

Blueprint for Carbon Neutrality

Petaluma's Greenhouse Gas Reduction Plan

September 2023



**CLIMATE READY
2030**

City of Petaluma

Blueprint for Carbon Neutrality



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DISCLAIMER

This Blueprint for Carbon Neutrality articulates broad policies to achieve equitable climate action. The Blueprint does not approve, fund, or authorize the implementation of any specific projects. Each implementation program will be reviewed and approved over time and follow protocols for adoption, which may require additional public review, review by the City Council and Climate Action Commission and/or other advisory bodies, and/or environmental review under the California Environmental Quality Act.

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Chapter 1: Executive Summary

Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes include heatwaves, heavy precipitation, more frequent coastal flooding, droughts, and hurricanes. The State of California and the City of Petaluma are already experiencing the effects of a changing climate. Both gradual climate change (e.g., sea level rise) and climate hazard events (e.g., extreme temperature days) expose people, infrastructure, developed areas, and ecosystems to a wide range of stress-inducing and hazardous situations. These hazards and their impacts disproportionately affect the most sensitive populations in the city.

The City of Petaluma, in partnership with Raimi Associates, is proud to present this Blueprint for Carbon Neutrality. The Blueprint contains an overview of and plan to address the greatest challenge that we, as a community, have ever had to face -- Climate Change. Petalumans have already begun to address this challenge through progressive actions that have established Petaluma as both a Regional and National climate leader. As a demonstration of this leadership, Petaluma has set a very ambitious goal to be carbon neutral by 2030—this document provides the pathway to achieving this goal. Actions that the City of Petaluma have already taken towards achievement of this goal include:

- The City is conducting energy efficiency analyses and upgrades for City owned facilities which includes analysis of the existing electric service capacity.
- The City is taking advantage of renewable energy opportunities such as solar, floating solar, renewable diesel, LED streetlight conversions, participating in Sonoma Clean Power's Evergreen 100% Renewable Energy Program, and transitioning the City's vehicle fleet to electric where possible.
- The City has either adopted or is in the process of adopting ambitious climate policies and plans, such as: the Climate Emergency Framework; EV Preferred Purchasing Policy; Integrated Pest Management Plan; Tree Preservation Ordinance; EV Charging Infrastructure Master Plan; City-wide Electrification Initiatives; All-Electric Requirements for New Construction and Substantial Remodels; Prohibition of new Fossil Fuel Gas Stations; and Sustainable Purchasing Policy.
- The City is partnering with community organizations, such as Cool Petaluma, Daily Acts, and ReLeaf, to implement and strengthen climate action initiatives throughout the City.

Every person and business in Petaluma will play an important role in reducing their own emissions to help the city meet its target. Together—we can rise to meet this challenge and create a better community for us all in the process.

Additional cornerstone actions that are critical to Petaluma’s success in reducing greenhouse gas emissions are identified in this document, and will require prioritizing equity considerations for our most vulnerable populations.

With many jurisdictions, states and nations working to be carbon neutral by 2045, the City of

Petaluma set a bold goal to be carbon neutral by 2030. Even with the cornerstone actions that this Blueprint lays out for greenhouse gas emission reduction, it is not certain that the City will be able to reach Climate Neutrality by 2030 without complementary changes to the larger regional, statewide, national, and global systems that the City relies on and is a part of. Nearing our climate goal will require an almost complete transformation of our local economy and our community, while strengthening the quality of life that makes Petaluma so exceptional. The Blueprint provides a framework for the Petaluma community that provides an overview of climate change, the foreseeable impacts that we will face as a result, and steps that we as a community can take to continue to respond to this challenge. Our success in reducing our emissions depends on the actions of the community, City action, and City staffing and financial capacity. Conservatively, following this Blueprint will lead to a 61% reduction in Petaluma’s Greenhouse Gas emissions by 2030, however, rapid community action such as shifts to lower-GHG behaviors, including adopting sustainable modes of transportation and installing electric home appliances can dramatically accelerate results. To reach climate neutrality by 2030, Petaluma will need to implement energy efficiency and decarbonization modifications in 85 percent of all buildings in Petaluma; ensure that 25 percent of all vehicles in Petaluma are electric; and transition 75 percent of all travel trips to modes other than single-occupancy vehicles.

The City recognizes that the Blueprint is a living document. Enhancements to Federal and State policy, technological changes, funding opportunities, and social change will impact the pace, effectiveness, and fairness of program implementation. The Blueprint establishes a new, collaborative, and adaptive framework for City action, establishing a cross-departmental working group, departmental coordinators, training programs, monitoring and reporting protocols, and processes to take adaptive action each year.

The Blueprint includes city-specific actions that include City-funded programs, requirements for new and future development in the city, and partnerships with businesses, community-based organizations, and individuals. It is designed with 22 cornerstone actions across the sectors of buildings, energy, transportation, resource consumption, and ecosystems. These priorities lay the foundation for future success and action. The Blueprint will serve as Petaluma's Climate Action Plan in that it focuses on Greenhouse Gas reduction and is part of the City's comprehensive approach to climate planning, which also includes climate action and adaptation policies and actions that will be part of the General Plan, which is currently being updated.

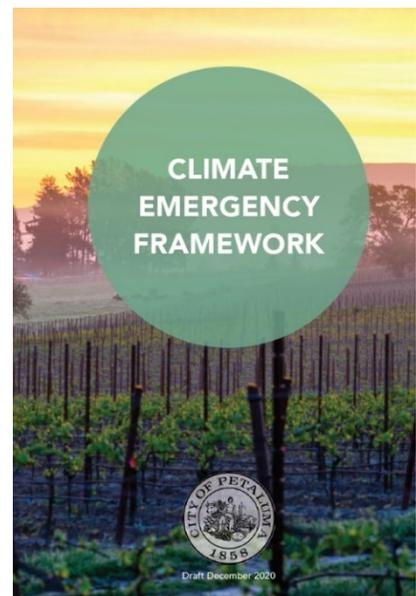
The Blueprint does not establish or approve actual greenhouse gas reduction programs or projects, but rather provides a framework for the development and implementation of such programs and projects that we as a community can implement to achieve our goals for carbon neutrality.

Petaluma's Climate Vision

In 2019 the City of Petaluma declared a Climate Emergency and established a Climate Action Commission to inform City action towards climate neutrality. Over the course of 2020, the Climate Action Commission and City staff developed the Climate Emergency Framework. The Climate Emergency Framework (CEF) was adopted by Petaluma City Council on January 11, 2021. The Framework commits the City to working towards climate neutrality by 2030, and articulates a vision for Petaluma's future and defines key values to guide the City's climate planning efforts. By acting decisively, Petaluma hopes to join and inspire others across the Bay Area in doing the same. As the CAC says, "Working as a community, the City can initiate a massive local economic impulse, model 21st century green architecture, landscape design, and engineering, and work to restore ecological balance and economic stability in the region."

Climate inaction has a compounding effect. The longer emission sources continue unabated, the greater the amount of reduction within a shorter time frame is required to offset the increases. Swift action that is rooted in integrity is necessary to ensure that City actions and policies contribute to improved climate justice, mitigation, sequestration, adaptation, public health, and social resilience outcomes and meet our mandates and targets. The CEF provides the direction on what the Blueprint should achieve in relation to climate change mitigation:

Our vision is to make Petaluma a leader in climate mitigation and sequestration to ensure a stable climate for ourselves and future generations. The City will endeavor to reach climate neutrality no later than 2030.



A community thrives when all members benefit from actions and policies that increase awareness, education, collaboration, and engagement. To achieve the City’s ambitious goal, the City must focus on an equitable implementation approach so every Petaluman can experience a healthy, sustainable future. The City must prioritize climate change-related programs, policies, and actions to achieve equitable outcomes for frontline and underserved communities. Petaluma is committed to prioritizing the health of the community and our ecosystems by taking equitable yet aggressive climate action to better prepare the City for future climate impacts.

The vision for Petaluma’s future includes continuing to garner public support, community ownership, and desire to act on climate change from every economic, geographic, political, and demographic sector in Petaluma, especially from those who have been unable to participate in City governance or who will suffer first and worst from climate-driven problems.

Cornerstone Actions

The Blueprint establishes the path for the City to move towards carbon neutrality by 2030. It is a short range (5-10 year) implementation-focused plan that outlines the strategies and actions (i.e., policies, and programs) that the City and community need to implement to reduce greenhouse gas (GHG) emissions in line with the City’s goal of carbon neutrality by 2030, and to create resilience to the impacts of climate change. It builds on the City’s extensive body of existing and in-progress climate work, including the Climate Emergency Framework, the Active Transportation Plan, participation in Sonoma Clean Power, reduced carbon usage in new construction through the City’s All-Electric requirement, prohibition on new fossil fuel gas stations, City programs to move to electric fleet vehicles and use of solar power, the General Plan Update, and more.



The City has identified 22 cornerstone actions to jumpstart emission reductions within the city. These strategies align with City Council priorities, generate significant emissions reductions and co-benefits, and are foundational actions that prepare the city for the implementation of additional actions in the future. Table 1 lists the City’s priority actions to be completed by 2027. They are detailed further in Chapter 5, the sector-specific action plans.



Striving for carbon neutrality by 2030 will require transformational change to the built environment, street network and urban form, as well as a reimagining of daily life for Petalumans. It will take an immediate, coordinated “All of the Above” approach to put Petaluma on the pathway to carbon neutrality, as suggested by the priority actions below spanning all climate action sectors. Although this period of transition will be challenging, each step toward carbon neutrality will ultimately enhance the quality of life and sustainability in Petaluma.

Table 1. Cornerstone Actions

#	Implementation Target*	Sector	Cornerstone Action
1	On-going	Municipal Operations	Electrification of transit fleet by 2030
2	2025	Municipal Operations	Facility energy audits, full electrification by 2030
3	2025	Transportation + Land Use	Transportation Demand Management (TDM) ordinance and vehicle miles traveled (VMT) impact fee
4	2025	Transportation + Land Use	Completed Active Transportation Plan (ATP), Local Safety Plan, GPU integration, implementation by 2030
5	2025	Transportation + Land Use	Electric Vehicle (EV) charging reach code
6	2025	Existing Buildings	“One-stop shop” for electrification incentives and educational resources
7	2025	Resource Consumption	Enclosure standards for new multifamily and nonresidential construction
8	2025	Resource Consumption	Partner with Cool Petaluma volunteers to conduct the community surveys needed to estimate consumption emissions
9	2025	Resource Consumption	Partner with Recology and Zero Waste Sonoma to: <ul style="list-style-type: none"> • Conduct waste audits/contamination monitoring; • Implement and enforce an edible food recovery program; and • Educate the public about waste diversion.
10	2025	Sequestration	Revised Tree Preservation Ordinance
11	2026	Municipal Operations	Capital Improvement Plan alignment with carbon neutral goal
12	2026	Municipal Operations	Infrastructure upgrades of Corp Yard, Petaluma Transit
13	2026	Municipal Operations	Zero Emission Vehicle (ZEV) plan, implementation of light, medium duty by 2030
14	2026	Transportation + Land Use	Begin implementing updated General Plan program

15	2026	Transportation + Land Use	Parking pricing policies and program
16	2026	Existing Buildings	Financing mechanisms to fund municipal incentive programs including bonds or taxes
17	2026	Sequestration	Revised Urban Forest Plan, with detailed implementation strategy
18	2027	Transportation + Land Use	Charging infrastructure implementation
19	2027	New Buildings	Policy that phase in requirements for low embodied carbon materials
20	2027	Existing Buildings	A date certain, phased-in Existing Building Electrification strategy
21	2027	Sequestration	Comprehensive Land Management Plan and maintenance procedures for City properties that center regenerative management
22	2028	Transportation + Land Use	Revised zoning code, permitting, and approval processes

** Implementation will depend on City Council prioritization and City staff and financial resources.*

Plan Development Process

The Blueprint was developed as part of Petaluma’s General Plan Update. It builds on the City’s existing climate work and will help inform General Plan strategies. This Blueprint was written as an implementation step of the City’s Climate Emergency Framework, a document that sets the guiding principles and subsequent planning efforts for the City to respond to the climate crisis.

Developing this plan was a collaborative effort among City staff, the Climate Action Commission (CAC), consultants at Raimi + Associates, and the community. Blueprint development engaged these stakeholder groups multiple times and in different capacities to solicit input and feedback on every aspect of the plan from the inventorying of emissions to brainstorming mitigation measures, and prioritizing implementation actions.

Based on stakeholder input and the commitment to take bold equitable action the Blueprint mitigation measures are designed to put Petaluma on the pathway to carbon neutrality by 2030, which requires transformational change from both the City and community members within a short timeframe.

Organization of the Blueprint

The Blueprint is organized in a way that clearly outlines actions the City and community will need to implement to work towards carbon neutrality by 2030. It is important to note that the Blueprint provides guidance on what programs and policies the City should implement; as a planning document it does not undertake actual program development.

The Blueprint is organized in six chapters:

Chapter 1: Executive Summary establishes the context and vision of the Petaluma Blueprint for Carbon Neutrality and provides a summary of the City's priority actions.

Chapter 2: What is Climate Change? explains what climate change is and how it will impact Petaluma.

Chapter 3: Blueprint Approach lays out the concepts and other work that influenced the Blueprint's development, including the scope, equity considerations, community engagement, and other City plans.

Chapter 4: Our Community's Contribution to Climate Change describes the GHG emissions currently created from community and municipal sources, as well as what Petaluma's projected GHG emissions are in a Business-as-Usual Scenario and an Adjusted Business-as-Usual scenario.

Chapter 5: Greenhouse Gas Reduction Measure Action Plans contains seven GHG Reduction Measure Action Plans detailing actions for City departments and partnership opportunities to reduce GHG emissions in specific sectors.

Chapter 6: Blueprint Implementation provides guidance for implementing the policies and programs called for in the Reduction Measure Action Plans.



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Chapter 2: What is Climate Change?

Human emissions of carbon dioxide and other greenhouse gas emissions (greenhouse gases) are important drivers of global climate change, and recent changes across the climate system are unprecedented. The majority of greenhouse gases emitted from human activities are from burning fossil fuels for transportation, electricity, and industrial production. They trap heat in the atmosphere which results in warming over time. This atmospheric warming leads to other changes in the Earth's systems, including changing patterns of rainfall and snow, melting of glaciers and ice, and warming of oceans. This chapter gives an overview of what climate change is and how it will specifically impact Petaluma.

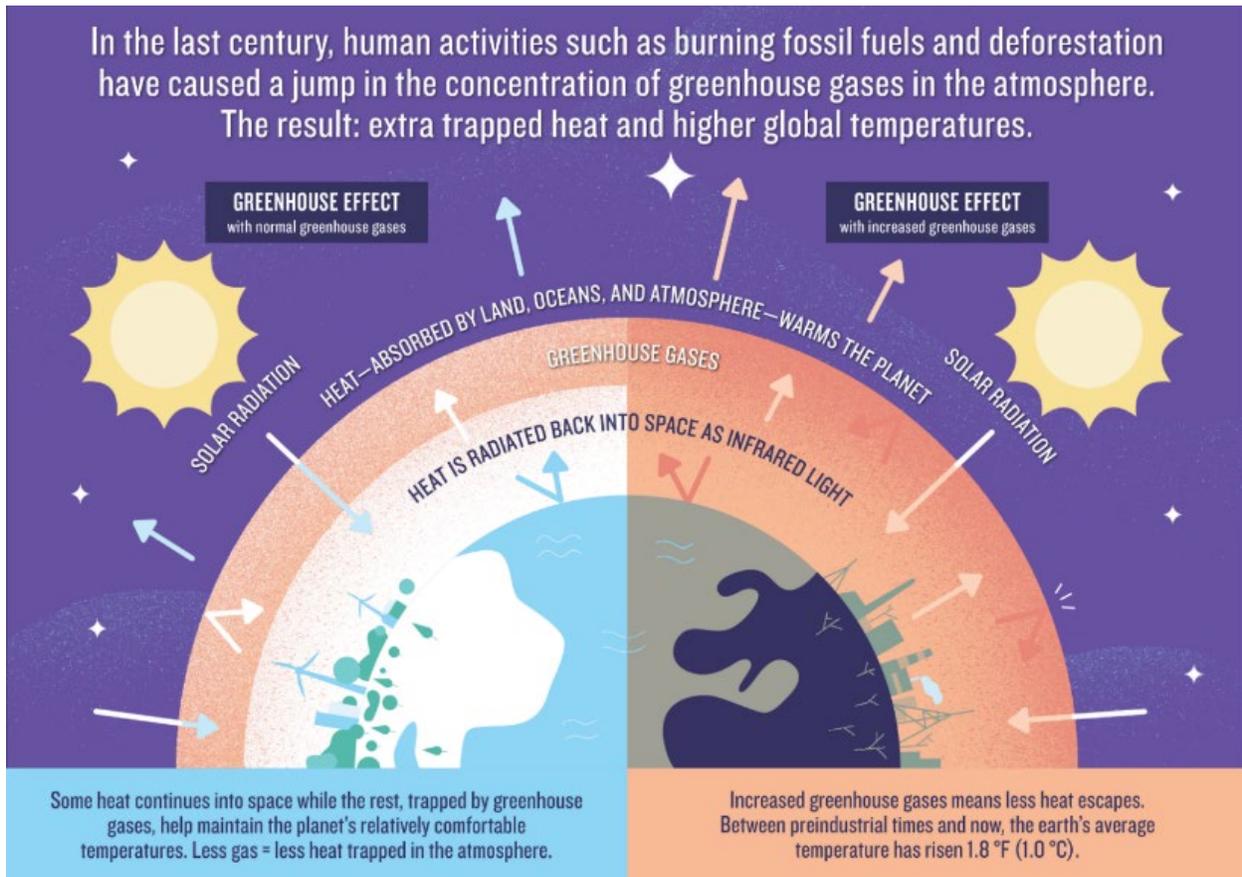


Climate Change

Climate is the long-term behavior of the atmosphere – typically represented as averages – for a given time of year. This includes average annual temperature, snowpack, or rainfall. Human emissions of carbon dioxide and other greenhouse gas emissions (greenhouse gases) are important drivers of global climate change, and recent changes across the climate system are unprecedented. Greenhouse gases trap heat in the atmosphere, resulting in warming over time as shown in Figure 1. This atmospheric warming leads to other changes in the earth systems, including changing patterns of rainfall and snow, melting of glaciers and ice, and warming of oceans. Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes include more severe heatwaves, coastal flooding, heavy precipitation, droughts, and hurricanes.¹

¹ Intergovernmental Panel on Climate Change 2021. Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

Figure 1. The Greenhouse Effect



Source: NRDC, 2019

California and Petaluma are already experiencing the effects of a changing climate. Both gradual climate change (e.g., sea level rise) and climate hazard events (e.g., extreme heat days), which expose people, infrastructure, buildings and properties, and ecosystems to a wide range of stress-inducing and hazardous situations. These hazards and their impacts disproportionately affect the most sensitive populations in the city, including children and elderly adults, low-income populations, renters, immigrants, and BIPOC residents, among others. These individuals may experience more negative health impacts from climate hazards. For example, children, pregnant women, older adults are more susceptible to heat illness in extreme heat events. Sensitive populations may have less capacity to adapt to climate shocks and stressors, such as how a low-income family renting an apartment does not have the ability to floodproof their residence.

While climate projections cannot predict what will happen at a certain date in the future, projections can provide cities with information about what to expect from the climate in the future. For example, climate projections can estimate how much warmer the temperature will be in summer or how many more extreme weather events are likely to occur in the future. Climate projections, however, cannot forecast with precision when those events will occur.

The extent of climate change in the future depends in part on the amount of greenhouse gas emissions now and in the future. Greenhouse gas emissions are driven by economic systems, land use patterns,

transportation and energy systems, and other social and political factors. Scientists use greenhouse gas emission scenarios to understand a range of potential climate projections. These include: a higher emission (or business-as-usual) scenario where emissions continue to rise, along with population growth through 2050 and plateau around 2100, and a lower-emissions scenario where emissions peak around mid-century then decline, due to worldwide efforts to reduce them.

Future climate projections are created using global climate models. These models simulate climate conditions both in the past and in the future. Climate scientists can use these models to assess how the climate will change (or not) based on scenarios of greenhouse gas emissions.

Potential Impacts of Climate Change Hazards in Petaluma

This section presents information on projected changes to natural hazards in Petaluma which are a product of climactic changes, including sea level rise, flood, drought and extreme precipitation, temperature, and wildfire.

Sea Level Rise

Sea level rise (SLR) is a rise in the average elevation of global oceans. In Petaluma, SLR will contribute to increased average water levels and flooding along the Petaluma River and its tributaries, as well as more frequent and severe tidal inundation. Higher River water levels can exacerbate existing and future flood hazards from severe storms, as well as alter the function of salt marshes and tidal flats near the confluence of Petaluma River and San Pablo Bay. As part of the ongoing General Plan Update process, the City of Petaluma is developing updated models regarding potential flooding impacts of sea level rise and climate change. The model evaluates and maps flood hazard areas given conservatively projected mid- and end-of-century sea level rise projections. The General Plan will address anticipated hazards related to flooding and sea level rise through land use decisions and adaptation policies.

Flood

The City of Petaluma is susceptible to various types of flooding events due to prolonged rainfall including riverine flooding, localized flooding, and levee failure flooding. During storm events, the San Francisco Bay and San Pablo Bay experience higher elevations of flooding due to storm surge (related to wind conditions in the Pacific Ocean), stronger waves, and increased inflows from rivers, increasing the San Francisco Bay elevation by upwards of 42 inches in a 100-year storm event. Because the City of Petaluma sits on a tidal slough, this increased Bay water elevation can cause flooding in low lying areas not near creeks, and cause backwater conditions which induce further flooding in the city.

The City of Petaluma is currently undertaking an update to the hydraulic model which develops flood risk maps for the Petaluma River watershed. The City's updated flood model will incorporate projections for other factors that influence flood risk, including sea level rise, astronomical tides and storm-induced bay water levels, precipitation intensity, and impervious land cover. The General Plan will address anticipated hazards related to flooding and sea level rise through land use decisions and adaptation policies.

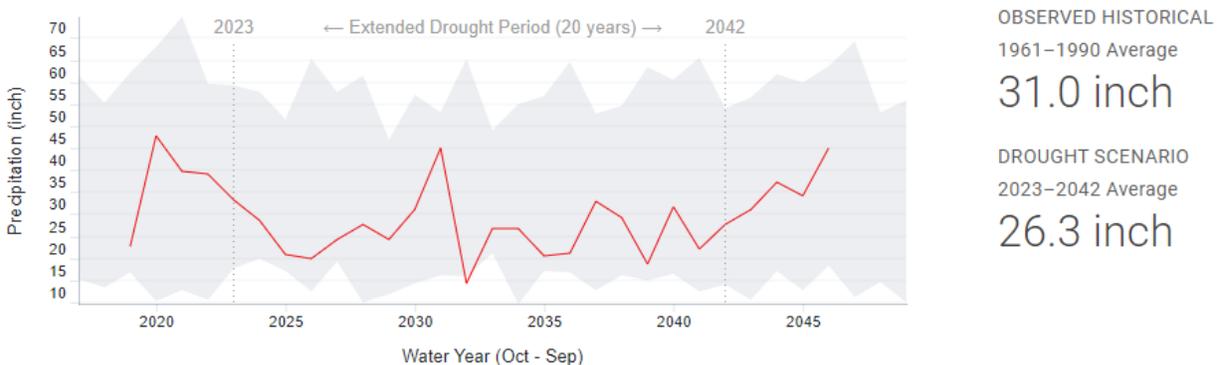


Drought and Extreme Precipitation

Cal-Adapt illustrates a drought scenario termed a “mega-drought” that may increase the variability of the already highly episodic precipitation patterns for this region. Over the next 20 to 30 years, a drought scenario may reduce the average mean precipitation from 31 inches to 26.3 inches for the City of Petaluma as shown in Figure 2. In addition to less total precipitation, the length of dry spells is projected to increase, leading to longer dryer periods with little precipitation. When combined with above-average temperatures, drought is even more likely.



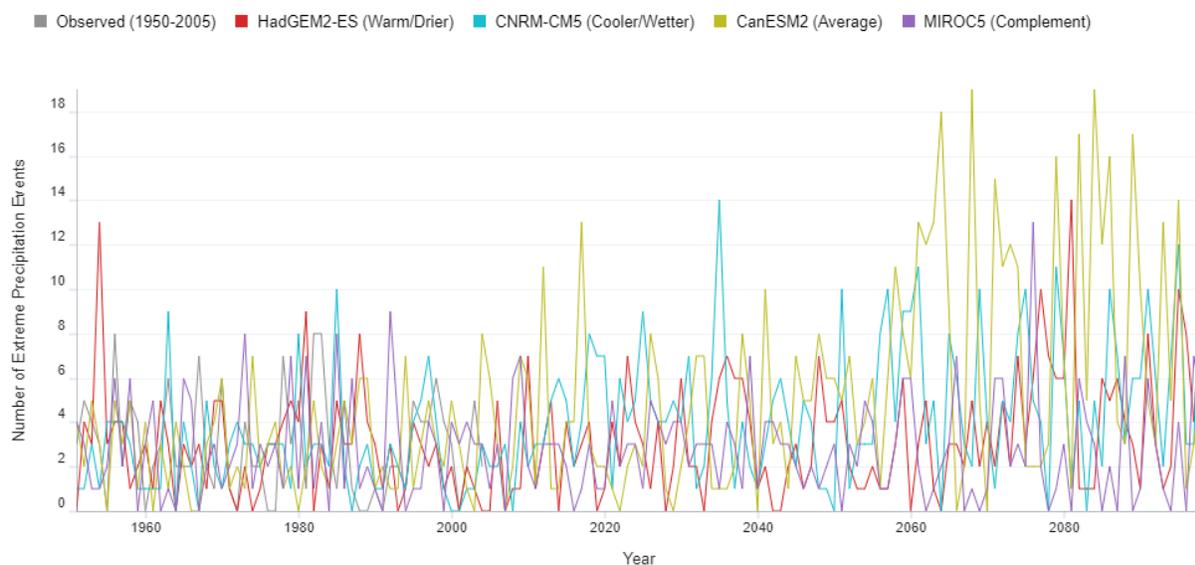
Figure 2. Petaluma Extended Drought Scenario 2023 - 2042 Precipitation (in Inches)



Source: Cal-Adapt, 2021

Precipitation in the Bay Area and Petaluma will continue to exhibit high year-to-year variability “booms and busts” with very wet and very dry years. According to California’s Fourth Climate Assessment, there is projected to be an increase in the magnitude of large precipitation events - events can bring up to 50 percent of all rainfall for the year, yet only make up 17 percent of all precipitation events.² Increases in the largest precipitation events (measured in inches of rain per day) range from 6 percent to 21 percent in Representative Concentration Pathway (RCP) 4.5 and as high as 37 percent in RCP 8.5 by end of century (Figure 3).³ Generally, the extreme storms in California deliver heavy precipitation over a narrow area and can cause flooding in areas typically prone to flood hazards. Additionally, research on extreme precipitation suggests that increased temperatures and more frequent short-duration, high intensity rainfall could increase the potential for flash flooding and debris flow, particularly after wildfires.⁴

Figure 3. Projected Extreme Precipitation Events in Petaluma



Source: Cal-Adapt, 2021

The occasional wet years do not necessarily reduce drought conditions from an ecological perspective. Even if there is greater precipitation, the projected increase in evaporative demand from higher temperatures implies that more water could be lost to the atmosphere and increase the possibility of drought. From a water supply perspective, variance in local precipitation and river levels can impact the levels of groundwater sources in the Petaluma Valley basin. However, as of 2020 it comprises less than 1 percent of the City’s annual water supply, so the occasional wet year will not have an impact. A majority of Petaluma’s water comes from Lake Mendocino and Lake Sonoma, which are fed by the Russian River. These sources are tied to larger statewide water storage, drought and snowpack conditions.

² California Governor’s Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission. (2018). *Statewide Summary Report. California’s Fourth Climate Change Assessment*.

³ “Precipitation, Drought and Snowpack.” California’s Fourth Climate Change Assessment. https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-005_SanFranciscoBayArea_ADA.pdf

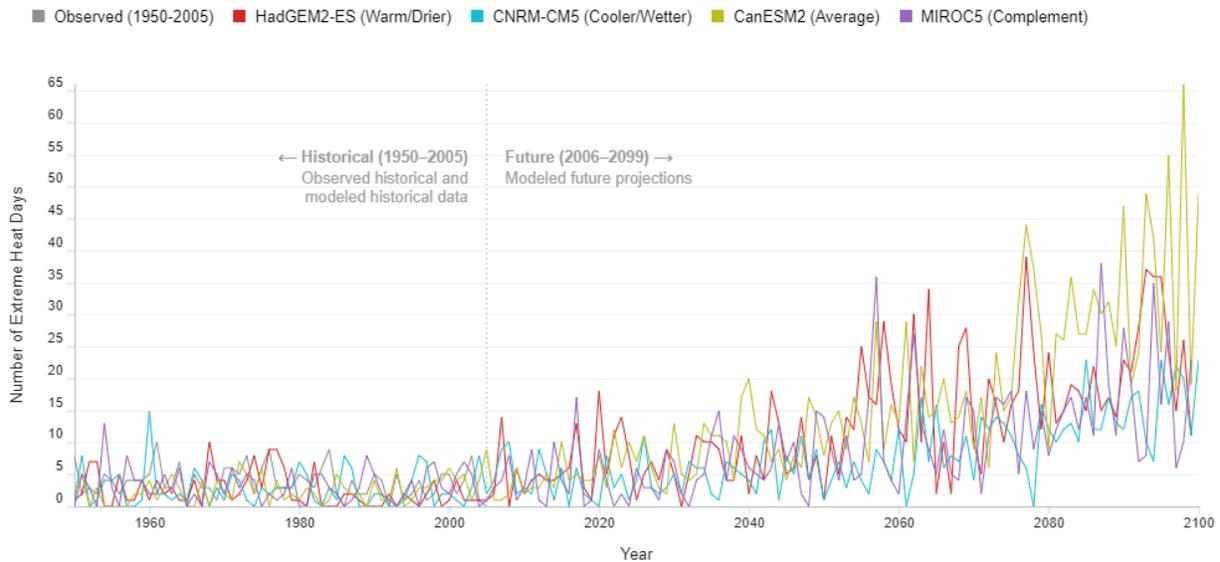
⁴ “Extreme Precipitation Events.” California’s Fourth Climate Change Assessment. https://www.energy.ca.gov/sites/default/files/2019-11/Reg_Report-SUM-CCCA4-2018-005_SanFranciscoBayArea_ADA.pdf

Temperature

Petaluma is projected to experience a steady increase in the annual average maximum temperature as a result of climate change. According to Cal-Adapt's RCP 8.5 emissions scenario, the City of Petaluma is projected to experience an increase of 3.6° F from the observed baseline of 72.2° F by 2040. By the end of the century the annual average maximum temperature in Petaluma is projected to increase by 10.7° F to 82.9° F.⁵

With rising average temperatures, the City of Petaluma is also expected to experience more extreme heat days, defined as days above 98° F. Cal-Adapt has projected that Petaluma will experience an increase from three days of extreme heat, in 2005 to six days by 2040 (using the high emissions RCP 8.5 scenario). By the end of the century, as many as 18 days of extreme heat are projected to occur each year between 2060 and 2099. This illustrates a dramatic rise in extreme heat days as a result in increasing annual average maximum temperatures, as shown in Figure 4.

Figure 4. Projected Extreme Heat Days in Petaluma



Source: Cal-Adapt, 2021

These impacts are expected to influence health and prosperity through the increased burden on local resources to mitigate extreme heat days, the exacerbations of wildfires, heavy precipitation events, and droughts which are all enhanced by increased temperatures. An increasing annual average maximum temperature for Petaluma will make wildfire ignitions more likely, intensify heavy precipitation events such as atmospheric rivers, and prolong and intensify the impacts of droughts and drought-like conditions.

⁵ CalAdapt, 2021

Wildfire

Climate change has the potential to affect multiple elements of the wildfire system, including fire behavior, ignitions, fire management, and vegetation fuels. Warming temperatures, drought, and the expansion of development into the wildland-urban interface are projected to increase fire risk in most of the Bay Area.

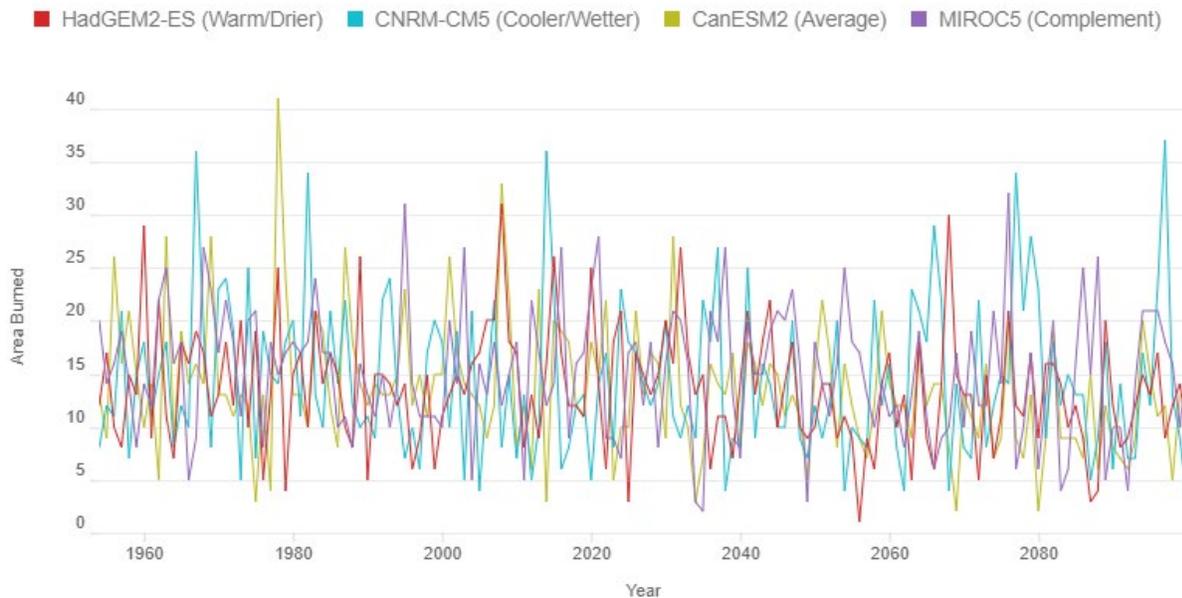
The Local Hazard Mitigation Plan (LHMP) for Petaluma has indicated a relatively low probability of a fire event occurring within the City limits. Most of the city is within a 25 percent or less percent chance of a fire occurring between the years 2026 and 2050 except for the southwest corner of the city that includes the Helen Putnam Regional Park. This area has a 34 percent to 50 percent probability of a fire occurring. Climate change will play a role in how wildfires behave, the frequency of ignitions, fire management strategies, and fuel loads. Increasing temperatures will intensify wildfire threat and susceptibility to more frequent wildfires in the grasslands that surround the City limits, in addition to wildlands throughout Sonoma County. Though there may be less fire risk in Petaluma than in other parts of Sonoma County, Petaluma often assists with regional disaster response, including opening emergency shelters for people and animals. Increased fire risks in other parts of the region may lead to increased demand for assistance, as well as a potential for increased demand for permanent housing in Petaluma as a result of the relatively low fire risk in the city compared to the rest of the region.

In Figure 5 below, Cal-Adapt provides projections for annual area burned under the high emissions RCP 8.5 scenario. The various climate models do not indicate a unified trend, as the area burned each year is highly variable depending on a slew of factors like drought period, vegetation moisture levels, density of fuel, and weather. Human activity also plays a part, as 85 percent of all fires in the state are ignited by people.⁶ However, we do know that climate change impacts will add intensity to wildfires due to longer warmer seasons, reduced distribution of biodiversity, lack of moisture, changes in ecosystems, drought impacts (e.g., pest diseases and continued spread of invasive species), and other such factors in coming years.⁷

⁶ California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission. (2018). *Statewide Summary Report. California's Fourth Climate Change Assessment.*

⁷ Ibid.

Figure 5. Modelled Annual Area Burned under a High Emissions Scenario in Petaluma



Source: Cal-Adapt, 2021

Impacts to Disadvantaged Communities

Climate change is expected to create a series of shocks and burdens that Petaluma’s underserved communities will experience more acutely due to their limited options and resources for avoiding, recovering from, or adapting to the damage caused by climate change. Understanding how place, demographics, and socioeconomic status contribute to climate change vulnerability helps identify avenues for policy and/or programmatic interventions to relieve the burden on disadvantaged communities.

Overall, there are many social, economic, and environmental factors that influence community and individual vulnerability to climate impacts and their ability to adapt to climate change. For example, outdoor workers are at greater risk of heat stroke and related illnesses from extreme heat events, lower income residents have fewer resources to repair flood or fire damage and may live in poor housing conditions, and people with limited English language proficiency are less likely to access programs that could help during or after an extreme weather event. Moreover, individual biological factors, such as age or health status, can amplify a population’s sensitivity to climate change.

What is a DAC?

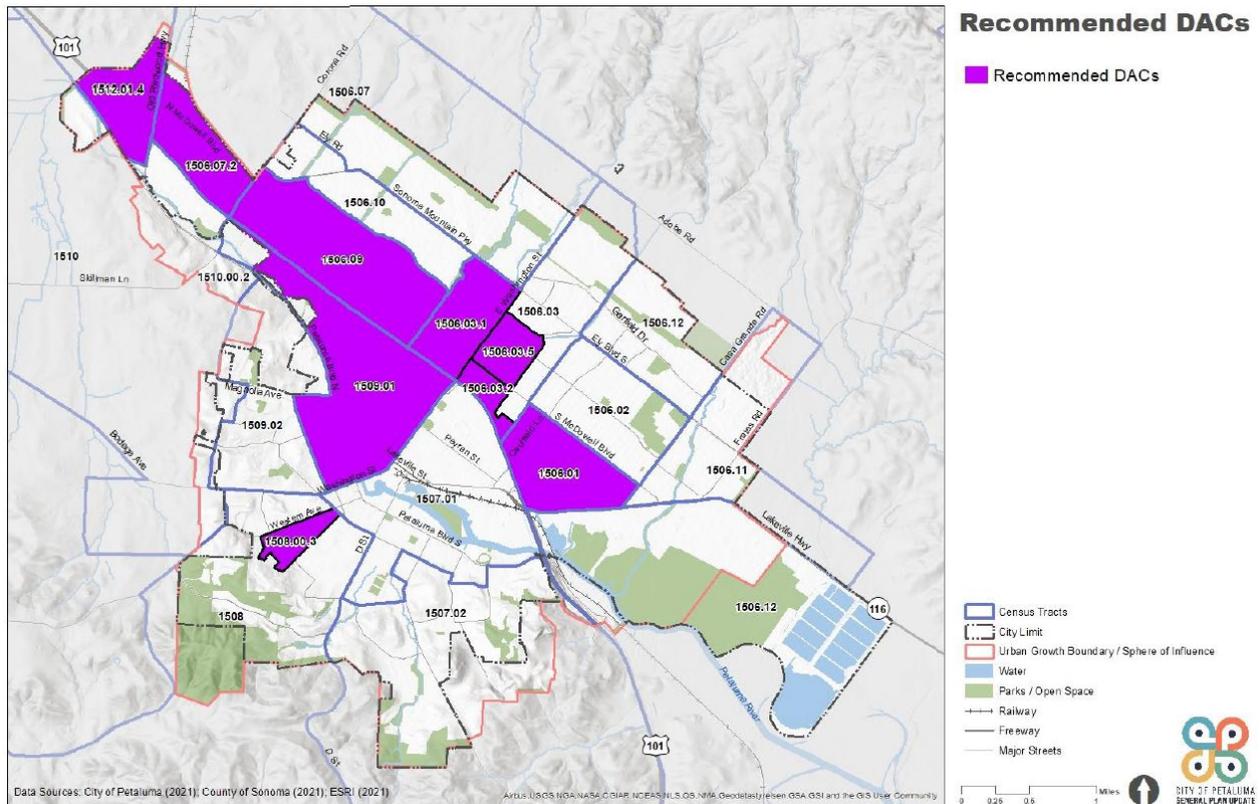
According to state law, a “disadvantaged community” (DAC) is defined as: a low-income area that is disproportionately affected by environmental pollution and other hazards that can lead to negative health effects, exposure, or environmental degradation.” DACs are geographically defined rather than defined by demographic characteristics.

$$\text{Low-Income} + \text{High Pollution and Health Burden} = \text{Disadvantaged Community}$$

Knowing which areas of Petaluma have more vulnerable residents helps decision-makers prioritize where and how to allocate resources when wildfires, extreme heat events, and other climate-related hazard events occur. As part of the General Plan Update process, the City prepared an existing conditions analysis of community health and environmental justice conditions pursuant to the requirements of SB 1000.⁸ The analysis identified nine census tracts or block groups in Petaluma that were identified as “Equity Priority Areas” based on the analysis of existing conditions related to health equity, environmental justice, and social vulnerability. Those geographies are illustrated in Figure 6.

Within Petaluma, census tract 1506.09 in the city’s Northeast and North McDowell Blvd subareas is particularly burdened based with multiple health and environmental burdens: traffic impacts; solid waste sites; diesel particulate matter; low life expectancy; highway-related air pollution; low active commuting rates; and low proximity to high-frequency transit. This tract also scored within the top 25% of social vulnerability in Sonoma County, with high scores on the following household and housing/transportation indicators: aged 65 or older, person with a disability, and living in mobile home.

Figure 6. Equity Priority Areas (Draft 2022)



Source: City of Petaluma, Health and Environmental Justice Existing Conditions Report

⁸ For full analysis and methodology, see Existing Conditions Analysis: Health & Environmental Justice https://static1.squarespace.com/static/5ea880f6d9a2075c7b7f54af/t/617311a72d495568d8ca9059/1634931123570/PetalumaGPU_HEJ_Report_FINAL_102121.pdf

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Chapter 3: Blueprint Approach

The Blueprint for Carbon Neutrality serves as the City’s Greenhouse Gas Reduction Plan that strives to achieve carbon neutrality by 2030. The Blueprint is intended to be a living document that is monitored, evaluated, and updated to reflect a changing climate landscape as well as implementation successes, challenges, and the availability of resources and information. This is a very ambitious plan, and the City recognizes that it will need to continue to learn and adapt throughout the Blueprint implementation process in order to best respond to community needs, support equitable GHG reductions, and take adaptive or corrective action.

Blueprint Scope

The Blueprint is the roadmap for Petaluma to be on the pathway to carbon neutrality by 2030. It contains reduction measures and actions that City departments need to implement to reduce communitywide and municipal GHG emissions. It focuses on the reduction of activity based GHG emissions, which are the emissions associated with the operation of buildings, vehicles, waste, and water use.

The scope of the Blueprint is to guide the creation of City-lead programs, policies, campaigns, and other efforts that reduce direct emissions. The GHG reduction measure action plans provide guidance specifically for City departments that also highlight opportunities to partner with other local and regional agencies and community-based organizations. As a mid- to long-range planning document, the Blueprint’s scope is limited to outlining what programs the City needs to develop in the future, not the development of the programs themselves. Consumption-based emissions, which are the indirect emissions associated with the entire lifetime of goods and services, are considered as part of Petaluma’s overall sustainability effort, but are not quantified in the Blueprint’s GHG reduction analysis and measures. While they will be reduced by the actions in the Blueprint, they mostly fall outside of the systems over which the City, as a governmental agency, has control. Therefore, the City’s influence on consumption emissions comes from the ability to educate the public and galvanize individual action on reducing consumption-based emissions.

While originally linked to climate adaptation, those strategies will be completed separately, in concert with the General Plan Update effort. Given the need to reduce emissions quickly, in line with the City goal of carbon neutrality, the Blueprint was moved forward more quickly.



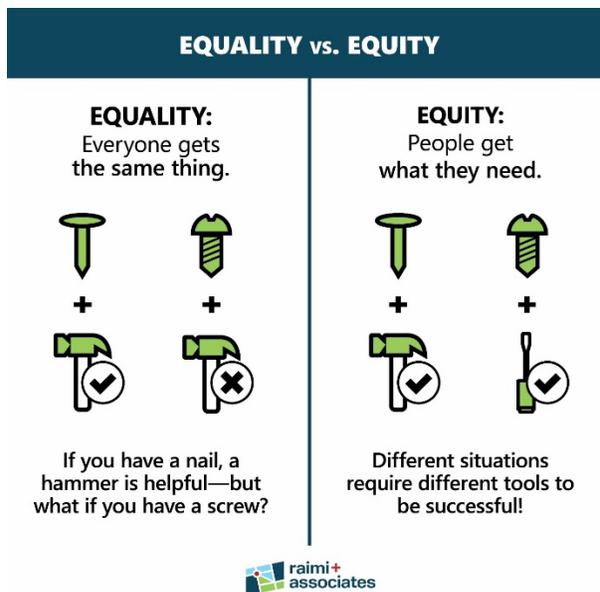
Equity Considerations

One of the key purposes of the Blueprint is to set Petaluma on the path of equitable climate action and adaptation. Although equity is like equality, they are not the same thing. Equality means everyone receives the same thing regardless of any other factors. Equity, on the other hand, aims for equal outcomes and is about ensuring that all people have access to the opportunities they need to thrive and succeed. Figure 7 provides a visual representation of this distinction.

Disadvantaged communities are often burdened with multiple, overlapping challenges that cumulatively impact their ability to adapt or respond to climate change. Structural and institutional racism in economic, government, and social systems has resulted and continues to result in the disproportionate distribution of climate burdens and exposures, such as a low tree canopy coverage and a high concentration of impervious surfaces. In addition, a growing body of social epidemiological research has found that repeated experiences of racism become biologically embedded in the body and results in “weathering” or premature physiological deterioration.⁹ This is relevant to the population’s sensitivity to climate hazards, as having a chronic illness (e.g., heart condition, lung condition, obesity) makes people more likely to experience health effects from extreme heat, wildfire, and other hazards.¹⁰

Prioritizing the needs of Equity Priority Areas creates the conditions and environment for all Petaluma residents to be healthy and to thrive. Everyone in Petaluma deserves the right to experience a healthy, sustainable future. It is ethically imperative to solve the climate crisis while simultaneously addressing the crisis of inequity in the community which threatens successful climate action and collective empowerments. By leading with an equity lens, Petaluma aims to divest from systems that harm public health, the economy, and the environment, and instead invest in community-based solutions that create community stability, greater public health, and economic well-being for all community members.

Figure 7. Equality vs. Equity



⁹ Geronimus, A. T. (2023). *Weathering: The Extraordinary Stress of Ordinary Life in an Unjust Society*. Little, Brown Spark.

¹⁰ US Environmental Protection Agency. (2021). *Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts*.

Types of Equity

There are a variety of ways the City can work to support equity. These include Procedural, Distributional and Structural Equity.

Procedural Equity:

- Transparent, fair, and inclusive process
- Ensure all are treated openly and fairly
- Increase civic engagement opportunities

Distributional Equity:

- Fairly distribute resources, benefits, and burdens
- Prioritize resources for communities that experience greatest inequities and unmet needs

Structural Equity:

- Make a commitment to compensate for past harms and prevent future unintended consequences
- Address underlying structural and institutional systems that are the root causes of social and racial inequities

Key equity considerations for the Blueprint GHG reduction measures include:

- That the benefits of GHG reductions reach those who are most impacted by climate change and/or sensitive to its negative effects
- That multiple facets of equity are addressed
- That programs are put in place to assist low-income Petalumans with the costs of implementing GHG reduction measures
- That barriers related to language ability, housing tenure, and other socioeconomic factors are addressed, so that all Petalumans have access to opportunities to take climate action
- That the City performs outreach to community groups to hear concerns, elicit input, and directly engage on climate policies and programs

To ensure that all programs and policies are developed with equity implications in mind, an Equity Implementation Tool is included in Appendix B. This tool is intentionally designed to guide City staff in thinking through ways to incorporate racial equity into the programs and initiatives called for in the Blueprint.

CEQA Qualified Plan

The greenhouse gas reduction targets specified by the State are consistent with substantial scientific evidence published by the Intergovernmental Panel on Climate Change (IPCC) and the United Nations Framework Convention on Climate Change (UNFCCC) regarding the need to reduce global greenhouse gas emissions to 80 percent below 1990 levels by 2050. This consistency is important for creating a “qualified” CAP. The concept of having a “qualified” CAP means that a CAP meets the criteria specified in CEQA Guidelines Section 15183.5(b) for a plan for the reduction of greenhouse gas emissions, such that a “qualified” CAP may then be used for the specific purpose of streamlining the analysis of greenhouse gas emissions in subsequent projects. Local governments have discretion on what levels or targets are established in a “qualified” CAP, provided they address adopted policies and are based on substantial evidence. Most often, local targets align with the California Senate Bill 32 reduction requirement of a 40 percent reduction below 1990 levels by 2030 to achieve qualified status. The Blueprint greenhouse gas reduction has demonstrated the ability to achieve a 60 percent reduction by 2030 (exceeding the requirement of 40 percent), if implemented as outlined in Chapter 5: GHG Reduction Action Plans. Achieving carbon neutrality will require advancements in technology, State and Federal policies, and additional changes to individual lifestyle choices. This is unlikely to occur by Petaluma’s target year of 2030 but can be realized with a longer-term timeline.



General Plan Update

The General Plan update process, which began in 2020, will include the creation of climate-related policies and actions that reinforce this Blueprint, and plan for climate adaptation and resiliency.

Cool Petaluma

Cool Petaluma is a grassroots effort that launched in January 2022 that mobilizes volunteers to prepare for emergencies, reduce carbon emissions, save water, and build vibrant communities at the block and neighborhood scales.¹² Cool Petaluma trains community leaders to create Teams on their blocks and work on individual and collective action with five objectives: prepare for emergencies, rethink consumption, transform transportation, improve buildings, and restore nature.

Petaluma Equitable Climate Action Coalition

Petaluma Equitable Climate Action Coalition (PECAC) was a program from September 2022-March 2023 designed to empower the voices of community members most impacted by our transportation systems and climate change, and who have historically been underrepresented in decision making. PECAC is a platform to give input and issue recommendations on how the City of Petaluma can prioritize policies, programs, and resources to address transportation equitably.¹³ PECAC recommended that the City take action to make walking safer, make biking safe and convenient, and invest in creating a dignified bus riding experience, among others.¹⁴

Blueprint Engagement

The City of Petaluma understands how crucial community input is in understanding and addressing climate change mitigation, resilience, and adaptation. Community members – residents, businesses, visitors, and others – offer unique knowledge, perspectives, and experiences navigating the impacts of climate shocks and stressors in the city. Community members will also be called upon to be active participants in climate mitigation and resilience measure implementation. The City created and executed a public participation plan to ensure that community members and other stakeholders had a diversity of opportunities to share their opinions and take part in the development of the Blueprint. This section describes the community engagement activities and the key themes heard during the process.



Source: Cool Petaluma

¹² Cool Petaluma. About. <https://www.coolpetaluma.org/about>

¹³ Daily Acts. Petaluma Equitable Climate Action Coalition (PECAC). <https://dailyacts.org/climate-action/>

¹⁴ Petaluma Equitable Climate Action Coalition. (2023). Equitable Climate Action Recommendations. <https://dailyacts.org/wp-content/uploads/2023/03/2022-PECAC-Final-Presentation.pdf>

Climate Action Commission: The CAC was engaged on several occasions to provide input related to mitigation measure development. Engagement activities included discussions at regular meetings, the creation of theory of change maps for each climate sector, and the solicitation of expertise through sector-specific ad-hoc meetings.

Cool Petaluma Volunteers: The City utilized the Cool Petaluma team to reach out to the broader community about climate action. They will also play a key role in helping the City to understand more about local consumption-based emissions.

Community Engagement: The Draft Blueprint will be posted for community review and comment through October 2023. The City will alert community members to the publication of the draft Blueprint through social media and community emails, as well as mentioning it during public meetings.

Relationship to other City Climate Efforts

The Blueprint complements Petaluma's numerous other climate-related long-range planning efforts. Measures in the Blueprint will be consistent with the relevant climate and resilience policies outlined in those documents.

Climate Emergency Framework

The Climate Emergency Framework¹⁵ is the result of collaboration of the Petaluma Climate Action Commission with input from city staff and volunteers in the community. Its purpose is to outline principles to guide the City's ongoing response to and discussion about the climate crisis and to guide and inform subsequent policies and implementation strategies. These principles establish Petaluma's shared vision of a healthy, sustainable, and equitable community. By setting the shared intention of this framework and working from the framework in subsequent planning efforts to create policy and implementation, the City will actively work to avoid catastrophic climate change and adapt to its expected impacts. The Climate Emergency Framework also provides the overarching vision and values for the Blueprint, which includes the vision for Petaluma to be carbon neutral by 2030.

General Plan Update

The General Plan is a long-range policy document that maps out how the City of Petaluma serves its community. California law requires that every city and county in the state develop and maintain a General Plan. The General Plan sets forth a shared 20-year vision for the future. It builds on community strengths and assets, while tackling new and emerging challenges like climate change. The Blueprint's greenhouse gas forecast and analysis are based on the General Plan's growth projections.

The General Plan is expected to be completed in 2025. Blueprint strategies will help to inform General Plan policy development and ensure that climate is considered throughout all elements of the Plan.

¹⁹ City of Petaluma. (2021). Climate Emergency Framework.
https://storage.googleapis.com/proudcity/petalumaca/uploads/2021/02/Climate-Action-Framework_Final.pdf

Additionally, the General Plan will include policies and strategies related to climate adaptation and resilience that respond to the climate hazards facing Petaluma.

Active Transportation Plan

The Bicycle and Pedestrian Advisory Committee (PBAC) is currently working with the City to update the City's Active Transportation Plan (ATP). The ATP will present strategies to encourage walking and biking within the city by making local roads safer and enhancing the pedestrian and bicycle networks. The ATP outcomes will feed directly into the City's General Plan update and are critical measures to reduce community transportation-related emissions as outlined in the transportation sector of the Blueprint.

VMT Reduction Strategy

The City is developing a VMT Reduction Strategy to identify near-term actions to reduce vehicle miles traveled (VMT) that can be included in the Capital Improvement Plan or ordinance updates. Categories of potential actions include investing in VMT reducing infrastructure, shifting travel behaviors through transportation demand management (TDM) programs, and conducting public outreach.

Local Hazard Mitigation Plan

The Local Hazard Mitigation Plan (LHMP) Update,¹⁶ adopted in 2020, is a document that aims to make Petaluma residents less vulnerable and more resilient to future hazard events. It analyzes a wide array of hazards, not just those that are related to or exacerbated by climate change. The Blueprint builds on the findings and recommended mitigation actions from the LHMP in relation to climate-related hazards including sea level rise, flooding, extreme heat, and wildfire. However, one point of departure between the LHMP and Blueprint is that the Blueprint contains measures to reduce GHGs and mitigate climate change. In contrast, the LHMP's purpose is to protect people and property from the effects of hazardous events.



¹⁶ Wood Environment & Infrastructure Solutions, Inc. City of Petaluma Local Hazard Mitigation Plan. City of Petaluma, Nov. 2020, page 4-111, <https://cityofpetaluma.org/documents/lhmp/>

Chapter 4: Our Community's Contribution to Climate Change

Current Emissions Profile

Community GHG Inventory

The 2018 Community Greenhouse Gas Inventory¹⁷ serves as the foundation for projecting emission trends and informing measures and actions that the City needs to implement to achieve carbon neutrality by 2030. The inventory captures communitywide emissions generated from transportation, energy consumption in homes and buildings, solid waste, water, and off-road transportation (e.g., emissions from construction, landscaping equipment, etc.) within the city. It was developed using the ICELI Global Protocol for Community-Scale Greenhouse Gas Emission Inventories.

The City of Petaluma's total 2018 GHG emissions are estimated to be 472,422 MTCO₂e, an increase of 12,067 MTCO₂e from the 2010 baseline year. Of the five sectors, on-road transportation accounted for the largest amount of GHG emissions, with estimated emissions of 314,493 MTCO₂e, or 67 percent of total emissions. The second largest sector was residential energy use, with estimated emissions of 60,409 MTCO₂e, or 13 percent of total emissions. The remaining 20 percent of emissions were made up of nonresidential energy, solid waste, off-road transportation, and water and wastewater, as shown in Table 3 and Figure 8.



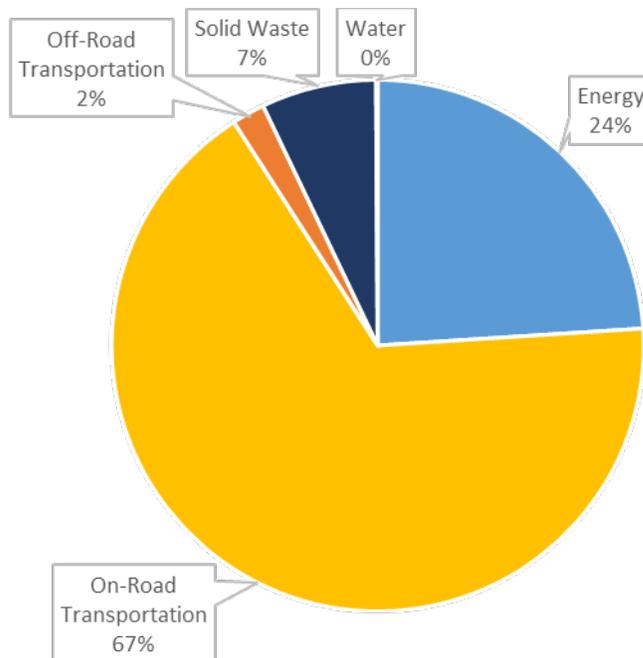
¹⁷ See Appendix C: 2018 Community GHG Inventory

Table 2. 2018 Total Annual Community GHG Emissions

Community Sector	Subsector	Subsector MTCO ₂ e	Sector MTCO ₂ e	Percent of Total
Transportation	On-Road Transportation	314,493	314,493	67%
Energy	Residential	60,409	114,475	24%
	Nonresidential	54,065		
Solid Waste	Residential	12,669	33,137	7%
	Commercial	20,468		
Transportation	Off-Road Transportation	9,727	9,727	2%
Water and Wastewater	Water Use	73	590	0.1%
	Wastewater Treatment	517		
Total		472,422		100%

Sources: City of Petaluma, 2021; Raimi + Associates, 2021.

Figure 8. 2018 Percentage of Annual Community GHG Emissions by Sector



Municipal GHG Inventory

City of Petaluma municipal operation emitted an estimated 3,653 MTCO₂e from its operations in 2019, representing less than one percent of communitywide emissions as shown in Table 3 and Figure 9.^{18,19} These emissions were produced by buildings and facilities, employee commute, fleet vehicles, transit fleet vehicles, and wastewater sectors. This inventory also includes the streetlights / traffic signals and airport facilities, but those sectors did not have any recorded emissions. These facilities and infrastructure use carbon-free electricity and did not report any natural gas consumption.

Of the sectors inventoried, the vehicle fleet comprised the largest portion (31 percent) of the total municipal operations emissions in 2019. Employee travel was the second largest source, accounting for 27 percent of emissions.



¹⁸ See Appendix D: 2019 Municipal GHG Inventory

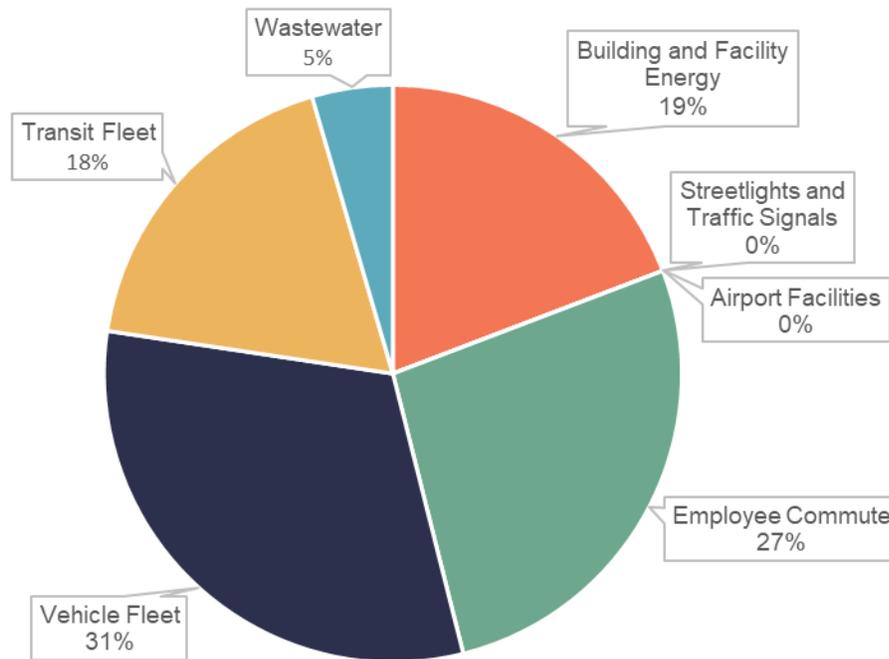
¹⁹ The Petaluma Community GHG Inventory estimated 2018 emissions.

Table 3. 2019 Total Annual Municipal GHG Emissions by Sector

Sector	Emissions (MTCO _{2e})	Percent of Total
Buildings and Facilities	701	19%
Streetlights and Traffic Signals	0	0%
Airport Facilities	0	0%
Employee Travel	982	27%
Vehicle Fleet	1,143	31%
Transit Fleet	662	18%
Wastewater	165	5%
Total	3,653	100%

Sources: City of Petaluma, 2021; Raimi + Associates, 2021.

Figure 9. 2019 Percentage of Total Annual Municipal GHG Emissions by Sector

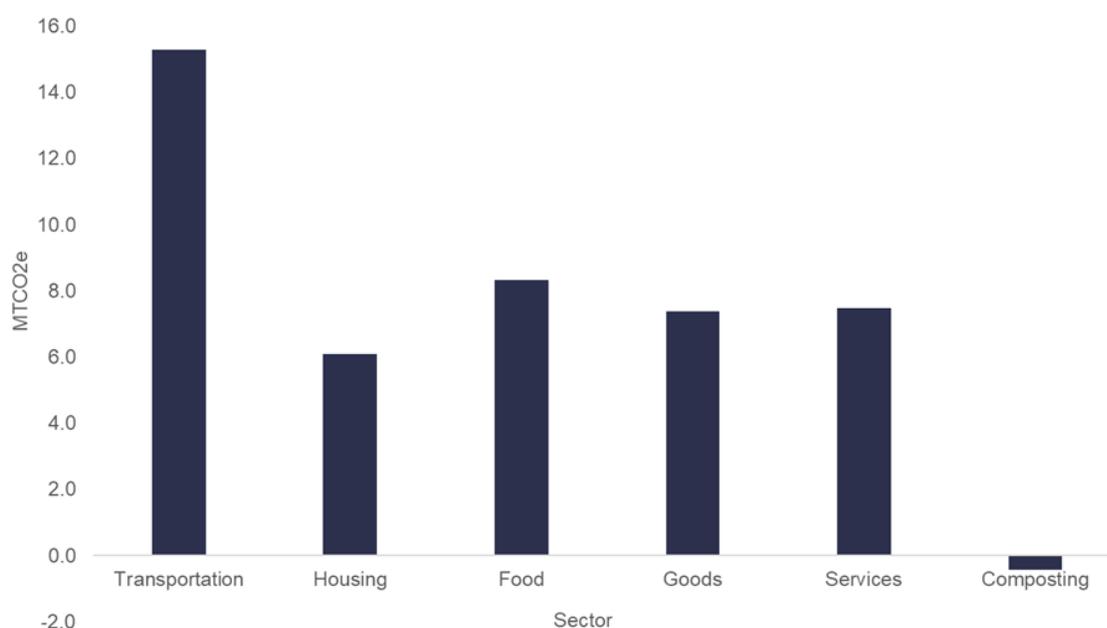


Consumption-Based GHG Inventory

Petaluma's Climate Emergency Framework calls for the reduction of indirect emissions in addition to elimination of direct emissions, which are accounted for in the community and municipal inventories above, to meet State, County, and City climate goals. Measuring consumption captures both the direct and lifestyle emissions of the goods and services Petaluma residents use (transportation, housing, food, goods, services, and composting). Emissions are created at all lifecycle stages of those categories: from their raw materials, manufacturing, distribution, retail, and disposal.

Petaluma's consumption emissions were estimated during a study conducted by UC Berkeley and the Bay Area Air Quality Management District in 2015. This method results in a total of 1.2 million MTCO_{2e}, about 146 percent higher emissions than the traditional activity-based approach for Petaluma in 2015 and 150 percent higher than the activity-based emissions in 2018. This is largely due to higher emissions from transportation and the inclusion of emissions from food, goods, and services. Transportation remains the largest source of emissions (35 percent), followed by food (19 percent), services (17 percent), goods (17 percent), and housing (which includes electricity consumption) (14 percent). Composting reduces one percent of total GHG emissions. In total, the average Petaluma household's consumption-based emissions were 44.1 MTCO_{2e} in 2015.²⁰

Figure 10. 2015 Consumption-Based GHG Emissions per Petaluma Household



Source: UC Berkeley and BAAQMD, 2015

²⁰ UC Berkeley and the Bay Area Air Quality Management District. Consumption-Based Greenhouse Gas Inventories. Retrieved from: <https://coolclimate.org/inventory>

GHG Forecast and Reduction Target

Two emissions forecasts were prepared to estimate Petaluma’s emissions from 2019-2030 as presented in Figure 11. They consider how emissions may change with projected increases in housing units (+8 percent), jobs (+15 percent), and population (+6.5 percent) by 2030. These forecasts show the emissions reductions the Blueprint actions will need to achieve to become carbon neutral by 2030.

- **“Business as Usual” (BAU):** GHG emissions forecast considers how Petaluma’s emissions would change over time if no action were taken to reduce emissions by the State or at the local level. BAU forecast emissions are expected to rise from 472,442 MTCO_{2e} in 2018 to 525,433 MTCO_{2e} in 2030, an 11 percent increase.
- **Adjusted Business as Usual (ABAU):** This forecast shows how Petaluma’s emissions are anticipated to change accounting for the impacts of adopted State policies without local action. Under the ABAU forecast, emissions are expected to fall from 472,422 MTCO_{2e} in 2018 to 428,527 MTCO_{2e} in 2030, a 9 percent decrease.

The bold carbon neutral target set forth in this plan demonstrates Petaluma’s commitment to mitigating climate change and the adverse impacts it causes. Figure 11 also illustrates the forecasted emissions for the BAU and ABAU scenarios in relation to the carbon neutral by 2030 target.²¹ Figure 13 in Chapter 5 illustrates the projected GHG emission reductions from the implementation of this Blueprint as “Aggressive Climate Action.”

²¹Figure 11 illustrates how the Business as Usual and Adjusted Business as Usual GHG forecasts compare to the carbon neutral target. For information on the results of local GHG reduction measures, see Figure 13 in Chapter 5, which shows the trajectory of two different local action scenarios toward achieving the carbon neutral target.

Figure 11. 2030 Projected Emissions and Reduction Target



Source: Raimi + Associates, 2021

How to Respond to Climate Change

Responding to climate change entails both mitigation and adaptation. Climate change mitigation focuses on slowing the severity of climate change by reducing greenhouse gas emissions.²² Climate change adaptation is taking steps to live with the effects of climate change and involves adjusting to the actual or expected future climate. Adaptation is focused on long-term threats to natural and human systems including human life, property, economic continuity, ecological integrity, and community function.²³

Petaluma’s goal of becoming carbon neutral by 2030 relates to climate change mitigation. In the Blueprint, Chapter 5: GHG Reduction Action Plans presents the framework of actions for the City to reduce community and municipal GHG emissions towards that target. The City will need help to get all the way to the carbon neutrality target. Achieving the target will require accelerated adoption of state climate laws contained in the State Scoping Plan, new sources of funding, technological advances, and community cooperation. Climate policy and technology is changing rapidly and being implemented more quickly than imagined. However, the City wanted to be realistic about what we can achieve today with our

²² CalOES. California Adaptation Planning Guide. <https://www.caloes.ca.gov/wp-content/uploads/Hazard-Mitigation/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf#search=adaptation%20planning%20guide>

²³ Ibid.

existing staffing and resources. The City is committed to working towards this goal, leveraging new opportunities to reach even deeper reductions. The plan sets up monitoring and reporting frameworks to make adjustments and take corrective actions to meet our targets. The Blueprint reduction measure action plans also relate to adaptation because they produce co-benefits such as improving ecosystem health, environmental justice, and the local food system, for example. Although those benefits do not necessarily reduce GHG emissions, they are important to ensure Petaluma continues to thrive as the climate changes.

Chapter 5: GHG Reduction Action Plans

The extent to which Petaluma is impacted by climate change is dependent on community actions today. By curbing greenhouse gas emissions and adapting the community to an already changing environment, the City can significantly reduce the damage incurred from climate change. The City is in a unique position to become a statewide climate leader by implementing city-wide policies, incentives, and education programs to deploy innovative technologies, to pilot regulatory mechanisms, and spark behavioral change to meet the City's deep greenhouse gas reduction targets.

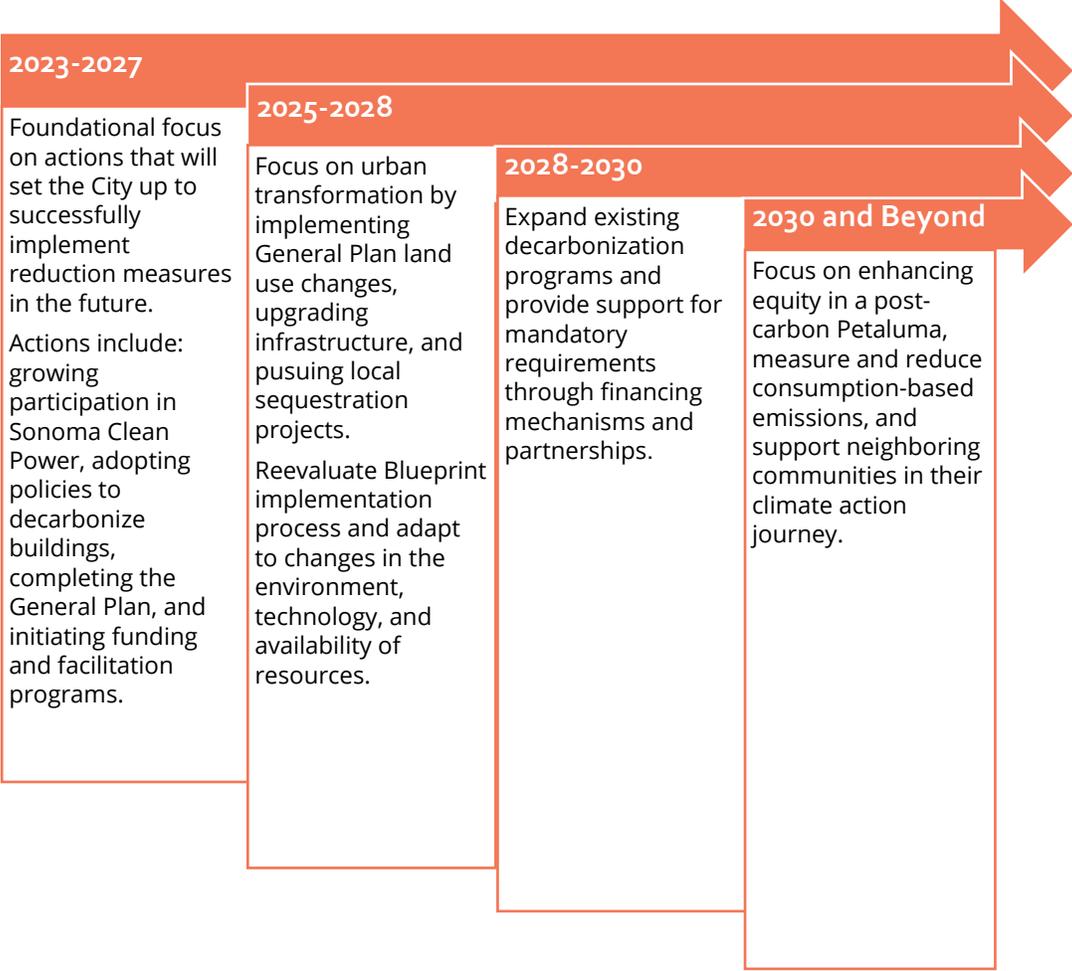
Petaluma has prepared this Blueprint to be a guide for the community's response to challenges posed by climate change, and to build on the City's ongoing efforts to mitigate and adapt to the impacts of climate change. This chapter summarizes the mitigation measures and actions that the City needs to implement to work towards becoming a carbon neutral city. This chapter includes Action Plans for the following emissions sectors:

- 1. Clean Energy*
- 2. Buildings*
- 3. Transportation and Land Use*
- 4. Water*
- 5. Resource Consumption*
- 6. Natural Systems and Sequestration*
- 7. Municipal Operations*

Reduction Approach

Petaluma’s target to achieve carbon neutrality by 2030 requires monumental shifts in all aspects of urban systems and people’s lifestyles on an extremely accelerated timeline. Striving for carbon neutrality by 2030 will require transformational change to the built environment, street network and urban form, as well as a reimagining of daily life for Petalumans. It will take an immediate, coordinated “All of the Above” approach to put the City on the pathway to carbon neutrality. This means that we need to take action in all sectors as quickly as possible, engage all City departments and residents, and commit significant investment by the City and individuals. The City, community groups, and individual Petalumans must also advocate at the State level to push for more programs and policies to support equitable climate action. Community, City, State, National and global action will all impact Petaluma’s ability to reach its climate goal.

Figure 12. Approach to Reduce Greenhouse Gas Emissions

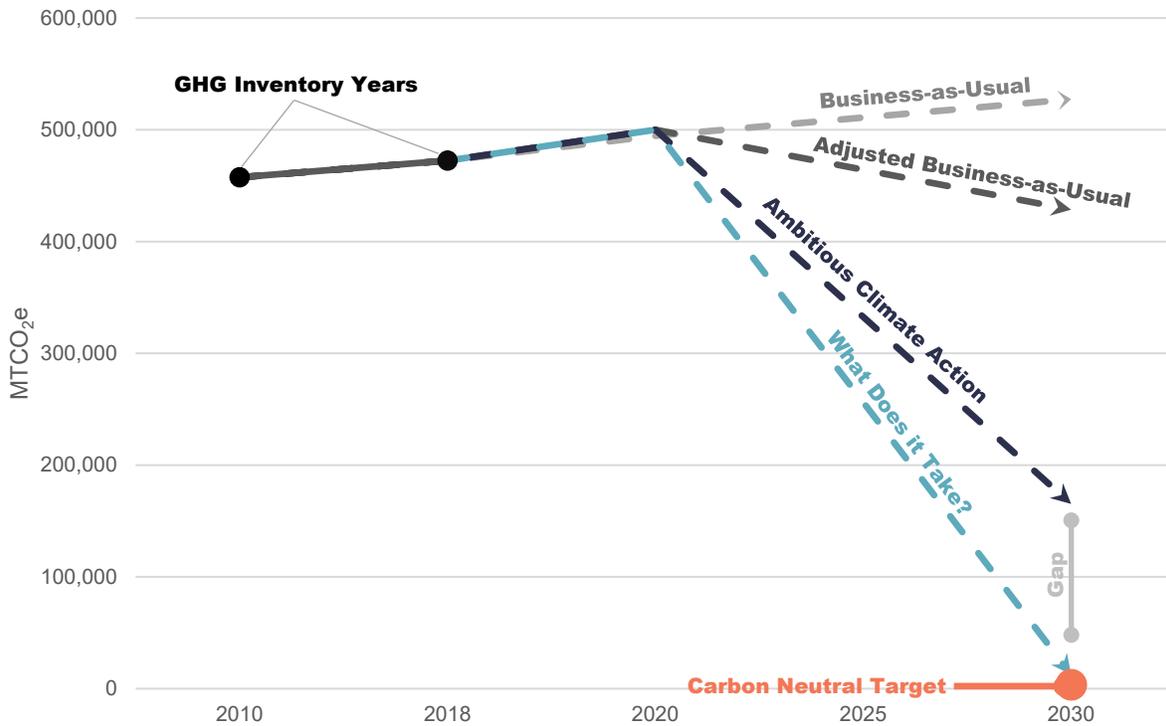


Greenhouse Gas Emissions Reduction Pathway

As illustrated in Figure 14 and Table 5, the City will need to proactively take ambitious climate action to reduce and offset greenhouse gas emissions to achieve local and State greenhouse gas reduction targets. State and regional policies and regulations are projected to reduce 2030 BAU emissions by 27 percent. In addition to the reductions realized through State policies, implementing the CAP mitigation measures can achieve the SB 32 goal of a 40 percent reduction in mass emissions by 2030 and puts the City on the path to achieving the long-term goal of carbon neutrality by 2030. Conservatively, these strategies achieve a 61 percent mass emissions reduction compared to 1990 levels in 2030. The range of climate action scenarios facing Petaluma, from least to most aggressive action, are listed below and illustrated in Figure 13:

- **Business-as-Usual (BAU):** This GHG emissions forecast considers how Petaluma’s emissions would change over time if no action were taken to reduce emissions by the State or at the local level. (See Chapter 4 for GHG Inventory and Forecast).
- **Adjusted Business-as-Usual (ABAU):** This forecast shows how Petaluma’s emissions are anticipated to change accounting for the impacts of adopted State policies without local action. (See Chapter 4 for GHG Inventory and Forecast).
- **Ambitious Climate Action:** This scenario requires the City and community to take ambitious action within the realistic bounds of current capacity, technology, and State and Federal policy. It models the GHG reductions from mandatory building and energy upgrades, resulting in: energy efficiency and decarbonization modifications in 40 percent of all buildings in Petaluma; 25 percent of all vehicles in Petaluma are electric; and 50 percent of all travel occurring in modes other than single-occupancy vehicles. The GHG reductions from the “Ambitious Climate Action” scenario are expected to be 256,720 MTCO_{2e} in 2030, a 51 percent decrease compared to 1990 levels and a 60 percent reduction compared to forecasted emissions.
- **What Does it Take?:** This scenario requires the City and individuals to make dramatic changes in daily life or operations. It models the GHG reductions from mandatory building and energy upgrades, resulting in: energy efficiency and decarbonization modifications in 85 percent of all buildings in Petaluma; 25 percent of all vehicles in Petaluma are electric; and 75 percent of all travel occurring in modes other than single-occupancy vehicles. The City will need to support these changes through significant investment in CAP implementation and program administration, land use, streets, active transportation, transit, and utility infrastructure. It also requires additional changes beyond the local level including accelerated State laws, new sources of funding, and technological advances. The GHG reductions from the “What Does it Take?” scenario are expected to be 12,600 MTCO_{2e}, a 97 percent decrease compared to 1990 levels.

Figure 13. Climate Action Scenarios



The City’s goal is to work towards carbon neutrality by 2030; with this, the City is pursuing the “What does it take?” scenario, the dark blue line in Figure 13 above. Though the “Ambitious Climate Action” scenario is more feasible given the City’s existing staffing and resources, State climate policies and technology are changing rapidly and being implemented more quickly than imagined. The City is committed to working towards carbon neutrality and will leverage new opportunities to reach even deeper reductions. The Blueprint sets up the monitoring and reporting frameworks to make adjustments and take corrective actions to meet that target.

Cornerstone Actions

The City has identified 22 cornerstone actions to jumpstart emissions reductions within the City. These strategies align with Council priorities, generate significant emissions reductions and co-benefits, and are foundational actions that prepare the city for the implementation of additional actions in the future. Table 4 lists the City’s cornerstone actions, which are detailed later in the chapter.

Table 4. Cornerstone Actions

#	Implementation Target	Sector	Cornerstone Action
1	On-going	Municipal Operations	Electrification of transit fleet by 2030
2	2025	Municipal Operations	Facility energy audits, full electrification by 2030
3	2025	Transportation + Land Use	Transportation Demand Management (TDM) ordinance and vehicle miles traveled (VMT) impact fee
4	2025	Transportation + Land Use	Completed Active Transportation Plan (ATP), Local Road Safety Plan, GPU integration, implementation by 2030
5	2025	Transportation + Land Use	Electric Vehicle (EV) charging reach code
6	2025	Existing Buildings	“One-stop shop” for electrification incentives and educational resources
7	2025	Resource Consumption	Enclosure standards for new multifamily and nonresidential construction
8	2025	Resource Consumption	Partner with Cool Petaluma volunteers to conduct the community surveys needed to estimate consumption emissions
9	2025	Resource Consumption	Partner with Recology and Zero Waste Sonoma to: <ul style="list-style-type: none"> • Conduct waste audits/contamination monitoring; • Implement and enforce an edible food recovery program; and • Educate the public about waste diversion.

10	2025	Sequestration	Revised Tree Preservation Ordinance
11	2026	Municipal Operations	Capital Improvement Plan alignment with carbon neutral goal
12	2026	Municipal Operations	Infrastructure upgrades of Corp Yard, Petaluma Transit
13	2026	Municipal Operations	Zero Emission Vehicle (ZEV) plan, implementation of light, medium duty by 2030
14	2026	Transportation + Land Use	Begin implementing updated General Plan program
15	2026	Transportation + Land Use	Parking pricing policies and program
16	2026	Existing Buildings	Financing mechanisms to fund municipal incentive programs including bonds or taxes
17	2026	Sequestration	Revised Urban Forest Plan, with detailed implementation strategy
18	2027	Transportation + Land Use	Charging infrastructure implementation
19	2027	New Buildings	Policy that phase in requirements for low embodied carbon materials
20	2027	Existing Buildings	A date certain, phased-in Existing Building Electrification strategy
21	2027	Sequestration	Comprehensive Land Management Plan and maintenance procedures for City properties that center regenerative management
22	2028	Transportation + Land Use	Revised zoning code, permitting, and approval processes

The dates reported throughout this Blueprint refer to the year that programs should be implemented by. When a measure says “by 2026” it means that the action will be implemented as written by January 1, 2026.

Action Plan Table Key

GHG Reduction Potential:

Supportive – no direct emissions reductions but aid the implementation of measures with direct emissions reductions.

Low – less than 15,000 MTCO₂e

Medium – 16,000 – 40,000 MTCO₂e

High – more than 40,000 MTCO₂e

Responsible City Departments: The City department or entity that will lead the implementation of the action.

Cost Key:

\$ - Low Cost (e.g., municipal code updates, plan updates, changes to internal protocols or existing programs)

\$\$ - Medium (e.g., new plans and studies and innovative programs)

\$\$\$ - High (e.g., capital projects)

Clean Energy Action Plan

Clean Energy Generation Strategy

Intent: Petaluma has a resilient and fossil-free energy system that reduces energy-related greenhouse gas emissions, as well as improves local air quality and public health.

Residential and nonresidential energy use, including electricity and natural gas, account for 24% of Petaluma’s greenhouse gas emissions. After the City joined Sonoma Clean Power (SCP), which supplies 100% carbon-free electricity to its customers, these energy emissions are mainly driven by the burning of fossil fuel natural gas, which accounts for almost 80% of energy-related emissions in the city.

As of 2020, the community wide participation rate in SCP is 89%. While all SCP energy is carbon free, only 4% of SCP accounts in Petaluma are in the EverGreen 100% renewable energy tier. Participating in SCP has the lowest upfront cost to access clean energy. Clean grid electricity, including the installation of distributed energy resources (DERs), such as local solar projects, is a keystone effort being led by the State to achieve its climate goals and build community resilience. Senate Bill 100’s renewable portfolio standard will require that supplied energy not only be 100% carbon-free by 2045 but also 100% generated from renewable sources like wind, solar, and local biogas. Furthermore, the City received a \$300K CalOES grant for emergency preparedness, which the City has used to prepare the Community Center for backup power that is compatible with the City’s current generators and future battery energy storage installations.

Equity Considerations

The Clean Energy Action Plan proactively addresses issues related to equity by understanding the barriers to participating in clean energy programs, including SCP, and focusing resources on SB 1000 disadvantaged communities to improve accessibility. Additionally, resources could be prioritized for the installation of solar plus storage projects for medical baseline customers to ensure access to electricity during power outages.

Performance and Equity Metrics

- Participation rate in SCP CleanStart and EverGreen
- Number of (or size of) solar installations on commercial buildings
- Number of (or size of) solar installations on residential buildings
- Number of battery storage systems installed, including to support CARE/FERA customers and in DACs
- Participation rate in utility (SCP and PG&E) and State clean energy incentive programs



GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Low	\$\$-	Resilience, air quality, public health	Community Development

City Implementation Actions

1. By 2025, adopt solar plus storage reach codes for residential and nonresidential development to require solar (kW/sf) for nonresidential buildings and for residential to cover the expected load of the home with PV systems. Ensure that systems are designed for the simultaneous or future installation of and connection to battery storage.
 - a. Utilize existing cost-effectiveness studies developed by the California Energy Commission (CEC).
 - b. Hire a consultant to evaluate the cost effectiveness of clean energy options including SCP, rooftop solar, and community solar projects.
 - c. By 2025, submit the adopted ordinances to the California Energy Commission (CEC) and California Building Standards Commission (CBSC) as required to have requirements apply to the current code cycle. Re-adopt this reach code with the new building code in 2026, if the 2025 code cycle doesn't include a storage component.
2. By 2025, establish an annual reporting system to transparently report progress on switching from natural gas to electric equipment in privately owned buildings and city facilities. See the Carbon Neutral Monitoring and Reporting Action Plan for more details.
3. By 2025, conduct a community-wide renewable energy generation analysis to identify locations in the City where renewable energy generation can be installed. Asses the feasible locations and proposed equipment identified in the communitywide renewable energy generation analysis under CEQA.
4. By 2025, establish a program to offer support to affordable housing developments with the installation of on-site solar and battery storage.
5. By 2026, adopt a policy requiring municipal back-up energy systems, including generators, be powered by carbon-free energy. Phase out the existing systems at or before the end of their useful life.
6. By 2026, consider banning gas-powered lawn and garden equipment in the city, and establish a program allowing electric equipment to be charged throughout the day as it is used.
7. By 2030, increase participation in SCP to 96%, ensuring 100% carbon-free electricity is the only option for residents and businesses.
8. By 2030, consider generating 100% of municipal energy from local (within Sonoma County), renewable sources, exploring grid-independent energy generation and storage at critical facilities.
 - a. Determine the anticipated generation capacity (kW) of planned renewable energy projects including at the Community Center, Community Sports Field, Police Department, Swim Center/Fairgrounds, and Ellis Creek Water Recycling Facility.
 - b. Determine the energy storage potential at existing city facilities.

Additional actions related to energy efficiency and conservation are included in the Buildings and Carbon Neutral Municipal Operations Action Plans.

Partnerships and Engagement

1. By 2025, partner with Sonoma Clean Power (SCP) to identify barriers for large users and/or sectors to participate at the 100% RE tier and develop and conduct a robust awareness and education campaign to boost enrollment targeting the 11% of customers in Petaluma that have remained with PG&E.
2. By 2025, conduct public hearings, public notices, and formally adopt solar reach code ordinances.
3. By 2025 provide links to resources on local, Federal, and State solar credits and other financing incentives on the city website. Explore partnering with a solar consultant firm to provide guidance for property owners. Offer free post-installation roof inspections.
4. By 2026, partner with PG&E and SCP to expand programs and rates that provide low-income customers with 100% carbon-free electricity.
5. By 2027, partner with SCP to identify funding for installation of renewable energy generation at feasible locations.

Funding Opportunities

1. (Ongoing) continue to leverage existing programs including SCP Electrify program and BayREN Home+ Rebates.
2. By 2025, partner with SCP, PG&E, Bay Area Air Quality Management District (BAAQMD), California Public Utilities Commission (CPUC), and BayREN to explore opportunities to incentivize electrification for California Alternate Rates for Energy Program (CARE) and Family Electric Rate Assistance Program (FERA) customers.
3. By 2026, establish financing mechanisms to fund municipal incentive programs such as bonds or taxes.
4. By 2026, apply for California Energy Commission's Electric Program Investment Charge (CEC EPIC) microgrid grant.

Buildings Action Plan

New Building Strategy

Intent: Decarbonized new construction that uses low embodied carbon materials, renewable energy, and efficient design.

New construction is governed by the California Building Standards Code and the California Green Building Standards Code (CALGreen), which include requirements for sustainable construction practices in the following categories:

- Planning and design
- Energy efficiency
- Water efficiency and conservation
- Material conservation and resource efficiency
- Environmental quality

The Building Standards Code is updated every three years to reflect industry best practices and increase the sustainability of new construction. Petaluma has already adopted an all-electric reach code for residential and nonresidential new construction and substantial remodels to take advantage of the City's access to carbon-free electricity through Sonoma Clean Power (SCP).

Equity Considerations

The New Building Strategy aims to improve the sustainability of new construction while ensuring equitable access to the climate benefits associated with decarbonized buildings. This outcome requires supporting affordable housing development and providing financial incentives in disadvantaged communities. Sustainable new development will address energy resilience in housing and help improve indoor air quality and stabilize energy costs for both residential and nonresidential property owners and tenants. Additionally, promoting the use of low-carbon building materials will help develop the supply chain for specific materials, and create higher paying trades jobs, which will strengthen the regional economy.

Performance and Equity Metrics

- Number of all-electric new development units
- Number of affordable units within residential projects
- Citywide natural gas use
- Number of new development projects that exceed CALGreen energy efficiency standards



GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$	Resilience, air quality, public health	Community Development
City Implementation Actions			
<ol style="list-style-type: none"> 1. By 2025, determine the feasibility and impacts of incentives to encourage new development to exceed Title 24 energy efficiency standards and adopt feasible best practices. 2. By 2025, add a question to the Solar Photovoltaic Systems Submittals form for all new solar systems installed if there is the ability to connect a battery storage. 3. By 2025, provide new development checklist to require as part of discretionary project review that includes all sustainability building requirements. 4. By 2026, encourage or mandate that all new homeowners enroll in Sonoma Clean Power. 5. By 2026, revise existing all-electric reach code to include ADUs, remodels, and tenant improvements of a certain size or dollar amount in addition to new construction. 6. By 2026, explore incentives and requirements, including adopting CALGreen Tier 2, for use of a minimum amount of reused and salvaged local building materials in remodels and new construction, especially forward-facing exterior applications, <ol style="list-style-type: none"> a. Consider amending the building permit application to require recycled/reused material content. b. By 2026, determine which building materials have low-embodied carbon alternatives and are appropriate for the expected types of development projects in the city. Use existing green building rating systems, including LEED and Living Building Challenge Red List as a resource. c. By 2027, prepare policy that phases in requirements for low embodied carbon materials (residential and commercial), conduct CEQA analysis as needed. 7. By 2028, hire a consultant to calculate expected emissions related to annual building activity within the city. 8. By 2030, adopt ordinance requiring all new construction achieve net zero energy use in construction and continuing operations. 			
Partnerships and Engagement			
<ol style="list-style-type: none"> 1. By 2025, coordinate with stakeholders including City staff and officials and external stakeholders to explore incentive options including financial, permitting, and process efficiencies. 2. By 2025, engage with stakeholders including City staff and officials, and external stakeholders, such as local developers regarding the purpose and impact of the requirements. 3. By 2025, coordinate with Sonoma Clean Power and other entities to provide educational information and technical assistance to developers and architects about alternative materials. Make resources available on the City website, at the City permit counters, and local and regional home improvement stores. 4. By 2026, coordinate with Sonoma Clean Power and other entities to provide technical resources, including hosting workforce development trainings for installers and building owners/operators to discuss benefits and technical requirements of alternative materials. 			

5. Collaborate with XeroHome to create a database for the community that will enable carbon and energy use data specific to individual addresses.

Funding Opportunities

1. By 2025, continue to leverage existing programs including SCP and Bay Area Regional Energy Network (BayREN) Home+ Rebates.
2. By 2026, partner with SCP, PG&E, Bay Area Air Quality Management District (BAAQMD), the California Public Utilities Commission (CPUC), and BayREN to explore opportunities to incentivize electrification for California Alternate Rates for Energy Program (CARE). Family Electric Rate Assistance Program (FERA) customers.
3. By 2025, explore financing mechanisms to fund municipal incentive programs including bonds or taxes. Establish funding mechanism by 2026.

Existing Building Strategy

Intent: The performance of existing buildings in Petaluma is improved and decarbonized.

Most building-related emissions are attributable to the existing building stock operations, which are much less efficient than new construction due to being built when building energy standards were less stringent or nonexistent. The three ways to reduce building related emissions are energy efficiency, sustainable construction practices, and electrification. Decarbonizing existing building operations through electrification is critical to meeting emissions reduction goals. There are many challenges associated with improving the performance of existing buildings including costs, rental/ownership status and split incentives, and technological constraints.

Equity Considerations

The Existing Building Action Plan aims to enable retrofitting of existing homes and businesses in Petaluma to achieve energy savings and more efficient operations. The implementation of energy efficiency measures has positive equity impacts because more energy efficient homes and businesses improve indoor air quality, reduce energy use, and lower energy bills. Disadvantaged residents and businesses benefit from improvements to existing buildings, particularly those with increased risks from poor indoor air quality including residents with pre-existing medical and respiratory conditions.

Improving existing buildings in Petaluma focuses on equitable electrification and promoting existing energy efficiency programs offered by BayREN, PG&E, and SCP. Equitable electrification achieves decarbonization of building operations, equal access to health and safety benefits, economic benefits, and maximizes the ease of installation for everyone, but focuses resources for underserved communities. The City has an existing Tenant Ordinance to mitigate displacement risk that strengthens tenant protections, including “relocation assistance” and “right of return” for tenants temporarily displaced by housing retrofits. Additionally, the City can consider methods such as a “green lease” to address the “split incentive” issue, and to prevent tenants paying for property improvements. Split incentives occur when the person paying for the upgrade, the building owner/manager, does not directly benefit from the improvement. Rather, the cost benefit goes to the utility bill payer, who is using less energy so saving money. A green lease is a lease that includes provisions that preclude the owner/manager from passing on the costs of building improvements, like solar panel installation, to the tenant. In market rate housing,

the green features in a building can also increase the amount rent that a building can ask for to account for the amenities that are included.

Performance and Equity Metrics

- Reduction in citywide natural gas use
- Number of building electrification retrofits
- Number of building retrofits for CARE/FERA customers
- Number of building electrification retrofits in SB 1000 disadvantaged communities
- Tracking upgrades to infrastructure to facilitate electrification

Existing Building Electrification Strategy

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
High	\$\$	Resilience, air quality, public health	Community Development, Public Works, City Manager, CAO
City Implementation Actions			
<ol style="list-style-type: none"> 1. By 2024, initiate a conversation with SCP about regional coordination around existing building electrification efforts. 2. By 2025 prepare policy requiring electric panel upgrades at point of sale and/or rental turnover for single family and low-rise residential buildings. <ol style="list-style-type: none"> a. Explore establishing a residential resale inspection program, using City building inspectors, to validate all time of sale sustainability requirements have been met. b. By 2025, develop an inventory of rental units in the city and require annual reporting by property owners or managers on vacancy and turnover. c. By 2028, establish a process to record decarbonization status from each property at the time of sale. 3. By 2025, create a system to monitor the replacement of natural gas equipment with electric equipment and other decarbonization retrofits. <ol style="list-style-type: none"> a. Create an electric equipment installation permit category. b. Establish an annual reporting system to inform the Climate Action Commission on progress on the switching from natural gas to electric equipment. 4. By 2025, explore enhancing SCP’s incentive program with a reduced-cost electric heat pump space heater and water heater program for income-qualified residents. 5. By 2026, establish an early natural gas equipment buyout program to incentivize early retirement of gas-powered equipment and building systems. 6. By 2026, map and define existing infrastructure needed for electrification and identify areas where infrastructure upgrades are needed. <ol style="list-style-type: none"> a. Prioritize installation of infrastructure upgrades in DACs followed by other identified install neighborhoods. 7. By 2027, develop a phased-in Existing Building Electrification strategy to retrofit 85% of existing homes and businesses to all-electric by 2030, and potentially adopt a burnout ordinance. Conduct CEQA analysis as needed. 			

8. By 2028, establish a process to record decarbonization status from each property at the time of sale. Explore requiring property owners to report building decarbonization status using tools, such as XeroHome.

Partnerships and Engagement

1. (Ongoing), continue to work with PG&E and SCP to determine electric distribution system and service infrastructure limitations and work to resolve issues, including a focus on improving access reliability in disadvantaged communities.
2. By 2025, establish an education campaign around cooking with electric appliances, including demonstrations from chefs and/or local restaurants.
3. By 2025, create an online “one-stop shop” for incentives that promote the cost and environmental benefits of electrification to residents and business owners before appliance failure. Promote SCP Electrify resources and incentives to builders, property owners, and contractors on the City website and at the City permit counters.
 - a. Collaborate with Xero Homes project to help homeowners understand their carbon footprint.
4. By 2025, work with local businesses to promote electric appliances in-store.
5. By 2026, waive permit approval fees for electrical upgrades to support the future installation of new electric appliances that will replace existing natural gas.
6. By 2026, provide technical resources, including hosting workforce development trainings for installers and building owners/operators to discuss benefits and technical requirements of electrification.
7. By 2026, utilize economies of scale related to electric equipment through cooperative purchasing to reduce upfront costs for low-income residents.
8. By 2030, work with PG&E to identify opportunities for natural gas infrastructure pruning to reduce the chance of stranded assets, provide potential funding, and establish an efficient transition to carbon neutral buildings.

Funding Opportunities

1. (Ongoing) continue to leverage existing programs including SCP Electrify program²⁴ and BayREN Home+ Rebates.
2. Promote low-income specific programs including CEC’s Low-Income Home Energy Assistance Program (LIHEAP) and the Low-Income Weatherization Program.
3. By 2025, partner with SCP, PG&E, BAAQMD, and BayREN to explore opportunities to incentivize electrification for CARE/FERA customers.
4. By 2026, explore and establish financing mechanisms to fund municipal incentive programs including bonds or taxes.

²⁴ <https://sonomacleanpower.org/programs/scp-electrify>

Existing Building Energy Efficiency Strategy

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$-\$\$	Resilience, air quality, public health	Community Development
City Implementation Actions <ol style="list-style-type: none"> By 2026, prepare and adopt ordinance establishing benchmarking and retrofitting requirements for nonresidential buildings. Explore the potential for a building performance standard. <ol style="list-style-type: none"> By 2025, conduct a study to determine the appropriate square footage threshold to capture additional buildings than is required by AB 802 for benchmarking. AB 802 is the “Building Energy Benchmarking Program.” The Building Energy Benchmarking Program requires owners of large commercial and multifamily buildings to report energy use to the California Energy Commission by June 1 annually. By 2026, require low-rise residential properties older than 10 years to provide an energy audit, disclose Home Energy Rating System (HERS) score or EPA Home Energy Score at time of sale or rental agreement. By 2027, partner with BayREN to implement a direct install program for energy efficiency improvements or specific rebates for installation labor. By 2027, adopt an ordinance requiring energy submeters to be installed in multifamily residential properties. 			
Partnerships and Engagement <ol style="list-style-type: none"> By 2025, promote energy efficiency programs and incentives from PG&E, SCP, BayREN, BAAQMD. By 2025, provide funding to support community partners and companies in developing green job training and conducting home energy retrofits. By 2025, work with PG&E and SCP to implement retrocommissioning in the existing building stock. By 2026, engage with stakeholders including residential and nonresidential property owners, managers, real estate agents, leasing brokers, and Chamber of Commerce to explain the benefits of providing a Home Energy Score. 			
Funding Opportunities <ol style="list-style-type: none"> By 2024, continue to leverage existing programs including SCP and BayREN Home+ Rebates. By 2025, partner with SCP, PG&E, BAAQMD, and BayREN to explore opportunities to incentivize efficiency upgrades for CARE/FERA customers. By 2026, explore and establish financing mechanisms to fund municipal incentive programs including bonds or taxes. Advocate to expand PG&E’s OBF (On Bill Financing) program to include residential customers in addition to businesses. 			

Transportation and Land Use Action Plans

Transportation and land use programs are a fundamental part of Petaluma's plan to reach carbon neutrality by 2030. Transportation-related emissions are the largest contributor to community-wide emissions, accounting for 67% of total emissions. Reducing emissions to achieve the City's target will require significant investments in active transportation infrastructure, transit service, transportation demand and parking management programs that reduce single-occupancy vehicle travel, and investment in electric vehicle infrastructure. It also means prioritizing people, cyclists, micromobility, and transit modes over cars, guaranteeing these modes are more convenient and less costly to use, and creating a healthier and cleaner future. Likewise, land use and neighborhood design impact where people travel, how far people go, and by what vehicle mode they make their trips. Compact, mixed-use neighborhoods encourage non-auto travel to meet daily needs.

This section includes five interrelated transportation and land use action plans including:

- Transportation and Land Use Coordination
- Transportation Demand Management and Parking
- Active Transportation and Complete Streets
- Vehicle Electrification and Electric Mobility
- Transit Service



Transportation and Land Use Coordination Strategy

Intent: Petaluma manages land use change to support greenhouse gas reduction targets by focusing development in location-efficient places, creating complete neighborhoods, and increasing density. Complete, mixed-use neighborhoods allow residents to access most of their everyday needs within a short walk, bike, or transit trip.

Land use describes the human use of the land. In Petaluma, there are dozens of different types of uses, including housing, parks, shopping, and schools. Land use and neighborhood design impact where people travel, how far people go, and by what vehicle mode, e.g. driving, walking, biking, or taking transit, they make their trips. Compact, mixed-use neighborhoods that offer housing to a range of income levels, support street connectivity, and facilitate high-quality transit access encourage non-auto travel to meet daily needs. Through the City's General Plan and Zoning Code, Petaluma will make sustainable land use practices the norm.

What is a Complete Neighborhood?

A neighborhood where residents can reach community amenities (e.g., grocery stores and retail), public facilities (e.g., parks and community centers) and services (e.g., health care and affordable childcare) within a 15-minute walk.

Equity Considerations

The Transportation and Land Use Coordination Action Plan aims to coordinate future land use and transportation decision-making to ensure a cleaner and healthier future. Disadvantaged communities face higher burdens from environmental pollution, traffic collisions, and longer commutes. This action plan requires streamlining affordable housing production and increasing housing opportunity in high-resource neighborhoods across the city. New development in existing disadvantaged communities may also increase displacement pressure. Policies and programs associated with tenant and small business protections should be explored by the City.

Performance and Equity Metrics

- Number of housing units near high-quality transit
- Number of affordable housing units within 0.5 miles or 15-minute walk of high-quality transit
- Achieve Regional Housing Needs Allocation (RHNA) targets for all income levels. Meet requirements to affirmatively further fair housing
- Proportion of population in complete neighborhoods

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
<p>High in complete neighborhoods</p> <p>Low to Moderate Citywide</p>	\$	Air quality, public health, reduced congestion	Community Development

City Implementation Actions

1. By 2025, adopt the updated General Plan Land Use Element with a focus on location efficient places, including:
 - a. Locate housing and jobs close to high quality transit corridors, including S McDowell Blvd, E Washington St., and Petaluma Blvd.
 - b. Define transit-oriented communities at high-quality transit stops that mix quality development, affordable housing, community services and amenities, and improved mobility options. Adopt the General Plan Land Use Designations to expand housing capacity by increasing heights and densities within transit-oriented communities.
 - c. Establish complete 15-minute neighborhoods around Town Centers, Neighborhood Centers, and other active nodes to enable residents to access most of their daily needs with a short walk, bike or transit trip. Develop maps defining the boundaries of complete neighborhoods and inventory services and amenities.
 - d. Enable incremental infill within the city’s existing residential neighborhoods, including accessory dwelling unit and plex housing types.
 - e. Examine rezoning to allow for light-touch, missing middle housing up to 10 units per acre. Implement streamlining provisions established in SB 10.SB 10 (2021) provides that local agencies may adopt an ordinance to allow up to 10 dwelling units on any parcel, at a height specified in the ordinance if the parcel is within a transit-rich area or urban infill site.
2. By 2025, streamline development consistent with City’s vision for carbon neutrality through zoning, permitting, and approval processes.
 - a. Establish Housing Sustainability Districts (HSDs), or a similar overlay, to streamline housing production on infill sites near high-quality transit consistent with CA Govt. Code Section 66200.
 - b. Establish additional incentives in the zoning code to facilitate affordable housing in transit-oriented communities.
 - c. Develop a comprehensive package of targeted incentives and regulations that increase access to specific amenities and services to create complete neighborhoods.
 - d. Establish new approval and permit streamlining for new housing that exceeds inclusionary and sustainability requirements.
3. By 2026, begin program implementation for the General Plan.
 - a. Establish a complete 15-minute neighborhoods working group lead by the Planning division in collaboration with other departments.
 - b. Complete a mobility hubs study to determine the financial costs, infrastructural needs, and economic feasibility to establish hubs and refine the hub recommendations by MTC with the General Plan Land Use Map and Mobility Frameworks.

<ul style="list-style-type: none"> c. Develop and continue programs to support small property owners to add housing, e.g., accessory dwelling units through education, preapproved plans, and financial incentives. <ul style="list-style-type: none"> 4. By 2028, adopt the City’s revised zoning code. <ul style="list-style-type: none"> a. Update the zoning districts consistent with the General Plan Land Use Designations and Housing Element. b. Allow a diversity of services and amenities in each complete 15-minute neighborhood, including childcare, healthy food, community gardens, and other amenities. Increase the types of home-based businesses allowed in residential neighborhoods. c. Increase density and height standards to expand housing capacity. d. Revise zoning standards related to substantial modifications to require existing parking lots are brought to current code requirements for landscaping, tree canopy, and stormwater, and EV charging. e. Consider incentives like a density bonus for building design and use of materials that sequester carbon (e.g., mass timber, carbon sequestering concrete processes).
<p>Partnerships and Engagement</p> <ul style="list-style-type: none"> 1. By 2024, partner with Cool Petaluma volunteers to conduct neighborhood asset and boundary mapping exercises for Petaluma neighborhoods. 2. Continue to partner with, financially support, and promote the Napa Sonoma ADU Center to provide information and technical support to the public on ADU regulations and implementation.
<p>Funding Opportunities</p> <ul style="list-style-type: none"> 1. General Fund 2. Development Impact Fees

Transportation Demand Management Strategy

Intent: Petaluma manages travel demand by reducing single-occupancy vehicle trips, incentivizing active transportation and transit use to lower VMT and greenhouse gas emissions.

Transportation demand management (TDM) and parking management seek to reduce single-occupancy vehicle (SOV) travel and shift trips to walking, biking, scooting, rideshare, and transit. TDM manages transportation resources through pricing, incentives, services, marketing, and other techniques. A key element of a comprehensive trip-reduction strategy is parking management. Strategies like parking maximums, unbundling, and shared parking reduce parking demand, minimize vehicle trips, optimize use of the parking supply, and support walkable neighborhoods. Robust TDM and parking management programs represent some of the largest opportunities to reduce transportation-related emissions in Petaluma and will be implemented the City's General Plan and Zoning Code.²⁵

Equity Considerations

In general, TDM helps support positive equity outcomes. TDM and parking programs, like unbundling parking, help improve transportation alternatives to the car, more accurately reflect the cost of travel, reduce emissions, and may provide direct benefits such as financial savings and more affordable transportation options. Other equity considerations may include the accessibility of the transit or active transportation in disadvantaged communities and exploring a transportation benefits program, like Universal Basic Mobility, for Petaluma's low-income residents.



Performance and Equity Metrics

- Vehicle miles traveled
- Number of publicly accessible bike parking stalls
- Miles of bike lane installed per year, by class
- Number of free/subsidized transit pass rides/year
- Transportation Demand Management Action Plan Adoption

²⁵ TDM for City employees is addressed separately. See Employee Transportation Demand Management Strategy, P. 99.

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
High (for new projects or neighborhoods with constrained parking) Low to Medium Citywide	\$\$	Air quality, public health, reduced congestion, quality of life benefits, safety benefits	Community Development, Public Works & Utilities
City Implementation Actions <ol style="list-style-type: none"> Use transportation demand management (TDM) to reduce single-occupancy vehicle travel and provide information and incentives to existing and future residents, employees, and visitors to encourage non-automobile travel. <ol style="list-style-type: none"> By 2025, adopt a TDM policy for employers and housing developments that requires employers and housing developments of a certain size to submit an emission reduction plan to the City to meet the City’s GHG reduction target. For smaller employers and housing developments, establish a requirement to provide employees and residents with educational materials about active transportation and transit options within the city. The City will work with businesses to phase in compliance over two years. By 2025, establish a City-led TDM program (or non-profit Transportation Management Authority), with dedicated oversight, to implement the TDM policy requirements. By 2026, establish annual reporting requirements to the City Council. By 2026, adopt a VMT-based development impact fee program. By 2026, evaluate the feasibility of funding a transportation benefits program, e.g. Universal Basic Mobility Program, for existing low-income residents in disadvantaged neighborhoods. By 2027, adopt an ordinance establishing penalties for non-compliance with the TDM policy. Establish procedures to use penalty revenue to fund active transportation improvements in disadvantaged communities. Coordinate with SCTA on VMT mitigation bank. 			
Partnerships and Engagement <ol style="list-style-type: none"> By 2025 conduct focus groups with large employers, small employers, and housing developers on their opportunities and challenges of implementing a TDM program. By 2025, create packages of public educational materials for each TDM tier that building owners/managers and employers can download from the City website. Require the materials be posted in a public place in the building as part of the TDM ordinance. By 2025, conduct a survey of low-income residents in disadvantaged communities to understand financial, logistical, and informational barriers to transportation to inform a Universal Basic Mobility program. Utilize available resources from ABAG and coordinate with other transportation programs. 			
Funding Opportunities <ol style="list-style-type: none"> General Fund Development impact fee / VMT impact fee Parking fee revenue TDM penalties Update and reconsider updated traffic impact funds – fund bank 			

Parking Management Strategy

Intent: Petaluma manages travel demand by managing parking resources more efficiently to lower VMT and greenhouse gas emissions.

Dynamic parking management often limits the amount of parking available, creating scarcity, and adding inconvenience to trips made by SOVs, thus disincentivizing driving. Reducing the convenience of driving results in a shift to other modes and decreased VMT. Strategies like parking maximums, unbundling or selling/leasing parking spaces separate from the lease of the residential property, and shared parking reduce parking demand, minimize vehicle trips, optimize use of the parking supply, and support walkable neighborhoods. Many of these interventions require updates to the zoning code.

Equity Considerations

Pricing parking generally leads to a more equitable transportation system by focusing on providing better access to opportunities and resources in marginalized communities and shifting the costs of driving to drivers. However, as certain neighborhoods in cities experience growth and affordability challenges, lower-income populations may be displaced further limiting access to transit and creating the need to focus on the cost implications for parking pricing strategies.



Performance and Equity Metrics

- Vehicle miles traveled
- Number of parking spaces removed per year
- Parking revenue

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
High (for new projects or neighborhoods with constrained parking) Low to Medium Citywide	\$\$	Air quality, public health, reduced congestion, quality of life benefits, safety benefits	Community Development, Public Works & Utilities
City Implementation Actions <ol style="list-style-type: none"> 1. Reform parking standards for new development to prioritize parking for bicycles, electric vehicles, and carshare, remove parking minimums, and unbundle parking. <ol style="list-style-type: none"> a. By 2025, establish a policy in the General Plan and update the zoning code to require residential and nonresidential development projects to unbundle parking from the purchase or lease of a residential or commercial use. 			

<ul style="list-style-type: none"> b. By 2025, establish a policy in the General Plan and update the zoning code to facilitate shared parking facilities to allow multiple uses on separate properties to use parking more efficiently. c. By 2025, revise the City’s bicycle parking standards, decoupling the standards from the automobile standards, and establishing standards for short- and long-term parking, showers, and other facilities based on building square footages and/or bedrooms. d. By 2025, revise the City’s carpool and van pool parking standards to be consistent with CalGreen Tier 2. e. By 2026, create a comprehensive parking management strategy that includes the removal of parking minimums and establishes parking maximums for new development in the zoning code. <p>2. Reduce parking supply and increase cost of parking to create constrained parking environments adjacent to transit-oriented and mixed-use neighborhoods.</p> <ul style="list-style-type: none"> a. By 2026, establish residential parking permit areas around transit-oriented and mixed-use neighborhoods to minimize spillover parking. b. By 2027, establish a parking pricing policy to balance supply and demand, to reduce demand for parking, and to meet target utilization rates at key destinations through the use of dynamic pricing. c. By 2027, establish a program to reinvest parking revenues into active transportation programs and capital improvement. Reserve a percentage of revenues for use in disadvantaged communities. d. By 2027, increase the City’s capacity to effectively manage and enforce parking. e. By 2030, consider expanding paid parking citywide in all transit-oriented and mixed-use neighborhoods.
<p>Partnerships and Engagement</p> <ul style="list-style-type: none"> 1. By 2025, notify and conduct focus groups with local community groups on new parking changes. Hold meetings at places in the community that are frequently visited.
<p>Funding Opportunities</p> <ul style="list-style-type: none"> 1. General Fund 2. Development impact fee / VMT impact fee 3. Parking fee revenue

Active Transportation and Complete Streets Strategy

Intent: The City provides a multimodal transportation network that prioritizes walking, biking, rolling, and transit use over auto travel.

Foundational to meeting the City’s carbon neutral target is to redesign the City’s streets around people rather than vehicles. TDM and parking management programs to shift travel mode from single-occupancy vehicle trips must be accompanied by improvements to the active transportation system that promote the safety and comfort of all individuals. With upgrades to the active transportation network and transit services—such as with new protected bike facilities or Petaluma Transit services — Petaluma will become a community with comfortable, inviting spaces for biking and walking and frequent transit service within a short distance.

Equity Considerations

Complete streets and equity are closely connected. Complete streets affect health by making places where it is safe and comfortable to be healthy and active. Historically, disadvantaged communities face higher burdens from traffic collisions with streets having a concentration of higher vehicle speeds. Other equity considerations include costs such as those associated with a bikeshare membership or e-bike purchase. This action plan lays the foundation for a re-envisioned framework for modal priority and implementation of complete streets and the active transportation network.

Performance and Equity Metrics

- Walk and bicycle mode share
- Low stress bicycle network lane miles by type
- Low stress bicycle network lane miles by type in disadvantaged communities
- Bicycle and pedestrian collisions with vehicles by demographic characteristics
- Accessibility of high-quality transit stops (geographic spread)

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$\$\$	Air quality, public health, safety, reduced congestion	Community Development, Public Works & Utilities
City Implementation Actions			
<ol style="list-style-type: none"> 1. Incorporate complete streets improvements into all roadway and development projects. <ol style="list-style-type: none"> a. By 2025, adopt a mobility priority policy with the General Plan as follows: 1) walk (persons with disabilities, pedestrians); 2) micromobility (including bicycles); 3) transit and shuttle; 4) drop-off and pick-up (ride share and taxi); and 5) auto (motorcycle, carpool/vanpool, carshare, and SOV). b. By 2025, adopt the City’s General Plan with complete street design standards that classify streets by their modal priority and land use context. c. By 2025, align Petaluma Active Transportation Plan improvement schedule with the General Plan complete street types and with the City’s Transit Plan. 			

<ul style="list-style-type: none"> d. By 2025, integrate the transit infrastructure needs into the Petaluma Active Transportation Plan. e. By 2025, adopt a policy that prioritizes mobility and safety for non-motorized modes for all roadway projects, in coordination with the Local Road Safety Plan. f. By 2026, establish new complete streets standards, street prioritization criteria, and implementation plan for complete streets in the city. g. By 2026, adopt a policy to prioritize transportation investments that reduce vehicle miles traveled per capita (VMT) and greenhouse gas emissions. Consider establishing a minimum proportion of discretionary transportation funding dedicated to active transportation. <ol style="list-style-type: none"> 2. By 2024, complete the Local Road Safety Plan. 3. By 2024, evaluate the success of the Sonoma Marin Bikeshare Pilot program to inform a permanent citywide e-bikeshare program. Evaluate the feasibility of an e-bike subsidy program. 4. By 2025 complete the Petaluma Active Transportation Plan and implement improvements by 2030 to create a low stress pedestrian and bicycle network that connects all residents to all destinations in Petaluma. 5. By 2025, study vehicle speeds on all city streets and adjusting speeds to accommodate the new modal priority. 6. By 2025, establish a bike share program with hubs throughout the city, and consider facilitating other shared micro mobility modes. 7. By 2026, add wayfinding signage for bikes, and micromobility network. 8. By 2026, establish a tactical urbanism program with approved street improvements. 9. By 2027, improve curb management to prioritize rideshare parking/loading zones, scooter and bike share docks, bike parking, EV charging stations, and autonomous vehicle loading zones. 10. By 2027, dedicate staffing to an active transportation team, including an active transportation planner, active transportation facilities operations, and a representative on the City Leadership team.
<p>Partnerships and Engagement</p> <ol style="list-style-type: none"> 1. By 2025, work with the Petaluma Unified School District to ensure school bus and school pool (by carpool, walk, and bike) programs are widespread, include Safe Routes to School. Determine whether expanding neighborhood school allocation could reduce crosstown travel. 2. By 2025, train public safety staff on dedicated bike and pedestrian paths to ensure safety and promote public use. 3. By 2026, establish a process to engage neighborhood residents in complete street design. Offer and vigorously promote ongoing programs to encourage adoption of active transportation (e.g., Ciclovía). 4. By 2026, become an official Bike Friendly City.
<p>Funding Opportunities</p> <ol style="list-style-type: none"> 1. Development impact fees 2. Regional, state, and federal grant programs (details to be provided in ATP) 3. Parking fee revenues

Transit Service Strategy

Intent: Petaluma expands and improves transit and shared mobility services to be more accessible, affordable, and timely.

Robust regional and local transit service is critical to serving the needs of workers, residents, and visitors in Petaluma. The city is served by the Sonoma-Marín Area Rapid Transit (SMART), Sonoma County Transit, Golden Gate Transit, and Petaluma Transit.

To reduce the number of overall vehicle trips, there must be an increase in transit service. Future expansion, including the SMART Corona Road Station, and investment in transit and shuttle service must be coordinated with complete street design improvements. Priority for transit on key streets, and strategies for coordination between transit agencies and other travel modes will improve connectivity and access for passengers using transit services.

Equity Considerations

Transit offers safe, affordable, timely, and convenient access to places that provides an essential service for lower-income people within limited mobility options. The prioritization of auto travel has created disparities in transit and car travel, safety considerations, and infrastructure that is inaccessible to people with disabilities are all equity consideration for this transit action plan. Further considerations may include the number of jobs held by low-income individuals and the need to access their destination in a timely manner which may include locations outside Petaluma. Low wage earners, such as restaurant employees frequently need timely access to transportation on a different schedule than 9-5 commuters.

Performance Equity Metrics

- Transit mode share
- Passengers per day
- Revenue vehicle miles and revenue vehicle hours (total and per passenger)
- Transit access and equity (e.g. in disadvantaged communities)
- Miles of bus-only lanes established
- Number of real-time bus signs installed
- Number of micromobility users or trips



GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Low to Medium	\$\$	Air quality, public health, safety, reduced congestion	Public Works & Utilities (Petaluma Transit)

City Implementation Actions

1. (Ongoing), continue to upgrade and improve Petaluma Transit infrastructure including benches, bike racks, ADA improvements, shelters, real-time signage.
2. By 2024, complete update to the Petaluma Short-Range Transit Plan.
 - a. Incorporate greenhouse gas emission reduction as a plan objective.
 - b. Assess service and service performance in disadvantaged communities.
3. By 2025, develop a funding plan for improving bike and pedestrian network connections to bus stops.
4. By 2025, implement and promote the K-12 free youth transit pass program.
5. By 2026, conduct a study to determine where and when increased levels of service are needed throughout the city, including:
 - a. Adding weekend and evening service
 - b. Mobility options
 - c. Creating new connections with SMART stations via new service types
 - d. Additional transit service to Downtown Petaluma
6. By 2027, establish an on-demand microtransit pilot program to provide transit services in disadvantaged and other communities.
7. By 2027, develop and pilot a subsidized fare (part of a Universal Basic Mobility Program), reduced fare, and/or free transit program.
8. By 2030, install transit signal prioritization and bus-only lanes.
9. By 2030, install bus pull-outs at all feasible bus stops along major arterial streets.

For implementation actions related to Petaluma Transit fleet vehicles and charging, see the Municipal Action Plan.

Partnerships and Engagement

1. By 2025, conduct surveys on perceptions of existing transportation infrastructure and needed improvements with local active transportation groups, commuter groups, and other stakeholders. Conduct the surveys on-board transit, online, and out in the community.
2. Continue to engage with SMART at the staff and Pedestrian and Bicycle Advisory Committee levels.
3. Continue to work with Sonoma County Transit and Golden Gate Transit to transition their revenue vehicle fleets to ZEVs.
4. Partner with Petaluma City Schools to promote transit youth through free passes and gamified outreach such as bus route scavenger hunts and bus shelter student art contests.
5. Continue participation in the MTC, SCTA initiatives to facilitate transit recovery.
6. Partner with Petaluma People Services to help transition fleet to ZEVs.

Funding Opportunities

1. Federal Transit Administration (e.g., FTA 5307)
2. Sales tax revenues (e.g., Transportation Development Act (TDA), State Transit Assistance (STA), and Sonoma County Transportation Measure M)
3. Low Carbon Transit Operations Program
4. Impact fees
5. Strategic Growth Council's Affordable Housing and Sustainable Communities Grant – Corona SMART Station
6. Transit fares

Vehicle Electrification and Electric Mobility Strategy

Intent: The City establishes a vehicle electrification and electric mobility strategy to accelerate the use of zero-emission vehicles and electric vehicle options.

In conjunction with policies that discourage people from driving, active transportation infrastructure, and transit service improvements, achieving carbon neutrality by 2030 will also require a rapid transition to zero-emission vehicles (ZEVs) that run on clean energy provided by Sonoma Clean Power. By 2030, all miles driven in Petaluma need to be zero emission. State policy requires all light-duty vehicles sold in California to be ZEV starting in 2035 and in 2045 for mid- and heavy-duty vehicles. Petaluma will invest in expanding the network of charging infrastructure to promote the transition to zero-emission vehicles and continue transitioning the City's fleet to zero-emission vehicles.²⁶



Equity Considerations

Disadvantaged communities face higher burdens from the transportation system, including environmental pollution, due part to their adjacency to Highway 101 and high-volume roadways. Cleaner vehicles produce few emissions and help reduce that pollution burden. Equity considerations associated with vehicle electrification also include financial access to electric vehicle ownership, charging “deserts”, accessibility for those with disabilities, costs associated with installing charging infrastructure and potential electric panel replacement, and ability to have charging infrastructure (renters vs. owners). The Vehicle Electrification and Electric Mobility Action Plan aims to emphasize equity considerations with planning investments in electric vehicle infrastructure, including the creation of fast-charging hubs serving Petaluma’s disadvantaged communities.

Performance and Equity Metrics

- Percent of electric vehicles in new vehicle sales
- Charging stations in disadvantaged communities
- Public charging facilities
- Code updates to facilitate/require installation of EV charging in new development

²⁶ See ZEV Fleet and Bus Strategy, P. 97.

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium to High	\$\$	Air quality, public health	Community Development, Public Works & Utilities
<p>City Implementation Actions</p> <ol style="list-style-type: none"> 1. Expand reliable, publicly accessible electric vehicle charging across Petaluma. Ensure that is financially and geographically accessible. <ol style="list-style-type: none"> a. By 2025, require new development to meet CalGreen Tier 2 standards for electric vehicle charging. b. By 2025, explore amending EV charger permitting requirements to include operation and maintenance plans for EV charger installations of four or more ports. c. By 2026, complete a study to establish a curbside charging pilot program. d. By 2027, create a fast-charging hub serving a “disadvantaged community” as identified in the General Plan. e. By 2030, expand charging to 10% of spaces within privately owned large commercial garages. 2. Launch a series of pilot programs and incentive programs to support the transition to electric vehicles and mobility, remaining flexible about how vehicle electrification continues to evolve and the varied and evolving uses, including hydrogen fuel cells, trucks, and towing. <ol style="list-style-type: none"> a. By 2025, pilot the use of zero-emission vehicles, e-bikes, and electric scooters for delivery and meal delivery services. b. By 2028, study creating a pilot Zero Emission Delivery Zone. 3. By 2026, develop/consolidate a comprehensive package of incentives to encourage the adoption of zero emission vehicles (ZEVs) including establish a fee waiver and/or permit streamlining program to support the installation of EV charging stations in existing residential, mixed use and commercial development. <p><i>For implementation actions related to City fleet vehicles and charging at City facilities, see the Municipal Action Plan.</i></p>			
<p>Partnerships and Engagement</p> <ol style="list-style-type: none"> 1. By 2025, launch a public awareness campaign, including messaging tailored to specific communities, with the goal of educating residents about the health, economic, and environmental benefits of transit, active transportation, and electric vehicles. 2. By 2025, collaborate with local bicycle and scooter businesses to launch a pilot project to test the use of accessible bicycles, e-bicycles and e-scooters for recreation and commuting. 3. By 2025, explore how businesses are approaching EV Infrastructure and co-habiting business are located near charging stations. 4. Work with PG&E and Sonoma Clean Power to ensure the electrical grid has the capacity to support large scale electric vehicle charging at all multifamily properties. 			
<p>Funding Opportunities</p> <ol style="list-style-type: none"> 1. Sonoma Clean Power 1. CALeVIP program 2. California Deployment Plan for the National Electric Vehicle Infrastructure 			

Water Action Plan

Water is a critical resource in California and Petaluma. Regional water supplies are already being adversely affected by climate change induced drought and decreased snowpack. Climate change is impacting local hydrology and affecting natural recharge to groundwater aquifers so that local groundwater is only used as supplemental or emergency supply. Lower rainfall and/or more intense runoff, increased evaporative losses, and warmer and shorter winter seasons can alter natural recharge of groundwater.

What is included?

This action plan includes strategies for water conservation, primarily in buildings and landscape. It is not a comprehensive list of actions. The City has other water plans that guide future decision-making and actions around water supply, drought, and water use.

Although water related GHG emissions in Petaluma account for less than 1% of the communitywide total emissions, the ecosystem and quality of life benefits that reliable clean water provide are important to protect. Thus, reducing indoor and outdoor water use through fixture upgrades and climate-appropriate landscaping for both residential and nonresidential buildings is incorporated in the Blueprint for Carbon Neutrality.

Water Strategy

Intent: Water is used efficiently in Petaluma to help ensure a safe and resilient water supply.

Petaluma purchases approximately 95% of its potable water from Sonoma Water. The City meets the other 1-10% of demand with locally-pumped groundwater. The City offsets 2-3% of demand with non-potable recycled water generated by the Ellis Creek Water Recycling Facility (ECWRF). ECWRF is currently able to recycle 100% of all tertiary-treated water produced during the irrigation season, but it is at capacity during the peak summer months. There is a capital improvement project that will increase peak tertiary treatment capacity from 4.68 to 6.8 MGD, producing a yield of 712 AFY to meet peak demands.

This strategy aims to reduce indoor and outdoor water use by providing alternative sources of water, including recycled water and greywater in line with the Urban Water Management Plan, evaluating CALGreen Tier 2 water efficiency requirements for alterations, additions, and remodels, and promoting existing rebate programs.²⁷

²⁷ The state's current standard for individual indoor residential water use (gallons per capita per day, or GPCD) is 55 gallons, but with the passage of SB 1157 the standard will be lowered to 47 GPCD from 2025-2030.

Equity Considerations

Requirements for water fixture upgrades should be accompanied by subsidies for low-income households. One action included in the Water Action Plan is to increase the existing subsidy for low-flow toilets and fixtures to include support for installation.

Performance and Equity Metrics

- Consumption of Gallons per capita per day (GPCD)
- Number of WELO compliant landscape renovations
- Number of participants in aerator and nozzle subsidy programs
- Number of direct install water efficiency upgrades

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Low	\$\$	Resilience, ecosystem	Public Works and Utilities, Planning

City Implementation Actions

1. (Ongoing) Hold giveaways for aerators and nozzles at public events or establish a periodic door-to-door or pick-up program offering immediate installations.
2. (Ongoing) Explore the feasibility of purple pipe expansion, dual plumbing, and blackwater system installation in the update of the Recycled Water Master Plan.
3. (Ongoing) Implement capital improvements at ECWRF to increase peak tertiary treatment capacity.
4. By 2025, research example water neutrality ordinances and incentives and current greywater permitting processes and determine which type of systems to pre-qualify.
5. By 2025, explore adding installation support as a part of the low-flow toilet subsidy program.
6. By 2025, continue to utilize, promote and build- out online permit application submittal and processing systems, and shorten the inspection process to one inspection for qualifying greywater systems.
7. By 2025, amend Municipal Code Sec. 15.17.050 with improved landscape water use efficiency standards and amend Sec. 15.17.050(C)(4) with new Petaluma River-Friendly Landscaping guidelines. Consider restricting or disallowing lawn installations or replacements, including disallowing artificial turf except in cases of athletic facilities.
8. By 2025, adopt the CALGreen Tier 2 water efficiency and conservation requirements for additions, alterations, and remodels.
 - a. Note the most recent standards to avoid continuous updates – Note all the locations in the code.
 - b. Consider additional incentives or exceptions for affordable housing development.
9. By 2025, replace existing water meters with Advanced Metering Infrastructure (AMI) system that will include easy-to-use web-based tools that allow customers to track and monitor water use. Promote the availability of Home Water Reports and provide materials on how to utilize the available information.
10. By 2026, explore a direct install water efficiency upgrade program for customers qualified

for subsidized water/sewer rates. Include low-flow toilets, weather-based irrigation controllers, rainwater capture systems, and drip irrigation.

11. By 2027, explore legal authority for greywater requirements as part of building code for all new construction and major renovations of existing buildings.
12. By 2030, explore adopting a tiered rate structure for water use, and mandatory benchmarking, audits, and retrofits for disproportionately high-water users.

Partnerships and Engagement

1. By 2025, engage stakeholders including QWEL certified landscapers, developers, architects, and property owners regarding the purpose and impact of the requirements.
2. By 2025, conduct public hearings, public notices, and formally adopt reach code ordinance.
3. By 2025, partner with Greywater Action or similar organization to determine eligibility criteria for systems that qualify for expedited permitting and provide permitting checklist.
4. By 2025, continue implementing and evolve public education campaigns that highlights water conservation practices and promotes and provides demonstrations of graywater and rainwater systems focusing on low-income customers with organizations like Daily Acts.
5. By 2027, create a social media campaign with awards to highlight Petaluma residents and businesses that have successfully modified their landscaping and/or reduced indoor water consumption.
6. (Ongoing) continue collaborating with Petaluma Groundwater Sustainability Agency for long-term regional sustainable water management.

Funding Opportunities

1. By 2025, explore funding opportunities to develop recycled water infrastructure including the State Water Resources Control Board Water Recycling Funding Program and Prop 1 funding.
2. Explore WaterSMART water and energy efficiency grants.
3. Continue DWR multi-benefit drought relief program.
4. Explore Water fees to fund wastewater and water infrastructure programs.
5. Water fees from Petaluma Groundwater Sustainability Agency (GSA) pay into supporting GSA, which helps sustainably manage ground water in Petaluma basin long term. Fees fluctuate depending on the year depending on how much water is pumped.

Applied for Reclamation Title 16 Funding in March 2022 and are waiting on the award. Will be part of tertiary treatment, urban and agricultural expansion.

Resource Consumption Action Plan

Petalumans consume many goods and services that originate inside and outside the City of Petaluma, including food; clothing; vehicles; furniture; pharmaceuticals; cosmetics; packaging; electronics; entertainment; software; hardware; transportation services; building materials; tools; and short-lived and single-use plastic and paper commodities by the ton – many of which are ever more difficult to recycle and/or compost. The extraction, processing, transport, distribution, sales, marketing, and disposal of these products represent the city’s largest source of consumption-based greenhouse gas emissions. The more goods people in Petaluma buy and the greater their relative emissions (i.e., the emissions resulting from their manufacture, transport, use, and disposal), the greater the adverse effects of those expenditures.

The Resource Consumption Plan aims to reduce overall resource demand, shift demand to lower-resource alternatives, and lower the material inputs for resources consumed. This plan couples’ traditional municipal roles like solid waste diversion with emerging roles like facilitating a sharing economy.

This section includes three strategies focused on:

- Solid Waste Diversion
- Local Food and Grocery
- Goods and Services

Additional actions to reduce resource consumption are included in the Buildings and Transportation and Land Use Action Plans.

Solid Waste Diversion Strategy

Intent: The City continues to divert organics from landfill in accordance with State targets and reduces greenhouse gas emissions related to landfilled waste.

This strategy aims to establish compliance pathways and enforcement mechanisms for compliance with SB 1383 organics and food waste diversion and reduce emissions related to other landfilled waste. By consuming less materials, recycling, and composting more, Petaluma will be able to reduce the amount of waste sent to landfill and be on the path to becoming a zero-waste city. This reduces consumption emissions associated with the life cycle of new goods and from the process of disposing items in the landfill.

Diverting organic material including food waste is a crucial step to meeting long-term goals because organic materials produce methane, which is a more potent GHG than carbon dioxide. The State adopted Senate Bill 1383, the Short-Lived Climate Pollutants Act, which requires jurisdictions to divert 75% of food waste from landfills by 2025, and jurisdictions must also recover food waste that can be repurposed. Moreover, organics recycling can provide useful byproducts including compost and biogas, which can further reduce emissions and provide economic benefits.

Equity Considerations

SB 1383 was not only designed to reduce the short-lived climate pollutants associated with organic waste in landfills but helps to address the amount of food waste and food insecurity. Food recovery, where generators of edible food are connected with organizations who supply food to those who are food insecure, is prioritized. Additionally, resources including technical assistance should be prioritized for small businesses and low-income housing within the city to reduce the burden of implementation costs. Similarly, requirements should be phased in from 2022-2025 to allow businesses with fewer resources more time to achieve compliance.

Performance and Equity Targets

- Tons of waste sent to landfill
- Pounds of edible food recovered and redistributed
- Recycling diversion rate
- Number of multifamily units in multifamily structures with access to composting service.

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$\$	Food justice	Public Works, Planning, City Manager

City Implementation Actions

1. (Ongoing) update the special event permitting process to include zero waste requirements for events, such as requiring applicants to submit a “waste plan” for each event.
2. By 2024, research local disposal facility diversion rates to determine potential for additional diversion.
3. By 2025, update enclosure standards for new construction to provide space for three streams in low-rise multifamily residential, high-rise multifamily residential, and nonresidential development.
4. By 2026, draft and adopt construction and demolition (C&D) diversion requirements for all new construction above what is required by CALGreen Tier 1.²⁸ File the adopted ordinance with the California Building Standards Commission (CBSC).
5. By 2027, explore modifying waste rate structure to encourage collection efficiency before the Recology franchise agreement ends December 31, 2027.
6. By 2028, support development of a “market” for compost through local collaboration.
7. By 2028, establish local ordinance prohibiting single use plastics (including water bottles) at City facilities and events, private events, and vending machines.

²⁸ 2019 CALGreen Tier 1 requires a minimum of 65% and Tier 2 requires a minimum of 80% construction waste reduction. The new code cycle, 2022 CALGreen, will be effective by January 1, 2023.

Partnerships and Engagement

1. (Ongoing) continue partnership with Recology to fuel trash trucks with biogas generated by wastewater treatment plant. Explore opportunities to expand facility capacity to include food waste.
2. By 2025, partner with Recology to:
 - a. Provide quarterly route reviews to identify prohibited contaminants potentially found in containers that are collected along route.
 - b. Clearly label all new containers indicating which materials are accepted in each container, and by January 1, 2025, place or replace labels on all containers.
 - c. Increase education and establish penalties for noncompliance with source separation requirements.
 - d. Review franchise agreement at regular intervals and include any new or relevant waste reduction and efficiency programs or stipulations in updated agreement.
3. By 2025, partner with Cool Petaluma to have volunteers lead sessions in their neighborhood on correct residential waste sorting.
4. By 2026, partner with Zero Waste Sonoma JPA to implement and enforce an edible food recovery program for commercial food uses, farmers market vendors, and events.
 - a. Identify commercial edible food generators that will be required to send surplus food to food recovery organizations.
 - b. Conduct focus groups to assess local food recovery organizations / food banks and pantries' capacity to accept recovered food.
 - c. Consider implementing a grant program to help organizations build their infrastructure. Prioritize funds for those located in disadvantaged communities.
 - d. Conduct outreach to educate affected retailers on the requirements.
5. Utilize the City's membership in the Zero Waste Sonoma JPA to educate the public about how to separate and divert waste, as well as the associated environmental and community benefits. Partner with Zero Waste Sonoma JPA to:
 - a. Identify contaminated waste generators in need of technical assistance.
 - b. Develop and distribute educational materials (such as the Sonoma Zero Waste Guide) and in-person assistance.
 - c. Coordinate local participation in food recovery and distribution program.
 - d. Promote the use of compost for backyard gardens for small-scale food production and carbon sequestration.
6. Develop partnerships with local business organizations such as the Downtown Association to ensure local businesses understand and adhere to waste diversion requirements.

Funding Opportunities

1. CalRecycle SB 1383 Local Assistance Grant Program
2. CalRecycle Greenhouse Gas Reduction Loan Program

Local Food System and Grocery Strategy

Intent: The City reduces consumption-based emissions, supports grocers in reducing emissions, and supports local farmers and distributors by purchasing of local food and making food system operations more efficient.

Food consumption emissions represents one of the largest categories of household emissions in the consumption-based inventory. Food production, disposal, transportation, packaging, and kitchens, amongst other sources all contribute to the food system emissions. While many of those emissions are outside of the City's jurisdictional control, the City, businesses, and every Petaluman has a role in their reduction.

Procuring local food reduces the upstream emissions from food production, distribution, and waste. This includes emissions from transportation, refrigeration, and even more high-level factors like land use change from natural to agricultural. One way individuals can reduce these indirect emissions is by modifying their purchasing behaviors, such as buying locally grown produce at a farmer's market instead of produce from another country in the supermarket. This strategy leverages the buying power of the City to demonstrate the importance of buying local food and supporting Petaluma's farmers and other producers. It also includes ways that the City can encourage residents and businesses to change their habits related to diet and operations through partnerships with local organizations and an educational campaign.

The City will have to develop the policies and programs in this action plan based on an analysis of Petaluma's local food system and feedback from farmers, regional agricultural agencies, and other stakeholders including restaurants and retail establishments. The USDA suggests that a fluid approach is helpful, depending on the seasons, the availability of certain kinds of products, and needs for special events.



Likewise, a large and often overlooked source of GHG emissions is fugitive releases of HFC's in use throughout the City in food retail refrigeration systems. Grocery stores in the US leak an average of 25% of their refrigerant annually, resulting in a significant amount of GHGs released annually. The Market Zero project, undertaken by ProspectSV and Whole Foods Market, and with sponsorship dollars from the California Energy Commission, piloted reductions from HFCs and is an opportunity to for the City to continue to lead.

Equity Considerations

Purchasing local food will translate into increased sales and revenue for Petaluma's farmers and local businesses. In relation to equity, this supports farmworkers who may have low incomes, lack access to health insurance, be immigrants, and/or identify as Latinx. According to 2020 ACS 5-Year Estimates, an

estimated 283 Petalumans are employed in the agriculture, forestry, fishing and hunting industry.²⁹ There are also Petalumans employed in food manufacturing using local products.

Through procurement processes the City can also make an effort to buy from BIPOC farmers and entrepreneurs. Institutional investments into local businesses can help the sector grow and provide more jobs to diverse community members.

Performance and Equity Metrics

- Number of local farmers and distributors on the City’s “Climate First” procurement list
- Number of City functions supplied with local food
- Number of permanent or pop-up local food dining hubs
- Number of refrigeration audits

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Low	\$	Resilience, groundwater recharge, ecosystem health	Lead: Climate Action Manager

City Implementation Actions

1. By 2025, modify the zoning code to allow the creation of more permanent or pop-up neighborhood outdoor dining areas as hubs for locally grown food.
2. By 2026, conduct a study identifying local farmers and distributors in Petaluma to determine the feasibility of implementing different types of local food procurement policies.
 - a. Based on the findings, decide on the City’s definition of “local” food.
3. By 2026, develop and adopt “Climate First” municipal food procurement policies that support local farmers and distributors in the Sustainable Purchasing Policy Addendum of the City of Petaluma Procurement Guide.
 - a. Develop a vendor checklist for vendors to check their compliance with City policies.
 - b. Develop an approved list of vendors and suppliers that City staff can buy from, which can be added to over time.
 - c. Develop a data collection tool to track the City’s local food procurement over time.
4. By 2027, develop a strategy to remove the barriers (in right-of-way regulations and/or zoning) to food forests on planting strips and other sites.
5. By 2027, create a demonstration food forest at a City park where appropriate.
6. By 2028, partner with BayREN to establish a pilot program to reduce refrigeration-related emissions by providing free audits and retrofits to food retail establishments and restaurants. Consider onsite solar and battery storage and/or microgrid opportunities in case of outages.

For implementation actions related to building electrification, see the Existing Buildings Action Plan.

²⁹ US Census Bureau. ACS 2020 5-Year Estimates. Table S2404: Industry by Sex for the Full-Time, Year Round Civilian Employed Population 16 Years and Over. <https://data.census.gov/cedsci/table?q=petaluma&t=Industry&tid=ACSST5Y2020.S2404>

Partnerships and Engagement

1. By 2026, consider partnering with the Sonoma County Food System Alliance, Cool Petaluma, and other groups to advocate at the appropriate government level for labeling of goods and services to identify local goods and disclose lifecycle climate impacts that can inform purchase decisions.
2. By 2026, partner with Sonoma County Food System Alliance on the development of the local food procurement policy (City Implementation Action 2) and outreach to the agricultural community, such as focus groups with local farmers and distributors.
3. By 2026, develop a local food-focused community outreach campaign shared through the City's social media and Climate Ready 2030 webpage, community events, and community partners such as Cool Petaluma.
 - a. Develop educational materials to post or distribute at community events that inform members of the public about the benefits of consuming local food.
 - b. Post information on City communication channels to encourage Petalumans to reduce high-GHG food consumption. This can include posting meatless recipes on City social media, creating a "meatless Monday challenge," and posting educational information about health and climate benefits of reduced animal product consumption, as well as educating consumers on lower-impact options for popular products such as carbonated water beverages.
 - c. Partner with groups (such as the Downtown Association, Cool Petaluma, and others) to encourage local restaurants, catering companies, and workplace cafeterias to increase menu offerings with less meat and dairy.
 - d. Partner with farmer's markets to ensure they are offering the Market Match program which allows CalFresh users to double their benefit when buying produce at a farmer's market. Promote the program on the City website, on social media, in the community, and at all farmer's markets.
4. By 2027, develop a business-oriented education campaign to promote ways to reduce food-related emissions including Zero Waste Sonoma and Sonoma Food Runners food recovery and recycling programs, refrigeration audits and retrofits and refrigerant alternatives, information about local producers, and electrification options and incentives for commercial kitchens.
5. By 2027, partner with Sonoma County Food System Alliance to promote regenerative agriculture concepts to local farmers and producers.
6. By 2028, partner with Cool Blocks to carry out volunteer events/demonstrations to plant food forests on planting strips in multiple neighborhoods, with a priority on DAC tracts.

Funding Opportunities

1. CalRecycle Grants
2. SCP and BayREN incentives

Goods and Services Strategy

Intent: Petalumans purchase goods and services wisely and rethink the concept of disposability to reduce consumption emissions.

Individuals, households, and cities do not have enough power to change the entire global economy which results in consumption emissions. However, because there is no global, national, or even local system to track consumption emissions, it can be difficult for consumers to make informed choices about the emissions embedded in products they buy.

This strategy aims to encourage behavior change around purchasing and waste through education, highlighting local businesses and products, and partnerships and/or lobbying with other local agencies. It also focuses on expanding opportunities to reuse, fix, and share goods instead of disposing of them. This reduces the need to purchase new items and reduces the amount of trash that ends up producing methane in the landfill. Lastly, the City can advocate for laws requiring producers to be transparent about their products' emissions.

Equity Considerations

Messaging about consumption emissions tends to focus on consuming less, but many households struggle to meet their basic needs due to income or other reasons. Therefore, it is necessary to encourage community members to aim for a level of consumption that is socially just and environmentally safe. Cultivating a sharing economy among community members can foster a spirit of helping and supporting others. Though the intent is that Petalumans of all income levels participate, this approach can benefit low-income households who cannot always afford to buy new items.

Performance and Equity Targets

- Number of local businesses participating in local goods incentive programs and/or received green certification “badges”
- Number of local businesses participating in reusable or compostable packaging incentive program

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$	Resilience, air quality, public health	City Manager, Economic Development, Planning Department
City Implementation Actions			
<ol style="list-style-type: none"> 1. By 2025, conduct a study to understand the most impactful goods and services to reduce Greenhouse Gas Emissions and publish publicly. The study shall include analysis of the local waste stream, exploration of how to track and reduce microplastics, and analysis of the services used most by residents (childcare, landscaping, mail, etc.). 2. By 2026, implement measures to promote local goods and services. <ol style="list-style-type: none"> a. By 2025, explore the possibility of creating special green certification “badges” (for businesses to signal they use salvaged or reused materials, refillable packaging, are all electric, etc.), and/or a “Circular Economy Opportunity Zone” incentive program for 			

- businesses that produce goods locally and with local materials. These measures can be implemented as an expansion of the existing Shop Petaluma program.
- b. By 2026, research ways to subsidize the cost of certain local goods for disadvantaged households.
 - c. By 2026, implement the program/s determined feasible by the studies in City Implementation Actions 2a and 2b as part of the Shop Petaluma program.
3. By 2027, implement measures to cultivate behavior change around the disposability of goods.
 - a. By 2026, modify City procurement rules to more heavily weight proposals that include returnable/reusable packaging instead of plastic in competitive processes. Notify all current suppliers of the preference for returnable/reusable packaging instead of plastic.
 - b. By 2026, conduct a study of repair/reuse/share businesses in Petaluma. Identify and implement strategies to support business retention and growth, with a focus on BIPOC-owned businesses.
 - c. By 2026, remove the barriers (in right-of-way regulations and/or zoning) to neighborhood projects that reduce the production and consumption of goods, including little libraries, repair clinics, and yard sales/exchanges.
 - d. By 2025, require local food businesses use reusable and/or compostable uncoated paper/bio-based packaging for take-away operations.

Partnerships and Engagement

1. By 2025, advocate for more robust extended producer responsibility policies and GHG content labelling statewide in partnership with Zero Waste Sonoma Joint Powers Authority.
2. By 2025, create a comprehensive City outreach campaign to educate and encourage action to reduce consumption emissions. Components include:
 - a. Encouraging Petalumans to estimate their carbon footprint on a web-based calculator.³⁰
 - b. Highlighting a sustainable local business in every City newsletter.
 - c. Providing information about sustainable local businesses and other consumption-related topics at relevant City counters and offices, such as the Planning and Economic Development.
 - d. Creating a module on the City's Climate Ready 2030 webpage that highlights resources (i.e., local "buy nothing" groups, thrift stores, donation centers, etc.) and local businesses to help Petalumans reuse.
3. By 2025, partner with CoolPetaluma volunteers to conduct the community surveys needed to estimate consumption emissions.
4. By 2026, partner with an organization (such as the Downtown Association and/or Cool Petaluma) to host a yearly "Tiny Footprint Festival" to showcase local goods and craftspeople.
5. Partner with other agencies to offer trainings for landscape contractors on using low carbon materials and electric equipment.
6. Partner with other agencies and local organizations to build up participation in the local sharing economy and secondhand goods. Promote resources on the City social media platforms and website.

³⁰ For example, the CoolClimateNetwork Calculator <https://coolclimate.berkeley.edu/calculator>

- a. Partner with the Sonoma County Library system to expand their existing lending library offerings (tools, seeds, etc.) and 3D printing resources. Publicize the libraries' services on City social media platforms and website.
- b. Identify and support programs and institutes that train people to fix items.
- c. Encourage the school district to explore a program to refurbish old electronics to give to students, especially those who were burdened by the digital divide during the COVID-19 pandemic.

Funding Opportunities

1. Philanthropy
2. CalRecycle Grants

Natural Systems and Sequestration

Action Plan

Petaluma's natural lands sequester carbon in the soil and plants, which absorb carbon dioxide in the atmosphere and store it as organic carbon through photosynthesis.³¹ Climate change impacts such as extreme heat, drought, and wildfires degrade the health of those natural systems, which unfortunately impact landscapes' ability to sequester carbon. Healthy landscapes are also important to protect biodiversity and ecological connection, improve water quality, and improve public health by improving access to quality green space.

To meet the goal of carbon neutrality by 2030, the City must manage its parks and other open spaces in ways that support healthy soils and foster plants that can thrive in Petaluma as the climate changes. This will ensure that Petaluma's landscapes continue to reduce rather than emit GHGs. This section includes four action plans including:

- Urban Forestry
- Open Space Management
- Climate Smart Working Lands
- City Landscape Management Action Plan.

Urban Forestry Strategy

Intent: Tree canopy coverage is increased by growing and maintaining the urban forest across all neighborhoods, particularly in disadvantaged communities.

Carbon sequestration is the long-term removal of carbon dioxide from the atmosphere into the earth's natural systems including trees, grasses, soils, and riparian areas, thereby slowing the accumulation of GHGs in the atmosphere. Carbon sequestration through the enhancement of natural systems provides many quality-of-life and resiliency co-benefits in addition to emissions reductions. For example, expanding the urban forest can help mitigate the urban heat island effect, improve air quality, provide traffic calming, and reduce energy use.

Equity Considerations

Historic patterns have resulted in an inequitable distribution of tree canopy between high-resource communities and disadvantaged communities. Increasing tree canopy in disadvantaged communities creates benefits such as cooling, air quality improvements, and increased public safety. Together these factors also support active transportation by making it more comfortable to walk and, wait for the bus or bike to a destination. This especially helps households without vehicles, youth, and older adults who can be more severely impacted by heat while travelling.

³¹ CA Natural Resources Agency. 2022. Natural and Working Lands Climate Smart Strategy. https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Expanding-Nature-Based-Solutions/CNRA-Report-2022---Final_Accessible.pdf

Performance and Equity Metrics

- Increase in tree canopy cover percentage in publicly accessible open spaces, rights-of-way, and private development
- Canopy coverage increase in disadvantaged communities
- Number of street trees
- Square feet of pavement removed and converted to landscaping/trees



GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$\$	Air quality, public health, groundwater filtration, biodiversity, reduce urban heat island effect	Public Works, Parks and Recreation and Community Development

City Implementation Actions

1. (Ongoing) Collaborate with ReLeaf Petaluma to support their 10,000 trees program, including potential fee reductions or water bill credits, if feasible.
2. By 2025, conduct an inventory of existing trees in Petaluma.
3. By 2025, adopt a revised Tree Ordinance that prioritizes tree preservation.
4. By 2025, revise tree pruning and clarify and reinforce removal criteria for street trees to minimize the loss of street trees, increases street tree planting opportunities, and improve maintenance of existing trees for long term health of urban canopy.
5. By 2025, adopt an updated List of Approved Street Trees that prioritizes climate and ecosystem appropriate trees and plants. Consider integrating the ReLeaf Petaluma Plant Palette recommendations.
6. By 2026, complete a study to establish a pathway and funding mechanisms to reduce emissions from off-road equipment focusing on lawn and garden equipment, and other sources of off-road emissions in the city.
7. By 2026, develop and adopt a Petaluma Urban Forest Plan in partnership with community organizations.
 - a. Establish a citywide minimum tree canopy cover goal.
 - b. Establish minimum tree canopy cover goals for specific land use types and scales:
 - i. Publicly accessible open spaces
 - ii. Streets / ROW
 - iii. New development (building parcel) – commercial and residential
 - c. Establish a new tree planting goal by 2030.
 - d. Identify which DACs to prioritize tree planting efforts.
 - e. Develop street / public ROW tree and vegetation design standards.
 - f. Develop and promote water-efficient tree irrigation system standards.

<p style="padding-left: 40px;">g. Adopt code amendments and update permitting requirements to be consistent with established tree canopy goals for land within the City's jurisdiction.</p> <ol style="list-style-type: none"> 8. By 2026, establish and fund a citywide street tree maintenance and tree planting program. 9. By 2026, adopt a monitoring system to track tree canopy cover over time. 10. By 2027, determine baseline data on existing carbon sequestration including Petaluma's share of legacy emissions and consumption emissions. 11. By 2027, establish an incentive program to reduce impervious surfaces on private property. 12. By 2030, offset carbon that cannot be sequestered locally through regional carbon sequestration and offset programs.
<p>Partnerships and Engagement</p> <ol style="list-style-type: none"> 1. Continue hosting an Arbor Day public event or event series to educate Petalumans about tree care, native species, tree benefits, etc. 2. Develop landscape management resources for residents and local businesses, including information on: <ol style="list-style-type: none"> a. incentives for low water use, nature-scaping, and large tree planting b. model landscapes to demonstrate principles. 3. Starting in 2024, partner with community organizations in Petaluma, such as ReLeaf, to coordinate tree planting on land use types where the City does not have jurisdiction (i.e. private property and schools). 4. By 2025, work with community volunteers to collect place-based data (i.e. observational studies of the shade and trees in public places). 5. By 2025, conduct a map-based survey asking Petalumans what locations they think need more trees.
<p>Funding Opportunities</p> <ol style="list-style-type: none"> 1. CalFire Urban and Community Forestry Grant Program 2. CNRA Environmental Enhancement and Mitigation Program 3. Bank of America Community Resilience Grant 4. CA Transportation Commission ATP (must demonstrate that greening benefits active transportation) 5. ReLeaf grants (to community groups only) 6. CalEPA Environmental Justice Small Grants Program (non-profits and federally recognized tribes only)

Open Space Management Strategy

Intent: Open space, agricultural areas, and green spaces are managed in a way that increases carbon sequestration, habitat connectivity, and public access to nature.

There are several forms of carbon sequestration that can be applied in open space, including planting trees, applying compost, reusing tree biomass (tree chips) as mulch, and restoring and protecting natural riparian areas such as along the Petaluma River. Through the development of an Open Space Management Action Plan, the City will incorporate ecological principles and practices that enrich soils and increase carbon storage, while also increasing biodiversity, improving watersheds, and enhancing ecosystem services.

Rebuilding rather than degrading soil organic matter of various land systems (wetland, forest, cropland etc.), can increase soil permeability, aid water-holding capacity while reducing runoff and decrease the expense of dredging the Petaluma River. Additionally, with the state in a historic drought it is imperative that open spaces have adequate soil health and ecosystem-appropriate plants to stay alive during harsh conditions.

Equity Considerations

Residents in disadvantaged communities tend to have less access to quality open space. Studies have found a link between lack of access to open space in minority and low-income communities and increased rates of negative health outcomes (chronic disease, respiratory illness, lower life expectancy).³²

In Petaluma, most neighborhoods are within a 10-minute walk of a park, which is considered high park access. No low-income and/or disadvantaged communities are more than a 20-minute walk to a park.³³ Even so, protecting, expanding, and improving the quality of open space can provide increased opportunities for outdoor exercise, socializing, and other healthy activities. Greenspace can also create a cooling effect, which can make temperatures more comfortable in disadvantaged communities where high amounts of impervious surfaces and lower tree canopy coverage are more common.



Performance and Equity Metrics

- Acres of Petaluma River restored
- Change in biodiversity score from baseline biodiversity assessment
- Tons/cubic yards of compost applied per year
- Change in soil carbon amount

³² Yañezm E., Aboelata, M., & Bains, J. (2020). Park Equity, Life Expectancy, and Power Building Research Synopsis. Prevention Institute. https://preventioninstitute.org/sites/default/files/uploads/PI_Park_Equity_Research-Summary_092420_FINAL%20%281%29.pdf

³³ Raimi + Associates. (2021). Existing Conditions Analysis: Health & Environmental Justice.

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$-\$\$\$\$	Resilience, air quality, public health, biodiversity	Parks and Recreation, Public Works, Community Development

City Implementation Actions

1. (Ongoing) Maintain the 200’ setback from the centerline of the Petaluma River in the General Plan.
2. (Ongoing) Explore opportunities for property acquisition and relocation sites for businesses in the floodplain and for repetitive loss areas of the 100-year floodplain consistent with the LHMP.
3. By 2025, work with local and regional environmental partners to create a biodiversity assessment and accountability tool, for example, a “Biodiversity Scorecard” or other means, to measure progress restoring and enhancing wildlife populations and native plant habitat for the city.
4. By 2026, pass ordinance requiring compliance with integrated pest management plan and provide templates for HOAs and the public.
5. By 2027, develop and adopt an Open Space Management framework as part of a comprehensive update to the Petaluma River Plan with policies to increase carbon sequestration, biodiversity, and public access for different typologies of open space:
 - a. Riparian Area / Tidal Marsh: Establish a target length of riverbanks to restore, re-creating a healthy and accessible waterway and pedestrian-oriented zone along the banks. Address upper watershed impacts, improve water quality and quantity, control erosion, and stabilize banks. Restore floodplains and historic floodplain ecosystem services in the Petaluma valley and hills.
 - i. Facilitate the removal of existing and transfer of future development away from the wetlands and tidal marsh by expanding the scope of the repetitive loss property acquisition program. Add criteria to the program to consider properties identified within flood zones per updated FEMA flood maps with future sea level rise and sites with high ecological resilience value.
 - ii. Amend the Implementing Zoning Ordinance to include landscape design, hardscape, soil, and stormwater management standards for building setbacks and any areas of public access to improve riparian habitat and allow room for nature-based responses to high-intensity storm surges and sea level rise.
 - b. Private Property
 - i. Encourage backyard edible gardens and the implementation of regenerative agriculture practices.
 - ii. Create landscape design, hardscape, soil, and stormwater management standards.
 - iii. Adopt a drought tolerant, ecosystem-appropriate plant palette.
 - c. Schools
 - i. Assess the amount and quality of schools’ open spaces. Identify schools in DACs that should be prioritized for greening projects.
 - ii. Partner with the school district to advocate for CA DGS to establish landscape design, hardscape, soil, and stormwater management standards, and plant palettes that prioritize carbon sequestration.

- d. Golf courses
 - i. Create landscape design, hardscape, soil, stormwater management standards, and plant palettes that prioritize carbon sequestration.
 - ii. Update Conditional Use Permit conditions for new Golf Course/Country Club uses to comply with new requirements, and include updated standards in lease renewals where possible.
- e. City parks, sites, and Landscape Assessment Districts – see the Municipal Action Plan.
 - i. Inventory and map wildlife areas & populations.
 - ii. Protect and restore existing undeveloped areas (e.g., by creating a community land trust).
- 6. By 2027, update ministerial and SPAR landscape plan requirements to reflect new Open Space Management framework.
- 7. Starting in 2028, explore opportunities to partner with or establish a local land trust to acquire properties or easements along the Petaluma River banks to restore and include them as projects in the CIP.
- 8. Establish a community compost pick-up program for regional compost.

Partnerships and Engagement

- 1. By 2025, promote CA Audubon Bird-friendly Communities resources and National Wildlife Federation Certified Wildlife Habitat Garden program.
- 2. By 2025, promote resources from Sonoma County Master Gardeners on the City website and social media.
- 3. By 2025, partner with local community gardens to host open houses / garden demonstration events.
- 4. By 2025, partner with local food and urban agriculture organizations such as Petaluma Bounty to promote gardening and establish a community seed library.
- 5. By 2025, establish a booth at farmers markets that contain educational material about local community gardens and backyard gardening.
- 6. By 2025, host yearly events in partnership with local landscaping/agricultural supply businesses with free or discounted seeds, fruit and vegetable starts, fruit trees, and compost.
- 7. By 2026, partner with Zero Waste Sonoma to establish local composting facilities.
- 8. By 2026, partner with Friends of the Petaluma River and/or the Petaluma River Park Foundation on river education efforts and property acquisitions.
- 9. By 2026, partner with Petaluma Wetlands Alliance and Point Blue Conservation Science to create the biodiversity scorecard, conduct education in schools, and participate in other community outreach efforts.

Funding Opportunities

- 1. California Coastal Commission (land acquisition)
- 2. Sonoma County Ag + Open Space Special District Matching Grant Program
- 3. CA Wildlife Conservation Board grants
 - a. Riparian Habitat Conservation Program
 - b. Habitat Enhancement and Restoration
 - c. Climate Adaptation and Resiliency
- 4. CNRA Environmental Enhancement and Mitigation Program

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| <ol style="list-style-type: none"> 5. CA DWR Urban Stream Restoration Grants 6. CA Transportation Commission ATP (must demonstrate that greening benefits active transportation) 7. Philanthropy |
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Climate Smart Working Lands Strategy

Intent: Local working lands become a source of carbon sequestration

Agriculture is an important part of Petaluma’s heritage. Today, there are about 200 acres of agricultural land in the city. Some of this land is suitable for City-facilitated demonstration or pilot program partnerships. With the implementation of regenerative practices, agricultural lands can help sequester carbon in addition to being the source of healthy local food. Practices such as compost application and cover cropping can benefit the farm by keeping weeds down and attracting pollinators.

Equity Considerations

Small agricultural operations typically have lean profit margins compared to large-scale farming. All programs should prioritize accessibility for small farmers, farmers just starting out in the industry, and BIPOC farmers.



Performance and Equity Measures

- Area of active agricultural land
- Number of on-farm carbon sequestration projects completed
- Change in landscape and soil carbon

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$	Resilience, air quality, public health, biodiversity	Planning Department

<p>City Implementation Actions</p> <ol style="list-style-type: none"> 1. By 2027, conduct an on-farm carbon sequestration pilot / demonstration project. 2. By 2027, develop a Local Agricultural/Working Lands strategy that is consistent with the Sonoma County Ag + Open Space Vital Lands Initiative and considers a suite of options such as: <ol style="list-style-type: none"> a. Support Sonoma County Ag + Open Space and other nonprofits’ efforts to protect agricultural land through conservation easements and other financial incentives. b. Explore the feasibility of creating a city-wide Purchase of Agricultural Conservation Easement (PACE) program.

- c. Explore the feasibility of creating a City funding program to incentivize and support farmers who implement healthy soils/climate smart practices. Prioritize BIPOC farmers, small farmers, and new farmers.
 - d. Secure access to compost and other materials (i.e., cover crop seeds) for farmers.
 - i. Align local regulations to statewide streamlining permitting efforts for on-farm composting.
 - ii. Explore bulk purchasing to sell to farmers at reduced rates.
3. By 2028, develop a tool to track the number of sequestration projects and changes in landscape and soil carbon.

Partnerships and Engagement

- 1. Starting in 2025, partner with Sonoma County Agriculture, Open Space District, and Resource Conservation District to conduct focus groups with local farmers and agricultural landowners to understand the challenges and opportunities of increasing carbon sequestration on their land.
- 2. Connect farmers to technical assistance from the County Farm Bureau, Ag, Weights & Measures, and UC Cooperative Extension program.
- 3. Encourage farmers to apply for CFDA Healthy Soils grants and connect them to technical assistance resources.
- 4. Connect farmers and landowners with Sonoma Land Trust and Sonoma County Ag + Open Space to pursue the establishment of conservation easements or facilitate sale or donation of land if desired.
- 5. Daily Acts (great for demonstrations etc.)

Funding Opportunities

- 1. SGC SALC Planning Grants
- 2. Sonoma County Agricultural Preservation and Open Space District Matching Grant Program
- 3. SGC SALC Agricultural Conservation Easement Grants
- 4. DOC California Farmland Conservancy Program
- 5. Explore establishing lighting and landscape assessment districts (LLADs)

City Landscape Management Action Plan

Intent: The City increases landscape carbon sequestration and soil quality at City parks and other open spaces.

The City of Petaluma Parks and Recreation Department maintains hundreds of acres of open space, playing fields, landscape assessment districts, and facilities. Implementing regenerative land management practices like compost application and replacing turf grass with native grasses sequesters carbon in the soil and vegetation. They can also improve the ecological health of the open space due to increased biodiversity and better soil health/water retention.

This strategy also includes actions to increase community gardens on City land. Even at a small scale, regenerative agriculture practices sequester carbon and have other co-benefits like reducing the need for pesticides and attracting pollinators.

Equity Considerations

Actions to increase carbon sequestration create positive community benefits such as more access to quality green space and better air and water quality. This is especially beneficial in DACs which historically have less greenspace, reduced tree canopy, lower air quality, and lack of access to healthy food.



Performance and Equity Metrics

- Acres of land with compost application
- Acre feet of water (potable and/or recycled) used on landscaping per year
- Acres of new community gardens, including those within disadvantaged communities
- Number of landscaping upgrades completed
- Number of rainwater catchment systems installed

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$\$-\$	Resilience, groundwater recharge, ecosystem health	Parks and Recreation, Public Works
City Implementation Actions			
<ol style="list-style-type: none"> 1. (On going) Update the Integrated Pest Management Plan to eliminate the use of synthetic pesticides on City-owned property. 2. (On going) Audit water consumption at municipal facilities and parks to identify opportunities to reduce water usage. 3. By 2025, conduct a decompaction and compost application demonstration project on City-owned land and track changes in soil carbon. 			

4. By 2026, adopt a comprehensive Land Management Plan and maintenance procedures for City properties that center regenerative practices.
 - a. Establish a threshold and implementation measures to increase soil organic matter on City Parks and other open spaces at City facilities by a certain percentage determined feasible by soil scientists and other experts.
 - i. Estimate baseline landscape carbon sequestered at City Parks and other open spaces at City facilities.
 - ii. Identify open spaces in the City’s portfolio that are suitable for compost application.
 - iii. Identify sources of compost: identify existing suppliers, explore opportunities to produce compost as part of City operations (i.e. composting the digestate left over from the anaerobic digestion process at ECWRF), and establishing Community Compost Hubs.³⁴
 - iv. Create landscape design, hardscape, soil, and stormwater management standards that promote sequestration.
 - v. Adopt a drought-tolerant, fire resistant, ecosystem appropriate plant palette that prioritizes sequestration (i.e. native grasses, shrubs and woody vegetation).
 - vi. Continue employing livestock to conduct holistic grazing.
 - b. Reduce water use on City facility landscaping, parks, and open spaces.
 - i. Identify opportunities to install rainwater capture systems (i.e., rain barrels, cisterns, etc.).
 - ii. Explore options to increase the use of recycled water for landscape irrigation.
 - c. Increase community gardens/urban farm parks.
 - iii. Identify vacant or underutilized City-owned land that can be converted to community gardens.
 - iv. Develop community gardens throughout the city, especially near existing and future low- and moderate-income residences.
 - v. Consider any required zoning amendments needed to allow community gardens, community food waste drop-offs, and/or community composting sites.
5. By 2027, establish a monitoring system to track compost application and soil organic material measurements over time.
6. By 2027, develop one or more “model landscape” gardens on City parks or other City open spaces that illustrate the principles of the Land Management Plan for the community.
7. Continuously monitor opportunities to purchase private lands to add to the City’s parks or other open space to increase sequestration and may have the co-benefit of increasing habitat connectivity.

Partnerships and Engagement

1. Continue supporting ReLeaf Petaluma’s 10,000 Trees Initiative.

³⁴ See LA Compost Community Compost Hubs and farmer’s market compost drop-off as example programs <https://www.lacompost.org/start-composting>

2. Engage with ecologists and soil scientists in the development of the Land Management Plan and regenerative maintenance procedures.
3. Include educational signage at sites with compost application and recycled water in use to teach the public about the possibilities and benefits of compost application, healthy soils, and water recycling.
4. Hold workshops and on-site demonstrations to educate community members about regenerative practices implemented on City lands such as no/less till, cover-cropping, and compost application.
5. Consider including an Adopt-A-Park program for ongoing management.
6. Partner with ReLeaf Petaluma and CoolPetaluma to host neighborhood “plant walks” to educate community members on native plants.

Funding Opportunities

1. DWR Urban Stream Restoration Program
2. WCB Climate Adaptation and Resiliency grant

Carbon Neutral Municipal Operations Plan

The ability to meet Petaluma's aggressive GHG mitigation goal and adapt to the effects of climate change will be demonstrated by City efforts to achieve high-performing buildings and facilities, sustainable transportation, and more. To meet the City's ambitious goal, the City will align department resources and staffing; define organizational structure, communications, and collaborative work plans; and manage facilities and assets to achieve carbon neutrality.

The City will implement a series of actions that will both reduce carbon emissions from municipal operations and enhance resiliency. These actions include energy and water efficiency upgrades for City facilities, parks, and landscapes, sustainable new construction, the electrification of buildings and fleet vehicles, supporting electric vehicle adoption through charger installation, and the installation of resilience measures including solar plus storage projects. These actions will not only reduce emissions but create community benefits through continuity of operations through emergencies and leading by example.

This will require the City to commit consistent, sustainable funding for new staff resources, training, and report and monitoring, among others.

The chapter consists of two sections. The Carbon Neutral Management Action Plan includes strategies for:

- City Staffing
- City Staff Training
- Reporting and Monitoring

The Carbon Neutral Facilities and Assets sections includes strategies for:

- Facility Energy Efficiency
- Facility Electrification
- ZEV Fleet and Bus Action Plan
- City Staff Transportation Demand Management

Carbon Neutral Management Action Plan

Organization Structure and Staffing Strategy

Intent: The City's organizational structure streamlines the implementation of the Blueprint for Carbon Neutrality (Blueprint) and there is adequate staffing with required expertise to complete the ambitious measures and actions.

The Blueprint is an ambitious plan with a compressed timeline that requires a high-level of interdepartmental coordination, communication, and decision making. The Organizational Structure and Staffing Strategy aims to establish an initial framework to implement the Blueprint actions, recognizing the framework must be flexible to adapt over the next decade and beyond. Each department will assign a Blueprint Coordinator to support the implementation of the Blueprint measures assigned to their department, educate their coworkers about GHG reduction measures in the workplace, and coordinate/report to the Climate Team.

This framework includes establishing a centralized team, headed by the Climate Action Manager, with duties including but not limited to:

- Overseeing Blueprint implementation
- Develop staff trainings and educational material
- Coordinating inter-departmental communication
- Managing relationships with external stakeholders
- Identifying and pursuing sources of funding to implement the Blueprint
- Annual reporting

The process of developing the Blueprint has identified the need for technical expertise amongst staff to manage certain tasks within existing departments was identified. This expertise includes fleet management in Public Works to support the electrification of the City fleet, and Green Building expertise in the Building Department to help create and enforce new requirements. Ensuring that the City has access to technical expertise is scheduled for the first three years of the Blueprint implementation so that teams and staff can efficiently implement these new programs.

Equity Considerations

The Climate Team can ensure that all the Blueprint implementation actions and programs adhere to equity principles. It will be more efficient for the Climate Team to manage this instead of each department separately. Climate Team staff will be able to consider equity a part of the overall Blueprint implementation effort, rather than in a piecemeal way with each separate program.

Internally, establishing the group of Sustainability Coordinators presents an opportunity for non-management staff to develop leadership skills.

Performance and Equity Metrics

- Number of new climate related staff positions filled
- Number of Sustainability Coordinators (at least one per department)
- Number of coordination meetings

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Low	\$\$		City Manager, Public Works, Building, Human Resources

City Implementation Actions

1. By 2025, establish a Climate Team housed in the City Manager’s office and define the structure, roles and responsibilities, and meeting timing for Climate Team.
 - a. Establish quarterly meeting milestones and annual reporting requirements for the Blueprint Coordinators to report to the Climate Team.
 - b. At the end of each calendar year, convene a meeting with the Climate Team, department heads, and departmental CAP Coordinators to discuss the upcoming year’s priorities for Blueprint implementation. Decide on course corrections and updated workplans based on the progress achieved (or lack thereof) towards key milestones.
2. By 2025, establish a system of departmental Blueprint Coordinators.
 - a. Require every City department to assign a Blueprint Coordinator. Representation could be flexible based on departments, with a commitment for the average number of annual hours for the Climate Team from each Blueprint Coordinator. Duties shall include but are not limited to:
 - i. Participate in a quarterly working group that leads education activities and guides implementation of Blueprint policies within and across departments. Management Analysts may be key in this process based on existing work programs.
 - ii. Collect data (key performance indicators, success stories, etc.) to provide to the Climate Team for the Blueprint annual report.
 - iii. Act as their department’s TDM ambassador by leading activities and educating coworkers on the TDM policies and benefits.
3. By 2025, implement a staffing strategy for:
 - a. A Climate Action Manager;
 - b. A City fleet manager to oversee fleet electrification;
 - c. A City facilities manager to oversee municipal facility energy and electrification;
 - d. A Green Building Official position to check building permits and other projects for compliance with new requirements established in the Blueprint’s Buildings and Clean Energy GHG reduction measures.
 - e. A part-time employee transportation coordinator to promote active transportation program for City employees and track progress.³⁵
4. By 2026, re-evaluate the staffing needs for Blueprint implementation. Determine if additional staff capacity is needed and/or if the duties of the Climate Team and departmental Sustainability Coordinators need to be adjusted.

³⁵ See Monitoring and Reporting Strategy, P. 93.

City Staff Training Strategy

Intent: The City develops and implements a training program for new and continuing employees about the City's GHG reduction program.

The City's employees are a valuable resource in making the City's practices more sustainable. When employees understand the many ways in which the City can advance sustainability, they can consider how their own work fits into the bigger picture. Employees who understand the urgency of climate change and the severity of the inequities of climate impacts will be motivated to develop and implement sustainable solutions in both their professional and personal lives. Climate should be part of everyone's job and be woven into the City's staff culture. Employee training and continuing education will help to ensure that all employees implement the City's municipal and workplace sustainability policies.

To achieve Petaluma's ambitious sustainability goals, all City employees will need to play a role and become sustainability champions.

Equity Considerations

Trainings about sustainability and City policies are an opportunity to engage staff in conversations about the intersection of equity and climate.

Performance and Equity Metrics

- Number of staff attending trainings
- Change in Staff Perception and Learning Survey Results

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Low	\$		Climate Team, All Departments
City Implementation Actions			
<ol style="list-style-type: none"> By 2024, develop and implement training on the City's Blueprint policies and programs for new employee orientation and require the training every two-years for all current employees. <ol style="list-style-type: none"> Develop and conduct pre- and post-training Perception and Learning surveys to track learning outcomes and provide feedback for subsequent trainings. Update the employee training yearly as new policies are enacted. Starting in 2025, create and distribute educational materials to staff related to climate change initiatives. Draw from existing online educational materials for general topics and create new materials about specific City policies and programs as they are enacted through 2030. Develop materials on: <ol style="list-style-type: none"> How and why to reduce energy use at work; The benefits of electric appliances over gas; How to implement the Local Food Procurement Policy at City events and other functions; The City ZEV fleet vehicle policies, how to use ZEVs, and their environmental benefits; 			

- e. The rules and available benefits/incentives of City employee TDM program;³⁶
 - f. Departmental data collection procedures;³⁷
 - g. Climate change and equity; and/or
 - h. Other topics as defined by the Climate Team.
3. By 2025, include training on the City's climate initiatives and practices in all new employee orientations.
 4. By 2025, conduct training on Battery Electric Bus (BEB) operation for Petaluma Transit bus drivers.
 5. By 2025, in partnership with the Green Building staff develop and administer trainings to permit counter staff on new Building and Clean Energy requirements.³⁸

Monitoring and Reporting Strategy

Intent: The City monitors the progress of the Blueprint implementation and takes corrective actions to ensure programs are advancing and targets are being met.

To achieve the Blueprint's ambitious GHG reduction targets by 2030, it is crucial for the City to keep track of implementation progress with clear metrics on progress and trends. Targets are defined as the level of performance to measure goals and strategy implementation. The key performance indicators are the specific data used to measure progress.

A first step is to expand existing emissions monitoring and data collection procedures so individual departments can contribute to the Climate Team's overall Blueprint monitoring. Results will then be analyzed internally to ensure progress is being made, or to course correct if certain sectors or measures are not progressing as expected. The results will also be showcased for the public on an online dashboard. The dashboard is intended to be a living tool that is regularly updated to show progress on key performance indicators, illustrate historical progress over the years, and highlight current initiatives. The City is already communicating with regional partners about creating a regional tracking system of key climate metrics.

If there is a problem with Blueprint implementation, the City will take corrective action to improve performance and/or prevent the reoccurrence of an issue. Corrective adjustments will be aimed at: 1) resolving the immediate issue, 2) considering whether similar issues might exist or arise elsewhere in the City, and 3) taking action, if needed, to prevent similar problems from occurring. Actions that implement system changes will be documented and monitored to evaluate effectiveness.

³⁶ See the Transportation and Land Use Action Plans, P. 51.

³⁷ See Monitoring and Reporting Strategy, P. 93.

³⁸ See Building Action Plans and Clean Energy Action Plans, P. 45 and 42, respectively.

Equity Considerations

With effective monitoring, the City can understand how effectively programs are being delivered to priority populations. Additionally, transparent reporting of Blueprint implementation progress advances procedural equity by allowing all Petalumans to access information.

Performance and Equity Metrics

- Greenhouse gas emissions
- Dollars spent on petroleum gas per year
- Employees using public transit v. single occupancy vehicle (SOV)
- Percentage of zero emission vehicles (ZEV) in City Fleet

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Low	\$		Climate Team
City Implementation Actions			
<ol style="list-style-type: none"> 1. By 2025, Climate Team will begin conducting quarterly meetings with the departmental Blueprint Coordinators.³⁹ 2. By 2025, establish procedures and templates for all departments to keep records of data relevant for tracking Blueprint measure GHG reductions, including but not limited to municipal fleet fuel records, building permit data, and community engagement details (i.e., number of events, participants, and adherence to zero waste and local food policies). Develop procedures for departments to respond to Climate Team data requests and to provide data for the online Dashboard. 3. By 2025, develop an internal site on City intranet to track progress on all community and municipal mitigation, adaptation, equity and engagement activities and actions. Site may be administered by the Climate Action Manager and incorporate the data from departmental sustainability coordinator’s annual reporting. This data will be used to develop community-facing Blueprint progress reports. 4. By 2025, develop a Dashboard on the City website for the public to view annual Blueprint implementation progress by sector. Use dashboard as the Blueprint annual report. Publish online and present to CAC. Prepare an annual update through 2030. 5. By 2026, estimate Petaluma’s consumption and jurisdictional emissions. Re-estimate emissions at three-year intervals. 			

³⁹ See Organization Structure and Staffing Strategy, P. 90.

Carbon Neutral Asset and Facilities Management Action Plan

Facility Energy Efficiency Action Plan

Intent: The City reduces energy consumed by municipal facilities.

Increasing energy efficiency is an important effort to complement building decarbonization (see Municipal Facility Electrification Strategy). Even though increasing energy efficiency in a fully electrified building would not reduce GHG emissions (due to the City's participation in SCP EverGreen), it is still beneficial to be more efficient as decarbonization increases the demand for electricity. It is also beneficial to increase efficiency of electric appliances because electricity demand will go up as the City works on decarbonizing facilities.

Though the next action plan calls for decarbonization of City facilities, there may still need to be gas appliances where technology is not developed or cost effective yet, or if there are concerns about reliability for certain critical infrastructure. For instance, all the City's emergency generators for fire stations, water treatment and stormwater infrastructure, and other critical departments are currently powered by fossil fuels. In this case, it is more sustainable from a consumption emissions standpoint to continue using existing infrastructure through the end of their useful life, and purchasing clean alternatives, if possible, at the time of replacement.

Equity Considerations

Improving the operations of facilities means they can better serve all Petalumans. Though there are upfront costs to make energy efficiency upgrades, they can save money in the long-term that can be poured back into the community.

Performance and Equity Metrics

- Reduction in Municipal natural gas use
- Municipal electricity use
- Reduction in Municipal energy related emissions
- Amount of solar PV installed at City facilities
- Battery storage capacity installed at City facilities
- Number/Reduction in fossil fuel generator/generator reliance
- Amount of downtime/power outage experienced at City facilities
- Number of fossil-fuel powered vehicles decommissioned and replaced with electric

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
High	\$\$	Resilience, air quality, public health	Lead: Public Works
City Implementation Actions			
<ol style="list-style-type: none"> 1. By 2025, conduct investment-grade energy audits of City facilities and lighting to identify and prioritize energy upgrade (e.g., decarbonization, resilient energy, and energy efficiency) opportunities in existing facilities and incorporate into CIP. Facilities with the highest energy consumption are already identified in the 2019 Municipal Inventory. 2. By 2025, update Facilities and Purchasing language to require vendors for City facilities projects meet energy efficiency requirements such as LEED, Envision, Living Building Challenge etc. Consider developing a template, rubric, and/or requiring the use of a calculator for vendors to estimate energy efficiency. 3. By 2025, conduct energy benchmarking using Energy Star Portfolio Manager and adopt Energy Use Intensity targets, or other metrics as appropriate, for existing facilities. 4. By 2025, using data from Energy Star Portfolio Manager to pilot an energy monitoring and management dashboard for the Public Works and Utilities Department to track the impacts of energy upgrades, and report this information to staff, leadership, and the community. 5. By 2026, prepare a municipal building and facility efficiency and electrification plan with identified sources of funding for inclusion in the City budget and completion by 2030. 			
Partnerships and Engagement			
<ol style="list-style-type: none"> 1. BayREN Technical Assistance 2. Sonoma Clean Power 3. PG&E 4. Share the progress made with community members across various communications outlets. Consider creating a public-facing version of the site tracking progress on municipal CAAP measures, including facility energy efficiency. 			
Funding Opportunities			
<ol style="list-style-type: none"> 7. BayREN 8. PG&E On-bill financing 9. CEC Energy Conservation Assistance Act – Low-Interest Loans 10. I Bank CLEEN Program loans 			

Facility Electrification Strategy

Intent: The City upgrades all municipal facilities with all-electric appliances and systems.

To become all-electric, City facilities must replace gas appliances, such as HVAC systems and water heaters. Electrifying City facilities will demonstrate leadership to the community since private buildings will also be required to decarbonize buildings eventually per the existing building electrification strategy.

Equity Concerns

Natural gas appliances contribute to indoor and outdoor air pollution. Electrification will improve air quality for the employees and visitors to City buildings, as well as the surrounding communities.

Performance and Equity Measurements

- Number of gas appliances replaced with electric
- Number of existing facilities retrofitted to be all-electric, including those in disadvantaged communities
- All new facilities being all-electric
- Amount of solar PV installed at City facilities
- Number of interpretive displays installed in public-facing building areas

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
High	\$\$	Resilience, air quality, public health	Lead: Public Works
City Implementation Actions			
<ol style="list-style-type: none"> 1. By 2025, perform an inventory of natural gas-fueled equipment and electrical load capacity at municipal facilities. 2. By 2025, update purchasing policies to prioritize the purchase of electric equipment for buildings. Include language to comply with State restrictions on the purchase of gas-powered lawn and garden equipment by 2024 and portable generators by 2028. 3. By 2025, align the City's Capital Improvement Plan with the facility decarbonization goal of 15% annual average replacement of gas-fueled equipment (100% by 2030). 4. By 2026, adopt building standards for new municipal buildings that require all electric construction and encourage the installation of energy efficient designs, renewable energy systems, battery storage, and other innovative technology. 5. Where feasible, retrofit all City facilities (including parking garages) to add rooftop solar. 6. By 2026, require new backup power systems at City facilities to be powered using carbon-free energy sources such as (lithium-ion batteries or solar) where feasible. 7. By 2030, convert all City-owned maintenance equipment to all electric and battery operated as feasible. 			
Partnerships and Engagement			
<ol style="list-style-type: none"> 1. BayREN Technical Assistance 2. Share the progress made with community members across various communications outlets. Consider creating a public-facing version of the site tracking progress on municipal CAAP measures, including facility electrification. 			
Funding Opportunities			
<ol style="list-style-type: none"> 1. BayREN 2. PG&E SGIP 3. PG&E On-bill financing 4. I Bank CLEEN Program loans 5. CalOES 			

ZEV Fleet and Bus Strategy

Intent: The City of Petaluma vehicle fleet is transitioned to 100% ZEV by 2030

The 2019 Municipal GHG Inventory revealed that 31% of the City's operational emissions are produced by the vehicle fleet. Currently, there are ZEV options available for light-, medium-, and some heavy-duty vehicles. Fleet managers must create a procurement and vehicle retirement schedule based on existing technology but also be prepared to re-evaluate as the market develops.

Proposed public fleet requirements of the CARB Advanced Clean Fleets Regulation⁴⁰ state that starting January 1, 2024, 50% of the vehicles added to the fleet each calendar year must be ZEV. Starting January 1, 2027, 100% of vehicles added must be ZEV each calendar year. There are some exceptions for emergency vehicles, military tactical vehicles, two-engine vehicles, etc. The City Transit fleet is required to be fully zero-emission by 2040 at the latest per the Innovative Clean Transit Regulation. The City must accelerate these targets in order to achieve 100% ZEV fleet by 2030.

Petaluma Transit already has a study and plan from 2019 to convert the bus fleet to electric, develop charging infrastructure, and increase electrical capacity. Currently, all Petaluma Transit vehicles are identified to be replaced with zero emission vehicles by approximately 2035. Advancing this transition to occur by 2030 will require additional funding and resources. The Petaluma Transit yard (555. N. McDowell Blvd) also requires significant infrastructure upgrades and the installation of multiple high-capacity chargers to accommodate a battery-electric fleet.

The following strategy includes actions for the City fleet (which will be managed by a Fleet Manager)⁴¹ and the buses (which are under the jurisdiction of Petaluma Transit) to become fully zero-emission.

Equity Considerations

Disadvantaged communities face higher burdens of environmental pollution. Transitioning the City fleet to ZEVs will reduce the NO_x, PM 2.5, and other pollutants released into communities. Better air quality improves the quality of life for all Petalumans but is especially important in DACs which frequently have higher rates of chronic respiratory disease.

Performance and Equity Metrics

- Annual emissions from City fleet vehicles
- Annual emissions from the Petaluma Transit bus fleet
- Number of combustion vehicles replaced with a ZEV alternative in City vehicle fleet
- Number of combustion vehicles replaced with a ZEV alternative in Petaluma Transit fleet
- Number of EV charging stations by type installed for City fleet charging
- Number of EV charging stations by type installed for Petaluma Transit fleet charging
- Number of “comfort” upgrades to improve user experience and passenger appeal of transit fleet.

⁴⁰ CARB. (2022). Advanced Clean Fleets Regulation Proposed Draft Regulation Language. https://ww2.arb.ca.gov/sites/default/files/2022-04/220504acfdraftstatelocal_ADA.pdf

⁴¹ See Organization Structure and Staffing Strategy, P. 90.

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$\$\$	Resilience, air quality	Lead: Climate Action Manager, Public Works, Fleet Manager, Petaluma Transit

City Implementation Actions

1. (Ongoing) Continue to include charging infrastructure projects in the Capital Improvement Plan and funds for ZEV fleet vehicles in the budget.
 - a. By 2025, expand EV charging to 10% of spaces in municipally-owned structures and lots. By 2030, expand EV charging to 25% of spaces.
 - b. Continuously evaluate innovations in ZEV charging infrastructure such as smart charging, bi-directional charging and portable solar plus battery chargers.
2. (Ongoing) Continue implementing the Petaluma Transit policy that all new bus procurements are ZEB.
3. (Ongoing) Continue to expand and promote an EV motor pool, including electric bicycles, for employees to conduct City business.
4. By 2025, conduct a feasibility study for enabling and implementing on-demand microtransit service as part of Petaluma Transit.
5. By 2025, create a fleet transition plan that amends the fleet vehicle procurement policy to require that all new light-duty fleet vehicle purchases are ZEV. Require that all new medium-duty fleet vehicles deemed feasible by the fleet manager are ZEV.
 - a. Select sites to develop EV charging infrastructure (and/or hydrogen fuel cell if applicable) for fleet vehicles.
 - b. Create a phased-in approach to remove light- and medium-duty combustion vehicles from the fleet and replace with ZEV.
 - c. Identify opportunities to reduce the number of fleet vehicles in favor of shared vehicles and electric bicycles.
 - d. Develop a tool to track the costs and benefits of new ZEV purchases and fleet conversion. Records must be kept to prepare compliance reports for CARB Advanced Clean Fleets regulations and will assist in the preparation of future municipal GHG inventories.
6. By 2026, complete infrastructure upgrades to the Petaluma Transit yard to be able to charge the first wave of electric buses as recommended by the Battery Electric Bus Planning and Engineering Study for Petaluma Transit (2019).
 - a. Implement the City’s EV Charging Master Plan related to the installation of charging infrastructure at the City Corps Yard and other facilities where fleet vehicles are housed.
 - b. Install solar panels and a zero-emission energy backup/generator system at the Petaluma Transit Yard.
7. By 2027, re-evaluate feasibility of converting heavy-duty vehicles to ZEV and update the Plan.
8. By 2028, complete all infrastructure needs to accommodate an electric bus fleet as recommended by the Battery Electric Bus Planning and Engineering Study for Petaluma Transit (2019).

Partnerships and Engagement

1. Partner with PG&E to assess and upgrade electrical infrastructure at the Corps Yard.
2. Work closely with the Fire, Police, and Water departments in the development of the plan to understand opportunities and challenges of converting emergency services and utility vehicles to ZEV.
3. Conduct bus driver trainings on operating the ZEV buses.
4. Create community outreach and education materials on the benefits of ZEV buses.
5. Encourage youth ridership through free riding or other incentives to create lifetime riders.
6. Host a community event with a free bus pass to get Petalumans interested in riding the new buses.

Funding Opportunities

1. CALeVIP
2. HVIP
3. Federal Bipartisan Infrastructure Legislation (2022)
4. PG&E EV Fleet Program
5. Monitor CARB for new grant funding in support of Advanced Clean Fleets requirements
6. Volkswagen Environmental Mitigation Trust Zero-Emission Transit, School, and Shuttle Buses
7. Carl Moyer Funds
8. FTA 5307 and 5339 (Low or No Emission Vehicle Program) grant funds
9. Low Carbon Transit Operations Program (LCTOP)
10. Transit Intercity Rail Capital Program (TIRCP)
11. Sonoma County Transportation Authority (SCTA) Go Sonoma funds
12. Traffic Impact Fees

Employee Transportation Demand Management Strategy

Intent: City of Petaluma employees use transit and active transportation instead of single-occupancy vehicle trips to travel to work

The 2019 Municipal GHG Inventory found that employee commute comprises 27% of the emissions from City operations. A majority of employees drive alone to work in a vehicle that uses fossil fuel. Starting in 2020, commute patterns radically changed during the COVID-19 stay-at-home orders and subsequent stages of the pandemic. While the lasting effect of the pandemic on commutes remains to be seen, the City can encourage employees to take transit or active transportation for the times they do travel to the office. The City can implement incentives and disincentives as part of a comprehensive employee Transportation Demand Management (TDM) program, similar to the strategy outlined in the Transportation and Land Use Action for the community.

Equity Considerations

Disadvantaged communities face higher burdens of environmental pollution. Even the relatively small reduction in vehicle miles traveled from City employees will help reduce the NO_x, PM 2.5, and other pollutants released into communities. Better air quality improves the quality of life for all Petalumans but is

especially important in disadvantaged communities which frequently have higher rates of chronic respiratory disease.

Performance and Equity Measures

- Change in SOV commute trips
- Reduction in VMT from employee commuting
- Number of active transportation improvements made at City workplaces
- Number of employees participating in incentive programs

GHG Reduction Potential	Cost	Co-Benefits	Responsible Departments
Medium	\$	Resilience, air quality, health	Lead: Planning Department Implementing: Human Resources

City Implementation Actions

1. By 2025, conduct an employee survey that reflects post-COVID-19 lockdown commute patterns and work-from-home policies. Conduct regular follow-up surveys to track ongoing progress.
2. By 2025, finalize and adopt the City’s work-from-home policy to allow non-essential employees to work from home a set number of days per week.
3. By 2025, establish a TDM coordination framework and prepare a plan to reduce employee single-occupancy vehicle trips that may include:
 - a. Implementing a transit pass reimbursement program beyond the existing free Petaluma Transit rides for City employees.
 - b. Reducing or eliminating free employee parking at City facilities or establishing a parking cash-out program.
 - c. Implementing a carpool incentive and carpool group matching program.
 - d. Building biking and walking infrastructure at City facilities such as secure bike racks, bike lockers, bike repair stands, electric bike hubs and showers.
 - e. A policy prioritizing transit for work-related travel.
 - f. Consider developing workforce housing for City employees to reduce commuting.
 - g. Allow for the purchase of e-bikes using City Wellness benefit.
 - h. Create an E-bike share program for City employees or subsidize employee use of citywide bike share.
4. By 2025, consider providing incentives to City employees to lease or purchase an EV. This can include a monetary incentive or providing benefits such as free charging and preferred parking.
5. By 2025, establish a data monitoring system that tracks reductions in employee SOV trips and uptake in employee incentive programs.
6. By 2026, conduct a follow-up employee commute survey and adjust programs as needed to achieve SOV trip reduction target.

Partnerships and Engagement

1. Starting in 2024, encourage employee participation in National Bike Month (May). The City can host events, raffles, and workshops to educate and motivate employees on the benefits of biking to work.
2. By 2025, conduct focus groups with employees about their commutes and how to reduce SOV trips.
3. Starting in 2025, partner with local bike shops to create an employee bike voucher or reimbursement program.
4. Provide all City employees with access to a free bikeshare membership when such a program is implemented throughout Petaluma.
5. Consider the Housing Land Trust of Sonoma County to development workforce housing for City employees.

Funding Opportunities

1. MTC Active Transportation Program

Chapter 6: Blueprint Implementation

This chapter outlines how the City can implement the Blueprint. It provides information about potential funding and financing mechanisms and a framework for the City to implement, monitor, evaluate, and update the Blueprint.

Funding and Financing Strategy

Some Blueprint actions will pay for themselves, but many will result in new costs or will require upfront funding which disadvantaged communities may not be able to afford. Sustainable funding sources must be developed to fund participation in measures needed most by disadvantaged communities. For action to be effective, to the extent the information available, decision-makers, including the City Council and individual households, must evaluate and balance the cost of implementation with potential cost savings and the avoided costs of inaction.

A combination of funding sources will be necessary to fund the programs called for in the GHG reduction measures and actions. The funding and financing strategy identifies major categories of private and public funding sources and their application to the types of programs, policies, and capital improvements called for in the Blueprint. As described in this chapter and Chapter 5: GHG Emissions Reductions Measures, these fall into the following main categories:

- Building energy efficiency and decarbonization
- Clean energy generation
- VMT reduction
- Vehicle electrification
- Water efficiency
- Waste diversion and source reduction
- Sequestration
- City staffing
- City facilities and assets



Table 5. Summary of Funding Sources

Source	Category	Blueprint Capital and Program Costs								
		Building Energy Efficiency and Decarbonization	Clean Energy Generation	VMT Reduction	Vehicle Electrification	Water Efficiency	Waste Diversion and Reduction	Sequestration	City Staffing	City Facilities and Assets
General Fund	City Resource	X	X	X	X	X	X	X	X	X
Capital Projects Fund	City Resource		X	X	X	X				X
Taxes, including Measure U	City Resource	X	X	X	X	X	X	X	X	X
Bonds	City Resource		X	X	X	X	X	X		
Internal Service Funds	City Resource								X	X
Utility Funds	City Resource					X				
Assessment District ¹	District-Based	X	X	X	X	X	X	X	X	X
Utility Rebates, Grants, and Incentive Programs	Grants and Incentives	X	X			X				X
Federal, State, Regional, and County Grants and Partnerships	Grants and Incentives	X	X	X	X		X	X		
Development Impact Fees, In-Lieu Fees, and Related City Funds	Developer Contribution			X				X		
Philanthropy	Private Donation						X	X		

1. See notes on SB 852 regarding Climate Resilience District

Below is a list of potential funding sources as well as available incentive programs to help reduce the cost of implementing Blueprint actions:

- **City’s General Fund:** This is the primary source of funding for City operations and can be used for any public purpose. It is allocated as part of the overall City budget, approved by City Council. The large number of competing priorities for General Fund dollars requires that the City seek out other sources of funding wherever possible to increase the likelihood of successful implementation for each action. In Petaluma, the Measure U Sales and Use Tax (approved by voters in 2020) contributes to the General Fund but is used for deficit elimination, workforce stabilization, infrastructure, and community priority initiatives.
- **Bonds:** Local governments can sell bonds to investors that raise capital for a specific objective. Bonds must be approved by voter and may have additional oversight or administration requirements.
- **Taxes:** Taxes generate revenue to support local, regional, and state operations. Taxes can be used either for general purposes (e.g., any city service as needed) or specific purposes (e.g., climate change mitigation) but require voter approval. Examples of taxes include:
 - Sales Tax, Measure U
 - Utility User Tax
 - Real Estate Transfer Tax
 - Parcel Tax
- **Utility Funds:** provide for the comprehensive and integrated management of Petaluma’s water resources, storm water and the collection and treatment of wastewater.
- **Assessment Districts:** An assessment district enables the City to collect special assessments from property owners for specified improvements, such as improvements to roads or flood control facilities. SB 852 recently created the Climate Resilience Districts Act which also authorizes “counties or special districts, either alone or in combination, establish climate resilience financing districts to undertake projects and programs to address climate change including wildfire, sea level rise, extreme heat and cold, drought, flooding, and related matters.”⁴²
- **Climate Resilience Districts:** A type of enhanced infrastructure financing district that are limited to funding projects that address sea level rise, extreme heat, extreme cold, and the risk of wildfire, drought, and the risk of flooding.
- **State, Federal, Regional, and County Grants:** Grants are usually given without expectation of repayment, but often require either matching funds from the City and/or staff time to administer the grants. Grants often fund new and innovative programs. However, grants are also competitive and are not guaranteed source of funding. The following agencies offer climate related grants:
 - Inflation Reduction Act
 - Department of Energy
 - California Energy Commission
 - PG&E
 - Bay Area Air Quality Management District
 - Electrify America
 - FTA Planning Grants
 - CARB
 - CalFire
 - FEMA
 - CDFA Healthy Soils Initiative
 - CalRecycle

⁴² <https://sd03.senate.ca.gov/news/20220909-governor-signs-sen-dodd%E2%80%99s-climate-resilience-bill>

- **Incentives and Rebates:** Incentives and rebates are usually monetary motivators that can help cover the cost of implementing specific programs or equipment. Many utilities have incentive programs to help spur investment, pay for equipment, and expand various markets for newer technologies. Existing programs include:
 - SCP Residential and Commercial Rebates
 - BayREN Home+ Rebates
 - California Water Service rebates
 - CA Clean Vehicle Rebate Project
 - Single-family Solar Affordable Solar Housing (SASH) Program
 - Multifamily Affordable Solar Housing (MASH) Program
 - Residential and Commercial Federal ITC for solar photovoltaics
 - New local incentives programs as needed