicts up to two feet of sea level rise as soon as 2060. (Adapting to Rising Tides, 2020) Given current trends in GHG emissions and increasing global temperatures, sea level rise is expected to accelerate in the coming decades.

Bodega Bay and Jenner are the communities most at risk to the impacts of sea level rise. (MJHMP, 2021) Sonoma County's Bodega Bay Focused Sea Level Rise Vulnerability Assessment finds that, in 2100 under the worst-case scenario, permanent inundation from sea level rise would affect 20% to 73% of coastal wetlands, almost 100% of Westside Regional Park and 36% of Doran Beach Regional Park, 26% to 39% of County roads, 23% of the Links at Bodega Harbor Golf Course, and less than 1% of the U.C. Davis Bodega Marine Laboratory. (Sonoma County Local Coastal Plan, 2023)

IV. Regional & State Climate Resilience

Regional & State Climate Resilience

In Sonoma County, and in California as a whole, there has been important progress towards climate resilience. Key plans by local, regional, and state agencies influenced the development of this Climate Plan and are summarized below.

Countywide

Regional Climate Protection Authority:
The Sonoma County Regional Climate Protection Authority (RCPA) was formed in 2009 through locally sponsored State legislation to coordinate countywide climate protection efforts among Sonoma County's nine incorporated jurisdictions and multiple countywide agencies. It has three main areas of focus: decarbonization, carbon sequestration, and resilience. The RCPA is focused on securing grant funding for GHG reducing programs and projects as well as leading countywide climate planning efforts. In addition, data collection, public information and education are significant elements of its climate protection effort. In September 2019, the RCPA adopted a resolution declaring a climate emergency in Sonoma County and began work on the Sonoma Climate Mobilization Strategy to guide climate actions through 2030.

Sonoma County Transportation Authority:
The Sonoma County Transportation Authority (SCTA) was created in 1990 and is governed by a Board of Directors representing each of the nine cities and the Sonoma County Board of Supervisors. The SCTA acts as the countywide planning and fund programming agency for transportation and performs a variety of important functions related to advocacy, project management, planning, finance, and research. The SCTA approved the comprehensive transportation plan, "Moving Forward 2050". To support local implementation of the plan, SCTA developed Shift Sonoma County, a project to shift transportation choices away from single occupant vehicles towards cleaner, healthier, and more efficient modes of transportation.

San Francisco Bay Area:
The southern portion of Sonoma County is part of the San Francisco Bay regional planning area. Key climate resilience planning efforts include:

Bay Adapt Regional Strategy for a Rising Bay, has multiple components: a set of guidelines for sea level rise adaptation planning, shoreline resiliency plans throughout the Bay, and an online mapping tool that knits together the guidelines and adaptation strategies.

Bay Area Regional Priority Climate Action Plan, includes a GHG emissions inventory the Bay Area region for 2022, and priority GHG reduction measures for two sectors: passenger vehicles and residential buildings.

Plan Bay Area 2050, is comprised of 35 strategies across the elements of housing, the economy, transportation, and the environment, founded on multiple cycles of meticulous analysis and rigorous public engagement.

Resilient Bay Area, is working with partners and stakeholders from across the Bay Area region to develop a Regional Multi-Hazard Adaptation Plan that supports the deployment of effective planning approaches and equitable, multi-benefit climate adaptation projects.

North Coast Region
The northern portion of Sonoma County is part of the North Coast region. Due to its more sparsely populated profile, the region does not engage is the same degree of integrated regional planning that the San Francisco Bay region does. The North Coast Resource Partnership engages in multi-objective integrated planning to achieve

Regional & State Climate Resilience

its regional goals and to guide local project implementation. The Partnership developed the North Coast Resilience Plan, which represents a shared vision for watershed, fireshed, forest, and community resilience in the North Coast region of California. The Plan is guided by and aligned with the goals and objectives of Tribal, federal, state, regional, and local plans. It was created with input and guidance from hundreds of experts, partners, and community members, using the best available data and information, including Indigenous science and Traditional Ecological Knowledge, regional remote sensing, and local knowledge. The Plan includes a comprehensive list of Strategies that articulate a shared regional vision, and Solutions and Projects to implement this vision. Guided by Indigenous knowledge, Good Fire is a critical tool for revitalizing and enhancing the resilience of forests, watersheds, and communities.

State of California

The State of California has established significant climate resilience programs and funding opportunities that reduce GHG emissions, directly through performance standards for GHG-emitting sources, and indirectly through programs that improve energy and fuel efficiency, and/or reduce waste. State programs also increase carbon storage and conservation and promote climate resilience in the natural landscape. These programs form the backdrop against which regional and local actions occur. Key State programs include:

Cap and Trade Program, a system in which power plants, refineries, and other large facilities buy and sell greenhouse gas emissions allowances in order to meet overall emissions limitations set by the California Air Resources Board (CARB).

Climate Change Scoping Plan to Achieve Carbon Neutrality, California's comprehensive plan outlining the state's approach to achieving its greenhouse gas emission reduction targets, including SB 32's goal of reducing emissions 40% below 1990 levels by 2030, and achieving carbon neutrality by 2045.

Renewables Portfolio Standard, California's statewide requirement that electricity providers procure energy from certain renewable sources—33% of total electricity by 2020, and 60% of total electricity by 2030.

Low Carbon Fuel Standard, a program requiring transportation fuel producers to reduce the greenhouse gas emissions intensity of their products, from extraction to refining and end use.

Advanced Clean Cars Program, which supports Governor Newsom's Executive Order (N-79-20) goal that 100% of in-state sales of new passenger cars and trucks will be zero emission by 2035 by reducing greenhouse gas and smog-causing pollutant emissions from California cars, including vehicle performance standards and manufacturer requirements.

Advanced Clean Fleets Program, which supports Governor Newsom's Executive Order (N-79-20) goal that 100% of medium and heavy-duty vehicles will zero emission by 2045, by requiring fleets that are well-suited for electrification to reduce emissions through requirements to phase-in the use of Zero-Emission Vehicles (ZEVs) for targeted fleets, and requirements that manufacturers only manufacture ZEV trucks starting in the 2036 model year.

Regional & State Climate Resilience

Innovative Clean Transit Program, that requires all public transit agencies to gradually reduce fleet vehicle tailpipe emissions and encourages them to provide innovative first and last-mile connectivity and improved mobility for transit riders.

Green Building Standards, a program to reduce the energy use of California buildings, including energy efficiency standards for new construction and retrofits for existing buildings.

Greenhouse Gas Reduction Fund, a program allocating proceeds from cap-and-trade auctions to support investments and projects that reduce greenhouse gas emissions throughout California.

Emissions performance standards for In-Use Off-Road Engines and portable equipment, and zero emission requirements for Small Off-Road Engines.

Organic Waste Recovery (SB 1383, Lara), requirements to divert 75% of organic waste from the landfill waste stream to composting, and rescue at least 20% of currently disposed surplus food, by 2025.

Natural and Working Lands Climate Smart Strategy, which identifies priority nature-based solutions to deliver climate benefits across all of California's diverse landscapes and guides State programs and investments.

California Climate Adaptation Strategy, that links together the state's existing and planned climate adaptation efforts, organized around outcome-based priorities, enabling a coordinated, integrated approach to achieve California's six climate resilience priorities and build climate resilience.

N**ature-based Solutions Climate Targets**, adopted pursuant to AB 1757 (C. Garcia, 2022), include nature-based solutions climate targets for 2030, 2038, and 2045 that contribute to California's goals of achieving carbon neutrality no later than 2045 and protecting Californians from the climate crisis.

California Forest Carbon Plan, which lays out recommended actions to achieve healthy and resilient forests, the state's the largest land-based carbon stock, based on current understanding about California's forests and how climate change will evolve in California.

Wildfire and Forest Resilience Action Plan, to strategically accelerate efforts to: restore the health and resilience of California forests, grasslands and natural places; improve the fire safety of communities; and sustain the economic vitality of rural forested areas.

Pathways to 30x30, which supports Governor Newsom's Executive Order (N-82-20), committing California to a goal of conserving 30% of its lands and coastal waters by 2030 (30x30).

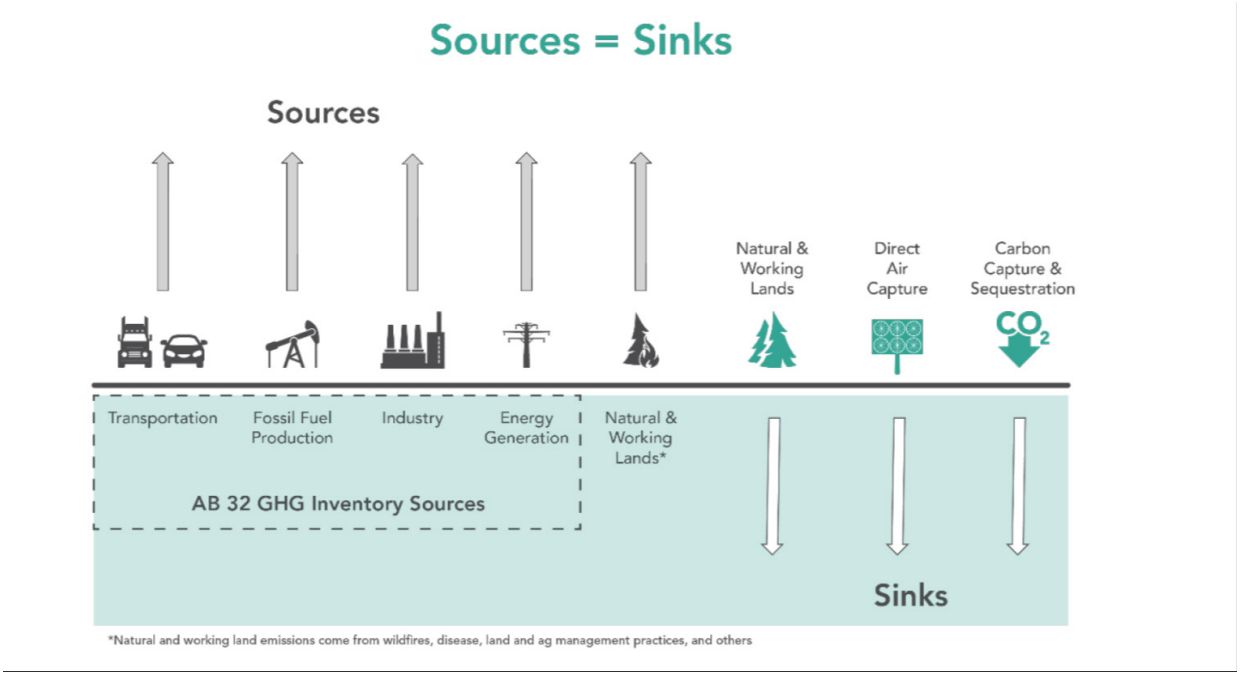
Strategic Plan to Protect California's Coast and Ocean 2020-2025, provides a roadmap for protecting and adapting these resources in the face of sea-level rise, ocean acidification and hypoxia, ocean warming, and other climate-driven stressors.

Water Resilience Portfolio, a roadmap to building water resilience through a diverse set of actions that will prepare California's water systems to support our growing state in a warmer, more variable climate.

V. Sonoma County Carbon Inventory

Sonoma County Carbon Inventory

Figure 5: Explanation of Carbon Neutrality



Carbon neutrality balances the net GHG emissions from all sources and sinks. (California Air Resources Board Draft 2022 Scoping Plan Update)

GHG Emissions Inventories:
A GHG emissions inventory calculates the quantity of heat-trapping gases released by human sources within a defined boundary over the course of a year. GHG inventories typically consider emissions associated with building energy use, transportation, waste disposal, water use (moving water through pipes) and wastewater treatment, and other more specific sources of emissions, like refrigerant systems. There are many GHGs but the most common is carbon dioxide, or CO2. Refrigerants can be thousands of times more potent at warming than CO2, but some have the same global warming potential. Inventories of GHG translate all GHG emissions into a CO2 "equivalent" using their global warming potential, and this is reflected as quantities of CO2e.

County Operations GHG Inventory:
GHG inventories were completed for the County's operations in 2017, 2019 and 2021 to provide a trending analysis across several years, including through the COVID-19 pandemic, which impacted emissions-producing activities worldwide. These inventories were prepared in accordance with the Local Government Operations Protocol (LGOP), an established methodology that is regarded as the industry standard for government operations GHG inventories. Trends were evaluated using the U.S. Community Protocol (and other standard protocols where the LGOP does not provide specific guidance). The inventories quantified emissions produced through local government operations that are under the County's operational control, including emissions generated by facilities and sources that the County owns, operates, or has full authority over. These inventories pertain only to emissions generated by the County of Sonoma's local

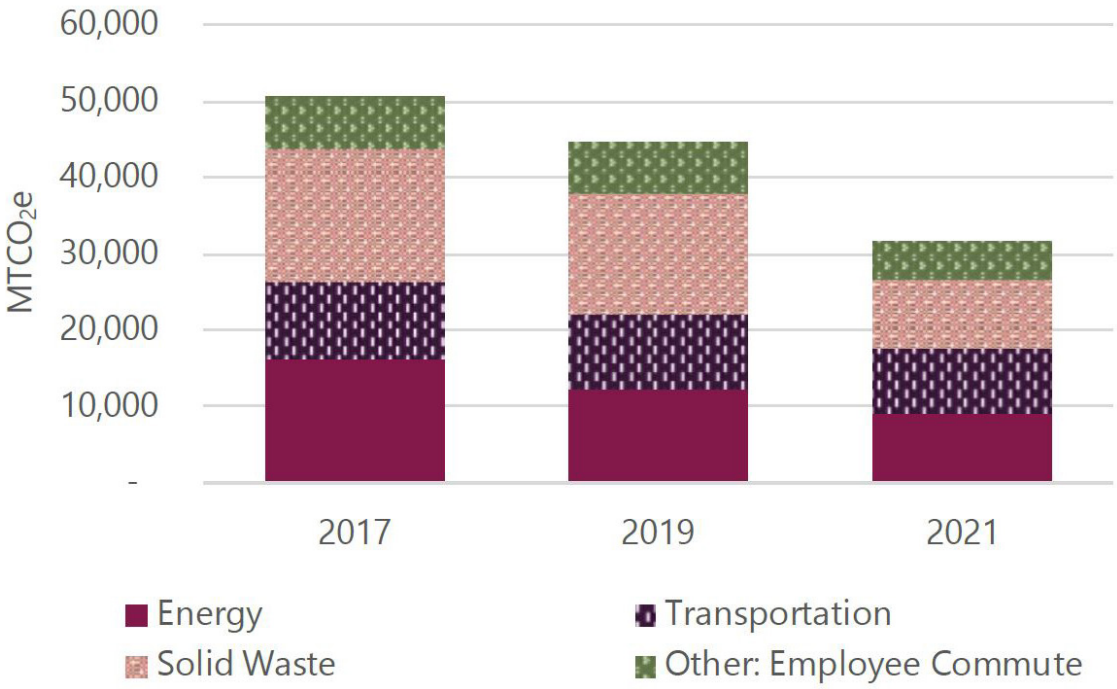
Sonoma County Carbon Inventory

government operations and do not include emissions produced by Sonoma County's communities. They build on previous GHG inventories completed by RCPA, Sonoma County Water Agency (Sonoma Water), and the County's Regional Parks department.

This inventory analysis found that County operations produced 50,635 metric tons of carbon dioxide equivalent (MTCO2e) in 2017, 44,756 MTCO2e in 2019 and 31,712 MTCO2e in 2021. Total emissions decreased 37% from 2017 to 2021. Emissions decreased 12% between 2017 and 2019 (the most recent inventory year before the COVID-19 pandemic) and 29% between 2019 and 2021. In 2017 and 2019, solid waste was the largest source of emissions (35% of total emissions both years), followed by energy (27–32% of total emissions). In 2021, energy was the largest source of emissions (29%), with solid waste as the next highest source (28%). (County GHG Inventory, 2023) Unlike most other sectors in these inventories—which only measured activity related to County government operations—solid waste included emissions from closed landfills that served residents and businesses countywide, which inflated the sector's total emissions in comparison to the rest of the inventory. When closed landfill emissions are filtered out, energy consumption produced 37–45% of total emissions, followed by transportation, which produced 28–34% of total emissions. (County GHG Inventory, 2023)

Building on the results of the 2017, 2019 and 2021 GHG inventories, the County prepared a wedge analysis—a visual representation of potential future emissions based on different scenarios—to forecast the County's GHG emissions through 2030 and inform future climate action efforts. (County GHG Inventory, 2023) This analysis can be used to understand how the County can best make progress toward achieving its goal of reaching net zero emissions by 2030.

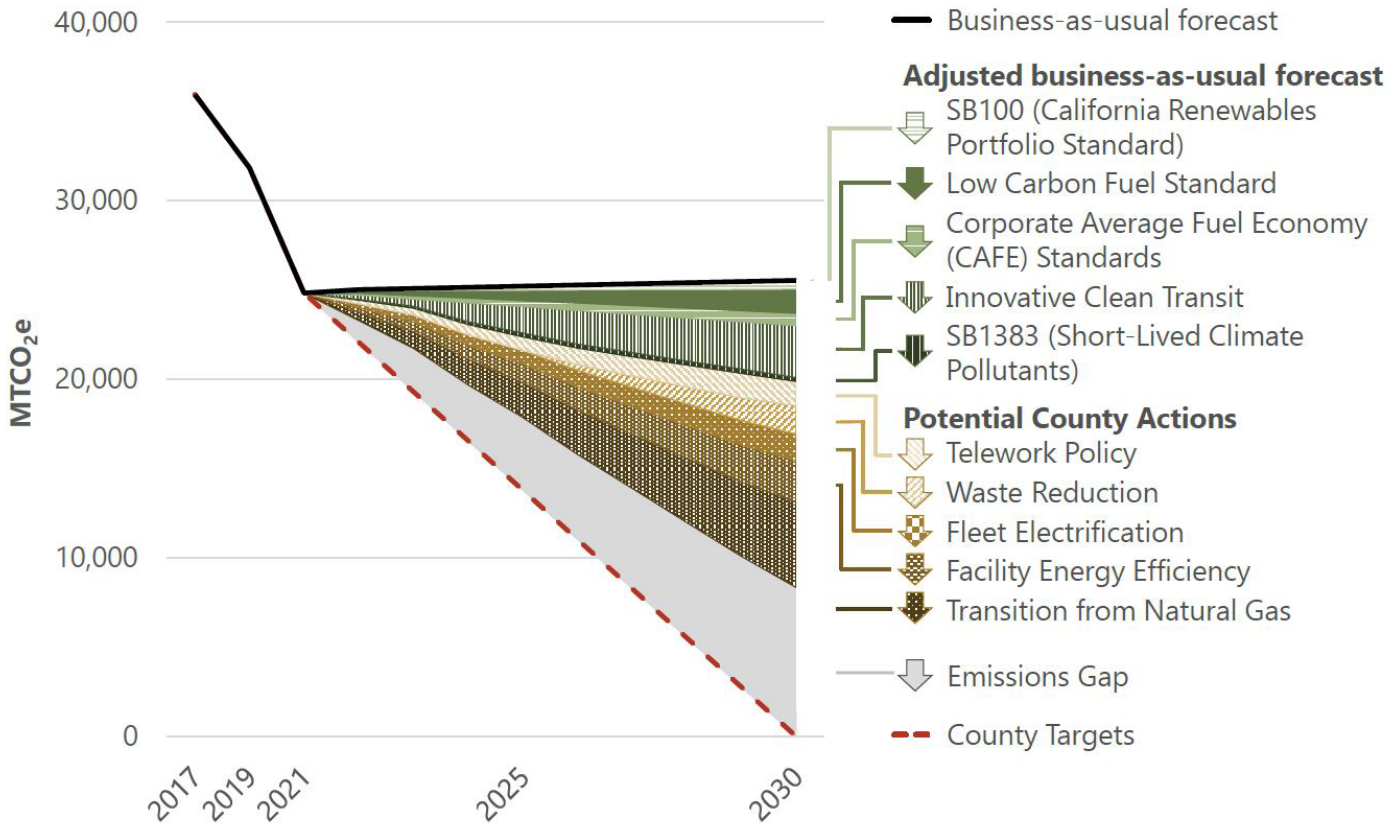
Figure 6: Total GHG Emissions for County Operations, 2017, 2019, 2021



The GHG Inventory shows the emission sources for County operations for 2017, 2019, and 2021. (Greenhouse Gas Inventory Report, 2023)

Sonoma County Carbon Inventory

Figure 7: GHG Wedge Analysis Excluding Landfills



The wedge analysis indicates the various state policies, potential County actions, and emissions gap to reach carbon neutrality by 2030. (Greenhouse Gas Inventory Report, 2023)

The wedge model projects the County's emissions two ways: including and excluding emissions from closed landfills.

If no federal, state or local climate action is taken, the County's emissions are projected to increase 3% by 2030. Considering the impacts of existing federal and state climate policies and regulations, emissions are expected to decrease 20% by 2030 (note that this analysis was prepared before some of the more recent state programs and policies were enacted). (County GHG Inventory, 2023) If the County implements high-level strategies to reduce emissions from some of its largest emission sources, emissions are expected to decrease 66% by 2030. (County GHG Inventory, 2023) These actions include improving facility energy efficiency, retrofitting buildings to transition buildings from natural gas to electricity or renewable energy sources, continuing to electrify the County's vehicle fleet, achieving zero waste by 2030 and modifying the County's telework policy.

When considering collective impact of federal and state policies, regulations, and potential County climate action implementation, remaining County emissions will consist of: Employee commute (35% of emissions). Electricity consumption (25% of emissions). On-road vehicle fleet (23% of emissions). (County GHG Inventory, 2023)

For more information about the County Operations inventory, please see the link in Appendix B.

Sonoma County Carbon Inventory

Sonoma County Community-wide GHG Inventory:

RCPA began publishing inventories of GHG emissions in 2016 with the release of Climate Action 2020 and Beyond, using an inventory for the year 2010. This effort also produced a back cast of 1990 data to be used for long-term comparison. Since then, the inventory has been updated at approximately two-year intervals--with new data added for 2015, 2018, 2020, and 2022. In July 2024, the RCPA published its fifth inventory of countywide GHG emissions with updated data for 2022.

Countywide GHG Inventory:

For the preparation of the Sonoma County 2022 Countywide GHG Inventory, the RCPA followed the U.S. Community Protocol for Accounting and Reporting of GHG Emissions published by the International Council for Local Environmental Initiatives (ICLEI) for the five Basic Emission Generating Activities: 1) Use of electricity by the community, 2) Use of fuel in residential and commercial stationary combustion equipment, 3) On-road passenger and freight motor vehicle travel, 4) Use of energy in potable water and wastewater treatment and distribution, and 5) Generation of solid waste by the community.

Consistent with RCPA's previous GHG inventories, this inventory does not include all human activities in Sonoma County that drive an increase or decrease in atmospheric GHG emissions. This approach focuses on monitoring progress on the most significant emissions sources that local government actions can most directly influence. The emissions categories that were excluded from this inventory update include: carbon sinks through biological carbon sequestration, consumption of goods and services imported into Sonoma County; industrial and commercial stationary sources; and air travel emissions (note that on-ground operational emissions from the Sonoma County Charles M. Schulz Airport were included in the emissions inventory for County Operations, see above). (Sonoma County Greenhouse Gas Inventory 2022, 2024)

Sonoma County emissions in 2022 were 3.11 million metric tons of CO2e (MTCO2e), which is over a 10 % reduction from 2018 emissions, but a slight 0.6 % increase from 2020 emissions. RCPA believes this small increase is because 2020 emissions were artificially low due to the impacts of the COVID-19 pandemic and the extended economic shutdown. Therefore, 2022 emissions should be viewed not as an increase from 2020 levels, but as a continued decrease from 2018 levels, with 2020 being an outlier year that produced artificially low emission levels. Compared to 1990 levels, the 2022 inventory shows a 21.1% reduction from 1990 emission levels. (Sonoma County Greenhouse Gas Inventory 2022, 2024)

Since the last inventory update, the countywide population declined by over 1.7%, but gross domestic product (GDP) rose by 6.3%. This increase in GDP is another indicator of the economic rebound and return to business-as-usual following the end of the pandemic that was so impactful to 2020 calculations. Key findings from the 2022 inventory include:

Sonoma County Carbon Inventory

1. Sonoma County GHG emissions have decreased over 20% from 1990.

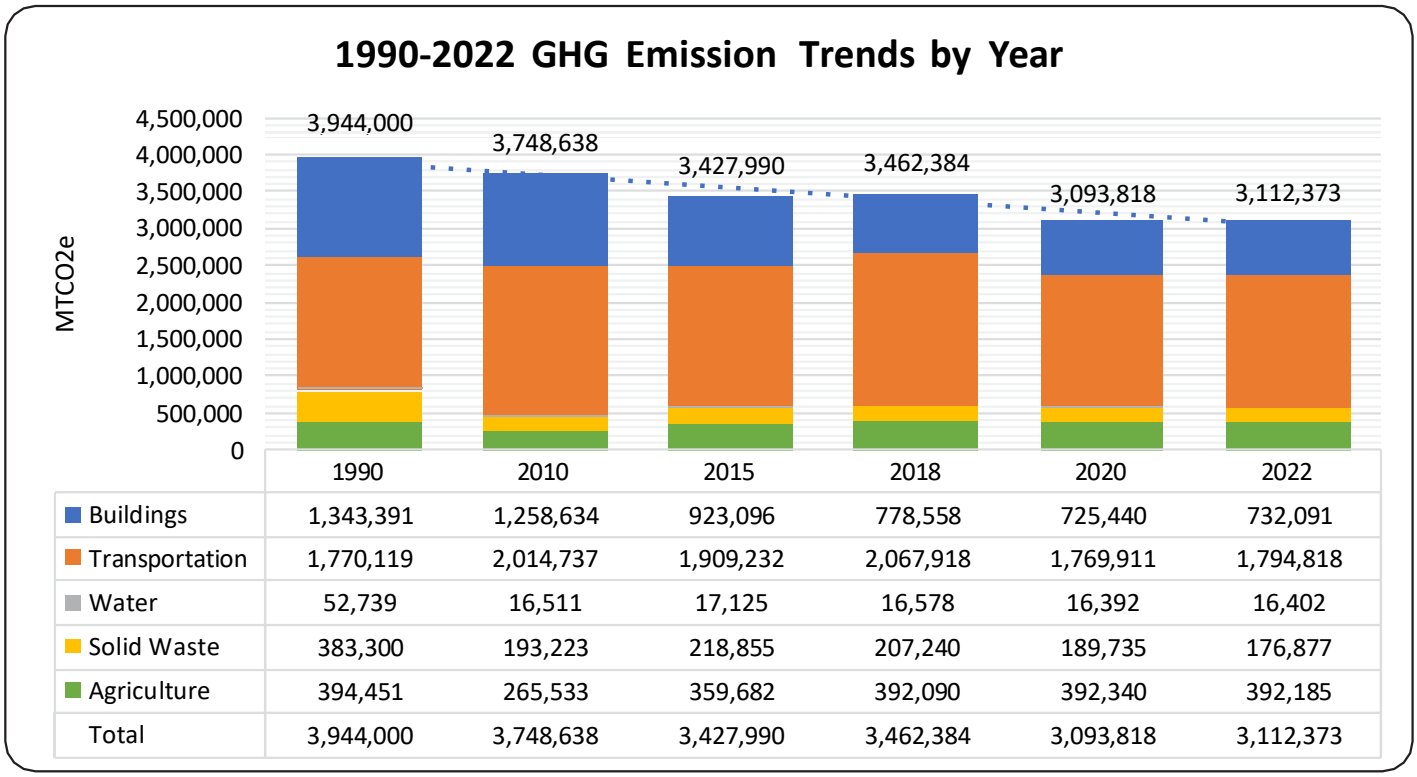
2. Emissions from energy used in buildings decreased 45.5% between 1990 and 2022, exceeding the short-term CA2020 goal of 27% by 2020. This reduction is primarily attributed to Sonoma Clean Power. As the Sonoma County electricity supply has grown cleaner, emissions from natural gas have become a more significant percentage of total emissions.

3. Transportation continues to be the largest source of emissions for the county. Nearly 58% of total countywide emissions were from transportation in 2022. As the COVID-19 pandemic has subsided and travel patterns have returned to more recognizable pre-pandemic levels, transportation emissions have risen slightly.

4. Emissions from waste sent to landfills decreased 6.8% between 2020 and 2022, or 53.9% between 1990 and 2022. Local jurisdictional efforts to comply with new state waste reduction laws over the past few years have contributed to the decrease in emissions.

Unincorporated County Share:
The 2022 Sonoma County GHG Inventory also provides community-wide inventories for each of the jurisdictions in Sonoma County, including the unincorporated areas.

Figure 8: Sonoma County GHG Emissions by Sector, 1990-2022



	1990	2010	2015	2018	2020	2022
Buildings	1,343,391	1,258,634	923,096	778,558	725,440	732,091
Transportation	1,770,119	2,014,737	1,909,232	2,067,918	1,769,911	1,794,818
Water	52,739	16,511	17,125	16,578	16,392	16,402
Solid Waste	383,300	193,223	218,855	207,240	189,735	176,877
Agriculture	394,451	265,533	359,682	392,090	392,340	392,185
Total	3,944,000	3,748,638	3,427,990	3,462,384	3,093,818	3,112,373

The GHG emissions for Sonoma County are divided by sector, with transportation being the biggest source of emissions.
2022 Greenhouse Gas Inventory Report, RCPA (2024)

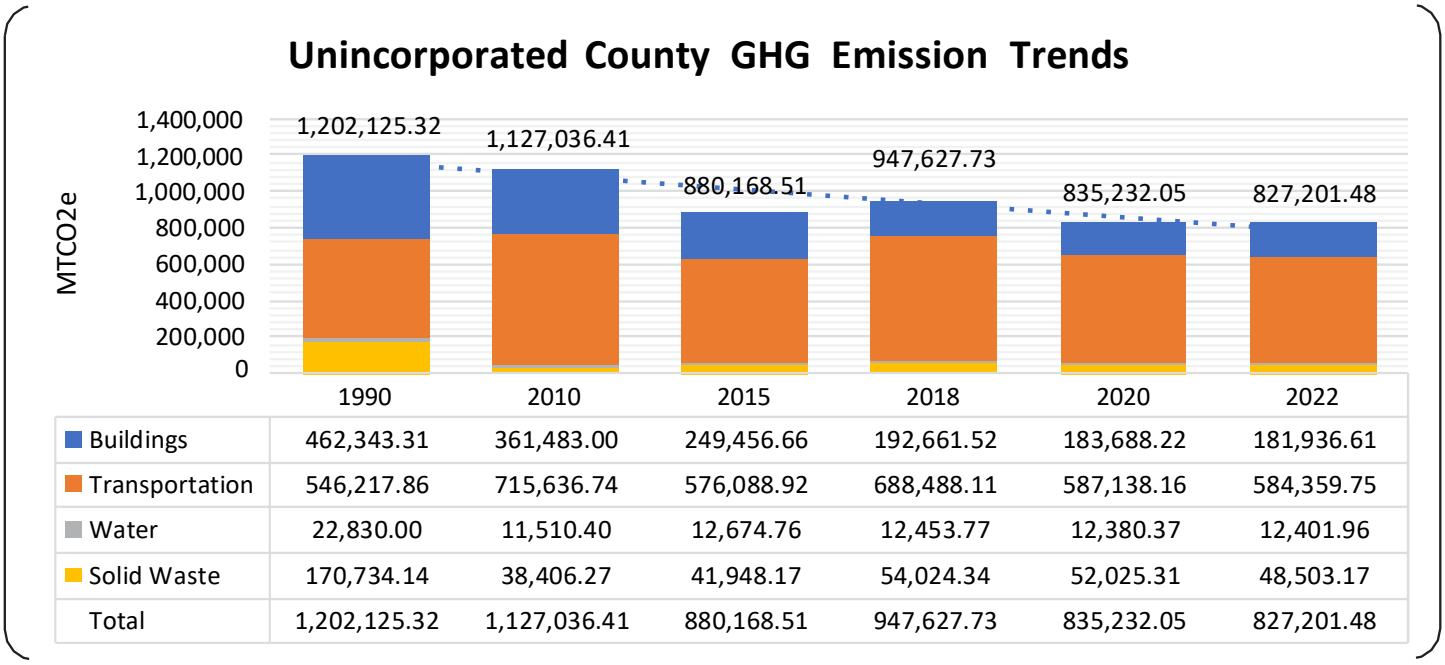
Sonoma County Carbon Inventory

The inventory shows that GHG emissions in unincorporated areas decreased by almost 1% from 2020 to 2022, and just under 13% from levels in 2018 (before the pandemic). Since 1990, GHG emissions in the unincorporated areas have dropped by over 32%. (Sonoma County Greenhouse Gas Inventory 2022, 2024)

In the unincorporated areas, transportation is the overwhelming source of emissions, contributing just over 70% of the total emissions in 2022. Transportation emissions declined by slightly less than one half of one percent (0.5%). Building energy use contributed 22% of total emissions in the unincorporated areas and declined by 1%, while solid waste disposal was responsible for almost 6% (declining about 7%), and water use was responsible for about 1.5% (growing marginally by less than two tenths of one percent, or 0.2%). As with the observations of the overall countywide emissions trends, the pandemic's impact on behavior caused a drop in GHG emissions in 2020, compounded by recurring wildfires; that emissions continued to decrease overall from that depressed level is noteworthy, even though it was a relatively small drop. The overall trend from 1990 through 2018 to 2020 shows a steady decline. (Sonoma County Greenhouse Gas Inventory 2022, 2024)

Carbon in the Landscape:
The carbon cycle is a process in which carbon is cycled between the atmosphere and the other parts of the earth system, including plants, animals, and other life forms; water bodies; soils; and in the Earth's crust and mantles,

Figure 9: Unincorporated Sonoma County GHG Emissions by Sector, 1990-2022



	1990	2010	2015	2018	2020	2022
Buildings	462,343.31	361,483.00	249,456.66	192,661.52	183,688.22	181,936.61
Transportation	546,217.86	715,636.74	576,088.92	688,488.11	587,138.16	584,359.75
Water	22,830.00	11,510.40	12,674.76	12,453.77	12,380.37	12,401.96
Solid Waste	170,734.14	38,406.27	41,948.17	54,024.34	52,025.31	48,503.17
Total	1,202,125.32	1,127,036.41	880,168.51	947,627.73	835,232.05	827,201.48

The GHG emissions for Unincorporated Sonoma County are divided by sector, with transportation being the biggest source of emissions. 2022 Greenhouse Gas Inventory Report, RCPA (2024)

including rocks and fossil fuels. Some parts of the earth system store carbon for longer or shorter time periods. Carbon that is stored in the deep ocean tends to stay in those parts of the earth system for much longer time periods compared to carbon stored in plants or soil. Carbon can be much more quickly incorporated into living biomass such as plants and water-based algae through respiration and into the soil via leaves and roots of dead plants and other decaying matter. The process of removing carbon from the atmosphere and storing it in the ocean, plants, soils etc. is carbon sequestration.

Carbon stocks are regions that store or sequester substantial amounts of carbon, such as natural landscapes like forests or shrublands, oceans, or agricultural lands. Both natural and working lands can be carbon stocks, where plants and soils take in more carbon than they release. Conserving these carbon stocks can help move the county closer to achieving the objectives of carbon neutrality, land conservation, and carbon sequestration. Actions taken on natural and working lands to increase carbon sequestration and avoid carbon depletion are “Nature-Based Solutions” and have become an important component of climate resilience planning.

Beyond carbon sequestration, maintaining healthy soils can improve crop health and yields, increase water retention and infiltration, prevent erosion, improve water quality, and improve biodiversity and wildlife habitats. California’s Fourth Climate Change Assessment reported that increasing organic matter in soils by three percent, by applying a ¼ inch of compost, could increase the soil’s water holding capacity by up to 4.7 million acre-feet across all working lands in California. (Bedsworth, 2019) These benefits impact the environment and farmers and form the basis for multiple dedicated federal, state, and local programs that fund healthy soils work. Maintaining healthy natural and working lands is key to human well-being because these lands are responsible for our agricultural abundance, water supply and quality, air quality, and biodiversity, which in turn influences socioeconomics and social equity.

California’s Nature-Based Carbon Storage Targets:

In 2024, as called for in Assembly Bill 1757 (2022), the California Natural Resources Agency, the California Air Resources Board, the California Environmental Protection Agency, the California Department of Food and Agriculture, and more than 40 State agency partners collaborated to develop nature-based solutions climate targets for 2030, 2038, and 2045 that contribute to California’s goals of achieving carbon neutrality no later than 2045. (California’s NBS Climate Targets, 2024) Targets were established for eight sectors including: wildfire risk reduction, forests, shrublands and chapparal, grasslands, croplands, developed lands, wetlands and seagrasses, and sparsely vegetated lands. There are acreage targets for thirteen nature-based climate solutions which, if implemented in California, have the potential to reduce GHG emission by over 500 million metric tons cumulatively by 2050. There are also percentage-based targets for some of the sectors. (California’s NBS Climate Targets, 2024) Data and tables below are from the report California’s Nature-Based Solutions Targets (CNBST) (April 2024), along with the acreage targets:

Sonoma County Carbon Inventory

Figure 10: California Statewide Nature-Based Solutions and Acreage Targets

Statewide Nature-Based Solutions & Acreage Targets				
Sector	Solution	Targets in Acres/Year, by Target Year		
		2030	2038	2045
Wildfire	Beneficial Fire Treatments	800 K	1.2 M	1.5 M
	Other Fuel Reduction Activities	700 K	800 K	1 M
	Wildfire Solutions -Total acres/year	**1.5 M**	**2 M**	**2.5 M**
Forests	Afforestation (adding trees)	52.9 K	52.9 K	52.9 K
	Conservation	55.1 K	55.1 K	55.1 K
	Restoration	322.1 K	462.1 K	322.1 K
	Working Forest Conservation	165.2 K	165.2 K	165.2 K
	Forest Solutions -Total acres/year	**595.3 K**	**735.3 K**	**595.3 K**
Shrublands & Chapparal	Conservation	104.6 K	104.6 K	104.6 K
	Restoration	37 K	40 K	45 K
	Shrublands Solutions -Total acres/year	**141.6 K**	**144.6 K**	**149.6 K**
Grasslands	Conservation	33 K	33 K	33 K
	Restoration	55.1 K	55.1 K	55.1 K
	Grasslands Solutions -Total acres/year	**88.1 K**	**88.1 K**	**88.1 K**
Croplands	Healthy Soils Practices	140 K	190 K	190 K
	Conservation	12 K	16 K	19.5 K
	Croplands Solutions -Total acres/year	**152 K**	**206 K**	**209.5 K**
Developed Lands	Afforestation (adding trees) Buffers	133	185	230
	Conservation	17.3 K	17.3 K	17.3 K
	Urban & Community Greening & Forestry	34.7 K	34.7 K	34.7 K
	Reducing Community Wildfire Risks	11 K	11 K	11 K
	Developed Lands Solutions -Total acres/year	**63.1 K**	**63.2 K**	**63.2 K**
Wetlands & Sea Grasses	Conservation	1.3 K	1.3 K	1.3 K
	Restoration	9.2 K	9.2 K	9.2 K
	Sea Level Rise Ecosystem Protection	1.7 K	1.7 K	1.7 K
	Wetlands Solutions -Total acres/year	**12.2 K**	**12.2 K**	**12.2 K**
Sparsely Vegetated Lands	Conservation	20 K	30 K	40 K
	Restoration	55.1 K	55.1 K	55.1 K
	Sparse Veg. Solutions -Total acres/year	**75.1 K**	**85.1 K**	**95.1 K**

Sonoma County Carbon Inventory

Statewide percentage-based targets were also established for three sectors: forests, croplands, and developed lands. The percentage-based targets are summarized below.

Figure 11: California Statewide Nature-Based Solutions and Percentage Targets

Statewide Nature-Based Solutions & Percentage Targets				
Sector	Solution	Targets in Percent/Yr, by Target Yr		
		2030	2038	2045
Forests	Decrease the rate of illegal conversion and forest degradation by	20%	50%	90%
	Through treatments, shift the percent of high severity fires to a percent of fires that are low-to-moderate severity	75%	83%	90%
Croplands	Convert conventional to organic systems in annual and perennial croplands	10%	15%	20%
Developed Lands	Decrease wildfire ignition incidents caused by vehicles	10%	20%	30%
	Treat priority roads that function as primary evacuation routes	50%	70%	100%
	(Additional Target) Increase large canopied, drought tolerant trees meaningful to the community; prioritize communities with low tree canopy	200 K (# of trees)	200 K (# of trees)	200 K (# of trees)

The State intends to use these targets to guide its actions and the funding it makes available. Achieving the targets will depend on the collaborative actions of federal, state and local governments, private landowners, and nonprofit organizations that own and manage lands. In setting these targets, the State also recognized the important role of native tribal peoples in supporting a healthy landscape, and seeks a greater role for native tribes in actions to restore California landscapes. (California's NBS Climate Targets, 2024)

Understanding how these targets would potentially translate to Sonoma County's landscape can inform decisions about carbon sequestration and building resilience in the landscape. On a percentage scale, Sonoma County's "share" for achieving the statewide targets for these sectors is estimated in the following table (note that the share for wildfire targets was estimated based on Sonoma County's share of statewide forest acres):

Sonoma County Carbon Inventory

Figure 12: Sonoma County Share of Nature-Based Solutions and Acreage Targets

Sonoma County Share for Nature-Based Solutions & Acreage Targets				
Sector	Solution	Targets in Acres/Year, by Target Year		
		2030	2038	2045
Wildfire	Beneficial Fire Treatments	33,194	82,985	165,970
	Other Fuel Reduction Activities	29,045	82,985	165,970
	Wildfire Solutions -Total acres/year	**62,239**	**82,985**	**165,970**
Forests	Afforestation (adding trees)	934	934	934
	Conservation	973	973	973
	Restoration	5,688	8,161	5,688
	Working Forest Conservation	2,917	2,917	2,917
	Forest Solutions -Total acres/year	**10,513**	**12,985**	**10,513**
Shrublands & Chapparal	Conservation	2,493	2,493	2,493
	Restoration	882	953	1,072
	Shrublands Solutions -Total acres/year	**3,375**	**3,446**	**3,565**
Grasslands	Conservation	733	733	733
	Restoration	1,224	1,224	1,224
	Grasslands Solutions -Total acres/year	**1,957**	**1,957**	**1,957**
Croplands	Healthy Soils Practices	18	25	25
	Conservation	2	2	3
	Croplands Solutions -Total acres/year	**20**	**27**	**27**
Developed Lands	Afforestation (adding trees) Buffers	2	3	4
	Conservation	268	268	268
	Urban & Community Greening & Forestry	537	537	537
	Reducing Community Wildfire Risks	170	170	170
	Developed Lands Solutions -Total acres/year	**977**	**978**	**979**
Wetlands & Sea Grasses	Conservation	25	25	25
	Restoration	180	180	180
	Sea Level Rise Ecosystem Protection	33	33	33
	Wetlands Solutions -Total acres/year	**239**	**239**	**239**
Sparsely Vegetated Lands	Conservation	310	464	619
	Restoration	853	853	853
	Sparse Veg. Solutions -Total acres/year	**1,162**	**1,317**	**1,472**

Sonoma County Carbon Inventory

Meeting the statewide targets in Sonoma County on a proportionate basis would mean treating 80,000 acres per year by 2030, with about 77% as wildfire treatments and 13% in forest treatments. (California's NBS Climate Targets, 2024) The County does not have the responsibility to meet these targets; rather, it will take the combined efforts of state, local, private, and non-profit land managers and will require funding and other support from many sources.

Carbon Storage in Sonoma County:
In 2023, the County published the County of Sonoma Carbon Inventory and Potential Sequestration Study (CSIPSS), which establishes an inventory of current carbon stocks and evaluates the potential for Sonoma County's landscape to sustainably store more carbon. Developed with local partners, this study presents recommendations for protecting significant carbon stocks and identifies available practices to increase carbon sequestration. The study found that the most carbon is stored in Sonoma County's forests, followed by grasslands, and then by developed land.
Sonoma County's diverse landscapes held approximately 117,593,161 MT CO_2e in 2013 and 105,365,590 MT CO_2e in 2022, providing critical co-benefits like healthy ecosystems and watersheds, recreation areas, and local food production. (CSIPSS, 2023) The land-based carbon inventories quantify the amount of carbon stored in different land cover classes, such as forests, grasslands, and others. This scale of carbon sequestration emphasizes the importance of protecting Sonoma County's existing carbon stocks. Optimizing the carbon sequestration potential of natural and working lands will be critical in achieving the state and local GHG reduction goals.

Between 2013 and 2022, there was a decline in carbon storage in the county's forests (21%) and wetlands (20%). (CSIPSS, 2023) Actions that promote forest health and mitigate fire risk can reduce the amount of carbon lost to climate hazards. Even with the decreases observed, the amount of carbon stored in Sonoma County's natural and working lands in 2022 is the equivalent of the amount of carbon emitted to supply electricity to over 20.7 million homes for an entire year, which is more than double the population of the Bay Area. (Greenhouse Gas Equivalencies Calculator, 2024)

In addition to the Carbon Stock Inventory, the study estimates the maximum carbon storage capacity of Sonoma County's landscape, that is, "carbon sequestration potential" and identifies options to reach that maximum potential. To estimate the sequestration potential for each practice, the study evaluated: (1) the potential acreage a practice could be applied upon in the county; (2) the potential carbon sequestration of that practice; and (3) the lifetime of the practice - that is, how long it will continue to sequester carbon.

The study then estimated the maximum potential for carbon sequestration if the practice were fully implemented on all suitable lands until 2030. Recognizing that the maximum scenario is not realistic, the study also provides estimates for adoption of each practice were implemented on 1% of the suitable acreage, which is scalable and supports development of realistic planning.

Because individual practices can be additive or redundant to each other it is not possible to total up the potential sequestration of each practice to arrive at a grand total of how much sequestration could be increased across Sonoma County. Some of the individual practices, if optimized across all suitable land types, would result in substantial carbon sequestration. For example,

Sonoma County Carbon Inventory

urban forestry on about 5,200 suitable acres would sequester over 35 million MT CO2e over 50 years, or about 700,000 MT CO2e per year. Additionally, this practice would have co-benefits of decreasing heat and increasing mental and physical health, particularly for environmental justice communities. The potential sequestration benefits in the Sonoma County landscape are large because the county has close to 1 million acres of natural and working lands. Optimizing sequestration across the landscape is a long-term undertaking require considerable resources. (CSIPSS, 2023)

To characterize potential sequestration, the County analyzed the amount of carbon that would be sequestered if the local share of statewide targets is achieved, using the most common and well-documented practices.

The practices and associated benefits were derived from the Sonoma County Carbon Stock Inventory and Potential Sequestration Study, and from practice guidance prepared by the California Department of Food and Agriculture and USDA Natural Resources Conservation Service. This data was then adjusted based on interviews with local land managers. The County standardized the approach by assuming that when more than one practice is commonly used to in a nature-based solution target area, the different practices are used equally. For example, two practices (compost and prescribed grazing) are typically used to restore grasslands; the practices can be applied together, and the County assumed each practice would be used on entire acreage in the target for restoring native grasslands with additive benefits. Further,

Figure 13: Sonoma County Share of Nature-Based Solutions Targets

Sequestration from Sonoma County Share of Nature-Based Solutions Targets		
Solutions by Sector	Lifetime Carbon Sequestration for Achieving 2030 Targets	
	Acres	MT CO2e*
Wildfire Solutions	62,239	2.2 million**
Forest Solutions	10,513	2.1 million
Shrublands Solutions	3,375	26,000
Grasslands Solutions	1,957	36,500
Croplands Solutions	20	700
Developed Lands Solutions	977	3.5 million
Wetlands Solutions	239	240
Sparsely Vegetated Lands Solutions	1,162	4,800
Total	80,482	7.9 million

* Wildfire Solutions includes beneficial fire and other fuel reduction activities. Beneficial fire has been shown to have a net positive effect on carbon sequestration due to increased ecosystem health & sequestration following the initial loss of carbon burned, and the incorporation of biochar into soils; and the carbon sequestered for the category is from other fuel reduction.

** There were insufficient data from available sources to estimate the carbon that the practice(s) would sequester.

Sonoma County Carbon Inventory

Further, benefits were assumed to be linear over the lifetime of the practice, which is not always the case for living systems, but was a necessary simplification to standardize the methodology. In some cases, the practices are not additive and benefits were averaged. The carbon sequestration benefits of achieving the scaled statewide targets in Sonoma County are estimated to the right. The analysis indicates that for practices where sufficient data exists to estimate, if the statewide targets for nature-based solutions were achieved on a proportionate basis in Sonoma County, nearly 1 million MT CO2e would be sequestered by 2030. Implementing nature-based solutions on shrublands and sparsely vegetated lands would further increase that total.

Carbon Storage on County Lands:
About 112,000 acres of Sonoma County landscape are publicly owned. Of these, 18,831 acres are held by the County of Sonoma (primarily as regional parks), 6,971 acres are held by the Agricultural Preservation and Open Space District (Ag + Open Space), and 2,400 acres are held by Sonoma Water. In addition, Ag + Open Space holds conservation easements on 122,400 acres. As summarized below, in total almost 2.2 million MT CO2e are stored in the lands held by the County and its affiliated agencies. (CSIPSS, 2023)

Achieving a proportionate share of the statewide targets for nature-based solutions on County-owned lands would sequester 1.84 million MT CO2e per year. This does not include additional carbon sequestration from meeting the targets on Ag + Open Space and Sonoma Water lands; however the County will collaborate with them on prioritizing and implementing nature-based solutions to support shared resilience objectives. While the County is not obligated to achieve these targets, they do provide a useful characterization of what can be achieved. It would correspond to treating 1,610 acres of land per year and could sequester nearly 22,000 MT CO2e by 2030.

Figure 14: Sequestration from Achieving Nature-Based Solutions

Sequestration from Achieving Nature-Based Solutions Targets on County-owned Lands		
Solutions by Sector	Lifetime Carbon Sequestration for Achieving 2030 Targets	
	Acres	MT CO2e
Wildfire Solutions	1,245	43,838
Forest Solutions	210	41,871
Shrublands Solutions	68	526
Grasslands Solutions	39	730
Croplands Solutions	NA	NA
Developed Lands Solutions	20	71,606
Wetlands Solutions	5	5
Sparse Veg. Solutions	23	88
Total	1,610	158,664

Figure 15: Total Metric Tons and Acreage

Total Metric Tons of Carbon & Acreage by Land Ownership (2022)		
Landowner	Total Acres	Total MT CO2e
Privately Owned	881,225	88,841,962
Publicly Owned	111,974	12,513,728
Total	993,199	101,355,691
County Land Ownership Summary		
County of Sonoma	18,831	1,837,223
Ag + Open Space	6,972	126,405
Sonoma Water	2,400	202,888
Total	28,202	2,166,515

** There were insufficient data from available sources to estimate the carbon that the practice(s) would sequester.
Notes: Acres have been rounded to the nearest whole number therefore sums may not match. Refer to Appendix B Sonoma County Land Cover, Carbon Stock, and Natural GHG Emissions Inventory Results Memorandum for additional explanation of these results.

VI. Measures & Actions by Sector

Measures and Actions by Sector

The Climate Plan includes measures and actions related to the County Operations. They are designed to help the County achieve carbon neutral, zero waste, and resilient operations, consistent with the Climate Action and Resiliency pillar of the Strategic Plan. The measures were informed by climate-related studies, strategies, and plans, and align with their priority recommendations. Examples of these include the 2021 RCPA Climate Mobilization Strategy, the 2021 Sonoma Water Climate Adaptation Plan, the 2021 Sonoma County Multi-Jurisdictional Hazard Mitigation Plan, the 2022 Sonoma County Climate Resilient Lands Strategy, the 2023 Sonoma County Community Wildfire Protection Plan, several transportation studies and plans developed by SCTA, and other sources. Some measures were specifically recommended by one or more County departments or agencies during the development of the Climate Plan.

Development of the Climate Plan was coordinated with development of a Climate Action and Resilience Plan for the County's Regional Parks Department. The Regional Parks plan focuses on many discrete actions to improve climate resilience in the department's operations and in the parks themselves, whereas County's Climate Plan highlights measures and actions that are more broadly applicable across the County, however care was taken to make sure the two efforts are aligned and mutually supporting. In the same vein, care was taken to promote alignment between the County's Climate Plan and the Sonoma County Airport's Sustainability Master Plan, which is currently under development. Please see Appendix B for a complete list of studies, strategies, and plans that influenced the Climate Plan.

The measures and actions in the Climate Plan are organized under six sectors: Energy, Transportation, Waste, Water, Wildfire, and Natural & Working Lands. In the presentation of the measures in each sector there is a description of the sector and a notation of key observed climate impacts on the sector; for more detailed information about climate impacts, please refer to Section VI, The Changing Climate, and specifically to the discussion of Key Local Climate Hazards. There is also a summary of the GHG mitigation and climate resilience objectives of the measures in the sector, important aspects of the policy landscape (such as statutory or regulatory requirements or other high-level considerations), and notable studies, strategies, and plans. In each sector, Early Actions are identified that were funded by the Board with Climate Resilience Funds or Wildfire Mitigation Funds, along with key climate-smart and wildfire resilience grants from outside sources.

The measures have an identification number that includes a letter and number sequence. The first letter indicates the sector, the next two letters identify the type of measure – where CO indicates "County Operations" and EA indicates "Early Action." The measures include actions that are identified as near term (2024-2026), midterm (2026-2030), and longer term (2030+) based on anticipated implementation timelines. County Operations measures are presented in a summary table followed by a one-page summary of each measure with key information about the measure. The one-page summary includes the measure number, a description of the measure and a list of actions included in the measure, and a summary of the impacts, including cost, GHG benefits, key implementation partners, and other benefits. The other benefits are designated with icons according to the keys below.

Measures and Actions by Sector

There is also an overall Multi-Criteria Analysis (MCA) score the measure received, and a graphical breakdown of the measure's performance on specific criteria, including climate mitigation, climate resilience, co-benefits, environmental justice and equity, Strategic Plan alignment, and state and federal funding potential.

The County prepared a Multi-Criteria Analysis (MCA) of expected benefits from each of the County Operations Measures. The MCA is based on the County's Climate Action, Resilience and Equity (CARE) Framework. The CARE framework was developed to prioritize climate-related projects under consideration for the County's Climate Resilience Fund. The MCA was adapted to align with high-level measures instead of specific projects and considers climate mitigation impact, climate resilience impact, associated co-benefits including air quality, energy/fuel savings, vehicle miles traveled (VMT) reduction, water conservation, ecosystem health, energy security, and public health & safety, environmental equity and justice, Strategic Plan alignment with goals and objectives beyond Climate Action and Resiliency, and funding potential by state and federal sources. Each measure was assigned an MCA score and a graphical breakdown of the measure's performance on the criteria listed. For more information regarding how the measures were scored for each criterion refer to Appendix F, "Multi-Criteria Analysis".

KEY FOR CLIMATE BENEFITS

Key Benefits Explanations:


Measures have general energy efficiency benefits not directly tied to County infrastructure


Measures have direct energy efficiency benefits for County buildings and facilities


Measures have direct benefits for County vehicles and fleet operations


Measures have direct benefits for multimodal transportation and mobility


Measures have direct benefits for protecting the environment


Measures have direct benefits for climate education and training personnel


Measures have direct benefits for water conservation, savings, and regeneration


Measures have direct benefits for construction projects and workforce development


Measures have direct benefits for physical lands, natural and working


Measures have direct benefits for reducing waste, recycling, and reusing resources

Energy

Energy

The Energy Sector, made up of energy generation and energy use, is the largest emitter of greenhouse gases into the atmosphere, contributing to climate change. In turn, changes in climate can disrupt energy networks themselves, stress infrastructure, and pose safety risks to people. The main focus of the Energy Sector in this Climate Plan is on reducing and decarbonizing building energy use.

Key Climate Impacts:

Extreme temperatures lead to greater energy demand, which drives the need for greater efficiency, and can destabilize the energy grid, requiring energy resilience that can be islanded from the grid (microgrids). Increased wildfires also interrupt grid power, as do other extreme weather events, such as storms with high winds.

Climate Resilience Objectives:

Energy efficiency and decarbonization reduce GHG emissions from energy generation, as do renewable energy sources. Renewable energy and storage provide resilience during grid interruptions.

Policy Landscape:

Key statewide and regional policies that influence building energy use and the GHG emissions associated with it, as well as the deployment of renewable energy and storage include:

Bay Area Regional Priority Climate Action Plan, prepared by the Bay Area Air Quality Management District, includes a GHG emissions inventory the Bay Area region for the base year 2022, and priority GHG reduction measures for two sectors: passenger vehicles and residential buildings. The plan sets out actions to achieve (1) Safe, Accessible, Clean, and Equitable Multi-modal Transportation, and (2) Holistic Building Decarbonization for Clean, Healthy, and Secure Housing.

Climate Change Scoping Plan to Achieve Carbon Neutrality, California's comprehensive plan outlining the state's approach to achieving its greenhouse gas emission reduction targets, including SB 32's goal of reducing emissions 40% below 1990 levels by 2030, and achieving carbon neutrality by 2045.

Green Building Standards, a program to reduce the energy use of California buildings, including energy efficiency standards for new construction and retrofits for existing buildings.

RCPA Sonoma Climate Mobilization Strategy: approved in 2021 to guide climate actions through 2030. This strategy outlines 13 countywide actions under local authority that have the potential to significantly reduce GHG emissions by 2030.

Renewables Portfolio Standard, California's statewide requirement that electricity providers procure energy from certain renewable sources—33% of total electricity by 2020, and 60% of total electricity by 2030.

Energy

The state is pushing to fully decarbonize building energy by 2045, which means shifting all heating, cooking, and other fossil fuel uses in buildings to electricity, and shifting all electricity production to renewables. Part of this transition is driven by bans on inefficient energy using products, for example halogen and fluorescent lighting will no longer be available for sale in California after the end of 2024. The Bay Area Air Quality Management District recently approved a ban on new natural gas furnaces in after 2027. Other statewide and regional regulations will be adopted in the next few years that will enforce the transition of local building energy use to high-efficiency with carbon free sources.

The state and federal governments have committed very substantial funding to support municipalities, businesses, and private individuals transitioning to more efficient and lower carbon energy systems and appliances. They are similarly making large investments to incentivize renewable energy and storage. There are also programs that couple housing support for low-income residents with energy resilience through climate-ready homes and equitable building decarbonization.

At the same time, energy costs are rising rapidly, which makes reducing energy use and securing renewable microgrid power and storage more important. PG&E's most recently approved utility rates, the 2023 General Rate Case increased system-wide electricity rates by over 45% from 2022 to 2024 before the addition of the rate increment to recover PG&E's costs for their Wildfire Mitigation Program. This has direct impacts on the County's budget. It increases costs for businesses and families, contributes to overall inflation, and also disproportionately impacts climate justice communities.

Key energy challenges facing California include: increasing continuing to ramp up renewable energy production and storage capacity; rapidly expanding transmission and distribution capacity when federal permitting of transmission lines takes about 10 years; and deploying a "smart grid" for which most of the power electronics, software, and privacy protections are still being refined. Because storage capacity will be finite and renewables, especially wind, can fluctuate significantly and without much advance notice, the grid needs to be able to flexibly shed load.

Lastly, the energy transition needs to not only include climate justice communities, it needs to advance their welfare and ensure that the energy and environmental injustices of the past do not continue into the clean energy future. Important climate justice focused policies shape funding priorities and other fundamental elements of the transition. Some of these disadvantage Sonoma County relative to other areas of the state and nation, which have larger populations experiencing greater environmental disparities than communities in Sonoma County. In spite of this, the County and its partners need to marshal the resources to not only support the transition to carbon-free energy, but to ensure it is a just transition.

Energy

Key Studies, Strategies and Plans:

The measures in the Energy Sector reflect recommended policies and actions in the RCPA Climate Mobilization Strategy, the results of a comprehensive investment-grade energy audit of County facilities through the PG&E Sustainable Solutions Turnkey program, the draft Regional Parks Climate Action and Resiliency Plan, which was under development while this Climate Plan was being prepared.

Key Features of the Energy Measures:

The Board invested in Early Actions to pilot renewable energy installations with storage, notably at the Santa Rosa Veterans Memorial Building, which serves as a shelter during emergencies. The facility also received energy efficiency upgrades and heat pump heating and cooling was added, allowing it to serve as a community cooling site in extreme heat.

Figure 16: Energy Sector Early Action Measures

Energy Sector Early Action Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
E-EA-1	Decarbonize Doran Beach infrastructure through Solar generation and backup power.	2023-24	Regional Parks
E-EA-2	Pilot energy resilience upgrades within the Santa Rosa Veteran's Building by adding solar and battery storage.	2023-24	Climate, Public Infrastructure
E-EA-3	Pilot improved energy efficiency and systems within the Santa Rosa Veteran's Building.	2023-24	Climate, Public Infrastructure

County Operations measures phase in recommendations from investment grade energy audits to reduce and decarbonize building energy use, increase renewable energy, and provide energy storage. There are also measures that establish policies about energy use and provide training and other support for the transition to carbon-free and resilient energy for the County's facilities and operations. In addition, there is a refrigerant management measure because that equipment also has a significant building energy use demand.

Energy

Figure 17: Energy Sector County Operations Measures

Energy Sector County Operations Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
E-CO-1	Reduce energy use and increase resilience at existing county facilities in the near-term through energy upgrades.	N	Public Infrastructure, Climate
E-CO-2	Reduce energy use and increase resilience at existing County facilities in the mid-term through energy upgrades.	M	Public Infrastructure, Climate
E-CO-3	Prepare plan & reduce energy use and increase resilience in the longer term at remaining County facilities planned for continuing use through energy upgrades.	L	Public Infrastructure, Climate
E-CO-4	Reduce greenhouse gas emissions due to electricity use for County operations by purchasing Evergreen power from Sonoma Clean Power for all electricity use.	N	Public Infrastructure, Climate, Budgets
E-CO-5	Minimize energy use and maximize resilience in new County facilities by developing energy policies.	M	Public Infrastructure, Climate
E-CO-6	Minimize energy use and maximize resilience in the new County Government Center by following approved building energy design policies (E-CO-5), or by achieving LEED certification.	M	Public Infrastructure, Climate
E-CO-7	Improve refrigerant leak detection & repair, and transition to lower global warming intensity refrigerants as feasible.	M	Public Infrastructure, Climate
E-CO-8	Reduce energy use and increase resilience in the mid-term by completing public lighting upgrades to high-efficiency systems.	M	Public Infrastructure
E-CO-9	Support decarbonization transition by planning for maintenance needs and staff training related to operation and maintenance of new technologies.	M	Public Infrastructure, Climate, HR
E-CO-10	Implement Regional Parks plan (when/as approved) to improve efficiency and decarbonize Parks buildings.	L	Regional Parks, Public Infrastructure, Climate

MEASURE E-CO-1

Reduce energy use and increase resilience at existing County facilities in the near term through energy upgrades.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$28,226,572 **($44,300,000)***	**4,996 MT CO2e**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency, Building Efficiency, Vehicle Electrification, Water Conservation, Ecosystem Health

***Lifetime Savings**

SUBMEASURES FOR E-CO-1

1.1: Upgrade existing lighting and controls at 46 buildings to LED Lighting with high-efficiency controls

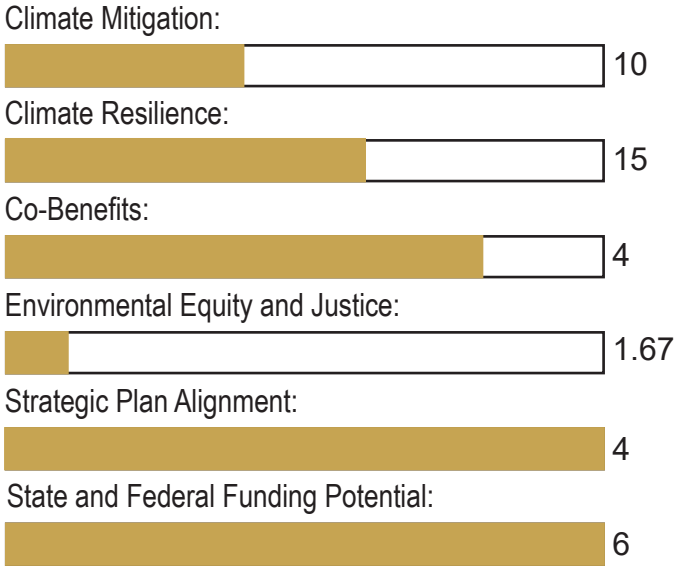
1.2: Install 2.1 MW (dc) Solar Photovoltaic systems in a carport configuration at the County Administration Center

1.3: Install Battery Energy Storage Systems at the County Administration Center [964/1927 kWh] and Los Guillicos [240/516 kWh]

1.4: Install water conservation fixtures at 44 buildings

1.5: Replace domestic hot water heating systems with heat pump systems at Petaluma & Cloverdale Veterans Buildings, and Heavy Fleet Facility

Multi-Criteria Analysis Score: 40.67/80



MEASURE E-CO-2

Reduce energy use and increase resilience at existing County facilities in the mid term through energy upgrades.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$81,097,962 **($61,600,000)***	109,862 MT CO2e	**Sonoma Public Infrastructure, Climate**	Energy Efficiency, Building Efficiency, Vehicle Electrification, Water Conservation, Ecosystem Health

***Lifetime Savings**

SUBMEASURES FOR E-CO-2

2.1: Upgrade existing HVAC at 38 facilities to heat pump systems

2.2: Install 110 EV Chargers to support municipal fleet electrification

2.3: Upgrade water heating systems

- 2.3.1: Replace 46 domestic water heaters w/heat pumps
- 2.3.2: Upgrade the hot water heating system at the Central Mechanical Plant to air and water source heat pumps to air & water source heat pumps

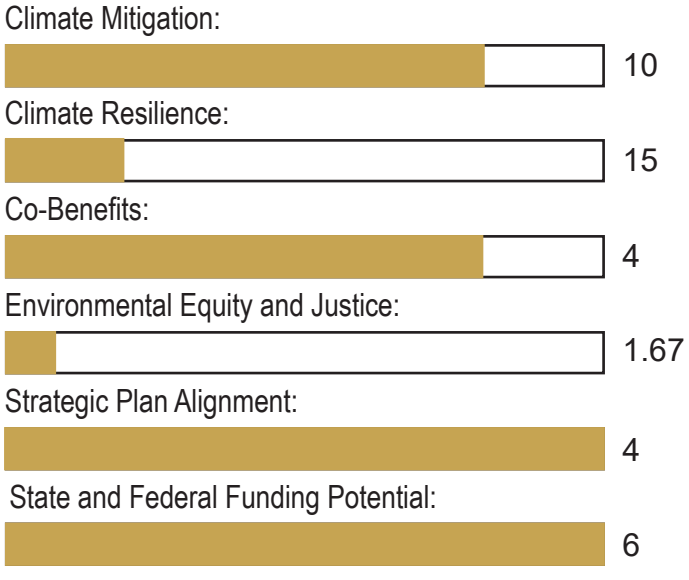
2.4: Replace gas-consuming kitchen equipment with high-efficiency electric equipment at 17 County facilities

2.5: Install high efficiency transformers at 23 county facilities

2.6: Replace the existing ice plant at the Spud Point Marina with a new, efficient ice-making facility

2.7: Upgrade existing HVAC controls at 42 facilities to advanced building management systems

Multi-Criteria Analysis Score: 40.67/80



MEASURE E-CO-3

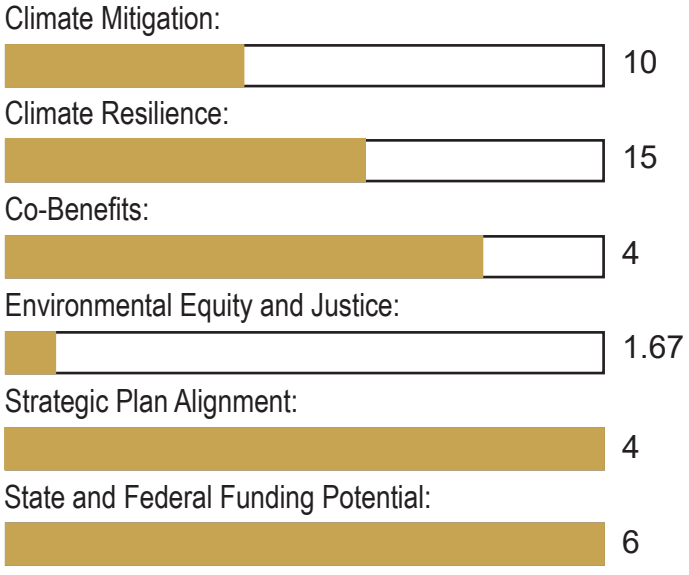
Prepare plan & reduce energy use and increase resilience in the longer term at remaining County facilities planned for continuing use through energy upgrades.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$100,000,000+	**TBD**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency; Building Efficiency; Vehicle Electrification; Water Conservation; Ecosystem Health

SUBMEASURES FOR E-CO-3

3.1: Based on progress from near and mid term measures, long term energy efficiency upgrades will be completed.

Multi-Criteria Analysis Score: 40.67/80



MEASURE E-CO-4

Reduce greenhouse gas emissions due to electricity use for County operations by purchasing Evergreen power from Sonoma Clean Power for all electricity use.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$63,767 per year	**107,129 lbs CO2e/yr or 48.6 MT CO2e/yr**	**Sonoma Public Infrastructure, Climate, CAO**	Energy Efficiency; Building Efficiency; Ecosystem Health

SUBMEASURES FOR E-CO-4

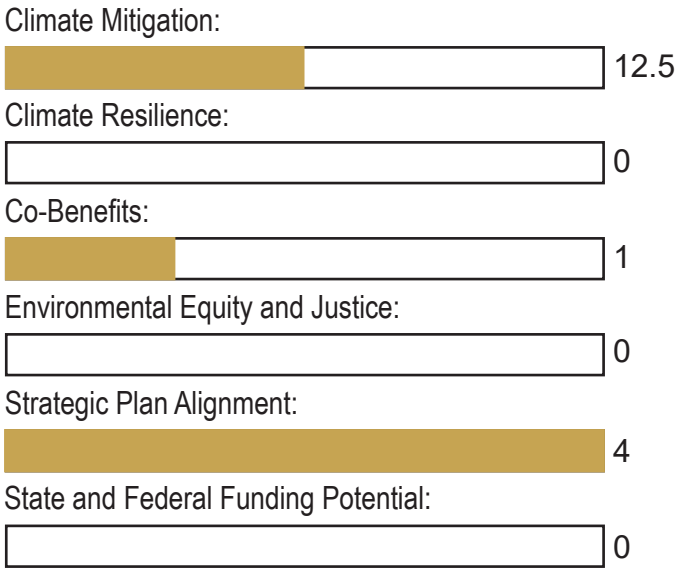
4.1: Assign all current SCP electricity accounts to Evergreen

4.2: Migrate PG&E + Direct Access electricity accounts to Sonoma Clean Power CleanStart

4.3: With Sonoma Clean Power evaluate costs & benefits of Evergreen for migrated accounts; recommend assignment based on results

4.4: Implement recommended assignment of migrated accounts to Evergreen

Multi-Criteria Analysis Score: 17.50/80



MEASURE E-CO-5

Minimize energy use and maximize resilience in new County facilities by developing energy policies.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$90,000	**TBD**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency; Building Efficiency; Vehicle Electrification; Water Conservation; Ecosystem Health

SUBMEASURES FOR E-CO-5

5.1: Build energy design for new construction of buildings

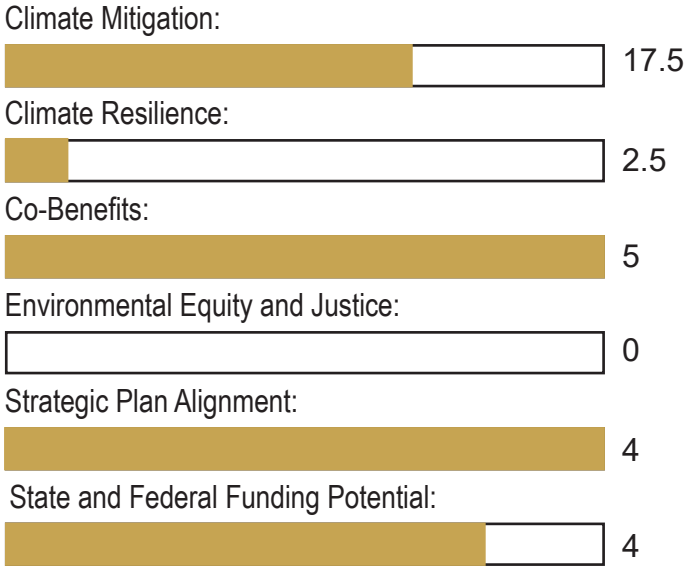
5.2: Build energy requirements for new leases of buildings

5.3: Embed energy of materials in new construction

5.4: Mitigate heat gain/island effect through cool roofs, cool coatings, utilization of green space cover (shade trees, green roofs, etc.)

5.5: EV-ready parking lot projects and EV capable-parking spaces consistent with CALGreen Tier 2 requirements

Multi-Criteria Analysis Score: 33/80



MEASURE E-CO-6

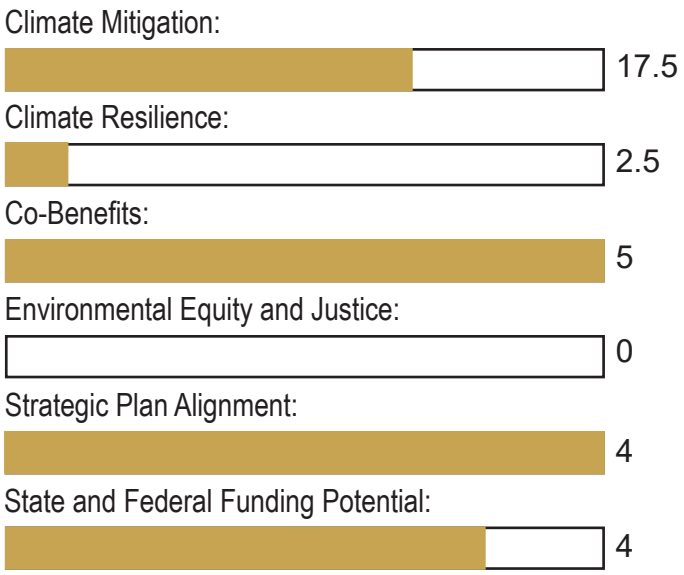
Minimize energy use and maximize resilience in the new County Government Center by following approved building energy design policies (E-CO-5), or by achieving LEED certification.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$350,000	**TBD**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency, Building Efficiency, Ecosystem Health

SUBMEASURES FOR E-CO-6

6.1: Minimize energy use and maximize resilience in the new County Government Center.

Multi-Criteria Analysis Score: 33/80



MEASURE E-CO-7

Improve refrigerant leak detection & repair, and transition to lower global warming intensity as feasible.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$20,000	**TBD**	**Sonoma Public Infrastructure, Climate**	Building Efficiency, Ecosystem Health

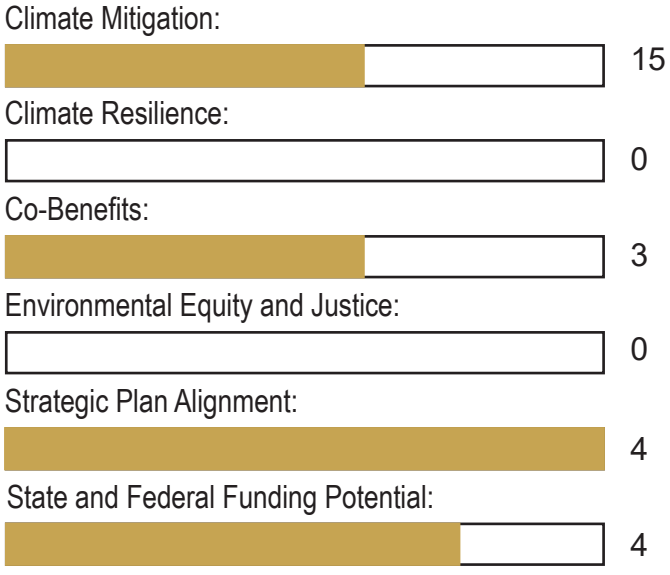
SUBMEASURES FOR E-CO-7

7.1: Conduct regular & frequent maintenance of equipment using refrigerant, adopt enhanced leak detection & repair, and evaluate & implement additional refrigerant management improvements

7.2: Adopt an expedited schedule to phase out transition to refrigerants w/ lower global warming potential

7.3: Implement and document best practices for refrigerant handling and disposal; require periodic training on refrigerant handling

Multi-Criteria Analysis Score: 26/80



MEASURE E-CO-8

Reduce energy use and increase resilience in the mid-term by completing public lighting upgrades to high-efficiency systems.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$300/light ($2,000/light per year)*	**18.4 lbs CO2e/light per year**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency, Building Efficiency, Ecosystem Health

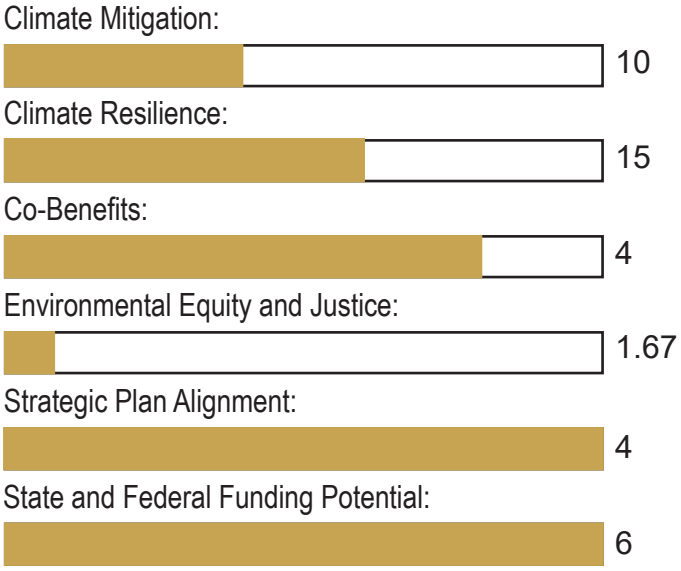
*Lifetime Savings

SUBMEASURES FOR E-CO-8

8.1: Upgrade County-owned public lighting to high-efficiency systems

8.2: Upgrade public lighting in County-managed lighting districts to high-efficiency systems

Multi-Criteria Analysis Score: 40.67/80



MEASURE E-CO-9

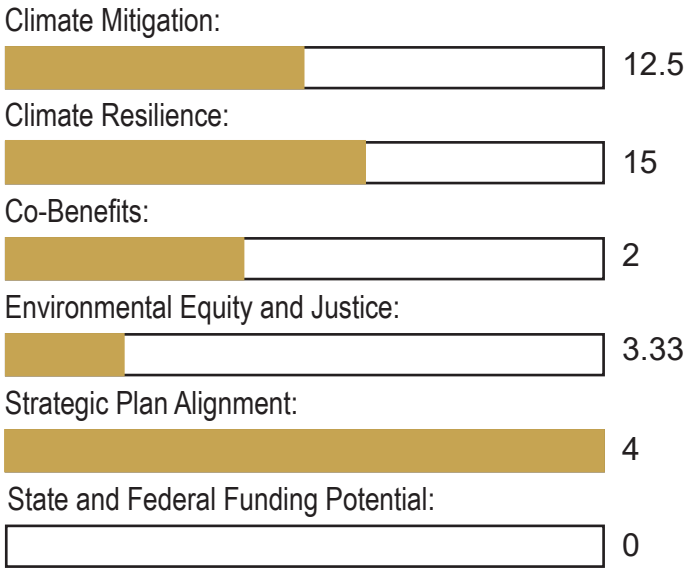
Support decarbonization transition by planning for maintenance needs and staff training related to operation and maintenance of new technologies.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$10,000	**N/A**	**Sonoma Public Infrastructure, Climate, Human Resources**	

SUBMEASURES FOR E-CO-9

9.1: Support decarbonization transition by planning for maintenance needs and staff training.

Multi-Criteria Analysis Score: 36.83/80



MEASURE E-CO-10

Implement Regional Parks plan (when/as approved) to improve efficiency and decarbonize Parks buildings.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$7,300,000** **($19,943,730)***	**45.2 MT CO2e/yr per system maximum**	**Regional Parks, Sonoma Public Infrastructure, Climate**	Energy Efficiency; Building Efficiency; Vehicle Electrification; Ecosystem Health

*Lifetime Savings
**All costs are for 10.4 only and based on estimate per 1MW system.

SUBMEASURES FOR E-CO-10

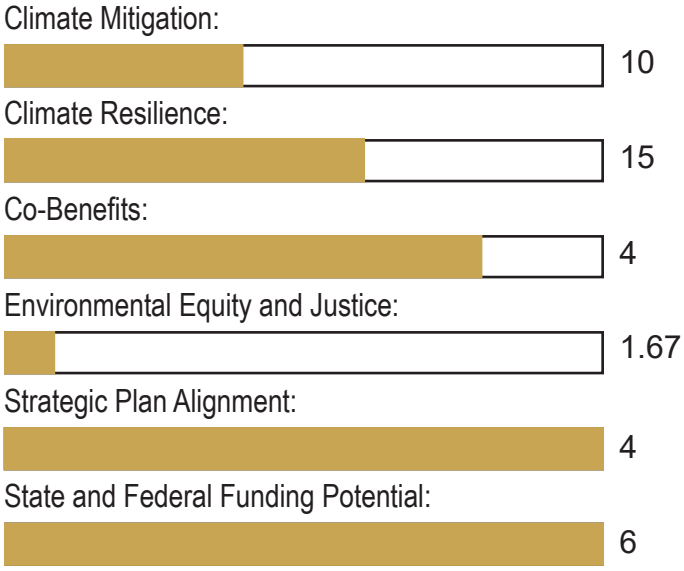
10.1: Feasibility study on current status of buildings and electrical service

10.2: Reduce propane use in Parks buildings, and implement energy upgrades at Park Ranger Residences

10.3: Prepare a feasibility study for renewable energy and solar charging hub installations in parks

10.4: Implement renewable energy installations in parks, and create solar charging hubs serving underserved communities

Multi-Criteria Analysis Score: 40.67/80



Transportation

Transportation

The Transportation Sector is the largest contributor to the County's municipal GHG emissions and includes emissions from all County-owned vehicles as well as emissions from County employees commuting to and from work. It also includes heavy duty off-road engines and small off-road equipment. Combustion vehicles emit GHGs and also other air pollutants that are harmful to human health and the environment. Decarbonizing transportation has a significant benefit for regional and near-road air quality, especially in communities impacted by environmental racism. In rural areas, there are typically fewer roads and transportation options than in cities. A single damaged road or bridge can cut off people's access to services and necessities, such as food or medicine.

Key Climate Impacts:
Wildfire, sea level rise, changes in precipitation, extreme weather, and heat pose risks to transportation system safety. Rising sea levels and more extreme storms can lead to more storm surge and flooding, which can damage roads, bridges, rail systems. Flooding disrupts the movement of commuters, tourists, and freight. People also need reliable transportation to get to their jobs. Extreme weather, such as heavy rains, can cause flooding and mudslides, affecting highways, railways, and bridges.

Climate Resilience Objectives:
Decarbonize the transportation sector. Other climate planning sectors focus on system resilience to damage from climate hazards.
Policy Landscape:

Key statewide and regional policies that influence the transportation sector and the GHG emissions associated with it, as well as the deployment of supporting infrastructure storage include:

Advanced Clean Cars Program, which supports Governor Newsom's Executive Order (N-79-20) goal that 100% of in-state sales of new passenger cars and trucks will be zero emission by 2035 by reducing greenhouse gas and smog-causing pollutant emissions from California cars, including vehicle performance standards and manufacturer requirements.

Advanced Clean Fleets Program, which supports Governor Newsom's Executive Order (N-79-20) goal that 100% of medium and heavy-duty vehicles will zero emission by 2045, by requiring fleets that are well-suited for electrification to reduce emissions through requirements to phase-in the use of Zero-Emission Vehicles (ZEVs) for targeted fleets, and requirements that manufacturers only manufacture ZEV trucks starting in the 2036 model year.

Climate Change Scoping Plan to Achieve Carbon Neutrality, California's comprehensive plan outlining the state's approach to achieving its greenhouse gas emission reduction targets, including SB 32's goal of reducing emissions 40% below 1990 levels by 2030, and achieving carbon neutrality by 2045.

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Innovative Clean Transit Program, that requires all public transit agencies to gradually reduce fleet vehicle tailpipe emissions and encourages them to provide innovative first and last-mile connectivity and improved mobility for transit riders.

Plan Bay Area 2050, developed by the Metropolitan Transportation Commission and the Association of Bay Area Governments, is comprised of 35 strategies across the elements of housing, the economy, transportation, and the environment.

RCPA Sonoma Climate Mobilization Strategy: approved in 2021to guide climate actions through 2030. This strategy outlines 13 countywide actions under local authority that have the potential to significantly reduce GHG emissions by 2030.

SCTA Moving Forward 2050, with a vision of: Connecting people and places as we transition our transportation network to zero-emissions by 2050. To support local implementation of the plan, SCTA developed Shift Sonoma County, a project to define and evaluate strategies to shift transportation choices away from single occupant vehicles towards cleaner, healthier, and more efficient modes of transportation.

The Governor committed to 100% zero emission vehicle sales in California by 2035, and the state and federal government have committed substantial funding to support the purchase of zero emission vehicles and the deployment of charging and hydrogen fueling infrastructure to support them. Both the state and federal governments have adopted or are adopting emissions standards for light, medium, and heavy-duty fleets that force the shift to battery electric or hydrogen-fueled vehicles. The state has also adopted fleet transition regulations that require fleet owners to achieve milestones in lower emissions or total decarbonization of their fleets. Lastly, there is an increased emphasis on alternative and active modes of transportation.

Key challenges include the need to rapidly expand zero emission charging and fueling infrastructure and increase capacity of the California grid to support it, both in generation and in transmission capacity. The shift away from fossil fuels also decreases transportation funding collected from fuels taxes and will ultimately require a reconfiguration of transportation funding.

There are also significant barriers to zero emission vehicle adoption in lower income communities. The transportation transition needs to uplift climate justice communities and advance their welfare and ensure that the transportation disparities, past and present, do not persist into the clean transportation future. Important climate justice focused policies shape funding priorities and other fundamental elements of the transition. Some of these disadvantage Sonoma County relative to other areas of the state and nation, which have larger populations experiencing greater environmental injustices and forms of environmental racism

Transportation

than communities in Sonoma County. In spite of this, the County and its partners need to marshal the resources to not only support the transition to carbon-free transportation, but to ensure it is a just transition.

Key Studies, Strategies and Plans:

The measures in the Transportation Sector reflect recommended policies and actions in the RCPA Climate Mobilization Strategy, the SCTA Moving Forward 20450, and Countywide Active Transportation Plan, Light Duty Fleet Transition Plan, the Sonoma County Transit Zero Emission Bus Roll-out Plan, compliance plans with other state engine regulations, and the draft Regional Parks Climate Action and Resiliency Plan.

Key Features of the Transportation Measures

The Board invested in Early Actions to expand bikeways and electric vehicle charging infrastructure, and pilot fare-free transit.

Figure 18: Transportation Sector Early Action Measures

Transportation Sector Early Action Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
T-EA-1	Accelerate creation of Class 1 Bikeways by funding transaction fees & costs related to right-of-way acquisition, and outreach materials.	2023-24	Regional Parks
T-EA-2	Expand the County's Electric Vehicle (EV) Charging Infrastructure with Level II and III charging infrastructure and deployable, solar-powered EV chargers.	2023-24	Public Infrastructure / Fleet
T-EA-3	Implement a Fare-Free service pilot on Sonoma County Transit, Santa Rosa City Bus, and Petaluma Transit, with the goal of rebuilding transit ridership.	2023-24	Sonoma County Transit, Santa Rosa & Petaluma
T-EA-4	Fund the right-of-way portion of the Arnold Drive Bike Lane project to add nearly 2 miles of Class II bike lanes on Arnold Drive in Sonoma Valley.	2023-24	Public Infrastructure / Roads

County Operations transportation measures focus on light, medium, and heavy-duty County fleet transition to zero emissions, transitioning heavy-duty off-road engines and small offroad equipment. They also expand charging infrastructure and Class I bikeways, and seek to shift employee commute patterns. There is also training and other institutional support for technology transition, and a measure to reduce vehicle idling to decrease emissions from fossil-fuels.

Transportation

Figure 19: Transportation Sector County Operations Measures

Transportation Sector County Operations Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
T-CO-1	Decarbonize the County fleet of light duty vehicles by 2040.	N M L	Public Infrastructure, Climate
T-CO-2	Implement demonstration projects and plan to support decarbonizing Sheriff pursuit vehicles.	M L	Public Infrastructure, Climate
T-CO-3	Decarbonize the fleet of medium & heavy-duty vehicles (greater than 8,500 lbs gross vehicular weight) by 2042.	M L	Public Infrastructure, Climate
T-CO-4	Decarbonize the transit bus fleet by 2040.	M L	Public Infrastructure - SC Transit
T-CO-5	Deploy zero emission vehicle infrastructure in number and locations to support the decarbonization schedule for light and heavy-duty fleets.	N M L	Public Infrastructure, Climate
T-CO-6	Decarbonize off-road heavy-duty equipment by 2042.	M L	Public Infrastructure, Climate
T-CO-7	Reduce idling emissions from county fleet vehicles and vehicles visiting county facilities by adopting policies and/or ordinances as appropriate.	N M	Public Infrastructure, Climate, HR
T-CO-8	Support vehicle fleet transition by planning for maintenance facility needs and staff training related to vehicle and fueling/charging infrastructure technologies.	M	Public Infrastructure, Climate, HR
T-CO-9	Reduce emissions from employee commute by 50% by 2030.	N M L	Climate, HR, OMB, Public Infrastructure, SCTA, SMART, Transit Operators
T-CO-10	Support the Sonoma County Airport Sustainability Master Plan (when/as approved).	M L	SC Airport, Climate
T-CO-11	Create Class 1 Bikeways that support an interconnected and protected network	M L	Regional Parks, Climate
T-CO-12	Decarbonize small offroad engines beginning in 2024 by requiring all purchases be zero-emission equipment.	N M L	Regional Parks, Public Infrastructure, Climate

MEASURE T-CO-1

Decarbonize the County fleet of light duty vehicles by 2040.*

*In accordance with state regulations

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$14,100,000 **($14,000,000)***	**3,333 MT CO2e / yr for the entire fleet**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency Vehicle Electrification Ecosystem Health

***Lifetime Savings**

SUBMEASURES FOR T-CO-1

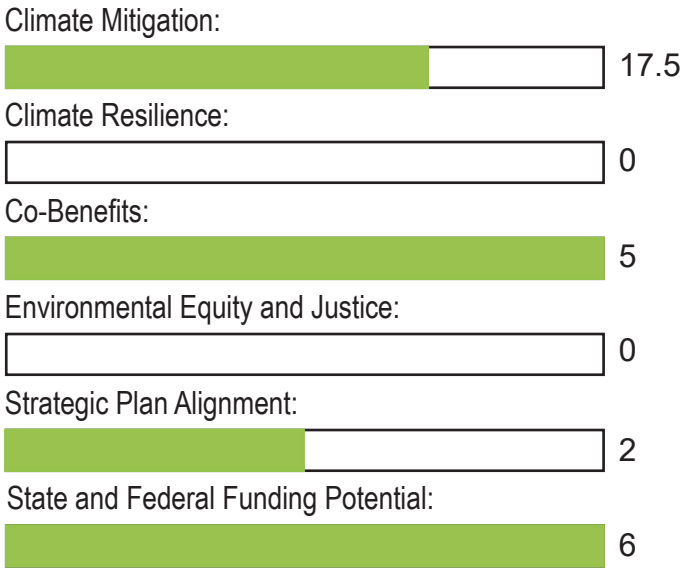
1.1: Achieve 30% zero-emission vehicle light-duty fleet by 2026 & purchase the lowest emission model available for the service need if purchasing gasoline powered vehicles

1.2: Decarbonize 50% of light duty vehicle fleet by 2030

1.3: Decarbonize 70% of light duty vehicle fleet for replacement each year and purchase the lowest emission model available for the service need when purchasing gasoline powered vehicles

1.4: Decarbonize 100% of light-duty vehicles scheduled for replacement each year

Multi-Criteria Analysis Score: 30.50/80



MEASURE T-CO-2

Implement demonstration projects & plan decarbonizing Sheriff pursuit vehicles as suitable vehicles are available.

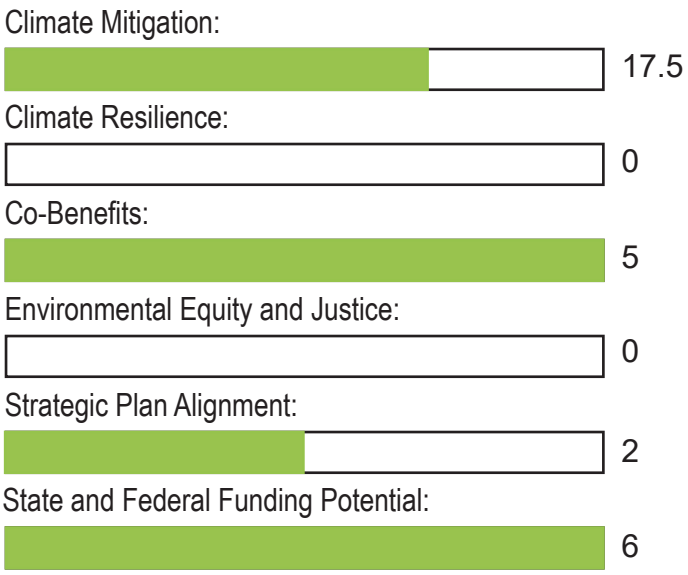
TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$130,000	**3,333 MT CO2e / yr for the entire fleet**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency; Vehicle Electrification; Ecosystem Health

SUBMEASURES FOR T-CO-2

2.1: Implement a demonstration project with a decarbonized pursuit vehicle and evaluate performance, limitations, opportunities

2.2: Develop a feasibility study and plan by 2028 to decarbonize pursuit vehicles as early as feasible (vehicle costs in E-CO-1)

Multi-Criteria Analysis Score: 30.50/80



MEASURE T-CO-3

Decarbonize the fleet of Medium & Heavy Duty vehicles (greater than 8,500 lbs gross vehicular weight) by 2042.*

*In accordance with state regulations

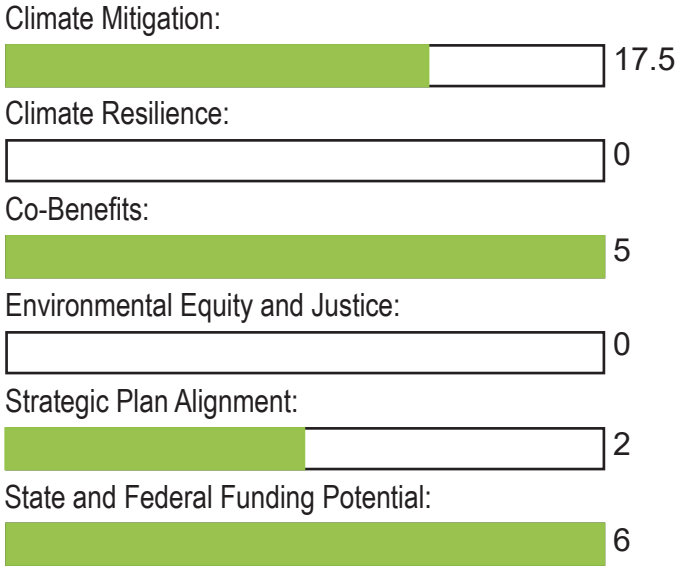
TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$2,700,000	**93 to 98% reduction in CO2e for 320 vehicles**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency; Vehicle Electrification; Ecosystem Health

SUBMEASURES FOR T-CO-3

3.1: Decarbonize 50% of heavy duty vehicles scheduled for replacement each year (unless exempted by CARB under the Advanced Clean Fleets regulation) and purchase the lowest emission model available for the service need when purchasing diesel powered vehicles

3.2: Beginning in 2030, decarbonize 100% of heavy duty vehicles scheduled for replacement each year unless exempted by CARB under the Advanced Clean Fleets regulation

Multi-Criteria Analysis Score: 30.50/80



MEASURE T-CO-4

Decarbonize the transit bus fleet by 2040.*

*In accordance with state regulations

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$59,862,545 ($13,272,000)*	**5,394 MT CO2e / yr for the entire fleet**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency; Vehicle Electrification; Ecosystem Health

***Lifetime Savings**

SUBMEASURES FOR T-CO-4

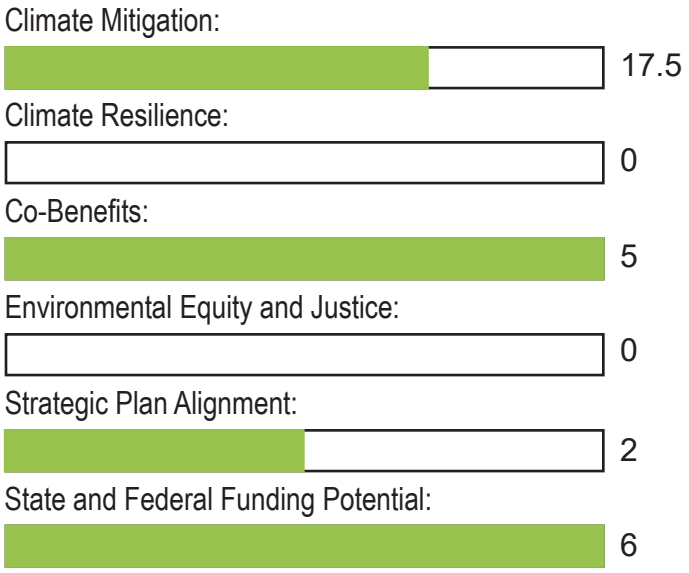
4.1:Zero emission buses will comprise at least 25% of all new transit bus purchases

4.2: Zero emission buses will comprise 100% of all new transit bus purchases, to achieve 100% zero emission transit buses by 2035

4.3: Install DC charging infrastructure at SCT Op Yard to support ZE buses 2026-28

4.4: Install DC charging infrastructure at SCT Op Yard + in-route charging in 2030

Multi-Criteria Analysis Score: 30.50/80



MEASURE T-CO-5

Deploy zero emission vehicle infrastructure in number and locations to support the decarbonization schedule for light and heavy duty fleets.*

*In accordance with state regulations

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$7,526,324	**TBD**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency; Vehicle Electrification; Ecosystem Health

SUBMEASURES FOR T-CO-5

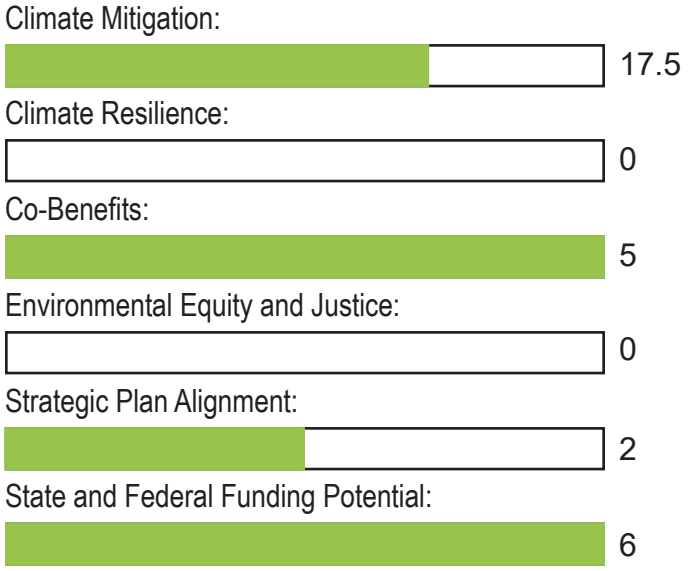
5.1: Develop a zero emission vehicle infrastructure plan that ensures charging/ fueling infrastructure is in place in locations to support the decarbonization schedule for light and heavy duty fleets

5.2: Seek funding to deploy 100 level II electric vehicle charging stations

5.3: Phase implementation of zero emission infrastructure plan

5.4: Complete installation of vehicle charging infrastructure

Multi-Criteria Analysis Score: 30.50/80



MEASURE T-CO-6

Decarbonize off-road heavy duty equipment by 2042.*

*In accordance with state regulations

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$550,000	**223 MT CO2e/yr**	**Sonoma Public Infrastructure, Climate**	Energy Efficiency, Ecosystem Health

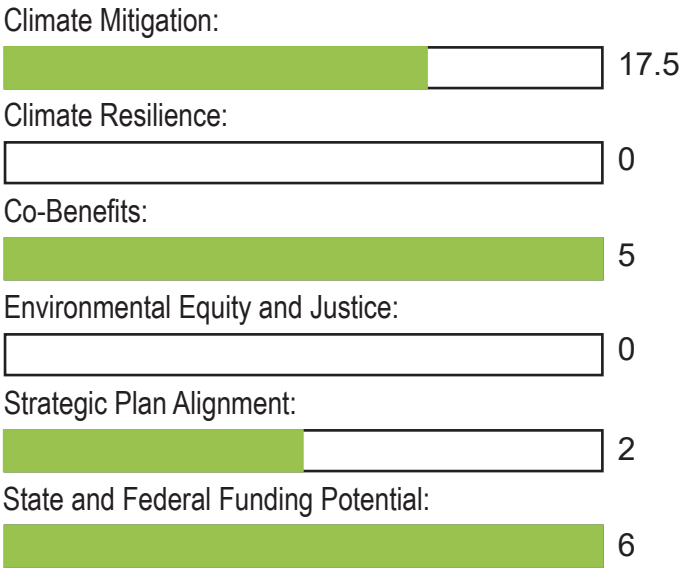
SUBMEASURES FOR T-CO-6

6.1: Develop an inventory of existing off-road equipment engine tiers & begin phase-out of Tier 0 engines, per CARB IUOR Reg.

6.2: Retire existing Tier 1 & 2 engines per CARB IUOR Reg.

6.3: Develop a feasibility study & upgrade plan to minimize equipment emissions and maximize decarbonization to the extent feasible

Multi-Criteria Analysis Score: 30.50/80



MEASURE T-CO-7

Reduce idling emissions from County fleet vehicles and vehicles visiting County facilities through policies/ ordinances as appropriate.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$18,000 **($1,152,000)***	**11,840 MT CO2e**	**Sonoma Public Infrastructure, Human Resources**	Energy Efficiency; Ecosystem Health; Vehicle Electrification

***Lifetime Savings**

SUBMEASURES FOR T-CO-7

7.1: Require drivers of County-owned vehicles to turn off engines after 3 minutes when not in use or when the driver leaves the vehicle, except as provided for specified vehicle types and circumstances

7.2: Prohibit idling on County-owned properties except as provided for based on analysis and input

Multi-Criteria Analysis Score: 15.50/80

Climate Mitigation: 7.5

Climate Resilience: 5

Co-Benefits: 3

Environmental Equity and Justice: 0

Strategic Plan Alignment: 0

State and Federal Funding Potential: 0

MEASURE T-CO-8

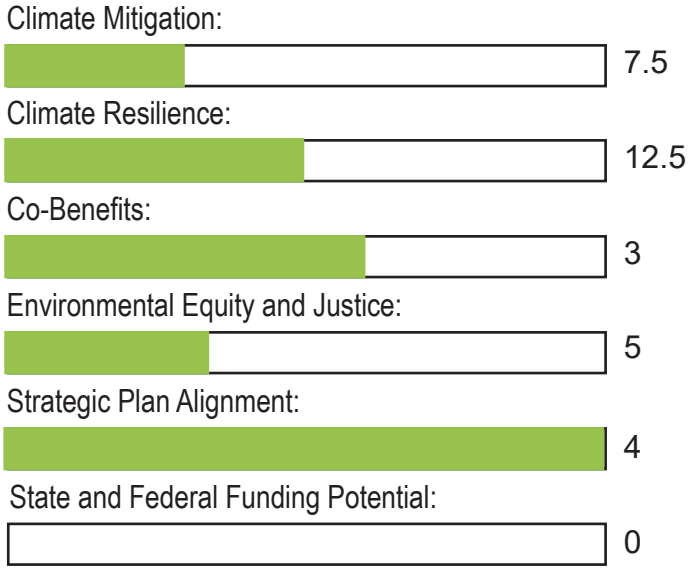
Support vehicle fleet transition by planning for maintenance facility needs and staff training related to vehicle and fueling/charging infrastructure technologies.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$10,000	**TBD**	**Sonoma Public Infrastructure, Climate, Human Resources**	Energy Efficiency; Climate Education; Vehicle Electrification; Workforce Development; Ecosystem Health

SUBMEASURES FOR T-CO-8

8.1: Based on upgrades for County fleet vehicles, appropriate training and education will be provided to staff.

Multi-Criteria Analysis Score: 32/80



MEASURE T-CO-9

Reduce emissions from employee commute by 50% by 2030.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$977,020	**1,352 MT CO2e/year**	**Sonoma Public Infrastructure, Climate, Human Resources**	Energy Efficiency; Vehicle Electrification; Alternate Transit; Ecosystem Health

SUBMEASURES FOR T-CO-9

9.1: Continued licensing the Clean Commute Trip Tracker

9.2: Evaluate opportunities to expand telework and revising telework policy

9.3: Evaluate and recommend options to increase employee incentives to commute other than by single occupancy vehicles

9.4: Expand employee access to electric vehicle charging through:

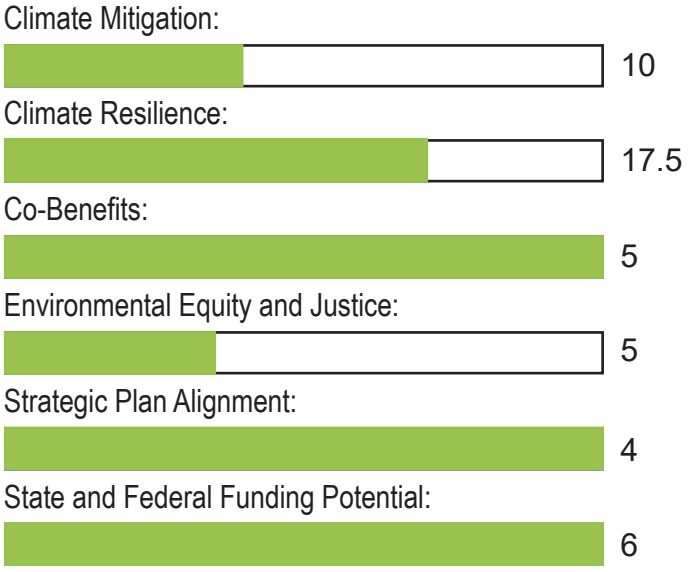
- 9.4.1: Seeking public-private partnerships to develop onsite charging infrastructure at County facilities
- 9.4.2: Evaluating opportunities to expand subsidized charging at County charging infrastructure or provide stipends for charging at privately managed charging infrastructure for at privately-owned charging sites

9.5: Develop a feasibility study of first mile and last mile connectivity opportunities for county employees in collaboration with local transit partners

9.6: Develop a feasibility study & plan to expand active transportation infrastructure, e.g. bike lockers, fix-it stations, and shower facilities

9.7: Evaluate options and developing a program to support mid-day trips and guaranteed rides home for employees using alternative transportation

Multi-Criteria Analysis Score: 47.50/80



MEASURE T-CO-10

Support the Sonoma County Airport Sustainability Master Plan (when/as approved) to reduce emissions.

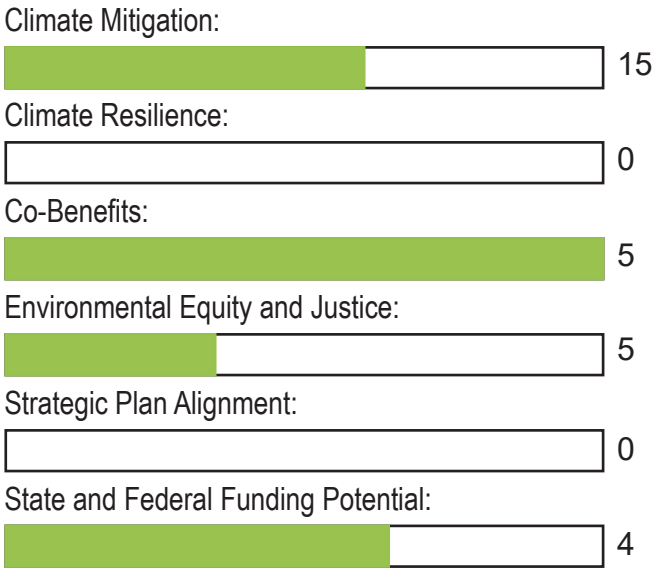
TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
TBD	TBD	Sonoma County Airport, Climate	Ecosystem Health; Alternate Transit

SUBMEASURES FOR T-CO-10

10.1: Establish plan elements to transition ground support vehicles and equipment to zero or near-zero emissions as feasible

10.2: Enhance procedures and other opportunities to reduce on-the-ground emissions from aircraft, and advocating for cleaner aviation fuels and fuel economy standards

Multi-Criteria Analysis Score: 29/80



MEASURE T-CO-11

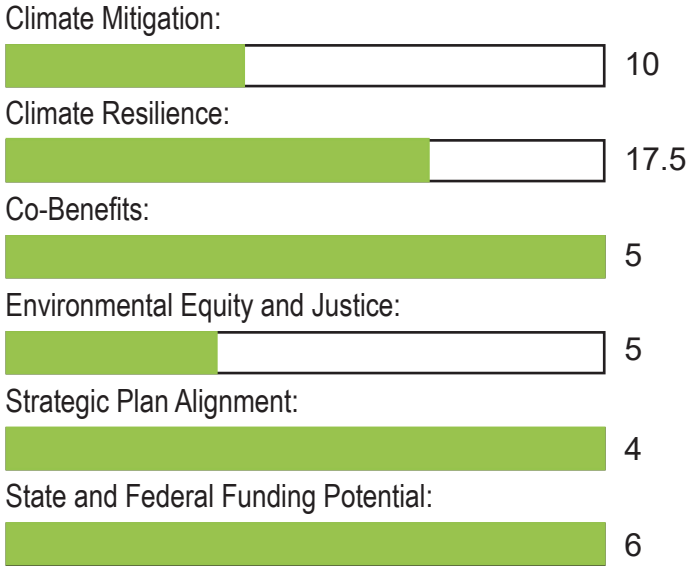
Create and connect to an interconnected system of Class 1 Bikeways through partnerships, acquisitions, and collaborative efforts.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$2.4 M - $7.5 per mile	**TBD**	**Regional Parks, Climate**	Alternate Transit; Ecosystem Health

SUBMEASURES FOR T-CO-11

11.1: Create Class 1 Bikeways through partnerships, acquisitions, and collaborative efforts

Multi-Criteria Analysis Score: 47.50/80



MEASURE T-CO-12

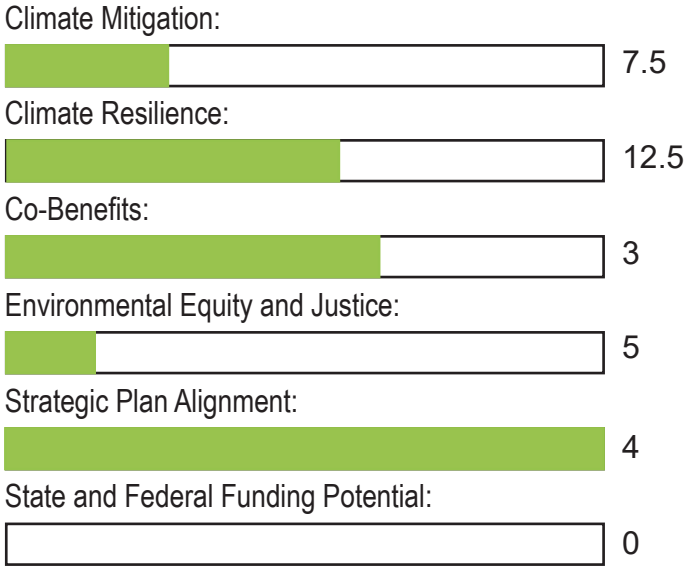
Decarbonize small offroad engines beginning in 2024 by requiring all purchases be zero-emission equipment.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$360,000	**674**	**Regional Parks, Sonoma Public Infrastructure, Climate**	Energy Efficiency; Ecosystem Health; Vehicle Electrification

SUBMEASURES FOR T-CO-12

12.1: Decarbonize small offroad engines beginning in 2024.

Multi-Criteria Analysis Score: 32/80



Zero Waste

Zero Waste

Under the County's Strategic Plan Climate Action and Resiliency Pillar, the County set a goal to make all County facilities zero waste. Zero Waste Sonoma defines zero waste as: The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health (Zero Waste International Alliance, n.d.).

Key Climate Impacts:
Two common methods of waste disposal, landfilling and incineration, are major contributors to the release of GHG gases into our atmosphere. Landfills, filled with decomposing waste, generate methane, a potent GHG. Similarly, incineration processes, while effective in reducing the volume of waste, emit large amounts of carbon dioxide, a primary driver of global warming. These emissions exacerbate climate change.

Climate Resilience Objectives:
Promote understanding of the intricate relationship between GHG emissions and solid waste management practices amongst staff and County visitors. This knowledge allows the County to reduce waste production, recycle, and compost effectively without contamination. This will decrease the volume of waste going to landfills and incinerators.

Policy Landscape:
Key statewide and regional policies that influence the waste sector and the GHG emissions associated with it include:

Assembly Bill 619 Reusable Containers and Multiuse Utensils, amends the Health and Safety Code to allow customers to bring their own containers for food to a restaurant or other food facility. Employees or customers may fill the container. Temporary food facilities may also provide reusable utensils.

Assembly Bill 341 Mandatory Commercial Recycling Law, requires recycling in the by businesses, non-profits, strip malls, government offices multi-family housing (five units or more), and schools that generate greater than four cy of waste weekly.

Assembly Bill 3025 Polystyrene Loose-fill Packaging, prohibits selling expanded packaging peanuts in California, unless it is 100% recycled material.

Assembly Bill 2020 California Beverage Container Recycling and Litter Reduction Act and AB 3056, raised the redemption value of qualifying beverages to 5 cents for containers under 24 ounces and 10 cents for containers 24 ounces or more.

Senate Bill 1383 Short-Lived Climate Pollutants, mandates statewide actions to reduce organic material in landfills by 50% from 2014 levels by 2020 and by 75% from 2014 levels by 2025. By this time, at least 20% of edible food currently disposed must be recovered for human consumption. This bill is the regulatory force as it imposes heavy fines and penalties for noncompliance.

Zero Waste

Assembly Bill 1826 Mandatory Commercial Organics, requires businesses, non-profits, multifamily housing, schools, and government generating more than four cy of weekly to waste to have compost.

Assembly Bill 827 Commercial Organics and Recycling Bins, requires commercial food establishments provide bins to customers for collecting organics and recycling.

AB Assembly Bill Program, established an industry-led, statewide stewardship program to manage reuse, recycling, and disposal of leftover architectural paint.

Assembly Bill 1125 Rechargeable Battery Recycling Act, requires retailers of rechargeable batteries take-back spent rechargeables from their customers.

The California Universal Waste Law, adopted new regulations for universal waste, deeming them hazardous to people and the environment. Universal wastes include batteries, fluorescent lamps and mercury containing products, and some electronic devices that contain mercury, lead, cadmium, copper and other hazardous substances.

Assembly Bill 2901 Cell Phone Recycling, requires vendors to recycle used phones.

Senate Bill 20 Electronics Recycling, established a funding system for the collection and recycling of certain electronic wastes. Fees are collected from consumers at point of purchase to fund collection and recycling programs.

Disposable Food Service Ware and Polystyrene Foam Ban Model Ordinance, would ban the sale of certain polystyrene foam products and limit the use of non-recyclable or non-compostable disposable food ware throughout Sonoma County.

Carryout Bags Ordinance, bans all single-use plastic bags and requires stores to charge 10 cents for each paper bag throughout Sonoma County.

Zero Waste Resolution, sets a goal of no material going to landfill by 2030 (Jurisdictions in Sonoma County have passed, or are considering passing).

In 2009, EPA found that more than 40 percent of national GHG emissions result from production, transportation, use, and disposal of material goods. EPA conducted a comprehensive study of GHG emissions and waste management that estimates the GHG emissions associated with managing waste materials and found that waste prevention is the best management option in terms of climate benefits. Recycling is the next best approach to reducing GHG emissions. The EPA has set out a transformative vision for our waste management system by releasing a series of strategies that will be dedicated to building a circular economy. A circular economy keeps materials and products in circulation for as long possible. The EPA has set out a transformative vision for our waste management system by releasing a series of strategies that will be dedicated to building a circular economy. A circular economy keeps materials and products in circulation for as long possible.

Zero Waste

Key Studies, Strategies and Plans:
County of Sonoma Zero Waste Audit and Characterization Study, Municipal Greenhouse Gas Inventory, Zero Waste Resolution, Carbon Stock Inventory and Potential Sequestration Study, Senate Bill 1383, RCPA Climate Mobilization Study.

Key Features of the Waste Measures:
The Board invested in Early Actions to partner with Zero Waste Sonoma and waste managers to draft a model ordinance to regulate the disposal of waste generated by construction, demolition, and destruction activities within Sonoma County. This ordinance can now be reviewed by all jurisdictions and considered for adoption. The County also partnered with the University of California Cooperative Extension on a project exploring how provision of food access during emergencies can overlap with the reduction of food waste by creating resilient community food networks.

Figure 20: Zero Waste Sector Early Action Measures

Waste Sector Early Action Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
ZW-EA-1	Develop a Construction, Demolition & Deconstruction Model Ordinance.	2023-24	Public Infrastructure, Zero Waste Sonoma
ZW-EA-2	Conduct a 3-year project to create community-based food networks to increase community resilience to climate change.	2023-24	UCCE

County Operations measures phase in recommendations form the Zero Waste Audit and Characterization Study. The study found that in 2023, total emissions of the County's waste management program is 493 MTCO2e. A more Robust Waste program utilizing a whole systems approach, finding alternatives both up and downstream could reduce the current emission output to -3,864 MTCO2e. The EPA Waste Reduction Model (WARM) was used to determine the GHG emissions from the current levels of waste per the baseline totals.

The Zero Waste measures are outlined in the table below. They includes the costs associated with each measure, and the target timeline for implementation.

Zero Waste

Figure 21: Zero Waste Sector County Operations Measures

Waste Sector County Operations Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
ZW-CO-1	Establish a measurable Zero Waste program with leadership and accountability in all County departments and facilities to increase waste diversion.	N	Climate, Public Infrastructure, Zero Waste Sonoma, Department Heads
ZW-CO-2	Establish and update facility-specific near-term actions to increase waste diversion by 50% for each facility type.	M	Climate, Zero Waste Leadership Team (ZW-CO-1), Zero Waste Sonoma
ZW-CO-3	Demonstrate and document compliance with statewide organic waste diversion requirements (SB 1383).	N	Zero Waste Leadership Team, Public Infrastructure, Zero Waste Sonoma
ZW-CO-4	Increase diversion of organic waste from landfills by 100% in County facility types that generate organic waste.	N	Climate, HR, Public Infrastructure, Zero Waste Sonoma, Communications
ZW-CO-5	Review diversion outcomes of near-term measures and actions and develop a comprehensive Zero Waste Plan.	M	Climate, Zero Waste Leadership Team, Zero Waste Sonoma
ZW-CO-6	Decrease the use of disposable food ware for onsite and offsite County-facilitated dining by 100% through a County-wide policy.	M	Climate, HR, Zero Waste Leadership Team
ZW-CO-7	Develop centralized universal waste collection stations in every County facility to ensure access.	M	Climate, Public Infrastructure
ZW-CO-8	Prioritize five types of procurement contracts with upstream suppliers, review, and develop waste reduction benchmarks for future contracts.	M	Climate, Zero Waste Leadership Team, Public Infrastructure
ZW-CO-9	Evaluate and implement strategies to enhance waste diversion for the Reuse/Recycling Program Center.	M	Climate, Zero Waste Leadership Team, Public Infrastructure, Zero Waste Sonoma
ZW-CO-10	In partnership with the Bay Area Air Quality Management District and the Northern Sonoma County Air Pollution Control District, evaluate opportunities to cost-effectively reduce landfill gas emissions from closed landfills.	M	Climate, Public Infrastructure, BAAQMD, NSCAPCD

MEASURE ZW-CO-1

Establish a Zero Waste program with leadership and accountability in all County departments and all County facilities to increase waste diversion.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$290,000	**Refer to ZW-CO-2**	**Sonoma Public Infrastructure, Climate, Human Resources, Zero Waste Sonoma**	Waste Reduction; Climate Education; Ecosystem Health

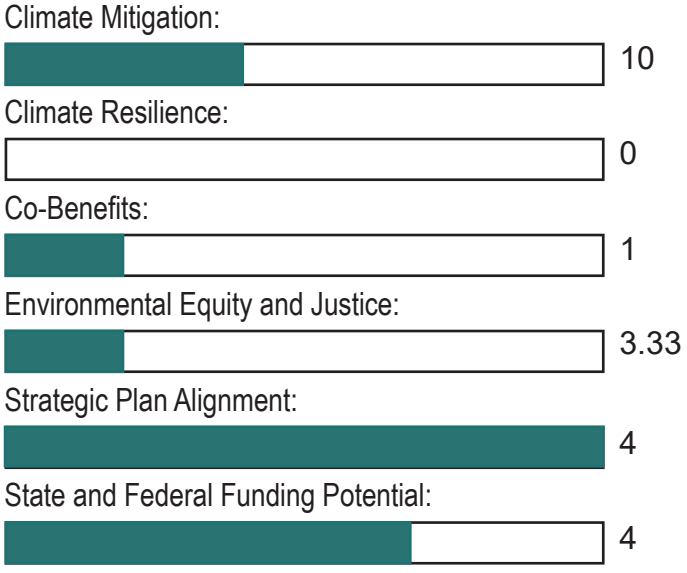
SUBMEASURES FOR ZW-CO-1

1.1: Establish a Zero Waste Champion at every facility to advance facility progress towards zero waste
- 1.1.1: Share information and promote waste diversion among employees at 7 facility types
- 1.1.2: Conduct monthly spot checks on waste diversion and visual inspection

1.2: Convene a Zero Waste Team including facility Zero Waste Champions, department management representatives, and CARD
- 1.2.1: Meet periodically to review and promote waste diversion progress
- 1.2.2: Review trends in spot check data & identify diversion successes & improvements
- 1.2.3: Recommend improvements to the spot check process and/or waste diversion options

1.3: Establish a county-wide Zero Waste Coordinator
- 1.3.1: Collect, analyze, and summarize the monthly waste diversion spot checks and other key organic waste compliance data
- 1.3.2: Develop mid-term waste diversion strategies for each of the facility types
- 1.3.3: Prepare annual report to the Board on progress towards Zero Waste by 2030

Multi-Criteria Analysis Score: 22.33/80



MEASURE ZW-CO-2

Establish and update facility-specific near-term measures and actions to increase waste diversion by 50% based on results of the 2023 Zero Waste Audit and Characterization Study for each facility type.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$685,000	**851 MT CO2e**	**Sonoma Public Infrastructure, Climate, Dept. Heads Association, Zero Waste Sonoma, Recology**	Waste Reduction; Climate Education; Ecosystem Health

SUBMEASURES FOR ZW-CO-2

2.1: For Airport facility types, create a campaign, work with vendors, and incentivize vendors to increase waste diversion and reach zero waste goals

2.2: For Animal Services facility types, identify organic waste streams, create infrastructure to decrease organic waste, and train staff on proper disposal

2.3: For Corporate Yard and Maintenance facility types, create policy on CD&D waste, train staff on proper handling, and host weekly waste education meetings

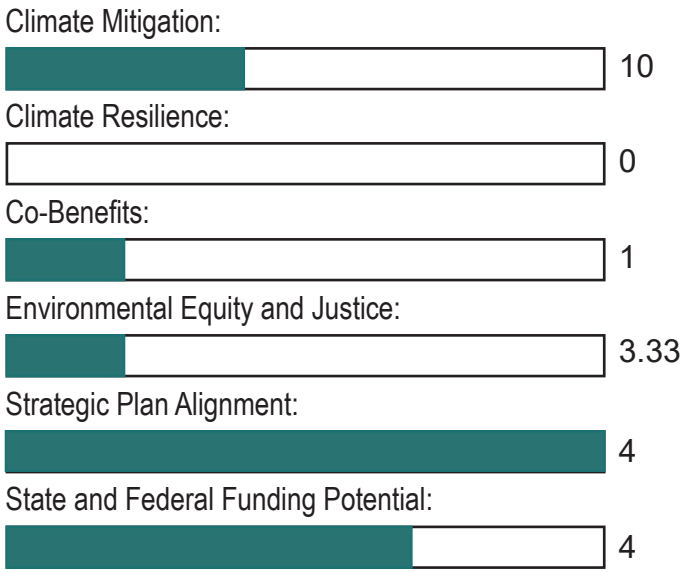
2.4: For Detention facility types, provide waste disposal infrastructure, staff training on waste disposal, and assign waste sorting tasks, focused on organics

2.5: For Office facility types, provide paper recycling infrastructure, organic waste disposal infrastructure, and staff training on waste disposal

2.6: For Parks and Recreational facility types, provide organic waste disposal infrastructure, staff training on waste disposal, and build partnerships with vendors to decrease single-use plastic waste

2.7: For Veterans Memorial Building facility types, provide signage on waste disposal infrastructure, staff training on waste disposal, and require waste diversion plans for events with more than 50 people

Multi-Criteria Analysis Score: 22.33/80



MEASURE ZW-CO-3

Demonstrate and document compliance with statewide organic waste diversion requirements.*

*In accordance with state regulations

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$110,000	**1,276 MT CO2e**	**Sonoma Public Infrastructure, Climate, Zero Waste Sonoma**	Waste Reduction; Climate Education; Ecosystem Health

SUBMEASURES FOR ZW-CO-3

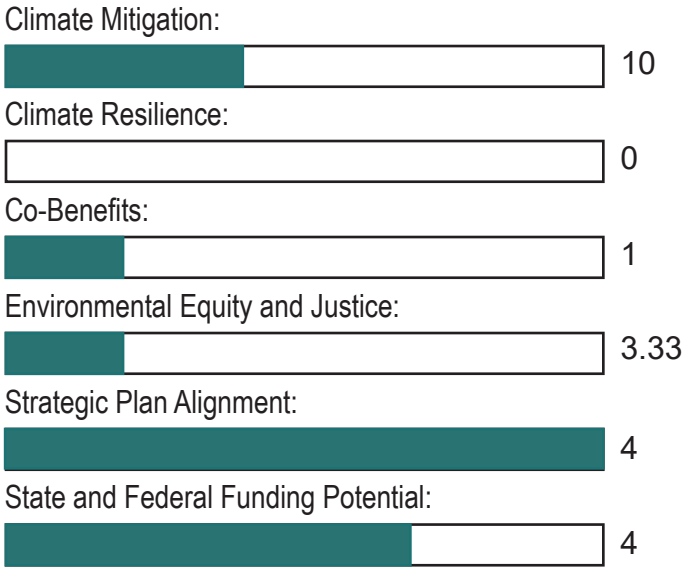
3.1: Perform and document monthly spot checks of waste bins at each facility

3.2: Prepare an annual report to the Board on waste diversion outcomes

3.3: Identify a target number of facilities and frequency of review, and implement a periodic audit of facility waste streams; document audit results and corrective action taken in annual report

3.4: Develop a system to document and summarize compliance with requirements regarding procurement, mandatory policies and ordinances, education and outreach, etc.

Multi-Criteria Analysis Score: 22.33/80



MEASURE ZW-CO-4

Increase diversion of organic waste (compostable materials) from landfills by 100% in designated County facility types that generate organic waste.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$210,000	**636 MT CO2e**	**Climate, Sonoma Public Infrastructure, Human Resources, Communications, Zero Waste Sonoma, Recology**	Waste Reduction; Climate Education; Ecosystem Health

SUBMEASURES FOR ZW-CO-4

4.1: Increase employee access to simple, clean composting infrastructure

- 4.1.1: Provide compost collection cans in break rooms and in-office areas with microwaves, refrigerators, and/or food areas
- 4.1.2: Locate green compost collection bins with signage where paper towels are dispensed
- 4.1.3: Provide counter-top composting cans and liners for workspaces with employee agreements to empty the cans daily
- 4.1.4: Establishing centralized, covered and contained compost collection bins

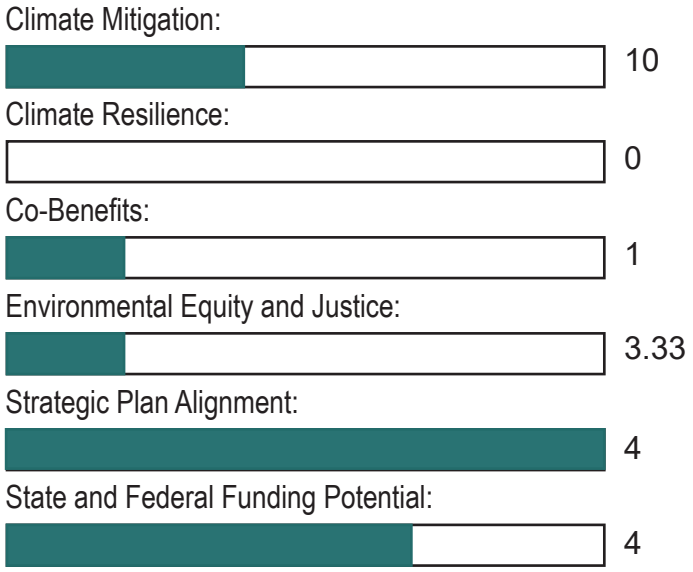
4.2: Inform employees that food waste must be diverted and identify proper uses of waste receptacles

- 4.2.1: Procure informational signage for waste collection areas
- 4.2.2: Post signage developed in 4.2.1
- 4.2.3: Place labels on all bins and cans for waste, recycling, & compost collection

4.3: Prepare & deliver a short training video about waste diversion goals, requirements, benefits, & procedures

4.4: Evaluate and update janitorial services and waste collection agreements as needed to support increased compost diversion measures

Multi-Criteria Analysis Score: 22.33/80



MEASURE ZW-CO-5

Review the diversion outcomes of near-term measures and actions and develop a Comprehensive Zero Waste Plan.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$70,000	**TBD**	**Climate**	Waste Reduction, Climate Education, Ecosystem Health

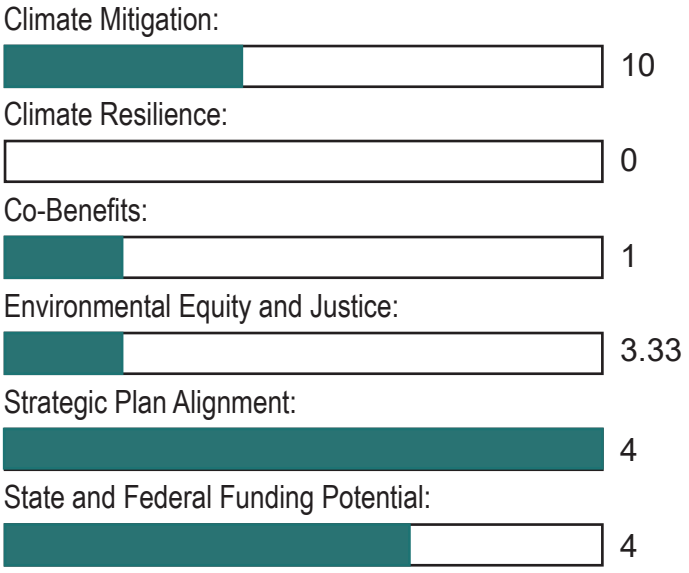
SUBMEASURES FOR ZW-CO-5

5.1: Establish facility-specific waste reduction targets and strategies

5.2: Require monitoring and documentation of implemented practices

5.3: Incorporate periodic waste stream auditing

Multi-Criteria Analysis Score: 22.33/80



MEASURE ZW-CO-6

Decrease the use of disposable foodware for onsite and offsite County-facilitated dining by 100% through a County-wide policy.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$180,000	**13 MT CO2e**	**Sonoma Public Infrastructure, Climate, Human Resources**	Waste Reduction; Climate Education; Ecosystem Health

SUBMEASURES FOR ZW-CO-6

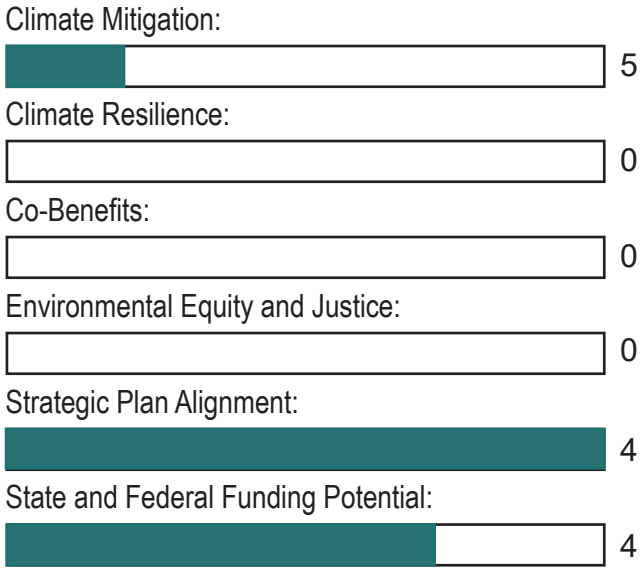
6.1: Identify requirements for staff to provide their own foodware by 2027.

6.2: Incentivize County staff to comply with the policy by providing branded reusable foodware.

6.3: Provide a centralized foodware storage system for County staff to utilize County-owned reusable foodware by 2030.

6.4: Provide education & training on the centralized foodware system, compliance with the policy, and resources to support County staff.

Multi-Criteria Analysis Score: 13/80



MEASURE ZW-CO-7

Develop centralized universal waste collection stations in every County facility to ensure that people have access to hazardous waste collection sites by 2030.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$140,000	**265 MT CO2e**	**Sonoma Public Infrastructure, Climate, Human Resources**	Waste Reduction; Climate Education; Ecosystem Health

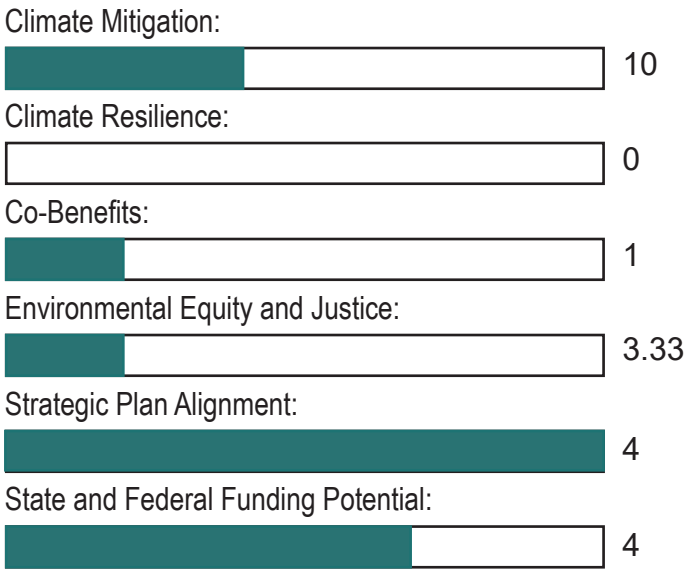
SUBMEASURES FOR ZW-CO-7

7.1: Establish or update services contracts as appropriate, to ensure universal waste is handled properly

7.2: Establish policies and procedures regarding proper handling and disposal of universal waste

7.3: Provide universal waste training, developed by Recology and ZWS through Sonoma Higher Ed, to new and current employees with a periodic refresher course on the centralized hazardous waste system

Multi-Criteria Analysis Score: 22.33/80



MEASURE ZW-CO-8

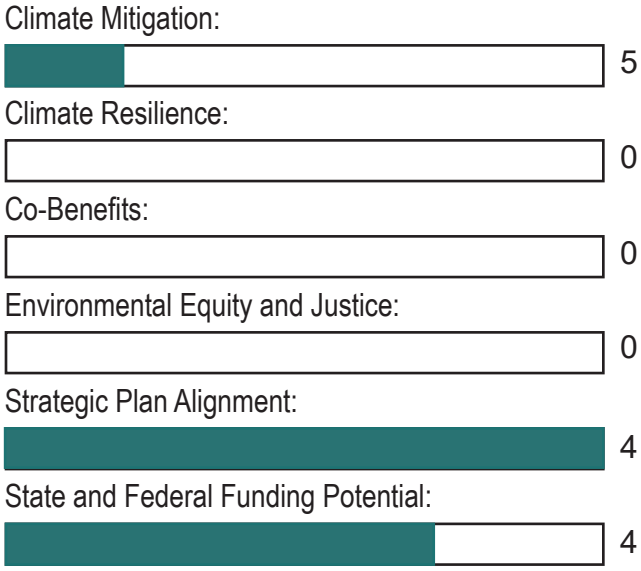
Prioritize five types of procurement contracts with upstream suppliers, review, and develop waste reduction benchmarks for future contracts.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$50,000	**TBD**	**Sonoma Public Infrastructure, Climate**	Waste Reduction; Climate Education; Ecosystem Health

SUBMEASURES FOR ZW-CO-8

8.1: Audit procurement contracts and establish sustainability goals based on the results.

Multi-Criteria Analysis Score: 13/80



MEASURE ZW-CO-9

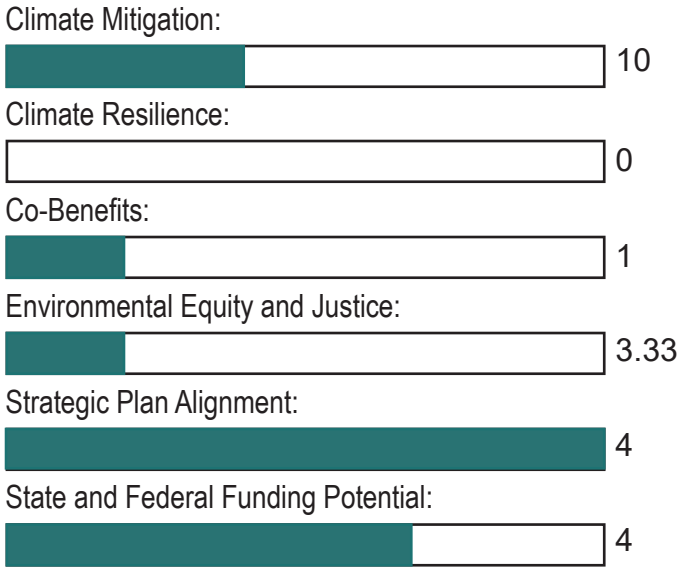
Evaluate and implement waste diversion options for the Reuse and Recycling Program Center for furniture, appliances, and other useful, non-hazardous items.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$50,000	**2,394 MT CO2e**	**Sonoma Public Infrastructure, Climate, Zero Waste Sonoma**	Waste Reduction; Climate Education; Ecosystem Health

SUBMEASURES FOR ZW-CO-9

9.1: Review and recommend opportunities to enhance the Reuse/Recycling Program Center currently in place at the County of Sonoma.

Multi-Criteria Analysis Score: 22.33/80



MEASURE ZW-CO-10

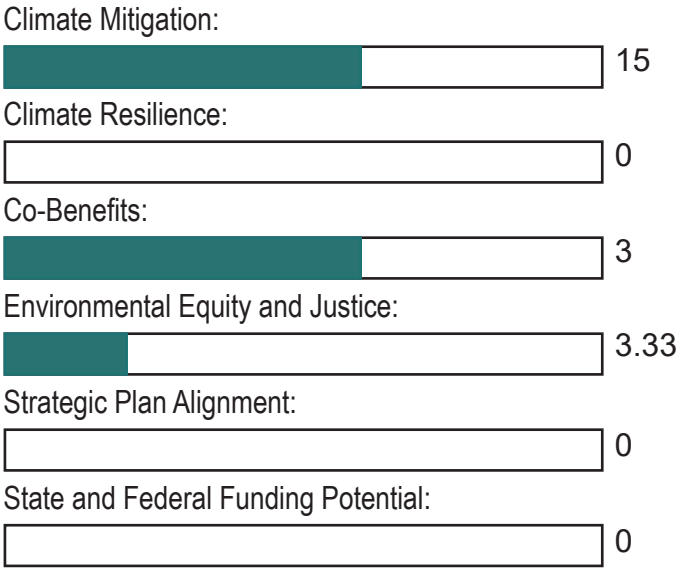
In partnership with the Bay Area Air Quality Management District and the Northern Sonoma County Air Pollution Control District, evaluate opportunities to cost-effectively reduce landfill gas emissions from closed landfills not otherwise subject to regulation.

TOTAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$810,000	**TBD**	**Climate and other collaborators**	Waste Reduction; Climate Education; Ecosystem Health

SUBMEASURES FOR ZW-CO-10

1.1: Coordinate efforts with different partners to determine feasible options to reduce closed landfill waste emissions

Multi-Criteria Analysis Score: 21.33/80



Water

Water

Water is a nexus issue tied to energy, agriculture and food security, industry, human health, biodiversity and ecosystem health, peace and stability, human rights, and many other priorities. The climate crisis, if unaddressed, leads to growing competition for freshwater resources, water quality issues, declines in ecosystem health, biodiversity loss and challenges meeting basic water and sanitation needs. There are many local partners currently working to protect local water systems and adapt to the changing climate. The County will work in partnership with Sonoma Water and other local water providers to meet their planned goals and promote climate resilience and carbon neutrality.

Key Climate Impacts:
Climate models indicate that there are likely to be larger and warmer storms, resulting in increased rainfall and flooding. Changes in precipitation, snowpack, and more frequent droughts will likely increase demands on groundwater resources. Sonoma County has experienced extreme drought on the Russian River, river flooding, sea level rise and river flooding risk on the Petaluma River and on Sonoma Creek, the upper and lower Russian River (Fife Creek, Alexander Valley), and sea level impacts along the coast (Bodega, Bodega Bay, Jenner, Timber Cove, The Sea Ranch, and Gualala). Sea level rise threatens coastal and riparian communities and infrastructure and leads to repeat flooding of low–lying areas. In addition, the pumping and distribution of potable water to more than 600,000 Sonoma and Marin County residents requires significant electrical power, as do water treatment processes related to Sonoma Water's wastewater facilities. The power used in water distribution contributes to GHG emissions.

Climate Resilience Objectives:
The County aims to conserve water, increase reuse and recycling when feasible, promote watershed health and resilience and reduce risks climate hazards pose to infrastructure, communities, ecosystems, and water supplies.

Policy Landscape:
Key statewide and regional policies that influence the water sector and the GHG emissions associated with it include:

Assembly Bill 1739, Senate Bill 1739, and Senate Bill 1319 Sustainable Groundwater Management Act, requires local agencies to form groundwater sustainability agencies, for the high and medium priority basins, and develop and implement groundwater sustainability plans to avoid groundwater overdraft.

Assembly Bill 1668 and Senate Bill 606, directs the State Water Board to adopt efficiency standards and performance measures for water use.

Making Conservation a California Way of Life, is a regulatory framework that establishes efficiency goals for each urban retail water supplier aiming to reduce urban water use by 400,000 acre feet by 2030.

Water

A*ssembly Bill 685 Human Right to Water*, the state statutorily recognizes that “every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes”.

California Water Plan Update 2023, focuses on enhancing the adaptive capacity of water systems. The plan emphasizes the need to transition the state to net-zero carbon emissions, manage water resources to safeguard water supply and quality and food security, protect vulnerable populations from drought, flooding, and extreme heat, prepare for sea level rise, and protect and enhance critical natural and built infrastructure for water storage, treatment, distribution, reuse, and stormwater capture.

Water Resilience Portfolio, identifies four broad approaches to water resilience including, maintain and diversify water supplies, protect and enhance natural systems, build connections and be prepared.

California’s Water Supply Strategy: Adapting to a Hotter, Drier Future, highlights that hotter and drier weather could diminish state water supply by up to ten percent by 2040. The strategy recommends increasing the California’s ability to store water from large storm events above and below ground, recycling and reusing water, increasing water use efficiency and conservation, capturing stormwater and desalinating ocean water and salty groundwater.

In 2017, a historic five-year drought motivated Governor Brown to sign into law water efficiency legislation, SB 606 and AB 1668, to create a new foundation for long-term improvements in water conservation and drought planning. This established water use objectives and long-term standards for efficient water use for urban retail water suppliers, provided incentives for water suppliers to recycle water, identified small water suppliers and rural communities that may be at risk of drought and water shortage and provided recommendations, and required urban and agricultural water suppliers to set annual water budgets and prepare for drought. Governor Newsom declared the human right in California as central to California’s strength and vitality. These guiding principles of conservation, stewardship and equity inform water resources management. The State Water Plan Update centers equity in the water resources management as climate change impacts climate justice communities. For example, in Sonoma County residents face repeat flood hazards when affordable housing is located within flood zones. In this case, water resources management would include tenant aid, resources and technical assistance to facilitate residential flood mitigation measures and procedures to react to flood emergencies especially for events that don’t merit a full disaster activation.

Key Features of the Water Measures:
The County has taken early actions that align with state and local water resilience goals. Sonoma Water and the County's Department of Emergency Management, funded in part by the County’s Climate Resilience Fund, is conducting a feasibility study of flood-managed aquifer recharge in the Alexander Valley, a countywide assessment of flood risk management, and drafting a Drought Resiliency Plan with DEM.

Water

These foundational publications will inform future water resource management actions. Other early actions include a partnership with Sonoma Water, Resource Conservation Districts (RCDs), Sonoma-Marin Saving Water Partnership, and Daily Acts that supports a county-wide pilot rebate and training program to promote household-level water storage through rainwater catchment. The County is also installing large-scale rainwater capture systems on multiple regional parks.

Figure 22: Water Sector Early Action Measures

Water Sector Early Action Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
W-EA-1	Provide a county-wide pilot rebate & training program to promote household-level water storage through rainwater catchment.	2023-24	Sonoma Water, RCDs, Sonoma-Marin Water Savings Partnership, Daily Acts
W-EA-2	Conduct a countywide assessment of flood risk management and develop recommendations for integrated flood risk management.	2023-24	Sonoma Water, Emergency Management
W-EA-3	Improve resiliency & minimize economic loss from future droughts through assessment & evaluation of 2012-2014 & current droughts.	2023-24	Sonoma Water, Emergency Management
W-EA-4	Conduct a feasibility study of flood-managed aquifer recharge in the Alexander Valley.	2023-24	Sonoma Water
W-EA-5	Enhance rainwater catchment & water storage in Regional Parks.	2023-24	Regional Parks

The water sector addresses the need for water conservation, watershed and land stewardship, and strategic planning of water resources management of drinking water supplies and freshwater flows. Climate smart practices can be implemented in priority areas to reduce the risks climate hazards present to water supplies. Actions also address the needs of coastal and riparian residents and businesses vulnerable to the impacts of sea level rise and flooding or need freshwater flows secured. Actions also aim to mitigate emissions from water uses. While the County does not operate wastewater treatment facilities, and cannot directly impact those emissions, the County can reduce emissions from water use at County facilities. Sonoma Water is working at the water-energy nexus by exploring pumped storage hydropower at Lake Sonoma and potentially other locations and battery storage options. Their goal is to consume power mid-day, when electricity is more available and can be sourced from renewable sources, then deliver power in the evening, when energy is in high demand. The County can support these efforts and others outlined in the 2021 Sonoma Water Climate Adaptation Plan and the Sonoma Water Energy and Climate Resiliency Policy by identifying jurisdictional gaps and lending planning and implementation support as needed.

Water

Figure 23: Water Sector County Operations Measures

Water Sector County Operations Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
W-CO-1	Develop low-impact rainwater harvesting systems on County-owned facilities.	M	Regional Parks, Public Infrastructure, Climate, Sonoma Water
W-CO-2	Evaluate and implement restoration projects of upland watersheds on critical landscapes that have been impacted by wildfire or identified as highly vulnerable areas, on County-owned lands.	M L	Regional Parks, Public Infrastructure, Climate, Permit Sonoma, Sonoma Water, Ag + Open Space
W-CO-3	Identify & address areas contributing to soil instability & erosion on County-owned lands, with a focus on wildfire hazard areas with high risk of post-fire geohazards to critical assets, including water infrastructure & critical habitats.	L	Climate, Emergency Management, Permit Sonoma, Regional Parks, Sonoma Water, Public Infrastructure
W-CO-4	Evaluate and prioritize conservation practice projects on County-owned lands to enhance water resilience and mitigate drought, flood, and debris flows.	M	Regional Parks, Climate, Permit Sonoma, Sonoma Water, Emergency Management
W-CO-5	Evaluate, prioritize, and implement water saving features into current and new construction of County facilities.	M L	Climate, Public Infrastructure, Regional Parks
W-CO-6	Evaluate opportunities and barriers to utilizing grey water at new and existing County-owned facilities/ lands with high water demand.	M	Climate, Public Infrastructure, Regional Parks
W-CO-7	Develop policies standardizing use of future climate data in planning, designing, and maintaining County infrastructure and facilities.	N M	Climate, Emergency Management, Permit Sonoma, Sonoma Water, Ag + Open Space, Information Services
W-CO-8	Conduct a vulnerability assessment/feasibility study for County-owned infrastructure & lands that are at-risk of sea-level rise & riverine flooding and/or erosion to identify strategies to protect, accommodate, and/or retreat.	N M L	Emergency Management, Climate, Sonoma Water, Regional Parks, Public Infrastructure

MEASURE W-CO-1

Develop low-impact rainwater harvesting systems on County-owned facilities.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$560,000 ($540,000)*	**64.7 MT CO2e**	**Regional Parks, Climate, Sonoma Public Infrastructure, Sonoma Water, RCDs**	Building Efficiency, Ecosystem Health, Water Conservation, Physical Environment

***Lifetime Savings**

SUBMEASURES FOR W-CO-1

1.1: Evaluate existing rainwater harvesting on County-owned lands

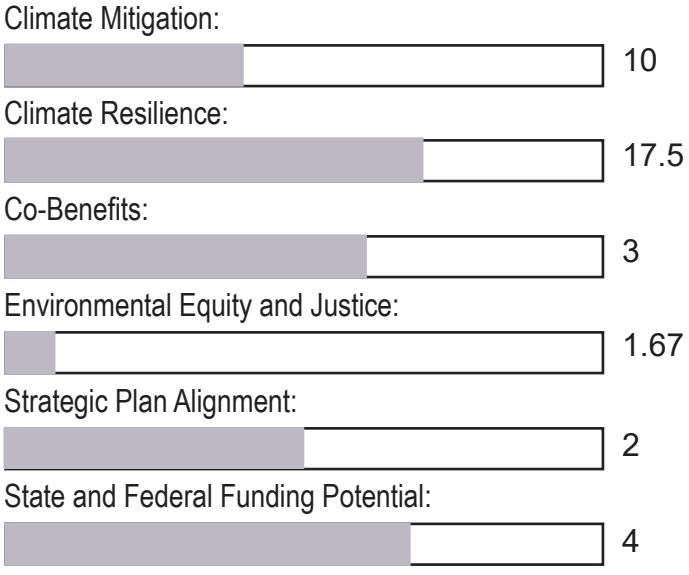
1.2: Identify & prioritize locations to develop rainwater harvesting systems

1.3: Recommend top priorities to the County of Sonoma Board of Supervisors and secure funding

1.4: Implement projects based on the approved priorities and using low-impact development practices

1.5: Evaluate project outcomes & recommend a phased implementation plan to the Board of Supervisors for remaining suitable locations

Multi-Criteria Analysis Score: 38.17/80



MEASURE W-CO-2

Evaluate and implement restoration projects of upland watersheds on critical landscapes that have been impacted by wildfire or identified as highly vulnerable areas, on County-owned lands.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$4,595,125	**34,812 MT CO2e**	**RCDs, Regional Parks, Sonoma Public Infrastructure, Ag + Open Space, Permit Sonoma, Climate**	Ecosystem Health; Water Conservation; Physical Environment

SUBMEASURES FOR W-CO-2

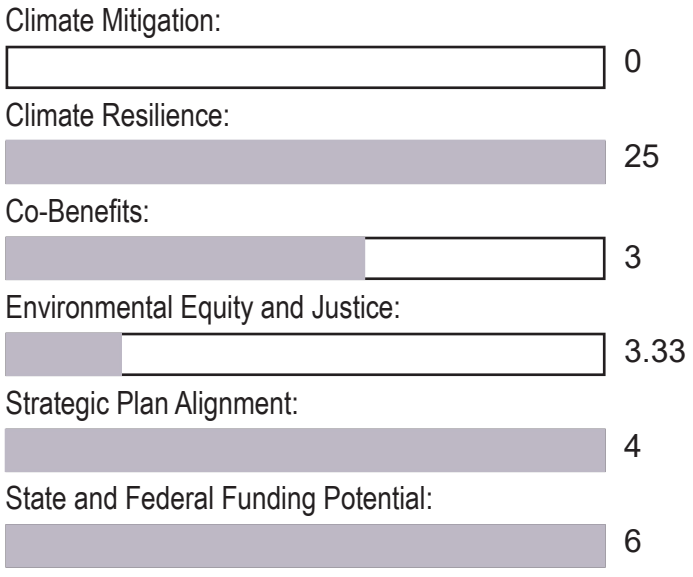
2.1: Prioritize highly vulnerable areas for upland watersheds restoration projects based on a pre-hazard analysis to identify critical landscapes and suitable restoration activities by 2030

2.2: Identify & recommend restoration projects based on factors and the outcomes of W-CO-7.1, including environmental review

2.3: Implement restoration in key areas, aiming for 2% restoration completed by 2030

2.4: Evaluate restoration project outcomes and recommend further collaboration to complete 100% restoration by 2045

Multi-Criteria Analysis Score: 41.33/80



MEASURE W-CO-3

Identify & address areas contributing to soil instability & erosion on County-owned lands, with a focus on wildfire hazard areas with high risk of post-fire geohazards to critical assets, including water infrastructure & critical habitats.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$57,594	**7,059 MT CO2e**	**CARD, Emergency Management, Permit Sonoma, Sonoma Water, Regional Parks, Sonoma Public Infrastructure**	Ecosystem Health; Water Conservation; Physical Environment

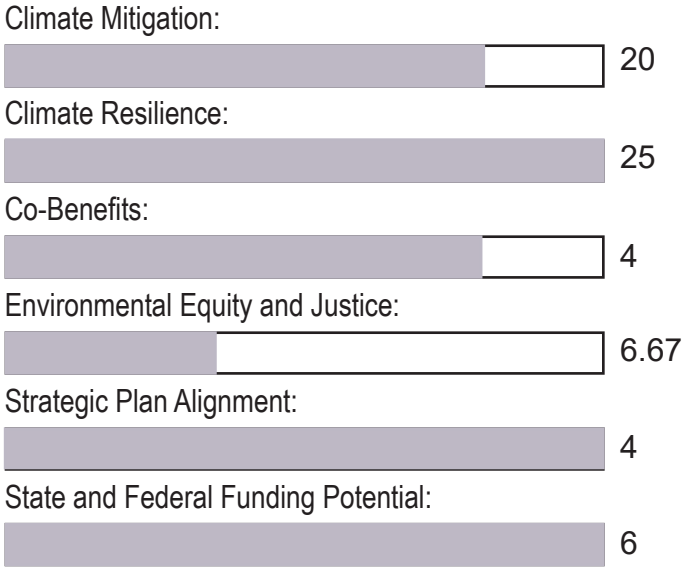
SUBMEASURES FOR W-CO-3

3.1: Identify & prioritize infrastructure areas contributing to erosion & soil instability based on costs, mitigation potential & feasibility by 2028

3.2: Develop recommendations for addressing soil erosion and instability of prioritized areas, with environmental review, to the Board of Supervisors by 2028

3.3: Implement demonstration projects and present recommendations for broader implementation by 2030

Multi-Criteria Analysis Score: 65.67/80



MEASURE W-CO-4

Evaluate and prioritize conservation practice projects on County-owned lands to enhance water resilience and mitigate drought, flood, and debris flows.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$39,519	**730 MT CO2e**	**Regional Parks, Climate, Sonoma Public Infrastructure, Ag + Open Space, Permit Sonoma, Sonoma Water**	Ecosystem Health; Water Conservation; Physical Environment

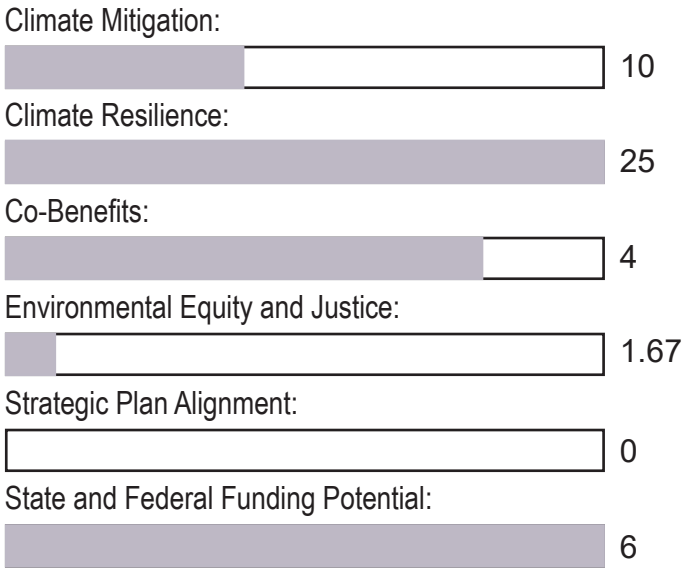
SUBMEASURES FOR W-CO-4

4.1: Identify conservation projects to implement in conjunction with W-CO-8, sea-level rise and inland flooding

4.2: Evaluate and prioritize conservation projects based on feasibility, cost effectiveness, and climate hazard priorities

4.3: Recommend 10% of priority projects for implementation by 2030 w/environmental review, and evaluate feasibility for future implementation of remaining projects

Multi-Criteria Analysis Score: 46.67/80



MEASURE W-CO-5

Evaluate, prioritize and implement water saving features into current and new construction of County facilities.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
1,327,000	**23.6 lbs CO2e per 1,000 gallons saved**	**Climate, Sonoma Public Infrastructure, Sonoma Water, Regional Parks**	Ecosystem Health; Water Conservation; Energy Efficiency; Building Efficiency

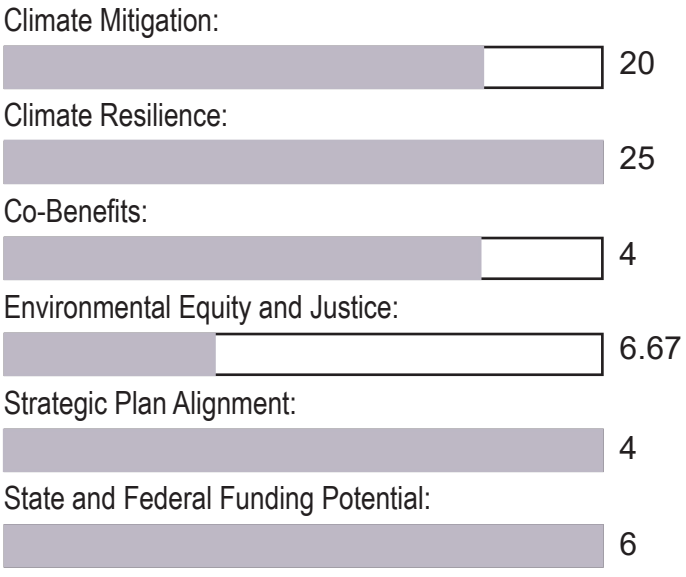
SUBMEASURES FOR W-CO-5

5.1: Identify and prioritize water resilience opportunities based on feasibility, timeline, and potential water savings from water conservation measures in E-CO-1 (near term energy upgrades)

5.2: Propose a water resiliency policy for new construction of specific facility types and current County facility types

5.3: Implement demonstration projects, verify actual water savings, and propose appropriate policy updates

Multi-Criteria Analysis Score: 65.67/80



MEASURE W-CO-6

Evaluate opportunities and barriers to utilizing grey water at new and existing County-owned facilities/ lands with high water demand.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$450,000	**TBD**	**Climate, Sonoma Public Infrastructure, Regional Parks, Permit Sonoma, Sonoma Water**	 Energy Efficiency, Building Efficiency, Water Conservation, Ecosystem Health, Waste Reduction

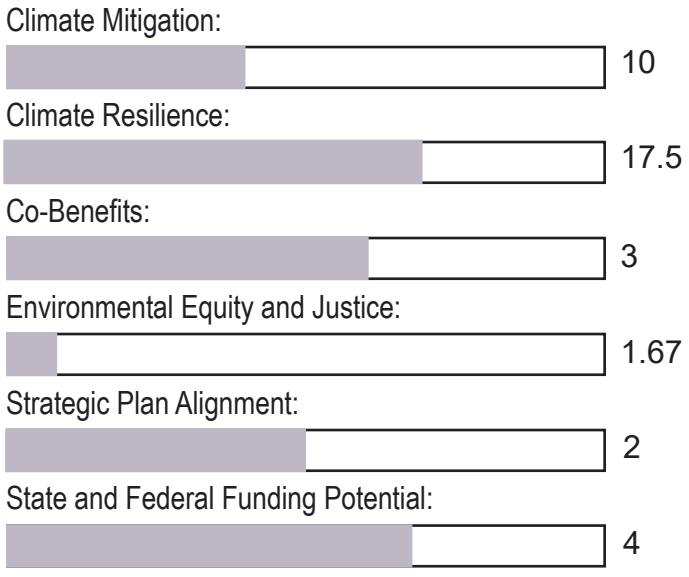
SUBMEASURES FOR W-CO-6

6.1: Conduct a feasibility study for using grey water for County landscaping and new construction scenarios

6.2: Propose grey water demonstration projects at County facilities, and include appropriate complimentary actions, eg: replace non-functional turf, plant low water use plants, add stormwater retention

6.3: Based on demonstration projects outcomes, prioritize & recommend grey water use & complimentary actions at County facilities

Multi-Criteria Analysis Score: 38.17/80



MEASURE W-CO-7

Develop policies standardizing use of future climate data in planning, designing, and maintaining County infrastructure and facilities.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$1,018,000	**TBD**	**Climate, Sonoma Public Infrastructure, Emergency Management, Permit Sonoma, Sonoma Water, Information Systems**	Energy Efficiency; Building Efficiency; Water Conservation; Workforce Development; Ecosystem Health; Climate Education

SUBMEASURES FOR W-CO-7

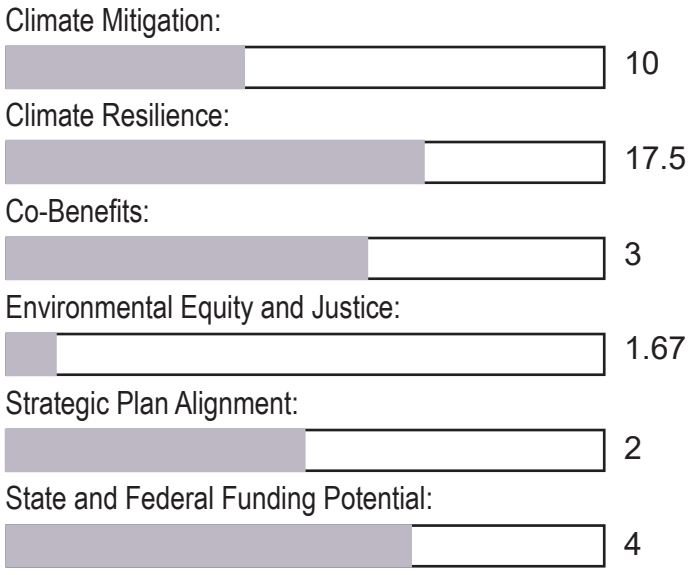
7.1: Assemble a working group to define climate planning initiatives and recurring data applications to evaluate opportunities to standardize practices and identify gaps in current data use processes

7.2: Develop appropriate data resources & system(s) to maintain them

7.3: Present recommendations to the Board of Supervisors to consider

7.4: Develop training through SonomaHigherEd to educate all relevant staff on an on best data management practices

Multi-Criteria Analysis Score: 38.17/80



MEASURE W-CO-8

Conduct a vulnerability assessment/ feasibility study for County-owned infrastructure & lands that are at-risk of sea-level rise & riverine flooding and/or erosion to identify strategies to protect, accommodate, and/or retreat.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$1,850,000	**TBD**	**Emergency Management, Sonoma Water, Regional Parks, Sonoma Public Infrastructure, Climate**	Water Conservation; Physical Environment; Ecosystem Health

SUBMEASURES FOR W-CO-8

8.1: Working with Russian River Regional Monitoring Program (R3MP) and San Francisco Estuary Institute (SFEI), develop a new, comprehensive stream and riparian corridor map headwaters to ocean/ bay for Sonoma County. Incorporate readily available hydrography datasets to feed into a comprehensive vulnerability assessment to help accomplish this task.

8.2: Prepare vulnerability assessment using readily available hydrography datasets

8.3: Assemble working groups, as appropriate, to identify, assess, & guide prioritization of areas facing repeat sea-level rise hazards and riverine flooding/erosion with expected near-term climate impacts.

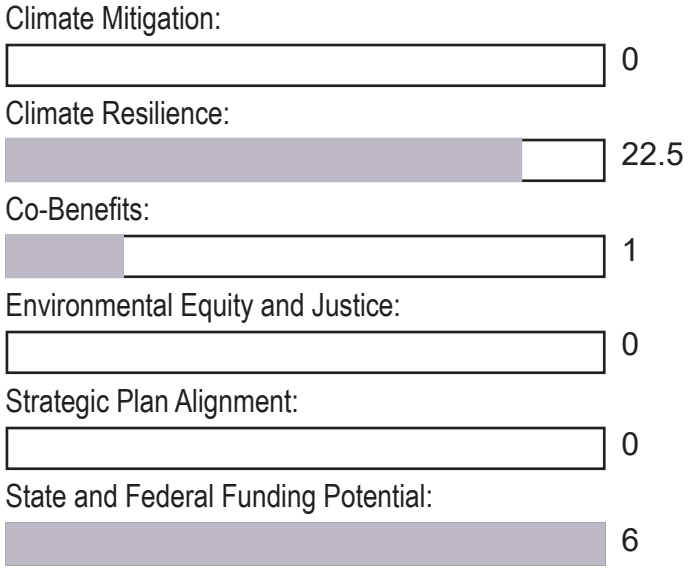
8.4: Develop a plan that includes prioritized strategies to protect, accommodate or retreat that aligns with the County of Sonoma Hazard Mitigation Plan, a five-year implementation plan & the Local Coastal Plan, including environmental review

8.5: Secure funding & implement top-priority projects.

8.6: Present results of the top-priority projects to the Board of Supervisors and propose a long-term funding plan for priority projects

8.7: Convene partners to develop funding mechanisms to address coastal communities and ecosystems vulnerable to sea-level rise impacts.

Multi-Criteria Analysis Score: 29.50/80



Wildfire

Wildfire

Investing in wildfire resilience is the first goal of the Climate Action and Resiliency pillar in the Board's Strategic Plan. The dramatic increase in the number, size, and destructiveness of wildfires is one of the most apparent impacts of the changing climate. The Wildfire Sector reflects the County's commitment to reducing the risk of, and damage and loss due to, catastrophic wildfires.

Key Climate Impacts:
Increased frequency and severity of wildfires is one of the most significant climate hazards facing Sonoma County. Wildfire destroys property and costs lives. It damages energy and transportation infrastructure, degrades water quality, increases waste and GHG emissions, and harms ecosystems and biodiversity. Smoke from wildfires is harmful to human health and causes early death, with the greatest impacts on the very young, the elderly, those with underlying health conditions, and disadvantaged communities and communities of color.

Climate Resilience Objectives:
Reduce the risk of catastrophic wildfires, reduce damage and loss due to wildfires, harden structures against wildfire, and increase the health and resilience of natural and working lands to mitigate harm from wildfires

Policy Landscape:
Key statewide and regional policies that influence the Wildfire sector:

California Climate Adaptation Strategy, that links together the state's existing and planned climate adaptation efforts, organized around outcome-based priorities, enabling a coordinated, integrated approach to achieve California's six climate resilience priorities and build climate resilience.

California Forest Carbon Plan, which lays out recommended actions to achieve healthy and resilient forests, the state's the largest land-based carbon stock, based on current understanding about California's forests and how climate change will evolve in California.

Natural and Working Lands Climate Smart Strategy, which identifies priority nature-based solutions to deliver climate benefits across all of California's diverse landscapes and guides State programs and investments.

Nature-based Solutions Climate Targets, adopted pursuant to AB 1757 (C. Garcia, 2022), include nature-based solutions climate targets for 2030, 2038, and 2045 that contribute to California's goals of achieving carbon neutrality no later than 2045 and protecting Californians from the climate crisis.

Wildfire and Forest Resilience Action Plan, to strategically accelerate efforts to: restore the health and resilience of California forests, grasslands and natural places; improve the fire safety of communities; and sustain the economic vitality of rural forested areas.

Wildfire

Sonoma County experienced multiple catastrophic wildfires in 2017, 2019, and 2020. The losses from these wildfires, in structures, dollars, livelihoods, and lives, deeply impacted county residents and businesses. In 2021, the Board of Supervisors allocated $25 million from PG&E settlement funds for the 2017 wildfires towards vegetation management for wildfire resilience. The County retained U.C. Berkeley's Center for Law, Energy and the Environment (CLEE) to convene stakeholders and experts and recommend investment priorities for the vegetation management funds. The County was awarded FEMA Hazard Mitigation Grant Program funding for a Hazardous Fuels Reduction Project and to create the Sonoma County Wildfire Adapted pilot program to advance wildfire hardening in communities. With a subsequent FEMA grant through the Building Resilience in Communities program and considerable local match funding, the County expanded the pilot to create the Wildfire Resilient Sonoma County project. With all funding combined, close to $100 million is being invested across Sonoma County to increase wildfire resilience. In addition, in 2020, the Board expanded the Sonoma County Energy Independence Program to allow residential and commercial property owners to finance wildfire hardening improvements with funds from the County that are repaid through a voluntary tax assessment on the property.

In 2022, the Board approved Sonoma County's first Multi-Jurisdictional Hazard Mitigation Plan, and the Sonoma County Climate Resilient Lands Strategy. The Plans identify critical assets at risk from wildfire and other hazards, and the actions needed to prepare for and reduce the losses. In 2023, the Board of Supervisors approved the Community Wildfire Protection Plan. The Plans are accompanied by a public-facing Hub Site and Portal that provides access to project planning and tracking as well as tools and supporting information. In addition, the Board funded UC Cooperative Extension Sonoma County to develop the Wildfire Fuel Mapper, a parcel-scale GIS-based planning tool to determine effective fuels treatments for properties. In 2023, Sonoma Water launched the Sonoma County Wildfire Resilience Planner, another GIS-based tool that is landscape scale to prioritize investments for different types of wildfire resilience treatments.

Wildfire resilience is also a priority at the federal and state level, with considerable funding available for wildfire mitigation. Governor Newsom established a Forest Management Task Force that produced the 2021 Wildfire and Forest Resilience Action Plan. The state also strengthened Chapter 7A in the California Building Code and Chapter 337 in the California Residential Code to require ignition-resistant construction in the Wildland-Urban Interface Fire Area served by CALFIRE.

As insurance providers in California have been able to factor losses from recent fires into their rate filings, home insurance premiums have increased. More recently, insurers have been limiting underwriting in California. The County is

Wildfire

developing a pilot program to have community-based fire hardening and property wildfire risk mitigation factored into insurance policy decisions.

Wildfire has disproportionate impacts on climate justice communities, damaging their health, and destroying generational wealth that was already compromised by systemic racism. The County and its partners need to ensure wildfire resilience benefits climate justice communities and wildfire impacts on residents and businesses are mitigated through a just transition to a climate resilient future.

Key Studies, Strategies and Plans:

The measures in the Wildfire Sector reflect recommended policies and actions in the Multi-Jurisdictional Hazard Mitigation Plan, the Community Wildfire Protection Plan, the Carbon Inventory and Potential Sequestration Study, the Climate Resilient Lands Strategy, the CLEE Report, and the draft Regional Parks Climate Action and Resiliency Plan.

Key Features of the Wildfire Measures:
The Board invested in Early Actions to provide community grants for vegetation management, reduce wildfire risks by promoting managed grazing, and develop and implement community-centered wildfire risk reduction.

Figure 24: Wildfire Sector Early Actions Measures

Wildfire Sector Early Action Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
WF-EA-1	Invest in strategic community grants supporting vegetation management strategies.	2021-24	Ag + Open Space, many collaborators
WF-EA-2	Reduce wildfire risk from vegetation fuels by promoting managed grazing through education, outreach, and job skills training.	2023-24	UCCE (with RCDs and USDA NRCS)
WF-EA-3	Develop and implement a community-centered wildfire risk reduction program through Wildfire Adapted Sonoma County, and SoCoAdapts.	2021-26	Permit Sonoma

Wildfire

County Operations Wildfire measures focus on assessing vulnerability and developing wildfire hardening priorities then proposing implementation with funding and environmental review as appropriate. Measures also prioritize vegetation management and nature-based solutions to mitigate wildfire threats. The first measure is a project to formalize coordination and identify a sustainable organizational management and funding approach to wildfire resilience.

Figure 25: Wildfire Sector County Operations Measures

Wildfire Sector County Operations Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
WF-CO-1	Implement the Sustainable Wildfire Resilience project with the Resiliency Coordination Team.	N	Climate, Ag+Open Space, Emergency Management, Permit Sonoma, Regional Parks, Sonoma Water, UCCE, RCPA, Fire Services, other partners
WF-CO-2	Develop a phased wildfire risk reduction and structure hardening plan for County-owned lands and facilities.	N M	Climate, Emergency Mgmt, Ag + Open Space, Permit Sonoma, Regional Parks, Public Infrastructure, Sonoma Water
WF-CO-3	Review County-owned lands to identify current buffer zone service, gaps, and opportunities.	M	Climate, Emergency Management, Regional Parks, Permit Sonoma, Public Infrastructure
WF-CO-4	Identify & prioritize suitable vegetation treatment & mulching project areas on County lands & prepare environmental review for priority projects.	N M	Permit Sonoma, Regional Parks, Sonoma Water, CalFire, Fire Districts
WF-CO-5	Implement fire-safe landscape practices, tree care, and protection on County-owned lands.	N M	Regional Parks, Climate, Fire Districts, Permit Sonoma
WF-CO-6	Evaluate schedule of vegetation management along roadsides/right-of-way areas	M L	Public Infrastructure, Climate, Emergency Management
WF-CO-7	Based on risk and vulnerability assessments, recommend assets and plan for managed retreat from wildfire risk or other climate hazards.	M L	Climate, Emergency Management, Permit Sonoma, Regional Parks, Sonoma Water, Public Infrastructure

MEASURE WF-CO-1

Implement the Sustainable Wildfire Resilience project with the Resiliency Coordination Team to formalize near-term wildfire resilience planning and implementation coordination between departments, agencies, and partners, and prepare and present recommendations for a sustainable, integrated, long-term wildfire resilience program and funding.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$400,000	**TBD**	**Climate and other collaborators**	

SUBMEASURES FOR WF-CO-1

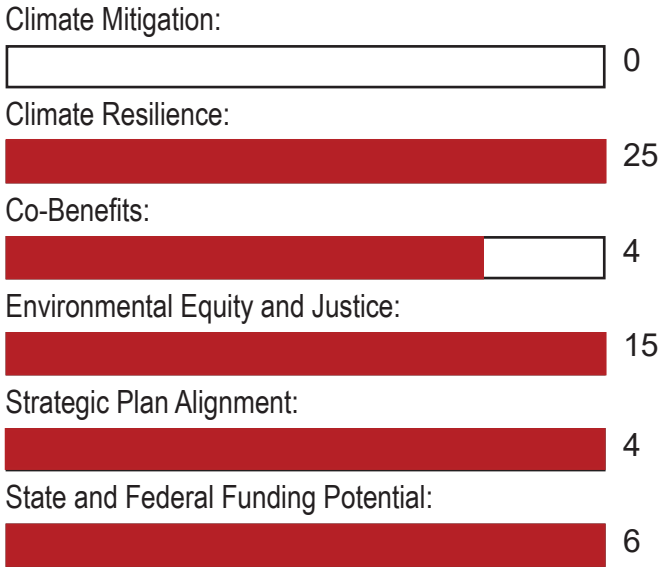
1.1: Establish Resilience Coordination Team of department heads with wildfire resilience programs

1.2: Establish Technical Advisory Committees for 1) landscape hardening, 2) near-structure hardening. 3) climate resilient lands, and 4) organizational structure and funding

1.3: Coordinate efforts with different partners to determine wildfire resilience programming and funding opportunities long-term

1.4: Present recommendations to the Board of Supervisors for a long-term sustainable program

Multi-Criteria Analysis Score: 54/80



MEASURE WF-CO-2

Develop a phased wildfire risk reduction and structure hardening plan for County-owned lands and facilities

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$550,000	**TBD**	**Sonoma Public Infrastructure, Emergency Management, Ag + Open Space, Climate, Permit Sonoma, Sonoma Water, UCCE**	Energy Efficiency, Building Efficiency, Physical Environment, Ecosystem Health

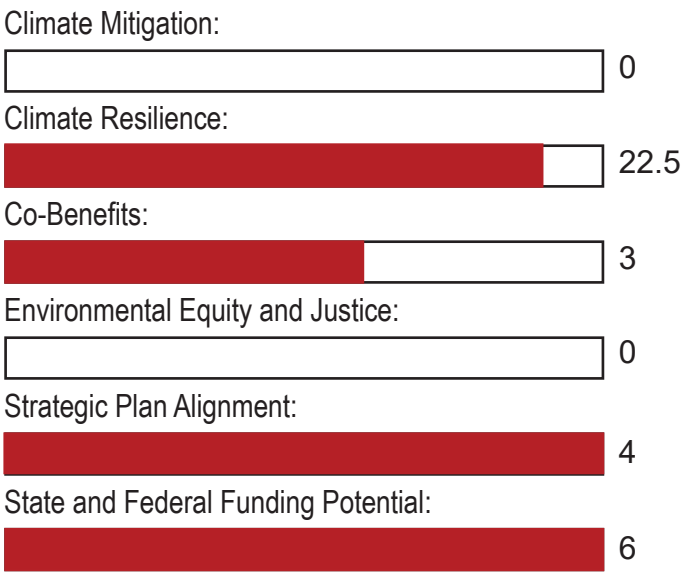
SUBMEASURES FOR WF-CO-2

2.1: Conduct a wildfire vulnerability assessment of existing County buildings, infrastructure, and lands (built assets, parks, public rights of way, wooded/brush covered areas, & other vegetated spaces) in wildfire hazard areas to identify applicable defensible space & structure hardening practices

2.2: Prioritize wildfire risk reduction and hardening for County buildings, infrastructure, and lands

2.3: Recommend a phased municipal wildfire resilience plan County buildings, infrastructure, and lands with potential funding strategies to the Board of Supervisors

Multi-Criteria Analysis Score: 35.50/80



MEASURE WF-CO-3

Review County-owned lands to identify current buffer zone service, gaps, and opportunities.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$157,450	**4,384 MT CO2e**	**Climate, Emergency Management, Permit Sonoma, Regional Parks, Sonoma Waster, Sonoma Public Infrastructure**	Building Efficiency; Workforce Development; Physical Environment; Ecosystem Health

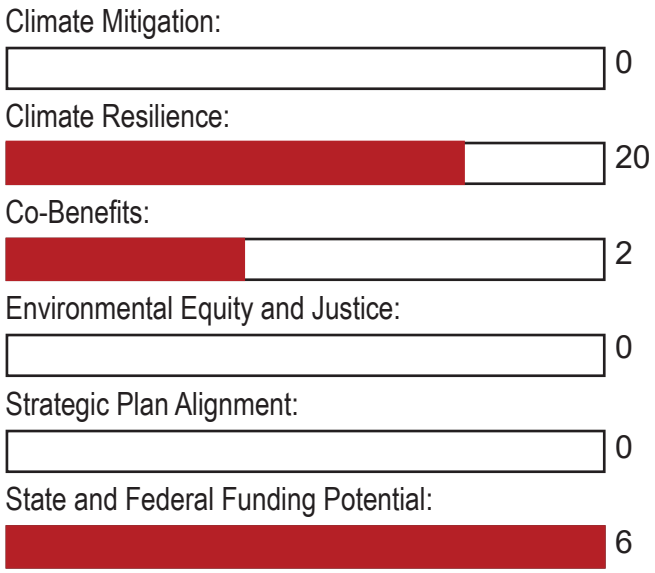
SUBMEASURES FOR W-CO-3

3.1: In coordination with WF-CP-2, evaluate where County-owned lands serve as existing resilient buffer zones to protect critical infrastructure and communities from wildfire

3.2: Identify County-owned lands that could fill gaps in existing buffer zone service & prioritize locations for developing buffer zone service

3.3: Propose a phased plan to implement land-based wildfire resilience strategies on County-owned lands for increased buffer zone capacity by 2030

Multi-Criteria Analysis Score: 28/80



MEASURE WF-CO-4

Identify & prioritize suitable vegetation treatment & mulching project areas on County lands & prepare environmental review for priority projects.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$697,000*	**19,272 MT CO2e**	**Sonoma Public Infrastructure, CalFire, Fire Districts, Firesafe Sonoma, Regional Parks, Sonoma Waster, Climate, Permit Sonoma**	Workforce Development; Physical Environment; Ecosystem Health

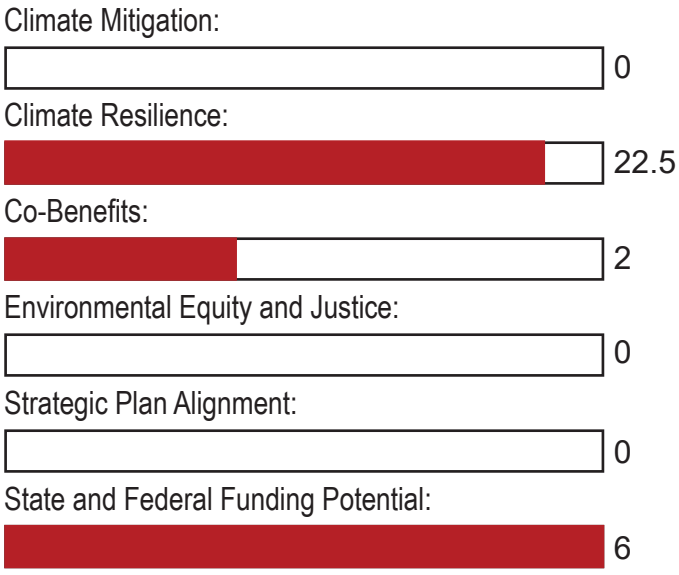
*Not Including Implementation

SUBMEASURES FOR W-CO-4

4.1: Identify & prioritize suitable vegetation treatment & mulching project areas on County lands

4.2: Prepare a CAL VTP programmatic CEQA analysis for environmental compliance for priority projects

Multi-Criteria Analysis Score: 30.50/80



MEASURE WF-CO-5

Implement fire-safe landscape practices, tree care, and protection on County-owned lands.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$717,524	**19,272 MT CO2e**	**Ag + Open Space, Climate, Local Fire Districts, Permit Sonoma, Regional Parks, Sonoma Water, Sonoma Public Infrastructure**	Water Conservation; Workforce Development; Physical Environment; Ecosystem Health

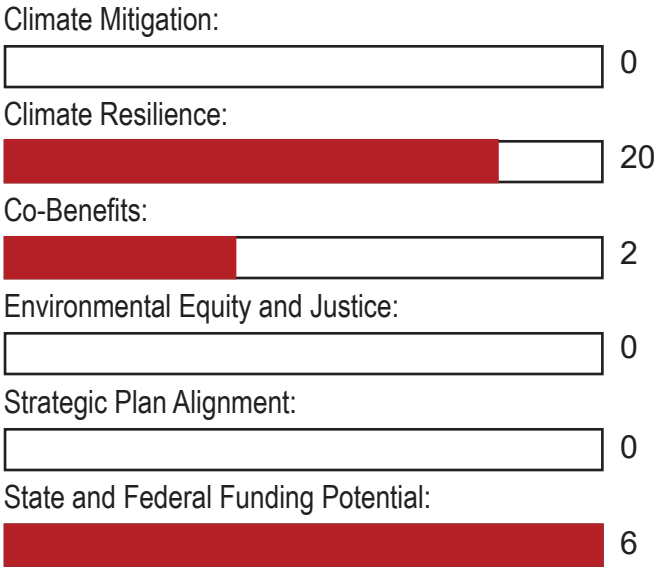
SUBMEASURES FOR W-CO-5

5.1: Inventory and evaluate existing landscape practices on County-owned lands in wildfire hazard areas by 2026

5.2: Identify and prioritize improved fire-safe landscape practices for County-owned lands in wildfire hazard areas by 2027

5.3: Secure funding & environmental review, and implement prioritized practices on County-owned lands in wildfire hazard areas by 2030

Multi-Criteria Analysis Score: 28/80



MEASURE WF-CO-6

Evaluate schedule of vegetation management along roadsides/right-of-way areas for fire risk reduction.

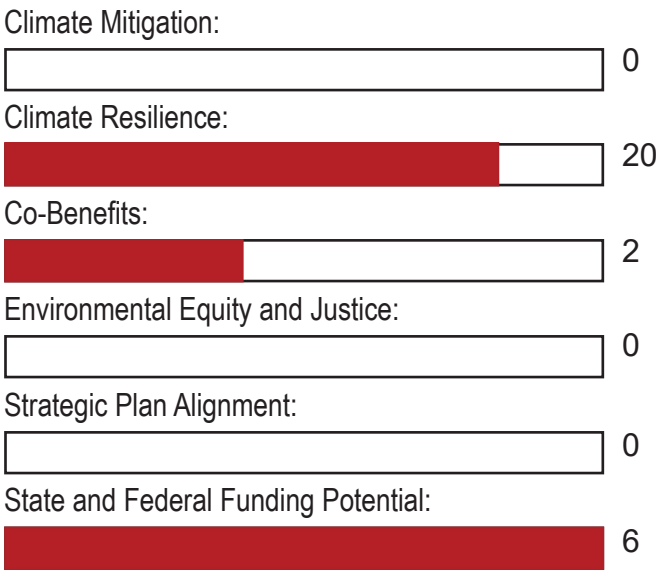
TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$50,000*	**22,777 MT CO2e**	**Climate, Sonoma Public Infrastructure**	Workforce Development; Physical Environment; Ecosystem Health

*Not Including Implementation

SUBMEASURES FOR W-CO-6

6.1: Assess schedule of vegetation management for fire risk reduction.

Multi-Criteria Analysis Score: 28/80



MEASURE WF-CO-7

Based on risk and vulnerability assessments, recommend assets and plan for managed retreat from wildfire risk or other climate hazards.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$200,000	**TBD**	**Emergency Management, Permit Sonoma, Regional Parks, Sonoma Water, Sonoma Public Infrastructure, Climate**	Building Efficiency; Workforce Development; Physical Environment; Ecosystem Health

SUBMEASURES FOR W-CO-7

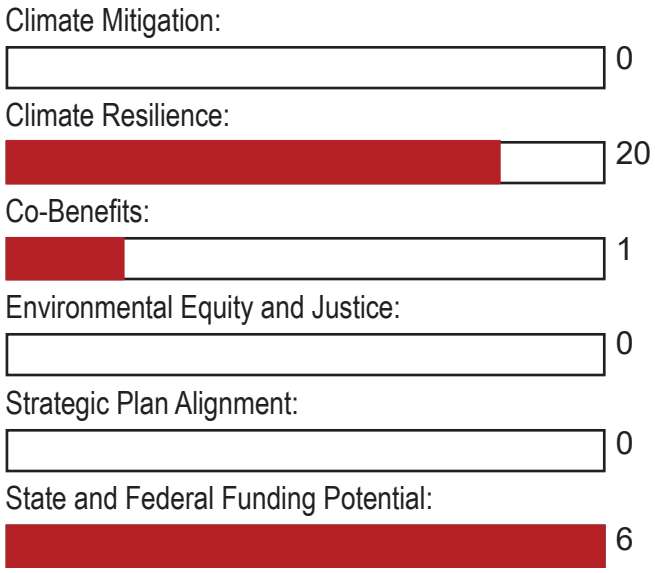
7.1: In conjunction with WF-CO-2, W-CO-3, and W-CO-8, identify County facilities and infrastructure at severe or extreme risk from wildfire or other climate hazards due to their location

7.2: Propose criteria to determine appropriateness of managed retreat in response to wildfire, sea level rise, or other climate hazards

7.3: Identify & prioritize facilities & infrastructure where managed retreat is the most appropriate response to climate hazards

7.4: Propose a phased strategy to implement and fund managed retreat while maintaining safety and core services to the extent feasible

Multi-Criteria Analysis Score: 27/80



Natural & Working Lands

Natural and Working Lands

Natural and working lands can be a powerful engine for reducing the pace of climate change and increasing resilience to climate impacts through climate smart land management. These climate smart practices can sequester carbon in plants, rocks, and soils, where it can stay a day, a season, decades, or centuries, depending on the site and the practice. These practices are not new, they are tried and true conservation practices that have been implemented for decades and in some cases half a century or more. Many of them are standardized and supported by the state and federal agencies. They are planned and implemented for their many benefits such as water quality, soil health, agricultural productivity, biodiversity and more. GHG inventories encourage us to look at these practices through a new lens and see how they affect the balance of carbon in the atmosphere, lands, and waters.

Key Climate Impacts:
Wildfire, sea level rise, changes in precipitation, extreme weather, and heat pose risks to California's carbon stocks. Rising sea levels and more extreme storms can lead to loss of coastal ecosystems and wetlands and erosion of soils into waterways, impacting water quality and ecosystem functions. Drought can lead to decreased productivity in plants and trees and reduce survivorship if droughts are prolonged. Drought also reduces freshwater availability for critical habitat such as rivers, creeks, and streams, reducing biodiversity. Wildfire can convert forest, including urban forest, into barren land, grassland and shrublands changing their ecosystem functions and reducing carbon stored in the soils and trees.

Climate Resilience Objectives:
Enhance sequestration of carbon and associated co-benefits in forest, grassland, shrubland, agricultural land, and developed land. Increase resiliency to climate impacts throughout Sonoma County's landscape.

Policy Landscape:
Key statewide and regional policies that influence the natural and working lands sector and the GHG emissions associated with it include:

Assembly Bill 1757, California Global Warming Solutions Act of 2006: Natural and Working Lands, calls for a suite of actions to center nature-based solutions in California's climate efforts and urgently scale their implementation in line with best available science.

Assembly Bill 2278 Natural Resources: Biodiversity and Conservation Report, requires the Natural Resources Agency to implement actions to achieve the goal of conserving at least 30% of state lands and coastal waters by 2030. The bill also requires the Secretary for the Natural Resources Agency to submit annual progress reports to the Legislature.

Natural and Working Lands Climate Smart Strategy, identifies priority nature-based solutions across California's landscapes and guides state programs and investments.

California's Nature-Based Solutions Climate Targets, sets quantitative targets regarding implementation of nature-based solutions.

Natural and Working Lands

California's 2021 Climate Adaptation Strategy, sets goals to increase the pace and scale of nature-based climate solutions, increase landscape connectivity and climate refugia, integrate nature-based solutions into relevant infrastructure and investments and accelerate state processes to support implementation of nature-based solutions.

Pathways to 30x30, provides a range of actions designed to result in 30% of California's lands being conserved by 2030, six million acres of land and half a million acres of coastal waters.

Sonoma County Ag + Open Space Vital Lands Initiative, a long-range comprehensive plan prioritizing the land conservation activities of Ag + Open Space. The Plan identifies climate resilience as a co-benefit of conservation.

Governor Newsom outlined a comprehensive and results-oriented agenda to expand nature-based solutions across California. At a high-level the targets set to achieve accelerated adoption of climate smart practices in forest, shrubland, and grassland management and agriculture, increase investment in urban trees on developed lands, reduce conversion of natural and working lands to intensive agriculture or development, and restore lost or compromised wetlands.

Key challenges include the need to rapidly expand local technical service providers and increase capacity of local organizations to support private landowners in adoption of nature-based solutions. Long-term funding is needed to sustain this work. While climate smart practices increase climate resilience, carbon stocks are highly variable from year to year, and short time frames do not adequately demonstrate the impact that management has on ecosystems. Climate planning should include management of carbon stock over longer periods (CARB Scoping Plan, 2022).

Key Studies, Strategies and Plans:
The measures in the Natural and Working Lands Sector reflect recommended policies and actions in the Sonoma County Carbon Stock Inventory and Potential Sequestration Study, Sonoma County Climate Resilient Lands Strategy, Sonoma County General Plan, Sonoma County Integrated Parks Plan, Regional Parks Sonoma County Strategic Plan 2023-2025, Sonoma County Ag + Open Space Healthy Lands and Healthy Economies, Sonoma County Ag + Open Space Vital Lands Initiative, RCPA Climate Mobilization Strategy, and the Sonoma County Regional Parks Draft Climate Action and Resiliency Plan.

Key Features of the Natural and Working Lands Measures:
The Board invested in Early Actions to plan and implement climate smart practices throughout Sonoma County. One early action is the Sonoma-Marin Ag and County Climate Coalition (SMACCC), a partnership between the County of Sonoma, Gold Ridge, Sonoma and Marin Resource Conservation Districts, Sonoma County Farm Bureau, Carbon Cycle Institute, Sonoma County Regional Climate Protection Authority, University of California Cooperative Extension, Agricultural Institute of Marin, and

Natural and Working Lands

Marin Agricultural Land Trust. This project is funded by a $10 million grant from the U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) Partnerships for Climate-Smart Commodities award, as well as $2.35 million in match from partner organizations. This project will create and support a regional supply chain of diverse climate-smart agricultural commodities and catalyze the development of a regional carbon finance program to scale and sustain regional implementation of climate smart practices.

County operations focus on conserving, maintaining, and restoring healthy, natural, and working lands by implementing carbon sequestration practices on County lands. The measures build upon the existing efforts of Sonoma County Regional Parks, Ag + Open Space, as well as RCDs, local agencies, non-profits, and CBOs who are national leaders in this space.

Figure 26: Natural and Working Lands Sector Early Actions Measures

Natural and Working Lands Sector Early Action Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
NWL-EA-1	Create a Regional Parks Climate Adaptation and Resiliency Plan.	2023-24	Regional Parks
NWL-EA-3	Increase carbon sequestration through compost application on agricultural and community sites.	2023-24	RCPA, RCDs, ZWS, Daily Acts, Carbon Cycle Institute
NWL-EA-4	Increase carbon sequestration through collaborative climate smart agriculture.	2023-24	Climate, Ag Commissioner, RCPA, RCDs, Ag Institute of Marin, Marin Ag Land Trust, UCCE, CCI, Sonoma Farm Bureau

Natural and Working Lands

Figure 27: Natural and Working Lands Sector County Operations Measures

Natural and Working Lands Sector County Operations Measures			
Measure #	Measure Short Name	Timeline	Key Departments & Agencies
NWL-CO-1	Ag + Open Space will continue to consider conservation of important carbon stocks in their easement selection process.	N M	Ag + Open Space
NWL-CO-2	Increase coordination with tribes and opportunities for tribal collaboration of land management on County-owned lands by 2026.	N M	Regional Parks (coordinate w/Ag + Open Space, Climate, Sonoma Water)
NWL-CO-3	Identify appropriate sites and establish formal targets for compost and mulch application on County lands based on SB 1383.	N M	Regional Parks, ZWS, RCDs, Public Infrastructure, Climate
NWL-CO-4	Create urban forested green space on County-owned lands.	M L	Regional Parks, Public Infrastructure, Climate
NWL-CO-5	Increase carbon sequestration on County-owned lands by implementing beneficial practices from the Carbon Stock Inventory and Potential Sequestration Study.	M L	Regional Parks, Climate, RCDs, Public Infrastructure, Sonoma Water
NWL-CO-6	Provide County facilities and parks staff with ongoing training for best practices on climate smart landscaping practices by 2028.	M L	Regional Parks, Sonoma Water, Public Infrastructure
NWL-CO-7	Establish a Climate Resilient Lands Working Group.	N M	Climate, Ag + Open Space, Permit Sonoma, Regional Parks, Sonoma Water, RCPA, Tribes, RCDs, UCCE, & partners

MEASURE NWL-CO-1

Ag + Open Space will continue to consider conservation of important carbon stocks in their easement selection process.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
Not Applicable*	**40,700+ MT CO2e**	**Climate, Ag + Open Space**	Physical Environment, Ecosystem Health

*Activities by Ag + OS

SUBMEASURES FOR NWL-CO-1

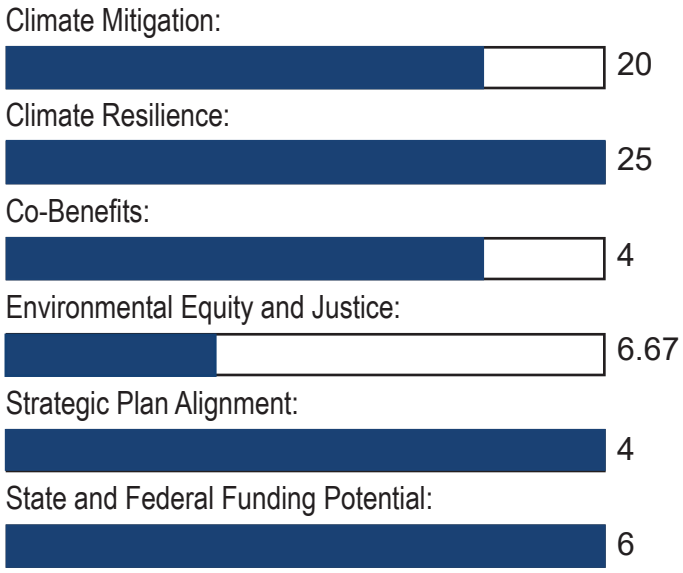
1.1: Ensure solicitation for easements extends to parcels with significant carbon stocks including forests, woodlands, wetlands, rangelands, and grasslands by 2027

1.2: Consider additional factors in established selection criteria that assign value to carbon stocks and landowner interest in adopting carbon sequestration practices for acquisition of easements by 2025

1.3: Evaluate carbon sequestration for existing and at the close of new easement acquisitions to include in County Greenhouse Gas goal monitoring and tracking by 2027

1.4: Evaluate the inclusion of climate resilience metrics for consideration in the reauthorization of Ag + Open Space's sales tax to engage with through the public review process

Multi-Criteria Analysis Score: 65.67/80



MEASURE NWL-CO-2

Increase coordination with tribes and opportunities for tribal collaboration of land management on County-owned lands by 2026, based on traditional and historic stewardship practices.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$50,000	**Not Applicable**	**Regional Parks, Climate, Ag + Open Space, Sonoma Water**	Water Conservation; Workforce Development; Physical Environment; Ecosystem Health

SUBMEASURES FOR NWL-CO-2

2.1: Restore the tribal engagement liaison for the County of Sonoma, and/or engage a tribal engagement facilitator to help coordinate land management activities

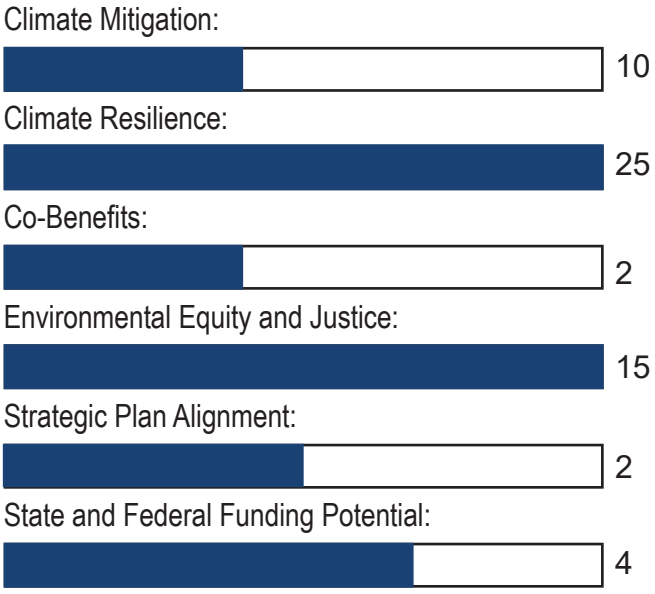
2.2: Engage with local tribes to coordinate on climate resilience efforts and collaboratively identify co-management goals and opportunities by 2025

2.3: Identify specific stewardship projects for the Board of Supervisors to consider, in collaboration with local tribes by 2026

2.4: Implement stewardship projects identified in NWL-CO-3.3, in collaboration with local tribes by 2035

2.5: Evaluate the project outcomes and present recommendations for further collaboration to the appropriate governing bodies

Multi-Criteria Analysis Score: 58/80



MEASURE NWL-CO-3

*In accordance with state regulations

Identify appropriate sites and establish formal targets for compost and mulch application on County lands based on SB 1383 and monitor and track applications every 3 years.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$130,585	**88 MT CO2e**	**Zero Waste Sonoma, Sonoma Public Infrastructure, RCPA, Ag + Open Space, Climate**	Ecosystem Health; Workforce Development; Physical Environment; Waste Reduction

SUBMEASURES FOR NWL-CO-3

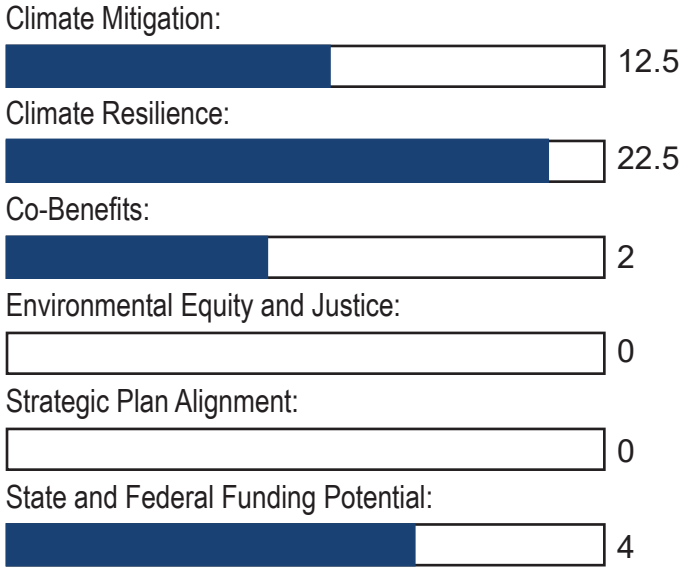
3.1: Identify & prioritize County-owned lands suitable for increased compost application based on feasibility & cost-effectiveness by 2025

3.2: Identify the appropriate quality and quantity of compost to be applied on County-owned lands to meet regional SB 1383 requirements

3.3: Establish procurement & quality assurance policies to protect against ecological harm from compost application, with guidance, by 2026

3.4: Coordinate with Public Infrastructure and Regional Parks to apply compost, and audit application every 3 years by 2030

Multi-Criteria Analysis Score: 41/80



MEASURE NWL-CO-4

Create urban forested green space on County-owned lands, utilizing as appropriate egresses and ingresses of county buildings, vacant lots, rooftops, medians and walkways.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$393,291	**71,606 MT CO2e**	**Climate, Regional Parks, Sonoma Public Infrastructure**	Workforce Development; Physical Environment; Ecosystem Health

SUBMEASURES FOR NWL-CO-4

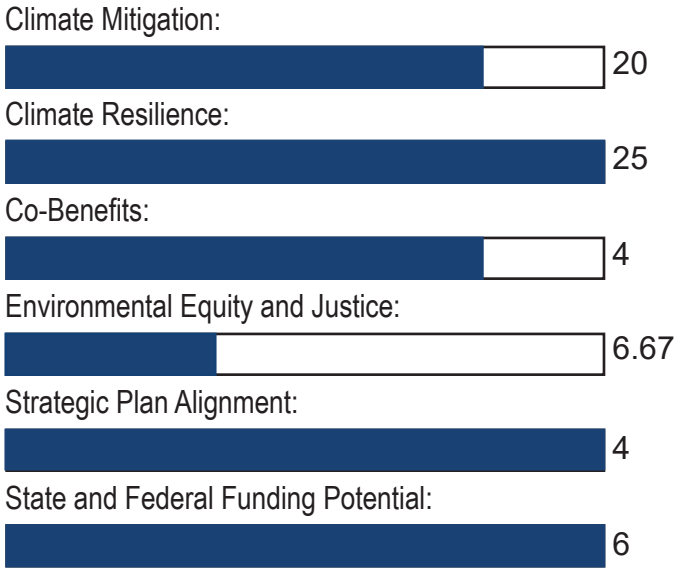
4.1: Evaluate and prioritize County-owned lands for potential green space feasibility

4.2: Develop & propose demonstration project gardens at highly frequented County facilities to educate employees and visitors about climate-smart landscaping practices by 2030

4.3: Evaluate the demonstration project outcomes from NWL-CO-4-2, present recommendations for future projects

4.4: Develop a plan to increase green space coverage on County-owned lands, with a focus on carbon sequestration, water conservation, feasibility and cost-effectiveness

Multi-Criteria Analysis Score: 65.67/80



MEASURE NWL-CO-5

Increase carbon sequestration on County-owned lands by implementing beneficial practices described in the Carbon Stock Inventory and Potential Sequestration Study thru 2030.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$640,869	**526 MT CO2e**	**Regional Parks, Climate, Sonoma Water, Sonoma Public Infrastructure**	Water Conservation; Workforce Development; Physical Environment; Ecosystem Health

SUBMEASURES FOR NWL-CO-5

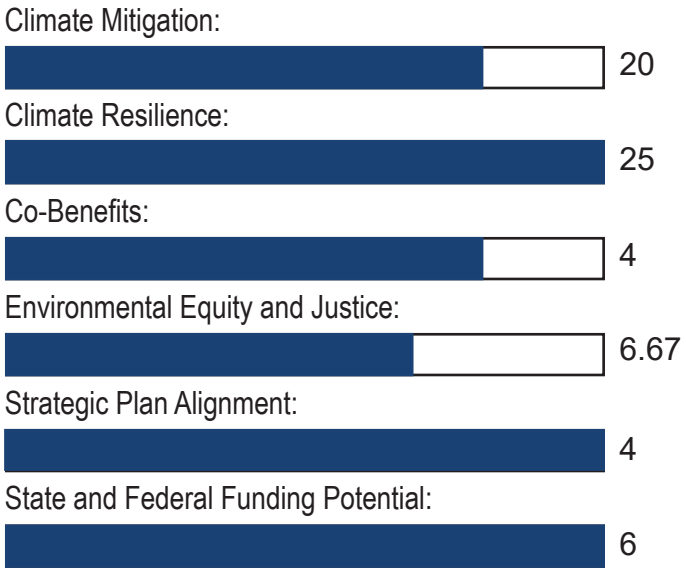
5.1: Develop Climate/Carbon Farm Plans for Regional Parks, including prioritization of climate-smart practice implementation thru 2030

5.2: Establish short-and long-term targets for practice implementation to increase carbon sequestration by 2030 based on NWL-CO-5-1

5.3: Propose & implement regenerative land management practices at municipal scale, including practices that draw down carbon, reduce GHG emissions, and improve watershed and human health thru 2030 based on NWL-CO-5-1 and NWL-CO5-2

5.4: Evaluate progress-to-date for short-term and long-term targets established for NWL-CO-5-1 and NWL-CO-5-2, & determine next steps for implementation of sequential practices beyond 2030

Multi-Criteria Analysis Score: 65.67/80



MEASURE NWL-CO-6

Provide County facilities and parks staff with ongoing training for best practices on climate smart landscaping practices by 2028.

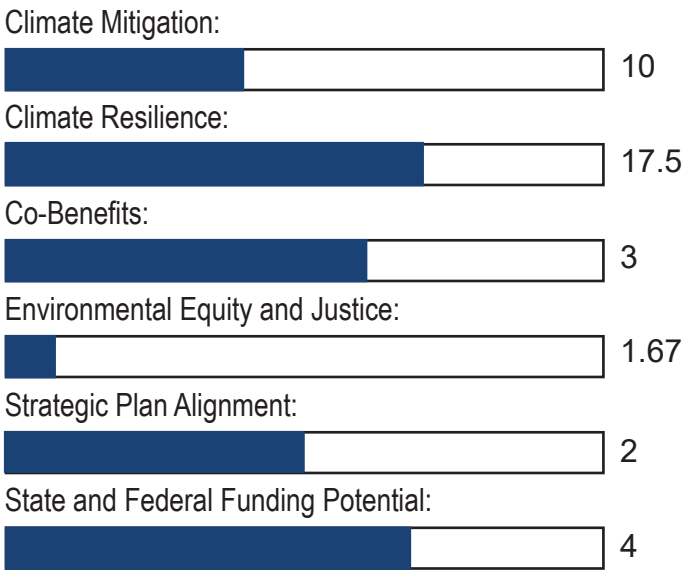
TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$7,500	**Not Applicable**	**Climate, Regional Parks, Sonoma Water, Sonoma Public Infrastructure**	Climate Education; Water Conservation; Workforce Development; Physical Environment; Ecosystem Health

SUBMEASURES FOR NWL-CO-6

6.1: Evaluate and prioritize climate-smart landscaping trainings and programs for County staff focused on landscaping and soil management

6.2: Provide training for County staff, through Sonoma Higher Ed along with change management to ensure implementation by 2030

Multi-Criteria Analysis Score: 38.17/80



MEASURE NWL-CO-7

Establish a Climate Resilient Lands Working Group.

TOTAL POTENTIAL IMPACTS FROM THE MEASURE			
ESTIMATED COSTS	**POTENTIAL GHG BENEFITS**	**KEY PARTNERS**	**OTHER BENEFITS**
$15,000	**Not Applicable**	**Climate and other collaborators**	Water Conservation; Workforce Development; Physical Environment; Ecosystem Health

SUBMEASURES FOR NWL-CO-7

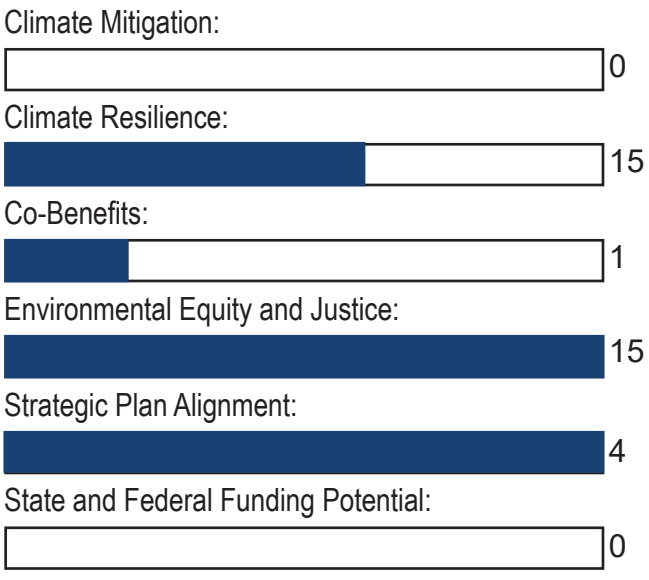
7.1: Convene the working group to meet on a regular, periodic schedule to recommend priorities and coordinate projects and funding applications

7.2: Develop a strategic vision for coordinated land resilience in Sonoma County and a framework for ongoing implementation

7.3: Identify, prioritize, and seek funding for demonstration projects using the Project Concepts of the Climate Resilient Lands Strategy

7.4: Develop recommendations for sustainable ongoing funding and implementation of a coordinated, ongoing land resilience program

Multi-Criteria Analysis Score: 35/80



V. Community Progress & Engagement

Community Progress & Engagement

The foundation of the County's community engagement has developed and evolved over the last two decades. In particular, substantial effort and dedication over the last 10 years created more inclusive engagement practices to build climate resilience in Sonoma County to climate hazards such as wildfires, flooding, sea-level rise, air pollution, power outages, and extreme heat. To inform the development of the Climate Resilience Comprehensive Action Plan, the County partnered with several agencies and community-based organizations and advocates to engage with communities on climate change efforts and resiliency work. The Sonoma County Climate Action 2020 and Beyond Plan, adopted in 2016, was one of the first comprehensive efforts to involve the community in climate action planning and implementation efforts. The Regional Climate Protection Authority developed the plan with extensive input from residents, businesses, and local organizations. Public workshops, surveys, and stakeholder meetings were integral to shaping the goals and strategies of the plan.

In April 2021 the County's Climate Action Ad Hoc hosted a virtual Town Hall meeting on Climate Action and Resilience: Steps to Become Carbon Neutral by 2030. The format included short presentations from some of the County departments and agencies, special districts, Sonoma Clean Power, and nonprofit community partners that address factors related to climate. After hearing from presenters, the community was given the opportunity to provide input on what was important to them and ways the County could best respond to the climate crisis. A total of 980 comments were received either prior to or during the Town Hall and spanned across 35 climate-related topics. A summary of the input received was presented to the Board of Supervisors on May 11, 2021, in the broad sectors of transportation, vegetation management, energy and built environment, zero waste, and adaptation and social resilience. These comments led to the development of the Early Action Measures approved by the Board in 2022 and 2023. Most of the comments from the Town Hall focused on wider community climate action and resilience, and these shaped the Climate Plan's approach to community progress discussed below. Comments that directly addressed, or were clearly applicable to, County Operations informed development of those measures.

Implementation of the Climate Action and Resiliency pillar is a collaborative effort of County departments and agencies, primarily involving the Climate Action and Resiliency Division of the County Administrator's Office, Ag + Open Space, the Agricultural Commissioner, the Economic Development Board, Human Services, Permit Sonoma, Regional Parks, Sonoma Public Infrastructure, Sonoma Water, and the University of California Cooperative Extension (UCCE) in Sonoma County. The County also collaborates locally with the RCPA and SCTA (including city partners), the Bay Area Air Quality Management District, the Northern Sonoma County Air Pollution Control District, Sonoma Clean Power, the Gold Ridge and Sonoma Resource Conservation Districts, and multiple fire services partners, including FireSafe Sonoma, 23 fire protection agencies, and CalFIRE.

Several climate resilience programs implemented through the County provide outreach, education, and community engagement. Key programs include: the Sonoma County Energy Independence Program, which provides

Community Progress & Engagement

financial resources for homeowners and businesses to upgrade their facilities to be more climate resilient; energy efficiency and built-environment resiliency programs through the Bay Area Regional Energy Network (BayREN), and the PG&E Local Government Partnership, and Sonoma Green Business Certification programs. There are also extensive outreach, education, and engagement activities conducted by County departments, agencies, and partners, associated with wildfire planning, prevention, and protection.

Input Received Developing the Climate Resilience Comprehensive Action Plan

In preparing this Climate Plan, the County engaged communities in multiple ways, including surveys, tabling multiple events, focus group conversations, and interviews of community organizations and members, and held a Climate Town Hall and two workshops with the Board of Supervisors. Staff also reviewed community input on climate resilience issues in other forums, including where engagement informed recommendations in related studies, plans, and strategies; this is especially true where proposed Climate Plan measures reflect priority recommendations in those documents. The Climate Plan measures incorporate the community input and findings from summaries of input from the 2021 Climate Action and Resiliency Town Hall, the 2021 RCPA Climate Mobilization Strategy, the 2022 Sonoma County Multi-Jurisdictional Hazard Mitigation Plan, the 2022 Climate Resilient Lands Strategy, the recommendations of community committees on the 2022-23 RCPA Climate Protection Initiative, and the 2023 Community Wildfire Protection Plan, among others. Staff also reviewed survey results collected for the update to the Safety Element of the General Plan. Of note, the Climate Resilient Lands Strategy included consultation with tribal representatives of the five tribal governments in Sonoma County; the insight and priorities communicated during these meetings resulted in the inclusion of specific measures in the Climate Plan.

A recurring theme of the comments received was the need for deeper engagement with individual communities, especially those that have historically not had access to climate resilience policymaking. Respondents repeatedly indicated the need to leverage trusted community leaders and advocates in designing and implementing equity-centered engagement for climate resilience, and that resources need to be provided to support that work. As a direct result of this input, the County designed a Community Engagement Strategy to Promote Climate Justice. The County will develop a clearer understanding of the climate resilience needs, priorities, barriers, and opportunities of diverse communities across Sonoma County, with a focus on unincorporated and climate justice communities. The result of the engagement will be prioritized recommendations to the Board of Supervisors for future County actions to advance equitable climate resilience in Sonoma County communities.

Community Engagement Strategy

Equity and justice are central to effective community engagement. Ensuring that all community members, especially those from climate vulnerable and climate justice communities, have a voice in climate resilience efforts is critical and takes necessary steps to address historic harms. The County's strategy will incorporate the following principles:

Equitable and Inclusive Representation – Supports equitable design of programs and delivery of benefits by incorporating outreach to communities that are excluded, intentionally or unintentionally, in climate resilience and climate justice discussions.

Uplifting Anti-Racist Practices – Identifies and eliminates practices that are racist, or that reinforce outcomes shaped by systemic racism, so that power and benefits are redistributed and shared equitably.

Transparency and Accountability – Enables trust and promotes just outcomes by focusing on clarity and openness of organizational culture, and ownership of actions and outcomes.

The County will implement a yearlong equitable community engagement process to develop a clearer understanding of the climate resilience needs, priorities, barriers, and opportunities of diverse communities across Sonoma County, with a focus on unincorporated and climate justice communities. Rather than simply seeking input on candidate measures and actions to promote community climate resilience progress, this engagement will focus on developing a greater understanding of how needs, priorities, barriers, and opportunities differ in communities across Sonoma County. This will require community engagement that is deeper in conversation and wider in reach, recognizing that communities on the coast may have different concerns and constraints than communities in the central Santa Rosa plain, or in the wildland-urban interface of the coastal ranges and Mayacamas mountains. Similarly, residents in low-income communities may have different concerns and constraints, as might different occupational sectors; for example, farm-owners, farmworkers, businesses in the hospitality sector, and those who own or work in shops or construction businesses may each have unique challenges and opportunities. This engagement work will promote a clearer picture or these different needs and priorities to help the County prioritize the work and the resources it devotes to supporting equitable climate resilience progress in communities across Sonoma County.

Partnerships for Effective Engagement:
The County will coordinate on engagement efforts with RCPA and SCTA, cities, Sonoma Clean Power, and government partners who are undertaking climate resilience community engagement initiatives. The County will also partner with the RCDs to ensure effective engagement with farmers, ranchers, and landowners, and will seek opportunities to work with local labor, trade, and business groups.

Inviting Consultation with Tribal Governments:
Consistent with the recommendations from consultation with tribes during the development of the Climate Resilient Lands Strategy, the County will invite local tribal leaders to consult regarding the development of a working forum for the County and local tribes to discuss shared interests in climate resilient land management, opportunities to expand collaboration and coordination in land management activities, and other climate resilience issues of mutual interest.

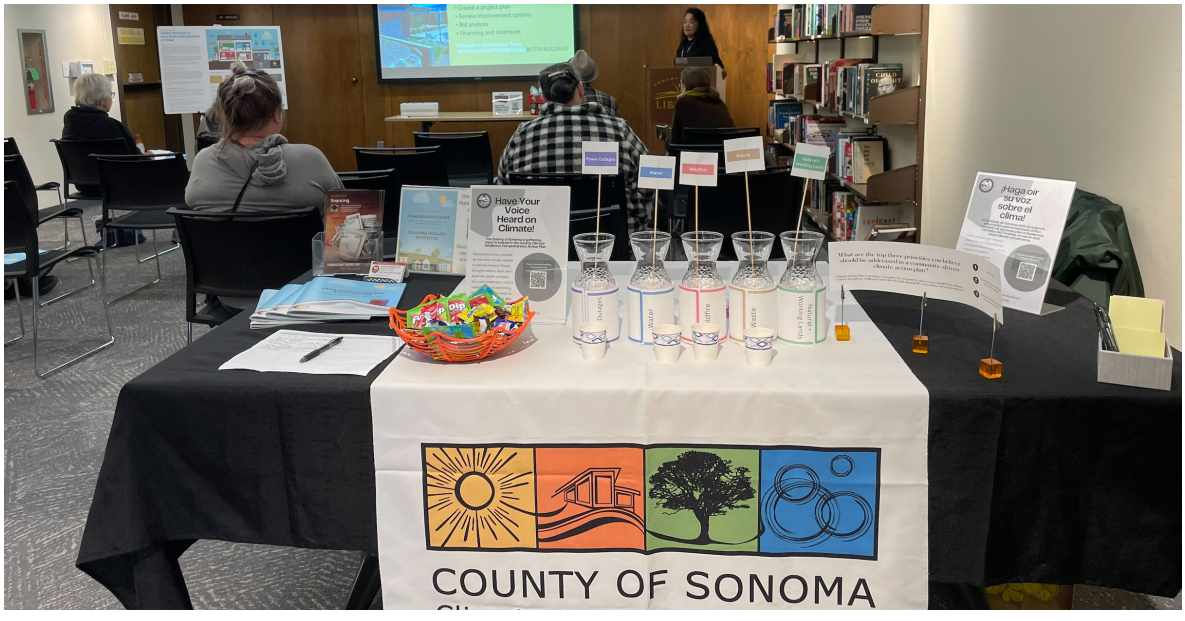
Community Engagement Strategy

Information Sharing:
Effective communication is a cornerstone for ensuring that all community members are equitably informed about climate change and resilience efforts. The County's strategy for disseminating information revolves around leveraging the Advisory Committee as a group of trusted local organizations, utilizing diverse communication channels, and developing clear, accessible materials.

Active Participation:
Active participation ensures that the climate resilience strategies developed are not only effective but also reflective of the community's needs and priorities. The County will work with the Advisory Committee to foster active participation, which includes hosting interactive workshops and town halls, facilitating focus groups and listening sessions, and publishing digital media content.

Ongoing Collaboration:
Ongoing collaboration builds climate resilience by ensuring that climate resilience efforts are dynamic, responsive, and continuously improving based on community input and evolving circumstances. The County's approach to fostering ongoing collaboration includes developing community-based partnerships, supporting grassroots initiatives, and implementing a system for monitoring and evaluating engagement efforts. These partnerships can include joint projects, co-hosted events, and collaborative research and will strengthen collaborations with local organizations, businesses, schools, and other groups.

Candidate Measures for Community Progress:
Based on the input, suggestions, and specific comments received during the development of the Climate Plan, collaboration with County departments, agencies and other partners, and on priority measures and actions in other climate-related plans, the County compiled a list of candidate measures and actions that could advance community climate resilience. These measures are included for illustration and to promote conversation – neither the list nor the scope of the measures is set, and both are likely to evolve as community engagement progresses. With those caveats, the following tables lay out a range of possible actions the County could take to support communities to become more climate resilient.



Community Progress Measures

Figure 28: Candidate Energy Community Progress Measures

Candidate Energy Community Progress Measures & Actions	
E-CP-1	Consistent with authorities and the triennial update to codes and standards, consider reducing energy use at new construction in unincorporated areas.
E-CP-2	Consistent with authorities and the triennial update to codes and standards, consider decarbonizing new construction by 10%.
E-CP-3	Consistent with authorities and the triennial update to codes and standards, consider reducing energy use, decarbonizing, and increasing resilience through renewable energy requirements for new construction.
E-CP-4	Reduce energy use, decarbonize, and increase resilience through renewable energy plans and policies for existing residential and commercial buildings.
E-CP-5	Reduce energy use and increase resilience at existing residential and commercial buildings through policies and programs.
E-CP-6	Incentivize energy efficiency and renewable energy uptake in communities.
E-CP-7	Prioritize and support energy efficiency and renewable energy access in underserved communities.
E-CP-8	Support and participate in Sonoma Clean Power's GeoZone project by developing conforming policies, ordinances, or other enabling actions.
E-CP-9	Engage and educate communities on energy efficiency, electrification, renewable energy, and energy storage upgrades.
E-CP-10	Develop focused "call-to-action" campaigns to motivate community action on energy efficiency, electrification, renewable energy, and energy storage.
E-CP-11	Promote the use of carbon-free electricity in residential and commercial buildings to achieve 100% carbon-free electricity.
E-CP-12	Conduct community engagement to develop additional candidate energy measures and actions for Community Progress and prioritize all Community Progress energy measures and actions.

Community Progress Measures

Figure 29: Candidate Transportation Community Progress Measures

Candidate Transportation Community Progress Measures & Actions	
T-CP-1	Evaluate developing and/or updating transportation Emergency Mgmt and measures in the General Plan to reduce travel by single occupancy vehicles.
T-CP-2	Evaluate developing and/or updating land use measures in the General Plan to reduce travel by single occupancy vehicles.
T-CP-3	Evaluate developing and/or updating neighborhood design plans and policies to promote and support active transportation including requirements for developers.
T-CP-4	Create complete and safe streets for active transportation and accessing alternative transportation modes.
T-CP-5	Reduce idle engine emissions with congestion management strategies.
T-CP-6	Enhance and coordinate transit service by implementing Phase II and Phase III recommendations of the SCTA Transit Integration & Efficiency Study, and actions from the SCTA Comprehensive Transportation Plan 2050.
T-CP-7	Implement bicycle and pedestrian improvements consistent with the Countywide Active Transportation Plan to be completed in 2025.
T-CP-8	Expand bike sharing as a transportation alternative.
T-CP-9	Incentivize using alternative modes of transportation.
T-CP-10	Increase awareness and support in communities for alternative modes of transportation.
T-CP-11	Develop focused "call-to-action" campaigns to motivate community mode shifting.
T-CP-12	Accelerate the transition to 100% electric vehicles for all transportation needs not covered by micromobility and public transportation systems.
T-CP-13	Conduct community engagement to develop additional candidate transportation measures and actions for Community Progress and prioritize all Community Progress transportation measures and actions.

Community Progress Measures

Figure 30: Candidate Zero Waste Community Progress Measures

Candidate Zero Waste Community Progress Measures & Actions	
ZW-CP-1	Using the Zero Waste Sonoma model ordinance, develop an ordinance mandating diversion of construction, deconstruction, and demolition wastes.
ZW-CP-2	Develop a food recovery ordinance pursuant to SB 1383.
ZW-CP-3	Evaluate planning, zoning, and permitting needs related to anticipated increases in needs for waste diversion facilities.
ZW-CP-4	In partnership with RCPA and Zero Waste Sonoma, develop a policy framework to create and support regional building material reuse markets.
ZW-CP-5	In partnership with Zero Waste Sonoma, develop a program and incentives structure for compliance & monitoring under SB 1383 food recovery regulations.
ZW-CP-6	Expand waste diversion elements in Sonoma Green Business certification in consideration of SB 1383.
ZW-CP-7	Support and seek to expand beach clean-up days with local organizations (e.g., Russian Riverkeeper and Coastwalk) to build awareness of the issues of trash and reduce impacts on coastal assets.
ZW-CP-8	Expand outreach & education to residents, schools, and businesses on the benefits of, and best practices for, waste diversion, recycling, & composting.
ZW-CP-9	Conduct community engagement to develop additional candidate waste measures and actions for Community Progress and prioritize all Community Progress waste measures and actions.

Community Progress Measures

Figure 31: Candidate Water Community Progress Measures

Candidate Water Resilience Community Progress Measures & Actions	
W-CP-1	Coordinate solutions to protect our most vulnerable coastal residents and businesses from sea-level rise, including those who live in the innundation zones, displaced community members, and workers who face lost wages during flood events.
W-CP-2	Coordinate solutions to protect our most vulnerable community members from flood hazards, including those who live in the floodplain, displaced community members, & workers who face lost wages during flood events.
W-CP-3	Advance recommendations from the Summary Report on Improved Flood Risk Management in Sonoma County.
W-CP-4	Advance drought resiliency projects from the Countywide Drought Resilience Plan.
W-CP-5	Expand the pilot rebate and training program to promote household-level water storage through rainwater catchment.
W-CP-6	Establish a program to support agricultural lands in development and maintenance of on-site water storage infrastructure to ensure drought preparedness.
W-CP-7	Conserve and reduce the use of potable water for non-potable uses.
W-CP-8	Develop a literature review and analysis to determine septic water sources of pollution in the Lower Russian River region and seek community input on potential wastewater solutions.
W-CP-9	Collaborate with local tribes, state and federal agencies, and other stakeholders to advance riparian corridor protection and coastal habitat restoration in near-shore areas, including kelp forests and sea grass beds.
W-CP-10	Conduct community engagement to develop additional candidate water measures and actions for Community Progress and prioritize all Community Progress water measures and actions.

Community Progress Measures

Figure 32: Candidate Wildfire Community Progress Measures

Candidate Wildfire Resilience Community Progress Measures & Actions	
WF-CP-1	Develop and implement a whole community-centered, landscape-based wildfire resiliency program through the Wildfire Resilient Sonoma County project, and SoCoAdapts.
WF-CP-2	In collaboration with Fire Districts, Calfire and other partners, assist in the development of a County-wide vegetation management plan to map existing and future project locations, identify current gaps and opportunities, and ensure long-term maintenance.
WF-CP-3	Reduce loss of existing carbon stocks due to wildfire through conservation of natural lands, conservation easements, new policies, and land acquisition.
WF-CP-4	Reduce wildfire risk from vegetation fuels by optimizing opportunities for prescribed and agricultural grazing on public and private lands across Sonoma County.
WF-CP-5	Support urban infrastructure resilience planning that utilizes nature-based solutions to improve the ability for infrastructure to withstand extreme weather and natural disasters.
WF-CP-6	Integrate climate resilience into other County plans, ordinances, programs and projects, specifically in regard to land use decisions and land management.
WF-CP-7	In coordination with the California Department of Insurance and key stakeholders, and the planning work of WF-CO-1, develop and implement the Sonoma County Wildfire Risk Reduction Insurance Pilot Program.
WF-CP-8	Expand the Chipper program to include a community chipping and/or curtain burner rotation program for areas designated as Very High or High wildfire vulnerability.
WF-CP-9	In coordination with WF-CO-1, WF-CP-4, and the SoCoAdapts program, collaborate with HOAs to develop policies for increasing wildfire resilience for homeowners.
WF-CP-10	Prioritize fuel management projects with EMS considering feasibility, costs, and potential impact in wildfire hazard areas using the CWPP Project Entry Portal Project List and Map.
WF-CP-11	Coordinate code enforcement and inspections for vegetation management between County programs, fire districts and CAL FIRE in the highest fire hazard zones.
WF-CP-12	Develop workforce pathways to permanent employment for transitional adolescents (18- to 24-year-olds), focusing on wildfire resilience job skills and technical expertise.
WF-CP-13	In coordination with WF-CO-1, expand and enhance the CWPP Hubsite to serve as a larger single-point-of-entry portal for wildfire resilience and risk reduction resources, grants, and other community information.
WF-CP-14	Support and enhance ongoing programs to increase awareness and preparedness for wildfire and other climate hazard emergencies in vulnerable and socially disadvantaged communities by increasing access to clear and actionable information in multiple languages.
WF-CP-15	Increase wildfire resilience in new construction by exploring the potential expansion of California Building Code Chapter 7A.
WF-CP-16	Conduct community engagement to develop additional candidate wildfire measures and actions for Community Progress and prioritize all Community Progress wildfire measures and actions.

Community Progress Measures

Figure 33: Candidate Natural and Working Lands Community Progress Measures

Candidate Natural and Working Lands Community Progress Measures & Actions	
NWL-CP-1	Sustain and enhance Ag + Open Space's Community Spaces Matching Grant Program to expand opportunities for public agencies, non-profits, and tribes serving under-resourced communities to implement projects for urban farming, access to green spaces, and/or preservation of urban carbon stocks.
NWL-CP-2	Evaluate opportunities to secure state and federal funding or other funding mechanisms to sustain and scale climate smart practice implementation within Sonoma County.
NWL-CP-3	Partner with public agencies and CBOs to continue to host compost giveaways and workshops to educate and provide resources for landowners to apply compost where application is feasible and advisable.
NWL-CP-4	Increase carbon sequestration on croplands and working lands through soil carbon amendments, hedgerow planting, grassland restoration, and implementation of other climate-smart practices.
NWL-CP-5	Explore partnerships and seek opportunities to support residents and local businesses to decarbonize their workflows and lifestyles.
NWL-CP-6	Partner with members of underserved, low-income, and frontline communities to inform planning and implementation of climate smart practices to improve human health.
NWL-CP-7	Evaluate land-based strategies to reduce the impacts of extreme heat, with a focus on community needs for cooling centers.
NWL-CP-8	Enhance tidal marsh conservation, restoration, and sediment supply through planning, design, permitting, and construction of projects.
NWL-CP-9	Conduct community engagement to develop additional candidate natural and working lands measures and actions for Community Progress and prioritize all Community Progress natural and working lands measures and actions.
NWL-CP-10	Increase wetland restoration to restore native plants, create wildlife corridors and habitat, reduce peak flows, disrupt spread of wildfires, sequester carbon, and create outdoor recreation opportunities.

VI. Costs and Benefits of Measures

Costs and Benefits of Measures

There will be direct and indirect costs of implementing the Climate Plan. The County estimated costs and benefits for the County Operations measures and actions based on the best available information. In many cases, measures call for an initial study, assessment, or prioritization of needs or possible activities, with future action on the highest priorities; in these cases, costs of near-term actions are estimated, and future costs and benefits characterized to the extent feasible. To understand the combined multiple benefits of the measures, the County performed a multi-criteria analysis which results in relative ranking score for each measure. In addition, the County had analysis of both direct and indirect costs and benefits performed to understand the total social costs and benefits of defined measures using a measure of the social cost of carbon. It is important to understand that the multi-criteria analysis and the cost benefit analysis value benefits in different ways, and the multi-criteria analysis does not consider costs, so the relative rankings they produce are different. The County estimated the costs and potential co-benefits of implementing the community engagement strategy to prioritize potential future County actions to advance climate resilience in Sonoma County's communities.

In considering these estimates of costs and benefits, it is important to also understand the context in which they are contemplated. The long-term economic costs of responding to climate change will be immense. Investments will need to be made by every resident, agency, and organization across every sector of society. While these costs may be large and seem unattainable, the cost of inaction is even larger. As an example, a recent report examined the cost of decarbonizing the entire U.S. economy by 2050. The simulation illustrated the difference between two scenarios, with one starting climate action in 2021 and the second delaying climate action until 2030. By comparing the net present value of the two scenarios (including cumulative capital, operational costs, and fuel expenditures), the study found that the cost of delaying action to 2030 was 72% more than early action.

Estimating Costs and Benefits of Measures:

Direct Costs and Benefits:

To estimate the direct costs and benefits of County Operations addressing the energy and transportation sectors, the County relied on studies and analyses of current (or baseline) use and associated GHG emissions, opportunities to reduce either the use or the emissions, and the benefits and costs of doing so. These studies were discussed along with the measures themselves (please see Section IX). Direct costs and benefits of measures to reduce waste were estimated as an additional task in the Zero Waste Audit and Characterization Study. Some costs and benefits were based on similar activities completed by the County or its partners. In some cases, the measures include an initial action (such as a study or prioritization effort) that will inform the scope of subsequent work; in these cases, costs and benefits were estimated or characterized insofar as available information allows.

Direct costs and benefits of measures involving nature-based solutions are inherently difficult to quantify unless the scope and details of a specific project are known. This is because costs and benefits vary substantially depending on the nature of the specific land-based practice to be used and the location, terrain, and other particulars of land on which the practice will be

Costs and Benefits of Measures

be implemented. Often, restoring an area involves multiple practices dictated by the landscape typology.

To characterize the scale of nature-based costs and benefits, the County considered the local share of statewide targets for nature-based solutions, and the estimates of associated costs and benefits (please refer to the discussion in Section VIII). Because County-owned lands account for 2% of the total natural and working lands in Sonoma County, the costs and benefits of implementing nature-based solutions on County-owned lands was approximated at 2% of the local share of statewide targets. These approximates were used to estimate the acreage on which the nature-based measures in the Climate Plan would potentially be applied, and the associated costs and benefits. This is an approximation only; the actual costs and benefits of implementing measures on a specific parcel of land will vary considerably for the reasons described above. These approximated costs and benefits are intended to characterize the climate resilience opportunities of nature-based measures for high-level planning purposes only and should not be used to calculate costs and benefits of a specific project.

In some cases a measure did not correspond well to the statewide nature-based solutions target categories. The costs and benefits of those measures were estimated using information in the 2023 Sonoma County Carbon Inventory and Potential Sequestration Study, USDA Natural Resources Conservation Service guidance, and other studies and analyses as applicable.

Multi-Criteria Analysis of Benefits:

The County also prepared a Multi-Criteria Analysis (MCA) of expected benefits from each of the County Operations Measures. The MCA is heavily based on the County's Climate Action, Resilience and Equity (CARE) Framework. The CARE framework was developed to prioritize climate-related projects under consideration for the County's Climate Resilience Fund, and therefore contemplates more detailed parameters than are typically available with a planning document like the Climate Plan. The MCA incorporated the following benefit criteria:

Climate Mitigation (scored on the impact the measure would have on GHG emissions it is addressing, and the magnitude of the baseline GHG emissions addressed by the measure)

Climate Resilience (scored on the strength of the adaptation features included in the measure, and the severity of the underlying hazard threat being addressed by the measure)

Co-benefits (scored on the number of co-benefit categories that accompany the measure, including air quality, energy/fuel savings, VMT reduction, water conservation, ecosystem health, energy security, and public health & safety, up to a maximum of 5)

Environmental Equity & Justice (scored on the degree of improvement in access to benefits by underserved or under-resourced communities)

Cross Strategic Plan Alignment (scored on the degree of alignment the measure has with other Strategic Plan goals and objectives beyond Climate Action and Resiliency)

State and Federal Funding Potential (scored on the measure's likely eligibility and competitiveness for state or federal funding opportunities)

Costs and Benefits of Measures

Cost Benefit Analysis:

The County also had a cost benefit analysis prepared for measures that included action scopes with sufficient delineation to support the analysis. The cost benefit analysis includes the total direct financial costs and benefits per ton of CO2e emissions reductions as well as the total social value of benefits per ton of GHG and criteria air pollutants. The total social cost per ton of GHG reductions gives an indication of the cost-effectiveness of each climate action measure from a social perspective. That is, the total social cost per ton of GHG reductions includes all costs and benefits, even those that accrue to society at large and cannot be assigned to participating residents, businesses, community organizations, and government agencies. For example, the value of avoided health impacts from reduced air pollution would reduce the total social cost per ton of GHG reductions. When the overall cost per ton of CO2e reductions is negative, it indicates the climate action measure results in a net benefit to society. A total of 17 measures were analyzed, and many of the measures analyzed have net benefits rather than costs, sometimes dependent on the range of forecasted energy prices that determine the value of future expenses and savings.

Estimated Costs & Benefits of Measures & Actions:

Estimated direct costs and benefits associated with the measures are discussed below. The ranked Multi-Criteria Analysis scores are reported, as are the results of the cost benefit analysis based on the social cost of carbon.

Direct Costs & Benefits: A summary table of direct costs, benefits, and cost effectiveness is provided for measures where these can be estimated. Key features of the costs and benefits of measures are also discussed for each sector.

Costs and Benefits of Measures

Figure 34: Estimated Costs, Benefits, and Cost Effectiveness of Energy Sector County Operations

Measure Number	Short Title	Initial Cost ($)	Lifetime Savings ($)	Lifetime Benefit (MT CO2e)	Capital Cost Effectiveness ($/MT CO2e)	Net Cost Effectiveness ($/MT CO2e)
E-CO-1	Near-term energy & water upgrades to County facilities	$28.2 M	$44.3 M	4,996	$5,650	-$2,845
E-CO-2	Mid-term energy & water upgrades to County facilities	$81.1 M	$61.6 M	109,864	$746	$177
E-CO-4.1	Upgrade existing CleanStart accounts to Evergreen	$63,767/yr*	-	48.6/yr*	-	$1,312
E-CO-8	Complete streetlight transition to LED	$300/light	$29,700/light	0.125/ light	$2,410	-$238,584
E-CO-10.4	Implement renewable energy in parks	$7 M**	$19.9 M	1,356	$5162	-$9,546

*Lifetime of project is expected to be 20 years
** Estimate per 1MW system.

The near term energy and water upgrades at prioritized County facilities (E-CO-1) would reduce operational emissions by 221 MT CO2e per year, or approximately 5,000 MT CO2e over the life of the upgrades, with a capital cost of $28.2 million and estimated cost savings of $44.3 million over the life of the upgrades (based on the approved PG&E 2023 General Rate Case with Wildfire Mitigation Program costs, and assuming no escalation in utility costs over the life of the project). This translates to a capital cost effectiveness of $5,650/MT CO2e and a net cost of -$3,217/MT CO2e (that is, a net savings). The mid-term energy upgrades at additional County facilities would reduce 5,683 MT of CO2e per year, or approximately 110,000 MT CO2e over the life of the upgrades with a capital cost of $81.1 million and an estimated cost savings of $61.6 million over the life of the upgrades. The capital cost-effectiveness of $746/MT CO2e and a net cost of $177/MT CO2e.

The County currently has 474 electricity accounts with Sonoma Clean Power, and 85% of the usage through those accounts is assigned to Evergreen (100% renewable) power; the costs and benefits of upgrading the remaining accounts to Evergreen is based on the difference in rates and power portfolios and assumes a “life” of the measure extends until the California grid is 100% renewable, which is expected to be in 2045 under the state’s Renewable Portfolio Standard. Lighting upgrades have the greatest net cost effectiveness, followed by installing additional carport solar generation, and the near-term energy upgrades at County facilities.

Costs and Benefits of Measures

Figure 35: Estimated Costs, Benefits, and Cost Effectiveness of Transportation Sector County Opera-

Measure Number	Short Title	Initial Cost ($)	Lifetime Savings ($)	Lifetime Benefit (MT CO2e)	Capital Cost Effectiveness ($/MT CO2e)	Net Cost Effectiveness ($/MT CO2e)
T-CO-1	Decarbonize the light duty fleet*	$14.1 M	$14 M	23,331	$604	$4
T-CO-1+5	Decarbonize the light duty fleet* + EV infrastructure**	$21.6 M	$14 M	23,331	$927	$327
T-CO-3	Decarbonize the medium & heavy-duty fleet* ***	$2.7 M				
T-CO-4	Decarbonize the transit bus fleet* ***	$59.8 M	$13.3 M	64,728	$926	$721
T-CO-7	Reduce idling emissions from County vehicles	$18,000	$1.1 M	11,840	$2	-$96
T-CO-12	Decarbonize small offroad engines***	$360,000	$270,000	674	$534	$133

*Costs are incremental to programmed like-kind vehicle replacement funds and exclude incentives
** Excludes the cost of potential upgrades to electrical service
*** Required by state regulations

Fleet transitions to zero emissions are largely mandated by the California Air Resources Board. Where there is not a mandate on the fleet owner, restrictions on vehicles offered for sale will force the transition. With that in mind, decarbonizing the light duty fleet is highly cost-effective considering the costs of the vehicles alone, and still reasonably cost-effective when infrastructure needs are factored in. This is primarily due to the significant operational savings battery-electric vehicles have compared to fossil fuel combustion counterparts. Similar operational savings are likely in medium and heavy-duty vehicles, however they are not as well documented because those vehicles are more limited and have not had the time-in-service to allow quantitative conclusions about savings. Reducing idling emissions from County vehicles is the most cost-effective measure based on the low cost of developing the policy from model policy documents and the availability of telematics to support compliance. Idling emissions reductions are based on data for medium and heavy-duty vehicles and only assumed that portion of the County fleet (320 vehicles); lifetime cost savings reflect average fuel savings as reported by U.S. EPA.

Costs and Benefits of Measures

Figure 36: Estimated Costs, Benefits, and Cost Effectiveness of Waste Sector County Operations

Measure Number	Short Title	Initial Cost ($)	Lifetime Savings ($)	2030 Benefit (MT CO2e)	Capital Cost Effectiveness ($/ MT CO2e)	Net Cost Effectiveness ($/MT CO2e)
ZW-CO-2	Facility-specific near-term actions for 50% waste diversion	$685,000	-	851	$805	-
ZW-CO-3	Demonstrate and Document alignment with SB 1383	$110,000	-	1,276	$85	-
ZW-CO-4	Increase organic waste diversion by 100%	$210,000	-	638	$328	-
ZW-CO-6	Decrease disposable foodware use for County-facilitated dining by 100%	$180,000	-	13	$13,664	-
ZW-CO-7	Develop universal waste collection system	$140,000		265	$524	
ZW-CO-9	Enhance waste diversion outcomes for Reuse/Recycling Center	$50,000		2,394	$21	

* All CO2e reduction benefits were estimated with the US EPA WARM model

The Waste measures are designed to shift the behavior of County staff and visitors to County facilities (including to Regional Parks) to divert recyclable and compostable materials from the landfill waste stream. The measures and actions were developed based on the results of the 2023 County of Sonoma Zero Waste Audit and Waste Characterization Report. Costs and benefits of measures were estimated as an associated task, and benefits were derived from the US EPA WARM model.

Increasing the diversion of organic waste is the most cost-effective waste reduction measure. It is also mandated pursuant to SB 1383 (Lara, 2016), which requires 75% of organic waste be diverted by 2025, compared to levels in 2014. The law requires all businesses and multi-family dwellings with more than 2 cubic yards (CY) of weekly service, generating over 20 gallons of organic waste weekly to participate in organic waste collection. Based on the Zero Waste study, the County currently generates about 245 tons of separated organic waste per year, however the annual landfill waste stream contains another 971 tons organic waste.

Costs and Benefits of Measures

Figure 37: Estimated Costs, Benefits, and Cost Effectiveness of Water Sector County Operations

Measure Number	Short Title	Initial Cost ($)	Lifetime Savings ($)	Lifetime Benefit * (MT CO2e)	Capital Cost Effectiveness ($/MT CO2e)	Net Cost Effectiveness ($/MT CO2e)
W-CO-1	Develop low-impact rainwater harvesting systems on County-owned facilities	$560,000	$540,000	64.7	$4,252	$170
W-CO-2	Restoration of County- owned upland water-sheds affected by fire	$4.6 M	-	34,812	$132	
W-CO-3	Reduce soil instability & erosion, especially in areas affected by fire	$57,594	-	7,059	$8	
W-CO-4	Implement nature-based practices to mitigate drought, flood, & debris	$39,519		730	$54	

* Nature-based solutions costs and benefits evaluated based on statewide targets and USDA Natural Resources Conservation Service guidance, over the lifetime of considered practices. W-CO-2 practice lifetimes are 45-50 years. W-CO-3 practice lifetime is 20 years and W-CO-4 practice lifetimes range from 10-50 years.

Important note about costs and benefits of nature-based solutions: To determine the costs and benefits of associated with individual nature-based measures and actions, the County used the estimates of the benefits of achieving the statewide nature-based solutions targets on County-owned lands on a proportionate basis. The County evaluated each Climate Plan measure to assess how it would contribute to achieving those targets, based on the USDA Natural Resources Conservation Service guidance on costs and benefits of nature-based practices. Costs reflect national averages, and benefits were estimated only for six years or the life of the practice if shorter. Actual costs and benefits are likely higher. Measures evaluated this way are marked with an asterisk (*).

The most cost-effective water measure is W-CO-3, which would implement nature-based practices (with a priority on areas affected by wildfires) that enhance the ability of the landscape to absorb and store water from rainfall, manage flooding, and stabilize compromised hillsides and stream banks. In addition to increasing water resilience these practices also sequester carbon. The next most effective measure is W-CO-4, which would implement nature-based practices to mitigate drought, flood, and debris.

Costs and Benefits of Measures

Figure 38: Estimated Costs, Benefits, and Cost Effectiveness of Wildfire Sector County Operations

Measure Number	Short Title	Initial Cost ($)	Lifetime Savings ($)	Lifetime Benefit* (MT CO2e)	Capital Cost Effectiveness ($/ MT CO2e)	Net Cost Effectiveness ($/MT CO2e)
WF-CO-3	Review County-owned lands & enhance wildfire buffers	$157,450	-	4,384	$36	_
WF-CO-4	Prioritize & evaluate vegetation treatment on County-owned lands	$1,405,524 **	-	19,727	$71	-
WF-CO-5	Implement fire-safe landscape practices, tree care, and protection on County-owned lands	$717,524	-	4,439	$36	-
WF-CO-6	Evaluate & recommend enhance vegetation fuels management in roadside/ right-of-way areas	$3,792,331**		22,777	$169	

* Nature-based solutions costs and benefits evaluated based on statewide targets and USDA Natural Resources Conservation Service guidance, over the practice life. For WF-CO-3,4,5,6 practice lifetimes range from 10-50 years.

** WF-CO-4 and 6 net cost effectiveness represents implementation and planning costs. Whereas the measure only represents planning costs.

All nature-based wildfire treatments are found to be highly cost-effective. The treatment practices are bundled together in the USDA guidance on costs and benefits, however the measures have different initial costs based on the additional preparation required. Variability in the cost-effectiveness is not meaningful in the context of the bundled nature of the underlying data.

Costs for conservation easements were estimated based on the Ag + Open Space 2017 report, “Healthy Lands, Healthy Economies” which also estimates very large values for ecosystem service benefits associated with conservation; these co-benefits were not included in this analysis of direct costs and benefits. Costs for the other nature-based practices are derived from USDA guidance.

Costs and Benefits of Measures

Figure 39: Estimated Costs, Benefits, and Cost Effectiveness of Natural and Working Lands Sector County Operations

Measure Number	Short Title	Initial Cost ($)	Lifetime Savings ($)	Lifetime Benefit* (MT CO2e)	Capital Cost Effectiveness ($/ MT CO2e)	Net Cost Effectiveness ($/MT CO2e)
NWL-CO-1	Ag + Open Space continue to consider conservation of important carbon stocks in their easement selection process	$53,038,441	-	40,755	$1,301	_
NWL-CO-3	Establish compost & mulch applic'n targets on County-owned lands**	$130,585	-	88	$1,484	-
NWL-CO-4	Create urban forested green space on County-owned lands	$393,291	-	71,606	$5	-
NWL-CO-5	Increase carbon storage on County-owned lands w/carbon farm plans	$640,869		526	$1,218	

* Nature-based solutions costs and benefits evaluated based on statewide targets and USDA Natural Resources Conservation Service guidance. The practice life of NWL-CO-3,4 and 5 practices range from 5-50 years.

**SB 1383 (Lara, 2016) requires the County to purchase the equivalent of 0.8 tons/year per resident of compost (about 110 tons/year), biofuel, or waste-derived energy.

For example, carbon sequestration benefits associated with planting urban or wildland trees is estimated by the USDA guidance to persist for 50 years. At a cost effectiveness of $5 per MT of CO2e, NWL CO-4 is very cost-effective. Urban forestry campaigns like the global "OneTreePlanted" program cite a per tree cost of $350. Local initiatives that rely in volunteer (or property owner) labor report a lower per-tree cost – for example, the City of Cotati reimburses property owners $150 per tree for up to two trees per year, and ReLeaf Petaluma recently completed its 1,000th tree planted at an average cost of $215 per tree.

Multi-Criteria Analysis Rankings:

The measures were ranked based on their Multi-Criteria Analysis score. In the ranking table below the measures on the top of the chart have the highest overall score, indicating these measures deliver the greatest combined benefit relative to other measures.

Costs and Benefits of Measures

Figure 40: Ranking of the Multi-Criteria Analysis for County Operations Measures

Measure ID	Action Short Name	Current MCA Score
NWL-CO-1, 4, 5; W-CO-3, 5	Protect existing rural and urban forest cover and green spaces	65.67
NWL-CO-2	Increase Tribal Land Management	58.00
WF-CO-1	Implement the Wildfire Resilience Project	54.00
T-CO-9	Reduce County staff commuting	47.50
W-CO-4	Prioritize Conservation Practice Projects on County Lands	46.67
W-CO-2	Implement green stormwater infrastructure (GSI) projects	41.33
NWL-CO-3	Establish Compost and Mulch Application on County Lands	41.00
E-CO-2, 10	Electrify County buildings	40.67
E-CO-1, 3, 8	Perform energy efficiency upgrades and retrofits	40.67
W-CO-1, 6, 7; WF-CO-3, 4, 5, 6, 7; NWL-CO-6	Conserve water	38.17
E-CO-9	Support Decarbonization Transition Planning	36.83
WF-CO-2	Develop a Wildfire Risk Reduction and Structure Hardening Plan	35.50
NWL-CO-7	Establish a Climate Resilient Working Group	35.00
T-CO-5	Install EV chargers at County facilities	33.83
E-CO-5, 6	Develop a County construction policy	33.00
T-CO-8, 12	Support Vehicle Fleet Staff Transitions for New Transport Technology	32.00
T-CO-11	Create Class 1 Bikeways	31.00
T-CO-1, 2, 3, 4, 6	Electrify County fleet	30.50
WF-CO-4	Pursue the CAL VTP for Wildfire Resilience	30.50
W-CO-8	Sea-level Rise Planning on County Lands	29.50
WF-CO-3	Identify Buffer Zone Services and Gaps	28.00
WF-CO-5	Implement Fire-Safe Landscape Practices	28.00
WF-CO-7	Plan for Managed Retreat from Wildfire Risk	27.00
E-CO-7	Reduce refrigerant emissions	26.00
ZW-CO-1, 2, 3, 4, 5, 7, 9	Increase diversion of waste from landfills	22.33
ZW-CO-10	Reduce landfill impact	21.33
E-CO-4	Transition to Sonoma Clean Power's Evergreen program	17.50
T-CO-7	Reduce Idling Emissions from vehicles	15.50
ZW-CO-6, 8	Update Green Purchasing Policy	13.00

Note: T-CO-10 cannot be quantified due to insufficient data.

Costs and Benefits of Measures

Cost-Benefit Analysis Findings:

In addition to informing decisionmakers about the economic consequences of climate action measures for which there is sufficient information, helping to prioritize climate action measures, and guiding budgeting processes, the County can use this Cost-Benefit Analysis as a baseline to manage and measure economic and financial performance of Climate Plan implementation.

Cost-Benefit Analysis results are described using the following terms:

Relative community GHG reduction is the relative magnitude of GHG emission reductions compared to the overall community inventory. The terms "small", "medium", and "large" describe how noticeable the expected reductions would be in the inventory.

Rapid payback net benefit refers to the relative likelihood the measure will result in both private and social negative costs per ton of GHG reduction, resulting in a net benefit to Sonoma County while recovering initial investment costs quickly. The net benefit is calculated to be greater than $1,000 per CO_2e ton.

Lifetime benefit refers to the relative likelihood the measure will result in both private and social negative costs per ton of GHG reduction, resulting in a net benefit to the county over the life of the measure. The net benefit is expected to range between $100 to $1,000 per CO_2e ton.

Societally cost-effective refers to the likelihood the measure will result in positive net private costs that are offset by the collection of social benefits identified in the analysis. The private costs are typically less than $100 per CO_2e ton and the social value benefits are larger than $100 per ton.

Moderate net cost refers to the likelihood the measure will result in positive net private costs that are not offset by the collection of social benefits identified in the analysis. The net costs range from $100 to $1,000 per ton.

High net cost refers to the likelihood the measure will result in substantial private costs well beyond the collection of social benefits identified in the analysis. The costs for these measures exceed $1,000 per ton. However, each of the measures considered in this range are mandated by state regulations and the County has little or no discretion on implementation.

The Cost-Benefit Analysis estimates the GHG emissions and total social cost per ton of emissions for 17 climate action measures. The table below provides a qualitative summary for each measure of the relative GHG reduction or sequestration, defined as rapid payback net benefit, lifetime net benefit, moderate net benefit, societal cost-effectiveness, moderate net cost, or high net cost. The 17 climate action measures are listed in order of relative benefit to society. The community-oriented measures have a wide range of cost effectiveness, and certain segments will need financial assistance to achieve County objectives. In addition, several of the County-oriented climate action measures are expensive but are in response to state mandates.

Costs and Benefits of Measures

The Cost-Benefit Analysis resulted in the following findings, organized by the highest to lowest cost-effectiveness:

E-CP-3 Promote Renewables and Microgrids (Rapid Payback Net Benefit): E-CP-3 is cost-effective relative other climate action measures because renewables and microgrids can displace PG&E's proposed powerline undergrounding program thus significantly lowering electric rates and hastening electrification.

T-CO-1 and T-CO-5 Electrifying the County light duty vehicles with charging infrastructure (Rapid Payback Net Benefit): Electrifying the County on-road, off-road and transit fleets is required under state regulation. Converting the County's light duty vehicle fleet to electric is highly beneficial.

E-CP-7 Prioritize energy efficiency in underserved communities (Lifetime Net Benefit to Moderate Net Cost): Targeting low-income communities shows a wide cost range that depends on application and setting.

E-CP-6 Incentivize energy efficiency uptake (Lifetime Net Benefit to High Net Cost): The financing programs to incentivize electrification and energy efficiency also show a wide cost range that depends on application and setting. Residential customers are more likely to see lower costs than commercial non-residential.

T-CO-3 Electrify medium and heavy duty trucks (Societally Cost-Effective): The high upfront costs are offset by fuel savings over the life of the equipment. The total emission reductions would be moderate on the community scale, but large for County operations.

NWL-CO-2, NWL-CO-5, NWL-CP-4 plus W-CO-4 Natural & working lands carbon sequestration (Societally Cost-Effective): The four measures generally range in cost from near zero to less than $200 per metric ton.

WF-CP-3, WF-CP-4 Land conservation and implement county-wide grazing plan (Societally Cost-Effective to Moderate Net Cost): The two wildfire mitigation measures have significant carbon sequestration value which makes them relatively inexpensive.

E-CO-1 and E-CO2: County building energy measures (Moderate Net Cost): These are aimed at upgrading and electrifying County facilities and the individual components shows a mix of net benefits and costs per CO2e ton. The energy efficiency activities are generally more cost-effective than those aimed at electrification of buildings energy uses.

T-CO-4 Decarbonize the transit fleet (High Net Cost): This has a high net cost as Sonoma County Transit's bus fleet already uses compressed natural gas (CNG) which already delivers lower fuel cost than diesel and has lower emissions.

T-CO-6 and T-CO-12 Decarbonizing the County government's off-road and small engine equipment fleet (High Net Cost): These are expensive at the moment because there is little experience in the market with electric vehicles and mobile equipment and manufacturers are not yet offering more than a few specialized models.

The magnitude of net costs and benefits is presented graphically below:

Costs and Benefits of Measures

Figure 41: Cost Effectiveness Analysis for County Operations and Community Measures

Measures & Actions	Scope	Description	Relative Community GHG Reduction	Rapid Payback Net Benefit >$1,000/ ton	Lifetime Net Benefit $100- $1,000/ton	Societally Cost-Effective	Moderate Net Cost $100- $1,000/ ton	High Net Cost >$1,000/ ton
E-CP-3	Community	Promote renewables and micro grids	Small	$$-				
T-CO-1	County	Decarbonize the County fleet of light duty vehicles (less than 8,500 lbs gross vehicular weight) by 2040*	Moderate	$$-				
T-CO-5	County	Deploy zero emission vehicle infrastructure to ensure charging/fueling infrastructure is in place in locations to support the decarbonization schedule for light and heavy duty fleets.	Moderate	$$-				
E-CO-1	County	Reduce energy use and increase resilience at existing county facilities in the near term	Small	$$-	$-			
E-CP-7	Community	Prioritize and support energy efficiency and renewable energy access in underserved communities	Large		$-	$=/=	$+	
E-CP-6	Community	Incentivize energy efficiency and renewable energy uptake in communities						
		*New Construction by SCEIP/SCP on bill inancing***	Moderate			$=/=	$+	$$+
		*Retro its by SCEIP/SCP on bill inancing***	Large		$-	$=/=	$+	
T-CO-3	County	Decarbonize the fleet of Heavy Duty vehicles (greater than 8,500 lbs gross vehicular weight) by 2042*	Moderate			$=/=		
WF-CP-4	Community	Reduce wildfire risk from vegetation fuels by developing and implementing a county-wide grazing plan	Large			$=/=		
NWL-CP-4	Community	Increase carbon sequestration on croplands and working lands through soil carbon amendments, hedgerow planting, grassland restoration, and implementation of other climate-smart practices.	Large			$=/=		
NWL-CO-5	County	Increase carbon sequestration on County-owned lands by implementing beneficial practices described in the Carbon Stock Inventory and Potential Sequestration Study thru 2030.	Small			$=/=		
NWL-CO-2	County	Increase opportunities for tribal collaboration of land management on County-owned lands by 2026, based on traditional and historic vegetation practices.	Small			$=/=		
W-CO-4	County	Evaluate and prioritize conservation practice projects on County-owned lands and Sonoma Water Lands	Small			$=/=		
WF-CP-3	Community	Reduce loss of existing carbon stocks due to wildfire through conservation of natural lands, conservation easements, new policies, and land acquisition	Large				$+	
E-CO-2	County	Reduce energy use and increase resilience at existing county facilities in the mid term	Small			$=/=	$+	$$+
T-CO-4	County	Decarbonize the transit bus fleet by 2040*	Moderate					$$+
T-CO-12	County	Decarbonize small off road engines beginning in 2024 by requiring replacements and new purchases be zero-emission equipment*	Small					$$+
T-CO-6	County	Decarbonize non-road heavy duty equipment by 2042*	Small					$$+
Notes	* -	Implementation required by state regulations						
	** -	Significant federal & state incentives available to households & businesses						

VII. Funding and Financing Strategy

Funding and Financing Strategy

The Climate Plan identifies climate resilience actions that have been prioritized in related studies, strategies, and planning efforts. Significant funding will be required to fully implement all of the measures. The County is systematically tracking funding opportunities and will use identify opportunities that align well with measures in the Climate Plan. The County will use the Climate Plan to support funding applications as aligned opportunities arise.

To support residents and businesses make progress towards climate resilience, the County offers a fully municipally operated property-assessed financing program, the Sonoma County Energy Independence Program, or SCEIP. Through SCEIP financing is available for permanent energy, water, wildfire safety, and seismic strengthening improvements through the property tax system. Financing is available for residential, commercial, industrial, agricultural, multifamily and certain non-profit projects.

Through SCEIP, property owners can finance permanent energy efficiency, water conservation, renewable generation, wildfire safety, and seismic strengthening projects; the financing is repaid as an assessment on the property's regular tax bill. There over 100 pre-approved improvements eligible for SCEIP financing. All measures must meet and prove performance criteria and be permanently installed. Custom measures that are not pre-approved may be submitted for review. Since its inception, SCEIP has funded over $100 million in climate resilience improvements on Sonoma County properties.

Historically, the County has funded the climate resilience work of departments with General Fund, special funds, such as funds from the settlement with PG&E for the 2017 wildfires, special department funds (for example Measure M funding for Regional Parks), and through grants and congressional appropriations. Key funding sources are discussed below.

General Fund & Special Funds:

In 2021, the Board established a Climate Resilience Fund with $10 million from the 2017 settlement with PG&E; this fund has been used to advance Early Action measures described in Section IX. Funds remaining could be used towards implementation of measures and actions in this Climate Plan. In addition, the County has received mitigation funding to offset impacts from the Federated Indians of Graton Rancheria development of their gaming and resort facility in the unincorporated area west of Rohnert Park; in 2024, the Board identified mitigation funds associated with air quality and GHG impacts for implementation of the Climate Plan.

In consideration of the current financial pressures on General Fund arising from the state's budget deficit and associated cuts to programming, this Climate Plan deprioritizes General Fund resources for funding implementation over the next two years – that is, through the Near-Term measures and actions timeline.

Many of the measures and actions include a first step of evaluating, prioritizing, and or planning for implementation, and a key step in that process is the preparation of any needed environmental documents, as well as recommending funding. In addition to the funding and financing discussion below, the County will actively monitor and evaluate funding opportunities for alignment with measures and actions in the Climate Plan and will prepare and/or update funding and financing strategies that reflect changing opportunities.

Funding and Financing Strategy

Grants & Incentives:
The County has successfully applied for significant grant and incentive funding for climate resilience over the last few years. Key grants and incentives are listed in the Table below. The County also has nearly $5 million in other grant applications pending. The County actively tracks funding opportunities and applies when program criteria are well-matched to County priorities and projects.

Figure 42: List of Climate Resilience Grants Received To-Date

Climate Resilience Grants & Incentives Awarded	
Grant/Incentive and Project	Award
IRA Renewable Energy & Storage Direct Payment Tax Credit (expected in 2026, based on Admin Center & Los Guillicos project schedule)	$4,462,563
CPUC Self-Generation Incentive Program (reservation pending)	$431,980
IRA Renewable Energy & Storage Direct Payment Tax Credit (expected in 2025, based on current Santa Rosa Veterans Building project schedule)	$396,109
CPUC Self-Generation Incentive Program (reserved)	$122,400
IRA Renewable Energy & Storage Direct Payment Tax Credit (2024, in process)	$41,093
CalTrans Sustainable Transportation Planning Grant Program: Equitable EV Charging Plan for Sonoma County (2024)	$247,000
US DOE Energy Efficiency and Conservation Block Grant/ Voucher Program: Fleet Electrification (2024)	$233,790
Congressional Appropriation thru US HUD: Equitable Energy Resilience – EV Infrastructure and Green Jobs Training Project (2023-4)	$791,200
US EPA Clean Water Act Section 302(J): Russian River Pathogen Planning Project (2024)	$250,000
USDA NRCS Climate Smart Agriculture: Sonoma Marin Ag & County Climate Coalition (2023)	$10,000,000
Total	**$16,976,135**
US FEMA Wildfire Resilient Sonoma County Grants	~ $60 million

Funding Strategies for Key Measures: Considering upcoming grant cycles and measure implementation schedules, funding strategies were developed for 10 County Operations measures. The County prioritized County Operations measures in each sector that will substantially advance the climate resilience of County facilities and/or operations, address a key gap in operational climate resilience, or complete a critical step will enable substantial climate resilience progress.

The County also prioritized one measure that would support community climate resilience progress; only one measure was identified because more community input is still needed to refine and prioritize measures and actions the County could take to support community progress. The measure identified directly supports efforts to achieve a near-term goal of the Board's Strategic Plan, which is to provide

Funding and Financing Strategy

financing for energy upgrades at multi-family residential properties; based on work already done in this area, achieving this goal will require integrating incentives into the financing of those upgrades, and the measure identified would help establish those incentives.

The strategy is a living document and does not commit the County to apply for any opportunity, rather to carefully consider whether to apply with sufficient time to develop competitive proposals. The table below lists the measures for which funding strategies were prepared, and the number of funding opportunities identified.

Thirty specific funding opportunities were identified for the measures listed above. The table serves as a quick reference guide organized by the fiscal year in which an application would be submitted and identifies the applicable climate action measure (or measures) matched to the funding opportunity. A detailed discussion of the funding strategy for each of the measures can be found in Appendix H.

Figure 43: List of Measures for the Funding and Financing Strategy

Climate Action Measure	CR-CAP Sector
E-CP-7: Prioritize and support energy efficiency and renewable energy access in underserved communities.	Energy
E-CO-2: Reduce energy use and increase resilience at existing County facilities in the mid term through energy upgrades.	Energy
NWL-CO-5: Increase carbon sequestration on County-owned lands by implementing beneficial practices described in the Carbon Stock Inventory and Potential Sequestration Study thru 2030.	Natural and Working Lands
T-CO-1: Decarbonize the County fleet of light duty vehicles by 2040.	Transportation
T-CO-3: Decarbonize the fleet of Medium & Heavy Duty vehicles (greater than 8,500 lbs gross vehicular weight) by 2042.	Transportation
T-CO-4: Decarbonize the transit bus fleet by 2040.	Transportation
T-CO-5: Deploy zero emission vehicle infrastructure in number and locations to support the decarbonization schedule for light and heavy duty fleets.	Transportation
T-CO-11: Create and connect to an interconnected system of Class 1 Bikeways through partnerships, acquisitions, and collaborative efforts.	Transportation
W-CO-4: Evaluate and prioritize conservation practice projects on County-owned lands to enhance water resilience and mitigate drought, flood, and debris flows.	Water
W-CO-8: Conduct a vulnerability assessment/feasibility study by 2027 for County-owned infrastructure and lands that are at-risk for near term sea-level rise and riverine related flooding and/or erosion to identify protect, accommodate, and/or retreat strategies.	Water
WF-CO-5: Implement fire-safe landscape practices, tree care, and protection on County-owned lands.	Wildfire

Funding and Financing Strategy

Figure 44: List of 30 Potential Grants for Climate Plan Measures

Fiscal Year	Grant Program	Climate Action Measure
2024-25	Congressional Directed Funding (recommended because no grant opportunities)	E-CP-7
2024-25	Metropolitan Transportation Commission | One Bay Area Grant Regional Program | Climate Initiatives Program (Transportation Electrification) | Multiple Programs	E-CO-2, T-CO-1, T-CO-3, T-CO-4, T-CO-5
2024-25	California Air Resources Board | California Hybrid and Zero Emission Truck and Bus Voucher Incentive Project	T-CO-3, T-CO-4
2024-25	Bay Area Quality Management District | Transportation Fund for Clean Air	T-CO-1, T-CO-3, T-CO-4
2024-25	Sonoma County Transportation Authority | Transportation Fund for Clean Air 40 Percent Program	T-CO-1, T-CO-3, T-CO-4
2024-25	San Joaquin Valley Air Pollution Control District | California Volkswagen Mitigation Trust Funds for Transit, School, and Shuttle Bus	T-CO-4
2024-25	CalTrans | Sustainable Transportation Planning Grants	T-CO-5
2024-25	Metropolitan Transportation Commission | Transportation Development Act, Article 3	T-CO-12
2024-25	National Fish and Wildlife Foundation & National Oceanic and Atmospheric Administration | National Coastal Resilience Fund	W-CO-8
2024-25	California Ocean Protection Council | Sea Level Rise Adaptation Program	W-CO-4, W-CO-8
2024-25	CalFire | Wildfire Prevention Grant Program	WF-CO-5
2025-26	Bay Area Quality Management District | Transportation Fund for Clean Air	T-CO-5
2025-26	Sonoma County Transportation Authority | Transportation Fund for Clean Air 40 Percent Program	T-CO-5
2025-26	California Energy Commission | Community Energy Reliability and Resilience Investment	E-CO-2
2025-26	U.S. Department of Transportation | Charging and Fueling Infrastructure Grant Program (Community Program)	E-CO-2
2025-26	California Transportation Commission | Local Partnership Program	T-CO-4, T-CO-12
2025-26	Metropolitan Transportation Commission | One Bay Area Grant Program	T-CO-12
2025-26	State of California Ocean Protection Council | Sea Level Rise Adaptation Planning Grant Program	W-CO-8
2025-26	State of California Coastal Conservancy | Multiple Programs	NWL-CO-5, W-CO-4, WF-CO-5, W-CO-8
2025-26	California Department of Food and Agriculture | Multiple Programs	NWL CO-5
2025-26	Wildlife Conservation Board | Multiple Programs	NWL-CO-5
2025-26	California Transportation Commission | Active Transportation Program	T-CO-12
2025-26	Metropolitan Transportation Commission | Active Transportation Program (Regional)	T-CO-12
2025-26	California State Parks | Land and Water Conservation Fund	T-CO-12
2025-26	Bay Area AQMD | Carl Moyer Voucher Incentive Program (Agricultural Equipment and Heavy-Duty On-Road Vehicles and Buses)	T-CO-3, T-CO-4
2025-26	Northern Sonoma County Air Pollution Control District | Carl Moyer Program	T-CO-3, T-CO-4
2026-27	North Coast Resource Partnership | CalFire Forestry Health Implementation Program	WF-CO-5
2026-27	California Department of Food and Agriculture | Multiple Programs	NWL-CO-5
2026-27	Wildlife Conservation Board | Multiple Programs	NWL-CO-5
2026-27	State of California Coastal Conservancy | Multiple Programs	NWL-CO-5

*Note: The team sometimes estimated the deadline based on conversations with grant managers or the history of the program. The funding strategy requires regular updates to maintain usefulness.

Funding and Financing Strategy

Financing Strategy

Financing options will help the County fund implementation of the Climate Plan, especially climate action measures which require ongoing funding, as well as supplement the County of Sonoma's General Fund investment and State, regional, and federal grants. While financing mechanisms are available to locally fund capital investments and ongoing expenditures, each has specific requirements and key hurdles to overcome. The mechanism will depend on political considerations and fiscal capacity to raise revenue. The following are specific financing mechanisms to consider:

#1: Partner with the Regional Climate Protection Authority (RCPA), which has taxing authority as a Climate Resilience District. Sonoma County has the first Climate Resilience District (CRD) in California, established by the State Legislature and governed by the RCPA. The RCPA can propose different taxes and fees for voter approval to raise revenue for the Climate Resilience District. The RCPA examined one scenario that would use a half dozen of these options to generate $45 million annually. Funds raised by the RCPA would not be County funds, however they could support measures that are a priority for the County, depending on the specifics of the revenue package approved by the voters.

#2: Implement innovative financing programs tied to direct actions. Building on the County's past groundbreaking implementation of financing options, the County could implement options modeled on successful habitat management programs but not implemented elsewhere before: 1) a working lands carbon mitigation bank program could fund carbon sequestration on natural and working lands by selling credits to other jurisdictions to assist in meeting their climate action plan goals; and 2) a residential retrofit offset reverse auction program could collect emission offset payments from developers to achieve net zero emission levels and then pay contractors through a reverse auction to retrofit low-income housing for electrification.

#3: Expand funding for existing successful community financing mechanisms. The County already has implemented one of the two preferred community financing mechanisms, the Sonoma County Energy Independent Program. The Sonoma County Energy Independence Program has financed $109 million in projects through its revolving loans and is backed by $60 million in bonds. The other preferred mechanism, on-bill financing, is available through Sonoma Clean Power. Along with on-bill financing, the Sonoma Clean Power Authority issues rebates for households and businesses to purchase electrification technologies. There are also incentives offered through the Bay Area Regional Energy Network (BayREN) and Pay As You Save (PAYS) programs from utilities.

Funding and Financing Strategy

Innovative Financing Through Mitigation Payments

Working Lands Carbon Mitigation Bank Program:
Unincorporated Sonoma County is largely agricultural, with a few small communities. Most of that agricultural land is intensively farmed, much of it irrigated. This situation presents the opportunity to sequester large amounts of carbon relative to the total greenhouse gas emissions from all County activities. In other words, the County can approach a level of net-zero emissions with a surplus available to share with other jurisdictions, particularly with those in Sonoma County.

Residential Retrofit Offset Reverse Auction Program:
The Retrofit Program would collect carbon offset mitigation fees from project developers who are unable to achieve a ZNE or ZNC standard with available technologies. The County would identify eligible low-income residential buildings for energy efficiency and electrification retrofits. Contractors would bid on how many buildings they could do for a set amount of money.

VIII. Equity

Equity

The County of Sonoma is strongly committed to promoting and ensuring equitable access to government decisions and services, and to equitable outcomes. The Board also embedded equity in the County's service to the people of Sonoma County through Strategic Plan's Racial Equity and Social Justice pillar. The overarching goal of that pillar is to "Achieve racial equity in County service provision and ensure a workforce reflective of the community we serve."

The County knows that Sonoma County's collective well-being and prosperity are impacted by significant racial inequities. By focusing on racial equity and social justice in the Strategic Plan, the Board of Supervisors has begun to institutionalize equity and address disparate impacts on people of color both internally as an organization and in the community. Data shows that the greatest disparities occur along racial and socio-economic lines, and research and best practices nationally show that successful equity programs begin with a focus on race.

In developing this Climate Resilience Comprehensive Action Plan, the County began with the questions and promptings of the Racial Equity Analysis, which is modeled on the analysis developed through the Government Alliance on Race and Equity. The County actively considered racial and social justice in the community engagement for the development of the Climate Plan, and intentionally incorporated climate justice and just transition in specific measures and actions that are part of the plan, and in the MCA framework used to evaluate them.

Community engagement for the Climate Plan was iterative and incorporated different modes of engagement. Materials, interviews, focus groups, surveys, and meetings were offered in English and Spanish. County staff participated in community events across Sonoma County, sharing information and offering activities that allowed people of all ages to learn about climate resilience and provide their perspectives on what the County should focus on in its plan. Engagement activities were also designed to support interaction by people with different communication needs and preferences – with community input accepted verbally, written on notes, by dropping tokens in jars, anonymously through surveys, via polling at meetings, and also through email.

A key learning from the engagement process was the need to more deeply engage with climate justice communities, and to develop a better understanding of the breadth of needs, priorities, barriers, and opportunities in diverse communities throughout Sonoma County before finalizing measures and actions the County can take to support community progress towards climate resilience. As a direct result of this learning, the Climate Plan includes a Community Engagement Strategy that will be overseen and implemented by an Advisory Committee of local community-based organizations and leaders. This Committee will develop engagement activities based on its members' deeper knowledge of the communities they represent, and the members will then help the County implement the strategy, with funding provided by the County.

The Committee will provide input into the prioritized measures and actions to be presented to the Board of Supervisors in 2026. The Community Engagement Strategy also envisions ongoing partnerships with community-based organizations after the Board of Supervisors approves measure and actions to advance community climate resilience. The specific nature of partnerships will be informed by this work into the future.

Equity

Candidate measures to support community climate resilience were developed based on community engagement and input about climate resilience beginning in 2021. While the measures collectively support climate resilience across all communities, individual measures and actions focus on and prioritize climate justice communities. For example, in the Energy sector measures would support development of community microgrids, specifically prioritizes microgrid planning and development, and energy efficiency and renewable energy access in energy justice communities. Many of the Transportation sector measures would improve infrastructure and access for walking, biking, and other micro-transportation solutions, and increase the efficiency and integration of the transit system, which is especially supportive of environmental justice communities. And a set of actions would reduce transportation-related impacts that disproportionately affect climate justice communities by reducing emissions from idling engines while the transition to electric vehicles is underway. The candidate Community Progress measures also include water measures that prioritize protections and support for vulnerable communities that will be impacted by sea level rise and flooding. In various forums and especially in one-on-one interviews, members and representatives of climate justice communities highlighted the significance of direct and secondary impacts of wildfires on their safety, health, and well-being. Collectively, the Wildfire sector measures can significantly reduce the severity and damage from large wildfire events, and one measure would develop workforce pathways to permanent employment for transitional adolescents focusing on wildfire resilience job skills and technical expertise. Measures for Natural and Working Lands prioritize urban farming, expanding tree canopy, and access to and preservation of green spaces in environmental justice communities. They also incorporate land-based strategies to reduce the impacts of extreme heat (which disproportionately affects environmental justice communities), as well as job skills training in climate-smart practices to provide expand economic opportunity for workers in landscaping and farming. In all sectors, there is a measure explicitly seeking additional ideas and opportunities from communities to support their climate resilience needs.

County Operations measures and candidate Community Progress measures would establish a forum for regular engagement with tribal governments on climate resilience and expand opportunities for co-management of lands and traditional cultural practices in the landscape. These measures respond to priorities identified by Sonoma County tribes. In establishing a forum for regular climate resilience engagement, the County recognizes that priorities and opportunities will evolve over time. The County also recognizes that each tribe will have individual concerns and priorities. With regular engagement on climate resilience the County hopes to expand respectful dialogue and collaboration that advances both tribal and County climate resilience goals.

IX. Environmental Review

Environmental Review

The Climate Resilience Comprehensive Action Plan reflects a vision for a climate resilient future for the County of Sonoma's facilities and operations, and for Sonoma County communities. It incorporates a range of potential future actions that, if implemented, could advance the County toward climate resilience. However, nothing in the plan legally binds future County decisions or actions. The Board of Supervisors' approval of the plan is not a commitment to any particular course of action, and is not a decision to approve, adopt, or fund any of the potential actions identified in this document. For these reasons, approval of the plan is exempt from California Environmental Quality Act (CEQA) review pursuant to Section 15262 of the CEQA Guidelines.

Whether a particular measure is implemented in the future depends on a variety of factors. Each proposed action that is advanced for consideration will be reviewed in accordance with normal internal and public processes, including CEQA review, if applicable. Some identified actions may ultimately be rejected or modified through those review processes.

CEQA Guidelines section 15262 provides as follows: "A project involving only feasibility or planning studies for possible future actions which the agency, board, or commission has not approved, adopted, or funded does not require the preparation of an EIR or Negative Declaration but does require consideration of environmental factors. This section does not apply to the adoption of a plan that will have a legally binding effect on later activities." This Guideline applies to this plan.

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