Climate Mobilization Strategy

Final Draft

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- Recology
- Zero Waste Sonoma
- Regional Climate Protection Authority
- Sonoma County Transit Authority
- Sonoma County Transit

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1 Introduction

1.1 Purpose and Background

The Healdsburg Climate Mobilization Strategy (CMS) is a living document that outlines cost effective and impactful efforts that the City can implement to address climate change. The CMS will serve as a roadmap for the City to achieve greenhouse gas (GHG) emission reductions in support of the Regional Climate Protection Authority (RCPA) goal for Sonoma County to achieve carbon neutrality by 2030 and in alignment with the State's goal to reduce GHG emissions by 40 percent below 1990 levels by 2030 and achieve carbon neutrality by 2045.[1] The primary focus of this document is to detail the City's current and projected GHG emissions and prioritize and describe key measures and actions for the near-term that will be most impactful in reducing GHG emissions, while also being community-driven, feasible, and equitable. The CMS also highlights existing GHG reduction projects being undertaken by the City and supports the implementation of planned GHG reduction projects.

Healdsburg Community

The City of Healdsburg is located within northern Sonoma County in California. The City is approximately 4.4 square miles and has a population of approximately 11,700 people, of which 66% are white and 29% are Hispanic or Latino per the U.S. Census Bureau. Over 94% of residents are high school graduates and 26% of the population is 65 years or older. The median household income is $94,000 and 60% of housing is owner-occupied. However, approximately 10% of residents are living in poverty, compared to 11.6% national average. The CMS development engaged with the diverse population of Healdsburg and worked to develop climate solutions that are appropriate for this community.

The City of Healdsburg is unique for a small city, operating its own electric, water, and wastewater systems. The City also has its own public airport, golf course, senior center, and public event center. The City operates two open spaces at Fitch Mountain and the Ridge comprising of 320 acres of protected land. These unique community characteristics provide climate action opportunities that may not be possible in other communities. When asked at the beginning of the CMS development process, Healdsburg residents shared that the aspects of the community valued most are the small-town, safety, and natural environment. The CMS seeks to maintain these values and leverage these opportunities with solutions that are impactful and feasible in Healdsburg.

Healdsburg and its residents have not been immune from the impacts of climate change. In the last five years the City has experienced extreme drought conditions, flooding, and wildfires, including experiencing a full city evacuation and public safety power shutoff (PSPS) for the Kincaide Fire in 2019 and a partial evacuation and citywide evacuation warning for the Walbridge Fire in 2020.

Past Sustainability Progress

The City of Healdsburg has been committed to increasing sustainable operations and policies for many years and has a highly engaged community committed to reducing GHG emissions throughout the community. For example, the City recently adopted the Electrification Reach Code requiring new

[1] The State carbon neutrality goal established by Assembly Bill 1279 considers carbon neutrality to be at least an 85 percent reduction in GHG emissions with the remaining fraction achieved through removals such as carbon sequestration.

buildings to use electric space and water heating and has had great success with reducing the amount of organic waste going to the landfill through free compost bin giveaways and community engagement. Additionally, Healdsburg Electric is continually expanding their contracts with renewable and carbon free energy sources to decarbonize the electricity delivered to Healdsburg.

GHG inventories have been completed by RCPA for Healdsburg for 2015, 2016, 2018, and 2020 to track and understand the City's emissions and sources. The City has adopted numerous community planning documents, including the City of Healdsburg General Plan, 2020 Strategic Plan, Healdsburg Community Based Transportation Plan, and Healdsburg Bicycle & Pedestrian Master Plan, that include a number of policies, goals, and projects that are focused on improving sustainability within the city and contribute to the reduction of GHG emissions.

1.2 Climate Mobilization Strategy Development Process

Process

The CMS was built off the previously completed GHG emissions inventories prepared by RCPA and included development of future GHG emissions forecasts and analysis of GHG emission reduction targets in support of state and regional reduction goals. After the targets were analyzed, GHG emission reduction measures and supporting actions were designed based on the success of the work done previously in the City, current best practices, and community recommendations. The measures were refined based on City staff, stakeholder, and community feedback, to establish a list of priority projects and measures.

A Community-driven Process

CMS Engagement

- 3 CMS Community Events
- 6 Stakeholder Meetings
- 3 Surveys
- 1 Climate Fest Booth
- Multiple "Pop Up" Booths

To help track successful implementation and progress monitoring, key performance indicators (KPIs) were established as benchmarks for the CMS. A streamlined implementation plan for the next 1-3 years, outlined in Chapter 5 and presented in Appendix D, was developed to track and monitor the City's progress implementing measures and action and towards achievement of the established targets. The CMS underwent public review prior to adoption where the CMS was revised based on public and Council comments. Figure 1 illustrates the CMS development process.

Figure 1 CMS Development Process

Developing a comprehensive strategy to tackle climate change requires collaboration among various stakeholders, community members, decision-makers, and City staff. By working together and with ongoing engagement events throughout the process, a plan that is representative of the needs and the desires of the community at large was developed.

Community Feedback

A key goal of the CMS was to be a community-driven process. To gain as much input from a diverse set of community members, the City hosted 4 key CMS community events that were open to the community members and advertised using multiple outreach methods. Events were hosted in person, virtually, and throughout the year to provide many opportunities for community engagement and feedback. The City partnered with Corazon Healdsburg to facilitate each of the events in Spanish, helping the diverse voices of the community to be heard throughout the process. The City also hosted stakeholder group meetings, including with Climate Action Healdsburg, Healdsburg Chamber of Commerce Government Affairs Committee, Healdsburg Rotary Club, Healdsburg Senior Center, and Healdsburg High School Eco-Art Club. Event development was dynamic, taking feedback from each event and adjusting accordingly to increase access and engagement.

Additionally, the City issued three surveys with the goal of gaining an understanding of the community's current interest and concerns surrounding climate change, and what projects and actions the community would like to see the City prioritize to reduce impacts of climate change, while retaining the character of the City. The first survey received over 260 responses, with 256 English responses and 12 Spanish responses. The second survey received approximately 460 responses, 106 of which were in Spanish, and additional 65 responses received from the Climate

Fest Activity. The third survey received 476 responses, with 404 English responses and 72 Spanish responses.

Changes were made based on the feedback received from the community, staff, and Council during the document review process. The changes made in response to public and Council comments are summarized in the Change Log.

Community insight is incredibly valuable for this process as it confirms that the CMS aligns with the specific needs and aspirations of the people it aims to serve. The main outreach and engagement events that were completed as part of this project can be found in Table 1. See Appendix C for additional details.

Table 1 Summary of Outreach and Engagement Events

Meeting Topic	Event	Date
Community Kickoff	Community Workshop	December 12, 2022
Input on Climate Mobilization Strategy Survey	Community Input Survey	December 12, 2022 – January 31, 2023
Climate Mobilization Strategy Update – Forecast, Targets, and Initial Strategy Workshop	Virtual Community Workshop	March 1, 2023
	Spanish Watch Party/ Workshop	March 1, 2023
Climate Fest Earth Day Booth	Community Pop-up Event	April 22, 2023
Strategy Prioritization Survey	Community Input Survey	April 22, 2023 – May 21, 2023
Community Workshop – Proposed Measures and Actions Workshop	Community Workshop	July 26, 2023
Final Strategy Survey & Public Review of CMS	Community Input Survey	August 22, 2023 – September 10, 2023

City Collaboration

The CMS will be implemented across all the city departments and the community. Success with implementation and achievement of the GHG reduction targets will require coordination and cooperation between different city departments and commitment and effort from all levels of the city's administration. The development of the CMS was led by the City Manager's Office and developed through an integrated partnership between City staff from all departments, including Community Development, Public Works, Community Services, and Utilities. To ensure practicality and effectiveness, the goals and measures presented in the CMS were developed in close collaboration with department heads. This approach ensured that the measures were feasible and that the proposed actions provided a clear roadmap to address potential barriers to implementation. By incorporating insights from City departments, the CMS struck a balance between community preferences and the City's operational capabilities.

2 Scientific Context for Climate Change

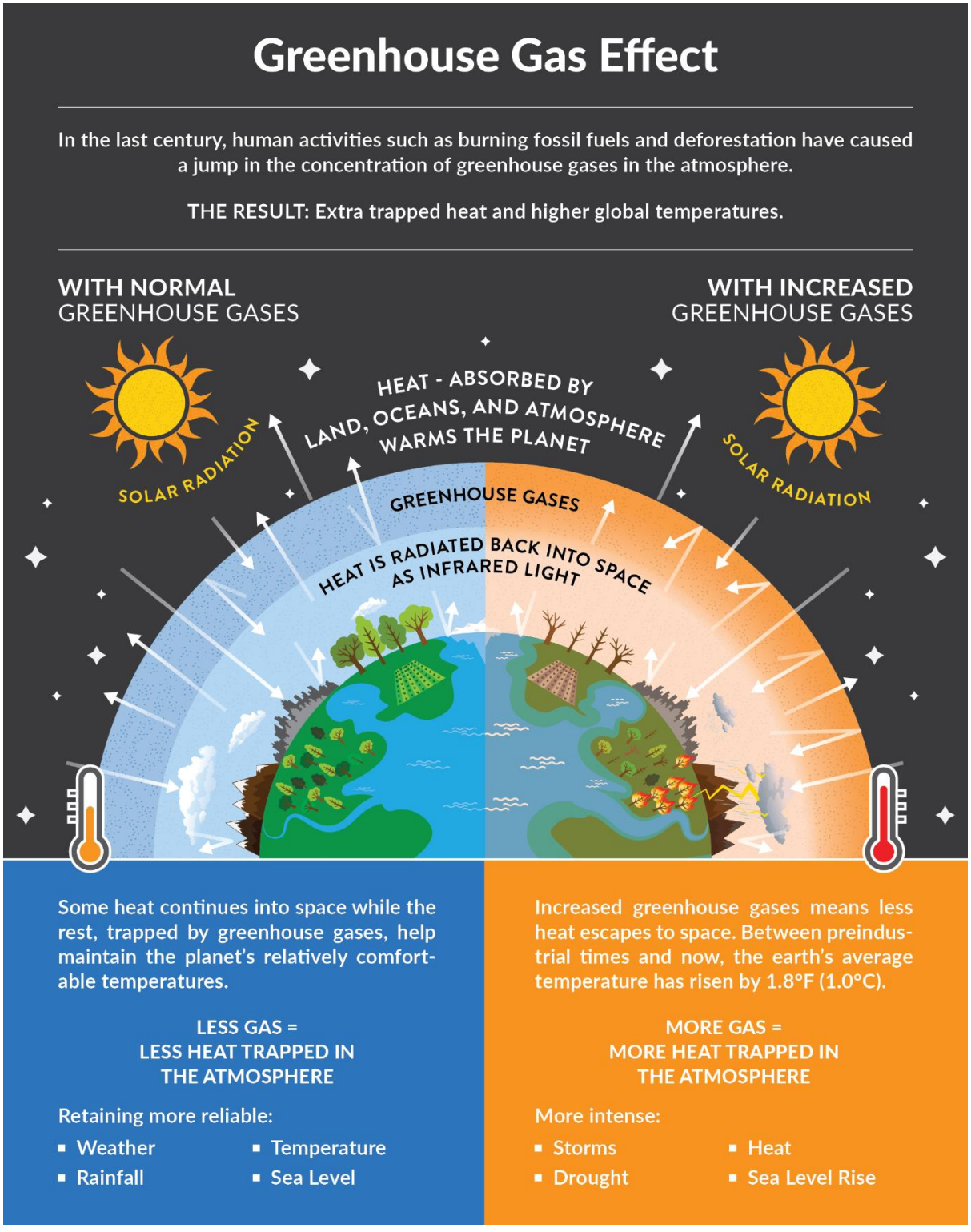
Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate intensity (such as wind patterns, precipitation, and storms) over an extended period of time. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century.[2]

2.1 Background on Greenhouse Gas Emissions

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The accumulation of GHGs in the atmosphere regulates the earth's temperature is known as the "greenhouse gas effect". The greenhouse effect, shown in Figure 2, is integral to sustaining life on Earth. However, human activities emit GHGs more than natural ambient concentrations, thereby contributing to the enhancement of the natural greenhouse effect. This enhanced greenhouse effect contributes to global warming, an accelerated rate of warming of Earth's average surface temperature. More specifically, by burning fossil fuels to power homes, businesses, and automobiles, we increase the amount of GHGs emitted into the atmosphere, which, in turn, leads to increased absorption of infrared radiation by the Earth's atmosphere and increasing temperatures near the surface.

[2] SAR Climate Change 1995: The Science of Climate Change — IPCC

Figure 2 Greenhouse Gas Effect



Types of GHGs

The United Nations Intergovernmental Panel on Climate Change's (IPCC) list of GHG emissions include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), as well as chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, which are collectively called fluorinated gases.[3] Fluorinated gases are man-made gases that can stay in the atmosphere for centuries and contribute to the GHG effect. Ninety-seven percent of the annual GHG emissions generated in the United States consist of CO_2, CH_4, and N_2O,[4] while fluorinated gases[5] result in the remaining three percent of emissions. Most fluorinated gases come from industrial sources, of which there are relatively few in Healdsburg. Due to CO_2, CH_4, and N_2O comprising the large majority of GHG emissions in Healdsburg, the CMS focuses on these three gases for its GHG emissions inventory, forecast, and reduction strategy, consistent with the ICLEI – Local Governments for Sustainability's U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol).

Each type of GHG has a differing ability to trap heat in the Earth's atmosphere over a specified timescale (generally, 100 years), referred to as the gas's global warming potential (GWP).[6] The reference point to compare the potential impact of different GHGs is CO_2, and therefore CO_2 has a GWP of 1, whereas CH_4 has a GWP of 28. This means that each metric ton (MT) of methane causes 28 times more warming than 1 MT of CO_2. Even more potent, N_2O has a GWP of 265, or 265 times the GWP of 1 MT of CO_2.[7]

Sources of GHGs

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and decomposition of organic waste in landfills. These activities release GHGs into the atmosphere and contribute to climate change. With the accelerated increase in fossil fuel combustion and deforestation since the Industrial Revolution of the 19th century, concentrations of GHG emissions in the atmosphere have increased exponentially. The United States Environmental Protection Agency (U.S. EPA) tracks the country-wide emissions and publishes an annual report: Inventory of U.S. Greenhouse Gas Emissions and Sinks.[8] The Inventory of U.S. Greenhouse Gas Emissions and Sinks is a comprehensive account of total GHG emissions for all man-made sources in the U.S. including CO_2 removal from the atmosphere by "sinks," (e.g., through the uptake of carbon and storage in forests, vegetation, and soils) from management of lands in their current use, or as lands are converted to other uses. In 2020, the most recent year in which GHG emissions have been calculated nationally, emissions in the U.S. totaled 5,222 million metric tons (MMT) of CO_2e after accounting for sequestration from the land sector. Emissions decreased from 2019 to 2020 by 11

3 https://www.c2es.org/content/main-greenhouse-gases/

4 https://www.wri.org/blog/2020/02/greenhouse-gas-emissions-bycountry-sector

5 Fluorinated gases, which includes four main types: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3), are man-made gases that can stay in the atmosphere for centuries and contribute to the GHG effect.

6 https://www.ipcc.ch/assessment-report/ar5/

7 https://www.ipcc.ch/assessment-report/ar5/

8 https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

percent due to the COVID-19 pandemic, however, preliminary estimates show that emissions rebounded in 2021 after the height of the pandemic.[9]

Effects of Climate Change

In California, the impacts of climate change are already being felt, and will continue to become more severe throughout the twenty-first 21st century. Higher temperatures, more extreme heat events and wildfires, and rising sea levels are all effects of climate change experienced in California. The California Office of Environmental Health Hazard Assessment reported in 2018 that despite annual variations in weather patterns, California has seen a trend of increased average temperatures, more extreme heat days, higher acidity in the Pacific Ocean, earlier snowmelt, and lesser rainwater runoff. From 1895 to 2011, average temperatures have increased by about 1.7˚F statewide, and a smaller proportion of annual precipitation is falling as snow instead of rain. During 1972-2018, California experienced a fivefold increase in the annual area burned, largely attributable to climate change-induced atmospheric temperature rises.

Likewise, the City of Healdsburg is likely to face direct impacts from climate change. Elevated temperatures can harm agriculture, strain water resources, and heighten the risk of heat-related illnesses. Similar to other regions in California, Healdsburg is also vulnerable to more frequent and severe wildfires due to climate change where dry and hot conditions contribute to the spread of wildfires, posing risks to communities, ecosystems, and infrastructure.

While everyone will be impacted, the effects of these environmental hazards will vary depending on factors such as age, health, and socioeconomic status. The most vulnerable individuals will bear the greatest burden from the potential impacts of climate change. It is crucial that the development of this CMS benefits all community members and does not disproportionately burden or harm vulnerable populations.

2.2 Public Policy Context

California Climate Policy

California is recognized globally as a leader on climate change, having established a variety of ambitious GHG reduction targets and associated strategies. The primary policies that has driven statewide GHG emissions reductions are Executive Order (EO) S-3-05, Assembly Bill (AB) 32, Senate Bill (SB) 32, EO B-55-18, and most recently AB 1279. Signed in 2005, EO S-3-05 established statewide GHG emission reduction targets to achieve long-term climate stabilization as follows: by 2020, reduce GHG emissions to 1990 levels and by 2050, reduce GHG emissions to 80 percent below 1990 levels. In 2016, SB 32 set a target for achieving a 40 percent reduction in GHG emissions below 1990 levels by 2030. In 2018, EO S-3-05 was accelerated by EO B-55-18, which established a goal of achieving carbon neutrality by 2045 and was codified by AB 1279. Carbon neutrality refers to emitting net zero carbon emissions, which can be achieved by either eliminating all GHG emissions, or balancing carbon emissions with carbon removal (which can be achieved through carbon sequestration or carbon neutral technologies). AB 1279 requires the reduction in GHG emissions by

[9] https://www.google.com/search?q=US+emissions+increase+post+pandemic&rlz=1C1GCEB_enUS997US997&oq=US+emissions+increase+post+pandemic&aqs=chrome..69i57j33i160.3876j0j7&sourceid=chrome&ie=UTF-8

85% below 1990 levels by 2045. The remaining 15% of emissions would be removed via carbon removal technology or natural working lands.

To meet the state's 2045 goal of carbon neutrality, CARB recommends that local agencies long-term targets align with AB 1279. Specifically, CARB guidance is for jurisdictions to first strive to exceed the SB 32 targets of reducing GHG emissions 40% below 1990 levels, while establishing a policy framework to achieve the long-term target of carbon neutrality by 2045.

Other Key California Climate Policies

California's GHG-emissions-reduction strategies that will help achieve these reduction targets are developed through its Scoping Plan updates and various Sustainable Communities Strategies passed by local Metropolitan Planning Organizations. Other important climate legislation that will help California achieve its GHG-reduction targets include the state's green building code (Title 24), SB 1383, which set targets for reducing organic waste to landfills, and SB 100, which mandated 100 percent renewable and carbon-free electricity by 2045.

Regional and Local Goals

In March 2021, the Sonoma County Regional Climate Protection Authority (RCPA) adopted the Sonoma Climate Mobilization Strategy (SCMS) which establishes goals and strategies for Sonoma County to achieve carbon neutrality by 2030.[10] The SCMS is not a qualified GHG reduction plan under CEQA.

The SCMS defines carbon neutrality as achieving an 80% reduction in emissions from 1990 levels coupled with carbon sequestration to meet the remaining 20% of emissions removal to achieve carbon neutrality by 2030. The RCPA has also adopted a goal to achieve zero waste by 2030. In 2019, City of Healdsburg adopted a resolution to achieve zero waste by 2030, defined as diversion of 90% or more of waste from the landfill.

Other City policies include Climate Emergency Resolution in 2019 and a Low-Carbon Electricity Resolution in 2018.

[10] https://rcpa.ca.gov/wp-content/uploads/2020/12/Sonoma-Climate-Mobilization-Strategy-Adopted-2021-03-08.pdf

3 GHG Emissions Levels

An important part of the CMS process is the development of a GHG inventory. A GHG emissions inventory identifies the major sources and quantities of GHG emissions produced by community wide activities within a jurisdiction's boundaries for a given year. Estimating GHG emissions enables local governments to establish an emissions baseline, track emissions trends, identify the greatest sources of GHG emissions within their jurisdiction, and set targets for future reductions.

The CMS builds off the community wide 2018 GHG emissions inventory prepared by the RCPA. The 2018 GHG emissions inventory was used to establish a GHG emissions baseline for the CMS, forecast future GHG emissions trends, and identify the greatest sources of GHG emissions within their jurisdiction. The 2018 GHG emissions inventory identifies the major sources and quantities of GHG emissions produced by communitywide activities within Healdsburg's city limits (i.e., the Healdsburg General Plan planning area).

Emissions estimates were calculated using the International Council for Local Environmental Initiatives (ICLEI) methodologies, specifically, the United States Community Protocol for Accounting and Reporting Greenhouse Gas Emissions Version 1.2 (Community Protocol) is used for community-wide emissions. To allow for comparison among GHG emissions sources, all emissions are translated to the equivalent of one metric ton of carbon dioxide, or MT CO_2e. One MT CO_2e is the equivalent of using 113 gallons of gasoline or driving 2,492 miles in a standard combustion vehicle.[11]

3.1 Healdsburg GHG Emissions Inventory

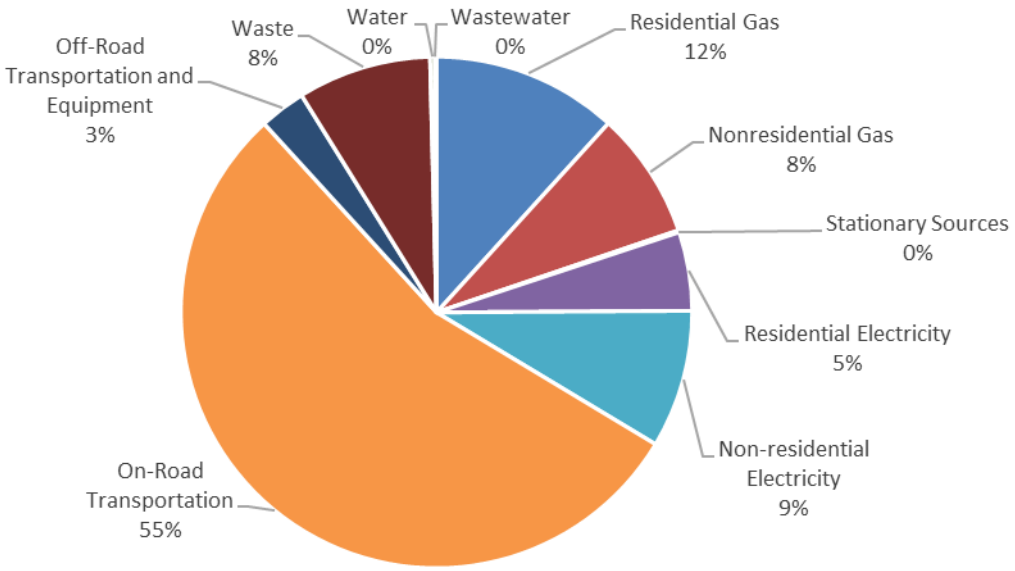
The 2018 GHG inventory prepared by RCPA was used to develop GHG emissions forecasts and GHG emission reduction targets for Healdsburg through 2045. Emissions from residential and commercial energy usage, on-road transportation, off-road transportation, landfilled waste, water, and wastewater were all included in the inventory. Healdsburg's total GHG emissions for 2018 were estimated to be 93,473 MT CO_2e, as depicted in Figure 3. For more information on the data and methodologies used, refer to the Sonoma County Greenhouse Gas Inventory 2018 Update.[12]

According to the results of the 2018 GHG inventory, the largest source of GHG emissions in Healdsburg was from on-road transportation, which accounted for 55 percent of total emissions. The second largest source of GHG emissions was from natural gas usage in residential and non-residential buildings, combined to account for 20 percent of total emissions. Natural gas is used to heat water, homes, and businesses and to power gas-powered appliances. Electricity usage accounted for the third largest source of emissions, with residential and non-residential usage combining for a total of 14 percent of total emissions in Healdsburg.

[11] https://developer.epa.gov/greenhouse-gas-equivalencies-calculator-widget/

[12] https://scta.ca.gov/wp-content/uploads/2020/06/2018-GHG-Report-FINAL-9-25.pdf

Figure 3 Healdsburg GHG Emissions 2018 Inventory



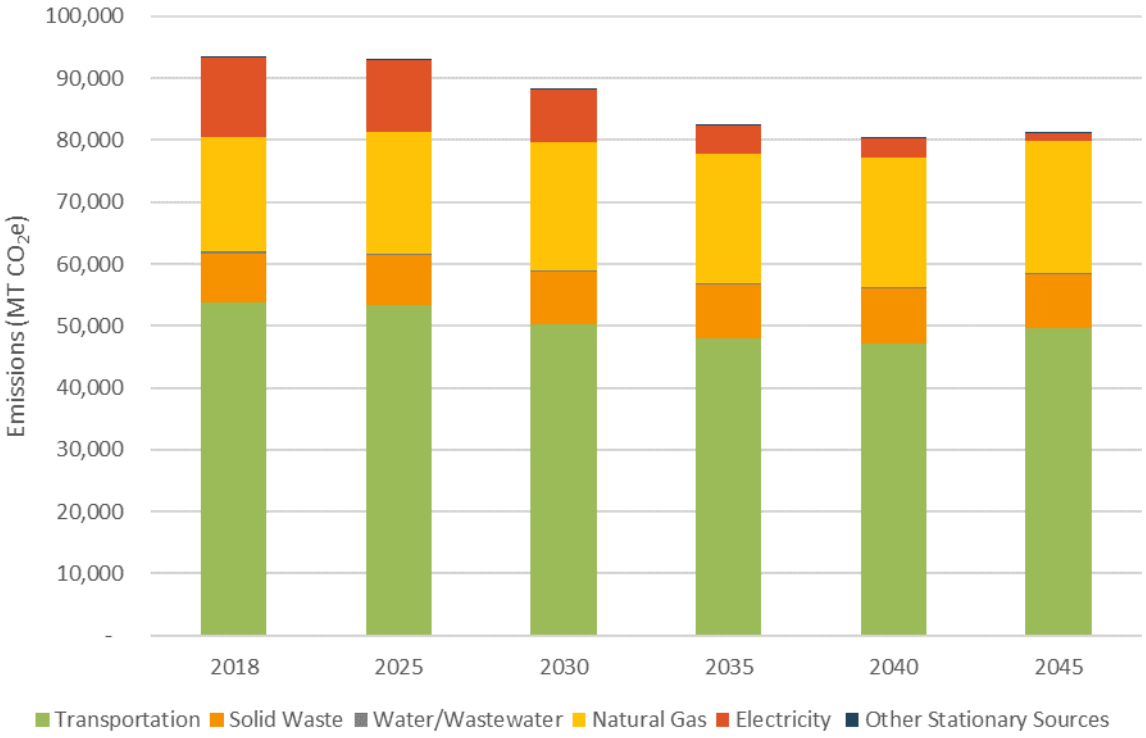
3.2 GHG Emissions Forecast

While GHG inventories provide data on Healdsburg's current emissions, GHG-emissions forecasts (forecast) estimate the city's projected GHG emissions into the future. Forecasts are developed from the most recent GHG inventory and provide an estimate of how Healdsburg's emissions might change over time based on demographic projections, including population, employment, housing, and transportation activity data. Although the most recently prepared GHG emissions inventory for the city is the 2020 emissions inventory, the activity data for the year was impacted both by a wildfire at the geothermal plant impacting energy emissions and by COVID-19 which significantly changed community behaviors including energy use and transportation. Due to these anomalies, the 2018 GHG emission inventory was selected to serve as the baseline for the forecast as it is considered the most recent emission inventory representative of typical conditions in the community.

A GHG emissions forecast was developed to estimate future GHG emissions within the city through 2045. It was developed based on the growth and demographic projections used in the RCPA Climate Action Plan 2020, the CA Dept of Finance projections on population growth, and the Regional Housing Needs Allocation (RHNA) for the 2023-2031 housing cycle. The forecast also accounts for current and future legislative actions from the state government, such as SB 100, Title 24 building energy efficiency standards, and transportation legislation. More information on these regulations and how they were accounted for in the forecast can be found in Appendix A.

Healdsburg's forecast projects the community's GHG emissions will decrease through 2030 and continue to decrease, but at a slower rate, through 2045. This is due to State legislation, including Title 24 and California's GHG vehicle emission standards, being fully phased in and then being offset by population and job growth. A summary of Healdsburg's GHG forecast through 2045 is shown in Figure 4.

Figure 4 Healdsburg GHG Emissions Forecast, 2018 – 2045



3.3 Healdsburg GHG Emissions Goals

GHG reduction targets are used to establish measurable metrics intended to guide the community's commitment to achieve GHG emissions reduction and help gauge progress with reducing emissions over time. GHG targets are developed relative to a baseline emissions level. California has established Statewide GHG reduction goals for 2030 and 2045. The State has encouraged communities to adopt their own plans consistent with these goals in the CARB 2022 Scoping Plan. Thus, local agencies are recommended to establish at a minimum, equivalent reduction targets at the local level by establishing community wide GHG reduction goals for climate action that will help California achieve its 2030 and 2045 GHG emissions goals.

The RCPA has set a regional goal to achieve carbon neutrality, an 80 percent reduction in GHG emissions with 20 percent carbon sequestration, for Sonoma County. This CMS establishes an efficiency target of 40 percent reduction in GHG emissions per capita from 1990 levels in alignment with state goals, and in support of the RCPA goal recognizing that the City alone is not able to meet a carbon neutrality goal by 2030.[13] The pathway to achieve Healdsburg targets in alignment with the state's targets is shown in Figure 5. The emissions gap between the forecast and the target pathway represent the amount of GHG emissions that Healdsburg is committed to reducing through local GHG reduction strategies and projects. As shown in Table 2, the state's efficiency target requires reducing emissions by approximately 1 MT CO_2e per capita by 2030 and working towards carbon

[13] Efficiency targets have been recommended in the CARB Scoping Plan as an appropriate target that normalizes GHG emissions to population changes.

neutrality by 2045. Based on the forecasted population in 2030 and 2045 this translates to a mass emissions reduction of approximately 13,636 MT CO_2e and 81,219 MT CO_2e, respectively.

In areas where there is substantial community and Council support, as well as staff resources and budget, the City will seek to exceed the state's efficiency target. This CMS is expected to achieve a 24,224 MT CO_2e reduction if fully implemented by 2030. Based on the forecasted population in 2030, this would translate to a reduction of approximately 1.9 MT CO_2e per capita. Compared with the 2030 adjusted forecast, this would result in 5.0 MT CO_2e per capita in 2030 which is approximately 48% lower than the estimated 1990 per capita levels of 9.8 MT CO_2e.

Figure 5 Healdsburg GHG Emission Reduction Goals

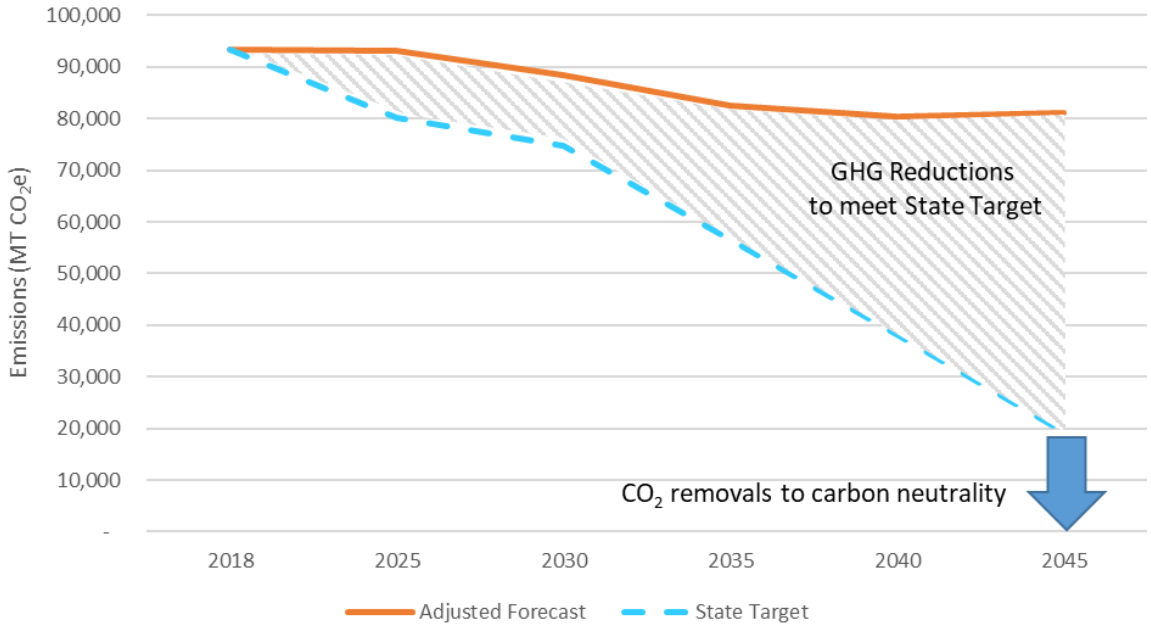


Table 2 GHG Emissions Target Pathway

Metric	2025	2030[2]	2035	2040	2045[3]
Population[1]	12,025	12,746	12,882	13,018	13,127
Per Capita Adjusted Forecast (MT CO_2e per capita)	7.7	6.9	6.4	6.2	6.2
State Emissions Target and Gap					
Per Capita State Targets (MT CO_2e per capita)	6.7	5.9	3.9	2.0	0.0
State Efficiency Emissions Target (Pathway) (MT CO_2e)	80,240	74,746	50,362	25,447	–
Remaining Emissions Gap from State targets (MT CO_2e)	12,881	13,636	32,224	54,927	81,219

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; N/A = not applicable

Emissions have been rounded to the nearest whole number and therefore sums may not match.

[1] Population projections for the GHG inventories (1990,2010, 2015, 2018) and forecasted population projections obtained from CA Dept of Finance, RCPA Climate Action Plan 2020.

[2] The RCPA has set a target to exceed the states target by reaching carbon neutrality by 2030 and urges cities within Sonoma County to adopt a similar target. City of Healdsburg is in support of the RCPA goal, but has established a target in alignment with the states 2030 target established by SB 32.

[3] Under AB 1279 it is anticipated that to reach carbon neutrality by 2045 approximately 85% of the reduction would be achieved through direct reduction of emissions in the community while the remaining 15% would be achieved with carbon removal.

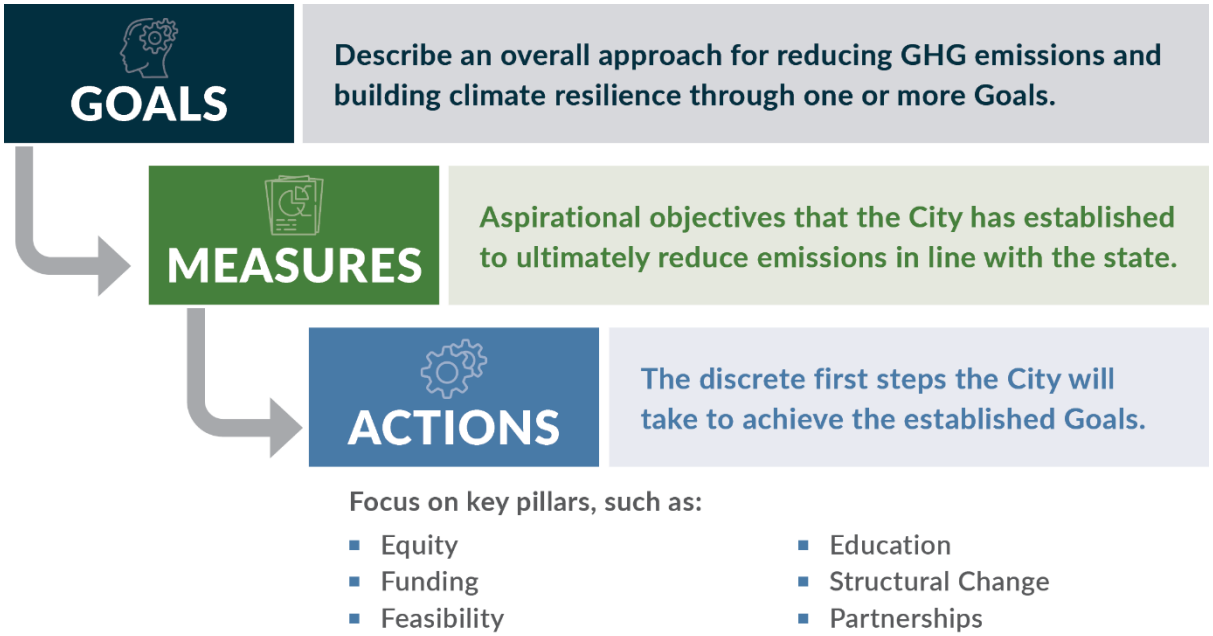
4 GHG Emission Reduction Strategy

4.1 Strategy Development

The CMS sets forth a roadmap for how the City will reduce GHG emissions in the near term to meet the established 2030 goals and make progress towards carbon neutrality in 2045. This CMS builds upon Healdsburg's previous efforts with actions that are equitable, achievable, and implementable. The measures and actions in the CMS were developed through a collaborative process between City staff, the City Council, key stakeholders, and the community.

The following sections detail the City's mitigation strategies and the considerations made to develop them. The measures identify specific goals (i.e., Healdsburg activity data targets by 2030) within each sector that will contribute to the overall GHG reduction goal. The measures are organized into sectors, which relate to the specific area to which the strategies and actions pertain. These include Building Energy, Transportation, Solid Waste, Water and Wastewater, and Carbon Sequestration. Each measure also has supporting actions, which consist of the specific steps that the City will take in support of the strategies. Actions identify the supportive programs, policies, financial pathways, and other commitments that will accomplish a measure goal. The Actions should be viewed as the steps to implement the goal. Figure 6 depicts the structure of the CMS measures, goals, and actions.

Figure 6 Measure, Goal, and Action Structure



Over time, the Strategy will be reviewed, and additional actions will need to be added to make greater progress on the established Goals. This Climate Mobilization Strategy serves as the City's first step in climate planning and will continue to be refined.

Key Strategy Attributes

In general, measures are designed to encompass six key attributes that are essential to effective climate policy implementation. Together, these specific key attributes have been identified to be specific community impact areas that together will activate or guide the buildout of actions for each

measure. In general, the actions under a single measure should collectively address all the key attributes. The key attributes include:

- **Structural Change:** Establishing a program/policy/ordinance that will allow the City to reach the target that we have within a measure (e.g., ordinance or code)
- **Education**: To support a structural action we want to get community buy in and promote the existence of the program and educate stakeholders (e.g., educational events or materials)
- **Equity**: Actions that engage and consider vulnerable communities (low-income families, fixed-income seniors, agricultural workers, etc.) that may experience secondary impacts or not benefit directly from the measure's objective (e.g., actions that ensure the overall community benefit)
- **Feasibility Studies**: Used to understand more about the details/obstacles/feasibility or implementation of a program (e.g., analysis necessary to identify the best path or the feasibility of implementing a specific measure)
- **Funding**: The financial backing to get a program going – a dive into grant funding or financing opportunities (e.g., grants or rebates that help pay for the implementation of a measure, funding to adequately staff the program)
- **Partnerships:** Looking at outside non-profits or agencies that can help with implementation of a measure's actions (e.g., community organizations that are best positioned to move a measure forward consistently or sustainably)

Co-benefits

The City's commitment to reduce GHG emissions means the community will benefit from various co-benefits that will have lasting positive impacts on the community residents and in helping Healdsburg preserve their character, including improved public health, new opportunities for economic growth and resilience, connected communities, increased adaptive capacity, and greater energy-supply security. The co-benefits identified for each CMS Measure include:

Environmental Quality: Enhancing urban natural environments safeguards biodiversity and ecosystem services, such as cleaner air and water. Healthy ecosystems mitigate pollution, provide species habitat, and offer recreational spaces for the community. They also assist in managing extreme weather effects by absorbing rainwater and reducing strain on the City's infrastructure. Overall, increasing green spaces, reducing air pollution, and water pollution enhances the community's quality of life.

Preserve Community Character: Healdsburg residents strongly value the small-town feel of the City and community connectivity. Creating opportunities for community members to engage in public life and build connections to their neighbors promotes a tightly-knit City with a strong sense of community.

Public Health and Safety: Reduction in use of fossil fuels in vehicles and homes improve air quality and public health. Increasing access to a safe and well-connected active transportation network can also lead to healthier communities.

Energy Resilience: Certain GHG reduction strategies can also yield resilience benefits, and the reverse is true as well. For instance, enhancing local energy storage and power generation can improve energy resilience, ensuring uninterrupted access to affordable energy from local sources.

Equity Guardrails

Integral to sustainability planning is ensuring that the impacts, co-benefits, and opportunities associated with developed strategies are equitably distributed amongst the community and that additional burdens on vulnerable communities are avoided. The City of Healdsburg defines vulnerable communities as follows:

- Vulnerable community: an area with concentrated populations of fixed-income seniors, persons with a disability, and lower income residents.[14]

Such communities are often disproportionally affected by the impacts of climate change and the burdens of sustainability actions. For this reason, they must be engaged, represented, and prioritized during the planning process. This kind of equitable community planning, can help cities design safe, thoughtful, and specific policies that improve public health across the community, provide equitable job opportunities and better incomes, and minimize disproportionate burdens. Altogether, equitable community planning provides a strong foundation for realistic sustainability initiatives to be developed and implemented by the community.

Establishing equity guardrails act as minimum standards that must be met for any measure to be considered. The equity guardrails are developed based on specific community concerns and help distil the diverse and higher-level discussions about equity into a mechanism that can be used to inform policy and create concrete change. Each Measure included in this CMS was reviewed for each criterion to determine if its associated actions would result in disproportionate burdens, inequities, or discrimination in the City. If determined it could, the measure was updated to ensure the actions instead benefited the community members that have the most to gain. Following are the equity goals/guardrails used in the drafting of the measures and actions in this document.

Table 3 Equity Guardrail Criteria

Equity Guardrails	Description
Integrate Health and Safety	Ensure each Measure provides access to health, safety, and comfort benefits associated with the CMS by prioritizing access for vulnerable communities.
Equitable Economics	Ensure each Measure establish funding and financing opportunities that are designed for and can be accessed by vulnerable communities and that additional financial burdens on these groups are avoided.
Provide Social and Cultural Support	Ensure each Measure includes access to information and materials and meaningful support for vulnerable communities. This may involve the addition/expansion of programs in partnership with community-based organizations that educate, engage, provide resources, and respond to barriers.
Affordability and Anti-displacement Potential	Ensure each Measure contains guardrails to protect vulnerable communities from displacement and increased cost of living.
Continued Investment and Engagement	Ensure each Measure includes specific mechanisms for continued investment in and engagement with vulnerable communities throughout implementation of the CMS to address any identified barriers as wells as unforeseen equity barriers that may arise as the CMS is implemented.

[14] Definitions sourced from the General Plan's Community Health & Environmental Justice Element.

Cost Assessment

Determining cost for measures is a complex process that involves an evaluation of capital cost, marginal cost, cost of inaction, change in cost overtime, and return on investment. Variability in implementation costs depends on the Goals identified, their level of specificity, and the accompanying funding and financing strategies. Costs may vary from capital-intensive investments, like the installation of bike infrastructure to encourage alternative means of transportation, to less capital-intensive but more staff-intensive investments, like conducting outreach and education campaigns to increase organic waste diversion. Additionally, costs can be categorized as internal or external costs where internal costs are those felt by the City (aka. municipal costs) while external costs are those felt by the residents and businesses (aka. community costs). These costs have been broken down into three categories presented Table 4. Each Measure in the following section includes the overall cost category for the City and Community. For a complete description of cost considerations for the Measures and Actions see Appendix B.

Table 4 Cost Categories

Cost Category	City	Community
No-Cost	Goals associated with operational changes that do not include new upfront costs or result in zero lifecycle costs. ▪ Continuing existing programs	Goals associated with changes that do not include new upfront costs or result in zero lifecycle costs. ▪ Switching transportation modes from single occupancy vehicles to active transportation.
Low-Cost	Goals associated with low upfront costs and will only require staff time to implement, such as: ▪ Developing partnerships ▪ Policy Updates ▪ Community Outreach	Goals associated with low upfront costs compared to existing alternatives, such as: ▪ Additional energy bill costs for renewable energy compared to fossil fuel-based energy
Moderate-Cost	Goals associated with moderate upfront costs to the City and require moderate capital costs or consultant time along with staff time, such as: ▪ Feasibility Studies ▪ Incentive and Compliance Programs ▪ Pilot Projects	Goals associated with moderate upfront costs that are not comparable to existing costs nor are offset over lifetime, such as: ▪ New fees from utilities or city taxes ▪ Upfront costs partially offset by rebate opportunities
High-Cost	Goals associated with high upfront costs and require substantial investments into infrastructure and technology system upgrades, such as: ▪ Bike Lanes ▪ Energy Storage Systems ▪ EV Charging Networks	Goals associated with high upfront costs that are not comparable to existing cost nor are offset over lifetime, such as: ▪ New electric vehicle purchase prior to existing vehicle replacement

Community and City Feedback

Measures and actions were developed based on best practices to achieve GHG emission reductions from the 2018 levels used to develop Healdsburg's GHG forecast. Specific measure goals for GHG reduction were set based on community, City staff, City Council, and stakeholder input. Feedback from the community was received through three workshops, a pop-event, and three surveys. In addition to community engagement, the City hosted several small group meetings with community organization stakeholders to hear specific feedback on the CMS and strategies developed. The surveys and events were designed to understand what the community was most concerned about with climate change and the sectors to be prioritized, as well as the type of strategies to be pursued through the CMS and of those strategies the way to implement the strategies through specific actions. Feedback was analyzed both quantitively and qualitatively to inform the final list of measures and actions in this document. Throughout this process, the community was informed through advertisements and community events of the progress of the CMS, including the results of the GHG emissions analysis, a cost assessment of the proposed measures and actions, and provided a draft of the document for public review and feedback prior to the document being taken to Council.

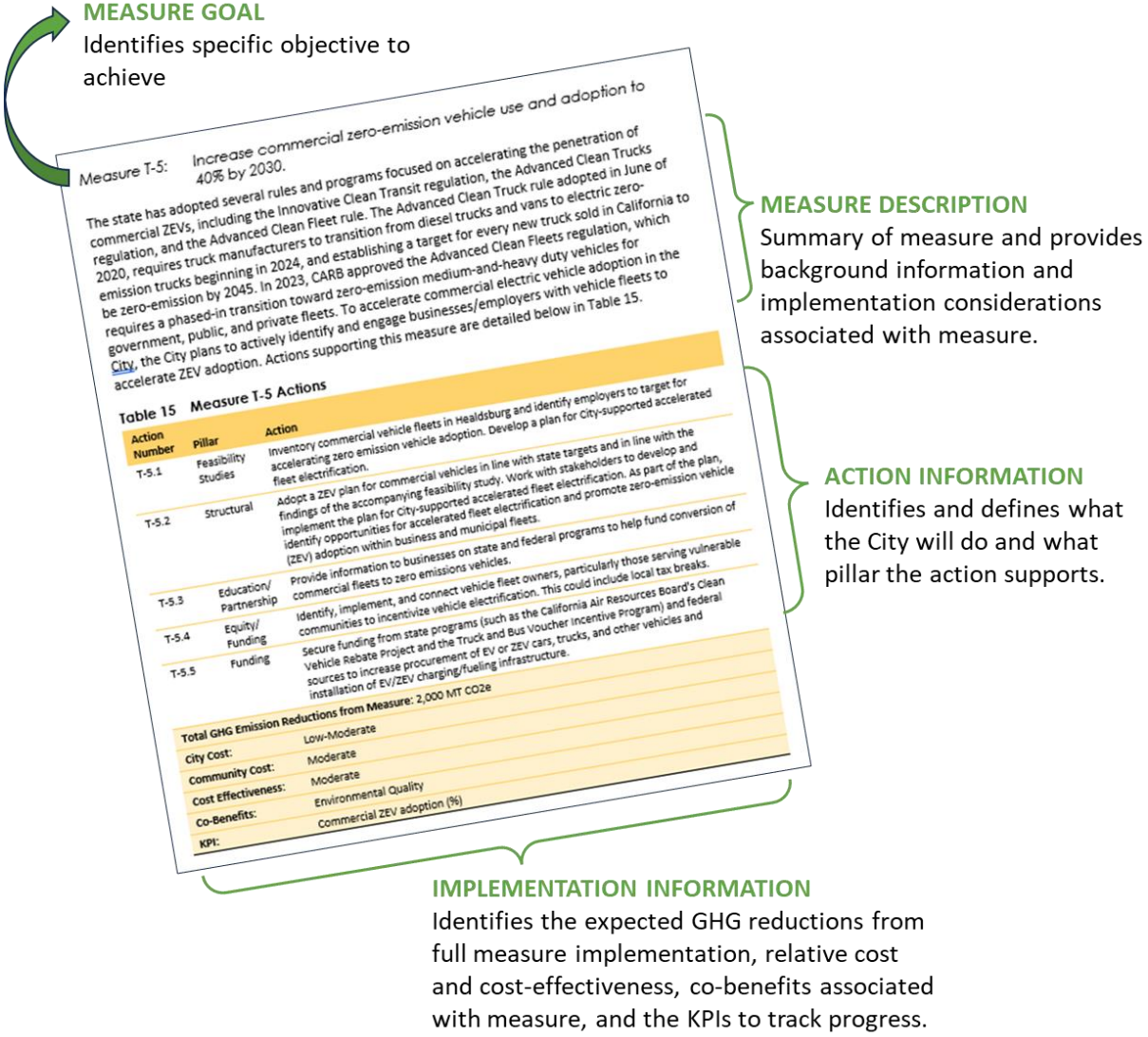
The strategies were developed through cross-departmental collaboration where feasibility, priorities, and barriers for implementation are considered and accounted for in the measure goals and actions contained in this CMS. Draft measures and actions were taken to City Council to hear and incorporate feedback throughout the process.

4.2 Measures

The measures are organized by sector (e.g., Building Energy, Transportation, Waste, Water & Wastewater, Carbon Sequestration, and Administration). Each topic identifies the measures and goals the City will strive to meet by 2030.

Each measure includes a description of the measure that provides background on the measure and considerations for implementation, as well as a summary table that includes the specific actions that make up the measure, and several additional details such as GHG reduction potential, cost, co-benefits, and KPI(s) to measure progress of implementation. Figure 7 provides an overview of how to read this section.

Figure 7 How to Read this Section



Building Energy

Building energy makes up approximately 34% of Healdsburg GHG profile. Of that, approximately 60% of building energy emissions are due to use of natural gas and 40% due to indirect emissions associated with electricity use. In California, the primary strategies for reducing building energy GHG emissions are decarbonization of the electricity grid and electrification of buildings. The State has implemented several regulations to decarbonize energy including Senate Bill (SB) 100 and SB 1020 aimed towards shifting the electricity grid to 100% renewable and zero-carbon power sources by 2045 and the Title 24 building code that is regularly updated to increase energy efficiency and accelerate the electrification of buildings.

Measure BE-1: Procure 85% of electricity from renewable and zero-carbon sources by 2030 and 100% renewable and carbon-free no later than 2045.

Emissions associated with electricity consumption are related to the source of power used to generate electricity (i.e., combustion of natural gas, solar, geothermal). Retail electricity providers, like Healdsburg Electric, are required by Senate Bill 100 to procure at least 60% of the electricity from eligible renewable energy sources (i.e., solar, wind, geothermal, small hydroelectric, and biomass) by 2030 and 100% eligible renewable resources and zero-carbon resources by 2045. Senate Bill 1020 establishes additional rules, requiring that 90% of the electricity mix be from eligible renewable resources or zero-carbon resources by 2035 and 95% by 2040. In 2022, the Healdsburg Electric community-wide electricity mix was 50% from eligible renewables (38% from geothermal, 10% from solar, 2% small hydroelectric), 15% from large hydroelectric, and 35% from fossil-fuel sources. More information about Healdsburg's power content is available at healdsburg.gov/powercontent.

GHG emission reductions related to this Measure would result from exceeding state requirements (i.e., Senate Bill 100 and Senate Bill 1020) and removing the use of fossil-fuel powered electricity from the electricity mix. Switching an electricity grid to renewable and zero-carbon sources has significant GHG reduction potential, however, it does include significant investment and some supply and technological limitations. For example, certain renewable electricity sources such as solar and wind are zero-carbon and can be supplied in abundance, however, they are not consistently supplied through-out the day and the supply are often mis-matched with the demand straining the electricity grid. Renewable electricity sources such as geothermal and biomass are reliable and consistent sources of power, however, these sources generate a small amount of GHG emissions and there are capacity limitations in terms of maximum output of power supplied. Some solutions include diversifying the electricity grid to ensure electricity can be provided at all times when needed at a reasonable cost and installation or use of energy storage systems (e.g., battery banks). Recently completed renewable projects include the floating solar project at the Waste Water Reclamation Facility, Antelope Solar development, and contracts for small hydroelectric. Actions supporting this Measure are detailed below in Table 5.

Table 5 Measure BE-1 Actions

Action Number	Pillar	Action
BE-1.1	Feasibility Study	Conduct electrification infrastructure and capacity feasibility studies. This would include: ▪ Develop a long-range community-wide electric energy and demand forecast to estimate future usage and peak demands due to adoption rates of building and transportation electrification. Use the forecast to help inform the amount of new energy sources and system capacity improvements required. ▪ Formalize the City's electric department long-range (ten-year) electric capital improvement plan with consideration for necessary infrastructure improvements to meet future demands. ▪ Using the developed long-range energy and demand forecast, formalize a pathway (resource-plan) to meet the City's energy needs and list of potential resources through 2045. Generation Resources may include a combination of local and remote generation sites as well as energy storage. ▪ Prioritize and schedule projects for implementation. The energy forecast study and formalized plans should identify barriers for implementation of priority projects, as well as identify funding sources, impacts on rates, and partnerships needed for successful implementation.
BE-1.2	Structural	Develop a resolution that Healdsburg Electric will exceed the requirements of SB 100 and SB 1020 by 2030 where 85% of the electricity mix is sourced from a combination of eligible renewable sources and/or carbon-free sources. As part of this resolution include actions of: 1. In setting the target establish valuation rankings for various generation types and projects. 2. Consider the reliability and cost benefits of energy storage and/or demand response by 2030 3. Continue to offer 100% renewable Green Rate with consideration that both the Standard and Green rates will reach the SB 100 goal of 100% renewable and carbon-free energy by 2045. 4. Indicate that geothermal and other low-carbon eligible renewables will continue to be included in the overall electricity mix.
BE-1.3	Partnership/ Funding	Work with Lodi Energy Center (LEC) project participants to advocate for and support the Department of Energy grant application to fund the LEC hydrogen-electrolyzer project. Identify and pursue other possible incentives or funding to transition facility to green hydrogen. This will reduce emissions of Healdsburg Electric electricity and increase reliability of the electricity source.
BE-1.4	Partnership/ Education	Work with community groups, local organizations, and NCPA to: ▪ Engage with community to advertise/highlight the adoption of the resolution establishing the goal of achieving 85% renewable and/or carbon-free electricity by 2030 and 100% renewable and/or carbon-free no later than 2045. Provide information on the process for providing reliable electricity 24/7 year around and the importance of power sources to ensure the reliability of the electricity provided. ▪ Provide information to the community on the importance of achieving this goal and how to meet this goal through city and community actions and involvement. This may include information on the benefits of local generation of renewable energy versus purchasing of Renewable Energy Certificates (RECs) to promote community installation and use of solar and battery storage to better achieve local carbon-free electricity community wide. ▪ Implement a software solution for residents and businesses to view electric consumption data in near real time. ▪ Include information on time of energy use as it factors into carbon intensity and how community members can capitalize on using electricity when it has the lowest carbon intensity (e.g., when to charge electric vehicles and when to run space heating and

Action Number	Pillar	Action
		cooling). Work with industry experts to help with demand response planning, developing strategies to increase flexibility of the grid, and for informing consumers of carbon intensity of the electricity they are using to promote behavior change.
BE-1.5	Partnership/ Equity	Partner with community organizations to ensure low/moderate income households are aware of the CARE and State's HEAP program to receive decreased electricity rates and provide technical assistance.
Total GHG Emission Reductions from Measure: 2,171 MT CO2e		
City Cost:		Moderate
Community Cost:		Moderate
Cost Effectiveness:		Moderate
Co-Benefits:		Environmental Quality, Public Health and Safety, Energy Resilience
KPI:		Change in Healdsburg Electric emission factor (%)

Measure BE-2: Continue to adopt an Electrification Reach Code for all new residential and commercial buildings with each triannual code cycle. Consider updating electrification ordinance to eliminate natural gas consumption in new construction for the 2025 California Building Standards Code and moving forward.

The City of Healdsburg has already adopted an Electrification Reach Code that requires electric space and water heating appliances in all new residential and commercial buildings. The policy currently allows for natural gas cooking and decorative fireplaces. Heating appliances make up approximately 90% of the natural gas usage in buildings. The adjusted forecast projects that natural gas usage in the community due to new buildings would increase by approximately 7% without the implementation of this ordinance. As such, this ordinance has the potential to avoid an increase of ~7% of GHG emissions from new buildings. The GHG emissions associated with electricity usage in place of natural gas are driven by the emission factor of the electricity grid. The City also currently promotes energy efficiency and efficient electrification with rebates and informational resources. Actions supporting this Measure are detailed below in Table 6.

Table 6 Measure BE-2 Actions

Action Number	Pillar	Action
BE-2.1	Structural	Continue to enforce the Electrification Reach Code for the 2022 California Building Standards Code requiring electric space and water heating in new construction.
BE-2.2	Structural	In 2025 and every 3-years thereafter if not included within State building codes, revisit the building electrification ordinance to update the scope. As part of ordinance update, consider the following scope changes: 1. Minimize the exemptions associated with the ordinance, while allowing for health and safety exemptions as necessary and exploring potential exemptions for specific use cases determined to have substantial economic development or business impacts. 2. Continue to require the submittal of an infeasibility waiver to review specific end uses where electrification is technologically infeasible. 3. Require that any end-use deemed infeasible for electrification exceed existing Title 24 energy efficiency standards and be electric ready for future electrification. 4. Establish a zero NOx threshold. 5. Specify that affordable housing developments will be all-electric to ensure no stranded assets. 6. Revisit substantial remodel and improvement definitions to be included in the ordinance.
BE-2.3	Education	Engage with the community, key stakeholders, and local-based community organizations representing vulnerable communities to raise awareness about building electrification before revising the electrification ordinance. Emphasize the economic and environmental advantages of electrification and address concerns related to emergency response to minimize exceptions. Publicize the cost savings, environmental benefits, and flexibility of electrification through the City website and permit counters, targeting builders, property owners, and contractors.
BE-2.4	Partnership/ Equity	Engage with interested parties, both internal interested parties, such as City staff and officials, and external interested parties, such as local developers and community groups regarding the purpose and impact of the Healdsburg Electrification Reach Code and to identify and address equity concerns in policy implementation.
BE-2.5	Funding/ Equity	Engage with affordable housing developers to leverage incentives for new all-electric and efficient low-income residential buildings through the California Energy Commission Building Initiative for Low-Emissions Development (BUILD) Program and the Affordable Housing and Sustainable Communities (AHSC) Program. Regularly investigate and leverage other incentive programs available for electrification of new buildings.
Total GHG Emission Reductions from Measure: 883 MT CO_2e		
City Cost:	Low	
Community Cost:	No Cost	
Cost Effectiveness:	High	
Co-Benefits:	Environmental Quality, Public Health and Safety, Energy Resilience	
KPI:	Share of new construction electrified (%)	

Measure BE-3: Decarbonize residential building stock by 8% by 2030

Residential buildings account for approximately 17% of Healdsburg's total GHG emissions with 70% of residential building emissions attributed to natural gas consumption. Electrifying existing residential buildings requires the replacement of natural gas appliances with electric equipment. The GHG reduction potential of this strategy is dependent on the degree to which the existing residential building stock can be electrified. Actions that rely on voluntary replacement of electric equipment or ordinances requiring electrification at end-of-life replacements have been shown to reduce GHG emissions by approximately 10-30%, whereas the adoption of an end of natural gas flow date that requires all existing buildings to convert to electric equipment would eliminate all emissions associated with natural gas consumption in buildings. Since electric appliances are approximately three times more efficient than similar natural gas burning equipment and appliances, the use of electric equipment instead of natural gas would result in improved energy efficiency and a reduction in overall energy consumption for replaced natural gas equipment. The City currently promotes energy efficiency and efficient electrification with rebates and informational resources. This measure focuses on continuing activities to promote voluntary electrification of residential buildings. Actions supporting this Measure are detailed below in Table 7.

Table 7 Measure BE-3 Actions

Action Number	Pillar	Action
BE-3.1	Structural	Align with SB 379 to implement an online, automated permitting platform. As part of a comprehensive permitting compliance program, include routine training of City staff, dedicating City staff time to building inspections, charging fees for noncompliance, providing easy-to-understand compliance checklists online and with permit applications, and facilitating expedited permitting online, including solar and battery storage.
BE-3.2	Funding/ Equity	As allowed by law, continue to provide incentives available for community members installing solar and battery storage to their homes such as a Net Metering Program with high-compensation NEM rates, and continue to provide incentives for energy efficiency and efficient electrification upgrades, as well as promote other funding and incentive opportunities available through the State and Federal government. Provide resource information to the community through websites, workshops, and partnerships. Include outreach to newly sold homes, when homeowners are more likely to make upgrades.

Action Number	Pillar	Action
BE-3.3	Equity	Review incentives, rebates, and financing options for procedural equity and ensure that existing and updated incentive programs are being equitably distributed to the community. Develop a suite of Equity Guardrails with input from the community to ensure existing building electrification improves equity in the community.
BE-3.4	Structural	Develop an appliance direct install program for Multi-Family income-restricted properties. Consider implementing a Neighborhood Retrofit Program to improve resiliency in residential buildings (i.e., on-site power generation and storage, weatherization, cooling, etc.), with an emphasis on connecting incentives and resources with rental property owners and low-income residents. Partner with community organizations to utilize existing resources.
BE-3.5	Funding	Once feasibility studies and cost analysis are completed, dedicate staff time or funding of consultants to pursue funds through CARB, the Investment Reduction Act, and the Infrastructure Investment and Jobs Act including, but not limited to: 1. DOE block grants 2. Green bonds 3. Grant Anticipation Notes or Short-Term Loans 4. Tax exempt lease purchases 5. Energy as a service 6. Energy Performance Contracting from Energy Service Companies (ESCOs)
BE-3.6	Partnership	Continue to conduct periodic energy efficiency rebates reviews. Promote existing available rebates and incentives for energy efficiency and electrification from Healdsburg Electric, the State, and the Federal government through partnership with community groups to educate the community on ways to finance electrification.
Total GHG Emission Reductions from Measure: 812 MT CO_2e		
City Cost:	Moderate	
Community Cost:	Moderate	
Cost Effectiveness:	Moderate	
Co-Benefits:	Environmental Quality, Public Health and Safety, Energy Resilience	
KPI:	Change in residential natural gas consumption (%)	

Measure BE-4: Decarbonize non-residential building stock by 5% by 2030

Non-residential buildings account for approximately 17% of Healdsburg's total GHG emissions with 48% of non-residential building emissions attributed to natural gas consumption. Similar to the residential sector in BE-3, electrifying existing non-residential buildings requires the replacement of natural gas appliances with electric equipment. This measure focuses on continuing activities to promote voluntary electrification and energy benchmarking of non-residential buildings.. Actions supporting this Measure are detailed below in Table 8.

Table 8 Measure BE-4 Actions

Action Number	Pillar	Action
BE-4.1	Education	Develop an education campaign to promote electrification and include items in the program such as: 1. Conduct engagement efforts for the commercial sector to identify ways the City can support commercial energy storage installations and neighborhood scale microgrid opportunities.

Action Number	Pillar	Action
		2. Facilitate funding opportunities for commercial business electrification by identifying and supporting grant opportunities available to the community, prioritizing small and community owned. 3. Implement feedback provided during the community outreach process for small businesses and community-owned businesses to address potential equity impacts of the building performance program. 4. Utility bill inserts to advertise the incentive programs or grants available and the cost benefits of electric appliances 5. Targeted outreach to builders, developers, local contractors, and property managers with an informational brochure describing the financial benefits of replacing natural gas appliances with all electric appliance when they apply for permits 6. Provide informational webinars and an updated website to advertise and promote All-Electric Building Initiative rebates and incentives 7. Promote the use of the Energy Star Portfolio Manager program and benchmarking training programs for nonresidential building owners.
BE-4.2	Education/ Partnership	Continue to partner with electrification/efficiency experts to provide guidance to commercial buildings covered by the new code(s) and/or ordinance(s).
BE-4.3	Education/ Partnership	Partner with the Healdsburg businesses and the Chamber of Commerce to inform and facilitate electrification for commercial business owners.
Total GHG Emission Reductions from Measure: 314 MT CO_2e		
City Cost:		Low
Community Cost:		Moderate
Cost Effectiveness:		Moderate
Co-Benefits:		Environmental Quality, Public Health and Safety, Energy Resilience
KPI:		Change in non-residential natural gas consumption (%)

Measure BE-4A: Decarbonize 50% municipal buildings and facilities by 2030

By demonstrating the feasibility of building electrification within municipal buildings and facilities the City can lead by example in driving down building emissions. For example, the City has already retrofit most buildings with LED lighting and replaced failing equipment with efficient electric alternatives, such as the all-electric and efficiency upgrades made to City Hall in 2018. Special focus is also given to the wastewater treatment plan, which accounts for approximately 5% of community wide electricity consumption and nearly 60% of municipal consumption. While all City accounts are on the Green Rate for 100% renewable electricity, reducing electric consumption at the wastewater treatment plant and other city facilities allows for more green electricity to be available to meet the needs of other community members and businesses in Healdsburg. Actions supporting this measure are detailed below in Table 9.

Table 9 Measure BE-4A Actions

Action Number	Pillar	Action
BE-4A.1	Structural	Develop a resolution to decarbonize 50% of municipal buildings and facilities by 2030 and 100% by 2045, by retrofitting natural gas appliances with electric alternatives. Include in the resolution an 'electric first' purchasing policy for any equipment or appliances in need of replacement.

Action Number	Pillar	Action
BE-4A.2	Feasibility Studies/ Funding	Conduct a feasibility study to understand current decarbonization and barriers to installing additional distributed energy resources such as solar and battery storage, or other renewable energy generation infrastructure, at municipal facilities. Plan for directing resources through the city for funding, energy storage, and distributed energy resources. Direct municipal efforts to sourcing space for energy storage projects, microgrid implementation, and future electrification.
BE-4A.3	Structural	Complete a Wastewater treatment plant energy efficiency study and implement the highest impact recommendations. Utilize grant funding opportunities as much as possible.
Total GHG Emission Reductions from Measure: Supportive		
City Cost:		High
Community Cost:		No Cost
Cost Effectiveness:		Moderate
Co-Benefits:		Environmental Quality, Public Health and Safety, Energy Resilience
KPI:		Change in municipal natural gas consumption (%)

Transportation

Transportation makes up approximately 60% of Healdsburg GHG profile. Of that, approximately 95% of transportation GHG emissions are due to on-road transportation. The primary strategies to reduce transportation involve mode shift away from single-occupancy vehicles and electrifying the remaining vehicle miles traveled (VMT).

Measure T-1 *Implement programs that increase access to safe active transportation, such as walking and biking, that achieve 15% of active transportation mode share by 2030.*

The City currently supports active transportation through the continual increase in bicycle and pedestrian routes and maintenance of existing routes. Increasing the mode shift from single-occupancy vehicles to active transportation options is largely dependent on safe routes and a behavior shift from the community. Increasing the available safe bicycle and pedestrian routes, the connectivity of such routes to locations of interest, and increasing the benefit of using such options can initiate change. Based on current census data approximately 2% of trips are associated with bike travel, and 4% associated with walking. Bicycle and walking trips primarily replace short vehicle trip types, not long distances. Studies have shown that a mode shift to active transportation can be increased up to 15%, though this level of change requires extensive change in infrastructure and behavior change. Behavior change is commonly driven by education, or incentives and disincentives, such as implementing paid parking, that promote a change. Actions supporting this measure are detailed below in Table 10.

Table 10 Measure T-1 Actions

Action Number	Pillar	Action
T-1.1	Structural	Work with Sonoma County Transportation Authority (SCTA) to update the 2013 Existing and Planned Bicycle and Pedestrian Facilities for City of Healdsburg with new planned and completed projects by 2025. As part of the update consider including: 1. Identified projects from the 2013 plan not yet implemented and include a progress update and/or reasons that identified projects were determined infeasible in updated Master Plan 2. Safe Routes to School plan 3. Increased biking infrastructure off the main street to enhance connectivity throughout the City and/or in communities where there is currently no or limited infrastructure 4. In partnership with surrounding communities, identify opportunities for infrastructure improvements or expansions to enhance cross-community active transportation 5. Explore streets for permanent through traffic closures to promote walking, biking, and other forms of active transportation with a focus on closing off downtown 6. Explore areas of the City to remove parking and/or additional traffic lanes to prioritize walking and biking 7. Determine equity barriers to safe bike and pedestrian infrastructure.

Action Number	Pillar	Action
T-1.2	Structural	Continue to utilize discretionary funds to implement the bicycle and pedestrian infrastructure improvements and updates such as the protected bike lanes along Healdsburg Avenue and reduction of through lanes on Healdsburg Avenue (e.g., Healdsburg Avenue Improvement Project). Select consultant to finalize designs for Healdsburg Avenue Improvement Project by end of 2023 to aim for project completion end of 2028. Improvement projects underway include: 1. Healdsburg Avenue Complete Streets improvements 2. Grove Street improves including ADA compliance 3. Foss Creek & Front Street connections 4. Saggio Hills Foss Creek Pathways Extension
T-1.3	Education/ Partnership	Support the Sonoma County Bicycle Coalition and local community groups to facilitate community outreach and education on transportation alternatives and promote infrastructure improvements and expansion, such as Foss Creek Trail. Continually improve methods for engaging the community, gathering input, and utilizing it to prioritize projects from the Bicycle and Pedestrian Master Plan. Promote and distribute regionally available tools, such as bike maps, bus routes and schedules, etc. to the community and to hotels and tourism centers to increase visitor use of active transportation.
T-1.4	Structural	Develop the Pilot Bike Share Program into a permanent and dependable bike share network that provides access to key destinations throughout the City, and work with regional partners including SMART and others, to assess potential for a regional bike share system. Include educational outreach and campaigns promoting use of the re-inspired program.
T-1.5	Education/ Partnership	Coordinate regionally through Sonoma County leveraging the regional active transportation plan to facilitate cross-community active transportation improvements, such as SMART multi-use path and Great Redwood Trail. As part of this action include community outreach and education on active transportation improvements to affected areas as well as the community.
T-1.6	Feasibility Studies	Evaluate existing bike parking facilities and evaluate what improvements can be made to increase supply, reduce theft, and increase rider attraction. Based on existing surveys and evaluation findings, improve and expand existing bike parking facilities throughout the city. Improve bike parking facilities near public transit stops and expand access to safe transit (i.e., first and last-mile access), as well as consider car parking spaces that could be converted to bicycle parking. Include analysis of last mile limitations and hurdles. Explore ways to require safe, secure bike parking and/or bike lockers as part of large commercial and multi-family projects.
T-1.7	Partnership	Support the tourism and business sectors of the greater Healdsburg County region to increase active transportation from tourists and employees.
T-1.8	Funding/ Equity	Partner with local bike shops to provide subsidies to low-income residents for e-bikes, helmets, locks, and other bicycle equipment. Continue to offer e-bike rebates with increased rebate opportunities for low-income customers. Implement an income-qualified coupon for the e-bike share program, in addition to the available 50% discounted e-bike share rate.
Total GHG Emission Reductions from Measure: 353 MT CO_2e		
City Cost:	High	
Community Cost:	No Cost	
Cost Effectiveness:	Low	
Co-Benefits:	Environmental Quality, Preserve Community Character, Public Health and Safety	
KPI:	Bicycle and pedestrian mode share (%)	

Measure T-2: Implement programs for public transportation that achieve 10% of public transit mode share by 2030.

To increase the mode shift from single-occupancy vehicles to using public transit or other car-share options is largely a behavior shift that relies on community members initiative. Increasing the access and convenience of such transportation options or increasing the benefit of using such options can initiate change. Currently public transit options in Healdsburg are limited and based on census data, approximately 1% of trips are associated with public transit use. Studies have shown that public transit use can be increased up to approximately 25%, though this level of change requires extensive change in infrastructure and offered services that meet the needs of the riders (e.g., commuting, local travel, travel for City visitors). The City is not the responsible agency for public transit services, however, works closely with the regional provider, Sonoma County Transit (SCT). Currently, the Healdsburg bus route is serviced by an electric shuttle and provides free ridership. Discount programs are also available for regional transit. At this time the City does not have the funding or resources to fund, implement and maintain its own public fleet or increase SCT's services in Healdsburg, and would require partnering with an outside company and organization and funding through new tax revenue sourced through either the community or tourists. This measure therefore focuses on collaborating with regional public transit providers and other partners to enhance regional connectivity. Actions supporting this measure are detailed below in Table 11.

Table 11 Measure T-2 Actions

Action Number	Pillar	Action
T-2.1	Feasibility Study/ Partnership	Partner with SCT to conduct a feasibility study to inform the development of a tourism-based mobility plan aimed at decreasing tourism-based single passenger vehicle use. In this study: 1. Identify community boundary locations for tourism designated parking and optimal route connectivity. 2. Identify opportunities for town shuttle services and park-and-ride locations for residents and tourists. 3. Pilot study on private funded transportation to wineries. 4. Gauge potential of private partnerships with big tourism destinations such as wineries and local businesses to implement direct public transit routes between park and ride and the relevant tourist destinations.
T-2.2	Study/ Partnership	Partner with regional organizations or community groups to conduct local transportation surveys to better understand the community's needs and motivation for traveling by car versus other alternatives such as the bus. Use survey results to inform policy development and education/outreach campaigns that are transit focused.
T-2.3	Equity/ Partnership	In the identification of access improvements to transportation include design improvements of seating and shading at bus stops and along active transportation routes. Partner with SCT to incorporate design changes throughout infrastructure modifications.
T-2.4	Equity/Studies	Work with public transit partners and rider groups to improve ridership through improved routes and modifying schedules to increase efficiency and align with riders' needs. Ensure public transportation access and improvements are prioritized in low-income areas, active aging neighborhoods, schools and at major destinations. This could include surveying existing transportation services, routes, schedules, and facilities throughout the city and developing a plan to improve these for implementation with preference given to improving public transportation facilities and expand access to transit (i.e., first and last-mile access).

Action Number	Pillar	Action
T-2.5	Education/ Funding/Equity	Promote free or subsidized regional public transit programs for vulnerable communities in Healdsburg that makes it free or discounted for participants to travel regionally via SCT.
Total GHG Emission Reductions from Measure: 2,022 MT CO_2e		
City Cost:	Moderate	
Community Cost:	No Cost	
Cost Effectiveness:	Moderate	
Co-Benefits:	Environmental Quality, Preserve Community Character, Public Health and Safety	
KPI:	Public transit mode share (%)	

Measure T-2A: Explore the development of a micro-mobility and/or car-share program to support mode shift from single occupancy fossil fuel vehicles to Zero Emission Vehicles.

To support the mode shift out of single-occupancy vehicles to using zero-emission vehicles (ZEVs) the City plans to explore additional micro-mobility options within the community. Increasing the access and convenience of such transportation options or increasing the benefit of using such options can initiate change. This measure consists of largely feasibility studies and outreach efforts to gauge the viability of additional micro-mobility devices. Additionally, the community has expressed a strong interest in an on-demand shuttle or a micro-transit program. As part of this Measure, the City will conduct the necessary feasibility studies to determine the viability and costs of a micro-transit system in town. This measure also focuses rounding out equity in access to alternative transportation. Actions supporting this measure are detailed below in Table 12.

Table 12 Measure T-2A Actions

Action Number	Pillar	Action
T-2A.1	Feasibility Study	Conduct a background review of options for purchasing, operating, and maintaining an on-demand door-to-door e-shuttle. This may include the development of a new on-demand e-shuttle, the expansion of DASH (Drivers Assisting Seniors in Healdsburg) for all residents of Healdsburg, or the development of a program to subsidize the cost for electric car-share programs such as Uber or Lyft. The analysis should include identification of potential funding sources (e.g., grants, local taxes, local business sponsorship, discretionary funds, etc.) and identification of barriers and opportunities for how such a micro-mobility program may enhance active transportation or public transit use. Present the findings to City Council and the public to determine next steps.
T-2A.2	Structural	Based on the findings of the feasibility study and the response from City Council and the public, develop and implement a micro-mobility policy that establishes a deployment protocol and permitting process, identifies any restrictions for use for safety reasons, and promotes equitable access through requirements for consistent placement of micro-mobility devices (e-scooters, e-bikes, etc.) in underserved areas or reductions in usage fees for lower-income users.
T-2A.3	Equity	Facilitate transportation equity through multilingual programs that identify local equity issues and seek to remove barriers for vulnerable communities to use carshare or micro-mobility options.

Action Number	Pillar	Action
T-2A.4	Education/ Partnership	Leverage community groups and local organizations to develop outreach and education materials advertising micro-mobility options and the benefits of use for traveling locally and increasing connectivity of public transit. Provide information on available funding opportunities or subsidies offered for low-income residents.
Total GHG Emission Reductions from Measure: Supportive		
City Cost:	Moderate to High	
Community Cost:	Low	
Cost Effectiveness:	Low	
Co-Benefits:	Public Health and Safety	
KPI:	Micro-transit mode share (%)	

Measure T-3: Develop programs and policies to discourage driving single passenger vehicles and to support the bicycle/pedestrian and public transit mode share goals of Measures T-1 and T-2.

While Measures T-1 and T-2 can be effective in changing community choices around transportation, the impacts of incentive-based policies increase when coupled with land-use planning that increases walkability of the City and the use of disincentives for less favorable choices, such as making it less convenient to drive a gasoline-fueled single passenger vehicle. Therefore, this measure aims to support transitions in mode shift by planning for additional forecasted VMT and offsetting it through development of active and micro-mobility alternatives. Through provisions of additional incentives, options, and systems enabling community-wide shifts from single passenger vehicles the City is aiming to further support transportation mode shifts. Additionally, by adopting land use and development policies that increase residential density in the City center and in close access to other transportation methods, such as walking, biking or public transit routes, the City can increase convenience of alternative transportation modes thereby supporting behavior change. Actions supporting this measure are detailed below in Table 13.

Table 13 Measure T-3 Actions

Action Number	Pillar	Action
T-3.1	Structural	Reduce future VMT of new development through infrastructure requirements modifying the General Plan and/or specific plans (e.g., Central Healdsburg Avenue Plan) such that the plans for different City areas include policies that support the development of a connected pedestrian and cyclist network. Infrastructure requirements may include: 1. Small scale version of park and ride for residents and tourists. 2. Interconnected bike lanes and sidewalks throughout the City. 3. Electric Bike stations or other micro-mobility hubs outside of major residences and shop destinations
T-3.2	Structural	City lead by example by encouraging and providing incentives for active transportation and public transit use, such as free access to the e-bike share program, public transit passes, telework options, or other incentives.
T-3.3	Structural	Pursue land use and development policies that promote infill development and/or increased density of residential development in the downtown core, along transit corridors, and within future planned development areas that is compact, mixed use, pedestrian friendly, and transit oriented where applicable.
Total GHG Emission Reductions from Measure: Supportive		
City Cost:	Moderate	
Community Cost:	Low	
Cost Effectiveness:	Low	
Co-Benefits:	Environmental Quality, Public Health and Safety	
KPI:	Change in community mode share to public transit or active transportation (%)	

Measure T-4: Increase passenger zero-emission vehicle use and adoption to 30% by 2030.

The state has adopted Executive Order N-79-20 requiring that 100% of new sales of passenger vehicles be zero-emissions by 2035, as well as invested billions of dollars into programs developed to support the expansion of ZEV and electric vehicle (EV) infrastructure throughout the state and increase access to ZEVs for all Californians including low- or moderate-income consumers. Based on consumer choice models and regulatory drivers, California's Motor Vehicle Emission Factor model has conservatively estimated that by 2030 there will be about a 7% penetration of passenger EVs. Accelerating this rate is primarily driven by increasing access to EVs and charging infrastructure and developing a connective network. Actions supporting this measure are detailed below in Table 14.

Table 14 Measure T-4 Actions

Action Number	Pillar	Action
T-4.1	Education/ Partnership	Partner with local organizations and community groups to distribute outreach and education materials to residents and local businesses on the financial, environmental, and health and safety benefits of ZEVs, as well as anti-idling for fossil-fuel vehicles. Provide information on available funding opportunities.
T-4.2	Equity/ Partnership	Identify private sector partnerships and develop affordable, zero-emission vehicle car share programs to serve affordable housing and/or multifamily developments with a priority to target vulnerable communities.
T-4.3	Equity/ Funding	Continue to promote the EV Monthly Bill Discount Program with increased discount opportunities for low-income customers, and develop an updated or replacement program

Action Number	Pillar	Action
		following program sunset in 2025. Continue to promote affordable EV charging rates at city-owned EV charging stations and adjust rates as necessary to cover program costs. Explore methods for charging different rates for different user groups or other programs to offset charging costs at public stations for low-income residents.
T-4.4	Funding/ Structural	Utilize the CALeVIP rebate to install new electric vehicle chargers at the Senior Center and downtown Maher lot. Applied for Federal Charing and Fueling Infrastructure (CFI) grant to install electric vehicle chargers at the Community Center, Giorgi Park, High School, and West Plaza. These projects would add 34 new public EV charging ports.
T-4.5	Feasibility Study	In addition to the 6 City-owned lots already identified, conduct a survey of existing publicly accessible electric vehicle chargers and their locations and identify a prioritized list of additional locations for new electric vehicle charging stations, or lots for increased chargers, with consideration for equitable distribution of chargers to vulnerable communities. Study should include an evaluation of capacity needs associated with the installation of new EV chargers and identification of the businesses or stakeholders that own the property to coordinate with for installation of chargers.
T-4.6	Funding	Identify and promote incentives and financing options for residential electric vehicle charger installations. Develop programs and policies to add 500 new publicly accessible and private workplace Level 2 and 3 electric vehicle charging stations to the City by 2030 through grants such as the California Energy Commission's Clean Transportation Program. Develop programs that incentivize residents and businesses to charge during times of abundant solar resources and avoid charging during peak hours and grid emergencies
T-4.7	Partnership/ Equity	Collaborate with neighboring jurisdictions and the Sonoma County Transportation Authority to develop a connected network on ZEV car share. Prioritize car share to serve affordable housing and/or multifamily developments.
T-4.8	Funding/ Partnership/ Equity	Partner with the local air district and RCPA to communicate State requirements for off road equipment and identify funding opportunities to support low-income residents to replace gas-powered landscaping equipment and off-road engines with zero emission equipment, such as through rebates or buyback programs.
Total GHG Emission Reductions from Measure: 7,636 MT CO_2e		
City Cost:	High	
Community Cost:	Moderate	
Cost Effectiveness:	Moderate	
Co-Benefits:	Environmental Quality	
KPI:	Passenger ZEV adoption (%)	

Measure T-5: Increase commercial zero-emission vehicle use and adoption to 40% by 2030.

The state has adopted several rules and programs focused on accelerating the penetration of commercial ZEVs, including the Innovative Clean Transit regulation, the Advanced Clean Trucks regulation, and the Advanced Clean Fleet rule. The Advanced Clean Truck rule adopted in June of 2020, requires truck manufacturers to transition from diesel trucks and vans to electric zero-emission trucks beginning in 2024, and establishing a target for every new truck sold in California to be zero-emission by 2045. In 2023, CARB approved the Advanced Clean Fleets regulation, which requires a phased-in transition toward zero-emission medium-and-heavy duty vehicles for government, public, and private fleets. To accelerate commercial electric vehicle adoption in the City, the City plans to actively identify and engage businesses/employers with vehicle fleets to accelerate ZEV adoption. Actions supporting this measure are detailed below in Table 15.

Table 15 Measure T-5 Actions

Action Number	Pillar	Action
T-5.1	Feasibility Studies	Complete white paper for US Postal Service fleet electrification in Healdsburg. Use white paper to inform the overall electrification study (BE-1.1) regarding commercial fleet electrification, peak demands, and on-peak/off-peak energy requirements. This information can be applied to other identified commercial vehicle fleets in Healdsburg.
T-5.2	Structural	Adopt a ZEV plan for commercial vehicles in line with state targets and in line with the findings of the accompanying feasibility study. Work with stakeholders to develop and implement the plan for City-supported accelerated fleet electrification. As part of the plan, identify opportunities for accelerated fleet electrification and promote zero-emission vehicle (ZEV) adoption within business and municipal fleets.
T-5.3	Education/ Partnership	Provide information to businesses on state and federal programs to help fund conversion of commercial fleets to zero emissions vehicles.
T-5.4	Equity/ Funding	Identify, implement, and connect vehicle fleet owners, particularly those serving vulnerable communities to incentivize vehicle electrification. This could include local tax breaks.
T-5.5	Funding	Secure funding from state programs (such as the California Air Resources Board's Clean Vehicle Rebate Project and the Truck and Bus Voucher Incentive Program) and federal sources to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure.
Total GHG Emission Reductions from Measure: 2,000 MT CO2e		
City Cost:	Low-Moderate	
Community Cost:	Moderate	
Cost Effectiveness:	Moderate	
Co-Benefits:	Environmental Quality	
KPI:	Commercial ZEV adoption (%)	

Measure T-5A: Lead by example and electrify or otherwise decarbonize the municipal fleet in compliance with the state's Advanced Clean Fleet Rule.

The state's Advanced Clean Fleet regulation requires the electrification of the City' municipal fleet. The decarbonization of municipal vehicles and equipment with ZEVs and EVs at time of replacement are outlined as actions supporting this measure detailed below in Table 16.

Table 16 Measure T-5A Actions

Action Number	Pillar	Action
T-5A.1	Structural	Continue to implement the Zero-emission vehicle first purchasing policy for all light-duty municipal vehicles, and update to also include off road equipment, medium-duty vehicles, and provide a path to comply with the State's Advanced Clean Fleet rule requiring 50% of medium- and heavy-duty vehicle purchases be zero-emissions beginning in 2024 and 100% beginning in 2027. Also consider operational needs to determine appropriate size of vehicles. Maintain exemptions needed to ensure public safety and delivery of critical services.
T-5A.2	Structural	Install additional ZEV chargers in municipal parking lots for fleet, employees, and public use to meet projected demand.
T-5A.3	Structural	Develop a resolution to replace City-owned end-of-life small off-road equipment with electric equipment (e.g., lawn equipment and leaf blowers) at time of replacement.
Total GHG Emission Reductions from Measure: Supportive		
City Cost:		Moderate
Community Cost:		No Cost
Cost Effectiveness:		Moderate
Co-Benefits:		Environmental Quality
KPI:		Change in municipal fleet to ZEV (%)

Waste

GHG emissions associated with solid waste generated by the community makes up approximately 8% of Healdsburg GHG profile. A majority of emissions associated with waste generation are associated with the decomposition of organic material in the landfill. Therefore, the primary strategy for reducing emissions associated with solid waste generation is the diversion from the landfill and reuse of materials.

Measure SW-1: Achieve Zero Waste by 2030 through 90% diversion of solid waste from the landfill.

Senate Bill 1383 that took effect in 2022, requires all persons and entities to divert generated organic materials (e.g., food waste, green waste, etc.) from the garbage sent to the landfill. Entities that provide food are also required to donate excess food. The City of Healdsburg is a part of the County's Zero Waste Sonoma and has a franchise agreement with Recology to provide solid waste, recycling, and compost services to residents and business in Healdsburg in accordance with the solid waste recycle and diversion legislation. It is the responsibility of businesses and residents to comply with the requirements of Senate Bill 1383 through proper sorting and disposal of waste materials. Currently, user fees support a part time Zero Waste Specialist position for Healdsburg at Recology. Implementation of new waste-related actions would require either an increase in time for the Recology position and/or dedicated City staff time. Examples of completed and ongoing actions include high-quality food scrap countertop bin giveaways by the City and free bulky item pick up from Recology, as well as many ongoing educational campaigns and development of a construction and demolition materials ordinance by Zero Waste Sonoma. Actions supporting this measure are detailed below in Table 17.

Table 17 Measure SW-1 Actions

Action Number	Pillar	Action
SW-1.1	Structural	Meet the requirements of SB 1383 to reduce organics in the waste stream by 75% below 2014 levels by 2025 and achieve Zero Waste through 90% solid waste diversion by 2030. Include activities such as: 1. Implement enforcement and fee for incorrectly sorted materials with sensitivity to shared collection. 2. Assure adequate bin signage across commercial and residential areas of acceptable landfill, recyclable, and compostable materials. 3. Conduct additional free food scrap collection pail giveaways and promote the free curbside organics collection service by Recology 4. Expand existing ban on disposable food ware made of polystyrene foam or products containing PFAS to include additional items without means of recycling or recycling markets, such as produce bags. 5. Implement pilot project for reusables for restaurant to-go containers. 6. Identify long-term and alternate solutions for the community's wastewater bio-solids to avoid long hauling distances and develop local, beneficial reuse. 7. Identify public areas for adding organics collection and recycling bins where needed. Partner with Recology and Zero Waste Sonoma as applicable for the actions listed above.
SW-1.2	Education/ Partnership	Partner with Zero Waste Sonoma to support a Bring your own (BYO) education and outreach training for residents and businesses on reusables and implementing more sustainable packaging into daily use. Also educate the community on opportunities to use or compost food scraps. Provide resources of education and technical assistance on city website. Partner with libraries and other existing facilities to market campaigns about waste reductions, reuse and repair.
SW-1.3	Equity/ Partnership	Leverage community groups and local organizations to work with multi-family property owners/managers to increase education through signage for their properties and supplies for proper sorting.
SW-1.4	Feasibility Studies/ Partnership	Leverage Zero Waste Sonoma 2022 Waste Characterization study and visual characterization conducted at the Healdsburg transfer station to understand the waste stream and create a plan to increase diversion and reduce contamination. Continue to work with Zero Waste Sonoma to conduct a waste characterization study every 5 years that includes Healdsburg to inform programs and policies.
SW-1.5	Funding/ Partnership	Partner with Recology and/or Zero Waste Sonoma to pursue funding, such as the Organics Grant Program from CalRecycle or for projects through California Climate Investment, to reduce generated organic waste from multi-family homes and expand waste diversions programs within the City.
SW-1.6	Structural	Develop and implement a Zero Waste Protocol for special events.
Total GHG Emission Reductions from Measure: 7,729 MT CO_2e		
City Cost:		Moderate
Community Cost:		Low
Cost Effectiveness:		High
Co-Benefits:		Environmental Quality, Public Health and Safety
KPI(s):		Change in total tonnage of landfilled waste (%) Change in landfilled organic waste compared with 2014 baseline levels using waste characterization studies (%)

Water & Wastewater

GHG emissions associated with water and wastewater make up <1% of Healdsburg GHG profile. Emissions associated with water are due to indirect emissions from the electricity consumption for water conveyance, treatment and delivery to consumers in the City. Emissions associated with wastewater are due to the direct fugitive emissions from wastewater treatment. Therefore, the primary strategy for reducing emissions associated with water use and wastewater generation is to reduce water consumption and wastewater generation.

While water and wastewater reduction do not achieve substantial emissions reductions, this strategy is also important for community resilience. Healdsburg prepares a long-range water supply plan every five years, called the Urban Water Management Plan, which takes into account population, water supply, drought risk, and more.

Measure W-1: Reduce per capita potable water consumption by 25% by 2030.

Measures related to this sector include promoting water conservation by reducing per capita potable water consumption and increasing access to and use of recycled water. The State is currently finalizing the Making Water Conservation a Way of Life regulation, which will set water conservation standards and objectives for certain categories. Water and wastewater (along with all City accounts) utilize renewable power for the pumping and treatment of local water sources. Reducing electricity consumption helps more renewable electricity be available for other community members and businesses to use, as well as reducing the small amount of emissions associated with green energy sources. Actions supporting this measure are detailed below in Table 18.

Table 18 Measure W-1 Actions

Action Number	Pillar	Action
W-1.1	Structural	Update the Urban Water Management Plan every 5 years, as required by the State, and implement the identified demand reduction actions to ensure compliance with the State's Making Water Conservation a Way of Life regulations. Include new actions in the UWMP as needed to achieve State regulations, which may include: 1. Amend the City's Water Shortage Contingency Plan to restrict any water waste at any time for households, businesses, industries, and public infrastructure. 2. Work with Community Development, large water users, and other stakeholders to develop an On-Site Water Reuse Plan to maximize utilization of local water supplies decreasing energy intensity of distribution. 3. Revisit and update the Water Efficient Landscape Ordinance as needed. Engage, through regional partnerships, with builders and developers to provide information on the requirements for development projects. 4. Develop an ordinance for installation of dual-plumbing water systems that utilize greywater or recycled water for irrigation at new residential and commercial construction. 5. Increase engagement with the community, specifically low-to-moderate income residents, to understand available incentives or rebates, options, and programs to reduce per capita water use. Leverage regional programs and resources available through membership in the Sonoma-Marin Saving Water Partnership, and leverage partnerships with local organizations to expand water conservation outreach. 6. Implement a software solution for residents and businesses to view water consumption data in near real time. 7. Complete grant funded Municipal Water Pipeline and work to expand the Municipal Recycled Water Pipeline project, as funding is available. Identify additional locations available for recycled water use and establish a schedule for potable water replacement with recycled water in appropriate applications residentially, commercially, and municipally, and determine recycled water user fees. 8. Revise water and wastewater rates as necessary to ensure cost of service is covered.
Total GHG Emission Reductions from Measure: 46 MT CO_2e		
City Cost:		Moderate
Community Cost:		No Cost
Cost Effectiveness:		Low
Co-Benefits:		Environmental Quality, Public Health and Safety
KPI:		Change in per capita water consumption (%)

Carbon Sequestration

Carbon sequestration is the process of removing carbon from the atmosphere using technology and natural solutions. Over time as GHG emissions are reduced from more and more sectors, carbon sequestration and carbon removal will play an increasingly important role in California's ability to achieve carbon neutrality. Carbon can be removed from the atmosphere both naturally by trees and the carbon cycle as well as industrially via carbon capture equipment. As technology and methodologies advance, there may be significant reductions in GHG emissions that can be achieved to meet the States goal.

The RCPA goal of reaching carbon neutrality by 2030 relies on 20% of total emissions being removed via carbon sequestration. For the City of Healdsburg this would equate to the removal of approximately 25,000 MT CO2e. At this time, the technology is not available to the City of Healdsburg to achieve this level of carbon removal and it is not possible to achieve that level of carbon removal via natural carbon sequestration in the land mass under the City's jurisdictional control. However, the City is committed to identifying pathways to increase natural carbon sequestration within City boundaries and explore other opportunities for carbon removal as they become available.

Measure CS-1: Increase carbon sequestration by preserving existing mature trees and planting 500 new trees and high emissions reduction potential land cover types throughout the community by 2030.

This measure assists in reaching carbon neutrality through the preservation of mature trees and the planting of 500 new trees of high emissions reduction potential land cover types. The City aims to utilize trees as natural carbon sinks, helping to reduce GHG emissions and create co-benefits of cleaner air and reduced urban heat island effect. Actions supporting this measure are detailed below in Table 19.

Table 19 Measure CS-1 Actions

Action Number	Pillar	Action
CS-1.1	Structural/ Partnership/ Equity	Develop a Street Tree Master Plan to include goals for promoting street tree health, enhancing resiliency, increasing the environmental benefits and co-benefits resulting from street trees and shading, community engagement around the urban forest. Include activity to promote street tree health and maintaining existing trees through partnerships with the community and local organizations, including organizations with connections to vulnerable communities to assist in the implementation of the Street Tree Master Plan to ensure equity is prioritized as part of the plan.
CS-1.2	Structural	Develop a new Tree Protection Ordinance to include protection for native and heritage trees. The ordinance should regulate the removal of not just heritage trees, but native trees that increase the City's carbon stock and carbon sequestration. Ordinance may include: 1) Development requirements to protect or replace one-for-one existing trees and greenspace. 2) Implementation of a tree removal in-lieu fee that provides funding for the City to plant a new tree equivalent to every tree removed from private property. 3) Identification of native tree species and heritage trees to be protected. 4) Shade tree requirements for new development 5) Parking lot landscaping requirements 6) Increased permeable surfaces and green spaces in new development 7) Vegetative barrier requirements between busy roadways and developments to reduce exposure to air pollutants from traffic 8) Protocols for proper tree maintenance and care 9) Best practices to protect existing carbon stocks against wildfire risk
CS-1.3	Education	Establish an adopt-a-tree or adopt-a-street program that enables individuals, businesses, and community organizations to plant and care for trees in selected communities. Program should provide formalized information on appropriate trees eligible for planting in Healdsburg (i.e., native, drought tolerant, locations, fire resistant) and their maintenance. Leverage existing plant lists developed by nearby and partner organizations.
CS-1.4	Equity	Prioritize low-income areas of the city with less existing tree canopy for tree plantings. Increase shading in gathering spaces.
CS-1.5	Funding	Explore urban and community forestry grant programs (e.g., CAL FIRE) and other sources of state, federal, and philanthropic funding to fund urban forestry programs. As part of this effort, establish a goal to apply for at least one grant every three years.
Total GHG Emission Reductions from Measure: 25 MT CO_2e		
City Cost:	Low	
Community Cost:	Low	
Cost Effectiveness:	Low	
Co-Benefits:	Environmental Quality, Preserve Community Character	
KPI:	Number of new trees planted by 2030	

Measure CS-2: Maintain and expand existing restoration projects to sequester carbon in restored lands.

The City of Healdsburg contains several continuous green spaces including urban parks, the Healdsburg Ridge Open Space Preserve, and the Fitch Mountain Park and Open Space Preserve which act as natural carbon sinks in the community through provision of flora and fauna that absorb carbon dioxide. This measure aims to bolster the potential of the natural working lands in Healdsburg through an increased commitment to the restoration and preservation of parks and open spaces. Actions supporting this measure are detailed below in Table 20.

Table 20 Measure CS-2 Actions

Action Number	Pillar	Action
CS-2.1	Structural	Continue maintenance and expansion of Healdsburg Ridge Open Space Preserve (150 acres), and the Fitch Mountain Park and Open Space Preserve (170 acres), including wildfire mitigation. Continue maintenance and restoration projects in existing green spaces within City and urban areas.
CS-2.2	Education	Develop a community-based volunteer program supporting restoration project activity to create a maintained restoration process.
CS-2.3	Funding	Apply for at least one grant every three years for obtaining grant funding for restoration and preservation activities with a focus on projects that have been unable to be fully completed due to funding constraints.
CS-2.4	Partnership	Partner with local community organizations to promote and coordinate sequestration opportunities and facilitate volunteer maintenance projects.
Total GHG Emission Reductions from Measure: Supportive		
City Cost:		Low
Community Cost:		No Cost
Cost Effectiveness:		Moderate
Co-Benefits:		Environmental Quality, Preserve Community Character
KPI:		Change in restored land (%)

Measure CS-3: Align with SB 1383 and procure products of organic diversion at a rate of 0.08 tons of organic waste per capita per year with a focus on increasing compost application within City limits to increase carbon sequestration.

As an extension of Measure SW-1, this measure focuses on the procurement requirements of recycled organic products outlined in Senate Bill 1383. Recycled organic products include compost, mulch, biofuel, and renewable electricity and jurisdictions can meet their procurement targets through procuring any combination of these authorized recycled organic products. Based on the existing opportunities, the City has focused its attention on procurement of compost to meet the SB 1383 procurement target. The bulk of this measure is accomplished through the City's agreements with Zero Waste Sonoma and Recology to provide solid waste, recycling, and compost services to residents and business in Healdsburg in accordance with the solid waste recycle and diversion legislation. Actions supporting this measure are detailed below in Table 21.

Table 21 Measure CS-3 Actions

Action Number	Pillar	Action
CS-3.1	Structural Change	Meet the baseline procurement requirement of SB 1383 through direct procurement of applicable products, as feasible, for the City's use and application. Establish contracts with service providers that use applicable products (e.g., landscape services, transportation services, waste haulers) on the City's behalf to meet the remaining procurement requirement not met through direct procurement.
CS-3.2	Feasibility Studies/ Partnership	Identify locations within the City to apply compost as applicable/appropriate to help meet the procurement requirements of SB 1383. Leverage Zero Waste Sonoma to collaborate with local schools, Public Works, Community Services, Ag+Open Space, and the Resource Conservation Districts to identify additional opportunities to apply compost.
CS-3.3	Structural Change	Implement compost application on City-owned properties, according to findings of feasibility study for suitable locations and appropriate application rates.
CS-3.4	Structural Change	Develop requirements for compost application, tracking, and reporting for developers.
CS-3.5	Education	Work with Recology and ZWS to provide residents, businesses, and developers with educational material on where to get compost and how it can be used (i.e., landscaping), as well as how compost promotes carbon sequestration. Consider increasing free compost giveaways.
CS-3.6	Equity	Prioritize providing increased outreach and translated materials on the annual compost giveaway to low-income households, small businesses, and other vulnerable communities.
CS-3.7	Funding	Apply for at least one grant every three years for obtaining grant funding for SB 1383 compliance, assuming there are such grant opportunities available.
CS-3.8	Partnership	Work with Sonoma County to identify opportunities for a regional compost procurement program to help meet the organics procurement provisions of SB 1383 as well as streamline hauler routes through regional collaboration.
Total GHG Emission Reductions from Measure: 235 MT CO_2e		
City Cost:	Moderate	
Community Cost:	No Cost	
Cost Effectiveness:	Low	
Co-Benefits:	Environmental Quality, Preserve Community Character	
KPI:	Compost applied annually (tons per capita)	

Administration

Measures focused on the administration of the CMS and funding of the CMS do not provide direct quantifiable GHG emissions reduction; however they are key in successful implementation of the CMS and achieving the overall goal of the CMS.

Measure F-1: Identify Administrative Needs for Successful CMS Implementation

To best assist the accountability of the above measures and actions, the City plans to create a Climate Program Manager responsible for implementation, communications, and pursuit of new opportunities and funding for implementation of the CMS. Currently, the City has a Utility Conservation Analyst to implement the Utilities Department energy efficiency, building electrification, transportation electrification, and water efficiency actions. The Climate Program Manager would be responsible for managing the overall CMS and working with all Departments to implement their actions. The City's ability to successfully implement the CMS will be dependent on staff and resource capacity to manage the overall CMS. Actions supporting this measure are detailed below in Table 22.

Table 22 Measure F-1 Actions

Action Number	Pillar	Action
F-1.2	Structural	Consider creating a Climate Program Manager new position who is responsible for implementing CMS measures and actions by drafting ordinances, managing technical studies, leading outreach efforts, updating online information, managing the webpages and social media posts to promote climate programs, networking with partners and stakeholders, and pursuing relevant and impactful grant opportunities.
F-1.2	Structural	Report progress on CMS implementation annually to the City Council to measure progress and ensure accountability in achieving CMS emissions reduction goals.
F-1.3	Partnership/ Education	Partner with RCPA and other jurisdictions to ensure transparency in GHG emission reporting and make GHG emission data and inputs publicly available.
Total GHG Emission Reductions from Measure: Supportive		
City Cost:	Moderate	
Community Cost:	No Cost	
Cost Effectiveness:	N/A, supportive measure	
Co-Benefits:	Environmental Quality	

5 Implementation

One of the key purposes of this CMS was to identify and prioritize key measures and actions to be implemented in the near-term that are most impactful at reducing GHG emissions. Based on substantial evidence and CMS specific data, the measures and actions details in the previous section have been developed to be capable of reducing a specific quantity of GHG emissions within a reasonable period of time, considering economic, environmental, legal, social, and technological factors. As such, the following section establishes an implementation plan that has been developed through City department coordination and evaluation of implementation feasibility given budget and staff capacity. The implementation timeline presented in Appendix D includes just the actions that will be completed in the next one to three years. The actions within the above section are those that will be completed prior to 2030, however are not anticipated to be completed over the next three years and therefore are not listed in the implementation timeline table included in Appendix D. Measures and actions that were considered throughout this process that are either not technologically or financially feasible at this time have been included in Appendix E as actions and efforts to consider in the future after the Measures in this CMS have been implemented.

5.1 Prioritization of Funding

In establishing the implementation timeline the City considered the following principles to guide how measures and actions were prioritized.

- **GHG Reduction Potential.** The CMS prioritizes measures and actions that will have a meaningful impact in reducing GHG emissions.
- **Cost-effectiveness.** The CMS prioritizes cost-effective actions, which considers the least cost for the greatest GHG reduction impact as well as actions that generate cost savings or the greatest return on investment.
- **Community Interest.** The CMS considered community feedback throughout the process to prioritize actions that had great community interest and would have the largest benefit for the community.
- **Funding Source.** The City has a finite budget to apply to implementation of the CMS, therefore budgetary constraints were considered. The City also considered the opportunities and availability of outside funding sources that could be leveraged to augment local resources, such as grants, or State and Federal incentives.
- **Equity.** The costs of implementing policies should be equitably spread amongst the community, and extra caution was taken to limit new costs being placed on vulnerable populations.
- **Mandates:** Measures and actions that support State mandates were prioritized to ensure compliance with meeting State regulations.
- **In Progress/Time Dependent:** Actions that are already substantially in progress were prioritized to leverage already completed work and further build on the progress. Actions that have a specific timeline for implementation were also prioritized for implementation in the next 1-3 years, such as amendments to the building code during the next state building code update.

5.2 Monitoring

A key to successful implementation is monitoring progress and tracking implementation over time. As part of the CMS, the City will annually report on the status of the CMS implementation. GHG reductions will be tracked over time through the continued preparation of the RCPA inventories. Tracking implementation of the plan in conjunction with the inventory updates will demonstrate the progress the City is making in reducing GHG emissions and achieving its 2030 goal.

If the actions identified in the CMS to meet the 2030 GHG emissions reduction milestone goal are not implemented, additional actions may need to be developed to meet the 2030 goals. The longer taking action is delayed, the more significant actions need to be taken to achieve the longer-term GHG emissions reduction targets.

5.3 Implementation Plan

Appendix D presents the measures and actions to be implemented in the next 1-3 years (through June 30, 2026). Measures and actions not included in this 1-3 year implementation plan will be revisited in preparation for the City's following budgeting cycle (Fiscal Years 26/27 and 27/28).

There may also be other actions that local organizations or community groups will take the lead on during the next 1-3 years. Although not listed in the Implementation Plan, the City can support these efforts where feasible as they arise.

The 1-3 year implementation plan in Appendix D includes the measure, action description, timeframe, responsible departments, and estimated costs.

In order to achieve the 2030 GHG emissions reductions goals discussed in Chapter 4, Healdsburg will begin implementing the measures and actions as soon as possible to make real progress over the next few years. The CMS identifies the start date to begin implementation of a specific action. Additionally, actions already in progress are denoted as such and actions that will be ongoing, such as an education program, will have a start date and indicate that the action is "ongoing".

Some actions such as adopting ordinances to decarbonize building stock, planting trees, or conducting the initial feasibility studies can be accomplished on a short timetable; while others, such as implementation of strategies to increase infrastructure for active transportation or ZEVs may require longer timelines to conduct a feasibility assessment, obtain funding, and rollout any required infrastructure change.

Glossary

Term	Definition
Active Transportation	A means of transportation that is powered by human energy, for example walking or biking.
Adaptation	Adjustment or preparation of natural or human systems to a new or changing environment which moderates harm or exploits beneficial opportunities
Anthropogenic	Made by people or resulting from human activities; usually used in the context of emissions that are produced as a result of human activities
CALGreen	An abbreviated reference to the California Green Building Standards code, which sets minimum requirements for sustainable practices for construction (residential and commercial) projects throughout the state. It is updated every three years in accordance with the building cycle.
CALGreen Tier 1 & 2	Requirements beyond the mandatory measures laid out by CALGreen: Tier 1 adds additional requirements to the mandatory sustainability requirements, and Tier 2 further increases those sustainability requirements
CalRecycle	Agency that administers and provides oversight for all of California's state-managed non-hazardous waste handling and recycling programs
California Air Resources Board (CARB)	The lead agency for climate change programs that also oversees all air pollution control efforts in California to attain and maintain health-based air quality standards
Carbon-free Energy	Energy produced by a resource that generates no carbon emissions, for example, wind power
Carbon-neutrality/ Net-Zero Emissions	Balancing anthropomorphically generated emissions out by removing GHGs from the atmosphere in a process known as carbon sequestration
Carbon sequestration	The long-term storage or capture of carbon dioxide and other forms of carbon from the atmosphere through biological, chemical, and physical processes
CH4	Methane, a hydrocarbon that is a greenhouse gas produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion
Climate	The average of weather patterns over a long period of time (usually 30 or more years)
Climate Change	A change in the average conditions — such as temperature and rainfall — in a region over a long period of time
Complete Streets	Are designed and operated to enable safe use and support mobility for all users. Complete Streets approaches address a range of elements including sidewalks, bicycle lanes, bus lanes, public transportation stops, and median islands
CO2	Carbon dioxide, a naturally occurring gas and a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes
CO2e	Carbon dioxide equivalent, a metric measure used to compare the emissions from various greenhouse gases based upon their GWP
Decarbonization	Replacing technologies and services that run on fossil fuels (ex. natural gas) with ones that run on zero-carbon sources of energy (for example electricity from renewable energy like solar or wind power), ideally from renewable sources
Electric Vehicle (EV)	A vehicle that uses one or more electric motors or traction motors for propulsion
Energy Storage	Can provide frequency regulation to maintain balance between the network's load and detected power generated, achieving more reliable power supplies. Batteries are an example of energy storage

Term	Definition
Fossil Fuel	A general term for fuel formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the Earth's crust
Greenhouse Gas (GHG)	A gas that absorbs infrared radiation, traps heat in the atmosphere, and contributes to the greenhouse effect
Global Warming Potential (GWP)	Total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1
Greywater	Graywater refers to water that has been used domestically, commercially, and industrially
Local Governments for Sustainability (ICLEI)	A global network of more than 1,750 local and regional governments committed to sustainable urban development – emissions estimates were calculated using ICLEI's best available methodologies
Mitigation	An action that will reduce or prevent greenhouse gas emissions, such as electrifying buildings that previously ran on natural gas
Metric Tons (MT)	Common international measurement for the quantity of greenhouse gas emissions – one metric ton is equal to 2205 pounds or 1.1 short tons
Metric tons carbon dioxide equivalent (MT CO2e)	Metric/unit that GHG emissions are reported per standard practice; when dealing with an array of emissions, the gases are converted to their carbon dioxide equivalents for comparison purposes
Microgrid	A group of interconnected loads and distributed energy resources that act as a single controllable entity in respect to the grid. A microgrid can operate in 'island mode' and disconnect from the grid, or operate while connection to the grid
Mode Shift	Changing from one form of transportation to another, specifically, switching from traveling via car to traveling via bicycle or public transport
N2O	Nitrous Oxide, a powerful GHG with a high global warming potential; major sources of nitrous oxide include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning
Organic Material	Natural or organic materials, for example food scraps and yard waste
Reach Code	A building code which requires a higher level of energy efficiency than the standard statewide code. Reach codes are allowed and encouraged under Title 24.
Remodels/Alterations	A building update that changes the exterior detail of a structure, but not its basic shape or size
Renewable Energy	Energy derived from natural sources that are replenished at a higher rate than they are consumed (ex. wind, biomass)
Resilience	Ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate
Supportive Measure or Action	One which has not been quantified and does not provide a direct or easily quantified GHG reduction; however, these measures are expected to contribute to overall GHG reductions and/or provide co-benefits
Transportation Demand Management (TDM)	Transportation Demand Management focuses on how people make their transportation decisions, and facilitates greater usage of infrastructure for transit, ridesharing, walking, biking, and telework
Vehicle Miles Traveled (VMT)	VMT is the amount of total miles traveled by motor vehicle that are generated over a population over a given timeframe (Ex. 1 year)
Vehicle to Grid Charging	A vehicle-to-grid charging device absorbs electricity from a car battery and pushes it back to the grid, allowing EVs to function as backup storage cells for the electrical grid.
Vulnerable Community	An area with concentrated populations of fixed-income seniors, persons with a disability, and lower income residents.

Term	Definition
Zero-Emissions-Vehicle (ZEV)	A vehicle that never emits exhaust gas from the onboard source of power
Zero Waste	The conservation of all resources by means of responsible production, consumption, reuse, and recovery of materials and packaging, without burning, and with no discharges to land, water, or air that threaten human health

Appendix A

GHG Inventory, Forecast, and Targets Technical Memorandum

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April 3, 2023
Rincon Project No. 22-13600

Andrew Sturmfels
City of Healdsburg, Assistant City Manager
401 Grove Street
Healdsburg, CA 95448
Via email: asturmfels@healdsburg.gov
CC: email: Terra Sampson(tsampson@healdsburg.gov)

Subject: Healdsburg Climate Mobilization Strategy, Future GHG Emissions Forecasts and Gap Analysis Memorandum
Healdsburg, CA

Dear Mr. Sturmfels:

As part of the Healdsburg Climate Mobilization Strategy (CMS) Rincon Consultants, Inc. (Rincon) has calculated the 2025, 2030, 2035, 2040, and 2045 greenhouse gas (GHG) emissions forecasts based on the Healdsburg 2018 GHG emission inventory. Although the most recently prepared GHG emissions inventory for the City is the 2020 emissions inventory, the activity data for the year was impacted both by a wildfire at the geothermal plant impacting energy emissions and by COVID-19 which significantly changed community behaviors including energy use and transportation. Due to these anomalies, the 2018 GHG emission inventory was selected to serve as the baseline for the forecast as it is considered the most recent emission inventory representative of typical conditions in the community.

The 2018 GHG emissions inventory identifies the major sources and quantities of GHG emissions produced by communitywide activities within Healdsburg's city limits (i.e., the Healdsburg General Plan planning area). The inventory was developed by Sonoma County Regional Climate Protection Authority (RCPA) and provides the City with the data necessary to establish a GHG emissions baseline for the CMS, track GHG emissions trends, and identify the greatest sources of GHG emissions within their jurisdiction.

The GHG emissions forecast discussed in this memorandum provides an estimate of how Healdsburg's GHG emissions are expected to change in the years 2025 (interim year), 2030 (initial Senate Bill 32 compliance year), 2035 (interim year), 2040 (interim year), and 2045 (initial AB 1279 compliance year) as a result of anticipated Healdsburg economic and population growth, as well as the impacts that California climate-related legislation would have on these future GHG emissions. This memorandum also discusses the 2030 GHG emission reduction target of carbon neutrality adopted by RCPA and the states 2030 GHG emissions reduction target of 40 percent below 1990 levels as well as the total quantity of GHG emissions reduction that Healdsburg needs to achieve in order to contribute their fair share reduction of California's GHG emission reduction goal.[1] The gap between the 2030 adjusted forecast and Healdsburg's 2030 target would be addressed through local actions to be included in the CMS.

[1] California's long-term GHG emission reduction goals were established by the landmark Assembly Bill 32, Senate Bill 32, Executive Order B-55-18, and codified by Assembly Bill 1279. Collectively, these legislative actions provide a GHG reduction trajectory of reducing Statewide GHG emissions to 1990 GHG emission levels by 2020, 40% below 1990 GHG emissions levels by 2030, and carbon neutrality by 2045.

The following sections provide a summary of the results for the 2018 GHG emission inventory, GHG emission forecasts, and GHG reduction target options to be included in the Healdsburg CMS.

GHG Emissions Sectors and Sources

The GHG emissions forecasts presented herein are based on the 2018 GHG emissions inventory calculated for Healdsburg by RCPA as well as population and economic growth projections for Healdsburg. The GHG emissions sources included in the 2025, 2030, 2035, 2040, and 2045 forecasts analysis align with those in the 2018 GHG inventory. The GHG emissions sectors and associated sources included in the inventory and forecasts are provided in Table 1.

Table 1 Healdsburg GHG Emissions Sectors and Sources

GHG Emissions Sector	GHG Emissions Source
Transportation	On-Road Transportation
	Off Road - Diesel
	Off Road - Gasoline
	Off Road - Natural Gas (LPG)
Electricity[1]	Residential Electricity Consumption
	Non-Residential Electricity Consumption
Natural Gas	Residential Natural Gas Consumption
	Non-Residential Natural Gas Consumption
Stationary Sources	Emissions from Other Stationary Sources in Buildings
Water	Indirect Electricity Consumption from Water Delivery
Wastewater	Direct Wastewater Treatment Emissions[2]
Solid Waste	Solid Waste Generated by Community

1. Electricity Consumption includes electricity provided by Healdsburg Electric and Pacific Gas and Electric (PG&E).
2. Direct wastewater treatment emissions are from the following sources: digester gas from anaerobic digesters at wastewater treatment plants.

Healdsburg GHG Emissions Inventory Summary

The GHG emissions forecast analysis presented here is based upon the calculated GHG emissions from each source included in the 2018 GHG emissions inventory developed by RCPA. A detailed summary of the 2018 GHG emissions inventory is provided in Table 2.

Table 2 Healdsburg 2018 GHG Emissions Inventory Summary

GHG Emissions Sector/Source[1]	Emissions (MT CO_2e)	Activity Data	Activity Data Units
Transportation			
On-Road Transportation[1]	51,033	121,325,224	VMT
Off Road - Diesel	1,240	120,418	Gallons
Off Road - Gasoline	1,299	146,795	Gallons
Off Road - Natural Gas (LPG)	198	33,729	Gallons
Electricity			
Residential Electricity	4,657	26,186,905	kWh
Non-Residential Electricity	8,427	47,404,624	kWh
Natural Gas			
Residential Natural Gas	10,976	2,041,137	Therms
Non-Residential Natural Gas	7,525	1,399,284	Therms
Stationary Sources			
Other Stationary Sources	119	N/A	N/A
Water			
Indirect Electricity from Water Delivery[2]	274	1,513,826	kWh
Wastewater			
Direct Emissions from Wastewater Treatment	101	N/A	N/A
Solid Waste			
Solid Waste Generated/Disposal	7,898	13,754	Tons Landfilled
Total[2]	**93,473**	**N/A**	**N/A**

Notes: MT CO_2e = metric tons carbon dioxide equivalents; kWh = kilowatt hours; VMT = vehicle miles traveled; N/A = not applicable

1. Activity data and calculated emissions are the values utilized by RCPA in the 2018 GHG Inventory

2. The City utilities include Healdsburg Electric and water utilities, therefore indirect electricity from water conveyance is already included in the electricity sector. Emissions are shown in this table for informational purposes but to avoid double counting are not added in the overall total.

Healdsburg GHG Emissions Forecasts

Healdsburg's 2018 inventory establishes a reference point for communitywide emissions in a specific year. However, annual GHG emissions change over time and GHG emissions forecasts provide a way to estimate future emission levels based on both the continuation of current activities and external factors such as population and job growth. Forecasts also account for California legislative actions that are anticipated to reduce GHG emissions. Thus, the emissions forecast provides detail on the level of GHG reductions needed to achieve the GHG emissions reduction targets in a future year. Calculating the difference between the forecasted GHG emissions and the reduction target determines the gap to be closed through local actions and policies. This section includes an estimate of the future emissions for Healdsburg in the years 2025, 2030, 2035, 2040, and 2045 in a *baseline scenario* (baseline) forecast and an *adjusted scenario* (adjusted) forecast, which are defined as follows:

- *Baseline scenario*- Provides a forecast of how future GHG emissions would change if future activities continued as they did in 2018 and no changes in local or state policies or legislation that would reduce local emissions take place. Emission factors in a baseline forecast remain constant over time. The baseline forecast is based on growth trends projected in population, housing, employment, and transportation activity over time, consistent with regional projections.

- *Adjusted scenario*- Provides a forecast of how future GHG emissions would change if future activities continued as they did in 2018 and accounts for the future effects of currently adopted State legislation that would reduce GHG emissions compared from the *baseline scenario*. The *adjusted scenario* represents the State's contribution to reducing local GHG emissions to meet State goals without any additional contribution from local policies or actions.

Baseline GHG Emissions Forecast

The baseline forecast provides an estimate of what the communities GHG emissions would look like in forecast years if current activities continued as in 2018 and emission factors remained constant over time. The baseline forecast does not include new activities or policies since 2018, already planned activities, or state mandates. (State mandates are included in the *adjusted forecast*.) The purpose of the baseline forecast is to demonstrate the GHG reductions achieved through State legislation over time when compared to the *adjusted* forecast. The baseline forecast is based on projected trends in population and employment over time and is consistent with local and regional projections. The baseline GHG emissions projections were calculated based on the guidance of the Association of Environmental Professionals 2012 whitepaper, Forecasting Communitywide GHG Emissions and Setting Reduction Targets. The result is a baseline forecast in which GHG emissions change over time in relation to demographics, with the assumption that GHG emissions rates and activity data will continue in the future as they did in the year of the 2018 GHG emissions inventory. This methodology is used for all GHG emissions sectors and sources included in the 2018 GHG emissions inventory except for on-road and off-road transportation. On-road vehicle GHG emissions and off-road equipment GHG emissions were alternatively projected using modeled activity data and emission factors as detailed below. A description of the demographic metrics used to project activity data and associated growth factors for each forecasted GHG emission source are provided in Table 3 and were developed based on the 2018 community GHG emissions inventory. Detailed calculations for the baseline forecast are included in Attachment A.

Table 3 Growth Metrics and Associated GHG Emissions Sectors

GHG Emissions Sector	GHG Emission Source	Associated Growth Metric	Growth Metric Data Source
Electricity	Residential GHG Emissions Sources	Households	CA Dept of Finance; RCPA Climate Action Plan 2020; Healdsburg Housing Element Update Revised Draft
	Non-Residential GHG Emissions Sources	Employment	
Natural Gas	Residential GHG Emissions Sources	Households	
	Non-Residential GHG Emissions Sources	Employment	
Stationary Sources	All GHG Emissions Sources	Service Population	
Water	All GHG Emissions Sources	Service Population	
Wastewater	All GHG Emissions Sources	Service Population	
Solid Waste	All GHG Emissions Sources	Service Population	

The baseline forecast for the Healdsburg planning area relies on the growth and demographic projections used in the RCPA Climate Action Plan 2020[2], and the CA Dept of Finance projections on

[2] RCPA Climate Action Plan accessed here: https://rcpa.ca.gov/what-we-do/climate-action-2020/

population growth[3]. These growth projections were developed prior to the approval of the most recent Regional Housing Needs Allocation (RHNA) for the 2023-2031 housing cycle. As such, the household projections obtained from the RCPA CAP were adjusted to account for Healdsburg's 2023-2031 RHNA of 476 additional households. Population projections were similarly adjusted to account for the increase in housing in Healdsburg by multiplying the adjusted household numbers by the average persons per household obtained from the RCPA CAP by projection year. Additionally, the Healdsburg Housing Element currently being drafted states that in 2018 the jobs to household ratio in Healdsburg was 1.53. Jobs in Healdsburg were projected assuming the jobs to household ratio remained consistent over time and by applying the ratio to the housing projections. Table 4 provides an overview of the growth metrics used to project GHG emissions for the forecast calculations.

Table 4 Growth Metrics for Healdsburg GHG Emissions Forecasts

Growth Metric[1]	2018	2025	2030	2035	2040	2045
Population[2]	11,976	12,025	12,746	12,882	13,018	13,127
Housing[3]	4,511	4,807	5,085	5,128	5,171	5,215
Jobs[4]	6,902	7,355	7,779	7,846	7,912	7,978
Service Population	18,878	19,380	20,525	20,727	20,930	21,105

Notes: Service Population = Population + Employment

1. Forecasted demographic data for Healdsburg is based on the RCPA Climate Action Plan 2020. Population data was provided for 2018, 2020, , 2040, and 2050. The City of Healdsburg provided 2021-2022 numbers sourced from the Department of Finance. Housing data was provided for 2015, 2020, 2040, and 2050.
2. Population has been adjusted from RCPA CAP projections to account for Healdsburg 2023-2031 RHNA by multiplying the adjusted households by the average persons per household. The average persons per household values were obtained from the RCPA CAP projections.
3. Healdsburg 2023-2031 RHNA of 476 households was added to the 2030 housing stock projections obtained from the RCPA CAP. Household numbers after 2031 were projected based on the 2020-2040 compound annual growth rate in housing stock in Healdsburg obtained from RCPA CAP.
4. Job projections are based on the household projections and the jobs to household ratio in 2018 of 1.53 obtained from the Healdsburg Housing Element currently being drafted. Jobs are counted by the place of work occurring within the jurisdiction.

The growth indicators for Healdsburg are provided in Table 5 for each GHG emissions source, excluding on-road vehicles miles traveled (VMT) and off-road fuel consumption which were modeled separately, described in more detail below.

[3] Department of Finance Demographic Estimates accessed here: https://dof.ca.gov/forecasting/demographics/estimates-e1/

Table 5 Growth Indicators for Baseline GHG Emissions Forecast

GHG Emissions Source	Activity Data	Units
Transportation		
On-Road VMT	N/A	SCTM Travel Demand Model
Off Road – Diesel	N/A	OFFROAD Model
Off Road – Gasoline	N/A	OFFROAD Model
Off Road – Natural Gas (LPG)	N/A	OFFROAD Model
Electricity		
Residential Electricity	5,804.86	kWh/Household
Non-Residential Electricity	6,868.11	kWh/Employment
Natural Gas		
Residential Natural Gas	452.46	Therms/Household
Non-Residential Natural Gas	202.73	Therms/Employment
Stationary Sources		
Other Stationary Sources	0.0063	MT CO_2e/Service Population
Water		
Indirect Electricity from Water Delivery	80.19	kWh/Service Population
Wastewater		
Direct Emissions from Wastewater Treatment	0.005	MT CO_2e/Service Population
Solid Waste		
Solid Waste Generation	0.73	Tons Landfilled/Service Population

Notes: SCTM = Sonoma County Travel Model; N/A = not applicable; MT CO2e = metric ton carbon dioxide equivalent; kWh = kilowatt-hour; MG = million gallons

On-Road Activity Data

The Sonoma County Transportation Authority (SCTA) provided the City with VMT data obtained from SCTA's transportation demand model (SCTM). The current transportation demand model uses 2019 as a baseline year and 2040 as a horizon year. The SCTA attributes all VMT from trips beginning and ending within city boundaries to the city, as well as apportions one-half of the trip distance for any trip with an origin or destination within the community. Trips that begin and end outside of the city boundary are not attributed to the community and are considered pass-through trips. On-road VMT data is not differentiated by vehicle class and is provided as daily VMT which is converted to annual VMT using the annualization factor of 347 days per year, as described in EMFAC2021 documentation. SCTA scales the VMT data to better represent real-world conditions. This is done by adjusting the VMT data using a Caltrans Highway Performance Monitoring System (HPMS) correction factor developed from HPMS data obtained for a given year. The adjusted VMT data is further adjusted to account for any Sphere-of-influence (SOI) and/or City limit shifts that occurred in a given year by multiplying the HPMS adjusted VMT by the SOI scaling factors for the year. Because the HPMS correction factor and SOI scaling factor rely on actual roadway and City limit data collected during a given inventory year, the HPMS correction factor and SOI scaling factor cannot be forecasted. As such, for the purposes of forecasting VMT that is representative of the inventory VMT data used, it was assumed that the 2018 HPMS correction factor of 1.22 and the SOI scaling factor of 0.93 will remain constant over time and the raw SCTM VMT data for 2040 was adjusted following SCTA methodology described above.

SCTA develops weighted emission factors for each speedbin using EMFAC2021 web-based model that was run in emission rate model mode for Sonoma County for each inventory year. The settings were annual average, aggregated model years, all speeds, and all fuels. To ensure that the forecasted on-road emissions data is representative of the methodology used for the inventory, the vehicle categories identified by SCTA as light duty (LDV) or heavy duty (HD) were similarly applied to allocate the total VMT to the passenger or LDV VMT and commercial or HD VMT. Further, the same approach used by SCTA to develop weighted emissions factors from EMFAC2021 data was utilized for the forecast years.

Rincon utilized EMFAC2021 to determine electric vehicle (EV) penetration percent for LDVs and HDs and the quantity of electricity anticipated. For the baseline forecast, EV penetration of 0 percent and the vehicle emission factors remained the same as in 2018. The total VMT and VMT differentiated as passenger or commercial VMT used to calculated baseline emissions is presented in Table 6.

Table 6 Healdsburg Baseline GHG Emissions Forecast On-Road Transportation Data

	2018[1]	2025[3]	2030[3]	2035[3]	2040[2]	2045[4]
Total VMT[2]	121,325,224	134,170,813	143,346,234	152,521,655	161,697,077	177,948,622
Passenger VMT[5]	116,981,432	129,509,112	138,181,316	146,748,605	155,227,390	170,353,381
Commercial VMT[5]	4,343,791	4,661,701	5,164,918	5,773,051	6,469,687	7,595,241

Notes: VMT = vehicle miles traveled; MTCO2e = metric tons carbon dioxide equivalents; LDV = light-duty vehicle; HD = heavy-duty vehicles kWh = kilowatt hour; EV = electric vehicle;

1. VMT data was provided by SCTA for 2018 as used in the 2018 inventory with the HPMS correction factor and SOI scaling factor already applied to the raw VMT data.
2. SCTA provided raw SCTM VMT data for 2040 horizon model year. The 2018 HPMS correction factor and SOI scaling factor were applied to the raw SCTM 2040 VMT to forecast the VMT in alignment with the inventory data.
3. VMT for 2025, 2030, and 2040 were linearly interpolated between the 2018 VMT data and adjusted 2040 VMT data.
4. Annual growth between the SCTM baseline year of 2019 and horizon year of 2040 was used to estimate that VMT data for 2045.
5. Total VMT was allocated to passenger and commercial vehicles using the County-wide distribution of VMT obtained from EMFAC2021. Passenger VMT included the EMFAC vehicles classes LDA, LDT1, LDT2, MDV, MH, MCY, LHD1, LHD2, T6TS, UBUS, and OBUS. Commercial VMT included all other MHDT and HHDT vehicle classes, and SBUS, Motor Coach, and All Other Buses. The classification as LDV or HV was determined by SCTA.

Off-Road Activity Data

Activity data for off-road GHG emissions forecast was modeled separately from the above growth metrics and growth indicators, using the outputs from the CARB web-based OFFROAD2021 model. The OFFROAD2021 database was queried for Sonoma County for the forecast years to obtain fuel consumption for gasoline, diesel, and natural gas. The inclusion of specific equipment sectors from the database query was determined based on their relevance to activities occurring within Healdsburg and remained consistent with previous Healdsburg inventories developed by RCPA. The following equipment sectors are included in the 2018 baseline year inventory and the GHG emissions forecast:

- Agricultural
- Airport Ground Support
- Commercial Harbor craft
- Construction and Mining
- Industrial
- Lawn and Garden
- Light Commercial
- Oil Drilling

- Pleasure Craft
- Recreational Vehicles
- Transportation Refrigeration Units

The fuel consumption results of the database query were summarized for all equipment sectors in Sonoma County. Healdsburg was allocated a percentage of county fuel consumption for each sector relative to Healdsburg's proportion of jobs, population or specific activity (i.e., agriculture or airport) in the county. Specific apportionment factors used to calculate Healdsburg fuel consumption by off-road equipment from countywide fuel consumption were obtained from the 2018 Healdsburg inventory prepared by RCPA and are based on RCPA demographic data presented in the RCPA CAP. For the purposes of forecasting, the same apportionment factors from the 2018 inventory were used for the forecasts and are provided in Table 7. GHG emissions by off-road equipment fuel type are summarized in Table 8.

Table 7 Healdsburg Off-Road Transportation Attribution Metrics

Off-road Equipment Category	Attribution (% of countywide)	Attribution Metric
Agriculture	0.36%	Agriculture Activity
Airport Ground Support	13.79%	Airport Operations
Commercial Harbor Craft	2.39%	Population
Construction and Mining	2.32%	Employment
Industrial	2.32%	Employment
Lawn and Garden	2.42%	Households
Light Commercial	2.32%	Employment
Oil Drilling	2.32%	Employment
Pleasure Craft	2.39%	Population
Recreational Vehicles	2.39%	Population
Transportation Refrigeration units	2.32%	Employment

Table 8 Healdsburg Baseline GHG Emissions Forecast Off-Road Fuel Consumption

Off-road Fuel Category	2018	2025	2030	2035	2040	2045
Diesel	120,418	141,313	150,994	156,109	161,410	166,506
Gasoline	146,795	163,183	171,905	180,306	188,831	195,626
Natural Gas	33,729	37,007	39,535	42,144	45,026	45,026

Notes: All values are of the unit gallons of fuel

Data Source: California Air Resources Board. 2021. OFFROAD2021 v1.0.3 Emissions Inventory. Available: https://arb.ca.gov/emfac/emissions-inventory/b3e3139ff7a2304c48acb2a0684ab41b38c5c26e. Accessed February 1, 2023.

Emissions Factors

The baseline GHG emissions forecast is representative of a scenario where community activities are generally similar to that of the most recent GHG emissions inventory. As previously described, the activity data for the most recent GHG inventory year of 2020 was impacted both by a wildfire at the geothermal plant impacting energy emissions and by COVID-19 which significantly changed community behaviors including energy use and transportation. As such, the 2018 GHG emission inventory was

selected to serve as the baseline for the forecast as it is considered the most recent emission inventory representative of typical conditions in the community. Baseline activity data growth is multiplied by the emissions factors used to calculate GHG emissions from the 2018 GHG emissions inventory to generate an estimate of future GHG emissions without influence from GHG reduction policies at the State or local level. The baseline GHG emissions factors for the relevant GHG emissions sources and sectors are provided in Table 9, reported in MT CO_2e.

Table 9 Baseline GHG Emissions Factors

GHG Emissions Source	GHG Emissions Factor	Units
Transportation		
On-Road[1]	0.0004206	MT CO_2e/VMT
Off Road - Diesel	0.0103	MT CO_2e/Gallons
Off Road - Gasoline	0.0089	MT CO_2e/Gallons
Off Road - Natural Gas (LPG)	0.0059	MT CO_2e/Gallons
Electricity[2]		
Weighted Residential Electricity	0.00017782	MT CO_2e/kWh
Weighted Non-Residential Electricity	0.00017776	MT CO_2e/kWh
Natural Gas		
Residential Natural Gas	0.00538	MT CO_2e/Therm
Non-Residential Natural Gas	0.00538	MT CO_2e/Therm
Stationary Sources		
Other Stationary Sources	0.00629	MT CO_2e/service person
Water		
Indirect Electricity from Water Delivery	0.0001807	MT CO_2e/kWh
Wastewater		
Direct Emissions from Wastewater Treatment	0.00536	MT CO_2e/service person
Solid Waste		
Solid Waste Generation	0.574	MT CO_2e/Tons Landfilled

Notes: NA = not applicable; VMT = vehicle miles traveled; MT CO_2e = metric ton carbon dioxide equivalent; kWh = kilowatt-hour; ADC = alternative daily cover

1. VMT data used in the 2018 inventory does not differentiate between vehicle classification so a single weighted emission factor was developed for all VMT.
2. Electricity emission factors for residential and non-residential are weighted based on the quantity of electricity consumed by each category by provider and the associated emission factor. It is assumed for the baseline forecast that the emission factors for all providers will not change from the 2018 year.

Baseline GHG Emissions Forecast Results

The following provides a summary of the results of the baseline GHG emissions forecast for each source in Healdsburg. The results have been reported in MT CO_2e. The baseline forecast projects a gradual increase in GHG emissions above the baseline 2018 GHG emissions inventory from the energy sector, water and wastewater sector, and from solid waste due to projected population growth. Emissions associated with transportation show a significant increase over time attributed to an anticipated increase in VMT for the city. Table 10 and Figure 1 provide a summary of the Healdsburg baseline GHG emissions forecast.

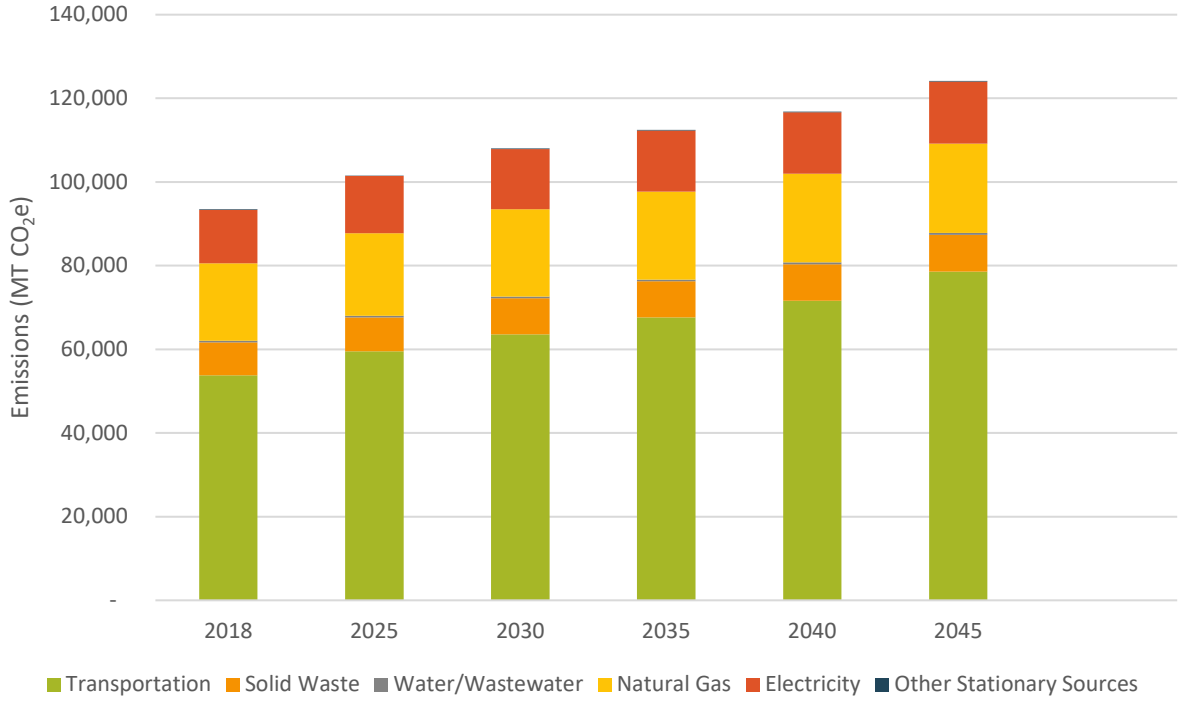
Table 10 Healdsburg Baseline GHG Emissions Forecast Summary

GHG Emissions Source	2018	2025	2030	2035	2040	2045
Transportation						
On-Road Transportation	51,033	56,436	60,295	64,155	68,014	74,850
Off Road – Transportation and Equipment	2,738	3,117	3,309	3,451	3,598	3,711
Electricity[1]						
Residential Electricity	4,657	4,962	5,248	5,293	5,338	5,383
Non-Residential Electricity	8,153	8,699	9,200	9,278	9,356	9,435
Natural Gas						
Residential Natural Gas	10,976	11,697	12,371	12,477	12,582	12,688
Non-Residential Natural Gas	7,525	8,018	8,481	8,553	8,626	8,698
Stationary Sources						
Other Stationary Sources	119	122	129	130	132	133
Water[1]						
Indirect Electricity from Water Delivery	274	281	297	300	303	306
Wastewater						
Direct Emissions from Wastewater Treatment	101	104	110	111	112	113
Solid Waste						
Solid Waste Generation	7,898	8,108	8,587	8,672	8,757	8,830
TOTAL	**93,473**	**101,544**	**108,029**	**112,421**	**116,818**	**124,145**

Notes: Values in this table may not add up to totals due to rounding. All values are of the unit metric tons of carbon dioxide equivalent (MT CO_2e)

1. The City utilities include Healdsburg Electric and water utilities, therefore indirect electricity from water conveyance is already included in the electricity sector. Emissions are shown in this table for informational purposes but to avoid double counting are not added in the overall total.

Figure 1 Healdsburg Baseline GHG Emissions Forecast (MT CO_2e) through 2045



Adjusted GHG Emissions Forecast

Several federal and State regulations have been enacted that would reduce Healdsburg's GHG emissions in 2025, 2030, 2035, 2040, and 2045. The impact of these regulations was quantified and incorporated into the adjusted forecast to project future emissions growth and the responsibility of the City and community once established State regulations have been implemented. The State legislation included in the adjusted forecast result in GHG emission reductions related to transportation, building efficiency and renewable electricity. A brief description of each regulation and the methodology used to calculate associated reductions is provided in the following, as well as a description of why specific legislation was excluded from the analysis. The following State legislation were applied to the Adjusted Forecasts based on the unique sectors within Healdsburg:

- **Title 24 Building Energy Efficiency Standards:** The California Code of Regulations Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption, which in turn reduces fossil fuel consumption and associated GHG emissions. The standards are updated triennially to allow consideration and possible incorporation of new energy-efficient technologies and methods. The 2019 Title 24 Energy Efficiency Standards have come into effect, creating significantly more efficient new building stock. The California Energy Commission (CEC) estimates that non-residential buildings will use 30 percent less energy and that residential homes would use 7 percent less energy compared with 2016 standards, which would increase to 53 percent when new residential developments must include on-site solar generation and near-zero net energy use starting in 2020. While the 2022 Title 24 Energy Efficiency Standards became effective in January 2023, the CEC has not provided specific levels of anticipated reduction in energy use associated with the recent 2022 standards. To remain conservative, the adjusted forecast only accounts for the

estimated energy savings related to 2019 Title 24 Standards. The impact of electrification will be addressed through measure development and quantification.

- **Renewable Portfolio Standard, Senate Bill 100, and Senate Bill 1020:** Established in 2002 under Senate Bill 1078, enhanced in 2015 by Senate Bill 350, and accelerated in 2018 and 2022 under Senate Bill 100 and Senate Bill 1020, respectively, California's Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, publicly owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 50 percent of total procurement by 2026 and 60 percent of total procurement by 2030. The RPS program further requires these entities to increase procurement from eligible renewables and GHG-free sources to 90 percent by 2035, 95 percent by 2040, and 100 percent of total procurement by 2045.
- **Transportation Legislation:** Major regulations incorporated into CARB's 2021 transportation model (EMFAC2021) include Advanced Clean Car Standards (LEV III, ZEV program, etc.), Senate Bill 1, and Phase 2 Federal GHG Standards. Additional reductions were calculated for the newly promulgated Innovative Clean Transit (ICT) regulations from CARB. Signed into law in 2002, AB 1493 (Pavley Standards) required vehicle manufacturers to reduce GHG emissions from new passenger vehicles and light trucks from 2009 through 2016. Regulations were adopted by CARB in 2004 and took effect in 2009 when the United States Environmental Protection Agency (USEPA) issued a waiver confirming California's right to implement the bill. The CARB anticipates that the Pavley I standard will reduce GHG emissions from new California passenger vehicles by about 30 percent in 2016, while simultaneously improving fuel efficiency and reducing motorists' costs.[4] Prior to 2012, mobile emissions regulations were implemented on a case-by-case basis for GHG and criteria pollutant emissions separately. In January 2012, CARB approved a new emissions-control program combining the control of smog, soot-causing pollutants, and GHG emissions into a single coordinated package of requirements for passenger cars and light trucks for model years 2017 through 2025. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles, Zero Emissions Vehicles, and Clean Fuels Outlet programs into a single coordinated package of requirements for model years 2017 to 2025. The new standards are anticipated to reduce GHG emissions by 34 percent in 2025.[5] Public transit GHG emissions will also be reduced in the future through the Innovative Clean Transit (ICT) regulation, which was adopted in December 2018. It requires all public transit agencies to gradually transition to a 100-percent zero-emission bus fleet by 2040. Under ICT, large transit agencies are expected to adopt Zero-Emission Bus Rollout Plans to establish a roadmap towards zero emission public transit buses.[6]

Table 11 summarizes the legislation that was applied to each sector in the adjusted forecast.

[4] CARB. Clean Car Standards – Pavley, Assembly Bill 1493. May 2013. http://www.arb.ca.gov/cc/ccms/ccms.htm
[5] CARB. Facts About the Advanced Clean Cars Program. December 2011. http://www.arb.ca.gov/msprog/zevprog/factsheets/advanced_clean_cars_eng.pdf
[6] Innovative Clean Transit. Approved August 13, 2019. https://ww2.arb.ca.gov/sites/default/files/2019-10/ictfro-Clean-Final_0.pdf?utm_medium=email&utm_source=govdelivery

Table 11 Healdsburg Adjusted GHG Emissions Forecast Sectors and Applicable Legislation

GHG Emissions Sector	GHG Emissions Source	
Transportation	On-Road Transportation	Transportation Legislation (Advanced Clean Cars Standards, Pavley Standards, Phase 2 Federal GHG Standards)
	Off Road - Diesel	None
	Off Road - Gasoline	None
	Off Road - Natural Gas (LPG)	None
Electricity[1]	Residential Electricity Consumption	Title 24 – applied to new buildings SB 100 – all electricity use
	Non-Residential Electricity Consumption	Title 24 – applied to new buildings SB 100 – all electricity use
Natural Gas	Residential Natural Gas Consumption	Title 24 – applied to new buildings
	Non-Residential Natural Gas Consumption	Title 24 – applied to new buildings[1]
Stationary Sources	Other Stationary Sources in Buildings	None
Water	Indirect Electricity Consumption from Water Delivery	SB 100
Wastewater	Direct Wastewater Treatment Emissions	None
Solid Waste	Methane Commitment of Solid Waste Generated by Community	None

1. As detailed below, though Title 24 impacts new building it is not anticipated to have a natural gas reduction impact on non-residential buildings under the 2019 Energy Efficiency Standards.

The following State legislation was not included in the emissions forecast calculations:

- **Assembly Bill 939 and 341:** In 2011, AB 341 set the target of 75 percent recycling, composting, or source reduction of solid waste by 2020 calling for the California Department of Resources Recycling and Recovery (CalRecycle) to take a Statewide approach to decreasing California's reliance on landfills. This target was an update to the former target of 50 percent waste diversion set by AB 939. As actions under AB 341 are not assigned to specific local jurisdictions, AB 939 has not been included as part of the adjusted forecast and instead measures addressing compliance with AB 939 will be included in the CMS.
- **Senate Bill 1383:** In 2016, SB 1383 established a methane emission reduction target for short-lived climate pollutants (SLCP) in various sectors of the economy. Specifically, SB 1383 establishes targets to achieve a 50 percent reduction in the level of the Statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025 (CalRecycle 2019). Additionally, SB 1383 requires a 20 percent reduction in "current" edible food disposal by 2025. Although SB 1383 has been signed into law, compliance at the jurisdiction-level is un-proven. For example, Santa Clara County, in their SB 1383 Rulemaking Overview presentation (June 20, 2018),[7] suggest that the 75 percent reduction in organics is not likely achievable under the current structure; standardized bin colors are impractical; and the general requirement is too prescriptive. As such, SB 1383 has not been included as part of the adjusted forecast. Instead measures addressing compliance with SB 1383 will be included and quantified through GHG reduction measures included in the CMS.

[7] Santa Clara County. June 20, 2018. SB 1383 Rulemaking Overview.
https://www.sccgov.org/sites/rwr/rwrc/Documents/SB%201383%20PowerPoint.pdf

GHG Reduction Legislation Calculations

The following methodology was used to calculate energy related GHG emissions reduction related to Title 24 and SB 100.

- **Title 24:** It is assumed that all growth in building energy consumption is from new construction. Accordingly, Title 24 GHG emissions reduction for natural gas and electricity are calculated as a percentage of the projected increase in energy consumption beyond the baseline 2019 GHG emissions inventory, under the baseline forecast. For projects implemented after January 1, 2020, the California Energy Commission (CEC) estimates that the 2019 standards will have the following energy consumption reduction impact:
  - 53 percent reduction beyond the 2019 baseline for residential electricity;
  - 30 percent reduction beyond the 2019 baseline for commercial electricity; and
  - 7 percent reduction beyond the 2019 baseline for residential natural gas.[8]
- **SB 100 and SB 1020:** PG&E, Direct Access[9], and Healdsburg Electric that currently provide electricity in Healdsburg are subject to SB 100 and SB 1020 requirements. GHG emissions from electricity consumption are largely determined by the emissions factor associated with the supplied electricity. Legislative GHG emissions reductions from SB 100 and SB 1020 are calculated as the difference between GHG emissions under the baseline forecast electricity and GHG emissions calculated using a SB 100/ SB 1020-adjusted GHG emissions factor for a given forecast year. An adjusted GHG emission factor is calculated for PG&E and Healdsburg Electric Standard tier by scaling the current electricity GHG emissions factor with the RPS percentage for renewable and zero-carbon electricity required for compliance with SB 100 and SB 1020. Healdsburg Electric anticipates continuing to provide approximately 30 percent of electricity from a geothermal source[10] for the Standard Rate. Therefore, for forecasting the Healdsburg Electric Standard Rate emission factor, geothermal was considered to make up 30 percent of the electricity mix for all future years, while the remaining 70 percent of electricity was scaled to meet the SB 100 and SB 1020 requirements. Because there is a small amount of emissions associated with geothermal power, Healdsburg Electric electricity will have an emission factor even as the electricity mix eliminates the fossil-fuel power sources in compliance with SB 100 and SB 1020. PG&E and Healdsburg Electric have different electricity emissions factors due to differences in their electricity delivery mix. The RPS percentages and associated GHG emissions factors used to determine the adjusted forecast electricity emissions are provided in Table 12. The RPS percentage for Healdsburg Electric's Green tier of service is 100% with geothermal serving 100% of that power.[11] As such, Healdsburg Electric Green tier emission factor is based on the most recent power content label available (i.e., 2021) and is assumed to stay constant through 2045. Note that while both Title 24 and SB 100/SB 1020 influence GHG emissions reductions in the electricity sector, double counting of these reductions is avoided by accounting for Title 24 reductions first and then accounting for reductions from SB 100 and SB 1020.

[8] California Energy Commission. 2018. 2019 Building Energy Efficiency Standards Frequently Asked Questions. Available: <https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf>. Accessed June 21, 2021.
[9] Direct Access is a retail electric service option whereby customers may purchase electricity form a competitive non-utility entity called a Energy Service Provider (ESP). Electricity service providers are required to comply with SB100.
[10] Geothermal meets the requirements of the RPS as an eligible renewable source of electricity.
[11] Due to impacts from a wildfire in 2019, the power in 2020 was primarily served by geothermal sources and supplemented with other renewable sources.

Table 12 Electricity Provider Forecasted RPS and Electricity GHG Emissions Factors

Energy Provider	2025	2030	2035	2040	2045
PG&E					
Adjusted Electricity Emission Factor (MT CO_2e/kWh)	0.0000398	0.0000340	0.0000085	0.0000042	0.0[5]
Direct Access[1]					
Electricity Emission Factor (MT CO_2e/kWh)	0.0001856	0.0001392	0.0000928	0.0000464	0.0[5]
Green Rate – Healdsburg Electric					
Adjusted Electricity Emission Factor (MT CO_2e/kWh)	0.0000449	0.0000449	0.0000449	0.0000449	0.0000449
Standard Rate – Healdsburg Electric					
Adjusted Electricity Emission Factor (MT CO_2e/kWh)	0.00015	0.000102	0.000054	0.000034	0.000013
Weighted Community Electricity Emissions Factor[2,3,4]					
Residential Adjusted Electricity Emission Factor (MT CO_2e/kWh)[1]	0.000150	0.000102	0.000054	0.000034	0.000014
Non-residential Adjusted Electricity Emission Factor (MT CO_2e/kWh)[2]	0.000149	0.000102	0.000054	0.000034	0.000014

Notes: MT CO_2e = metric tons of carbon dioxide equivalent; kWh = kilowatt hour

1. PG&E provides a small amount direct access electricity to non-residential customers. Direct access electricity emission factor based on the 2018 emission factor from the inventory and assumed to go to carbon free by 2045.
2. The Residential Weighted Electricity Emission Factor is developed based on the percent of residential electricity provided by each provider in 2018. It is assumed that the percent of residential electricity provided by each provider remains consistent over time. Based on the 2018 inventory, residential electricity was provided by the providers as follows: ~99.3% by Healdsburg Electric Standard Rate, ~ 0.7% by Healdsburg Electric Green Rate.
3. The Non-residential Weighted Electricity Emission Factor is developed based on the percent of non-residential electricity provided by each provider in 2018. It is assumed that the percent of non-residential electricity provided by each provider remains consistent over time. Based on the 2018 inventory, non-residential electricity was provided by the providers as follows:~0.1% by PG&E, <0.01% by Direct Access, ~99.3% by Healdsburg Electric Standard Rate, ~ 0.7% by Healdsburg Electric Green Rate.
4. Green Rate participation increased after 2018 when all City accounts were switched to the Green rate. The weighted factor for the overall community incorporates SB 100 and SB 1020 mandates requiring that renewable energy and zero-carbon sources supply 100 percent of retail electric sales by 2045.
5. PG&E's power content in 2021 had a large amount of electricity supply from nuclear power and relatively small amount from geothermal and biomass/biowaste. For the purposes of this forecast, the emissions factor is assumed to go to zero by 2045. It is likely that PG&E will need to incorporate eligible renewables that have a small amount of emissions associated with them to achieve RPS requirements. PG&E and Direct Access account for <1% of electricity supply in Healdsburg.

The following methodology was used to calculate transportation related GHG emissions reduction related to various State legislation.

- **Transportation Legislation:** Activity data for the adjusted forecasted on-road transportation VMT was similarly forecasted as the baseline forecast where the growth metrics were applied to the baseline growth indicators for VMT to forecast on-road VMT. Reductions in GHG emissions from the above referenced transportation standards were calculated using CARB's EMFAC2021 model for Sonoma County. The EMFAC2021 model integrates the estimated reductions into the mobile source emissions portion of the model.[12] The degree to which GHG emissions from on-road transportation

[12] Additional details are provided in CARB's EMFAC2021 Technical Documentation, March 2021. (https://ww2.arb.ca.gov/sites/default/files/2021-03/emfac2021_volume_3_technical_document.pdf). Note that the Low Carbon Fuel Standard (LCFS) regulation is excluded from EMFAC2021 because most of the emissions benefits due to the LCFS come from the production cycle (upstream emissions) of the fuel rather than the combustion cycle (tailpipe). As a result, LCFS is assumed to not have a significant impact on CO_2 emissions from EMFAC's tailpipe emission estimates.

will be reduced can be quantified as the difference between transportation emissions calculated using the 2018 provided emission factors and calculated using the reduced emission factors for the target years. In addition, passenger and commercial electric vehicle (EV) electricity consumption was calculated per forecast year based on EV penetration rates obtained from EMFAC 2021.

Passenger and commercial EV emissions from electricity consumption are subtracted from residential and commercial electricity emissions respectively in the adjusted forecast as emissions from EV charging in the forecast years are captured under the transportation sector. This emissions reallocation is labeled as an "EV adjustment" in the forecasts. The forecasted annual VMT and associated GHG emissions factors used to determine the adjusted forecast on-road emissions are provided in Table 13.

Table 13 Healdsburg Passenger On-Road Transportation Forecast

	2018	2025	2030	2035	2040	2045
Total VMT	121,325,224	134,170,813	143,346,234	152,521,655	161,697,077	177,948,622
Weighted Emission Factor (MT CO_2e/mile)	0.0004206	0.0003741	0.0003275	0.0002923	0.0002698	0.0002579
Passenger (LDV) VMT[1]	116,981,432	129,509,112	138,181,316	146,748,605	155,227,390	170,353,381
Commercial (HD) VMT[1]	4,343,791	4,661,701	5,164,918	5,773,051	6,469,687	7,595,241
% Passenger EV Penetration[2]	0.0%	5.2%	7.8%	9.9%	11.3%	12.0%
% Commercial EV Penetration[2]	0.0%	0.7%	7.1%	19.2%	29.5%	36.5%
Passenger EV (LDV) VMT	-	6,722,271	10,767,549	14,566,431	17,484,834	20,413,171
Commercial EV (HD) VMT	-	31,898	366,938	1,107,024	1,905,541	2,770,827
Passenger (LDV) Fuel Efficiency (kWh/mile)	0.343639	0.355876	0.369772	0.387224	0.401541	0.411350
Commercial (HD) Fuel Efficiency (kWh/mile)	-	1.410620	1.374296	1.355894	1.351219	1.348309
Passenger (LDV) kWh	-	2,392,298	3,981,534	5,640,468	7,020,872	8,396,950
Commercial (HD) kWh	-	44,996	504,282	1,501,008	2,574,802	3,735,932

Notes: VMT = vehicle miles traveled; MTCO2e = metric tons carbon dioxide equivalents; LDV = light-duty vehicle; HD = heavy-duty vehicles kWh = kilowatt hour; EV = electric vehicle;

1. Passenger and commercial VMT are calculated based on how SCTA assigned vehicle categories to a LDV or HD classification in emissions calculations where LDV included LDA, LDT1, LDT2, MDV, MH, MCY, LHD1, LHD2, T6IS, UBUS, and OBUS; all other vehicle classes of the EMFAC202x categorization were considered HD. This breakdown was used to estimate increased electricity usage by residential or non-residential buildings.
2. SCTA did not identify EVs as part of the VMT in the 2018 inventory, therefore it is assumed 0% penetration. EMFAC2021 was used to estimate % EV penetration for forecast years based on the vehicle classifications defined by SCTA.

Adjusted GHG Emissions Forecast Results

Compliance with State legislation is expected to result in GHG emissions reduction from the baseline GHG Emissions Forecast in the transportation and energy sectors for residential and non-residential activities. Compliance with the Pavley regulation, which requires automakers to control GHG emission from new passenger vehicles for the 2009 through 2016 model years, and the Advanced Clean Car Program, which combines the control of smog-causing (criteria) pollutants and GHG emissions into a

single package of regulations including the LEV regulations[13], are expected to reduce GHG emissions from transportation. Emissions associated with heavy-duty trucks and transit buses are also anticipated to be reduced through the Advanced Clean Trucks Regulation and Innovative Clean Transit, respectively. Compliance with Title 24 requirements are expected to reduce GHG emissions from reduced electricity and natural gas consumption in new buildings. Compliance with SB 100 requirements are expected to further reduce GHG emissions associated with the electricity sector by driving GHG emissions associated with electricity to zero by 2045. SB 100 is also anticipated to reduced indirect electricity emissions associated with water and wastewater conveyance and treatment. A detailed summary of the projected GHG emissions under the adjusted forecast by sector and year through 2045 can be found in Table 14 .

Table 14 Healdsburg Adjusted GHG Emissions Forecast Detail

GHG Emissions Source	2018	2025	2030	2035	2040	2045
Transportation						
On-Road Transportation	51,033	50,194	46,951	44,583	43,631	45,897
Off Road – Transportation and Equipment	2,738	3,117	3,309	3,451	3,598	3,711
Electricity[1]						
Residential Electricity	4,657	4,394	3,233	1,817	1,189	499
Non-Residential Electricity	8,153	7,346	5,234	2,822	1,785	694
Natural Gas						
Residential Natural Gas	10,976	11,646	12,274	12,372	12,470	12,568
Non-Residential Natural Gas	7,525	8,018	8,481	8,553	8,626	8,698
Stationary Sources						
Stationary Sources	119	122	129	130	132	133
Water[2,3]						
Indirect Electricity from Water Delivery	274	70	74	75	75	76
Wastewater						
Direct Emissions from Wastewater Treatment	101	104	110	111	112	113
Solid Waste						
Solid Waste Generation	7,898	8,108	8,587	8,672	8,757	8,830
TOTAL	**93,473**	**93,120**	**88,381**	**82,586**	**80,374**	**81,219**

Notes: Values in this table may not add up to totals due to rounding. All values are of the unit metric tons of carbon dioxide equivalent (MT CO_2e)

1. Electricity associated with EV charging due to EV penetration over the 2018 inventory year is added to the building energy sector in the adjusted forecast.
2. The City utilities include Healdsburg Electric and water utilities, therefore indirect electricity from water conveyance is already included in the electricity sector. Emissions are shown in this table for informational purposes but to avoid double counting are not added in the overall total.
3. The City indicated that starting in late 2018, the City switched all accounts to use all Green Rate electricity including water conveyance.

[13] The LEV III regulations adopted in 2012 increase emissions standards on GHG for new passenger vehicles through 2025 model year.

Figure 2 presents the GHG emissions trends in terms of MT CO_2e for the Adjusted forecast. Adjusted forecast emissions trend downward over time through 2045 with the decrease becoming more gradual between 2035 and 2045.

Figure 2 Healdsburg Adjusted GHG Emissions Forecast (MT CO_2e) through 2045

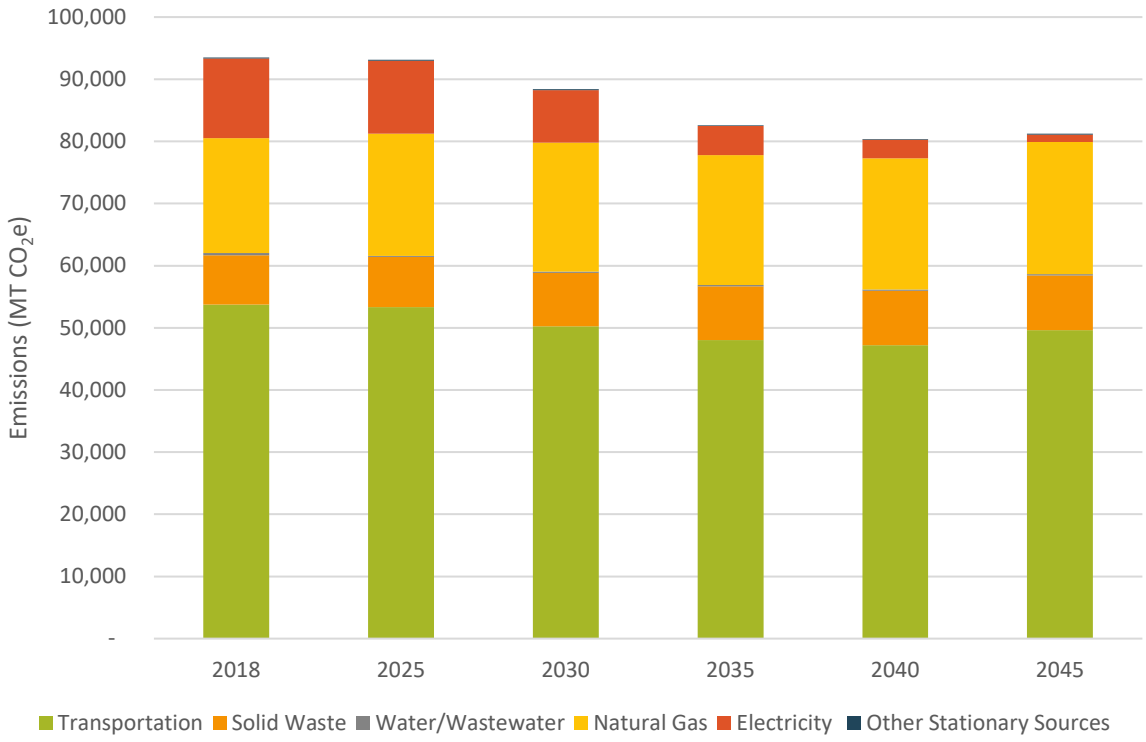


Table 15 provides the results summary of the GHG emissions forecast for Healdsburg, including the Baseline GHG Emissions Forecast, the Adjusted GHG Forecast, and the expected percentage GHG emissions reduction based on compliance with State GHG legislation.

Table 15 Healdsburg GHG Emissions Forecast Results Summary

	2018	2025	2030	2035	2040	2045
Baseline Forecast	93,473	101,544	108,029	112,421	116,818	124,145
Transportation Reductions	0	6,242	13,345	19,572	24,383	28,953
Title 24 Reductions	0	378	733	788	843	899
SB 100/SB 1020 Reductions	0	1,804	5,571	9,475	11,217	13,075
Legislative Adjusted Forecast	93,473	93,120	88,381	82,586	80,374	81,219
Percent Reduction in GHG Emissions from Legislation	0.0%	8.3%	18.2%	26.5%	31.2%	34.6%

SB = Senate Bill; GHG = greenhouse gas

Healdsburg GHG Emissions Targets

GHG reduction targets are used to establish measurable metrics intended to guide the community's commitment to achieve GHG emissions reduction and help gauge progress with reducing emissions over time. GHG targets are developed relative to a baseline emissions level. California has established Statewide GHG reduction goals for 2030 and 2045. The State has encouraged communities to adopt their own plans consistent with these goals in the CARB 2022 Scoping Plan. Thus, local agencies are recommended to establish at a minimum, equivalent reduction targets at the local level by establishing community wide GHG reduction goals for climate action that will help California achieve its 2030 and 2045 GHG emissions goals.

GHG reduction targets can be set as either an efficiency target (MT CO_2e per capita) or as a community-wide mass emissions target (total MT CO_2e). In CARB's 2017 Scoping Plan Update, efficiency metrics were identified as potential local targets to normalize population changes and not penalize cities which are growing at significant rates.[14] Within this section, targets are discussed in terms of absolute or mass emissions (MT CO_2e) and per capita emissions (MT CO_2e per person).

Healdsburg GHG Emissions Targets for 2030 and 2045

As the State is continuously setting new GHG emission targets, this allows Healdsburg to choose a variety of GHG emission targets to include in their CMS. These targets include:

- State-mandated target for a CEQA qualified Climate Action Plan (SB 32 Minimum Target)
  - Senate Bill (SB) 32/Assembly Bill (AB) 1279 – 40% below 1990 emissions level by 2030, carbon neutrality by 2045. The State-mandated target (or SB 32 minimum) requires a clear plan to reach the 2030 target of 40% below 1990 levels, and a pathway toward carbon neutrality by 2045. AB 1279 requires the reduction in GHG emissions by 85% below 1990 levels by 2045. The remaining 15% of emissions would be removed via carbon removal technology or natural working lands.
- Regional Aspirational targets
  - Carbon-neutrality by 2030. This target represents the most ambitious target that the RCPA has set for Sonoma County. This target also exceeds Governor Newsom's recent direction to CARB to explore feasibility of carbon neutrality by 2035. Achieving this target entails an 80% reduction in emissions from 1990 levels coupled with carbon sequestration to meet the remaining 20% of emissions removal to achieve carbon neutrality by 2030.

With GHG emission reduction targets in place, the reduction gap that Healdsburg will be responsible for through local action can be calculated. The CMS will assess the GHG emissions reduction gap based on the difference between the *legislative* adjusted GHG emissions forecast and the State and Regional GHG reduction targets.

There are two methodologies for calculating the minimum GHG emissions reductions the city will have to monitor to stay on track for supporting these goals. The City could choose to adopt mass emission or per capita targets. Mass emission targets describe emissions in terms of total MT CO_2e without any adjustment for population growth. The 2017 California Climate Change Scoping Plan Update includes guidance that details the methodology and benefits of developing per capita targets. The key benefit of a per capita target is that it corrects for population growth, as the target does not become more difficult

[14] California Air Resources Board. 2017. California's Climate Change Scoping Plan, p. 99-102.

to reach if the City grows faster than projected. Per capita emissions targets are developed by dividing the emissions in each target year by the forecasted population. Mass and per capita emissions targets for each of the potential targets listed above (i.e., state-mandated SB 32/AB 1279 target and RCPA target) are summarized below in Table 16.

Table 16 Summary of Healdsburg GHG Emission Reduction Targets and Gap Analysis

Metric	2025	2030[2]	2035	2040	2045[2]
Population[1]	12,025	12,746	12,882	13,018	13,127
Mass Emissions Adjusted Forecast (MT CO_2e)	93,120	88,381	82,586	80,374	81,219
Per Capita Adjusted Forecast (MT CO_2e per capita)	7.7	6.9	6.4	6.2	6.2
State Emissions Target and Gap					
State Mass Emissions Target (Pathway) (MT CO_2e)	71,339	55,530	37,020	18,510	0.0
Remaining Emissions Gap from State targets (MT CO_2e)	21,781	32,851	45,566	61,865	81,219
Per Capita State Targets (MT CO_2e per capita)	6.7	5.9	3.9	2.0	0.0
State Efficiency Emissions Target (Pathway) (MT CO_2e)	80,240	74,746	50,362	25,447	-
Remaining Emissions Gap from State targets (MT CO_2e)	12,881	13,636	32,224	54,927	81,219
RCPA Emissions Target and Gap[2]					
RCPA Mass Emissions Target (Pathway) (MT CO_2e)	49,744	0.0	0.0	0.0	0.0
Remaining Emissions Gap from RCPA targets (MT CO_2e)	43,376	88,381	82,586	80,374	81,219
Per Capita RCPA Targets (MT CO_2e per capita)	4.4	0.0	0.0	0.0	0.0
RCPA Efficiency Emissions Target (Pathway) (MT CO_2e)	52,816	0.0	0.0	0.0	0.0
Remaining Emissions Gap from RCPA targets (MT CO_2e)	40,304	88,381	82,586	80,374	81,219

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; N/A = not applicable

Emissions have been rounded to the nearest whole number and therefore sums may not match.

1. Population projections for the GHG inventories (1990,2010, 2015, 2018) and forecasted population projections obtained from CA Dept of Finance, RCPA Climate Action Plan 2020.
2. The RCPA has set a target to exceed the states target by reaching carbon neutrality by 2030 and urges cities within Sonoma County to adopt a similar target.

Table 17 provides further detail on the portion of the total emissions gap that would need to come from direct emission reductions that the city would achieve through local actions to align with the emission reduction targets. The difference between the total emissions gap and the direct emission reductions is the emission removals that would need to be achieved through carbon sequestration or other carbon removal technologies to reach carbon neutrality.

Table 17 GHG Emission Reduction versus Emission Removal Targets

Metric	2025	2030[2]	2035	2040	2045[2]
State Emissions Target and Gap – Mass Emissions Target Pathway					
Emissions Gap from State targets (MT CO_2e)[1]	21,781	32,851	45,566	61,865	81,219
Direct Emission Reductions (MT CO_2e)[2]	21,781	32,851	40,939	52,610	67,336
Emission Removals (MT CO_2e)[2]	0.0	0.0	4,627	9,255	13,882
State Emissions Target and Gap – Efficiency Emissions Target Pathway					
Emissions Gap from State targets (MT CO_2e)[1]	12,881	13,636	32,224	54,927	81,219
Direct Emission Reductions (MT CO_2e)[2]	12,881	13,636	25,928	42,204	61,974
Emission Removals (MT CO_2e)[2]	0.0	0.0	6,295	12,724	19,245
RCPA Emissions Target and Gap - Mass Emissions Target Pathway					
Emissions Gap from RCPA targets (MT CO_2e)[1]	43,376	88,381	82,586	80,374	81,219
Direct Emission Reductions (MT CO_2e)[2]	43,376	69,871	65,619	64,950	67,336
Emission Removals (MT CO_2e)[2]	0.0	18,510	16,967	15,425	13,882
RCPA Emissions Target and Gap – Efficiency Emissions Target Pathway					
Emissions Gap from RCPA targets (MT CO_2e)[1]	40,304	88,381	82,586	80,374	81,219
Direct Emission Reductions (MT CO_2e)[2]	40,304	63,466	59,503	59,168	61,974
Emission Removals (MT CO_2e)[2]	0.0	24,915	23,083	21,206	19,245

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; N/A = not applicable

Emissions have been rounded to the nearest whole number and therefore sums may not match.

1. Obtained from Table 16.
2. The targets specify the percent of the carbon neutrality goal that would be achieved through direct emission reductions versus carbon removals via carbon sequestration or other carbon removal technology.

Figure 3 presents the gap the city will be responsible for to meet the State's SB 32/AB 1279 emissions reduction targets of 60% and 85% emission reductions from 1990 levels in 2030 and 2045, respectively. The graph also shows the anticipated level of carbon removals that would be needed to achieve carbon neutrality by 2045 in alignment with AB 1279. Figure 4 presents the gap the city would need to meet to achieve the RCPA target of carbon neutrality by 2030 through an 80% reduction in emissions from 1990 levels coupled with 20% of carbon removals. The targets are shown as mass emissions and as efficiency targets converted to mass emissions.

Figure 3 GHG Emissions Gap Analysis for State Targets

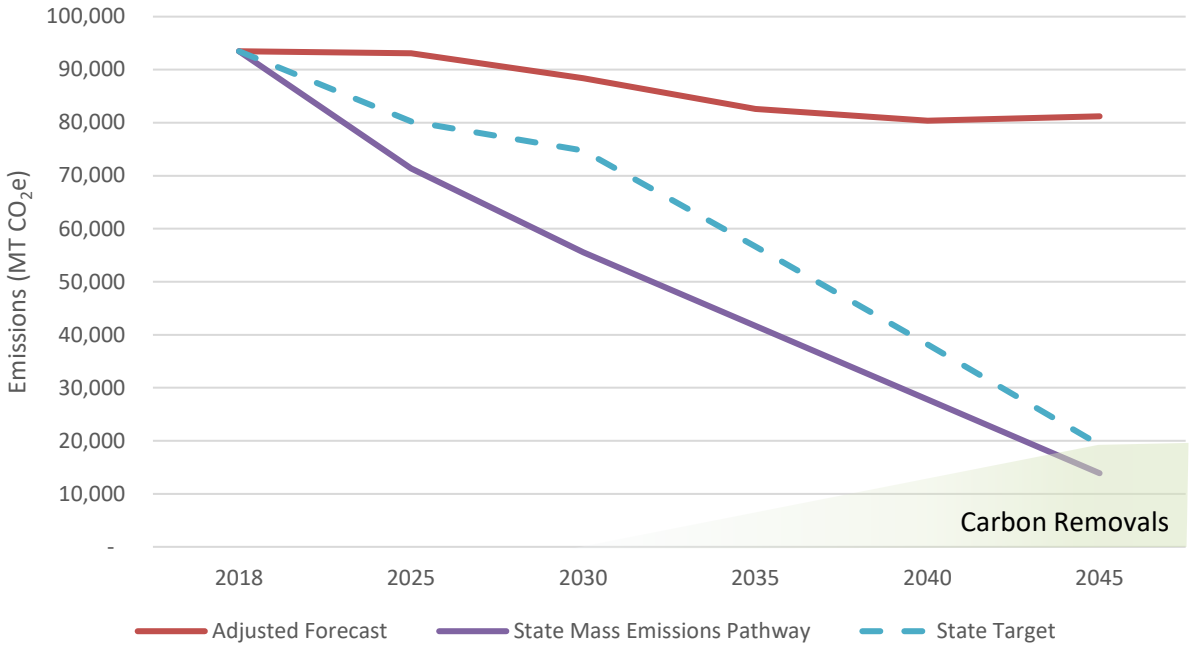
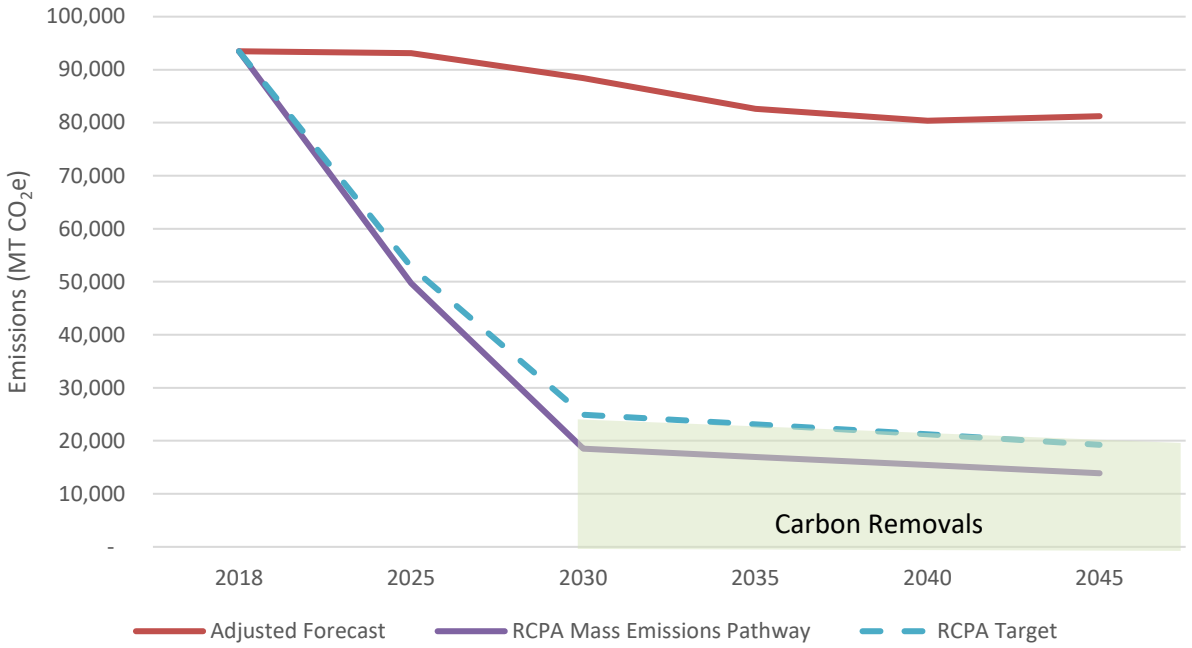


Figure 4 GHG Emissions Gap Analysis for RCPA Targets



Plan to Meet the Targets

The 2030 and 2045 targets identified above would be achieved through a combination of existing California measures and implementation of local measures identified in the Healdsburg CMS. Local measures will be identified through a comprehensive assessment of existing local and regional policies, programs, actions, and community ideas and by assessing any gaps and identifying additional opportunities. Additional measures will be developed from best practices of other similar and neighboring jurisdictions, as well as those recommended by organizations and agencies, such as the California Air Pollution Control Officers Association (CAPCOA), the Office of Planning and Research, CARB's 2022 Scoping Plan, and Association of Environmental Professionals (AEP). Measures will be vetted by City staff, interested parties, and the community and the top measures will be quantified to identify their overall contribution to the City's 2030 and 2045 GHG reduction targets in the Healdsburg CMS.

Appendix B

Cost of Implementation

Cost of Implementation

In coordination with Rincon Consultants, Inc. (Rincon) and the community of Healdsburg, the City of Healdsburg is developing a Climate Mobilization Strategy (CMS) that identifies specific Measures and Actions designed to help reduce greenhouse gas (GHG) emissions within the City. Making progress towards GHG reduction goals will require strategic investments into many City and community elements including infrastructure and technology systems and policies and programs to influence behavior change on the part of the community. To develop transparency around the prioritization of these investments, Rincon has assembled this cost of implementation assessment. This document includes a preliminary estimate of implementation cost for 15 specific Actions as well as qualitatively details the costs associated with each action and the implementation of each of the 18 Measures as a whole. City staff also provided rough cost estimates for moderate and high-cost actions.

Climate action and sustainability plans exhibit variability in implementation costs depending on the specific Measures identified, their level of effort, time of replacement, alternative costs, and the accompanying funding and financing strategies. For example, costs may vary from capital-intensive investments like the installation of bike infrastructure to encourage alternative means of transportation to less capital-intensive, but more staff-intensive investments related to outreach and education campaigns for increased organic waste diversion. The intent of this assessment is to distill these variable considerations into a document that provides a description of the potential costs on an order of magnitude, where they will be born, and the primary variables that affect each Measure and Action to help the City prioritize Measure implementation and best work towards GHG reductions. It is important to note that lifespan and accuracy of all cost estimates are limited by external changes or differences related to variables such as market pressures, inflation, fee structure, technological innovation, etc. Thus, the cost estimates presented herein are limited to the information available and reviewed at the time of this document's preparation and all interpretation and decisions made with this information must be constrained by these and other limitations.

Cost Considerations

Variability in implementation costs depends on the goals identified within Measures, their level of specificity, and the accompanying funding and financing strategies. This assessment considers several types of cost when assessing each Measure and Action. First, this assessment considers internal and external costs. Internal costs are those felt by the City (aka. municipal costs) while external costs are those felt by the residents and businesses (aka. community costs). Second, the assessment considers upfront and lifecycle costs. Upfront costs include the costs associated with purchasing and installing an item. Lifecycle costs include the costs associated with purchasing and installing the item along with operating, maintaining, and disposing of that item. Lastly, the assessment considers comparative costs. This cost represents the difference in cost between an item and a similar item. Costs can include monetary costs, such as purchases and investments, and less tangible costs such as staff and community time.

These costs have been broken down into four categories presented in Table 1.

Table 1 Cost Categories

Cost Category	City	Community
No-Cost	Goals associated with operational changes that do not include new upfront costs or result in zero lifecycle costs. ▪ Continuing existing programs	Goals associated with changes that do not include new upfront costs or result in zero lifecycle costs. ▪ Switching transportation modes from single occupancy vehicles to active transportation.
Low-Cost	Goals associated with low upfront costs and will only require staff time to implement, such as: ▪ Developing partnerships ▪ Policy Updates ▪ Community Outreach	Goals associated with low upfront costs compared to existing alternatives, such as: ▪ Additional energy bill costs for renewable energy compared to fossil fuel-based energy
Moderate-Cost	Goals associated with moderate upfront costs to the City and require moderate capital costs or consultant time along with staff time, such as: ▪ Feasibility Studies ▪ Incentive and Compliance Programs ▪ Pilot Projects	Goals associated with moderate upfront costs that are not comparable to existing costs nor are offset over lifetime, such as: ▪ New fees from utilities or city taxes ▪ Upfront costs partially offset by rebate opportunities
High-Cost	Goals associated with high upfront costs and require substantial investments into infrastructure and technology system upgrades, such as: ▪ Bike Lanes ▪ Energy Storage Systems ▪ EV Charging Networks	Goals associated with high upfront costs that are not comparable to existing cost nor are offset over lifetime, such as: ▪ New electric vehicle purchase prior to existing vehicle replacement

As part of this assessment, Rincon provided an in depth analysis of cost for 15 specific Actions selected by the City. To provide a more complete estimate of implementation of these specific actions, Rincon collected and analyzed cost data for each of the designated Actions using the following expenditure categories: capital cost, municipal staffing, consultants, and supply and materials. Capital expenditures for a municipality include upfront costs, like installation or infrastructure development, and lifecycle costs, such as operation and maintenance. Capital cost estimates presented herein were obtained from various sources including technical studies, analysis of current markets, information on expenditures provided by the City, as well as information regarding expenditures obtained from other similar cities or projects. Staffing represents the personnel costs by City staff to implement the action and are calculated using the current City of Healdsburg Master Fee Schedule and based on the estimated hours a given staff position would be required to implement the action.[1] The city has a limited staff to implement the CMS so there will likely be a need to rely on vendors and consultants to complete some of the actions. The consultant expenditure category captures the cost to hire a consultant to implement various actions, such as developing an ordinance and conducting a feasibility study. Costs for consultants and vendors were developed based on Rincon's experience conducting these activities and the fee schedule as well as consultant and vendor fees documented by both the City of Healdsburg and other similar California cities. Finally, many actions require materials and supplies to support implementation such as brochures or meeting materials for outreach activities which are estimated based on the City of Healdsburg Master Fee Schedule and our experience of the level of materials and supplies required. It is important to note that determining cost for infrastructure relies heavily on specifics that are

[1] https://healdsburg.gov/DocumentCenter/View/15274/Master-Fee-Schedule-FY-2022-2023

often determined during a feasibility study and during the planning phase. When possible, ranges or annual budgets related to infrastructure changes have been included, however in many cases it is not yet possible to provide a quantitative evaluation of future infrastructure that has not yet been determined. Additionally, it should be noted that while there are a number of grants, rebates, loans, and financing opportunities available to fund or partially fund many of the actions listed, the funds available is also variable and therefore cost estimates related to amounts available by grants or other financing options have not been included in this assessment.

Table 2 presents the municipal cost analysis for each action in the CMS. It includes a preliminary cost estimate (i.e., quantitative estimates) for the 15 actions selected by the City, as well as, a qualitative cost evaluation and categorization for all other actions, denoted by grey shading in the table below.[2] Additional rough cost estimates for City costs were estimated by City staff and are include in italics. Table 3 presents the community cost analysis for each measure in the CMS. It includes a qualitative cost evaluation and categorization for each measure and a quantitative cost estimate when data was available. Unless otherwise noted, all cost estimates are for a one-time expenditure. If a cost is anticipated to be ongoing, the estimated cost and time frame (i.e., annually) are included in the cost estimate.

[2] Actions that were not analyzed quantitatively and only received a qualitative cost analysis are denoted in Table 2 with grey shading.

Table 2 Cost to City for GHG Emissions Reduction Measures and Actions

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
Measure BE-1 Procure 85% of electricity from renewable and zero-carbon sources by 2030 and 100% renewable and carbon-free no later than 2045. (2,171 MT CO_2e reduction)				
BE-1.1	Conduct electrification infrastructure and capacity feasibility studies. This would include: ▪ Develop a long-range community-wide electric energy and demand forecast to estimate future usage and peak demands due to adoption rates of building and transportation electrification. Use the forecast to help inform the amount of new energy sources and system capacity improvements required. ▪ Formalize the City's electric department long-range (ten-year) electric capital improvement plan with consideration for necessary infrastructure improvements to meet future demands. ▪ Using the developed long-range energy and demand forecast, formalize a pathway (resource-plan) to meet the City's energy needs and list of potential resources through 2045. Generation Resources may include a combination of local and remote generation sites as well as energy storage. ▪ Prioritize and schedule projects for implementation. The energy forecast study and formalized plans should identify barriers for implementation of priority projects, as well as identify funding sources, impacts on rates, and partnerships needed for successful implementation.	Moderate	▪ Consultant time to conduct electrification feasibility and capacity study (moderate) ▪ Staff time [estimated 400 hrs] to support feasibility and capacity study research (moderate)	▪ Consultant [$180,000 - $400,000] ▪ Staff [$70,000 - $100,000] ▪ **Total [$250,000 - $500,000]**
BE-1.2	Develop a resolution that Healdsburg Electric will exceed the requirements of SB 100 and SB 1020 by 2030 where 85% of the electricity mix is sourced from a combination of eligible renewable sources and/or carbon-free sources. As part of this resolution include actions of: 1. In setting the target establish valuation rankings for various generation types and projects. 2. Consider the reliability and cost benefits of energy storage and/or demand response by 2030 3. Continue to offer 100% renewable Green Rate with consideration that both the Standard and Green rates will reach	Low	▪ Staff time [estimated 240 hrs] to conduct research, collect data to develop resolution, gain community input, and develop staff reports and presentations for resolution adoption (low)	▪ Staff [$38,000]

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
	the SB 100 goal of 100% renewable and carbon-free energy by 2045. 4. Indicate that geothermal and other low-carbon eligible renewables will continue to be included in the overall electricity mix.			
BE-1.3	Work with Lodi Energy Center (LEC) project participants to continue to advocate for and support the Department of Energy grant application to fund the LEC hydrogen-electrolyzer project. Identify and pursue other possible incentives or funding to transition facility to green hydrogen. This will reduce emissions of Healdsburg Electric electricity and increase reliability of the electricity source.	Low	▪ Staff time to support the grant application preparation (low)	Not quantified
BE-1.4	Work with community groups, local organizations, and NCPA to: ▪ Engage with community to advertise/highlight the adoption of the resolution establishing the goal of achieving 85% renewable and/or carbon-free electricity by 2030 and 100% renewable and/or carbon-free no later than 2045. Provide information on the process for providing reliable electricity 24/7 year around and the importance of power sources to ensure the reliability of the electricity provided. ▪ Provide information to the community on the importance of achieving this goal and how to meet this goal through city and community actions and involvement. This may include information on the benefits of local generation of renewable energy versus purchasing of Renewable Energy Certificates (RECs) to promote community installation and use of solar and battery storage to better achieve local carbon-free electricity community wide. ▪ Implement a software solution for residents and businesses to view electric consumption data in near real time. ▪ Include information on time of energy use as it factors into carbon intensity and how community members can capitalize on using electricity when it has the lowest carbon intensity (e.g., when to charge electric vehicles and when to run space heating and cooling). Work with industry experts to help with demand response planning, developing strategies to increase flexibility of the grid, and for informing consumers of carbon	Low	▪ Staff time to develop partnerships and perform outreach, engagement, and education (low) ▪ Materials and supplies for outreach, engagement and education events (low)	Not quantified

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
	intensity of the electricity they are using to promote behavior change.			
BE-1.5	Partner with community organizations to ensure low/moderate income households are aware of the CARE and State's HEAP program to receive decreased electricity rates and provide technical assistance.	Low	▪ Staff time to develop partnerships and perform outreach and education (low)	Not quantified
Measure BE-2 Continue to adopt an Electrification Reach Code for all new residential and commercial buildings with each triannual code cycle. Consider updating electrification ordinance to eliminate natural gas consumption in new construction for the 2025 California Building Standards Code and moving forward. (883 MT CO_2e reduction)				
BE-2.1	Continue to enforce the Electrification Reach Code for the 2022 California Building Standards Code requiring electric space and water heating in new construction.	No-cost	▪ Continue staff time to enforce code (no new cost)	Not quantified
BE-2.2	In 2025 and every 3-years thereafter if not included within State building codes, revisit the building electrification ordinance to update the scope. As part of ordinance update, consider the following scope changes: 1. Minimize the exemptions associated with the ordinance, while allowing for health and safety exemptions as necessary and exploring potential exemptions for specific use cases determined to have substantial economic development or business impacts. 2. Continue to require the submittal of an infeasibility waiver to review specific end uses where electrification is technologically infeasible. 3. Require that any end-use deemed infeasible for electrification exceed existing Title 24 energy efficiency standards and be electric ready for future electrification. 4. Establish a zero NOx threshold. 5. Specify that affordable housing developments will be all-electric to ensure no stranded assets. 6. Revisit substantial remodel and improvement definitions to be included in the ordinance.	Low	▪ Staff time to update ordinance (low)	Not quantified

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
BE-2.3	Engage with the community, key stakeholders, and local-based community organization representing vulnerable communities to raise awareness about building electrification before revising the electrification ordinance. Emphasize the economic and environmental advantages of electrification and address concerns related to emergency response to minimize exceptions. Publicize the cost savings, environmental benefits, and flexibility of electrification through the City website and permit counters, targeting builders, property owners, and contractors.	Low	▪ Staff time to conduct outreach and education (low) ▪ Materials and supplies for outreach and engagement (low)	Not quantified
BE-2.4	Engage with interested parties, both internal interested parties, such as City staff and officials, and external interested parties, such as local developers and community groups regarding the purpose and impact of the Healdsburg Electrification Reach Code and to identify and address equity concerns in policy implementation.	Low	▪ Staff time to conduct outreach and education (low) ▪ Materials and supplies for outreach and engagement (low)	Not quantified
BE-2.5	Engage with affordable housing developers to leverage incentives for new all-electric and efficient low-income residential buildings through the California Energy Commission Building Initiative for Low-Emissions Development (BUILD) Program and the Affordable Housing and Sustainable Communities (AHSC) Program. Regularly investigate and leverage other incentive programs available for electrification of new buildings.	Low	▪ Staff time to conduct outreach and education, and research existing incentive programs to promote (low) ▪ Materials and supplies for outreach and engagement (low)	Not quantified
Measure BE-3 Decarbonize residential building stock by 8% by 2030. (812 MT CO_2e reduction)				
Removed from Final Plan	Assess the feasibility and cost for electrification retrofitting as well as identify potential equity concerns/impacts. Identify the appropriate project threshold to require electric upgrades in order to electrify 10% of existing residential buildings by 2030. Establish the funding and financing requirements necessary to support the community in this transition.	Moderate	▪ Consultant time to conduct feasibility, cost, capacity and equity analysis (moderate) ▪ Staff time [estimated 100 hrs] to work with consultant in analysis, develop partnerships and working groups, and perform engagement (moderate) ▪ Materials for community engagement activities (low)	▪ Consultant [$50,000 - $100,000] ▪ Staff [$20,000 - $30,000] ▪ Materials & Supplies [$1,000 - $10,000] ▪ **Total [$71,000 - $140,000]**

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
Removed from Final Plan	Continue to monitor the 9th circuit court of appeals of the CRA vs City of Berkeley ruling. Once electrification costs and funding/financing options are identified, develop an-electric-preferred reach code for existing residential buildings during the next building code cycle to be implemented through the building code for projects that are valued at $250,000 or greater. Include the following aspects in the code development: 1. If necessary, modify the reach code such that it satisfies the federal Energy Policy and Conservation Act's (EPCA) seven criteria for an exemption from preemption. 2. Establish a zero-NOx standards for replacement appliances. 3. Establish a time of renovation energy efficiency performance requirement and electrification requirement that includes a checklist of cost-effective efficiency and electrification options for renovations to be completed based on scale of project.	Low	▪ Staff and/or consultant time required to monitor the ruling and develop the mandatory requirements within the building code (low) ▪ Staff time required for adoption of requirement (low)	▪ Consultant [$25,000 - $60,000] ▪ Staff [$10,000 - $20,000] ▪ **Total [$35,000 - $80,000]**
BE-3.1	Align with SB 379 to implement an online, automated permitting platform. As part of a comprehensive permitting compliance program, include routine training of City staff, dedicating City staff time to building inspections, charging fees for noncompliance, providing easy-to-understand compliance checklists online and with permit applications, and facilitating expedited permitting online, including solar and battery storage.	Low	▪ Ongoing staff time to review projects and implement compliance program (low) ▪ Grant received and in progress for online permitting	▪ Staff [$12,000 - $15,000 annually]
BE-3.2	As allowed by the law, continue to provide incentives available for community members installing solar and battery storage to their homes such as a Net Metering Program with high-compensation NEM rates, and continue to provide incentives for energy efficiency and efficient electrification upgrades, as well as promote other funding and incentive opportunities available through the State and Federal government. Provide resource information to the community through websites, workshops, and partnerships. Include outreach to newly sold homes, when homeowners are more likely to make upgrades.	Moderate	▪ Staff time [estimated 200 hrs] for program expansion to include outreach to newly sold homes (low) ▪ Consultant time for outreach activities, develop outreach tool-kit, and website upkeep (low) ▪ Materials and supplies to provide to community (e.g., brochures) (low) ▪ Incentives and rebates to offset home or property owner costs (moderate)	▪ Staff time [$20,000 - $35,000] ▪ Consultant [$30,000 - $50,000] ▪ Materials and Supplies [$2,000 - $5,000] ▪ Incentives and Rebates [$200,000 - $300,000 annually] ▪ NEM Compensation [$0.0888 per kWh net-generation] ▪ **Total [$252,000 - $390,000]**

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
			▪ Net Energy Metering compensation for excess electricity generation (moderate)	
BE-3.3	Review incentives, rebates, and financing options for procedural equity and ensure that existing and updated incentive programs are being equitably distributed to the community. Develop a suite of Equity Guardrails with input from the community to ensure existing building electrification improves equity in the community.	Low	▪ Staff and/or consultant time to conduct outreach and engagement and develop equity metrics (low) ▪ Staff and/or consultant time to regularly review and update existing incentives (low)	Not quantified
BE-3.4	Develop an appliance direct install program for Multi-Family income-restricted properties. Consider implementing a Neighborhood Retrofit Program to improve resiliency in residential buildings (i.e., on-site power generation and storage, weatherization, cooling, etc.), with an emphasis on connecting incentives and resources with rental property owners and low-income residents. Partner with community organizations to utilize existing resources.	Moderate to High	▪ Staff or consultant time to develop and launch program, conduct outreach, develop partnerships, and coordinate implementation (moderate) ▪ Vendor cost to provide appliances and direct install services (moderate to high) ▪ Materials and supplies for outreach activities (low) ▪ Other incentives and rebates included in BE-3.5	▪ Staff/consultant [$100,000 – $200,000 annually][3] ▪ Vendor [up to $2,500,000][3] ▪ Materials and Supplies [$2,000 - $10,000 annually] ▪ **Total [$2,600,000 – 2,710,000]** ▪ Proposed Budget [$500,000 annually][4]

[3] Estimates on program obtained from March 2023 Staff Report regarding program implementation.

[4] The City receives about $500k annually from the Cap & Trade program for GHG reduction programs such as energy rebates, EV charging, etc. Using the funds on this specific Action would limit funds for other programs. The budget is included herein to provide context for potential funds reduced from other programs if this Action is implemented.

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
BE-3.5	Once feasibility studies and cost analysis are completed, dedicate staff time or funding of consultants to pursue funds through CARB, the Investment Reduction Act, and the Infrastructure Investment and Jobs Act including, but not limited to: 1. DOE block grants 2. Green bonds 3. Grant Anticipation Notes or Short-Term Loans 4. Tax exempt lease purchases 5. Energy as a service 6. Energy Performance Contracting from Energy Service Companies (ESCOs)	Low	▪ Staff time to determine program needs (low) ▪ Staff time to prepare funding applications (low)	Not quantified
BE-3.6	Continue to conduct periodic energy efficiency rebates reviews. Promote existing available rebates and incentives for energy efficiency and electrification from Healdsburg Electric, the State, and the Federal government through partnership with community groups to educate the community on ways to finance electrification.	Low	▪ Staff time to review rebates and conduct community outreach (low)	Not quantified
Measure BE-4 Decarbonize non-residential building stock by 5% by 2030. (314 MT CO_2e reduction)				
Removed from Final Plan	Identify non-residential building electrification barriers and analysis supporting future adoption of a non-residential building electric-preferred reach code. Assess the cost range for electrification retrofitting for different industries. Identify the appropriate project threshold to require electric upgrade in order to electrify 10% of existing non-residential buildings by 2030.	Moderate	▪ Staff and consultant time to conduct feasibility strategy (moderate)	Not quantified (to be completed with Action BE-3.1)
Removed from Final Plan	Continue to monitor the 9th circuit court of appeals of the CRA vs City of Berkeley ruling. As part of the next building code cycle, develop an electric-preferred reach code for existing non-residential buildings to be adopted by 2026 to be implemented through the building code for projects that are valued at $500,000 or greater. As part of this reach code include the following steps: 1. If necessary, modify the reach code such that it satisfies the federal EPCA's seven criteria for an exemption from preemption. 2. Encourage commercial buildings to comply with the Commercial Energy Performance Assessment and Disclosure Program (AB 1103).	Low	▪ Staff and/or consultant time required to develop the mandatory requirements within the building code (low) ▪ Staff time required for adoption of requirement (low) ▪ One full-time staff member hired to implement compliance program (moderate)	▪ Consultant [$25,000 - $50,000] ▪ Staff [$10,000 - $20,000] ▪ Staff [$120,000 - $150,000 annually] * If this Action is developed in concert with Action BE-3.2 and Action BE-3.3 there would not be a cost associated with this Action

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
	3. Establish a zero-NOx standards for replacement appliances. 4. Allow for health and safety exemptions as necessary. 5. Explore potential exemptions for specific use cases determined to have substantial economic development or business impacts. 6. Enforce the permitting of replacement appliances through the same permitting compliance program as for residential building electric-preferred reach code.			
BE-4.1	Develop an education campaign to promote electrification and include items in the program such as: 1. Conduct engagement efforts for the commercial sector to identify ways the City can support commercial energy storage installations and neighborhood scale microgrid opportunities. 2. Facilitate funding opportunities for commercial business electrification by identifying and supporting grant opportunities available to the community, prioritizing small and community owned. 3. Implement feedback provided during the community outreach process for small businesses and community-owned businesses to address potential equity impacts of the building performance program. 4. Utility bill inserts to advertise the incentive programs or grants available and the cost benefits of electric appliances 5. Targeted outreach to builders, developers, local contractors, and property managers with an informational brochure describing the financial benefits of replacing natural gas appliances with all electric appliance when they apply for permits 6. Provide informational webinars and an updated website to advertise and promote All-Electric Building Initiative rebates and incentives 7. Promote the use of the Energy Star Portfolio Manager program and benchmarking training programs for nonresidential building owners.	Low	▪ Staff and/or consultant time to develop and implement an education campaign (low) ▪ Staff time to conduct outreach and education (low) ▪ Materials and supplies for outreach and engagement, including bill inserts (low)	Not quantified
BE-4.2	Continue to partner with electrification/efficiency experts to provide guidance to commercial buildings covered by the new code(s) and/or ordinance(s).	Low	▪ Continue partnerships to provide technical assistance (low)	*City staff estimate current costs at less than $10,000*

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
				per year, depending on technical support needed.
BE-4.3	Partner with the Healdsburg businesses and the Chamber of Commerce to inform and facilitate electrification for commercial business owners.	Low	▪ Staff time to develop partnerships and conduct outreach (low)	Not quantified
Measure BE-4A Decarbonize 50% municipal buildings and facilities by 2030.				
BE-4A.1	Develop a resolution to decarbonize 50% of municipal buildings and facilities by 2030 and 100% by 2045, by retrofitting natural gas appliances with electric alternatives. Include in the resolution an "electric first" purchasing policy for any equipment or appliances in need of replacement.	High	▪ Staff time [60 hrs] to develop resolution and develop replacement schedule (low) ▪ Consultant to conduct natural gas appliance audit (moderate) ▪ Capital/comparative cost for appliance and lighting replacements and building retrofits as needed (high) ▪ Long-term energy bill savings (no-cost)[5]	▪ Staff [$8,000 - $12,000] ▪ Consultant [$40,000 – $60,000] ▪ Capital/comparative investment [$35-$200/square foot][6] ▪ Cost savings [~ $2,000 over 15 years][7] ▪ **Total per 50,000 square feet [$1,796,000 - $10,070,000]**
BE-4A.2	Conduct a feasibility study to understand current decarbonization and barriers to installing additional distributed energy resources such as solar and battery storage, or other renewable energy generation infrastructure, at municipal facilities. Plan for directing resources through the city for funding, energy storage, and distributed energy resources. Direct municipal efforts to sourcing space for energy storage projects, microgrid implementation, and future electrification.	Moderate	▪ Staff and consultant time to conduct feasibility study (moderate)	*City staff estimate costs between BE-3.1 and BE-3.2 [$35,000 - $140,000].*

[5] A portion of gas distribution costs is covered by the customer's gas bill payments, by electrifying this incremental cost is saved. Accessed at: https://rmi.org/insight/the-economics-of-electrifying-buildings/

[6] The cost to retrofit commercial buildings is highly variable depending on the retrofit, existing conditions, type of building, equipment available, etc., Furthermore, electric retrofits often show cost savings overtime. Recent studies found that for a typical office building electric retrofits would cost on average $25 - $150 per square foot. Accessed at: https://rmi.org/wp-content/uploads/2017/04/Pathways-to-Zero_Bldg-Case-for-Deep-Retrofits_Report_2012.pdf

[7] https://rmi.org/insight/the-economics-of-electrifying-buildings/

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
BE-4A.3	Complete a Wastewater treatment plant energy efficiency study and implement the highest impact recommendations. Utilize grant funding opportunities as much as possible.	High	▪ Staff time to acquire funding (low) ▪ Staff and consultant time to conduct an energy efficiency study (moderate) ▪ Capital costs to implement study recommendations (high)	*City staff estimate:* ▪ *Staff time to acquire funding [$5,000]* ▪ *Staff/consultant time to conduct study [$45,000 - $85,000]* ▪ *Capital costs may vary widely depending on recommendations [$10,000 - $1,000,000+]* ▪ ***Total [$60,000 - $1,090,000+ depending on grant funding opportunities]***
Measure T-1 Implement programs that increase access to safe active transportation, such as walking and biking, that achieve 15% of active transportation mode share by 2030. (353 MT CO2e reduction)				
T-1.1	Work with Sonoma County Transportation Authority (SCTA) to update the 2013 Existing and Planned Bicycle and Pedestrian Facilities for City of Healdsburg with new planned and completed projects by 2025. As part of the update consider including: 1. Identified projects from the 2013 plan not yet implemented and include a progress update and/or reasons that identified projects were determined infeasible in updated Master Plan 2. Safe Routes to School plan 3. Increased biking infrastructure off the main street to enhance connectivity throughout the City and/or in communities where there is currently no or limited infrastructure 4. In partnership with surrounding communities, identify opportunities for infrastructure improvements or expansions to enhance cross-community active transportation 5. Explore streets for permanent through traffic closures to promote walking, biking, and other forms of active transportation with a focus on closing off downtown 6. Explore areas of the City to remove parking and/or additional traffic lanes to prioritize walking and biking	High	▪ Consultant time to develop Safe Routes to School Plan (SRSP) (moderate) ▪ Staff [estimated 300 hrs] time to work with SCTA to update Bicycle and Pedestrian Plan (moderate) ▪ Consultant or staff time to conduct analysis (e.g., identification of areas for through traffic closure, equity analysis) for update (moderate) ▪ Materials and supplies needed for outreach and engagement events throughout process of updating document (low) ▪ Capital cost for increasing and improving biking infrastructure (high) ▪ Capital cost for street closures (moderate)	**Initial Planning Cost** ▪ Consultant - SRSP [$100,000 - $210,000] ▪ Consultant – analysis [$150,000 - $300,000] ▪ Staff [$45,000 - $60,000] ▪ Materials and Supplies [$5,000 - $10,000] ▪ **Total [$300,000 – $580,000]** ***(some costs potentially supported by grant for plan update)***

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
	7. Determine equity barriers to safe bike and pedestrian infrastructure.			**Infrastructure Cost** ▪ Bike Infrastructure [$325,000 - $650,000 per mile][8] ▪ Street Closures [$50,000 – $150,000 per short -term closure location][8]
T-1.2	Continue to utilize discretionary funds to implement the bicycle and pedestrian infrastructure improvements and updates such as the protected bike lanes along Healdsburg Avenue and reduction of through lanes on Healdsburg Avenue (e.g., Healdsburg Avenue Improvement Project). Select consultant to finalize designs for Healdsburg Avenue Improvement Project by end of 2023 to aim for project completion end of 2028. Improvement projects underway include: 1. Healdsburg Avenue Complete Streets improvements 2. Grove Street improves including ADA compliance 3. Foss Creek & Front Street connections 4. Saggio Hills Foss Creek Pathways Extension	High	▪ Staff and consultant time to finalize designs (low) ▪ Infrastructure investment (high)[9] ▪ Capital costs to implement bicycle and pedestrian infrastructure improvements (high)	*City staff estimate for current projects underway:* ▪ *Healdsburg Ave [$15M]* ▪ *Grove Street [$3-4M]* ▪ *Foss & Front [<$1M]*
T-1.3	Support the Sonoma County Bicycle Coalition and local community groups to facilitate community outreach and education on transportation alternatives and promote infrastructure improvements and expansion, such as Foss Creek Trail. Continually improve methods for engaging the community, gathering input, and utilizing it to prioritize projects from the Bicycle and Pedestrian Master Plan. Promote and distribute regionally available tools, such as bike maps, bus routes and schedules, etc. to the community and to hotels and tourism centers to increase visitor use of active transportation.	Low	▪ Staff time to develop partnerships and conduct outreach and education (low) ▪ Materials and supplies for outreach and engagement (low)	Not quantified

[8] Capital costs for infrastructure obtained from following study and include 30% inflation since time of study. Accessed at: https://www.pedbikeinfo.org/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf

[9] Rough estimates provided by City of Healdsburg Public Works Department

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
T-1.4	Develop the Pilot Bike Share Program into a permanent and dependable bike share network that provides access to key destinations throughout the City, and work with regional partners including SMART and others, to assess potential for a regional bike share system. Include educational outreach and campaigns promoting use of the re-inspired program.	Moderate	▪ Staff time to develop regional partnerships and conduct outreach and education (low) ▪ Staff time and capital costs to develop program (moderate)	*Current 3-year pilot costs approximately $100,000 per year. Staff estimate future costs of $100,000-$150,000 annually, and would encourage bike share vendor to seek local business sponsorship.*
T-1.5	Coordinate regionally through Sonoma County leveraging the regional active transportation plan to facilitate cross-community active transportation improvements, such as SMART multi-use path and Great Redwood Trail. As part of this action include community outreach and education on active transportation improvements to affected areas as well as the community.	Low	▪ Staff time to conduct education and outreach and coordinate infrastructure improvements with regional partners (low)	Not quantified
T-1.6	Evaluate existing bike parking facilities and evaluate what improvements can be made to increase supply, reduce theft, and increase rider attraction. Based on existing surveys and evaluation findings, improve and expand existing bike parking facilities throughout the city. Improve bike parking facilities near public transit stops and expand access to safe transit (i.e., first and last-mile access), as well as consider car parking spaces that could be converted to bicycle parking. Include analysis of last mile limitations and hurdles. Explore ways to require safe, secure bike parking and/or bike lockers as part of large commercial and multi-family projects.	Moderate	▪ Staff and consultant time to conduct evaluation and identify opportunity improvements (moderate)	*City staff estimate costs to be similar to BE-3.1 and BE-3.2 [$35,000 - $140,000]. Initial budget of $10,000*
T-1.7	Support the tourism and business sectors of the greater Healdsburg County region to increase active transportation from tourists and employees.	Low	▪ Staff time to develop partnerships and identify opportunities (low)	Not quantified
T-1.8	Partner with local bike shops to provide subsidies to low-income residents for e-bikes, helmets, locks, and other bicycle equipment. Continue to offer e-bike rebates with increased rebate opportunities for low-income customers. Implement an income-qualified coupon for the e-bike share program, in addition to the available 50% discounted e-bike share rate.	Moderate	▪ Staff time to develop partnerships (low) ▪ Capital costs to increase and provide new rebates (moderate)	*City staff estimate $50,000 annually.*

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
Measure T-2 Implement programs for public transportation that achieve 10% of public transit mode share by 2030. (2,022 MT CO2e reduction)				
T-2.1	Partner with SCT to conduct a feasibility study to inform the development of a tourism-based mobility plan aimed at decreasing tourism-based single passenger vehicle use. In this study: 1. Identify community boundary locations for tourism designated parking and optimal route connectivity. 2. Identify opportunities for town shuttle services and park-and-ride locations for residents and tourists. 3. Pilot study on private funded transportation to wineries. 4. Gauge potential of private partnerships with big tourism destinations such as wineries and local businesses to implement direct public transit routes between park and ride and the relevant tourist destinations.	Moderate	▪ Consultant time to conduct feasibility study (moderate) ▪ Staff [200 hrs] time to work with SCT or consultant on feasibility study and develop/implement pilot project (low) ▪ Capital cost to develop and implement pilot study (moderate)	▪ Consultant [$60,000 - $100,000] ▪ Staff [$25,000 - $40,000] ▪ Pilot Study [$200,000 - $300,000][10], [11] ▪ **Total [$285,000 - $440,000]**
T-2.2	Partner with regional organizations or community groups to conduct local transportation surveys to better understand the community's needs and motivation for traveling by car versus other alternatives such as the bus. Use survey results to inform policy development and education/outreach campaigns that are transit focused.	Low	▪ Staff time to develop regional partnerships and conduct community surveys (low)	Not quantified
T-2.3	In the identification of access improvements to transportation include design improvements of seating and shading at bus stops and along active transportation routes. Partner with SCT to incorporate design changes throughout infrastructure modifications.	Moderate	▪ Staff and consultant time to design bus stop improvements (moderate) ▪ Staff time to work with STC to incorporate design improvements (low) ▪ Capital cost for bust stop infrastructure improvements (e.g., street furniture, shade) (moderate)	*City staff estimate costs similar to T-1.6 [$35,000 - $140,000], plus the infrastructure costs which may vary depending on the modifications.*

[10] Assumed a one-year pilot study costing ~$100/hr based on average rates for shuttles locally, operations 7 days a week from 10 am to 6 pm (hours of winery operations).

[11] Based on conversations between Public Works Director and SMART on the on-demand e-shuttle. Assumed that pilot study for transportation to wineries would be a year long, though is anticipated to be a lower cost as hours of operation would be less.

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
T-2.4	Work with public transit partners and rider groups to improve ridership through improved routes and modifying schedules to increase efficiency and align with rider needs. Ensure public transportation access and improvements are prioritized in low-income areas, active aging neighborhoods, schools and at major destinations. This could include surveying existing transportation services, routes, schedules, and facilities throughout the city and developing a plan to improve these for implementation with preference given to improving public transportation facilities and expand access to transit (i.e., first and last-mile access).	Moderate	▪ Staff and/or consultant time to conduct survey, develop a plan, and coordinate with partners and stakeholders (moderate)	*City staff estimate costs similar to T-1.6 [$35,000 - $140,000].*
T-2.5	Promote free or subsidized regional public transit programs for vulnerable communities in Healdsburg that makes it free or discounted for participants to travel regionally via SCT.	Low	▪ Staff time for promotion and outreach (low)	Not quantified
Measure T-2A Explore the development of a micro-mobility and/or car-share program to support mode shift from single occupancy fossil fuel vehicles to Zero Emission Vehicles.				
T-2A.1	Conduct a background review of options for purchasing, operating, and maintaining an on-demand door-to-door e-shuttle. This may include the development of a new on-demand e-shuttle, the expansion of DASH (Drivers Assisting Seniors in Healdsburg) for all residents of Healdsburg, or the development of a program to subsidize the cost for electric car-share programs such as Uber or Lyft. The analysis should include identification of potential funding sources (e.g., grants, local taxes, local business sponsorship, discretionary funds, etc.) and identification of barriers and opportunities for how such a micro-mobility program may enhance active transportation or public transit use. Present the findings to City Council and the public to determine next steps.	Moderate	▪ Staff and consultant time to conduct feasibility study (moderate)	*City staff estimate costs similar to T-1.6 [$35,000 - $140,000].*
T-2A.2	Based on the findings of the feasibility study and the response from City Council and the public, develop and implement a micro-mobility policy that establishes a deployment protocol and permitting process, identifies any restrictions for use for safety reasons, and promotes equitable access through requirements for consistent placement of micro-mobility devices (e-scooters, e-bikes, etc.) in underserved areas or reductions in usage fees for lower-income users.	Moderate/High	▪ Staff time [300 hrs] to develop and implement micro-mobility policy (moderate) ▪ One part-time employee for staff management of program and permitting process (moderate) ▪ Annual cost to fund micro transit service operated by City (high)	▪ Staff [$35,000 - $60,000] ▪ Permitting Staff [$50,000 - $70,000]

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
			▪ Funding potential through Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program	▪ Micro transit annual budget ***if City funded*** [$500,000 - $2M]12,[13]
T-2A.3	Facilitate transportation equity through multilingual programs that identify local equity issues and seek to remove barriers for vulnerable communities to use carshare or micro-mobility options.	Low	▪ Staff time to conduct outreach and engagement (low) ▪ Materials and supplies for outreach and engagement (low)	Not quantified
T-2A.4	Leverage community groups and local organizations to develop outreach and education materials advertising micro-mobility options and the benefits of use for traveling locally and increasing connectivity of public transit. Provide information on available funding opportunities or subsidies offered for low-income residents.	Low	▪ Staff time to conduct outreach and engagement (low) ▪ Materials and supplies for outreach and engagement (low)	Not quantified
Measure T-3 Develop programs and policies to discourage driving single passenger vehicles and to support the bicycle/pedestrian and public transit mode share goals of Measures T-1 and T-2.				
T-3.1	Reduce future VMT of new development through infrastructure requirements modifying the General Plan and/or specific plans (e.g., Central Healdsburg Avenue Plan) such that the plans for different City areas include policies that support the development of a connected pedestrian and cyclist network and maximize infill development. Infrastructure requirements may include: 1. Small scale version of park and ride for residents and tourists. 2. Interconnected bike lanes and sidewalks throughout the City. 3. Electric Bike stations or other micro-mobility hubs outside of major residences and shop destinations	Low	▪ Staff and/or consultant time to update policies and plans (low)	Not quantified

[12] Example projects receiving funding for micro-transit/ on-demand shuttle received ~$1M for demonstration project, it is assumed that if the City funded the micro-transit system, a similar budget would be needed annually. Accessed at: FY22 SMART Project List.pdf (transportation.gov)

[13] Cost to fund a micro transit program annually varies drastically depending on the micro-transit services (e.g., on demand shuttle, e-scooters), and whether the service is operated by an outside vendor (e.g., BIRD) or if the City is bearing the cost. The SacRT's SmaRT Ride on-demand micro transit service in Sacramento, funded by local sales tax, is $1M a year. Accessed at: Creative ways to fund on-demand public transportation and microtransit in California - Via Transportation (ridewithvia.com).

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
Removed from Final Plan	Investigate parking policies to disincentivize single passenger vehicles while enabling alternative options for communities meeting defined equity metrics. Based on City Council and public feedback, implement parking policies to disincentivize single passenger vehicles. This ***may*** include options such as, but not limited to: 1. Eliminate or severely limit parking options for single-passenger vehicles in downtown and other commercial areas of the city using best available information on implementation. a. Implement a parking permit system to reserve available parking for employees of businesses downtown or in commercial areas. 2. Utilize a static or dynamic parking pricing for all downtown parking locations and use revenue to fund active transportation and public transportation projects. 3. Price all public parking spaces for all areas of the city with fees directed towards active transportation	Moderate	▪ Staff and/or consultant time to evaluate parking policies and structures (moderate) ▪ Staff time [1 FTE] to develop, implement and enforce parking permit system and program (moderate) ▪ Capital cost in smart parking meters, equivalent parking price equipment, and/or enforcement technology (moderate) ▪ Cost offset associated with revenue from parking fees and permits (no-cost)	▪ Consultant [$60,000 - $100,000] ▪ Staff [$100,000 - $200,000 annually] ▪ Capital [$20,000 - $60,000][14] ▪ **Total [$180,000 - $340,000]**
Removed from Final Plan	Conduct an analysis of the potential community impacts and benefits of charging for parking in downtown. Analysis should include evaluation of different parking fee structures as well as ensure that potential equity concerns are identified.	Moderate	▪ Staff and consultant time to conduct analysis (moderate)	*City staff estimate costs similar to T-1.6 [$35,000 - $140,000].*
T-3.2	City lead by example by encouraging and providing incentives for active transportation and public transit use, such as free access to the e-bike share program, public transit passes, telework options, or other incentives.	Moderate	▪ Staff time to conduct outreach and education on incentives (low) ▪ Materials and supplies for outreach and education (low) ▪ Capital costs to provide new or expanded incentives (moderate)	*City staff estimate $75,000-$100,000 a year based on incentives selected.*
T-3.3	Pursue land use and development policies that promote infill development and/or increased density of residential development in the downtown core, along transit corridors, and within future planned development areas that is compact, mixed use, pedestrian friendly, and transit oriented where applicable.	Moderate	▪ Staff time to develop policies (moderate)	*City staff estimate costs of approximately $140,000.*

[14] Installation of smart parking meters range between $250 - $500. Assumed 25 to 75 installed as part of this effort as well as additional cost for technology related to enforcement of parking. Reference accessed at: https://www.itskrs.its.dot.gov/node/209124

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
Measure T-4 Increase passenger zero-emission vehicle use and adoption to 30% by 2030. (7,636 MT CO2e reduction)				
Removed from Final Plan	Develop a reach code requiring electric vehicle capable charging spaces. By 2024, amend the Healdsburg Development and Municipal Code to promote EV chargers in new development and existing parking spaces, to require at minimum: ▪ Single Family – CalGreen Tier 2 provisions ▪ Multifamily – CalGreen Tier 2 provisions ▪ Non-Residential – CalGreen Tier 2 provisions ▪ Expand the designation of EV charging parking spaces to 15% of existing parking spaces within the City by 2030. ▪ Require larger residential rental building owners (more than 20 tenants) and large commercial building owners (more than 10,000 square feet) to install working electric vehicle chargers in 20% of parking spaces for new and existing buildings at time of renovation if projects are valued at $1,000,000 or greater. ▪ Expediate EV charger permits	Low	▪ Consultant time to aid in development of reach code (low) ▪ Staff time [estimated 80 hrs] required to support reach code development and for adoption of requirement (low)	▪ Consultant [$25,000 - $40,000] ▪ Staff [$12,000 - $15,000] ▪ **Total [$37,000 - $55,000]**
Removed from Final Plan	Develop an ordinance requiring Healdsburg vehicles to participate in the States Biennial smog check program and contribute towards clean energy standards. Work with the Northern Sonoma County Air Pollution Control District to require biennial smog checks.	Low	▪ Staff and/or consultant time to develop ordinance (low) ▪ Staff time to coordinate with the air district (low)	Not quantified
T-4.1	Partner with local organizations and community groups to distribute outreach and education materials to residents and local businesses on the financial, environmental, and health and safety benefits of ZEVs, as well as anti-idling for fossil-fuel vehicles. Provide information on available funding opportunities.	Low	▪ Staff time to conduct outreach and education (low) ▪ Materials and supplies for outreach and education (low)	Not quantified

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
T-4.2	Identify private sector partnerships and develop affordable, zero-emission vehicle car share programs to serve affordable housing and/or multifamily developments with a priority to target vulnerable communities.	Moderate	▪ Staff time to develop partnerships (low) ▪ Staff time and capital costs to develop car share program (moderate)	*City staff estimate public chargers to cost up to $200,000 per parking lot (6 connectors), depending on infrastructure and accessibility. City staff estimate other costs to be similar to T-1.4 [$100,000 - $150,000 annually], depending on discounts provided.*
T-4.3	Continue to promote the EV Monthly Bill Discount Program with increased discount opportunities for low-income customers, and develop an updated or replacement program following program sunset in 2025. Continue to promote affordable EV charging rates at city-owned EV charging stations and adjust rates as necessary to cover program costs. Explore methods for charging different rates for different user groups or other programs to offset charging costs at public stations for low-income residents.	Moderate	▪ Continue staff time to promote programs and rates (no cost) ▪ Staff time and capital costs to develop incentive program (moderate)	*City staff estimate $150,000 - $200,000 annually.*
T-4.4	Utilize the CALeVIP rebate to install new electric vehicle chargers at the Senior Center and downtown Maher lot. Applied for Federal Charing and Fueling Infrastructure (CFI) grant to install electric vehicle chargers at the Community Center, Giorgi Park, High School, and West Plaza. These projects would add 34 new public EV charging ports.	Moderate	▪ Capital costs to install electric vehicle chargers, offset by grant funding (moderate)	*City staff estimate $425,000 from already approved budget, plus an additional $680,000 from grant funding (if awarded).*
T-4.5	In addition to the 6 City-owned lots already identified, conduct a survey of existing publicly accessible electric vehicle chargers and their locations and identify a prioritized list of additional locations for new electric vehicle charging stations, or lots for increased chargers, with consideration for equitable distribution of chargers to vulnerable communities. Study should include an evaluation of capacity needs associated with the installation of new EV chargers and identification of the businesses or stakeholders that own the property to coordinate with for installation of chargers.	Moderate	▪ Staff and/or consultant time to conduct survey (moderate)	*City staff estimate similar to BE-3.1 [approx. $150,000].*

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
T-4.6	Identify and promote incentives and financing options for residential electric vehicle charger installations. Develop programs and policies to add 500 new publicly accessible and private workplace Level 2 and 3 electric vehicle charging stations to the City by 2030 through grants such as the California Energy Commission's Clean Transportation Program. Develop programs that incentivize residents and businesses to charge during times of abundant solar resources and avoid charging during peak hours and grid emergencies	Moderate to High	▪ Staff time to conduct outreach and education (low) ▪ Staff time to develop programs and policies (moderate)	*City staff estimate $500,000 - $2,500,000, depending on public charger rebate amount and grant availability. Proposed budget of $100,000 annually. Other action components to leverage T-4.5.*
T-4.7	Collaborate with neighboring jurisdictions and the Sonoma County Transportation Authority to develop a connected network on ZEV car share. Prioritize car share to serve affordable housing and/or multifamily developments.	Low	▪ Staff time to develop partnerships and coordinate ZEV infrastructure improvements (low)	Not quantified
T-4.8	Partner with the local air district and RCPA to communicate State requirements for off road equipment and identify funding opportunities to support low-income residents to replace gas-powered landscaping equipment and off-road engines with zero emission equipment, such as through rebates or buyback programs.	Low	▪ Staff time to develop partnerships and identify funding opportunities for low-income residents (low)	Not quantified
Measure T-5 Increase commercial zero-emission vehicle use and adoption to 40% by 2030. (2,000 MT CO2e reduction)				
T-5.1	Complete white paper for US Postal Service fleet electrification in Healdsburg. Use white paper to inform the overall electrification study (BE-1.1) regarding commercial fleet electrification, peak demands, and on-peak/off-peak energy requirements. This information can be applied to other identified commercial vehicle fleets in Healdsburg.	Low	▪ Staff time to complete white paper and provide for comment (low)	Not quantified
T-5.2	Adopt a ZEV plan for commercial vehicles in line with state targets and in line with the findings of the accompanying feasibility study. Work with stakeholders to develop and implement the plan for City-supported accelerated fleet electrification. As part of the plan, identify opportunities for accelerated fleet electrification and promote zero-emission vehicle (ZEV) adoption within business and municipal fleets.	Low	▪ Staff time to conduct outreach and engagement (low) ▪ Staff time to adopt the plan (low)	Not quantified
T-5.3	Provide information to businesses on state and federal programs to help fund conversion of commercial fleets to zero emissions vehicles.	Low	▪ Staff time to conduct outreach and education (low) ▪ Materials and supplies for outreach and education (low)	Not quantified

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
T-5.4	Identify, implement, and connect vehicle fleet owners, particularly those serving vulnerable communities to incentivize vehicle electrification. This could include local tax breaks.	Moderate	▪ Staff time to conduct outreach and education (low) ▪ Staff time and capital costs to implement incentives (moderate)	*City staff estimate approx. $100,000 annually.*
T-5.5	Secure funding from state programs (such as the California Air Resources Board's Clean Vehicle Rebate Project and the Truck and Bus Voucher Incentive Program) and federal sources to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure.	Low	▪ Staff and time to acquire funding (low)	Not quantified
Measure T-5A Lead by example and electrify or otherwise decarbonize the municipal fleet in compliance with the state's Advanced Clean Fleet Rule.				
T-5A.1	Continue to implement the Zero-emission vehicle first purchasing policy for all light-duty municipal vehicles, and update to also include off road equipment, medium-duty vehicles, and provide a path to comply with the State's Advanced Clean Fleet rule requiring 50% of medium- and heavy-duty vehicle purchases be zero-emissions beginning in 2024 and 100% beginning in 2027. Also consider operational needs to determine appropriate size of vehicles. Maintain exemptions needed to ensure public safety and delivery of critical services.	Moderate	▪ Staff time to update policy (low) ▪ Comparative cost to purchase and maintain ZEV instead of internal combustion engine vehicle and off-road vehicle (low-moderate) ▪ Lifecycle cost savings for ZEV (no-cost)	*City staff estimate incremental light duty vehicle cost increase of $10,000-$15,000 per vehicle, additional charging infrastructure costs of $200,000, and ongoing savings in fuel costs. Incremental costs for medium- and heavy-duty vehicles will vary widely. City staff estimate incremental off road vehicle replacement cost increase of $20,000-$30,000 per vehicle, additional charging infrastructure costs of $50,000, and ongoing savings in fuel costs.*

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
T-5A.2	Install additional ZEV chargers in municipal parking lots for fleet, employees, and public use to meet projected demand.	Moderate	▪ Capital costs to install ZEV chargers (moderate)	*City staff estimate public chargers to cost up to $200,000 per parking lot (6 connectors), depending on infrastructure and accessibility. Non-public charger costs are substantially lower.*
T-5A.3	Develop a resolution to replace City-owned end-of-life small off-road equipment with electric equipment (e.g., lawn equipment and leaf blowers) at time of replacement.	Low	▪ Staff time to develop resolution (low) ▪ Incremental costs for small off-road equipment (low-moderate)	Not quantified
Measure SW-1 Achieve Zero Waste by 2030 through 90% diversion of solid waste from the landfill. (7,729 MT CO2e reduction)				
SW-1.1	Meet the requirements of SB 1383 to reduce organics in the waste stream by 75% below 2014 levels by 2025 and achieve Zero Waste through 90% solid waste diversion by 2030. Include activities such as: 1. Implement enforcement and fee for incorrectly sorted materials with sensitivity to shared collection. 2. Assure adequate bin signage across commercial and residential areas of acceptable landfill, recyclable, and compostable materials. 3. Conduct additional food scrap collection pail giveaways and promote the free curbside organics collection service by Recology 4. Expand existing ban on disposable food ware made of polystyrene foam or products containing PFAS to include	Moderate[15]	▪ Staff time [estimated at 100 hours] to develop and implement pilot projects (moderate) ▪ Capital costs to develop and implement pilot projects (i.e., reusable to-go container program) (moderate) ▪ One-part time employee to develop and implement enforcement and fee program (moderate) ▪ Capital costs for adding bins in public areas (moderate)	▪ Staff – pilot projects [$20,000 - $38,000] ▪ Capital – pilot projects [$125,000 - $375,000][16] ▪ Staff – compliance monitoring [$60,000 - $80,000] ▪ Capital/ Staff - signage [$50,000 - $75,000][17]

[15] See SB 1383 Local Service Rates Analysis – CalRecycle for more information regarding the variables impact cost on municipalities for implementing programs to meet SB 1383 requirements. Accessed at: https://www2.calrecycle.ca.gov/Publications/Details/1698

[16] Cost of a pilot study is highly variable depending on type of study. Grant awards offered by CalRecycle are up to $1.5M – it is assumed that if a grant for a pilot project was not received and City funded project it would cost a similar amount. Accessed at: https://calrecycle.ca.gov/bevcontainer/grants/bevcontainer/rpp/fy202122/

[17] Cost for signage is variable depending on the type of signs or labels and number of signs the City chooses to install. For this estimate it is assumed that signs and labels range from $3 to $10 and the City would install 2,000 labels/signs and the public works department would be responsible for distribution an installation of signs with the staff's hourly rate $125 for 400 hrs. Accessed at: https://healdsburg.gov/DocumentCenter/View/15274/Master-Fee-Schedule-FY-2022-2

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
	additional items without means of recycling or recycling markets, such as produce bags. 5. Implement pilot project for reusables for restaurant to-go containers. 6. Identify long-term and alternate solutions for the community's wastewater bio-solids to avoid long hauling distances and develop local, beneficial reuse. 7. Identify public areas for adding organics collection and recycling bins where needed. Partner with Recology and Zero Waste Sonoma as applicable for the actions listed above.		▪ Staff time and materials and supplies to conduct outreach and education including bin distribution events (low) ▪ Staff time [estimated at 80 hours] to amend existing ban on polystyrene products (low) ▪ Staff and consultant time to conduct feasibility study for wastewater bio-solids (moderate) ▪ Cost offset based on revenue from lid flipping fees (no-cost)	▪ Staff – community engagement [$25,000 - $50,000 annually][18] ▪ Staff – ordinance development [$12,000 - $15,000] ▪ Consultant – feasibility study [$100,000 - $150,000] ▪ **Total [$400,000 - $700,000]**
SW-1.2	Partner with Zero Waste Sonoma to support a Bring your own (BYO) education and outreach training for residents and businesses on reusables and implementing more sustainable packaging into daily use. Also educate the community on opportunities to use or compost food scraps. Provide resources of education and technical assistance on city website. Partner with libraries and other existing facilities to market campaigns about waste reductions, reuse and repair.	Low	▪ Staff time to develop partnerships and conduct outreach and education (low) ▪ Materials and supplies for outreach and education (low)	Not quantified
SW-1.3	Leverage community groups and local organizations to work with multi-family property owners/managers to increase education through signage for their properties and supplies for proper sorting.	Low	▪ Staff time to develop partnerships and conduct outreach and education (low) ▪ Materials and supplies for outreach and education (low)	Not quantified
SW-1.4	Leverage Zero Waste Sonoma 2022 Waste Characterization study and visual characterization conducted at the Healdsburg transfer station to understand the waste stream and create a plan to increase diversion and reduce contamination. Continue to work with Zero Waste Sonoma to conduct a waste characterization study every 5 years that includes Healdsburg to inform programs and policies.	Low	▪ Staff and/or consultant time to create a plan (low) ▪ Continue staff time to maintain relationship with partners (no cost)	Not quantified

[18] Based on SB 1383 education/community outreach programs budget for other cities. Accessed at http://www.losbanos.org/wp-content/uploads/2020/03/Los-Banos-Solid-Waste-RFP-Package-Final.pdf.

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
SW-1.5	Partner with Recology and/or Zero Waste Sonoma to pursue funding, such as the Organics Grant Program from CalRecycle or for projects through California Climate Investment, to reduce generated organic waste from multi-family homes and expand waste diversions programs within the City.	Low	▪ Staff time to develop partnerships and acquire funding (low)	Not quantified
SW-1.6	Develop and implement a Zero Waste Protocol for special events.	Low	▪ Staff time to create and implement protocol (low)	Not quantified
Measure W-1 Reduce per capita potable water consumption by 25% by 2030. (46 MT CO2e reduction)				
W-1.1	Update the Urban Water Management Plan every 5 years, as required by the State, and implement the identified demand reduction actions to ensure compliance with the State's Making Water Conservation a Way of Life regulations. Include new actions in the UWMP as needed to achieve State regulations, which may include: 1. Amend the City's Water Shortage Contingency Plan to restrict any water waste at any time for households, businesses, industries, and public infrastructure. 2. Work with Community Development, large water users, and other stakeholders to develop an On-Site Water Reuse Plan to maximize utilization of local water supplies decreasing energy intensity of distribution. 3. Revisit and update the Water Efficient Landscape Ordinance as needed. Engage, through regional partnerships, with builders and developers to provide information on the requirements for development projects. 4. Develop an ordinance for installation of dual-plumbing water systems that utilize greywater or recycled water for irrigation at new residential and commercial construction. 5. Increase engagement with the community, specifically low-to-moderate income residents, to understand available incentives or rebates, options, and programs to reduce per capita water use. Leverage regional programs and resources available through membership in the Sonoma-Marin Saving Water Partnership, and leverage partnerships with local organizations to expand water conservation outreach.	Moderate	▪ Staff and/or consultant time to update plan (moderate)	*City staff estimate $15,000 - $20,000 to update required plan. Cost of implementation for new actions will vary widely.*

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
	6. Implement a software solution for residents and businesses to view water consumption data in near real time. 7. Complete grant funded Municipal Water Pipeline and work to expand the Municipal Recycled Water Pipeline project, as funding is available. Identify additional locations available for recycled water use and establish a schedule for potable water replacement with recycled water in appropriate applications residentially, commercially, and municipally, and determine recycled water user fees. 8. Revise water and wastewater rates as necessary to ensure cost of service is covered.			
Measure CS-1 Increase carbon sequestration by preserving existing mature trees and planting 500 new trees and high emissions reduction potential land cover types throughout the community by 2030. (25 MT CO2e reduction)				
CS-1.1	Develop a Street Tree Master Plan to include goals for promoting street tree health, enhancing resiliency, increasing the environmental benefits and co-benefits resulting from street trees and shading, community engagement around the urban forest. Include activity to promote street tree health and maintaining existing trees through partnerships with the community and local organizations, including organizations with connections to vulnerable communities to assist in the implementation of the Street Tree Master Plan to ensure equity is prioritized as part of the plan.	Low	▪ Staff or consultant time to develop Street Tree Master Plan (low) ▪ Staff time [estimated 100 hrs] for community outreach activities and development of partnerships (low) ▪ Funding potential through CAL FIRE Urban and Community Forestry grant	▪ Staff/Consultant [$50,000 - $200,000] ▪ Staff [$10,000 - $20,000] ▪ *Grant Funding [$150,000 - $ 200,000]* ▪ **Total [$60,000 - $220,000]**
CS-1.2	Develop a new Tree Protection Ordinance to include protection for native and heritage trees. The ordinance should regulate the removal of not just heritage trees, but native trees that increase the City's carbon stock and carbon sequestration. Ordinance may include: 1. Development requirements to protect or replace one-for-one existing trees and greenspace. 2. Implementation of a tree removal in-lieu fee that provides funding for the City to plant a new tree equivalent to every tree removed from private property. 3. Identification of native tree species and heritage trees to be protected. 4. Shade tree requirements for new development. 5. Parking lot landscaping requirements.	Low	▪ Staff time to develop ordinance (low) ▪ Capital cost of trees (low) ▪ Lifecycle cost of tree maintenance (low)	Not quantified

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
	6. Increased permeable surfaces and green spaces in new development. 7. Vegetative barrier requirements between busy roadways and developments to reduce exposure to air pollutants from traffic. 8. Protocols for proper tree maintenance and care. 9. Best practices to protect existing carbon stocks against wildfire risk.			
CS-1.3	Establish an adopt-a-tree or adopt-a-street program that enables individuals, businesses, and community organizations to plant and care for trees in selected communities. Program should provide formalized information on appropriate trees eligible for planting in Healdsburg (i.e., native, drought tolerant, locations, fire resistant) and their maintenance. Leverage existing plant lists developed by nearby and partner organizations.	Moderate	▪ Staff time and capital costs to develop program (moderate) ▪ Materials and supplies for education (low)	*City staff estimates $15,000 per 150 trees, to potentially be supported by in-lieu fees, donations, or other funding.*
CS-1.4	Prioritize low-income areas of the city with less existing tree canopy for tree plantings. Increase shading in gathering spaces.	Low	▪ Capital cost for planting and maintaining shade trees (low)	Not quantified
CS-1.5	Explore urban and community forestry grant programs (e.g., CAL FIRE) and other sources of state, federal, and philanthropic funding to fund urban forestry programs. As part of this effort, establish a goal to apply for at least one grant every three years.	Low	▪ Staff time to research grants and establish goal (low)	Not quantified
Measure CS-2 Maintain and expand existing restoration projects to sequester carbon in restored lands.				
CS-2.1	Continue maintenance and expansion of Healdsburg Ridge Open Space Preserve (150 acres), and the Fitch Mountain Park and Open Space Preserve (170 acres), including wildfire mitigation. Continue maintenance and restoration projects in existing green spaces within City and urban areas.	Moderate	▪ Enhanced staff time to manage preserves (moderate) ▪ Capital costs to expand preserves (moderate)	*Expansion would depend on available land and partners.*
CS-2.2	Develop a community-based volunteer program supporting restoration project activity to create a maintained restoration process.	Low	▪ Staff time to develop a volunteer program (low)	Not quantified
CS-2.3	Apply for at least one grant every three years for obtaining grant funding for restoration and preservation activities with a focus on projects that have been unable to be fully completed due to funding constraints.	Low	▪ Staff and/or consultant time to prepare grant applications (low)	Not quantified

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
CS-2.4	Partner with local community organizations to promote and coordinate sequestration opportunities and facilitate volunteer maintenance projects.	Low	▪ Staff time to develop partnerships and support outreach and engagement (low)	Not quantified
Measure CS-3 Align with SB 1383 and procure products of organic diversion at a rate of 0.08 tons of organic waste per capita per year with a focus on increasing compost application within City limits to increase carbon sequestration. (235 MT CO2e reduction)				
CS-3.1	Meet the baseline procurement requirement of SB 1383 through direct procurement of applicable products, as feasible, for the City's use and application. Establish contracts with service providers that use applicable products (e.g., landscape services, transportation services, waste haulers) on the City's behalf to meet the remaining procurement requirement not met through direct procurement.	Moderate	▪ Staff time to evaluate opportunities and maintain procurement activities (low) ▪ Staff time to establish and maintain contracts (moderate)	*City staff estimate similar to part time enforcement in SW-1.1 [$60,000-80,000].*
CS-3.2	Identify locations within the City to apply compost as applicable/appropriate to help meet the procurement requirements of SB 1383. Leverage Zero Waste Sonoma to collaborate with local schools, City Departments, Ag+Open Space, and the Resource Conservation Districts to identify additional opportunities to apply compost.	Moderate	▪ Staff and/or consultant time to conduct study (moderate)	*City staff estimate approximately $35,000 for study and collaboration.*
CS-3.3	Implement compost application on City-owned properties, according to findings of feasibility study for suitable locations and appropriate application rates.	Low	▪ Staff time to apply compost or coordinate with service providers (low) ▪ Increases to scope of work with service providers (low)	Not quantified
CS-3.4	Develop requirements for compost application, tracking, and reporting for developers.	Low	▪ Staff time to develop requirements (low) ▪ Staff time to include requirements in new construction approvals (low)	Not quantified
CS-3.5	Work with Recology and ZWS to provide residents, businesses, and developers with educational material on where to get compost and how it can be used (i.e., landscaping), as well as how compost promotes carbon sequestration. Consider increasing free compost giveaways.	Low	▪ Staff time to develop partnerships (low) ▪ Materials and supplies for education (low) ▪ Bulk compost purchases (moderate)	Not quantified

Action ID	Action Text	City Cost Category	City Cost Variables	Preliminary Cost Estimate by Action
CS-3.6	Prioritize providing increased outreach and translated materials on the annual compost giveaway to low-income households, small businesses, and other vulnerable communities.	Low	▪ Staff time and outreach materials (low)	Not quantified
CS-3.7	Apply for at least one grant every three years for obtaining grant funding for SB 1383 compliance, assuming there are such grant opportunities available.	Low	▪ Staff and/or consultant time to prepare grant applications (low)	Not quantified
CS-3.8	Work with Sonoma County to identify opportunities for a regional compost procurement program to help meet the organics procurement provisions of SB 1383 as well as streamline hauler routes through regional collaboration.	Low	▪ Staff time to develop partnerships and identify opportunities (low)	Not quantified
Measure F-1 Identify Administrative Needs for Successful CMS Implementation				
F-1.2	Consider creating a Climate Program Manager new position who is responsible for implementing CMS measures and actions by drafting ordinances, managing technical studies, leading outreach efforts, updating online information, managing the webpages and social media posts to promote climate programs, networking with partners and stakeholders, and pursuing relevant and impactful grant opportunities.	Moderate	▪ Staff time for new position [1 FTE] (moderate)	*City staff estimate up to $170,000 per year for salary, benefits, and operating expenses.*
F-1.2	Report progress on CMS implementation annually to the City Council to measure progress and ensure accountability in achieving CMS emissions reduction goals.	Low	▪ Staff time to report progress (low)	Not quantified
F-1.3	Partner with RCPA and other jurisdictions to ensure transparency in GHG emission reporting and make GHG emission data and inputs publicly available.	Low	▪ Staff time to develop partnerships and coordinate (low)	Not quantified

Table 3 Cost to Community for GHG Emissions Reduction Measures

Measure ID	Measure Text	Community Cost Category	Community Cost Variables	Preliminary Cost Estimate by Measure
Building Energy				
BE-1	Procure 85% of electricity from renewable and zero-carbon sources by 2030 and 100% renewable and carbon-free no later than 2045.	Moderate	▪ Electricity costs per rate plan changes and choosing to opt into Green Rate (low) ▪ Rate increases due to additional procurement of renewables (moderate)	▪ Green Rate Additional Energy charge [~$150/ household/year][19] ▪ Standard Rate increase [$50 - $100/household/year][20]
BE-2	Continue to adopt an Electrification Reach Code for all new residential and commercial buildings with each triannual code cycle. Consider updating electrification ordinance to eliminate natural gas consumption in new construction for the 2025 California Building Standards Code and moving forward.	No-cost	▪ Upfront cost savings of building all-electric homes and buildings (no-cost)[21] ▪ Long-term energy bill savings (no-cost) ▪ Avoided cost of not installing natural gas infrastructure (no-cost)[22]	No cost

[19] Over the next four years the Green Rate will cost an additional ~ $0.02 - $0.03/kWh compared with the standard rate. Based on the 2018 inventory, the average household uses ~6,000 kWh per year. Accessed at: Electric Rates | Healdsburg, CA - Official Website

[20] Utilities director of Healdsburg Electric estimates a possible average of $50-$100 annual residential additional cost increase for increased procurement of renewables to 85%, which would be further analyzed in the feasibility study. Income-qualified customers may apply for the CARE program providing a 25% discount on the electric bill.

[21] Electrification at time of new construction found to have minimal cost impacts to cost savings for building owner. Accessed at: https://rmi.org/insight/the-economics-of-electrifying-buildings/

[22] https://newbuildings.org/new-study-on-electrification-costs-shows-benefits-to-building-owners-and-society/

Measure ID	Measure Text	Community Cost Category	Community Cost Variables	Preliminary Cost Estimate by Measure
BE-3	Decarbonize residential building stock by 8% by 2030.[23]	Moderate	▪ Long-term energy bill savings (no-cost) ▪ Long-term savings from not paying incremental gas infrastructure costs (no-cost)[24] ▪ Additional cost from installation of electric appliance compared to installation of traditional appliance (moderate) ▪ Additional cost for infrastructure upgrades, permitting, contractors (moderate) ▪ Cost partially offset from state, federal and local rebates and incentives (no-cost)	▪ Upfront cost [$5,000-$30,000/single family home][25,26,27] ▪ Savings [$50 - $1,000/year/single-family home][25,26] ▪ Discounts Available [$2,000 - $14,000][28]
BE-4	Decarbonize non-residential building stock by 5% by 2030.	Moderate	▪ Long-term energy bill savings (no-cost) ▪ Additional cost from installation of electric appliance compared to installation of traditional appliance (moderate) ▪ Additional cost for infrastructure upgrades, permitting, contractors (moderate)	▪ Capital cost [$35-$200/square foot][29] ▪ Cost savings [~ $2,000 over 15 years][30]
BE-4A	Decarbonize 50% municipal buildings and facilities by 2030.	N/A	N/A	N/A

[23] City estimates that the average upfront cost for a residential electrification project could be approximately $25,000.

[24] A portion of gas distribution costs is covered by the customer's gas bill payments, by electrifying this incremental cost is saved. Accessed at: https://rmi.org/insight/the-economics-of-electrifying-buildings/

[25] Energy + Environmental Economics. 2019. Residential Building Electrification in California: Consumer economics, greenhouse gases, and grid impacts. Accessed at: E3_Residential_Building_Electrification_in_California_April_2019.pdf (ethree.com)

[26] City of San Jose. 2022. Healthy Homes, Healthy Air: A Framework for Existing Building Electrification Centered on Community Priorities.

[27] Upfront cost for electrification of a single-family home can vary widely depending on the existing condition of the home (i.e., level of additional electrical work needed) and the scenario of replacement (i.e., replace "on-burnout" vs replace "before burnout"). A replace "on-burnout" scenario has a marginal cost range of full-home electrification between $5,000 and $15,000, whereas a full home electrification scenario where the existing equipment has not burnout could range between $15,000 to $30,000. The cost range includes product and installation cost, 15% contractor markup, as well as accounts for the range in economy to budget appliance options, simple to complex installation parameters, and zero to additional electrical work required.

[28] Cost of electrification can be offset by several incentives and rebates for high efficiency and electric appliance replacement that exist through the state and federal government including incentives under the Inflation Reduction Act (IRA) for High Efficiency Electric Home Rebate Act (HEEHRA) which caps upfront discounts at $14,000 for all electrification projects. Rebate and incentives are broken out by income band with higher rebates available for low to moderate income residents. Accessed at: https://www.rewiringamerica.org/IRAguide

[29] The cost to retrofit commercial buildings is highly variable depending on the retrofit, existing conditions, type of building, equipment available, etc., Furthermore, electric retrofits often show cost savings overtime. Recent studies found that for a typical office building electric retrofits would cost on average $25 - $150 per square foot. Accessed at: https://rmi.org/wp-content/uploads/2017/04/Pathways-to-Zero_Bldg-Case-for-Deep-Retrofits_Report_2012.pdf

[30] https://rmi.org/insight/the-economics-of-electrifying-buildings/

Measure ID	Measure Text	Community Cost Category	Community Cost Variables	Preliminary Cost Estimate by Measure
Transportation				
T-1	Implement programs that increase access to safe active transportation, such as walking and biking, that achieve 15% of active transportation mode share by 2030.	No-cost	▪ Cost savings of reducing single occupancy vehicle use (no-cost)	No cost
T-2	Implement programs for public transportation that achieve 10% of public transit mode share by 2030.	No-cost	▪ Cost savings of reducing single occupancy vehicle use (no-cost)	No cost
T-2A	Explore the development of a micro-mobility and/or car-share program to support mode shift from single occupancy fossil fuel vehicles to Zero Emission Vehicles.	Low	▪ Cost associated with funding mechanism, e.g., city tax to fund program (low) ▪ Cost associated with use (low)	▪ Cost of ride [$1.50 - $3.50/ride][31]
T-3	Develop programs and policies to discourage driving single passenger vehicles and to support the bicycle/pedestrian and public transit mode share goals of Measures T-1 and T-2.	Low	▪ Potential costs of disincentive-based policies, e.g., parking fees (low) ▪ Cost savings of reducing single occupancy vehicle use (no-cost)	▪ Incremental cost on parking [$3.50/hour to $24/ max daily][32]

[31] Some current on-demand shuttles in surrounding areas cost $1 to $4 per ride. Accessed at: Silicon Valley Hopper | Affordable, On-Demand Rideshare in Cupertino (ridewithvia.com) & SMART launches on demand microtransit shuttle connecting the train to the Sonoma County Airport (STS) (ca.gov)

[32] Existing paid parking in Healdsburg is managed by AirGarage and is rated as $3.50/hour and $24/ daily Max. Accessed at: Paid Parking Comes to Healdsburg—but Is It Legal? - Healdsburg Tribune

Measure ID	Measure Text	Community Cost Category	Community Cost Variables	Preliminary Cost Estimate by Measure
T-4	Increase passenger zero-emission vehicle use and adoption to 30% by 2030.	Moderate	▪ Cost of charging infrastructure (moderate) ▪ Financing of charging infrastructure and vehicle purchase (no-cost to cost offset)[33] ▪ Initial investment in ZEV compared with ICE vehicle (moderate) ▪ Additional cost of zero-emission vehicle ownership compared to internal combustion engine ownership (i.e., higher upfront costs but lower operating costs) (low)	▪ Charging infrastructure [$700 – $4,000][34] ▪ Incremental maintenance cost savings [$0.05/mile][35] ▪ Comparative initial investment cost [$8,000-$35,000/vehicle][36]
T-5	Increase commercial zero-emission vehicle use and adoption to 40% by 2030.	Moderate	▪ Cost of charging infrastructure (moderate) ▪ Financing of charging infrastructure and vehicle purchase (no-cost to cost offset) ▪ Initial investment in ZEV compared with ICE vehicle (moderate) ▪ Additional cost of zero-emission vehicle ownership compared to internal combustion engine ownership (i.e., higher upfront costs but lower operating costs) (low)	▪ Charging infrastructure for business [$3,000 – $100,000][34] ▪ Incremental maintenance cost savings [$0.05/mile][35] ▪ Comparative initial investment cost for business [$35,000 - $250,000/vehicle][36]
T-5A	Lead by example and electrify or otherwise decarbonize the municipal fleet in compliance with the state's Advanced Clean Fleet Rule.	N/A	N/A	N/A

[33] There are a number of opportunities through state programs (e.g., CARB's LCFS) to receive grants, financing, or carbon credits for installing ZEV infrastructure and charging vehicles from it that can aid in offsetting the cost of ZEV infrastructure installation and use. Example program: https://ww2.arb.ca.gov/resources/documents/lcfs-zev-infrastructure-crediting

[34] Cost ranges depending on type of parking space and the installation requirements necessary (i.e., conduit and panel or retrofit) and type of charger installed. Accessed at: https://afdc.energy.gov/fuels/electricity_infrastructure_development.html

[35] An internal combustion engine costs on average 1.66 times per mile to maintain compared with an EV. Accessed at: https://publications.anl.gov/anlpubs/2021/05/167399.pdf

[36] Initial investment depends on vehicle type, year, etc. General ranges provided by US Department of Energy accessed at: https://www.energy.gov/sites/default/files/2022-12/2022.12.23%202022%20Incremental%20Purchase%20Cost%20Methodology%20and%20Results%20for%20Clean%20Vehicles.pdf

Measure ID	Measure Text	Community Cost Category	Community Cost Variables	Preliminary Cost Estimate by Measure
Solid Waste				
SW-1	Achieve Zero Waste by 2030 through 90% diversion of solid waste from the landfill.	Low	▪ Incremental cost associated with full implementation of SB 1383, e.g., waste diversion requirements, lid flipping fees, composting practices (low) ▪ Non-compliance fees (low)	**Implementation Cost** ▪ $17/household/annually[37] ▪ $662/small businesses/annually[37] **Non-compliance fee** ▪ ~$50/bin[38]
Water				
W-1	Reduce per capita potable water consumption by 25% by 2030.	No-cost	▪ Water bill savings from conservation (no-cost)	No cost
Carbon Sequestration				
CS-1	Increase carbon sequestration by preserving existing mature trees and planting 500 new trees and high emissions reduction potential land cover types throughout the community by 2030.	Low	▪ Potential energy bill savings from tree shade (no-cost) ▪ Cost of trees, water, and maintenance (low)	▪ <$500
CS-2	Maintain and expand existing restoration projects to sequester carbon in restored lands.	No-cost	▪ Property value appreciation from maintained open space (no-cost)	No cost
CS-3	Align with SB 1383 and procure products of organic diversion at a rate of 0.08 tons of organic waste per capita per year with a focus on increasing compost application within City limits to increase carbon sequestration.	N/A	N/A	N/A

[37] CalRecycle. 2016. Proposed Regulation for Short-Lived Climate Pollutants: Organic Waste Methane Emissions. Accessed at https://www.dof.ca.gov/Forecasting/Economics/Major_Regulations/Major_Regulations_Table/documents/Final_Sria_11-16%20.pdf#search=%22SB%201383%20Economic%20Analysis%22.

[38] Lid flipping fee for not complying with sorting organic diversion requirements can be placed by the City. Other cities have used a fee of $50 per bin for waste contamination. Accessed at: https://www.wm.com/location/california/san-joaquin/lodi/index.jsp

Measure ID	Measure Text	Community Cost Category	Community Cost Variables	Preliminary Cost Estimate by Measure
Funding and Administration				
F-1	Identify Administrative Needs for Successful CMS Implementation	N/A	N/A	N/A

Appendix C

Climate Mobilization Strategy Public Engagement Activities and Outreach

Public Engagement Activities and Promotion

The following section details the engagement activities and promotion efforts employed during the Climate Mobilization Strategy development process.

Council Engagement

Table 1 provides a timeline of the meetings and presentations taken to City Council during the CMS process.

Table 1 Council Engagement Events

Event	Date
Council Kickoff Presentation & GHG Inventory Summary Presentation	October 17th, 2022
Council Consent Item for Climate Mobilization Strategy Professional Services Agreement	November 21st, 2022
Council Update Presentation	May 1st, 2023
Council Review of Strategies and Actions	June 20th, 2023
Council CMS Review Presentation	September 5th, 2023
Council CMS Adoption Presentation	October 16th, 2023

Interested Party Engagement

Table 2 provides a timeline of the interested parties and small group meetings hosted during the CMS process.

Table 2 Interested Party Engagement Events

Interested Party	Date
Climate Action Healdsburg	July 25th, 2022 & March 15th & August 28th, 2023
Chamber of Commerce Government Affairs	February 9th, 2023
Rotary Club	March 27th, 2023
Senior Center	March 29th & April 6th, 2023
High School Eco-Art Club	April 7th, 2023

Community Engagement

Community Workshops

Community Kickoff Workshop (December 12th)

On December 12th the Community Kickoff Workshop was hosted in person at the Healdsburg Community Center in the Multi-purpose Room from 6:00 – 7:30pm. Approximately 50 community members attended and participated at the workshop. The workshop included a 20 minute presentation to start off the workshop followed by an interactive activity.

The intent of the workshop was to introduce the Climate Mobilization Strategy and provide information on the projects background to the community. The intent of the engagement activity was to gain initial insight into how the community viewed climate change, concerns related to climate change, specific areas the community felt the City should focus on to address climate change, and to understand how the community felt the Climate Mobilization Strategy (CMS) should fit into and support the community. The workshop was followed by a related survey.

PROMOTION

- Email blasts
- Social media
    - Facebook event
- Flyer/poster distribution
- Chamber/Visitor Center outreach
- Spanish Speaker outreach (in partnership with Corazon, including door to door outreach)
- Climate Action Healdsburg outreach
- City Manager newsletter
- Event posted on City calendar

ENGAGEMENT ACTIVITY

For each sector (i.e., Building Energy, Transportation, Solid Waste, Water/Wastewater, Other) the following discussion questions were posed to small groups of community members:

- How can the Climate Mobilization Strategy support the community qualities you value most?
- What concerns do you have regarding the climate and the future? What concerns do you have regarding the development of the Climate Mobilization Strategy?
- What actions do you feel the City should take to address climate impacts? What do you feel are the largest barriers to accomplish these actions?
- What actions can community members take to address climate impacts? What are the challenges you face to take such actions?

The attending City staff, and consultants circulated the room and tables to moderate and prompt discussion as needed.

From the workshop, it was identified that the community most values the small-town feel, safety, and natural environment of Healdsburg. Workshop participants were particularly interested in the CMS supporting active transportation infrastructure, preserving the natural environment, providing

opportunities for community members to be more sustainable (e.g., energy efficiency, expanding public transit, composting). Workshop participants were particularly concerned with drought and wildfires associated with climate change. Additionally, participants voiced concerns regarding affordability and equity related to the development of the CMS. Participants felt the City should focus on infrastructure improvements, rebates for individuals and protecting natural resources while there was concern that cost would be a barrier as well as business/ tourism interests may conflict with the community. Workshop participants indicated that community members should be responsible for things like reduced driving, composting or waste diversion and conserving resources (e.g., water and electricity), however education, cost, and changes in individual behavior was indicated as the largest perceived barriers.

Forecast, Targets, and Strategies Workshop (March 1st)

On March 1st a Community Workshop was hosted virtually via Zoom from 6:00 – 7:30pm. Approximately 40 community members attended the workshop virtually. The workshop started with a 20 minute presentation and status update followed by an engagement activity. Additionally, the workshop included a Spanish Watch Party hosted at the Community Center and facilitated by Corazon. The watch party included approximately 12 community members.

The goal of the workshop was to 1) inform the community of status of the CMS, findings of the previously provided feedback, and explain the challenges and opportunities to climate strategy development and 2) determine the communities priorities for types of strategies to employ in the community.

PROMOTION

- Email blasts
- Social media
    - Facebook event (English/Spanish)
    - Video with Mayor (English) and Parks Superintendent (Spanish)
- Flyer/poster distribution (English/Spanish)
    - Senior Center
    - Library
    - Community Center
    - City Hall & Community Development Center
    - Starbucks
    - Black Oak Coffee
- Chamber/Visitor Center outreach
- Spanish Speaker outreach (in partnership with Corazon, including door to door outreach in multiple neighborhoods)
    - Facilitated in-person interpretation of workshop activity
- Climate Action Healdsburg outreach
- City Manager newsletter
- Poster in Plaza (English/Spanish)
- Newspaper inclusion of event
- Event posted on City calendar

ENGAGEMENT ACTIVITY

The engagement activity was hosted using Mural Board, a tool to allow for brainstorming and collaboration on a virtual platform. Multiple breakout rooms of small groups were hosted where participants were encouraged to discuss their ideas for reducing emissions by each sector. The moderator of the room provided examples of strategies and prompted discussion and looked for participants to add their own ideas by sector via posted notes. After ideas were posted, the different ideas were voted on to give an idea of the level of support.

It was noted from participant feedback that the virtual platform was challenging to access and navigate and created frustration. This feedback guided future surveys and engagement activities.

From the mural board feedback, participants indicated a high level of interest in 100% carbon-free electricity, upgrading building codes for all electric, on-demand town shuttle services, increasing active transportation infrastructure, reducing cars in downtown, water conservation, and increasing natural habitat restoration.

Measures and Actions Workshop (July 26th)

On July 26th a Community Workshop was hosted at the Healdsburg Community Center from 6:00 – 7:30pm. Approximately 65 community members attended the workshop. The workshop started with a 20 minute presentation and status update followed by an engagement activity.

The goal of the workshop was to provide a forum for the public to review the drafted GHG reduction measures and actions and provide feedback in terms of support, no-support, or items that should be changed. The measures and actions brought to the workshop had already undergone multiple rounds of review by the City staff and included cost assessment of the actions and measures in terms of relative cost to the City and cost to the community.

PROMOTION

- Email blasts
- Social media
- Flyer distribution (English/Spanish)
- Spanish Speaker outreach (in partnership with Corazon, including door to door outreach)
- Climate Action Healdsburg outreach (including collaboration with Corazon and other outreach activities)
    - Op ed in newspaper
- City Manager newsletter
- Poster in Plaza (English/Spanish)
- Flyers and Pre-Meeting Slide at Council meeting

ENGAGEMENT ACTIVITY

The room was separated into 6 sections to focus on the sectors included in the CMS (e.g., Building Energy, Transportation, Solid Waste, Water, Carbon Sequestration, and Other). Each section contained the sector related measures as well as the actions and associated cost printed out on posters. Participants were provided green and red stickers to vote “support” or “does not support” on actions, respectively. The attending City staff and consultants were stationed around the room to answer questions and engage in discussion on the different actions and measures.

From the activity, it was noted that generally participants were in support of the proposed actions and measures as written, with more tree planting garnering the most support.

Community Surveys

Initial Climate Mobilization Strategy Survey (December 12th – January 31st)

Following the Community Kickoff Workshop the Climate Mobilization Strategy Survey was released. The survey was published in English and Spanish. The survey contained 10 questions that gauged what the respondent most valued about the Healdsburg community, how the CMS should support the community, concerns related to the development of the CMS, what sectors should be prioritized in the CMS and what they considered potential barriers.

PROMOTION

- Offered in both English and Spanish
- Email blasts
- Social media
    - Video with Utility Conservation Analyst (English/Spanish)
    - Reels of sample survey questions
- Flyer/poster distribution (English/Spanish)
    - Senior Center
    - Library
        - Posted at computer stations
    - Community Center
    - City Hall & Community Development Center
- Chamber/Visitor Center outreach
- Spanish Speaker outreach (in partnership with Corazon, including door to door outreach)
- Climate Action Healdsburg outreach
- City Manager newsletter
- Poster in Plaza (English/Spanish)
- Flyers at Council meeting
- Attend Senior Center lunch
- Senior Center newsletter
- Promotion at Rotary Club meeting
- January bill insert to all utility customers (English/Spanish)
- Added CMS information to template for all rebate check cover letters
- Email to all City staff

SURVEY RESULTS

There were 256 English responses and 12 Spanish responses to the survey. Survey respondents indicated that the aspects of the community that were valued most were the small-town feel, community and natural environment. Survey respondents ranked the changes to prioritize in the following order starting with the highest priority and ending with the lowest: water conservation,

water/wastewater, waste reduction, active transportation/reducing VMT, electrification of vehicles, electrification/decarbonization of buildings, and carbon sequestration. Respondents felt that the CMS should contribute to the community by increasing resiliency, reducing GHG emissions, improve transportation, increase community involvement, modernize buildings, and provide economic opportunities, where the list goes from most selected response to least. Respondents listed the following concerns regarding the development and adoption of the CMS from greatest to least concern: associated costs, regulatory limitations, other (e.g., effectiveness of plan, resource allocation), technology changes, and transportation changes.

Strategy Prioritization Survey (April 22nd – May 21st)

The Strategy Prioritization Survey was released April 22nd for approximately a month. The survey was published in English and Spanish. The survey was prepared using Balancing Act which asked respondents to select one of three options (e.g., low, medium, high) per type of strategy. The low, medium, high strategies related to the level of GHG emission reduction impact and the level of City and community effort that would be necessary to implement the strategy. For each strategy, background and major considerations for implementation was provided on the type of strategy. For each level of strategy implementation (e.g., low, medium, high) information was provided on relative cost of that level of strategy implementation, the GHG reduction impact, and the type of actions that would have to occur. Respondents had to select enough strategies to achieve at a minimum 33,000 MT CO2e of reductions to submit the survey. Respondents were also able to rank and prioritize their selections. The following over arching strategies were included in the survey:

- Increase carbon-free electricity
- Electrification of new construction
- Electrification of existing construction
- Shift driving to public transit or car-share
- Shift driving to walking or biking
- Increase electric vehicle adoption
- Reduce organic waste
- Reduce water consumption
- Increase carbon sequestration

The intent of the survey was to assess what respondents were willing to do to reach GHG reduction goals and which types of strategies they prioritized to get there.

PROMOTION

- Offered in both English and Spanish
- Email blasts
    - Press release
- Social media
    - Video with Utility Conservation Analyst (English/Spanish)
    - CMS informational pictures
- Flyer and brochure distribution (English/Spanish)
    - Senior Center
    - Library

  - Community Center
  - City Hall & Community Development Center
  - Coffee shops, ice cream store, and juice/smoothie store
  - Book stores
  - Healdsburg Center for the Arts
  - Safeway
  - CVS
- Chamber/Visitor Center outreach
- Spanish Speaker outreach (in partnership with Corazon, including door to door outreach and pop up tabling)
- Climate Action Healdsburg outreach (including collaboration with Corazon and other outreach activities)
- City Manager newsletter
- Poster in Plaza (English/Spanish)
- Flyers and Pre-Meeting Slide at Council meeting
- Promotion at Rotary Club meeting
- Email to all City staff
- City Pop Up tables
  - Black Oak Coffee (April 27)
  - Library (May 3)
  - Senior Center Brunch (May 5)
  - Food Pantry (May 10)
  - Can Recycling Station (May 17)
  - Day Labor Center (May 19)

SURVEY RESULTS

There were 460 English responses and 106 Spanish responses to the survey with an additional 65 survey responses occurring at the Climate Fest Pop-up event. In the energy sector, the results of the balancing act survey prioritized strategies in the following order: 1) increase carbon-free electricity, 2) electrify new construction, and 3) electrify existing construction. From the survey, the goals that received the most votes by strategy were: increase carbon-free electricity to 100% renewable and carbon-free, electrify new construction by 100%, and electricity 25% of existing buildings. In the transportation sector, the results of the balancing act survey prioritized strategies to shift driving to walking and biking with a goal of 15% mode shift being most favorable. English and Spanish responses differed for the other transportation strategies, where English responses indicated a preference for increasing electric vehicle adoption over increasing public transit use and Spanish responses indicated a preference for increasing public transit use over increasing electric vehicle adoption. From the responses, it appeared that a mode shift to 10-25% of public transit use was most favorable. A goal for an increase of electric vehicle adoption to 40-50% received the most votes from all respondents. A majority of respondents selected an organic waste diversion goal of 90% and a water conservation goal of 25%. Based on survey results the top four strategies were prioritized in the following order, where one is the highest priority: 1) increase carbon-free electricity between 85-100%, 2) electrify new construction (100% all-electric buildings), 3) reduce

organic waste by diverting at least 90% organic waste from landfills, and 4) shift driving to walking and biking (15% mode shift). English respondents also ranked the strategy to increase electric vehicle adoption to 40-50% as a top five priority. Spanish respondents ranked the strategy to electrify existing building by 25% as a top five priority.

Final Strategy Survey (August 22nd – September 10th)

In conjunction with the publishing of the CMS Public Review Draft for public comment, the Final Strategy Survey was released on August 22nd. The survey focused on specific aspects of key measures and actions to better understand community support for some of the actions that will require more changes or cost impacts. The results from this survey will be used to better understand community support for some of the key actions and to focus the implementation.

PROMOTION

Promotional activities were similar to those used for the first two surveys.

SURVEY RESULTS

There were 404 English responses and 72 Spanish responses to the survey. The survey asked respondents about their willingness to pay additional electricity costs that would likely be associated with the CMS goal to obtain 85% renewable and carbon-free electricity by 2030. Overall, 57% of respondents were not willing or somewhat unwilling, 37% willing or somewhat willing, and 7% were neutral. A majority of Spanish respondents (87%) were not willing to take on this cost. Respondents were asked to what extent they agree with a policy that requires existing gas appliances to be upgraded with electric appliances for existing buildings during large renovation projects (over $250,000 residential, and over $500,000 commercial). A majority of Spanish respondents indicated that this was not applicable as they were not building owners; whereas 58% of English respondents disagreed with the policy and 37% agreed with the policy. The survey asked several questions related to driving including whether respondents were willing to pay a parking fee downtown to reduce individual driving, which alternative transportation method the respondent would most likely use, and what resources would need to be available to encourage purchase and use of an electric vehicle (EV). The majority of survey respondents (74%) opposed the implementation of a downtown parking fee with 73% of Spanish respondents and 45% of English respondents noting that they did not want to reduce their individual driving. However, 40% of English respondents indicated that walking or biking would be a preferred method. 55% of Spanish respondents and 34% of English respondents indicated that they do not want to switch to an EV, while 39% of Spanish respondents and 2% of English respondents found that measures related to EVs are not applicable because they do not own a car. English respondents showed the most support (47%) for discounts, rebates, or incentives to offset initial costs, followed by public charging opportunities (33%), affordable public charging rates (27%), incentives for charging at certain times (17%), and expediate process to install chargers (15%). Support for other resources including multifamily housing charging, workplace charging opportunities, and opportunities to participate in an EV car share program had less than 10% support. A majority of English respondents (83%) are already sorting their organic waste or plan to (6%). Though 32% of Spanish respondents are currently sorting organic waste, 39% are not and do not plan to. When asked whether the respondent supports the implementation plan, a majority of Spanish respondents did not (88%); while there was a split response from English respondents with about half not supporting (48%) the plan and about half supporting (45%) the plan. The survey focused on the more difficult actions and did not ask about other supportive and engagement actions that are also included in the CMS,

which could have contributed to lower levels of support. Edits were made to some CMS actions to address feedback and comments received.

Community Pop-up Events

In addition to the above detailed community workshops and surveys, there were also several pop-up events conducted to promote the CMS and engage the public. The Climate Fest Booth is described below and the other pop-up events were intended to promote the Strategy Prioritization Survey described above.

Climate Fest Booth Activity (April 22nd)

The City hosed a booth at Climate Fest in Healdsburg Plaza. At the booth, City staff and consultants engaged with the community and promoted the recently released Strategy Prioritization Survey. Additionally at the booth, the City hosted an engagement activity which gauged participants interest in implementing different GHG reduction strategies such as waste diversion, electrification of their home and vehicles, and increased active transportation.

PROMOTION

- Email blast
- City Manager Newsletter
- Social media
- Overall Climate Fest promotional activities
- Opportunity drawing for e-bike for electric customers that participated in activity at booth

Appendix D

Implementation Plan

Implementation Plan

Measure / Action	Action Text	Start Date	Responsible Departments	Estimated Costs
Measure BE-1: Procure 85% of electricity from renewable and zero-carbon sources by 2030 and 100% renewable and carbon-free no later than 2045. (Mandated) [1]				
BE-1.1	Conduct electrification infrastructure and capacity feasibility studies. This would include: ▪ Develop a long-range community-wide electric energy and demand forecast to estimate future usage and peak demands due to adoption rates of building and transportation electrification. Use the forecast to help inform the amount of new energy sources and system capacity improvements required. ▪ Formalize the City's electric department long-range (ten-year) electric capital improvement plan with consideration for necessary infrastructure improvements to meet future demands. ▪ Using the developed long-range energy and demand forecast, formalize a pathway (resource-plan) to meet the City's energy needs and list of potential resources through 2045. Generation Resources may include a combination of local and remote generation sites as well as energy storage. ▪ Prioritize and schedule projects for implementation. The energy forecast study and formalized plans should identify barriers for implementation of priority projects, as well as identify funding sources, impacts on rates, and partnerships needed for successful implementation.	Q1 - 2024	Utilities	**Moderate** ▪ Consultant time to conduct electrification feasibility and capacity studies (moderate) [$180,000 - $400,000] ▪ Staff time [estimated 400 hrs] to support feasibility and capacity studies research (moderate) [$70,000 - $100,000] ▪ Total [$250,000 - $500,000]
BE-1.2	Develop a resolution that Healdsburg Electric will exceed the requirements of SB 100 and SB 1020 by 2030 where 85% of the electricity mix is sourced from a combination of eligible renewable sources and/or carbon-free sources. As part of this resolution include actions of: 1. In setting the target, establish valuation rankings for various generation types and projects. 2. Consider the reliability and cost benefits of energy storage and/or demand response by 2030. 3. Continue to offer 100% renewable Green Rate with consideration that both the Standard and Green rates will reach the SB 100 goal of 100% renewable and carbon-free energy by 2045. 4. Indicate that geothermal and other low-carbon eligible renewables will continue to be included in the overall electricity mix.	Q4 - 2024	Utilities, City Manager's Office	**Low** ▪ Staff time [estimated 240hrs] to conduct research, collect data to develop resolution, gain community input, and develop staff reports and presentations for resolution adoption (low) [$38,000]
BE-1.3	Work with Lodi Energy Center (LEC) project participants to identify ways to advocate for and support the Department of Energy grant application to fund the LEC hydrogen-electrolyzer project. Identify and pursue other possible incentives or funding to transition facility to green hydrogen. This will reduce emissions of Healdsburg Electric electricity and increase reliability of the electricity source.	In progress	Utilities	**Low** ▪ City and NCPA staff time to support the grant application preparation (low)
BE-1.4	Work with community groups, local organizations, and NCPA to: ▪ Engage with community to advertise/highlight the adoption of the resolution establishing the goal of achieving 85% renewable and/or carbon-free electricity by 2030 and 100% renewable and/or carbon-free no later than 2045. Provide information on the process for providing reliable electricity 24/7 year around and the importance of power sources to ensure the reliability of the electricity provided. ▪ Provide information to the community on the importance of achieving this goal and how to meet this goal through city and community actions and involvement. This may include information on the benefits of local generation of renewable energy versus purchasing of Renewable Energy Certificates (RECs) to promote community installation and use of solar and battery storage to better achieve local carbon-free electricity community wide. ▪ Implement a software solution for residents and businesses to view electric consumption data in near real time. ▪ Include information on time of energy use as it factors into carbon intensity and how community members can capitalize on using electricity when it has the lowest carbon intensity (e.g., when to charge electric vehicles and when to run space heating and cooling). Work with industry experts to help with demand response planning, developing strategies to increase flexibility of the grid, and for informing consumers of carbon intensity of the electricity they are using to promote behavior change.	Q1 - 2025	Utilities, City Manager's Office, Community groups	**Low** ▪ Staff time to develop partnerships and perform outreach, engagement, and education (low) ▪ Materials and supplies for outreach, engagement and education events (low)
BE-1.5	Partner with community organizations to ensure low/moderate income households are aware of the CARE and State's HEAP program to receive decreased electricity rates and provide technical assistance.	Ongoing	Utilities, City Manager's Office, Community groups	**Low** ▪ Staff time to develop partnerships and perform outreach and education (low)

[1] SB 100 and SB 1020 requires that electric utilities electricity is 60% renewable by 2030, and 90%, 95%, and 100% renewable and carbon-free by 2035, 2040, and 2045, respectively.

Measure / Action	Action Text	Start Date	Responsible Departments	Estimated Costs
Measure BE-2: Continue to adopt an Electrification Reach Code for all new residential and commercial buildings with each triannual code cycle. Consider updating electrification ordinance to eliminate natural gas consumption in new construction for the 2025 California Building Standards Code and moving forward.				
BE-2.1	Continue to enforce the Electrification Reach Code for the 2022 California Building Standards Code requiring electric space and water heating in new construction.	In progress	Community Development	**No new costs** ▪ Continue staff time to enforce code (no cost)
BE-2.2	In 2025 and every 3-years thereafter if not included within State building codes, revisit the building electrification ordinance to update the scope. As part of ordinance update, consider the following scope changes: 1. Minimize the exemptions associated with the ordinance, while allowing for health and safety exemptions as necessary and exploring potential exemptions for specific use cases determined to have substantial economic development or business impacts. 2. Continue to require the submittal of an infeasibility waiver to review specific end uses where electrification is technologically infeasible. 3. Require that any end-use deemed infeasible for electrification exceed existing Title 24 energy efficiency standards and be electric ready for future electrification. 4. Establish a zero NOx threshold. 5. Specify that affordable housing developments will be all-electric to ensure no stranded assets. 6. Revisit substantial remodel and improvement definitions to be included in the ordinance.	Q3 - 2025	Community Development, Utilities	**Low** ▪ Staff time to update ordinance (low)
BE-2.3	Engage with the community, key stakeholders, and local-based community organization representing vulnerable communities to raise awareness about building electrification before revising the electrification ordinance. Emphasize the economic and environmental advantages of electrification and address concerns related to emergency response to minimize exceptions. Publicize the cost savings, environmental benefits, and flexibility of electrification through the City website and permit counters, targeting builders, property owners, and contractors.	Q1 - 2025	Community Development, Housing, Utilities, Community Groups	**Low** ▪ Staff time to conduct outreach and education (low) ▪ Materials and supplies for outreach and engagement (low)
BE-2.4	Engage with interested parties, both internal interested parties, such as City staff and officials, and external interested parties, such as local developers and community groups regarding the purpose and impact of the Healdsburg Electrification Reach Code and to identify and address equity concerns in policy implementation.	Q1 - 2025	Community Development, Housing, Utilities, Community Groups	**Low** ▪ Staff time to conduct outreach and education (low) ▪ Materials and supplies for outreach and engagement (low)
BE-2.5	Engage with affordable housing developers to leverage incentives for new all-electric and efficient low-income residential buildings through the California Energy Commission Building Initiative for Low-Emissions Development (BUILD) Program and the Affordable Housing and Sustainable Communities (AHSC) Program. Regularly investigate and leverage other incentive programs available for electrification of new buildings.	Q1 - 2024	Community Development, Housing, Utilities	**Low** ▪ Staff time to conduct outreach and education, and research existing incentive programs to promote (low) ▪ Materials and supplies for outreach and engagement (low)
Measure BE-3: Decarbonize residential building stock by 8% by 2030.				

Measure / Action	Action Text	Start Date	Responsible Departments	Estimated Costs
BE-3.1	Align with SB 379 to implement an online, automated permitting platform. As part of a comprehensive permitting compliance program, include routine training of City staff, dedicating City staff time to building inspections, charging fees for noncompliance, providing easy-to-understand compliance checklists online and with permit applications, and facilitating expedited permitting online, including solar and battery storage.	In progress	Community Development	**Low** ▪ Ongoing staff time to review projects and implement compliance program. (Low) [$12,000 - $15,000 annually] ▪ Grant received and in process for online permitting.
BE-3.2	As allowed by law, continue to provide incentives available for community members installing solar and battery storage to their homes such as a Net Metering Program with high-compensation NEM rates, and continue to provide incentives for energy efficiency and efficient electrification upgrades, as well as promote other funding and incentive opportunities available through the State and Federal government. Provide resource information to the community through websites, workshops, and partnerships. Include outreach to newly sold homes, when homeowners are more likely to make upgrades.	In progress	Utilities, Community Development, Community Groups	**Moderate** ▪ Staff time [estimated 200 hrs] for program expansion to include outreach to newly sold homes (low) [$20,000 - $35,000] ▪ Consultant time for outreach activities, develop outreach tool-kit, and website upkeep (low) [$30,000 - $50,000] ▪ Materials and supplies to provide to community (e.g., brochures) (low) [$2,000 - $5,000] ▪ Incentives and rebates to offset home or property owner costs (moderate) [$200,000 - $300,000 annually] ▪ Net Energy Metering compensation for excess electricity generation (moderate) [$0.0888 per kWh net-generation] ▪ Total [$252,000 - $390,000]
BE-3.4	Develop an appliance direct install program for Multi-Family income-restricted properties. Consider implementing a Neighborhood Retrofit Program to improve resiliency in residential buildings (i.e., on-site power generation and storage, weatherization, cooling, etc.), with an emphasis on connecting incentives and resources with rental property owners and low-income residents. Partner with community organizations to utilize existing resources.	In progress	Utilities, Community Development	**Moderate to High** ▪ Staff or consultant time to develop and launch program, conduct outreach, develop partnerships, and coordinate implementation (moderate) [$100,000 – $200,000 annually] ▪ Vendor cost to provide appliances and direct install services (moderate to high) [up to $2,500,000] ▪ Materials and supplies for outreach activities (low) [$2,000 - $10,000 annually] ▪ Other incentives and rebates included in BE-3.5 ▪ Total [$2,600,000 – $2,710,000] ▪ Proposed Budget [$500,000 Annually]
BE-3.6	Continue to conduct periodic energy efficiency rebates reviews. Promote existing available rebates and incentives for energy efficiency and electrification from Healdsburg Electric, the State, and the Federal government through partnership with community groups to educate the community on ways to finance electrification.	In progress	Utilities, Community groups	**Low** ▪ Staff time to review rebates and conduct community outreach (low)
Measure BE-4: Decarbonize non-residential building stock by 5% by 2030.				
BE-4.2	Continue to partner with electrification/efficiency experts to provide guidance to commercial buildings covered by the new code(s) and/or ordinance(s).	In progress	Community Development, Utilities	**Low** ▪ Continue partnerships to provide technical assistance (low) ▪ City staff estimate current costs at less than $10,000 per year, depending on technical support needed.

Measure / Action	Action Text	Start Date	Responsible Departments	Estimated Costs
Measure BE-4A: Decarbonize 50% municipal buildings and facilities by 2030.				
BE-4A.1	Develop a resolution to decarbonize 50% of municipal buildings and facilities by 2030 and 100% by 2045, by retrofitting natural gas appliances with electric alternatives. Include in the resolution an 'electric first' purchasing policy for any equipment or appliances in need of replacement.	Q2-2024	Community Development, Central Services	**High** ▪ Staff time [60 hrs] to develop resolution and develop replacement schedule (low) [$8,000 - $12,000] ▪ Consultant to conduct natural gas appliance audit (moderate) [$40,000 – $60,000] ▪ Capital/comparative cost for appliance and lighting replacements and building retrofits as needed (high) [$35-$200/square foot] ▪ Long-term energy bill savings (no-cost) [~ $2,000 over 15 years] ▪ Total per 50,000 square feet [$1,796,000 - $10,070,000]
BE-4A.3	Complete a Wastewater treatment plant energy efficiency study and implement the highest impact recommendations. Utilize grant funding opportunities as much as possible.	In progress	Utilities	**High** *City staff estimate:* ▪ Staff time to acquire funding (low) *[$5,000]* ▪ Staff and consultant time to conduct an energy efficiency study (moderate) *[$45,000 - $85,000]* ▪ Capital costs to implement study recommendations (high) *[$10,000 - $1,000,000+]* ▪ Total [*$60,000 - $1,090,000+*, depending on grant funding opportunities]
Measure T-1: Implement programs that increase access to safe active transportation, such as walking and biking, that achieve 15% of active transportation mode share by 2030.				
T-1.1	Work with Sonoma County Transportation Authority (SCTA) to update the 2013 Existing and Planned Bicycle and Pedestrian Facilities for City of Healdsburg with new planned and completed projects by 2025. As part of the update consider including: 1. Identified projects from the 2013 plan not yet implemented and include a progress update and/or reasons that identified projects were determined infeasible in updated Master Plan 2. Safe Routes to School plan 3. Increased biking infrastructure off the main street to enhance connectivity throughout the City and/or in communities where there is currently no or limited infrastructure 4. In partnership with surrounding communities, identify opportunities for infrastructure improvements or expansions to enhance cross-community active transportation 5. Explore streets for permanent through traffic closures to promote walking, biking, and other forms of active transportation with a focus on closing off downtown 6. Explore areas of the City to remove parking and/or additional traffic lanes to prioritize walking and biking 7. Determine equity barriers to safe bike and pedestrian infrastructure.	In progress	Public Works	**High** Initial Planning Cost ▪ Consultant time to develop Safe Routes to School Plan (SRSP) (moderate) [$100,000 - $210,000] ▪ Staff [estimated 300 hrs] time to work with SCTA to update Bicycle and Pedestrian Plan (moderate) [$150,000 - $300,000] ▪ Consultant or staff time to conduct analysis (e.g., identification of areas for through traffic closure, equity analysis) for update (moderate) [$45,000 - $60,000] ▪ Materials and supplies needed for outreach and engagement events throughout process of updating document (low) [$5,000 - $10,000] ▪ Total [$300,000 – $580,000] (some costs supported by grant for plan update) Estimated Infrastructure Cost based on study for FHWA (would vary substantially based on location and improvements needed) ▪ Capital cost for increasing and improving biking infrastructure (high) [$325,000 - $650,000 per mile] ▪ Capital cost for short-term street closures (moderate) [$50,000 – $150,000 per closure location]
T-1.2	Continue to utilize discretionary funds to implement the bicycle and pedestrian infrastructure improvements and updates such as the protected bike lanes along Healdsburg Avenue and reduction of through lanes on Healdsburg Avenue (e.g., Healdsburg Avenue Improvement Project). Select consultant to finalize designs for Healdsburg Avenue Improvement Project by end of 2023 to aim for project completion end of 2028. Improvement projects underway include: 1. Healdsburg Avenue Complete Streets improvements 2. Grove Street improves including ADA compliance 3. Foss Creek & Front Street connections 4. Saggio Hills Foss Creek Pathways Extension	In progress	Public Works, Finance Department, Community Services	**High** ▪ Staff and consultant time to finalize designs (low) ▪ Infrastructure investment (high) ▪ Capital costs to implement bicycle and pedestrian infrastructure improvements (high) *City staff estimate for current projects underway:* ▪ Healdsburg Ave [*$15M*] ▪ Grove Street [*$3-4M*] ▪ Foss & Front [*<$1M*]
T-1.4	Develop the Pilot Bike Share Program into a permanent and dependable bike share network that provides access to key destinations throughout the City, and work with regional partners including SMART and others, to assess potential for a regional bike share system. Include educational outreach and campaigns promoting use of the re-inspired program.	Q3 - 2025	Public Works, Community Development, Community Groups	**Moderate** ▪ Staff time to develop regional partnerships and conduct outreach and education (low) ▪ Staff time and capital costs to develop program (moderate) ▪ Total [Current 3-year pilot costs approximately $100,000 per year. Staff estimate future costs of $100,000-$150,000 annually, and would encourage bike share vendor to seek local business sponsorship.]
T-1.5	Coordinate regionally through Sonoma County leveraging the regional active transportation plan to facilitate cross-community active transportation improvements, such as SMART multi-use path and Great Redwood Trail. As part of this action include community outreach and education on active transportation improvements to affected areas as well as the community.	In progress	Public Works, Community Development, RCPA/SCTA, Community Groups	**Low** ▪ Staff time to conduct education and outreach and coordinate infrastructure improvements with regional partners (low)

Measure / Action	Action Text	Start Date	Responsible Departments	Estimated Costs
T-1.6	Evaluate existing bike parking facilities and evaluate what improvements can be made to increase supply, reduce theft, and increase rider attraction. Based on existing surveys and evaluation findings, improve and expand existing bike parking facilities throughout the city. Improve bike parking facilities near public transit stops and expand access to safe transit (i.e., first and last-mile access), as well as considering car parking spaces that could be converted to bicycle parking. Include analysis of last mile limitations and hurdles. Explore ways to require safe, secure bike parking and/or bike lockers as part of large commercial and multi-family projects.	Q1 - 2024	Public Works, Community Development	**Moderate** ▪ Staff and consultant time to conduct evaluation and identify opportunity improvements (moderate) ▪ Total *[City staff estimate costs to be similar to BE-3.1 and BE-3.2 [$35,000 - $140,000]]* ▪ Initial budget of $10,000
T-1.8	Partner with local bike shops to provide subsidies to low-income residents for e-bikes, helmets, locks, and other bicycle equipment. Continue to offer e-bike rebates with increased rebate opportunities for low-income customers. Implement an income-qualified coupon for the e-bike share program, in addition to the available 50% discounted e-bike share rate.	In progress	Utilities	**Moderate** ▪ Staff time to develop partnerships (low) ▪ Capital costs to increase and provide new rebates (moderate) ▪ Total *[City staff estimate $50,000 annually]*
Measure T-2 Implement programs for public transportation that achieve 10% of public transit mode share by 2030.				
T-2.4	Work with public transit partners and rider groups to improve ridership through improved routes and modifying schedules to increase efficiency and align with riders needs. Ensure public transportation access and improvements to ridership and route efficiency are prioritized in low-income areas, active aging neighborhoods, schools and at major destinations. This could include surveying existing transportation services, routes, schedules, and facilities throughout the city and developing a plan to improve these for implementation with preference given to improving public transportation facilities, schedules, and expand access to transit (i.e., first and last-mile access).	Q2 - 2024	Public Works, SCT, SMART, AMTRAK, Community Development, Community Groups	**Moderate** ▪ Staff and/or consultant time to conduct survey, develop a plan, and coordinate with partners and stakeholders (moderate) ▪ Total *[City staff estimate $ 35,000 - $ 140,000]*
Measure T-2A Structural: Explore the development of a micro-mobility and/or car-share program to support mode shift from single occupancy fossil fuel vehicles to Zero Emission Vehicles.				
T-2A.1	Conduct a background review of options for purchasing, operating, and maintaining an on-demand door-to-door e-shuttle. This may include the development of a new on-demand e-shuttle, the expansion of DASH (Drivers Assisting Seniors in Healdsburg) for all residents of Healdsburg, or the development of a program to subsidize the cost for electric car-share programs such as Uber or Lyft. The analysis should include identification of potential funding sources (e.g., grants, local taxes, local business sponsorship, discretionary funds, etc.) and identification of barriers and opportunities for how such a micro-mobility program may enhance active transportation or public transit use. Present the findings to City Council and the public to determine next steps.	Q2 - 2024	Public Works, City Manager's Office, Community Groups	**Moderate** ▪ Staff and consultant time to conduct feasibility study (moderate) *(City staff estimate costs similar to T-1.6 [$35,000 - $140,000].)*
T-2A.2	Based on the findings of the feasibility study and the response from City Council and the public, develop and implement a micro-mobility policy that establishes a deployment protocol and permitting process, identifies any restrictions for use for safety reasons, and promotes equitable access through requirements for consistent placement of micro-mobility devices (e-scooters, e-bikes, etc.) in underserved areas or reductions in usage fees for lower-income users.	Q1 - 2025	Public Works, City Manager's Office	**Moderate/High** ▪ Staff time [300 hrs] to develop and implement micro-mobility policy (moderate) [$35,000 - $60,000] ▪ One part-time employee for staff management of program and permitting process (moderate) [$50,000 - $70,000] ▪ Annual cost to fund micro transit service operated by City (high) Micro transit annual budget ***if City funded*** [$500,000 - $2M] ▪ Funding potential through Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program
Measure T-3: Develop programs and policies to discourage driving single passenger vehicles and to support the bicycle/pedestrian and public transit mode share goals of Measures T-1 and T-2.				
T-3.3	Pursue land use and development policies that promote infill development and/or increased density of residential development in the downtown core, along transit corridors, and within future planned development areas that is compact, mixed use, pedestrian friendly, and transit oriented where applicable	Q3 - 2024	Community Development, Housing	**Moderate** ▪ Staff and consultant time to develop policies (moderate) ▪ *City staff estimate costs of approx. $140,000.*
Measure T-4: Increase passenger zero-emission vehicle use and adoption to 30% by 2030.				

Measure / Action	Action Text	Start Date	Responsible Departments	Estimated Costs
T-4.3	Continue to promote the EV Monthly Bill Discount Program with increased discount opportunities for low-income customers, and develop an updated or replacement program following program sunset in 2025. Continue to promote affordable EV charging rates at city-owned EV charging stations and adjust rates as necessary to cover program costs. Explore methods for charging different rates for different user groups or other programs to offset charging costs at public stations for low-income residents.	In progress	Utilities	**Moderate** ▪ Continue staff time to promote programs and rates (no cost) ▪ Staff time and capital costs to develop incentive program (moderate) ▪ Total *[City staff estimate $150,000 - $200,000 annually]*
T-4.4	Utilize the CALeVIP rebate to install new electric vehicle chargers at the Senior Center and downtown Maher lot. Applied for Federal Charing and Fueling Infrastructure (CFI) grant to install electric vehicle chargers at the Community Center, Giorgi Park, High School, and West Plaza. These projects would add 34 new public EV charging ports.	In progress	Utilities, Community Development, Community Services	**Moderate** ▪ Capital costs to install electric vehicle chargers, offset by grant funding (moderate) ▪ Total *[City staff estimate $425,000 from already approved budget, plus an additional $680,000 from grant funding (if awarded)]*
T-4.6	Identify and promote incentives and financing options for residential electric vehicle charger installations. Develop programs and policies to add 500 new publicly accessible and private workplace Level 2 and 3 electric vehicle charging stations to the City by 2030 through grants such as the California Energy Commission's Clean Transportation Program. Develop programs that incentivize residents and businesses to charge during times of abundant solar resources and avoid charging during peak hours and grid emergencies	In progress	Public Works, Utilities, City Manager's Office	**Moderate to High** ▪ Staff time to conduct outreach and education (low) ▪ Staff time to develop programs and policies (moderate) ▪ Total *[City staff estimate $500,000 - $2,500,000, depending on public charger rebate amount and grant availability. Proposed budget of $100,000 annually. Other action components to leverage T-4.5]*
Measure T-5 Increase commercial zero-emission vehicle use and adoption to 40% by 2030.				
T-5.1	Complete white paper for US Postal Service fleet electrification in Healdsburg. Use white paper to inform the overall electrification study (BE-1.1) regarding commercial fleet electrification, peak demands, and on-peak/off-peak energy requirements. This information can be applied to other identified commercial vehicle fleets in Healdsburg.	Q4 - 2023	Utilities, City Manager's Office	**Low** ▪ Staff time to complete white paper and provide for comment (low)
Measure T-5A: Lead by example and electrify or otherwise decarbonize the municipal fleet in compliance with the state's Advanced Clean Fleet Rule. (Mandated) [2]				
T-5A.1	Continue to implement the Zero-emission vehicle first purchasing policy for all light-duty municipal vehicles, and update to also include off road equipment, medium-duty vehicles, and provide a path to comply with the State's Advanced Clean Fleet rule requiring 50% of medium- and heavy-duty vehicle purchases be zero-emissions beginning in 2024 and 100% beginning in 2027. Also consider operational needs to determine appropriate size of vehicles. Maintain exemptions needed to ensure public safety and delivery of critical services.	Q1-2024	Central Services	**Moderate** ▪ Staff time to update policy (low) ▪ Comparative cost to purchase and maintain ZEV instead of internal combustion engine vehicle and off road vehicle (low – moderate) ▪ Lifecycle cost savings for ZEV (no-cost) ▪ Total on-road *[City staff estimate incremental light duty vehicle cost increase of $10,000-$15,000 per vehicle, additional charging infrastructure costs of $200,000, and ongoing savings in fuel costs. Incremental costs for medium- and heavy-duty vehicles will vary widely.]* ▪ Total off-road *[City staff estimate incremental off road vehicle replacement cost increase of $20,000-$30,000 per vehicle, additional charging infrastructure costs of $50,000, and ongoing savings in fuel costs.]*
T-5A.2	Install additional ZEV chargers in municipal parking lots for fleet, employees, and public use to meet projected demand.	In progress	Community Development, Utilities, Central Services	**Moderate** ▪ Capital costs to install ZEV chargers (moderate) ▪ Total *[City staff estimate public chargers to cost up to $200,000 per parking lot (6 connectors), depending on infrastructure and accessibility. Non-public charger costs are substantially lower.*]
T-5A.3	Develop a resolution to replace City-owned end-of-life small off-road equipment with electric equipment (e.g., lawn equipment and leaf blowers) at time of replacement.	Q1-2025	Public Works, Community Services, Central Services	**Low** ▪ Staff time to develop resolution (low) ▪ Incremental costs for small off road equipment (low – moderate)

[2] The Advanced Clean Fleets regulation applies to any local government agency, such as a city, with one or more vehicles with a gross vehicle weight rating greater than 8,5000 lbs, The regulation requires that affected fleets, beginning in January 1, 2024, must ensure that 50% of their annual vehicle purchases per calendar year are zero emissions and beginning January 1, 2027, that 100% of vehicle purchases are zero-emissions.

Measure / Action	Action Text	Start Date	Responsible Departments	Estimated Costs
Measure SW-1: Achieve Zero Waste by 2030 through 90% diversion of solid waste from the landfill. (Mandated) [3]				
SW-1.1	Meet the requirements of SB 1383 to reduce organics in the waste stream by 75% below 2014 levels by 2025 and achieve Zero Waste through 90% solid waste diversion by 2030. Include activities such as: 1. Implement enforcement and fee for incorrectly sorted materials with sensitivity to shared collection. 2. Assure adequate bin signage across commercial and residential areas of acceptable landfill, recyclable, and compostable materials. 3. Conduct additional free food scrap collection pail giveaways and promote the free curbside organics collection service by Recology 4. Expand existing ban on disposable food ware made of polystyrene foam or products containing PFAS to include additional items without means of recycling or recycling markets, such as produce bags and straws. 5. Implement pilot project for reusables for restaurant to-go containers. 6. Identify long-term and alternate solutions for the community's wastewater bio-solids to avoid long hauling distances and develop local, beneficial reuse. 7. Identify public areas for adding organics collection and recycling bins where needed. Partner with Recology and Zero Waste Sonoma as applicable for the actions listed above.	In progress	Public Works, Recology, Zero Waste Sonoma, Community Groups	**Moderate** ▪ Staff time [estimated at 100 hours] to develop and implement pilot projects (moderate) [$20,000 - $38,000] ▪ Capital costs to develop and implement pilot projects (i.e., reusable to-go container program) (moderate) [$125,000 - $375,000] ▪ One-part time employee to develop and implement enforcement and fee program (moderate) [$60,000 - $80,000] ▪ Capital costs for adding bins in public areas (moderate) [$50,000 - $75,000] ▪ Staff time and materials and supplies to conduct outreach and education including bin distribution events (low) [$25,000 - $50,000 annually] ▪ Staff time [estimated at 80 hours] to amend existing ban on polystyrene products (low) [$12,000 - $15,000] ▪ Staff and consultant time to conduct feasibility study for wastewater bio-solids (moderate) [$100,000 - $150,000] ▪ Cost offset based on revenue from lid flipping fees (no-cost) ▪ Total [$400,000 – $700,000]
SW-1.2	Partner with Zero Waste Sonoma to support a Bring your own (BYO) education and outreach training for residents and businesses on reusables and implementing more sustainable packaging into daily use. Also educate the community on opportunities to use or compost food scraps. Provide resources of education and technical assistance on city website. Partner with libraries and other existing facilities to market campaigns about waste reductions, reuse and repair.	Q1 – 2025	Community Services, Housing, Public Works, Zero Waste Sonoma, Community Groups	**Low** ▪ Staff time to develop partnerships and conduct outreach and education (low) ▪ Materials and supplies for outreach and education (low)
SW-1.4	Leverage Zero Waste Sonoma 2022 Waste Characterization study and visual characterization conducted at the Healdsburg transfer station to understand the waste stream and create a plan to increase diversion and reduce contamination. Continue to work with Zero Waste Sonoma to conduct a waste characterization study every 5 years that includes Healdsburg to inform programs and policies.	In progress	Public Works, Zero Waste Sonoma	**Low** ▪ Staff and/or consultant time to create a plan (low) ▪ Continue staff time to maintain relationship with partners (no cost)
SW-1.5	Partner with Recology and/or Zero Waste Sonoma to pursue funding, such as the Organics Grant Program from CalRecycle or for projects through California Climate Investment, to reduce generated organic waste from multi-family homes and expand waste diversions programs within the City.	2024 – ongoing	Public Works, Recology, Zero Waste Sonoma	**Low** ▪ Staff time to develop partnerships and acquire funding (low)
SW-1.6	Develop and implement a Zero Waste Protocol for special events.	Q1 – 2024	Community Services	**Low** ▪ Staff time to create and implement a protocol (low)
Measure W-1: Reduce per capita potable water consumption by 25% by 2030. (Mandated)[4]				
W-1.1	Update the Urban Water Management Plan every 5 years, as required by the State, and implement the identified demand reduction actions to ensure compliance with the State's Making Water Conservation a Way of Life regulations. Include new actions in the UWMP as needed to achieve State regulations. List of actions that may be included is provided in CMS.	2025-2026	Utilities	**Moderate** ▪ Staff and/or consultant time to update plan (moderate) ▪ Total *[City staff estimate $15,000 - $20,000 to update required plan. Cost of implementation for new actions will vary widely.*]
Measure CS-1: **Increase carbon sequestration by preserving existing mature trees and planting 500 new trees and high emissions reduction potential land cover types throughout the community by 2030.**				
CS-1.1	Develop a Street Tree Master Plan to include goals for promoting street tree health, enhancing resiliency, increasing the environmental benefits and co-benefits resulting from street trees and shading, community engagement around the urban forest. Include activity to promote street tree health and maintaining existing trees through partnerships with the community and local organizations, including organizations with connections to vulnerable communities to assist in the implementation of the Street Tree Master Plan to ensure equity is prioritized as part of the plan.	Q1 – 2024	Community Services, Community Development, Public Works, City Manager's Office	**Low** ▪ Staff or consultant time to develop Street Tree Master Plan (low) [$50,000 - $200,000] ▪ Staff time [estimated 100 hrs] for community outreach activities and development of partnerships (low) [$10,000 - $20,000] ▪ Funding potential through CAL FIRE Urban and Community Forestry grant [$150,000 - $200,000] ▪ Total [$60,000 - $220,000]

[3] SB 1383 establishes a statewide goal of a 75% reduction in the amount of organic materials sent to landfill compared to a 2014 baseline. SB 1383 also establishes a statewide goal of a 20% increase in the amount of edible food recovered for human consumption by 2025. In addition, jurisdictions are annually required to procure organic waste products, such as compost, mulch, and SB 1383 compliant renewable natural gas.

[4] The State is currently finalizing the Making Water Conservation a Way of Life regulation. The regulation will set a unique Urban Water Use Objective for each water provider, based on standards for indoor residential water use, outdoor residential water use, outdoor commercial water use, water loss, and commercial best management practices. The standard for indoor residential water use will be set at 55 gallons per capita per day in 2024 and reduced by approximately 25% to 42 gallons per capita per day in 2030.

Measure / Action	Action Text	Start Date	Responsible Departments	Estimated Costs
CS-1.2	Develop a new Tree Protection Ordinance to include protection for native and heritage trees. The ordinance should regulate the removal of not just heritage trees, but native trees that increase the City's carbon stock and carbon sequestration. Ordinance may include: 1. Development requirements to protect or replace one-for-one existing trees and greenspace. 2. Implementation of a tree removal in-lieu fee that provides funding for the City to plant a new tree equivalent to every tree removed from private property. 3. Identification of native tree species and heritage trees to be protected. 4. Shade tree requirements for new development 5. Parking lot landscaping requirements 6. Increased permeable surfaces and green spaces in new development 7. Vegetative barrier requirements between busy roadways and developments to reduce exposure to air pollutants from traffic 8. Protocols for proper tree maintenance and care 9. Best practices to protect existing carbon stocks against wildfire risk	Q4 – 2023	Community Development, Community Services, City Manager's Office, Community Groups	**Low** ▪ Staff time to develop ordinance (low) ▪ Capital cost of trees (low) ▪ Lifecycle cost of tree maintenance (low)
CS-1.3	Establish an adopt-a-tree or adopt-a-street program that enables individuals, businesses, and community organizations to plant and care for trees in selected communities. Program should provide formalized information on appropriate trees eligible for planting in Healdsburg (i.e., native, drought tolerant, locations, fire resistant) and their maintenance. Leverage existing plant lists developed by nearby and partner organizations.	Q4 – 2023	Community Services, Community Development, Fire, Community Groups	**Moderate** ▪ Staff time and capital costs to develop program (moderate) ▪ Materials and supplies for education (low) ▪ Total *[City staff estimates $15,000 per 150 trees, to potentially be supported by in-lieu fees, donations, or other funding.]*
CS-1.4	Prioritize low-income areas of the city with less existing tree canopy for tree plantings. Increase shading in gathering spaces.	2024 – ongoing	Community Services, Community Development	**Low** ▪ Capital cost for planting and maintaining shade trees (low)
CS-1.5	Explore urban and community forestry grant programs (e.g., CAL FIRE) and other sources of state, federal, and philanthropic funding to fund urban forestry programs. As part of this effort, establish a goal to apply for at least one grant every three years.	2024-ongoing	Community Services, Fire, Public Works	**Low** ▪ Staff time to research grants and establish goal (low)
Measure CS-2: Maintain and expand existing restoration projects to sequester carbon in restored lands.				
CS-2.1	Continue maintenance and expansion of Healdsburg Ridge Open Space Preserve (150 acres), and the Fitch Mountain Park and Open Space Preserve (170 acres), including wildfire mitigation. Continue maintenance and restoration projects in existing green spaces within City and urban areas.	Ongoing	Community Services, Fire	**Moderate** ▪ Enhanced staff time to manage preserves and green spaces (moderate) ▪ Capital costs to expand preserves (moderate) (Expansion would depend on available land and partners)
CS-2.6	Partner with local community organizations to promote and coordinate sequestration opportunities and facilitate volunteer maintenance projects.	Q1 – 2025	Community Services	**Low** ▪ Staff time to develop partnerships and support outreach and engagement (low).
Measure CS-3: Align with SB 1383 and procure products of organic diversion at a rate of 0.08 tons of organic waste per capita per year with a focus on increasing compost application within City limits to increase carbon sequestration. (Mandated) [3]				
CS-3.1	Meet the baseline procurement requirement of SB 1383 through direct procurement of applicable products, as feasible, for the City's use and application. Establish contracts with service providers that use applicable products (e.g., landscape services, transportation services, waste haulers) on the City's behalf to meet the remaining procurement requirement not met through direct procurement.	Q1 -2025	Public Works	**Moderate** ▪ Staff time to evaluate opportunities and maintain procurement activities (low) ▪ Staff time to establish and maintain contracts (moderate) ▪ Total *[City staff estimate similar to part time enforcement in SW-1.1 [$60,000-80,000]]*
CS-3.2	Identify locations within the City to apply compost as applicable/appropriate to help meet the procurement requirements of SB 1383. Leverage Zero Waste Sonoma to collaborate with local schools, City Departments, Ag+Open Space, and the Resource Conservation Districts to identify additional opportunities to apply compost.	Q1 – 2024	Public Works, Community Services, Zero Waste Sonoma	**Moderate** ▪ Staff and/or consultant time to conduct study (moderate) ▪ Total *[City staff estimate approximately $35,000 for study and collaboration.]*
CS-3.3	Implement compost application on City-owned properties, according to findings of feasibility study for suitable locations and appropriate application rates.	Q2 -2024	Public Works, Community Services	**Low** ▪ Staff time to apply compost or coordinate with service providers (low) ▪ Increases to scope of work with service providers (low)
CS-3.5	Work with Recology and ZWS to provide residents, businesses, and developers with educational material on where to get compost and how it can be used (i.e., landscaping), as well as how compost promotes carbon sequestration. Consider increasing free compost giveaways.	Q1 -2024	Public Works, Recology, Zero Waste Sonoma, Community Groups	**Low** ▪ Staff time to develop partnerships (low) ▪ Materials and supplies for education (low) ▪ Bulk compost purchases (moderate)
CS-3.6	Prioritize providing increased outreach and translated materials on the annual compost giveaway to low-income households, small businesses, and other vulnerable communities.	Q2 – 2024	Public Works, Community Services, Community Groups	**Low** ▪ Staff time and outreach materials (low)

Measure / Action	Action Text	Start Date	Responsible Departments	Estimated Costs
CS-3.7	Apply for at least one grant every three years for obtaining grant funding for SB 1383 compliance, assuming there are such grant opportunities available.	2024 – ongoing	Public Works	**Low** ▪ Staff and/or consultant time to prepare grant applications (low)
CS-3.8	Work with Sonoma County to identify opportunities for a regional compost procurement program to help meet the organics procurement provisions of SB 1383 as well as streamline hauler routes through regional collaboration.	Q3 – 2024	Public Works, Sonoma County	**Low** ▪ Staff time to develop partnerships and identify opportunities (low)
Measure F-1: Identify Administrative Needs for Successful CMS Implementation				
F-1.2	Consider creating a Climate Program Manager new position who is responsible for implementing CMS measures and actions by drafting ordinances, managing technical studies, leading outreach efforts, updating online information, managing the webpages and social media posts to promote climate programs, networking with partners and stakeholders, and pursuing relevant and impactful grant opportunities.	Q1 - 2024	City Manager's Office, Human Resources, Finance Department	**Moderate** ▪ Staff time for new position [1 FTE] (moderate) ▪ Total *[City staff estimate up to $170,000 per year for salary, benefits, and operating expenses.]*
F-1.2	Report progress on CMS implementation annually to the City Council to measure progress and ensure accountability in achieving CMS emissions reduction goals.	2024 – ongoing	Climate Program Manager	**Low** ▪ Staff time to report progress (low)
F-1.3	Partner with RCPA and other jurisdictions to ensure transparency in GHG emission reporting and make GHG emission data and inputs publicly available.	Q2 - 2024	Climate Program Manager	**Low** ▪ Staff time to develop partnerships and coordinate (low)

Appendix E

GHG Emissions Reduction Measures and Actions for Future Consideration

Future Consideration

The list below includes items for future consideration as resources, partnerships, technology, etc. become available. It also includes items that other organizations can take the lead on and the City would provide minimal support or promotion as others choose to implement actions or develop programs. These items are measures and actions that were included in early drafts of the CMS measures and actions list or items that arose during the CMS development process. These items are not included in the final CMS measures and actions list, but may be considered in the future.

- Leverage, promote, and support as needed the efforts led by others that relate to the measures included in the CMS as new programs are developed or opportunities arise
- Consider requiring all large employers (more than 50 employees) and new construction to develop a Transportation Demand Management (TDM) Plan, including a Municipal TDM
- Consider adopting an internal carbon pricing policy
- Investigate opportunities for a city-wide carbon tax or other taxes/fees to fund future efforts
- Explore new carbon sequestration and carbon capture opportunities as technology advances and opportunities arise
- Evaluate opportunities to procure Renewable Natural Gas to meet the procurement requirements of SB 1383
- Consider park designs that increase carbon sequestration potential as parks are re-done or enhanced
- Consider adoption of a Construction Demolition ordinance
- Explore local opportunities to facilitate the siting and permitting of processing and end market infrastructure or participate in regional projects if developed
- Consider incorporating increased lid-flipping into franchise agreement with Recology