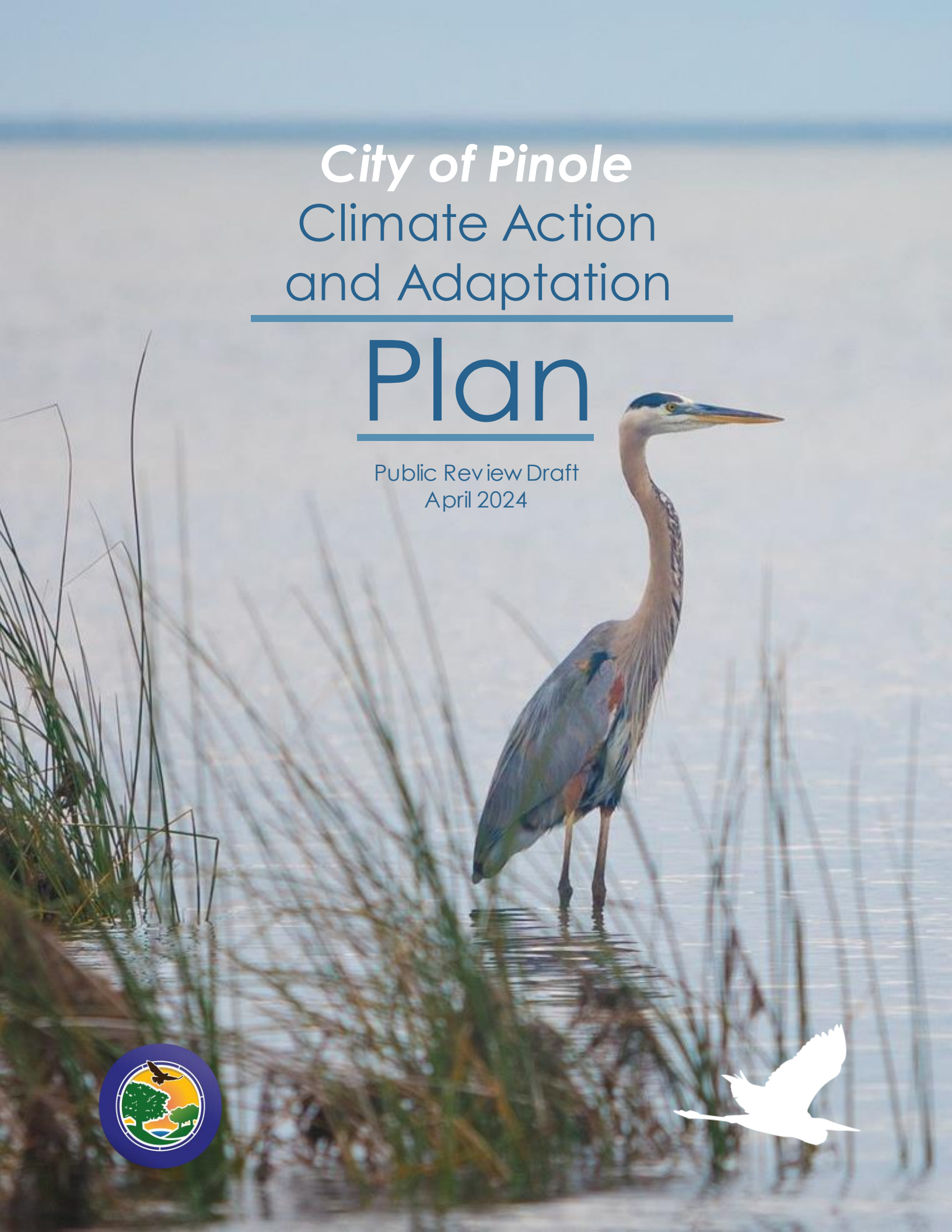

City of Pinole
Climate Action and Adaptation
Plan

Public Review Draft
April 2024

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Land Acknowledgement

Source: University of California, Berkeley

We would like to acknowledge the Ohlone people, who are the traditional custodians of this land. We pay our respects to the Ohlone elders, past, present, and future, who call this place, Ohlone Land, the land that Pinole sits upon, their home. We are proud to continue their tradition of coming together and growing as a community. We thank the Ohlone community for their stewardship and support, and we look forward to strengthening our ties as we continue our relationship of mutual respect and understanding.

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Project Acknowledgements

This Climate Action and Adaptation Plan was a collaborative effort between City staff from all departments and could not have been possible without the input and engagement from the Pinole Community. Thank you!

Pinole Residents, Businesses, and other Community Partners

City Team

Lilly Whalen, Community Development Director

Kapil Amin, Sustainability Fellow

Fiona Epps, Assistant to the City Manager/Public Information Officer

Dave Snell, Pinole Community TV Coordinator

Sanjay Mishra, Public Works Director

Misha Dhillon, Capital Improvement & Environmental Program Manager

Joe Bingaman, Publics Works Manager

Josh Binder, Plant Manager

Jeremy Rogers, Community Services Director

Maria Picazo, Acting Community Services Director

Consultants

Rincon Consultants, Inc.

CSG Consultants

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Project Partners

The City of Pinole would like to thank the following partners for their support and partnership to achieve the goals set forth in this Plan:

- 511 Contra Costa
- Bay Front Chamber of Commerce
- Contra Costa College
- Contra Costa County Green Business Program
- Cool the Earth
- Contra Costa County Department of Conservation and Development
- East Bay Economic Development Alliance
- East Bay Municipal Utility District
- Food Banks of Contra Costa and Solano
- Friends of Pinole Creek Watershed
- Kitchen@812
- Marin Clean Energy
- Pinole Artisans
- Pinole Garden Club
- Pinole Library
- Pinole Valley High School
- Pinole Valley High School Earth Team
- RecycleMore
- Republic Services
- Rethink Disposables
- Rising Sun
- SF Bay Conservation and Development Commission
- Sustainable Contra Costa
- West Contra Costa Fire Safe Council
- WestCAT
- Workforce Development Board of Contra Costa County

MCE Empowering Our Clean Energy Future
CONTRA COSTA | MARIN | NAPA | SOLANO

Workforce Development Board Contra Costa County

Pinole Artisans

FOOD BANK of Contra Costa & Solano

Sustainable Contra Costa

BAY FRONT CHAMBER OF COMMERCE
PINOLE HERCULES

bcdc

West Contra Costa Fire Safe Council

CONTRA COSTA CONSERVATION & DEVELOPMENT

Pinole Valley High School — New School, Same Excellence

EarthTeam — The Next Step in Environmental Education

K@812

California Garden Clubs, Inc.

CONTRA COSTA COLLEGE

Friends of Pinole Creek Watershed

REPUBLIC SERVICES

511 CONTRA COSTA

East Bay EDA

ReThink Disposable — Stop Waste Before It Starts

GREEN CALIFORNIA GREEN BUSINESS NETWORK CONTRA COSTA COUNTY

ccclib.org CONTRA COSTA COUNTY LIBRARY — Bringing People and Ideas Together

WESTCAT

RISING SUN CENTER FOR OPPORTUNITY

recyclemore — West Contra Costa Integrated Waste Management Authority

EAST BAY MUNICIPAL UTILITY DISTRICT

cool the earth

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Purpose of this Plan

This Climate Action and Adaptation Plan (CAAP) aims to support Pinole's "fair share" towards reducing greenhouse gas (GHG) emissions. It is designed to help Pinole achieve California's goals outlined in Senate Bill (SB) 32, which requires the state to reduce GHG emissions 40 percent below 1990 levels, as well as make substantial progress towards carbon neutrality in support of Assembly Bill (AB) 1279, which requires California to achieve "net zero greenhouse gas emissions" as soon as possible, but no later than 2045, and to achieve and maintain net negative GHG emissions thereafter. The CAAP is consistent with the California Environmental Quality Act (CEQA) requirements outlined in Section 15183.5(b), includes a framework for implementation, monitoring emission reduction activities, and further promotes community resilience and adaptation. This CAAP is consistent with the criteria set forth in CEQA Guidelines Section 15183.5(b) as outlined below:

1. Quantify GHG emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area (See Chapter 2).
2. Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable (See Chapter 2).
3. Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area (See Chapter 2).
4. Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level (See Chapter 3 and Appendix C).
5. Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels (See Chapter 5).
6. Be adopted in a public process following environmental review (See Appendix D).

This CAAP serves as a Qualified Climate Action Plan for which the City can streamline the environmental review process of GHG emissions generated from future projects. In turn, this can save time and money during the environmental review process while simultaneously spurring emissions reductions and promoting sustainable, economic growth and prosperity.

1. "Fair share" is considered what a country's total contribution would need to be to make a fair contribution to implementing the Paris agreement. This is interpolated to the City level for the purpose of regional climate action planning. (Climate Action Tracker n.d.)
https://climateactiontracker.org/methodology/cat-rating-methodology/fair-share/
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2023/small_container_2023/isor.pdf

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Glossary of Terms

Term	Definition
Active Transportation	A means of transportation that is powered by human energy, for example walking or biking.
Adaptation	The process of adjusting to actual or expected climate and its effects (e.g., reducing urban heat island effect by planting shade trees in parking lots or installing "green infrastructure" around buildings to manage storm water). In human systems, adaptation seeks to moderate or avoid harm and exploit beneficial opportunities for positive outcomes.
Adjusted Forecast	Several federal and state regulations have been enacted that would reduce Pinole's GHG emissions in 2030, 2035, 2040, and 2045. The impact of these regulations was quantified and incorporated into the adjusted forecast to project future emissions growth and the responsibility of the City and community once established state regulations have been implemented. The adjusted forecast additionally includes GHG emissions reductions from the City's switch from Pacific Gas and Electric (PG&E)-provided electricity to Marin Clean Energy (MCE)-provided electricity in 2018. MCE is a community choice aggregation (CCA) in Contra Costa County, which provides lower-emissions electricity options to Pinole.
Anthropogenic	Made by people or resulting from human activities; usually used in the context of emissions that are produced because of human activities.
Atmosphere	The envelope of gases surrounding the Earth; the gases that make up the atmosphere primarily include nitrogen (78%) and oxygen (21%), as well as argon, helium, carbon dioxide, methane, and water vapor in trace amounts.
Backup Power	Any device that provides instantaneous uninterruptible power, for example, a battery or generator.
Business as Usual Forecast	Provides an estimate of how GHG emissions would change in the forecast years if existing action continued as in 2017, absent any new regulations or actions which would reduce local GHG emissions.
CALGreen	An abbreviated reference to the California Green Building Standards code, which sets minimum requirements for sustainable practices for construction (residential and commercial) projects throughout the state. It is updated every three years in accordance with the building cycle.
CALGreen Tier 1 & 2	Requirements beyond the mandatory measures laid out by CALGreen: Tier 1 adds additional requirements to the mandatory sustainability requirements, and Tier 2 further increases those sustainability requirements.
CalRecycle	Agency that administers and provides oversight for all of California's state-managed non-hazardous waste handling and recycling programs.
California Air Resources Board (CARB)	The lead agency for climate change programs that also oversees all air pollution control efforts in California to attain and maintain health-based air quality standards
California Building Standards Commission (CBSC)	The CBSC is charged with administering California's building code adoption process, coordinating, and managing the model code adoption process for state agencies, and reviewing and approving building standards adopted by state agencies, among other duties.
Carbon-free Energy	Energy produced by a resource that generates no carbon emissions, for example, wind power.
Carbon-neutrality/Net-Zero Emissions	Balancing anthropomorphically generated emissions out by removing GHGs from the atmosphere in a process known as carbon sequestration.
Carbon sequestration	The long-term storage or capture of carbon dioxide and other forms of carbon from the atmosphere through biological, chemical, and physical processes.

Term	Definition
California Environmental Quality Act (CEQA)	1970 California statute requiring state and local agencies within California to follow a protocol of analysis and public disclosure of environmental impacts of proposed projects and adopt all feasible measures to mitigate those impacts.
Climate Hazard	A potential occurrence of climate related physical events or trends that may cause damage and loss.
CH_4	Methane, a hydrocarbon that is a greenhouse gas produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.
Climate	The average of weather patterns over a long period of time (usually 30 or more years).
Climate Change	A change in the average conditions — such as temperature and rainfall — in a region over a long period of time.
Community Based Organization (CBO)	A public or private nonprofit organization that is representative of the community or specific segments of a community and provides educational or outreach services to the community.
Complete Streets	Designed and operated to enable safe use and support mobility for all users. Complete Streets approaches address a range of elements including sidewalks, bicycle lanes, bus lanes, public transportation stops, and median islands.
Carbon dioxide (CO_2)	A naturally occurring gas and a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes.
Carbon dioxide equivalent (CO_2e)	A metric measure used to compare the emissions from various greenhouse gases based upon their GWP.
Decarbonization	Reduction or elimination of carbon dioxide emissions from a process such as manufacturing or the production of energy.
Disadvantaged and Vulnerable Communities	Areas which suffer disproportionately from a combination of economic, health, and environmental burdens (e.g., poverty, high unemployment, air and water pollution, presence of hazardous wastes, as well as higher rates of asthma and heart disease).
Distributed Energy Resources (DERs)	Small-scale electricity demand or supply resources that are interconnected to the electric grid, and usually located close to load centers where they can be used individually or in aggregate to support the grid
Electrification	The conversion of a machine or system to the use of electrical power (e.g., switching from natural gas to electricity to power appliances).
Emissions	The release of a substance (usually a gas when referring to the subject of climate change) into the atmosphere.
Environmental Justice	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.
Electric Vehicle (EV)	A vehicle that uses one or more electric motors or traction motors for propulsion.
Energy Storage	Provides frequency regulation to maintain balance between the network's load and detected power generated, achieving more reliable power supplies. Batteries are an example of energy storage.
Fossil Fuel	A general term for fuel formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the Earth's crust.
Greenhouse Gas (GHG)	A gas that absorbs infrared radiation, traps heat in the atmosphere, and contributes to the greenhouse effect.
Global Warming Potential (GWP)	Total contribution to global warming resulting from the emission of one unit of that gas relative to one unit of the reference gas, carbon dioxide, which is assigned a value of 1.
Greywater	Domestic wastewater generated in households or office buildings from streams such as sinks, showers, baths, washing machines or dishwashers.

Term	Definition
High-road jobs	High-road jobs provide family supporting wages, benefits, safe working conditions, fair scheduling practices, and transparent career advancement opportunities; recognize workers' experience and knowledge to inform job structures/descriptions and quality; take a systematic approach to generating greater opportunity for those who have been left out of the mainstream economy, are under-represented in high-wage occupations and industries, and/or face multiple barriers to quality in employment; and address issues related to environmental sustainability, particularly climate change, given the serious implications that climate change has for California's economy and the disproportionate impacts of climate change on low-income communities and communities of color.
Local Governments for Sustainability (ICLEI)	A global network of more than 1,750 local and regional governments committed to sustainable urban development – emissions estimates were calculated using ICLEI's best available methodologies
Intergovernmental Panel on Climate Change (IPCC)	The United Nations body for assessing the science related to climate change
Metric Tons (MT)	Common international measurement for the quantity of greenhouse gas emissions – one metric ton is equal to 2205 pounds or 1.1 short tons.
Metric tons carbon dioxide equivalent (MT CO_2e)	Metric/unit that GHG emissions are reported per standard practice; when dealing with an array of emissions, the gases are converted to their carbon dioxide equivalents for comparison purposes.
Microgrid	A group of interconnected loads and distributed energy resources that act as a single controllable entity in respect to the grid. A microgrid can operate in 'island mode' and disconnect from the grid or operate while connection to the grid.
Mitigation	Reducing GHG emissions (e.g., by reducing fossil fuels used in energy and transportation, reducing waste generated, and reducing water use).
Mode Shift	Changing from one form of transportation to another, specifically, switching from traveling via car to traveling via bicycle or public transport.
Nitrous Oxide (N_2O)	A powerful GHG with a high global warming potential; major sources of nitrous oxide include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning.
Organic Material	Natural or organic materials, for example food scraps and yard waste.
Photovoltaic (PV)	Relates to the production of electric current at the junction of two substances exposed to light (e.g. solar energy).
Qualified GHG Reduction Plan	A plan that accommodates growth in a manner that does not hinder the state's ability to reach further emission reduction goals and specifically complies with the requirements of CEQA Section 15183.5(b).
Quantified Reduction Measure or Action	A quantified measure or action has an associated calculation that estimates the GHG reductions associated with the measure/action. Quantified measures are summed to show the total reduction expected by implementing the CAAP.
Representative Concentration Pathway (RCP)	Greenhouse gas concentration trajectory scenarios adopted by the IPCC.
Reach Code	A building code which requires a higher level of energy efficiency than the standard statewide code. Reach codes are allowed and encouraged under Title 24.
Remodels/ Alterations	A building update that changes the exterior detail of a structure, but not its basic shape or size.
Renewable Energy	Energy derived from natural sources that are replenished at a higher rate than they are consumed (e.g., wind, biomass).
Resilience	Ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate.
Resilience Center	Physical spaces that provide shelter and resources during climate and other emergencies, as well as year-round services and programming that strengthen community connections and ability to withstand disasters

Term	Definition
Senate Bill (SB) 32	The California Senate bill that was codified in 2016 and requires there be a reduction in GHG emissions to 40% below 1990 levels by 2030.
Senate Bill (SB) 1383	California's Short-Lived Climate Pollutant Reduction Strategy, which sets statewide targets to reduce compostable materials in landfills by 75 percent by 2025, and to rescue at least 20 percent of edible food currently disposed for human consumption by 2025.
Sequestration	The storage of carbon in plants or materials so that it cannot enter the atmosphere and cause additional warming.
Social Equity	All people having equal access to and influence on the resources and benefits of society.
Supportive Measure or Action	One which has not been quantified and does not provide a direct or easily quantified GHG reduction; however, these measures are expected to contribute to overall GHG reductions and/or provide co-benefits.
Transportation Demand Management (TDM)	Transportation Demand Management focuses on how people make their transportation decisions, and facilitates greater usage of infrastructure for transit, ridesharing, walking, biking, and telework.
Vehicle Miles Traveled (VMT)	VMT is the amount of total miles traveled by motor vehicle that are generated over a population over a given timeframe (e.g., one year)
Very High Fire Hazard Severity Zone (VHFHSZ)	Fire Hazard Severity Zone maps are developed using a science-based and field-tested model that assigns hazard score based on factors that influences a fire's behavior and likelihood. VHFHSZ is the highest level of severity for Fire Hazard Severity Zones, according to the State Fire Marshall.
Weather	The state of the atmosphere over a short period of time (usually an hour or day), describing if it is hot or cold, wet or dry, calm or stormy, clear or cloudy, etc.
Zero-Emissions-Vehicle (ZEV)	A vehicle that never emits exhaust gas from the onboard source of power.
Zero Waste	The conservation of all resources by means of responsible production, consumption, reuse, and recovery of materials and packaging, without burning, and with no discharges to land, water, or air that threaten human health.

Acronyms and Abbreviations

Acronym/Abbreviation	Term
AB	Assembly Bill
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BAU	Business-as-usual
BayREN	Bay Area Regional Energy Network
BCDC	Bay Conservation and Development Commission
C&D	Construction & Demolition
CAAP	Climate Action and Adaptation Plan
CAPDash	Climate Action Planning Dashboard
CARB	California Air Resources Board
CARE	California Alternate Rates for Energy
CBSC	California Building Standards Commission
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	Methane
CBO	Community Based Organization
CORE	Clean Off-Road Equipment Voucher Incentive Project
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DOE	Department of Energy
EBMUD	East Bay Municipal Utility District
EPLAN	Community Outreach and Engagement Plan
EV	Electric Vehicle
ESCO	Energy Service Companies
ESPC	Energy Savings Performance Contracting
FEMA	Federal Emergency Management Agency
FERA	Family Electric Rate Assistance
FOPCW	Friends of Pinole Creek Watershed

Acronym/Abbreviation	Term
GHG	Greenhouse Gas
GWP	Global Warming Potential
HMP	Hazard Mitigation Plan
HVAC	Heating, Ventilation, and Air Conditioning
ICLEI	Local Governments for Sustainability
IPCC	Intergovernmental Panel on Climate Change
kWh	Kilowatt hour
LHMP	Local Hazard Mitigation Plan
MCE	Marin Clean Energy
MERV	Minimum Efficiency Reporting Values
MOU	Memorandum of Understanding
MTC	Metropolitan Transportation Commission
MT	Metric Tons
MT CO_2e	Metric tons carbon dioxide equivalent
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
N_2O	Nitrous Oxide
PCTV	Pinole Community Television
PG&E	Pacific Gas & Electric
PV	Photovoltaic
RCP	Representative Concentration Pathway
RHNA	Regional Housing Needs Allocation
RPS	Renewable Portfolio Standard
SB	Senate Bill
T&D	Transmission and Distribution
TDM	Transportation Demand Management
USGBC	U.S. Green Building Council
VMT	Vehicle Miles Traveled
VHFHSZ	Very High Fire Hazard Severity Zone
WWTP	Wastewater Treatment Plant
WestCAT	Western Contra Costa Transit
ZEV	Zero-Emissions-Vehicle

Table of Contents

1. Appendices C, D, and E are forthcoming.

Introduction

"Pinole the little City that could; can be a guiding light for the region."

– Pinole Community Member

San Pablo Avenue, Pinole

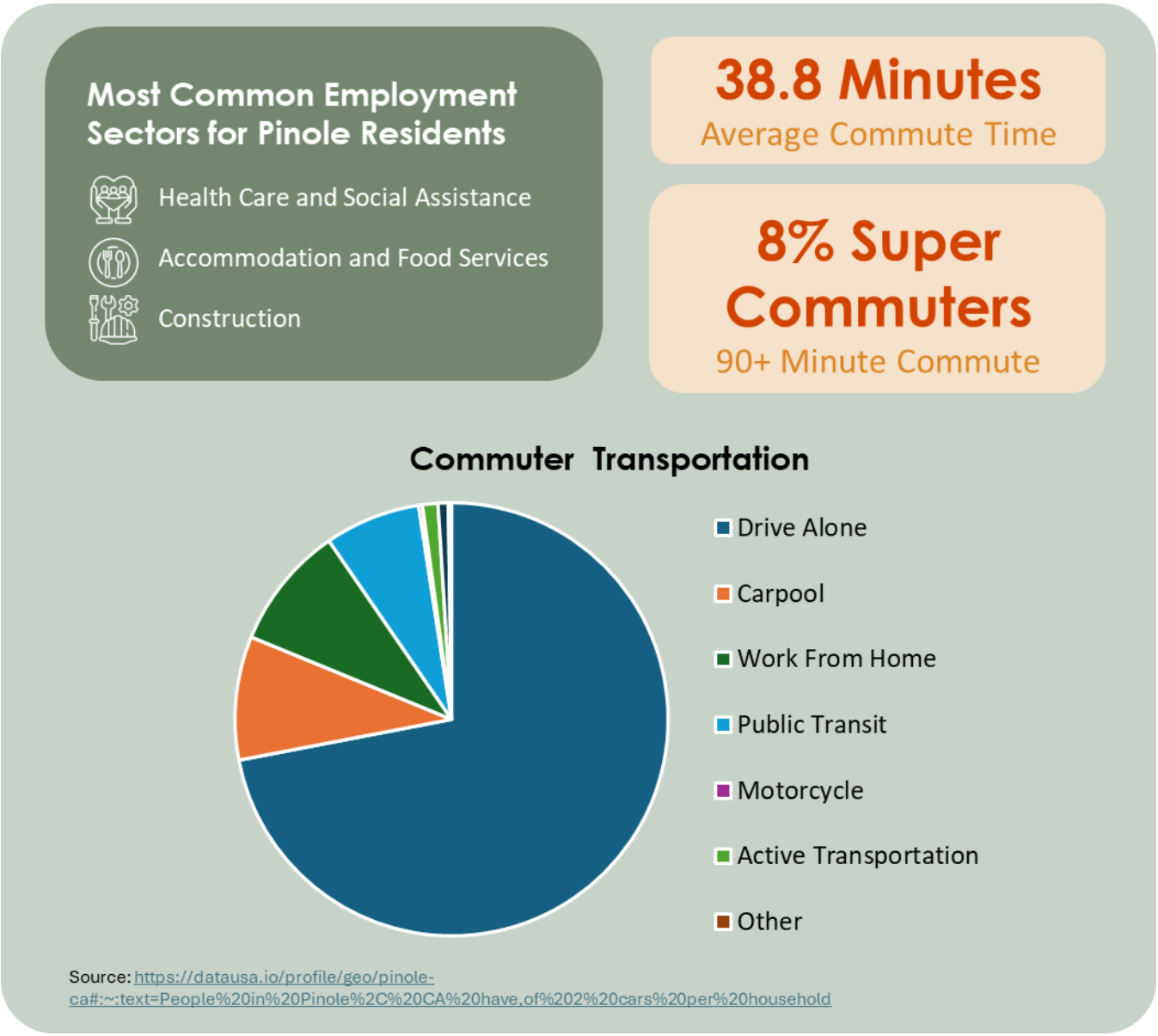
Overview of Pinole

The City of Pinole is in the San Francisco Bay Area, on the shores of San Pablo Bay in West Contra Costa County. Interstate-80 (I-80), which traverses the City, connects the San Francisco/Oakland metropolitan area with Sacramento and beyond. The City of Pinole has a land area of more than four square miles; much of the land has gently rolling hills with steeper hills paralleling the north and south. The elevation in the City ranges from sea level[2] to 500 feet above sea level. Pinole's existing land use pattern is generally a mix of residential neighborhoods and commercial and business centers combined with parks and open spaces.[3]

Our community is diverse, with approximately 26 percent of the population identifying as Hispanic or Latino, over 24 percent identifying as Asian, and nearly 12 percent identifying as Black or African American. Additionally, approximately 37 percent of the population identified as White, which is significantly less than the County (approximately 63 percent) and San Francisco (approximately 42 percent).[4] In Pinole, the average commute time is higher than the national average of 26.8 minutes and approximately 8 percent of the City's workforce have "super commutes," which are more than 90 minutes (see Figure 1). For City staff, the average commute time is anticipated to be similar, with an average one-way trip of 21.1 miles, based on an employee commute survey that was completed as part of the GHG emissions inventory (Appendix A). Energy (natural gas and electricity) is provided by Pacific Gas & Electric (PG&E); water is provided to the City by East Bay Municipal Utilities District; and wastewater is treated by the Pinole-Hercules Treatment Plant and the West County Wastewater Treatment Plant. Waste in the City is managed by Republic Services, which picks up landfill waste, recyclables, and organic waste at residences and businesses throughout the community.

2. https://www.ci.pinole.ca.us/residents/visit_pinole
3. https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Planning/General%20Plan/City_of_Pinole_General_Plan_12.2010-Chapter1.pdf
4. https://www.ci.pinole.ca.us/residents/visit_pinole https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Planning/General%20Plan/City_of_Pinole_General_Plan_12.2010-Chapter1.pdf

Figure 1 Pinole Employment and Commuter Statistics



Purpose of the CAAP

The primary purpose of the City of Pinole's Climate Action and Adaptation Plan (CAAP) is to chart a clear path to reduce greenhouse gas (GHG) emissions and become more resilient to our changing climate. The City recognizes the need for comprehensive, fiscally responsible solutions while employing actionable, measurable, and time-bound metrics to gauge its success. The CAAP is founded on a thorough analysis of communitywide systems, including an updated GHG emissions inventory (2017) and social vulnerability assessment, and builds upon the City's existing sustainability efforts (discussed below under *Legislative History and Past Climate Action in Pinole* and summarized in Figure 5) to establish a series of measures and actions that guide the City towards long-term GHG emissions reduction and resilience goals. The results of the updated GHG emissions inventory are included in Chapter 2 and the climate vulnerabilities are discussed in Chapter 4, with more technical details on the emissions quantification provided in Appendix A.

This CAAP is Pinole's roadmap to achieving the City's goal of 40 percent below 1990 levels by 2030 and demonstrates substantial progress towards achieving carbon neutrality by 2045. The CAAP also includes a framework for implementation and monitoring emission reduction activities, and further promotes adaptation and resilience of the community. The plan is intended to be a qualified climate action plan and meets the requirements of the CEQA Section 15183.5(b).

CAAP Vision

Climate change and its associated impacts are real and are already being felt locally. Projections indicate that these effects will only intensify in the current century unless there is a global effort to bring about significant change and reduce GHG emissions collectively (see Chapter 4 for a summary of future climate impacts in the City). Therefore, this CAAP seeks to promote policies and practices that safeguard the environment, enhance the quality of life for residents in Pinole, include equity in decision-making processes, strengthen the local economy, and continue to reduce the City's emissions in line with California's goals while improving our ability to adapt to the changing climate. To achieve these goals, the plan provides a set of measures for Pinole to mitigate emissions and adapt to climate change risks, establish a more resilient community, and lead the way toward a more sustainable future. The key components of a sustainable future include:

- **Reducing Greenhouse Gas Emissions:** Fostering renewable energy sources, implementing innovative green technologies, sustainable urban planning, and thoughtful, realistic alignment with the state's goals to reach carbon neutrality by 2045.
- **Adapting to Climate Change:** Developing resilient infrastructure, implementing effective resource conservation and management strategies, enhancing early warning systems, and prioritizing the conservation and restoration of ecosystems to bolster natural climate resilience.
- **Social Equity:** Protecting the most vulnerable from the impacts of climate change, including small and/or minority-owned businesses and disadvantaged communities that are most affected by a combination of economic, health, and environmental burdens, to create a healthier and more resilient City.
- **Economic Resilience:** Enhancing the City's ability to withstand unpredictable climate emergencies, supporting reliable and affordable utilities, creating clean energy jobs, and promoting resource conservation.
- **High-Quality of Life:** Improving the overall quality of life for all community members by fostering a shared and collaborative civic identity that prioritizes sustainability, safety, security, and diversity.
- **Community Involvement:** Encouraging all Pinole residents, business owners, and interested parties to actively participate in the climate planning process, providing an opportunity for those interested and invested to influence decision-making in the City. The collective goal is to engage in activities that minimize potential environmental, social, and economic impacts of climate change.
- **Collaborative Partnerships:** Collaborating with interested parties who can support others in the community in making science-guided decisions aimed at reducing emissions while creating a more sustainable, resilient, and equitable community.

CAAP Development Process

The CAAP was thoughtfully crafted through inclusive partnerships that involved collaboration with the community members, interested parties, utility providers, and others, led by the City of Pinole. A diagram of the CAAP development process is shown in Figure 2. On October 19th, 2021, the City Council adopted a resolution that declared a Climate Emergency. This resolution acknowledges the disastrous effects that climate change threatens to have on the City's public health, economy, infrastructure, and overall well-being. The CAAP is designed to reduce these effects and prepare the community for flooding, sea level rise, water scarcity, extreme heat events, and wildfires.

Figure 2 CAAP Development Process

As part of the CAAP development process the City completed a Community Outreach and Engagement Plan (EPLAN) to guide the community engagement process to garner significant feedback from the City's diverse communities in the development of the plan. As part of the EPLAN, community outreach materials were provided in English as well as Spanish, Tagalog, and traditional Chinese, upon request, to provide easy access to residents and community groups.

Inclusive Engagement

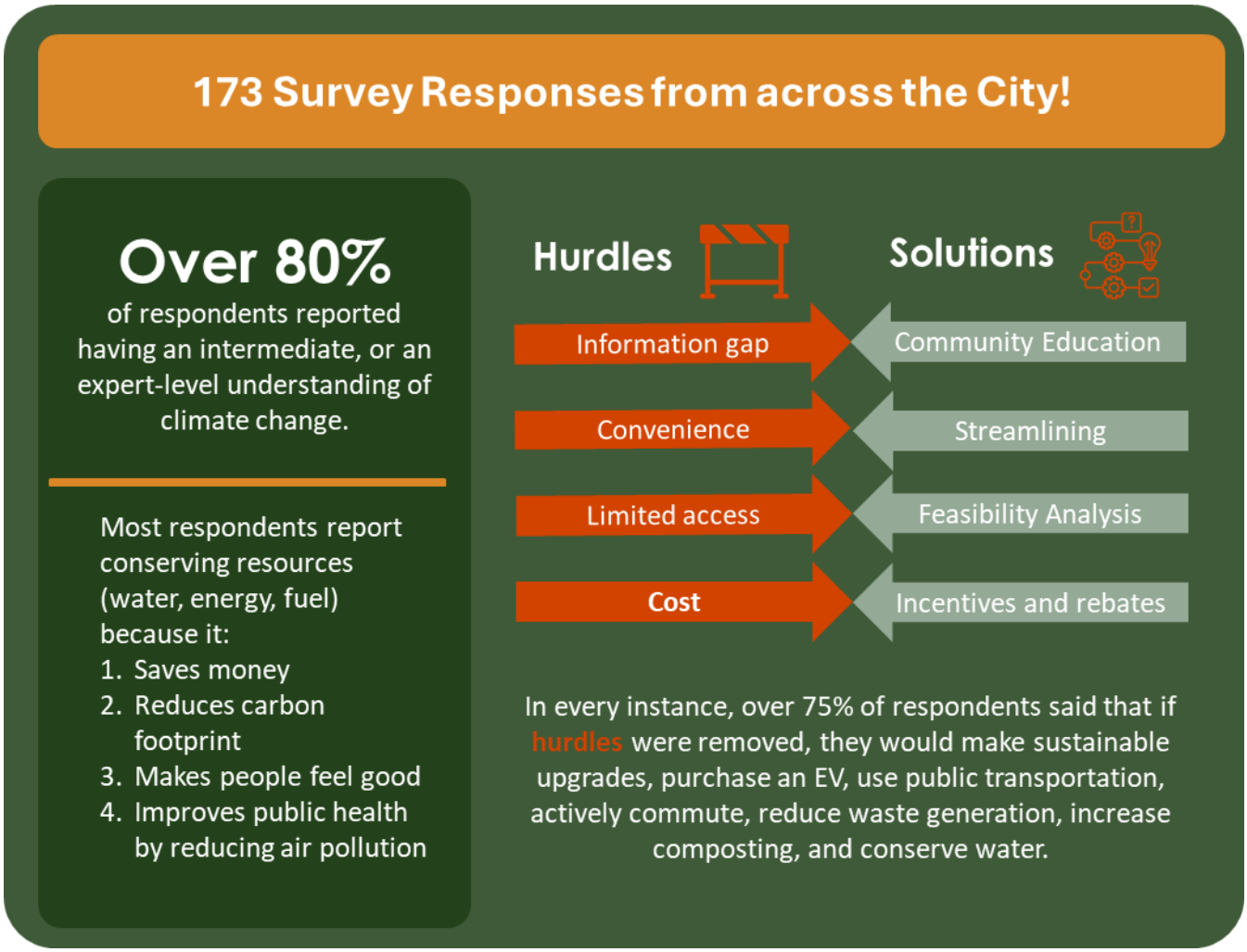
The CAAP development process began as the world emerged from the COVID-19 pandemic, which amplified our need to act now on climate action, recognizing the interconnected challenges posed by both crises. The pandemic also illuminated how disasters disproportionately affect disadvantaged and vulnerable communities.[5] On the other hand, the global response to the pandemic demonstrated how it's possible to work together to solve the problems that impact us all. We believe that it is critical that we collectively build a resilient future that we are proud of with cleaner air, weatherized homes and businesses, safer public spaces, secure jobs, and reliable, consistent access to resources. Therefore, inclusive engagement was instrumental in the development of this CAAP so that the voices of the community are reflected in our long-range plan.

5. According to the California Public Utilities Commission (CPUC), disadvantaged communities *"are areas which suffer disproportionately from a combination of economic, health, and environmental burdens (e.g., poverty, high unemployment, air and water pollution, presence of hazardous wastes, as well as higher rates of asthma and heart disease)."* https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/disadvantaged-communities#:~:text=Disadvantaged%20communities%20refers%20to%20the,of%20asthma%20and%20heart%20disease.

To launch the inclusive engagement process that informed the development of the CAAP, two surveys were released on the City's website (full and mini versions to accommodate people's availability). Survey responses were provided by residents, employees, business owners, landlords, landowners, Civic Leaders, residents who live in Contra Costa County, and employees who work in Contra Costa County. Key survey results are summarized in Figure 3.

In tandem, the City hosted an Open House event where the main hall of the Senior Center was transformed into a climate action think tank. These activities launched a year-long outreach campaign that included participation in community events (e.g., Community Pop-up at the City's Coastal Cleanup event), development and maintenance of a CAAP webpage, development and coordination of outreach materials, and release of the City of Pinole Strategy Prioritization game. During the first Open House event and survey, information was collected on the community's top priorities related to climate action, the associated co-benefits, and the vision for a more sustainable and resilient City. During the CAAP development process, we straddled the digital divide by providing both in-person and virtual options at various times, days of the week, and locations throughout the City, including events that invited families to participate with inclusive activities for youth to participate. Additionally, public agencies from

Figure 3 Summarized Survey Results



different sectors were present to introduce the community to the types of measures and actions that may be seen in the CAAP.

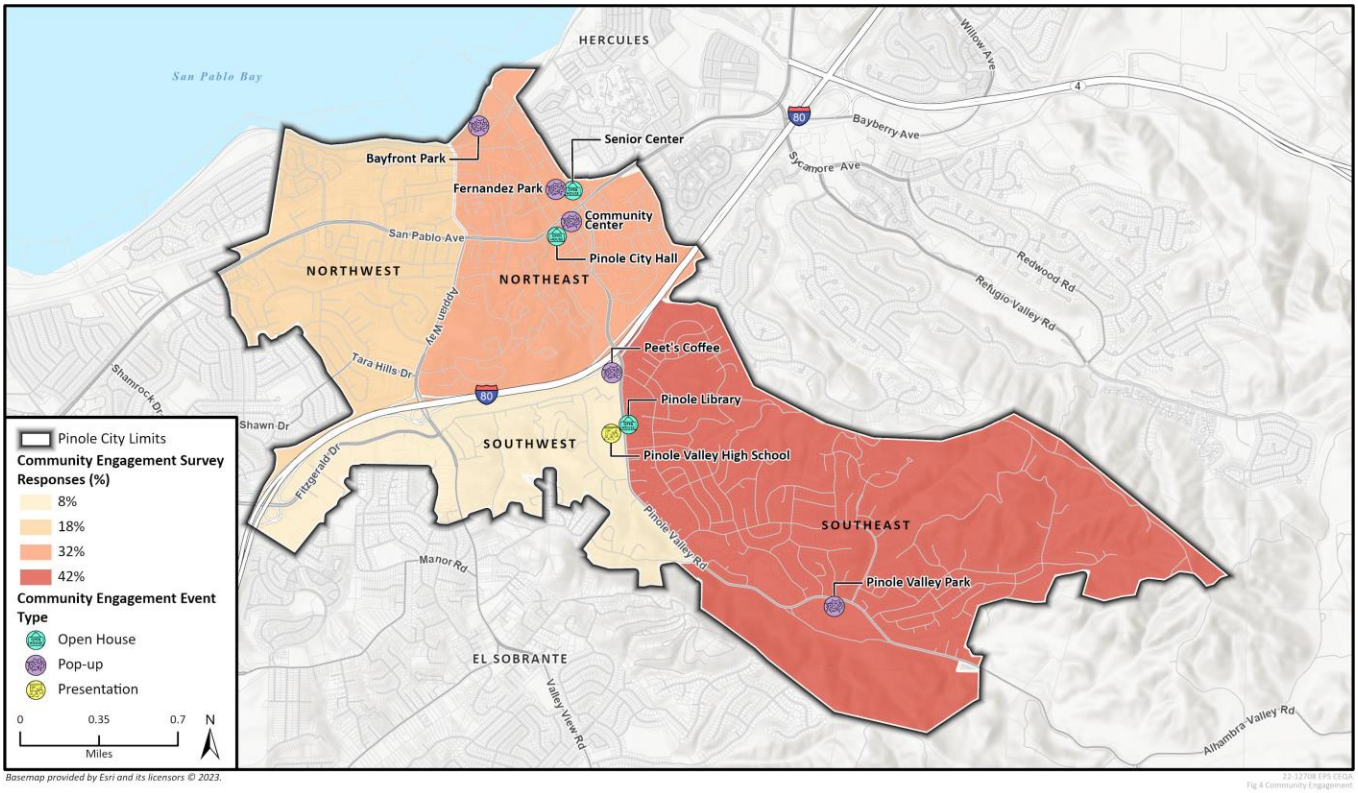
Table 1 and Figure 4 detail the outreach events and the locations in which they occurred. As part of the CAAP campaign, a logo was developed, as well as campaign materials that were dispersed and used throughout the City. Postcards were mailed to every household in Pinole, and we hosted the City's first Earth Month that was planned around the CAAP sectors.

In addition to the community engagement that took place throughout the CAAP development process, the City also met internally multiple times with staff from each department (e.g., City Manager's Office, Community Development, Community Services, Public Works, and Police Department) to identify any additional opportunities, establish the timeline and lead departments for implementation, and confirm that all initiatives were realistic and implementable in the long-term. Additionally, Pinole hosted the County's Sustainability Coordinator to talk specifically about the CAAP from a City staff perspective.

Table 1 CAAP-Related Community Outreach and Engagement

Event	Purpose	Location
Coastal Clean-up Day 2022	Introduce Plan/ Register CAAP subscribers	Bayfront Park
Dumpster Day 2022	Introduce Plan/ Register CAAP subscribers	Pinole Valley Park
National Night Out 2022	Introduce Plan/ Register CAAP subscribers	Fernandez Park
Survey	Receive preliminary feedback on areas of interest and potential hurdles for climate initiatives	Online
Community Open House	Introduce Plan	Senior Center
Farmer's Market	Gather public feedback to inform draft measures	Community Corner
Earth Team presentation	Introduce CAAP and its purpose to Earth Team	Pinole Valley High School
Stakeholder Interviews	Gathering feedback to inform the Plan from Civic, Business, and Community Focus Groups	Virtual
Earth Walk	Register subscribers and publicize workshop	Fernandez Park
Crockett's Shoreline Festival	Register subscribers and publicize workshop	City of Crockett
Pinole Car Show	Register subscribers and publicize workshop	Fernandez Park
Dumpster Day 2023	Publicize workshop	Pinole Valley Park
Earth Team presentation	Publicize workshop and CAAP information	Pinole Valley High School
Peet's Patio	Publicize workshop	Peet's Coffee
National Night Out 2023	Publicize workshop	Fernandez Park
Community Workshop	Review and provide feedback on draft measure and actions	Senior Center City Hall Pinole Library
Strategy Prioritization game	Review and provide feedback on draft measure and actions	Online

Figure 4 CAAP Community Engagement Map



Pinole Carbon Prioritization Game

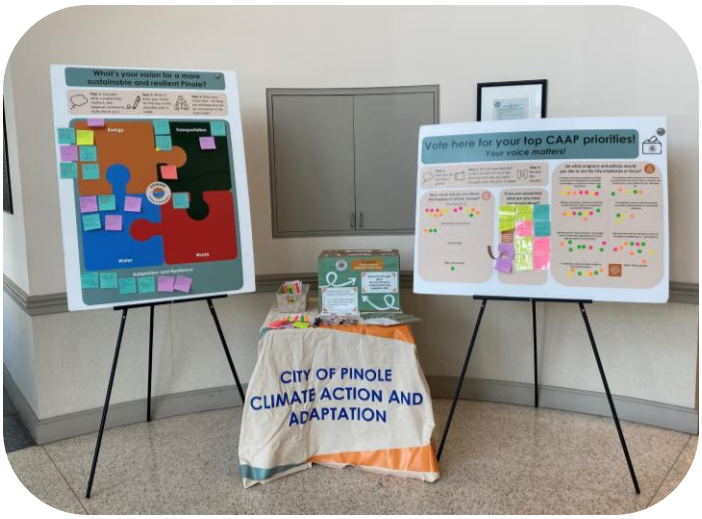
Community Members Playing the CAAP Carbon Prioritization Game

"This is a great initiative, and I really appreciate the opportunity [it] provides for our town."

– Pinole Community Member

Pinole CAAP Open House

CAAP Visioning Board



Ongoing Feedback Collection Opportunity at City Hall

Upcycled Arts and Crafts

"I think citizen involvement in the CAAP process is a good opportunity both for critical information gathering but also involving residents and businesses in climate action and solutions."

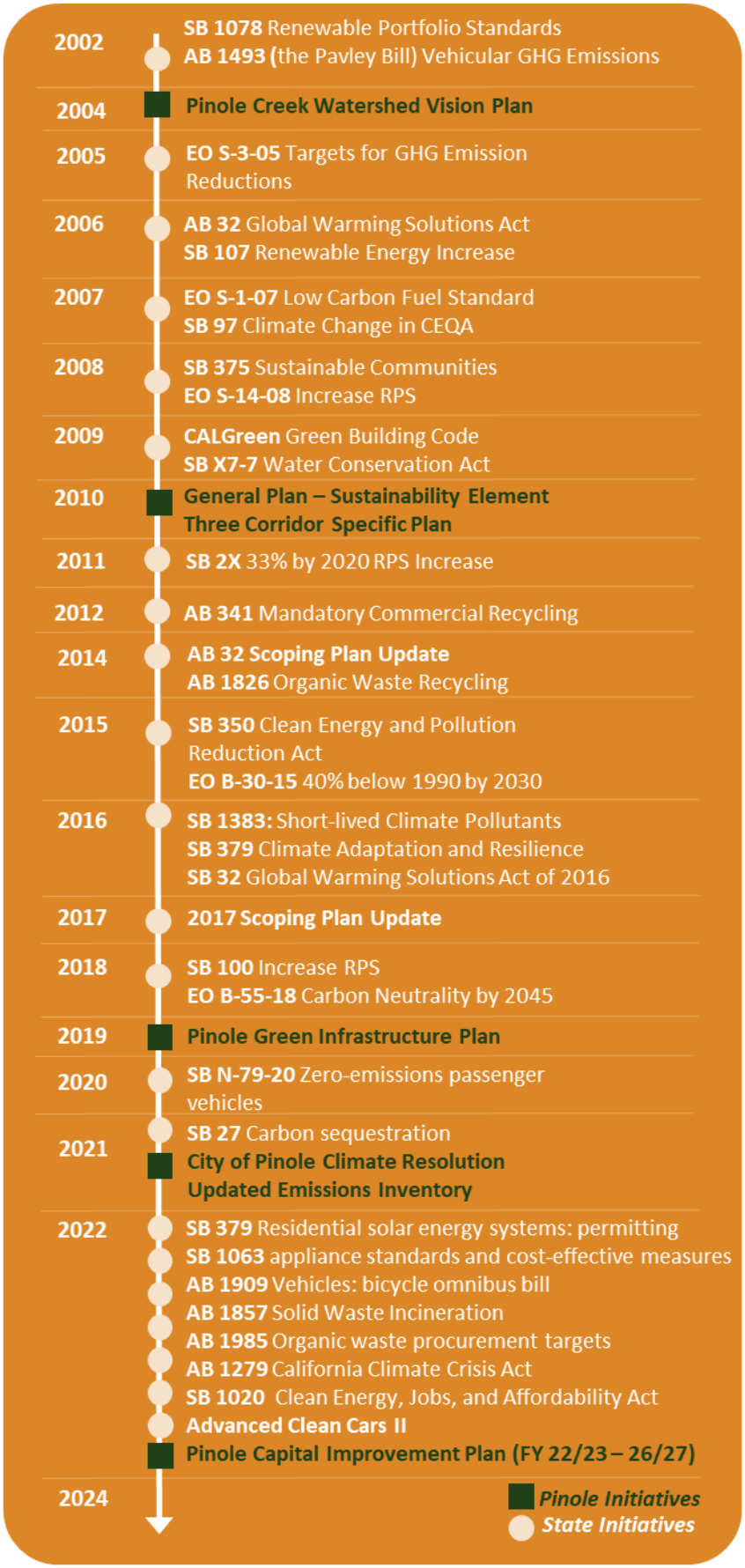
– Pinole Community Member

Community Pop-up Events

Legislative History and Past Climate Action in Pinole

California has established ambitious legislation and policies that aim to reduce and ultimately eliminate GHG emissions. The primary GHG legislation that has been adopted are Assembly Bill (AB) 32, Senate Bill (SB) 32, and AB 1279. To meet the state's 2045 goal of carbon neutrality, the California Air Resources Board (CARB) recommends that local agencies establish long-term targets that align with AB 1279. Specifically, CARB guidance calls for jurisdictions to first strive to exceed the SB 32 goals of reducing GHG emissions 40 percent below 1990 levels, while establishing a policy framework to work towards the long-term target of carbon neutrality by 2045. Carbon neutrality refers to emitting net zero carbon emissions, which can be achieved by either eliminating all GHG emissions, or balancing carbon emissions with carbon removal and sequestration. See Figure 5 as well as Appendix B for more information on the most influential California legislation related to climate change. Figure 5 provides a summary of the major state legislation as well as the City's complimentary or supplemental initiatives, plans, and policies. It is anticipated that the City will adopt the additional following plans in 2024 that are relevant: Active Transportation Plan, Health & Environmental Justice Element, and Updated Safety Element, and Parks Master Plan.

Figure 5 Regulatory Timeline



Emissions and Targets

"So happy the City is aware and acting on climate change!"

– Pinole Community Member

Climate Change Background

Climate change is caused by the addition of excess GHGs in the atmosphere, trapping heat near the Earth's surface. This raises the global average temperatures through what is referred to as the greenhouse effect. The increase in average temperatures across the globe affects sea level rise, precipitation patterns, the severity of wildfires, the prevalence of extreme heat events, water supply, and ocean temperatures and chemistry.[6] According to the Intergovernmental Panel on Climate Change (IPCC), GHGs are now higher than they have been in the past 400,000 years, raising carbon dioxide levels from 280 parts per million to 410 parts per million in the last 150 years.[7]

The dramatic increase in GHGs is attributed to human activities, beginning with the industrial revolution in the 1800s.[8] As such, anthropogenic (human) caused climate change is well-understood, prompting local, state, federal, and global governments and communities to reduce and mitigate the impacts of increasing GHG emissions.[9] Today, the need for urgent and ambitious action has been further reinforced by recent findings from the European Union's Copernicus Climate Change Service. The study found the year 2023 was the hottest on record, with the global average temperature being more than 1.4 degrees Celsius above pre-industrial levels. This increase is marginally under the 1.5-degree threshold in the Paris Agreement, and beyond what scientists say humans and ecosystems will struggle to adapt to.[10]

6. https://climate.nasa.gov/extreme-weather/
7. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf
8. https://www.ipcc.ch/sr15/chapter/spm/
9. https://climate.nasa.gov/climate_resources/24/graphic-the-relentless-rise-of-carbon-dioxide/
10. https://www.cnn.com/2023/12/06/climate/2023-hottest-year-climate/index.html#:~:text=The%20analysis%20from%20the%20European,and%20ecosystems%20will%20struggle%20to

Inventory Overview

A GHG emissions inventory quantifies and categorizes the various carbon emission sources to guide the development of a CAAP. The City of Pinole updated the 2017 GHG emissions inventory from community-wide activities within the City (Community GHG Inventory) and completed a 2021 GHG emissions inventory for municipal buildings and operations (Municipal GHG Inventory). The Community GHG Inventory estimates GHG emissions from residents and businesses within the City, including GHG emissions from municipal buildings and operations. It is important to note the Community GHG Inventory includes municipal GHG emissions as a subset within the inventory, while the Municipal GHG Inventory presents only the municipal GHG emissions. To allow for comparison among GHG emissions sources, all emissions are converted to the equivalent of one metric ton of carbon dioxide, or MT CO_2e.

1 MT CO_2e is the equivalent of using **113 gallons of gasoline** or **driving 2,564 miles** in a standard combustion vehicle.
Source: https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

Pinole's GHG Emissions Inventories

2017 Community Inventory

The Community GHG Inventory was originally completed by East Bay Energy Watch in June 2020 according to the International Council for Local Environmental Initiatives' (ICLEI) U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions, Version 1.2. The Community GHG Inventory was updated in 2023 with the most recent available data sources, emission factors, and Global Warming Potentials (GWP) from IPCC

Fifth Assessment Report (AR5) and focuses on sources within each sector that are under the jurisdictional control of the City. In 2017, the Pinole community (including municipal operations) emitted approximately 72,273 MT CO_2e.

The 2017 Community GHG inventory is organized by four primary sectors as shown in Table 2 and Figure 6. The transportation sector was the largest source of GHG emissions, generating approximately 35,718 MT CO_2e, or 49 percent of the total 2017 community emissions. The transportation sector includes passenger and commercial vehicles, public transit, and offroad vehicles. The energy sector, including electricity and natural gas used within residential and nonresidential buildings, was the second largest source of GHG emissions, generating approximately 33,088 MT CO_2e, or 46 percent of the total 2017 community GHG emissions. Nonresidential electricity and natural gas in this sector include commercial electricity and natural gas as well as direct access electricity.[11] The waste sector, including the processing and decomposition of waste at landfills in various locations, resulted in 3,300 MT CO_2e or five percent of the City's GHG emissions while the conveyance, delivery, and treatment of water (63 MT CO_2e) and treatment of wastewater (103 MT CO_2e) resulted in the remaining GHG emissions. Other sectors were excluded from this inventory because they are not under the jurisdictional control of the City.

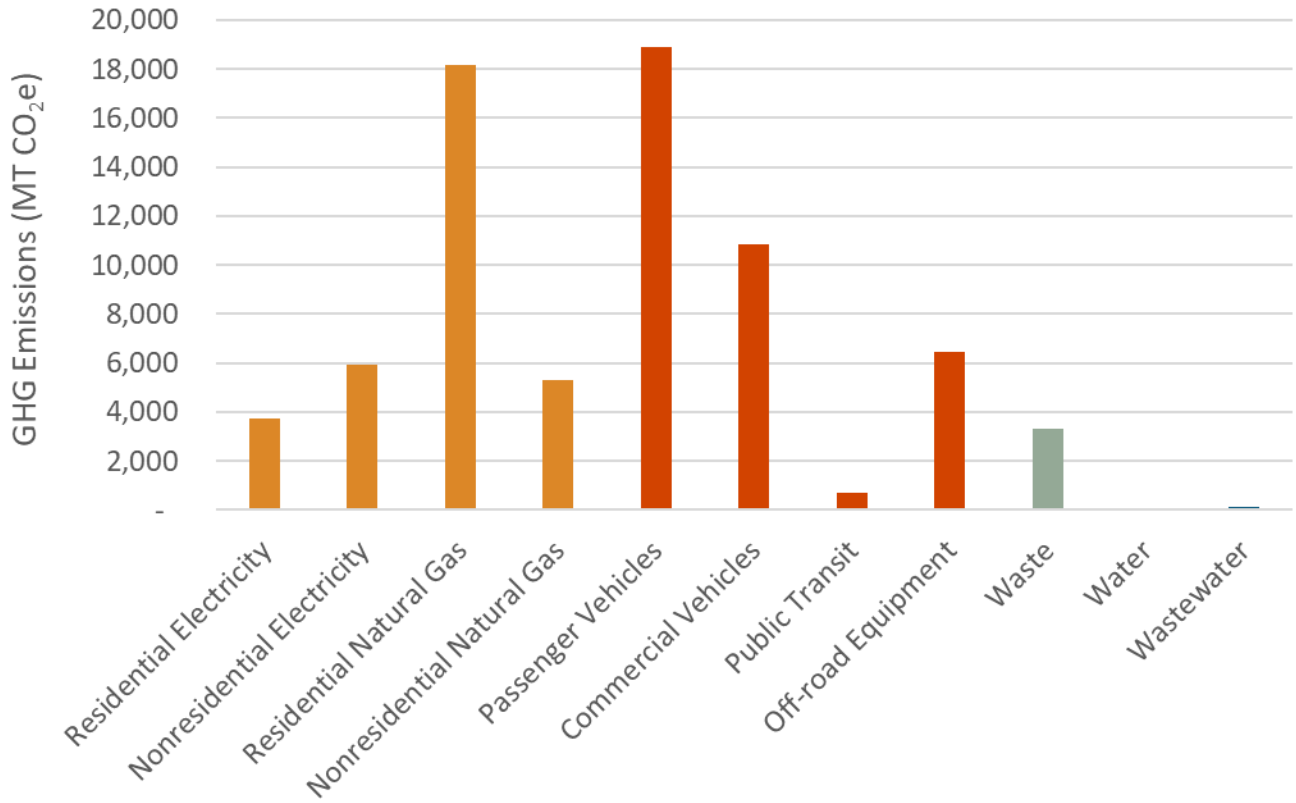
Table 2 City of Pinole Community GHG Emissions (2017)

Sector and Subsector	GHG Emissions (MT CO_2e)	Percent of Emissions (%)
Energy	**33,088**	**46%**
Residential Electricity	3,738	5%
Nonresidential Electricity	5,918	8%
Residential Natural Gas	18,140	25%
Nonresidential Natural Gas	5,291	7%
Transportation	**35,718**	**49%**
Passenger Vehicles	18,913	26%
Commercial Vehicles	10,868	15%
Public Transit (buses and BART)	701	1%
Off-road Equipment	5,236	7%
Waste	**3,300**	**5%**
Water and Wastewater	**166**	**<1%**
Water	63	<1%
Wastewater	103	<1%
Total Emissions	**72,273**	**100%**

Note: Values may not add up due to rounding.

11. Direct access electricity includes customers who purchase electricity from a competitive provider or non-utility entity. While direct access electricity may include electricity purchased from industrial customers, nonresidential energy excludes industrial sources because no industrial electricity or natural gas consumption was reported by the utility (Pacific Gas & Electric) in 2017.

Figure 6 City of Pinole Community GHG Emissions (2017)



2021 Municipal Inventory

The Municipal GHG Inventory was prepared with the best available data sources, emission factors, and IPCC AR5 GWP's, and was calculated based on ICLEI's Local Government Operations Protocol, Version 1.1. In 2021, Pinole's GHG emissions associated with municipal operations totaled 2,205 MT CO_2e.

The 2021 Municipal GHG Inventory is also organized by four primary sectors as shown in Table 3 and Figure 7. These GHG emissions are generated by the regular activities associated with running the municipality and can be directly influenced by the City. The transportation sector, including GHG emissions from the vehicle fleet, employee commute, and business travel, was the largest source of GHG emissions, generating approximately 1,136 MT CO_2e, or 52 percent of total 2021 municipal GHG emissions. The energy sector, including GHG emissions from the City's electricity and natural gas use, was the second largest source of emissions, generating approximately 491 MT CO_2e, or 22 percent of total 2021 GHG emissions. The solid waste sector generated 356 MT CO_2e representing 16 percent of total 2021 emissions while the remaining ten percent of municipal GHG emissions were generated from water use and wastewater generation (223 MT CO_2e) by the City's operations. Other sectors were excluded from this inventory because they are not under the jurisdictional control of the City.

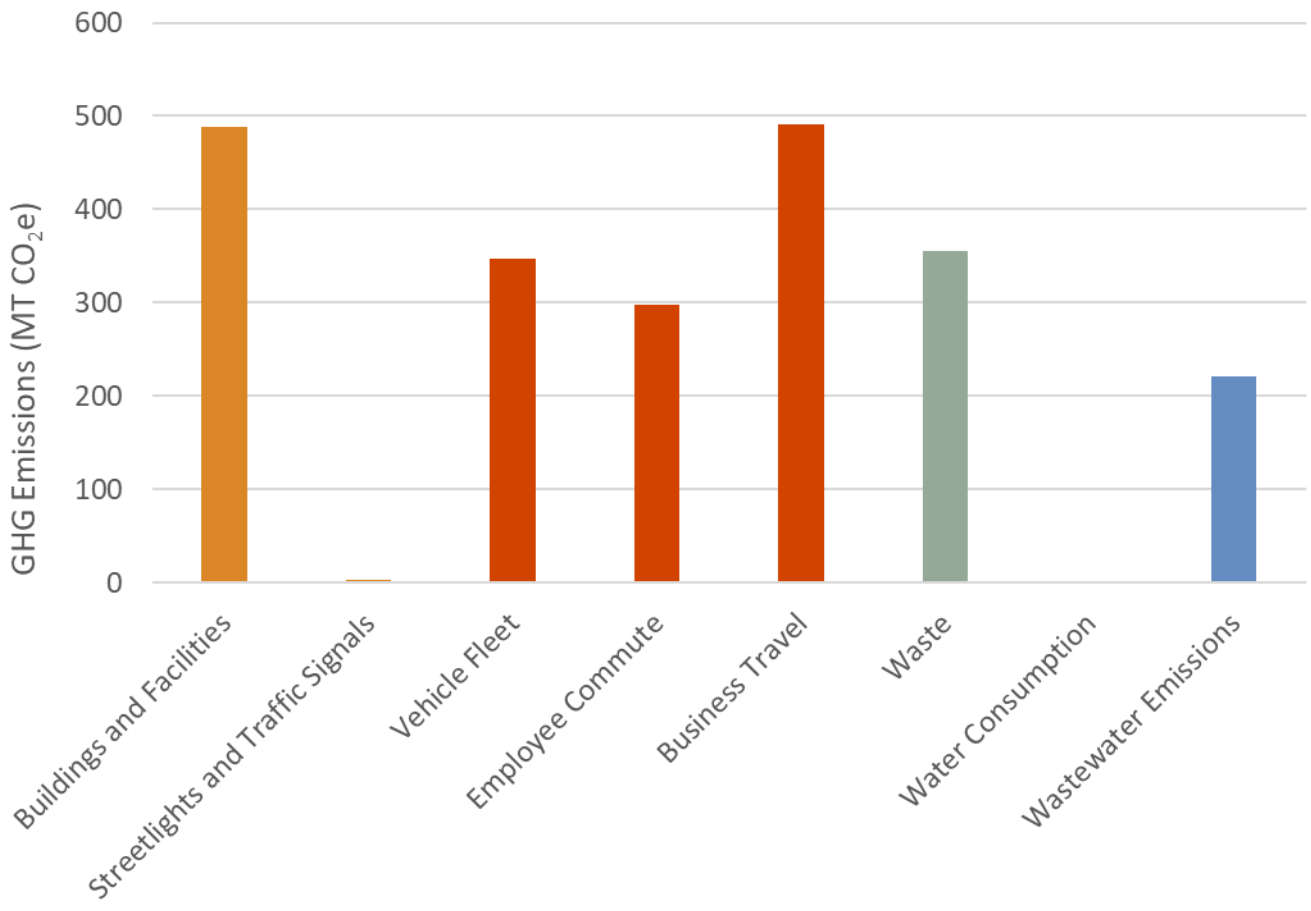
Appendix A provides further details on the Community GHG Inventory update and Municipal GHG Inventory preparation. Additionally, the Community GHG Inventory and Municipal GHG Inventory results can be viewed on the City's CAAP Dashboard.[12] This dashboard will be regularly updated with new inventories to track changes in communitywide and municipal GHG emissions over time.

12. The CAAP Dashboard can be accessed at: https://cap.rinconconsultants.com/Pinole

Table 3 City of Pinole Municipal GHG Emissions (2021)

Sector and Subsector	GHG Emissions (MT CO_2e)	Percent of Emissions (%)
Energy	**491**	**22%**
Buildings and Facilities	488	22%
Streetlights and Traffic Signals	3	<1%
Transportation	**1,136**	**52%**
Vehicle Fleet	347	16%
Employee Commute	298	14%
Business Travel	491	22%
Waste	**356**	**16%**
Water and Wastewater	**223**	**10%**
Water Consumption	1	<1%
Wastewater Emissions	221	10%
Total Emissions	**2,205**	**100%**

Figure 7 City of Pinole Municipal GHG Emissions (2021)



Pinole's GHG Emissions Forecast

GHG emissions forecasts, demonstrating how the City's GHG emissions are expected to change in the future, have been generated based on the 2017 Community GHG Inventory. The future emissions are projected based on the continuation of current activities, projected population, and job growth over time to help identify actions that must be taken now to meet future targets. GHG emissions are forecasted through the years 2025, 2030, 2035, 2040, and 2045 according to two scenarios: a business-as-usual scenario and an adjusted scenario.

Business-as-Usual Forecast

The business-as-usual scenario provides a forecast of how future GHG emissions would change if current activities continued as they did in 2017 and growth were to occur without local policies and actions to reduce GHG emissions. The forecast is based on growth trends projected in the City's population, employment, and housing according to the Association of Bay Area Governments' Plan Bay Area 2050 which accounts for the number of new homes needed in the Bay Area as part of the Regional Housing Needs Allocation (RHNA). Table 4 shows the demographic projections used for the forecast. While most sectors are forecasted using the demographic metrics, on-road and off-road transportation were forecasted using growth projections from CARB's on-road and off-road transportation emission inventory modeling tools (EMFAC2021 and OFFROAD2021). As shown in Table 5, the City's business-as-usual GHG emissions are projected to increase to 79,501 MT CO_2e in 2025, 84,515 MT CO_2e in 2030, 88,764 MT CO_2e in 2035, 93,183 MT CO2e in 2040, and 97,772 MT CO_2e in 2045. For additional information on the business-as-usual forecast as well as the demographic metric calculations, see Appendix A.

Table 4 Business-as-Usual Forecast Demographic Metrics by Year

Demographic	2017	2025	2030	2035	2040	2045
Population	19,663	21,718	23,110	24,592	26,168	27,845
Employment	7,970	8,963	9,645	10,379	11,168	12,018
Household	6,901	7,431	7,783	8,151	8,536	8,940

Notes: Demographic metrics were calculated using Pinole-specific values from Plan Bay Area 2040 for 2015 and applying local and regional growth expected between 2015-2050 from Plan Bay Area 2050.

Adjusted Forecast

Several state regulations have been adopted that will reduce future local GHG emissions. These regulations have been incorporated into an adjusted forecast to account for future GHG emissions reductions resulting from state efforts and investments. Key state legislation included in the adjusted forecast include:

- Renewable Portfolio Standard (Senate Bill 100 and Senate Bill 1020) which requires investor-owned utilities, publicly owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 50 percent of total procurement by 2026, 60 percent by 2030, 90 percent by 2035, 95 percent by 2040, and 100 percent by 2045. The increase in renewable energy resources reduces the GHG-intensity of electricity.

- Building Energy Efficiency Standards (Title 24, Part 6 of the California Code of Regulations)[13] which sets standards for energy-efficient technologies and methods in new buildings to reduce electricity and natural gas consumption in new buildings and increase the use of renewable electricity.
- Transportation legislation including the Advanced Clean Cars Program (introduced by CARB in 2012),[14] Advanced Clean Truck regulation, and Innovative Clean Transit regulation which work together to increase the fuel efficiency of fossil-fuel powered on-road vehicles and increase the share of zero-emission vehicles on the road.

In addition to the reductions from state legislation, the adjusted forecast also includes emission reductions associated with the City's transition from Pacific Gas and Electric-provided electricity to the lower-emissions electricity options provided by Marin Clean Energy (MCE) which occurred after the inventory year in April 2018. The resulting adjusted forecast provides the level of GHG emissions reductions the City will be responsible for after state regulations and existing local actions (i.e., the switch to MCE) have been implemented (and before any additional contribution from local policies or actions). As shown in Table 5, the City's adjusted business-as-usual emissions are projected to increase to 69,558 MT CO_2e in 2025, 68,902 MT CO_2e in 2030, 67,403 MT CO2e in 2035, 68,262 MT CO_2e in 2040, and 69,901 MT CO_2e in 2045.Appendix A provides further details on the specific state regulations incorporated into the adjusted forecast and quantified legislative reductions to the business-as-usual forecast.

Table 5 Forecasted Community GHG Emissions

Community GHG Emissions (MT CO_2e)	2025	2030	2035	2040	2045
Business-as-Usual	79,501	84,515	88,764	93,183	97,772
Reductions from State Legislation and MCE	9,943	15,613	21,361	24,921	27,871
Adjusted Forecast	**69,558**	**68,902**	**67,403**	**68,262**	**69,901**

Pinole's GHG Emissions Targets

Emission targets are quantitative goals that will further the City's ability to measure emission reduction progress from the baseline scenarios and help guide implementation. The GHG targets were aligned with the state's GHG reduction goals for the years 2030 and 2045. The state's goals are developed relative to the state's 1990 GHG emission baseline. As mentioned above, SB 32 establishes a goal to reduce statewide GHG by 40 percent below 1990 levels by 2030, and AB 1249 establishes the state's goal of achieving carbon neutrality by 2045. The City's GHG targets were developed relative to the 2017 Community GHG emissions by back-casting to 1990. This back-cast utilized the change in statewide GHG emissions between 2017 and 1990 as a proxy for change in Pinole during the same period.[15]

13. The 2019 Building Energy Efficiency Standards were incorporated into the adjusted scenario. The 2022 Building Energy Efficiency Standards were not incorporated due to lack of data made available by the State.
14. The latest Advanced Clean Cars II regulations expanded the Advanced Clean Cars Program but were not incorporated into the adjusted forecast because the state has not yet updated emissions models with the regulation's impacts.
15. The City of Pinole's 1990 GHG emissions were estimated to be 78,982 MT CO2e based on a nine percent increase in state GHG emissions seen between 2017 and 1990. These calculations are consistent with guidance from the Governor's Office of Planning and Research's General Plan Guidelines. https://opr.ca.gov/docs/OPR_C8_final.pdf

The estimated 1990 GHG emissions were then reduced by 40 percent to establish a 2030 target for the City and reduced to zero to establish a 2045 target for the City. The targets, established as follows, remain consistent with the State's 2030 and 2045 goals:

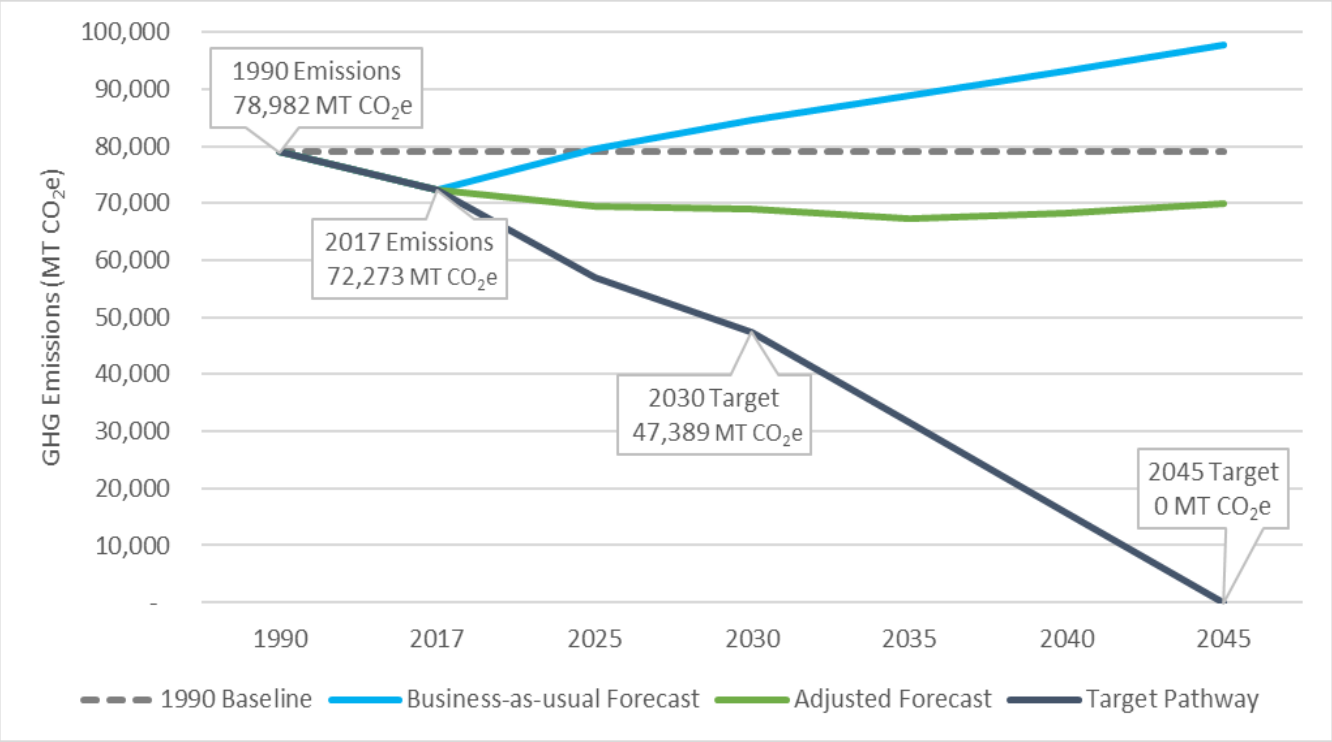
- Reduce GHG emissions to 47,389 MT CO_2e by 2030 (the SB 32 target year)
- Reduce GHG emissions to 0 MT CO_2e by 2045 (the AB 1249 target year)

After accounting for reductions that will result from state regulations, as shown in Table 6 and Figure 8, there remains a gap between Pinole's adjusted forecast and Pinole's targets. To meet the City's targets and align with state goals, Pinole will need to reduce communitywide GHG emissions by 21,512 MT CO_2e by 2030 and 69,901 MT CO_2e by 2045. These reductions will be achieved through implementation of measures and actions developed specifically for Pinole based on community engagement, best practices of similar and neighboring jurisdictions, and those recommended by state organizations and agencies. The emissions reduction measures and actions are presented in Chapter 3 and are quantified to identify their overall contribution to meeting the City's 2030 and 2045 GHG reduction targets. See Appendix A for more information on the forecast and targets.

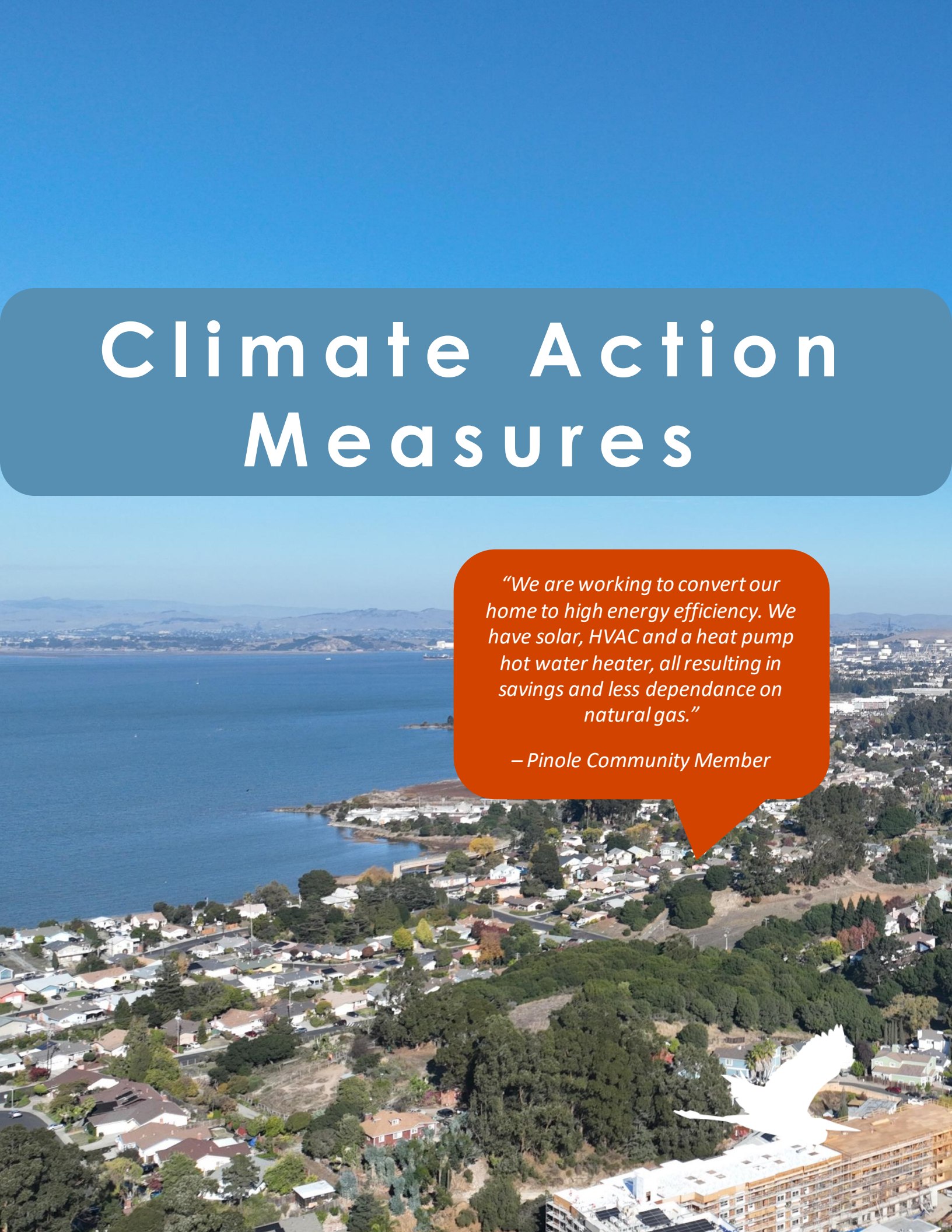
Table 6 Community GHG Emission Reduction Targets and Gap Analysis

Emissions Forecast or Pathway	1990	2025	2030	2035	2040	2045
Mass Emissions Target Pathway						
Adjusted Forecast (MT CO_2e)	78,982	69,558	68,902	67,403	68,262	69,901
SB 32 Mass Emissions Target Pathway (MT CO_2e)[1]	78,982	56,960	47,389	31,593	15,796	0
Remaining Emissions Gap (MT CO_2e)	N/A	12,598	21,512	35,810	52,466	69,901

Figure 8 City of Pinole Emissions Forecast



Climate Action Measures



"We are working to convert our home to high energy efficiency. We have solar, HVAC and a heat pump hot water heater, all resulting in savings and less dependance on natural gas."

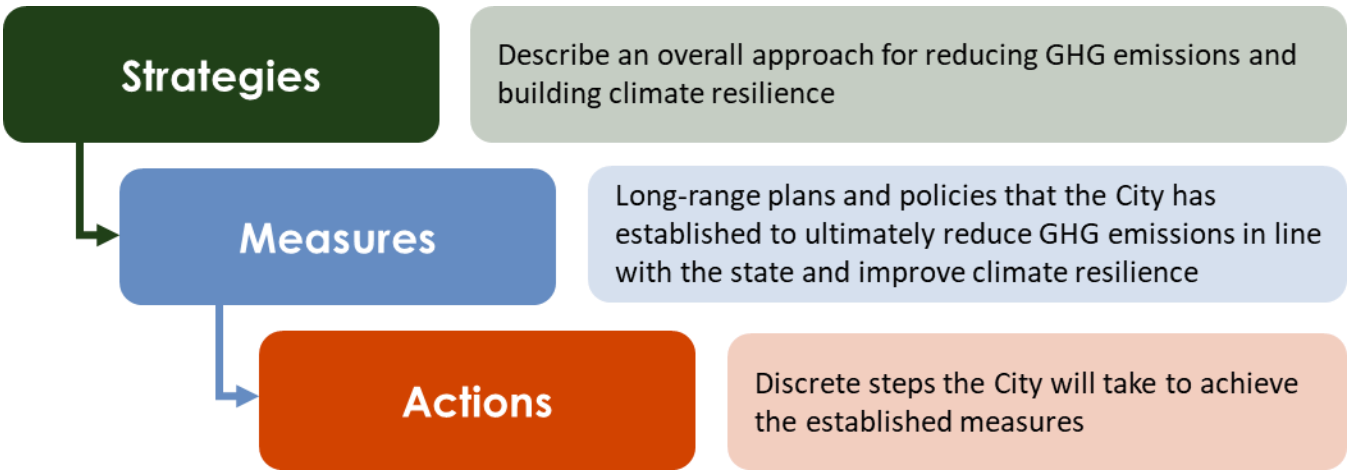
– Pinole Community Member

Climate Action and Adaptation Measures

The City of Pinole recognizes that achieving long-term sustainable change is essential to ensure that the community contributes its fair share towards reducing greenhouse gas emissions. This will help the state limit the impacts of climate change and enable the community to adapt to the local effects of climate change. To establish sustainable change, the community's efforts must be reasonable, resilient, and equity-driven. The City will lead by example and spearhead the community's climate efforts to implement the adopted climate action and adaptation measures outlined in this plan and maintain progress with regular monitoring and accountability.

The climate action and adaptation measures included in this CAAP are structured stepwise to provide a comprehensive path for implementation. As detailed in Figure 9, each climate action and adaptation measure are positioned under a guiding strategy and contain a set of supporting actions for implementation. The measures were developed to both reduce GHG emissions and adapt to climate change impacts. Specifically, the plan's mitigation measures detail achievable and implementable GHG emissions reduction policies designed to achieve the City's GHG emissions reduction targets for 2030 (40 percent below 1990 levels) and provide substantial progress towards meeting the longer-term target of carbon neutrality by 2045. The plan's adaptation measures, which are discussed further in Chapter 4, are designed to increase Pinole's adaptive capacity and resilience to climate change impacts. Over time, the Plan will be reviewed, and additional actions will need to be added to make greater progress on the established measures, as appropriate. This CAAP serves as the City's first step in climate action planning and will continue to be refined.

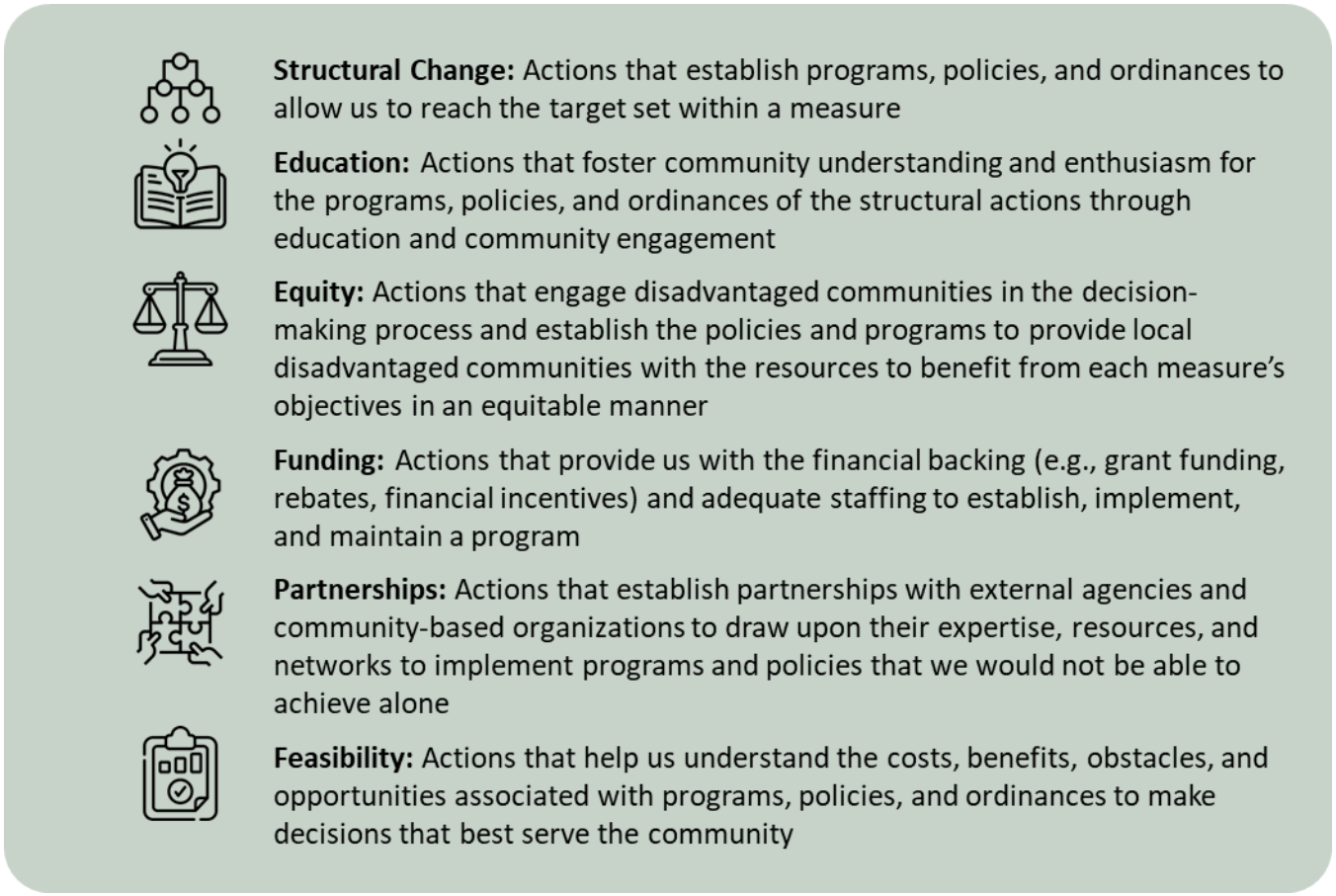
Figure 9 Climate Strategy Structure



Climate Policy Pillars

Reasonable, resilient, and equitable climate action and adaptation planning is built on key pillars that are essential for effective implementation. Pinole's six Climate Policy Pillars are focused on structural change, education, equity, funding, partnerships, and feasibility. During the climate action and adaptation measure development process, each measure was viewed through the lens of these Climate Policy Pillars to develop an implementable plan. Each pillar is detailed in Figure 10.

Figure 10 Pinole's Climate Policy Pillars



Cornerstone Measure

The Cornerstone Measure was designed to set the direction of the CAAP by embodying the spirit and character of Pinole and clearly illustrating how each Climate Policy Pillar is integrated into the measures. The rest of the climate action and adaptation measures are intended to align with the Cornerstone Measure, providing the most effective means for achieving the City's climate action and adaptation goals.

In construction, the cornerstone is often the first stone set, and all other stones are set in reference from that point, essentially determining the direction or position of the building. Similarly, the Cornerstone Goal (CR-1) sets the direction of our CAAP and intends to connect the CAAP and energize our community around the opportunity to leverage climate action and adaptation implementation to make Pinole a center for green economic development and high-road jobs. From electrification retrofits and bicycle lane buildouts to carbon sequestration research and restoration projects, climate action and adaptation initiatives in Pinole will create new industries for the local economy and foster job growth. A study by the University of California, Los Angeles (UCLA) Luskin Center for Innovation found that 100,000 full-time equivalent jobs would be created across various sectors of the economy as the result of electrifying all of California's new and existing buildings by 2045.[16]

16. https://innovation.luskin.ucla.edu/2019/11/13/move-to-all-electric-buildings-will-trigger-significant-demand-for-skilled-workers/

Similarly, in the waste and materials sector, the process of re-using materials was found to create 200 times as many jobs as sending those materials to landfills and incinerators.[17] Centering these opportunities in Pinole will help create a prosperous, green economy that works to reduce GHG emissions in Pinole and adapt the community to climate impacts. It will also bring "high-road jobs" to Pinole residents – jobs that will provide Pinole residents family-sustaining wages, comprehensive benefits, and opportunities for continued career advancement.[18]

To leverage these economic opportunities for Pinole's economy and residents, the Cornerstone Measure was designed in a stepwise manner to employ each Climate Policy Pillar as demonstrated in Figure 11. With each Climate Policy Pillar, CR-1 will make transformational change and engage the community. This will set the foundation for the rest of the measures in the CAAP to establish their own foundations to make reasonable, resilient, and equitable change in Pinole.

Mitigation Measures

Together, we developed a CAAP that includes a thoughtful list of measures and actions that collectively help us reach 2030 emissions reduction goals and put us on track to ultimately reach our longer-term goal of net neutrality for 2045. In addition to the mitigation measures, we have also prepared a list of adaptation measures (see Chapter 4) and measures that are specific to the City operations, which are summarized under municipal measures included below.

Figure 11 Cornerstone Measure Alignment with Pillars

Measure CR-1

Leverage the CAAP's work around electrification, transportation infrastructure buildout, organic waste diversion, and carbon sequestration to establish Pinole as a center for green economic development and high-road jobs.

- Focuses on **Structural Change** by updating the City's Economic Development Strategy to specifically attract green businesses and incentivizing developments that are dense, transit-rich, and connected to the active transportation network.
- Focuses on **Education** by offering residents training courses through a green workforce development program.
- Focuses on **Equity** by focusing the green workforce development program on members of disadvantaged and vulnerable communities in Pinole.
- Focuses on **Funding** by creating a Green Technology Incubator to provide green businesses access to funding.
- Focuses on **Partnerships** by working with the Contra Costa County Green Business Program and City staff to leverage their network and experience.
- Focuses on **Feasibility** by identifying climate change impacts that affect core industries and small businesses and assessing the existing broadband network in Pinole to optimize work-from-home rates.

17. https://worldgbc.org/article/waste-hierarchy-cbre/
18. https://www.usdn.org/uploads/cms/documents/workforce-guide_4.12.21_form.pdf

These measures provide a pathway for the City to lead by example by reducing emissions and increase adaptive capacity at City-owned and operated buildings to demonstrate that the initiatives included throughout this plan are feasible and achievable. In total, there are 21 mitigation measures related to building energy (five measures), transportation (six measures), solid waste (five measures), water and wastewater (two measures), and carbon sequestration (two measures), as well as the cornerstone measure discussed above. The Measures included under each mitigation and adaptation strategy are intended to pull in the same direction, providing the most effective means for achieving the GHG reductions to help the City achieve the 2030 target and establish the framework for the deep decarbonization needed to reach the 2045 target of carbon neutrality.

Measure Co-benefits

Climate action and adaptation measures were refined based on community feedback and input and designed to produce additional benefits beyond GHG emissions reduction and adaptation. These co-benefits were collectively prioritized by the community to align with their needs and preferences and will have the potential for long-term positive impacts throughout the community. The co-benefits identified for each measure include:

- Greater access to healthy food
- Cleaner air and water
- Improved public and active transportation
- Cost savings
- More green spaces
- Improved disaster preparedness, safety, and resilience
- Improved economy/job creation

Measure Summary and GHG Emissions Reductions

Table 7 and 8 summarize the climate action measures developed and adopted by this CAAP. Table 7 also includes the GHG emission reduction potential of each mitigation measure. In total, the measures will reduce 21,585 MT CO_2e by 2030 and 68,746 MT CO_2e by 2045. Assuming the state legislation and the City's initial transition to MCE in the adjusted forecast reduce GHG emissions by 15,613 MT CO_2e by 2030, Pinole is on target to achieve the 2030 GHG reduction target and California's Senate Bill 32 goal. Similarly, assuming the state legislation of the adjusted forecast will reduce emissions by 27,871 MT CO_2e by 2045, Pinole will remain slightly above the net zero emissions target in 2045. However, these remaining emissions can be offset through established carbon sequestration measures, which can further assist Pinole to reach the community's goal of carbon neutrality. For further detail on the substantial evidence and calculation methods of the GHG emission reductions, refer to Appendix C.

It is important to note that while all measures benefit the community, they do not all result in equal GHG emissions reductions and some measures are considered "supportive," meaning that they do not directly result in GHG emissions reductions, although they support the overall goals of the CAAP. These measures do not have emissions reductions directly associated with implementing them, however, they may collectively increase the GHG emissions reduced.

Table 7 Mitigation Strategies and Measures

ID	Measure Text	Reductions
Strategy CR: Cornerstone to Climate Action and Adaptation Planning		
CR-1	Leverage the CAAP's work around electrification, transportation infrastructure buildout, organic waste diversion, and carbon sequestration to establish Pinole as a center for green economic development and high-road jobs.	2030: N/A 2045: N/A
Strategy FL: Building Energy		
BE-1	Electrify 100% of new construction in the City in 2024.	2030: 1,509 2045: 5,962
BE-2	Electrify existing residential buildings to reduce natural gas consumption by 26% by 2030 and 100% by 2045.	2030: 4,778 2045: 19,273
BE-3	Electrify existing commercial and mixed-use (i.e., combined commercial and residential) buildings to reduce natural gas consumption 18% by 2030 and 100% by 2045.	2030: 997 2045: 5,868
BE-4	Increase the number of accounts enrolled in MCE's Deep Green option to 95% communitywide by 2030.	2030: 3,200 2045: 0
BE-5	Increase generation and storage of local community-scale renewable energy.	2030: N/A 2045: N/A
Strategy TR: Transportation		
TR-1	Create a safe and connected active transportation network linked to Pinole Creek to increase active transportation mode share to 5.5% by 2030 and 11.5% by 2045.	2030: 107 2045: 256
TR-2	Implement public and shared transit improvements and programs to achieve a 13% public transit mode share by 2030 and 18% by 2045.	2030: 256 2045: 559
TR-3	Develop programs and policies to discourage driving single passenger vehicles and to support the active transportation and public transit mode share goals of Measures TR-1 and TR-2.	2030: N/A 2045: N/A
TR-4	Increase passenger zero-emission vehicle (ZEV) use and adoption to 33% by 2030 and 100% by 2045.	2030: 3,832 2045: 13,839
TR-5	Increase commercial zero-emission vehicle (ZEV) use and adoption to 30% by 2030 and 100% by 2045.	2030: 2,303 2045: 8,186
TR-6	Electrify or otherwise decarbonize 15% of off-road equipment operations by 2030 and 100% by 2045.	2030: 1,245 2045: 10,721
Strategy SW: Solid Waste		
SW-1	By 2025, reduce landfilled organic waste by 75% and support food insecure residents by diverting 20% of currently disposed edible food to food recovery organizations to meet and or exceed SB 1383 requirements.	2030: 2,934 2045: 3,570
SW-2	Reduce landfilled inorganic waste 35% by 2030 and 90% by 2045.	2030: N/A 2045: N/A
SW-3	Meet CalGreen's current 65% construction and demolition (C&D) materials diversion requirements on all covered projects.	2030: N/A 2045: N/A
SW-4	Analyze opportunities to enhance the City's Wastewater Treatment Plant to divert organic waste from the landfill and increase organics recovery.	2030: N/A 2045: N/A
SW-5	Establish new programs to meet the City's SB 1383 annual procurement target (i.e., 1,073 tons of compost) by 2030.	2030: 425 2045: 513

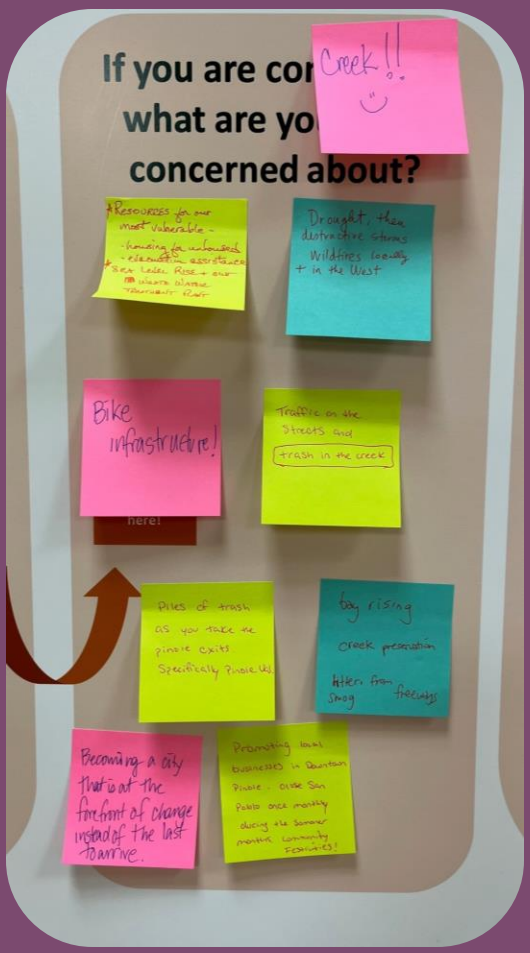
Strategy W: Water and Wastewater		
W-1	Reduce per capita potable water consumption 10% by 2030 and 25% by 2045, from 2017 levels.	2030: N/A 2045: N/A
W-2	Increase the community's use, supply, and access to recycled water.	2030: N/A 2045: N/A
Strategy TR: Carbon Sequestration		
CS-1	Increase carbon sequestration and prepare the urban forest for climate change, extreme heat, drought, and wildfire by adopting policies developed through the Community Urban Forest Plan.	2030: N/A 2045: N/A
CS-2	Increase nature-based and technological carbon sequestration opportunities in Pinole.	2030: N/A 2045: N/A

Table 8 Municipal Mitigation Strategies and Measures

Measure ID	Measure Text
Strategy COP City Infrastructure and Operations	
Measure CIO-1	Upgrade all City accounts to MCE's Deep Green option by 2025 and electrify or otherwise decarbonize all municipal buildings and facilities by 2035.
Measure CIO-2	Electrify or otherwise decarbonize 30% of the municipal vehicle fleet by 2028 and 100% by 2040.
Measure CIO-3	Electrify or otherwise decarbonize all municipal off-road equipment by 2035, where feasible.
Measure CIO-4	Reduce employee VMT 20% by 2035, from 2019 levels by developing and implementing a municipal Transportation Demand Management (TDM) Plan by 2028.
Measure CIO-5	Reduce municipal water consumption 15% by 2030, from 2019 levels.
Measure CIO-6	Reduce organic waste by 10% by 2025, from 2019 levels and landfill zero waste by 2035.
Measure CIO-7	Retrofit existing infrastructure owned and operated by the City, such as the Pinole-Hercules Water Pollution Control Plant, located in the areas at risk of sea level rise.
Strategy CG: City Governance	
Measure CG-1	Build staffing capacity to effectively implement the CAAP Mitigation Measures and update the CAAP triennially.
Measure CG-2	Establish reporting procedures to implement the CAAP measures and transparently communicate progress to the community.

Cornerstone

CR-1 *Leverage the CAAP's work around electrification, transportation infrastructure buildout, organic waste diversion, and carbon sequestration to establish Pinole as a center for green economic development and high-road jobs.*



Cornerstone

CR-1 ***Leverage the CAAP's work around electrification, transportation infrastructure buildout, organic waste diversion, and carbon sequestration to establish Pinole as a center for green economic development and high-road jobs.***

Pinole has traditionally been a bedroom community, a place where people live, but do not necessarily work.[19] We see Pinole as a place where people can live, work, and play, reducing commute times, protecting resources, and spending more time doing the things that bring us joy. Employment in Pinole is changing and based on data from the United States Census Bureau, employment in Pinole declined by 1.43 percent between 2020 and 2021.[20] However, this change is aggregated across all job sectors and does not represent the changes in specific fields. For example, Installation, Maintenance, and Repair; Life, Physical and Social Science; and Community and Social Service Occupations, which are traditionally tied to high-road jobs, have grown in Pinole between 5 and 26 percent in that same timeframe. We will leverage our thoughtful work around electrification, mobility, organic waste management, and carbon sequestration to establish Pinole as a center for green economic development and high-road jobs. Implementation of this measure will include creating a green workforce development program to connect residents to workforce development training courses for climate industries with high-road jobs (Action CR-1c). Additionally, the City will identify a place and create a plan to develop a zero-carbon district where all buildings and mobility options are carbon free (Action CR-1h). Collaborative, system-wide solutions will pave the way for realistic and meaningful transformations, addressing one of the most complex challenges of our time and fostering sustainable progress across diverse sectors.

19. https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Planning/General%20Plan/City_of_Pinole_General_Plan_12.2010-Chapter1.pdf
20. https://datausa.io/profile/geo/pinole-ca?monthly-employment=latestEmploymentGrowthYoY

Key Performance Indicators:

- Green and clean energy businesses in Pinole (#)
- Certified Green Businesses in Pinole (#)

Emissions Reductions
2030: N/A
2045: N/A

CR-1a Coordinate with the City's Economic Development staff to review and update the Pinole Economic Development Strategy every three years (2026/28, 2029/31, 2032/34, etc.) and adjust fees to specifically attract green and clean energy businesses to Pinole by reflecting changing economic trends, evolving community needs, and emerging opportunities. Include an annual review of the fee schedules (including a survey of competitor's fees) to assess their impact on green businesses.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CR-1b	Work with the City's Economic Development staff to perform direct outreach to existing Pinole businesses to identify climate change impacts (e.g., climate hazards, increasing water and natural gas costs, etc.) that may affect the long-term viability and growth of existing core industries and small business. Include regional green and clean energy businesses in a "short list" of industries to focus these initial outreach and business retention efforts during Phase 1.
CR-1c	In partnership with organizations such as the Workforce Development Board of Contra Costa County or Contra Costa College, create a green workforce development program to connect Pinole residents to workforce development training courses for climate industries with high-road jobs. Additionally, use the program to develop a network of local professional associations active in Pinole and to incorporate green workforce development training courses into the periodic "Pinole Workforce Development Consortium" meetings identified in the Economic Development Strategy. Focus this program on members of the most disadvantaged and vulnerable communities in the City and track enrollment and success rate by zip code to monitor the reach and distribution of the initiative.
CR-1d	Partner with the Contra Costa County Green Business Program to help small- and medium-sized businesses in Pinole minimize their impact on the environment and increase the number of certified Green Businesses in Pinole.
CR-1e	Create a Green Technology Incubator in partnership with the Workforce Development Board of Contra Costa County, Contra Costa College, the Renaissance Entrepreneur Center, the East Bay Economic Development Alliance, or similar partners, to help startups and companies working on innovative solutions for climate-related challenges to succeed in the market. The Green Technology Incubator would provide access to funding through identification and partnership opportunities for grants, technical assistance, networking support, and community exposure.
CR-1f	Incentivize optimal use of properties with a water view by adoption of Municipal Code Amendments allowing for height exceptions for mixed use developments that include top-floor restaurants that are dense, transit rich and connected to Pinole's growing active transportation network.
CR-1g	Based on the findings and recommendation of the broadband feasibility study (currently in progress), a subsidy or grant program may be developed to improve existing infrastructure of multi-family units (i.e., upgrade internal wiring etc.) to update policies to increase Pinole residents' work-from-home rate, including incorporating work-from-home strategies into the Transportation Demand Management standards of Action TR-3a.
CR-1h	Explore locations within the City to create a plan to develop a climate resilience district. The district would receive focused City resources, support, partnerships with local businesses, and engagement to develop resilient communities. Examples could include the Pinole Valley area to focus on funding projects related to wildfire risk, for example.

Building Energy

BE-1 *Electrify 100% of new construction in the City in 2024.*

BE-2 *Electrify existing residential buildings to reduce natural gas consumption by 26% by 2030 and 100% by 2045.*

BE-3 *Electrify existing commercial and mixed-use (i.e., combined commercial and residential) buildings to reduce natural gas consumption 18% by 2030 and 100% by 2045.*

BE-4 *Work with MCE to provide 100% carbon-free and renewable energy to at least 95% of the community by 2030.*

BE-5 *Increase generation and storage of local community-scale renewable energy by exploring new advancements in the clean energy sector.*

Building Energy

BE-1 *Electrify 100% of new construction in the City in 2024.*

Implementation of this measure would be achieved through adoption of a single margin source energy score or more stringent ordinance in 2024 to avoid new natural gas construction after calendar year 2024. All-electric buildings can be more energy efficient and require lower energy bills than those powered by natural gas.[21] Constructing new all-electric buildings is more cost-effective up-front than building traditional mixed-fuel buildings due to the cost savings obtained from avoiding the installation and expansion of natural gas infrastructure.[22] These long-term and up-front cost savings make all-electric new construction an easy choice for builders. All-electric buildings also provide a critical step towards improving public health because burning natural gas in poorly ventilated areas (i.e., through gas furnaces) can cause a drastic increase of harmful indoor pollutants that are linked to increased risk of respiratory illnesses. One study found that mean nitrogen dioxide concentrations were higher in homes with a gas stove (33.1 ppb) than in those without a gas stove (16.8 ppb),[23] which relates to a 20% increase in symptoms of asthma in children under 12. In this study, indoor levels were also associated with the presence of a gas heater and the use of a space heater or oven for supplementary heating. Using electric appliances mitigates these indoor air pollutant risks. When coupled with Measures BE-4 and BE-5, reducing direct emissions from natural gas consumption in existing buildings will result in buildings that run more efficiently and cleaner in terms of their energy use.

21. https://www.nrdc.org/bio/pierre-delforge/new-study-confirms-benefits-electrifying-ca-buildings#:~:text=Replacing%20natural%20gas%20with%20clean,according%20to%20a%20new%20analysis
22. https://rmi.org/insight/the-economics-of-electrifying-buildings-residential-new-construction/
23. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7665158/

Key Performance Indicators:

- All-electric new buildings (% of total new buildings)

Emissions Reductions
2030: 1,509
2045: 5,962

BE-1a Adopt a single margin source energy score or more stringent ordinance in 2024 to avoid new natural gas construction.

BE-1b Partner with organizations such as MCE, Bay Area Regional Energy Network (BayREN), the Building Decarbonization Coalition and the U.S. Green Building Council (USGBC) to compile a suite of case studies (e.g., document/guide on all-electric best practices and examples applicable to Pinole or the Bay Area) and cost-effective strategies (e.g., energy efficiency improvements) for electric

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

BE-1b	buildings by prototype. Provide digital copies on the City's website and hard copies at City Hall for residents and business owners to review and utilize.
BE-1c	Partner with organizations such as MCE, BayREN, the Building Decarbonization Coalition, and USGBC to educate building owners, developers, and contractors on the cost savings, environmental benefits, and versatility associated with all-electric construction, as well as the advantages all-electric construction provide for United States Green Building Council LEED certification. Utilize the case studies and cost-effective strategies as well as existing resources such as those provided by MCE as educational materials and share the information on the City's website, at City events (such as Dumpster Day and Earth Walk), and at the City's permit counter.
BE-1d	Partner with PG&E to conduct an electrification infrastructure and capacity feasibility study to identify expected increases in electricity demand due to building and vehicle electrification and identify infrastructure improvements (including local renewable energy and storage projects) to increase capacity to meet demand. During this process, work with MCE to provide projections on load changes due to electrification.
BE-1e	Partner with MCE, the WFDBCCC and/or other organizations to host regular workforce development trainings for installers, local contractors, and building owners/operators. Trainings would provide financial resources and technical requirements, including information on new electric appliances and approaches to electrification. Partner with community-based organizations to connect members of vulnerable communities to these training programs in plain language and in a culturally appropriate manner.
BE-1f	Advocate for regional policy and programs that allow for utility rates that are supportive of electrification (i.e., electricity rates lower than natural gas rates).

Building Energy

BE-2 *Electrify existing residential buildings to reduce natural gas consumption 26% by 2030 and 100% by 2045.*

Existing building electrification requires the replacement of fossil-fueled systems with electric alternatives and provides the same GHG emission reduction, energy bill, and public health benefits as new building electrification. However, barriers to this measure have been recognized such as the cost for homeowners and members of disadvantaged and vulnerable communities that make it difficult to prioritize electrification. These community members will also face the greatest impacts if left as the last customers relying on the gas distribution system because they can least afford the significant bill increases anticipated to support aging and stranded natural gas infrastructure.[24] Therefore, implementation of this measure would include adoption of a reach code requiring all central air conditioning unit installations and replacements be two-way, providing both heating and cooling with a single unit for residential buildings. In Pinole, equitable distribution will be established through a variety of actions, including Action BE-2c, which aims to complete a residential existing building electrification feasibility analysis to determine the upfront and on-bill costs associated with building electrification strategies and draw on existing ordinances from similar jurisdictions to identify barriers to replacement and permit compliance (including equity barriers). Additionally, the City will create a water heater loaner program where residents who are replacing their natural gas-powered water heaters with electric-powered water heaters at the end of their useful lives can borrow or rent a working natural gas water heater from the City (Action BE-2k). In addition to reducing long-term cost burdens, electrification will also improve indoor air quality and increase home values.

24. https://greenlining.org/wp-content/uploads/2019/10/Greenlining_EquitableElectrification_Report_2019_WEB.pdf

Key Performance Indicators:

- Residential natural gas consumption (% change)

Emissions Reductions
2030: 4,778
2045: 19,273

BE-2a Adopt a reach code in 2024 requiring all central air conditioning unit installations and replacements be two-way, providing both heating and cooling with a single unit for residential buildings.

The ordinance would apply to projects after calendar year 2024. The ordinance would be implemented through the building permit process.

BE-2b After calendar year 2024, include major renovations (i.e., projects that affect over 50% of the building, add an additional 50% of gross floor space to the building, or value more than 50% of

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

BE-2b cont.	the assessed value of the property at time of application submittal) in the all-electric new residential building requirements.
BE-2c	Complete a residential existing building electrification feasibility analysis by 2024 to determine the upfront and on-bill costs associated with building electrification strategies and draw on existing ordinances from similar jurisdictions to identify barriers to replacement and permit compliance (including equity barriers). This information will be used to inform and support future updates to the existing building electrification ordinances as well as the building electrification resource center (Action BE-2e).
BE-2d	Partner with Contra Costa County Department of Conservation and Development to create a virtual all-electric building resource center to provide residents information on available electrification assessments, turn-key installations by BayREN and/or state vetted contractors, low up-front costs and on-bill financing, and equipment and labor warranties.
BE-1e	As part of the building electrification resource center, partner with a provider such as Rising Sun to provide free assessments to rental and multi-family properties, as well as seniors and residents living on low incomes.
BE-2f	Partner with MCE and PG&E to review incentives, rebates, and on-bill financing options for procedural equity and then update the incentives to remove the identified barriers.
BE-2g	Partner with properties in Pinole that provide existing deed-restricted affordable housing, MCE, PG&E, and BayREN to initiate and complete an affordable housing electrification pilot project. Project will implement energy efficiency strategies to mitigate increased energy bills for occupants. Promote the pilot project as a case study for future projects in the City and the region.
BE-2h	Work with MCE and PG&E to conduct a cost-effectiveness study and design electricity and natural gas billing rates that make electrification the most cost-effective option to reduce energy bill burdens for residents living on low- and moderate-incomes.
BE-2i	Provide education around cooking with electric appliances and partner with local chefs, restaurants and/or Kitchen@812 to host cooking demonstrations at community events such as the Farmers Market. Integrate locally sourced food into the demonstrations to also educate community members on the GHG emission reduction and resilience benefits of local food.
BE-2j	Enforce ordinance compliance through a comprehensive permitting compliance program which may include, but is not limited to: ▪ Providing dedicated time for routine staff training to incorporate into existing building inspections. ▪ Imposing fees for noncompliance to offset staff costs and encouraging voluntary compliance. ▪ Establishing easy-to-understand web-based compliance checklists and permit applications. ▪ Facilitating online permitting. ▪ Providing zero-cost permit fees for heat pump installations.

BE-2k	Develop and implement a water heater loan program where residents who are replacing their natural gas-powered water heaters with electric-powered water heaters at the end of their useful lives can borrow or rent at no cost a working natural gas water heater from the City for a limited period of time (e.g., three weeks) to use during any electrical panel upgrade requirements to install an electric water heater. Participation in this program could serve as a mechanism to support thoughtful residential transition. Consider expanding the loan program to induction stoves as well.
BE-2l	Partner with Rising Sun, or similar entity, to continue providing "Green House Calls" to residents to recommend energy-saving appliances and programs to help offset the costs of electrification.
BE-2m	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. Engage local developers, MCE, and vulnerable populations to assess the feasibility of adopting an end-of-flow ordinance that would require natural gas lines be capped and decommissioned in existing buildings by 2045.
BE-2n	Adopt an end-of-flow ordinance that would require natural gas lines by capped and decommissioned in existing buildings by 2045.

"I'm not really sure how to track my home's energy consumption. But I do want to start tracking it. To see how my family and I can improve. I'm planning to ask my parents about it."

– Pinole Community Member

Building Energy

BE-3 ***Electrify existing commercial and mixed-use (i.e., combined commercial and residential) buildings to reduce natural gas consumption 18% by 2030 and 100% by 2045.***

Similar to residential building electrification, we must pursue commercial building electrification equitably to help small and minority-owned businesses benefit from electrification rather than be left with increasingly expensive gas appliances. Electrifying businesses involves buildings of larger sizes and different purposes. Therefore, this measure was designed to include the development of a building performance program to target a GHG per square foot goal for all commercial buildings over 20,000 square feet which will be implemented through three phases: data collection, retro commissioning, and performance standards. While the technology does exist today to fully electrify all commercial buildings, we must support our business owners to understand the options, resources, and benefits to electrifying their business. This measure has been developed to successfully electrify commercial buildings and mitigate the greatest impacts of climate change, by including education programs to raise awareness among business owners, provide financial incentives, and offer access to expertise regarding the options, support, and benefits of electrifying their establishments.

Key Performance Indicators:

- Commercial natural gas consumption (% change)

Emissions Reductions

2030: 997
2045: 5,868

BE-3a Complete an existing commercial building electrification feasibility analysis in 2024 to determine the upfront and on-bill costs associated with building electrification strategies and draw on existing ordinances from similar jurisdictions to identify barriers to replacement and permit compliance (including equity barriers).

BE-3b Adopt a reach code in 2024 requiring all central air conditioning unit installations and replacements be two-way, providing both heating and cooling

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

BE-3b cont.	with a single unit for commercial and mixed-use buildings. The ordinance will be implemented through the building permit process. Track annual progress on commercial and mixed-use building electrification through the same permit tracking program developed for residential building electrification.
BE-3c	Evaluate the success of the pilot Pinole Energy Efficiency Rebate Program which offers for calendar year 2024 additional rebates to Pinole residents for energy efficiency improvements stacked on top of federal, state, or regional rebates or discounts. Work with Contra Costa County Department of Conservation and Development to restructure the pilot program as needed. Seek annual grant funding sources to sustain and support the program through.
BE-3d	Develop a building performance standard program to meet a specific level of energy use per square foot for all commercial and industrial buildings over 20,000 square feet. Implementation and compliance support, including resources and tools which will be implemented through four phases: 1. Pre-development phase – Phase 1 – Staff to receive technical assistance from the Building Technologies Office in the Federal Office of Energy Efficiency and Renewable Energy (EERE). Per the EERE, technical assistance may take the form of: ▪ Building stock analyses, including analysis of energy and emission impacts associated with building performance standard adoption ▪ Performance target-setting and trajectories ▪ Measure and technology prioritization and packaging ▪ Cost-effectiveness analyses 2. Data collection phase – Phase 2 – All commercial and industrial building owners with floor area over 20,000 square feet report electricity and natural gas data through energy star portfolio manager 3. Retro commissioning phase – Phase 3 – All covered building owners complete a retro commissioning process to identify and correct system inefficiencies while identifying opportunities for electrification and downsizing of oversized equipment. 4. GHG Performance Standard – Phase 4 – Implement a building performance standard that requires buildings to meet a specific GHG performance level
BE-3e	Conduct targeted outreach and complete tailored campaigns during development of the building performance program (Action BE-3d) and electrification ordinance (Action BE-3b) to identify potential barriers to commercial and mixed-use electrification (including equity barriers) and educate commercial and mixed-use property owners on the potential cost savings and other benefits of electrification. Include targeted outreach to building owners that rent or lease space to small businesses and minority-owned businesses as well as the business owners and conduct a survey to such businesses to identify specific resources needed to support equitable building electrification.
BE-3f	Partner with Contra Costa County to provide small and minority-owned businesses, as well as commercial property owners who rent or lease space such business, electrification assessments. These assessments will be conducted by BayREN or state vetted contractors and include turn-key installations at low up-front costs. Additionally, the building electrification resource center (Action BE-2e) will provide equipment and labor warranties. Furthermore, partner with MCE or PG&E to provide on-bill financing.

BE-3g	Partner with the Bay Area Council, Bay Front Chamber of Commerce, and Contra Costa County Green Business Program to inform, encourage, and facilitate electrification for commercial business owners.
BE-3h	Review incentives and rebates (from Action BE-3i) for procedural equity and develop a process so that existing and updated incentive programs continue to be equitably distributed to the community. Hurdles to equitable implementation could include credit checks, excessive procedural roadblocks, and lack of targeted outreach.
BE-3i	Work with MCE and PG&E to incentivize all-electric retrofits by combining rebate programs and financing mechanisms to create cost-effective electrification packages and develop bulk-purchasing opportunities for multi-unit development owners. Additionally, work with BayREN to educate the business community about the available incentives and include direct outreach to small, and frontline community-owned businesses and property owners who rent and lease space to frontline community-owned businesses.
BE-3j	Work with BayREN to identify highly efficient net zero energy building owners that meet the CPUC's hard-to-reach criteria and recognize them through the City's communication channels. Publicize commercial tax breaks to these building owners as well as commercial developers in Pinole.
BE-3k	Re-evaluate the building performance program (Action BE-3d) every three years to gauge implementation progress and phase expansion of program to smaller buildings.
BE-3l	Review and update Section 15.46.020 of the Municipal Code to require upon a transfer of ownership the disclosure of additional relevant weatherization information (e.g., ventilation standards, wall insulation, and installation of programmable thermostats) for residences and commercial buildings over 5,000 square feet. As part of this, work with Contra Costa County Department of Conservation and Development to promote the Weatherization Program for qualifying residents. Additionally, develop a City-specific disclosure checklist and coordinate with realtors/brokers to engrain the City's resale requirements into their work with buyers and sellers.

Building Energy

BE-4 ***Work with MCE to provide 100% carbon-free and renewable energy to at least 95% of the community by 2030.***

MCE's Deep Green service eliminates fossil fuels sources electricity from their service, providing electricity from 100 percent renewable sources (i.e., solar, hydro, and wind).[25] While the California grid will continue to get cleaner as the Renewable Portfolio Standard progresses, MCE provides Pinole with GHG emission reduction potential in the meantime—especially when paired with all-electric buildings. Maintaining enrollment in MCE Deep Green will help leverage the benefits of renewable energy, fostering a sustainable and resilient community while reducing GHG emissions. The City will adopt a resolution to enroll all of Pinole's residents and businesses in MCE's Deep Green (or alternatively, Light Green if it is 100 percent carbon-free) by 2030 (Action BE-4a), and work with MCE as part of Action BE-4b to create a funding and subsidy plan/program for customers enrolled in the CARE or FERA programs to opt-up to MCE's Deep Green option. The City will continue working with MCE to understand the hurdles and barriers that residents and business owners may encounter related to maintaining low opt-out rates as well as provide education and targeted outreach that clearly detail the benefits of using carbon free and renewable energy in homes and businesses.

25. https://www.c2es.org/content/renewable-energy/

Key Performance Indicators:

- Accounts enrolled in MCE Deep Green (%)
- Communitywide electricity emission factor (MT CO_2e/kWh)

Emissions Reductions 2030: 3,200 2045: 0

BE-4a Support MCE in building capacity and funding to provide all Pinole customers 100% carbon-free and renewable energy and adopt a City resolution to automatically enroll all Pinole residents and businesses in carbon-free and renewable from MCE (e.g., MCE's Deep Green option) by 2030. The resolution shall include identification of a funding or subsidy plan/program (Action BE-4b) to avoid cost increases to customers enrolled in the California Alternate Rates for Energy (CARE) or Family Electric Rate Assistance (FERA) programs (Action BE-4b).

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

BE-4b	In support of Action BE-4a, work with MCE to create a funding and subsidy plan/program for customers enrolled in the CARE or FERA programs to opt-up to MCE's Deep Green option. This may include subsidizing costs to customers who participate in CARE/FERA programs through non-discounted customer rate increase or obtainment of funding for vulnerable communities.
BE-4c	Continue to work with MCE to conduct an annual analysis of opt-out rates in the City and expand the research to understand why residents and businesses opt out of MCE. Include targeted outreach to residents living on low- and fixed-incomes and vulnerable communities to identify barriers to remaining with MCE.
BE-4d	Continue to partner with MCE to conduct educational campaigns, including tabling at community events, establishing informational resources on the City's website, regularly posting on social media, and developing energy bill inserts, to highlight the benefits of 100% renewable energy and promote the available incentives.
BE-4e	Conduct targeted outreach campaigns to convert PG&E direct access customers to MCE by promoting available incentives and promoting the economic and business benefits of 100% renewable energy.

Building Energy

BE-5 *Increase generation and storage of local community-scale renewable energy.*

While all-electric buildings can be carbon neutral and produce lower energy bills than those powered by natural gas, we must also prioritize reliability and safety. Pairing all-electric buildings with local solar photovoltaics and battery storage can insulate the community from public safety power shutoffs and grid outages, increasing the resilience of our buildings. Additionally, local solar and battery storage can reduce energy bill burdens by reducing the electricity purchased from the grid and avoiding purchase during peak hours. However, solar and battery storage come with high upfront costs that may be difficult for members of disadvantaged and vulnerable communities to prioritize. There can also be a disconnect between owners and occupants of rental or multi-family properties where the owner takes on the cost burden and the residents reap the benefits. To create an equitable transition to renewable energy, the actions developed with the measure provide a framework that focuses on partnerships (Action BE-5d) and financing mechanisms (Action BE-5f) to provide local solar to disadvantaged and vulnerable communities and explore opportunities for community solar. Increased use of renewable energy and zero-carbon sources supports SB 100, which requires at least 60 percent of energy supplied in California be renewable by 2030 and be 100 percent renewable and carbon-free by 2045.[26]

26. https://www.energy.ca.gov/sb100

Key Performance Indicators:

- Renewable energy generation capacity installed (MWh)
- Energy storage capacity installed (MWh)

Emissions Reductions Not Quantified

BE-5a Adopt a Solar Ordinance requiring newly constructed and majorly renovated multi-family and commercial buildings to install solar systems and storage that meet minimum requirements of Tier 2 Voluntary Standards under CalGreen.

BE-5b Continue to establish and streamline standards, permit requirements and processes for electrification-related installations such battery storage systems to allow for easier implementation of these technologies in the City.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

BE-5c	Install a co-located community solar and storage facility to benefit affordable housing sites using Equity Resilience Incentives under the Self-Generation Incentive Program available through the California Public Utilities Commission.
BE-5d	Collaborate with PG&E, MCE, Contra Costa College, the Academy of Art University School of Motion Pictures & Television and/or other regional and local community partners to support and incentivize local on-site energy generation and storage resources. This could include: ▪ Connecting home and business owners, particularly those in vulnerable communities, to incentives for renewable energy and storage including Net Metering Programs through PG&E for bill credits, the federal investment tax credit, and the California Public Utilities Commission's (CPUC) Disadvantaged Communities-Single-Family Solar Homes (DAC-SASH) program, Self-Generation Incentive Program (SGIP) and Equity Resilience rebates that provide an upfront rebate for battery storage. ▪ Promoting installation of storage technology in concert with renewable energy infrastructure through multilingual education programs, outreach, and information provided via City platforms and communication channels. ▪ Create community spotlight campaigns highlighting interviews with Pinoleans who have paired installation of storage technology with renewable energy infrastructure. ▪ Providing workshops to large commercial developers and large business property owners on the benefits of microgrids and energy resilience. ▪ Creating a strike team to conduct engagement efforts for the commercial sector to identify ways the City can support commercial energy storage installations and neighborhood scale microgrid opportunities.
BE-5e	Expand the partnership with GRID Alternatives through increased funding/support and promote the benefits of renewable energy through multi-lingual educational programs to facilitate an equitable transition to renewable energy.
BE-5f	Partner with CBOs and homeowner's associations (HOAs) through the City's professional grant writing consultant, who will support the identification, conceptualization, preparation, and submittal of grant applications to secure funding for community-scale renewable energy projects. Utilize any grant funded projects as City pilot projects to demonstrate the success of the program and opportunities available.

"The faster we implement energy source revisions or investments; the more money Pinole will save in the long run."

– Pinole Community Member

Transportation

TR-1 *Create a safe and connected active transportation network linked to Pinole Creek to increase active transportation mode share to 5.5% by 2030 and 11.5% by 2045.*

TR-2 *Implement public and shared transit improvements and programs to achieve a 13% public transit mode share by 2030 and 18% by 2045.*

TR-3 *Develop programs and policies to discourage driving single passenger vehicles and to support the active transportation and public transit mode share goals of Measures TR-1 and TR-2.*

TR-4 *Increase passenger zero-emission vehicle (ZEV) use and adoption to 33% by 2030 and 100% by 2045.*

TR-5 *Increase commercial zero-emission vehicle (ZEV) use and adoption to 30% by 2030 and 100% by 2045.*

TR-6 *Electrify or otherwise decarbonize 15% of off-road equipment operations by 2030 and 100% by 2045.*

Transportation

TR-1 ***Create a safe and connected active transportation network linked to Pinole Creek to increase active transportation mode share to 5.5% by 2030 and 11.5% by 2045.***

In addition to reducing vehicle miles traveled (VMT), and in turn GHG emissions, increasing safe active transportation options provides health, mobility, and livability benefits. Increasing opportunities for safe active transportation—any self-propelled, human-powered form of transportation such as walking, biking, skating, or scooting —increases our opportunity for physical exercise and recreational activities. With the Pinole Creek traversing the City, we have a direct opportunity to provide interconnected network that links residential neighborhoods, schools, and commercial centers to Pinole Creek and thereby to each other (Action TR-1b). Active transportation also improves mobility, providing community members who cannot drive with affordable options to travel safely and independently. Simultaneously, it bridges the first- and last-mile gap by providing extended mobility options. This measure will include completion and implementation of the Active Transportation Plan (Walk and Roll Pinole), which is being prepared as of the time of this drafting.[27] The City will also periodically host open street events to transform streets into non-motorized spaces instantly and at a low cost. We can collectively overcome the traditional hurdles associated with active transportation (e.g., infrastructure constraints, safety concerns, and inadequate facilities) through thoughtful planning, investing in active transportation infrastructure, implementing safety improvements, and fostering a cultural evolution towards making Pinole a 15-minute City, which is defined as a community where people can access key amenities by actively commuting no more than 15 minutes.

27. https://ghd.mysocialpinpoint.com/pinole_atp

Key Performance Indicators:

- Active transportation mode share (%)
- Bike lanes installed (miles)
- Bicycle repair stations and parking structures installed (#)

Emissions Reductions
2030: 107
2045: 256

TR-1a

Conduct an analysis of existing bicycle and pedestrian conditions during the development of the Active Transportation Plan with a focus on identifying residential communities, commercial uses, schools, and open spaces currently disconnected from the Creek, due to freeways and lack of connections on busy roads. Build on the interactive map created to solicit community input regarding the Active Transportation Plan on "Pinole Speaks," the City's public input website to display the active transportation conditions

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

TR-1a cont.	identified and allow community feedback through the webpage.
TR-1b	Complete the Active Transportation Plan with a focus on creating safe and connected active transportation networks that link residential neighborhoods, schools, and commercial centers to Pinole Creek and thereby to each other. The plan will include: ▪ A prioritized list of pathways to be installed or upgraded to include shared-use paths, buffered bike lanes, bike boulevards, and separated bikeways. ▪ A prioritized list of bicycle parking or storage and equipment repair infrastructure. ▪ Information on additional infrastructure installed as part of the plan, such as trash and recycling receptacles to prevent waste from entering the creek due to increased usage. ▪ A schedule for reducing vehicle speed limits at prioritized locations. ▪ Available funding sources for infrastructure buildout. ▪ Use of sustainable materials, when feasible Prioritization shall focus on achieving an equitable active transportation system where all Pinole residents have access to critical connections and mobility options.
TR-1c	Partner with Contra Costa Transportation Authority to pursue funding from Caltrans' Active Transportation Program or similar funding opportunities to implement improvements from the City's Active Transportation Plan.
TR-1d	Partner with an entity such as the Metropolitan Transportation Commission, 511 Contra Costa, or the Contra Costa Transportation Authority to expand existing rebate programs to help families living in Pinole on low- and fixed-incomes purchase alternative modes of transportation (e.g., bicycles, scooters, rollerblades, skates, skateboards) and appropriate safety gear.
TR-1e	Partner with Bike East Bay and/or other non-profit groups to periodically close streets with connections and vistas of the Creek to cars to host walk/bike/roll (car-free) community events that demonstrate the benefits of a safe and connected active transportation network. Coincide these community events with regular active transportation events to encourage and reward residents for participation.
TR-1f	Partner with schools, youth sports leagues, the Pinole Police Department, the Pinole Community Services Commission and community groups such as Friends of Pinole Creek Watershed, 511 Contra Costa, Pinole Valley Earth Team, Pinole Rotary, and local Tribes to teach students and families bicycle and pedestrian safety and educate them on the safe route availability and the health and environmental benefits of walking and bicycling, as well as the history of the Pinole Creek ecosystem and surrounding natural lands.
TR-1g	Partner with an electric bike provider or rental company to pilot an electric-bike rental program at the Pinole Library. Track use of the program, including equity indicators, to monitor its success and evaluate continuation of the program.
TR-1h	Install bike repair stations along the Pinole Creek and other prime locations, and consider partnering with a local bike shop to provide quarterly bicycle repair support for residents traveling along the bike path or at a designated, central location.

TR-1j	Implement 100% of the Active Transportation Plan by 2030 to achieve a 5.5% active transportation mode share by 2030 and 11.5% by 2045.

"Most services can be accessed on foot, but there are some barriers and difficult routes, missing curb cuts and unmarked crossings. These improvements would make the city safer for pedestrians."

– Pinole Community Member

Transportation

TR-2 ***Implement public and shared transit improvements and programs to achieve a 13% public transit mode share by 2030 and 18% by 2045.***

Increasing public transit mode share provides benefits beyond reducing GHG emissions from vehicles. Public transit and shared transportation can shift communities towards a healthier future by reducing local air pollutants and boosting quality of life. Public transportation has substantially lower crash rates and lower crash severity than automotive travel. It also provides cost saving opportunities to the public due to savings from less fuel, maintenance, insurance, and registration costs.[28] Further, public transportation fosters public health improvements because most public transit users regularly walk or bike to access points. This trend can result in improved health and reduced medical expenses when coupled with the local air quality improvements that reduced mobile combustion of fossil fuels provides. Based on community responses to the CAAP survey, approximately 78 percent of respondents said that they do not utilize active transportation currently because it takes too long to get where they need to go. Approximately 61 percent of respondents also noted that they like the freedom of leaving and arriving on their own schedule. Therefore, implementation of this measure would include completing a prioritization study to determine transit priority corridors and the best potential locations for expansion to improve transit accessibility. Based on the prioritization study, a plan would be developed to expand routes and schedules; provide consistent labeling; create safe, clean, and convenient shelters; and monitor the routes to confirm they meet the needs of the community.

28. https://www.transportation.gov/mission/health/Expand-Public-Transportation-Systems-and-Offer-Incentives#:~:text=Investments%20in%20public%20transportation%20have,crash%20severity%20than%20automotive%20travel.

Key Performance Indicators:

- Public transit mode share (%)
- Bus service added (hours/week or miles)

Emissions Reductions

2030: 256
2045: 559

TR-2a

Partner with Western Contra Costa Transit (WestCAT) to conduct a prioritization study to determine transit priority corridors and best potential locations for WestCAT expansions (including the Hercules Intermodal Transit Center and Richmond BART Station) to reduce transit travel times from/to Pinole. The study shall include an analysis of existing shelters and schedules, a survey of existing commuter patterns, analysis of potential latent demand, and targeted outreach to residents living on low- and moderate-incomes

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

TR-2a cont.	and members of vulnerable communities to understand the concerns around or equity barriers to using public and/or shared transit.
TR-2b	Conduct a feasibility study to assess the potential impacts and costs of a park-and-ride facility in Pinole and identify potential locations.
TR-2c	Work with WestCAT to complete an analysis of potential design improvements, such as seating and shading bus shelters and along active transportation routes to increase use.
TR-2d	Work with WestCAT to improve transit accessibility for people with disabilities by ensuring physical accessibility (i.e., ramps, lifts, and tactile paving), providing both audio and visual information; training staff on how to assist people with disabilities and handle equipment; and actively engage people with disabilities in the decision-making process.
TR-2e	Partner with WestCAT and the Contra Costa Transportation Authority to implement a free public transit pilot program for students, foster youth, and unhoused youth in Pinole that makes it free for participants to travel via WestCAT.
TR-2f	Based on the prioritization studies (TR-2a - TR-2c), develop a plan to prioritize infrastructure improvements in existing neighborhoods that increase access to and use of public transit. The plan shall include projects and timelines to: ▪ Expand WestCAT routes and schedules ▪ Cohesively identify all existing and new shelters so that there is consistent branding, map formats and information displays (this would also support implementation of Measure EH-1) ▪ Provide safe and convenient shelters with benches, shade, hand sanitizing stations, area maps, and native plants ▪ Establish a schedule to annually monitor routes and schedules to confirm they meet the needs of the community
TR-2g	Engage with Caltrans to design and install a park and ride facility, which may include implementing efficient traffic flow systems.
TR-2h	Partner with 511 Contra Costa to educate Pinole residents, commuters, and students on available transit opportunities through free commute consultations and provide qualifying commuters with financial incentives to take transit, such as pre-loaded Clipper cards and a Guaranteed Ride Home program.
TR-2i	Partner with WestCAT and the Contra Costa Transportation Authority to pursue funding for the prioritization study and plan (TR-2a - c and TR-2f) through MTC's One Bay Area Grant funding, or similar funding opportunities.
TR-2j	Partner with the West Contra Costa Unified School District and/or private schools to evaluate mobility needs and expand bus routes where necessary to increase access to and use of school bus transportation to schools, including services for after-school hours for student and their guardians

Transportation

TR-3 ***Develop programs and policies to discourage driving single passenger vehicles and to support the active transportation and public transit mode share goals of Measures TR-1 and TR-2.***

We recognize that supporting active transportation and public transit will require making the systems more accessible, convenient, and safer (Measure TR-1 and TR-2) and coupled with implementation of programs and policies to discourage driving, we can realize meaningful transformations in our mobility network that impact much more than just transportation. Developing programs and policies to discourage driving single occupancy vehicles such as the development of Transportation Demand Management (TDM) Plans that provide a defined set of strategies aimed at maximizing traveler choices (Action TR-3a) will be a primary component of this measure.[29] This measure also includes an action to create a Pinole Parklets program in existing parking areas with a distinctive design that incorporates seating, greenery, and/or bike racks and accommodate unmet demand for public space on neighborhood retail streets or commercial areas (Action TR-3b). Implementation of this measure would also include developing partnerships to identify gaps in the mobility network to prioritize cross-jurisdictional collaboration and connect the region, reducing the need for single occupancy vehicles. Additionally, the City will analyze and work to mitigate the potential community impacts and feasibility and benefits of implementing disincentive-based policies for driving single-passenger vehicles.

29. https://ops.fhwa.dot.gov/plan4ops/trans_demand.htm

Key Performance Indicators:

- Ordinance adopted
- Feasibility study status
- Parklets installed (#)

Emissions Reductions Not Quantified

TR-3a Adopt an ordinance requiring all employers to develop a Transportation Demand Management (TDM) Plan and require large employers (i.e., more than 25 employees) to include money-based incentives for employees to bike, walk, carpool, or take public transit to work. Additionally, complete a comprehensive study to establish an Average Vehicle Ridership (AVR) that accurately reflects Measure TR-1 and TR-2's goals.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

TR-3b	Create a Pinole Parklets Program to install parklets in the downtown and other commercial areas of the City and engage with businesses to gain sponsorship for the parklets.
TR-3c	Require informative signage be included at the parklets designed through the Pinole Parklet Program (Action TR-3b) that provide information on the benefits of ecosystem services at all scales, and the health impacts associated with reducing single occupancy vehicle trips.
TR-3d	Partner with local jurisdictions, public transit providers, and CBOs to identify gaps in the mobility network that can be prioritized for cross-jurisdictional collaboration to connect the region and reduce the need for single occupancy vehicles.
TR-3e	Conduct an analysis of the potential community impacts and feasibility and benefits of implementing disincentive-based policies for driving single-passenger vehicles, including a congestion charge program, limiting parking options, increased local taxes (income tax, gasoline tax, or car registration tax), and Transportation Network Companies (TNC) user taxes. Include analysis of potential equity impacts of the policies and identification of potential equity metrics to address equity concerns when developing policies.
TR-3f	Consider opportunities to fund transportation system improvements through disincentive-based program revenues and/or a tiered TDM fee for employers who do not achieve the established AVR by 2030 to establish an equitable transition to more sustainable modes of transportation.
TR-3g	Conduct AVR surveys of Pinole businesses every three years to determine weekday AVR and mode share split, perceived barriers to telecommuting and alternative modes of transportation (i.e., modes other than single-occupancy vehicles), and interest in sustainable transportation amenities, infrastructure, and events/resources.
TR-3h	Consider development applications that will improve the community by increasing density in transit-rich areas and connecting residents of multi-family, and/or affordable housing sites to public and shared transit options.

"Better active transportation infrastructure seems achievable to me and seems it could provide economic benefits as well.

– Pinole Community Member

Transportation

TR-4 ***Increase passenger zero-emission vehicle (ZEV) use and adoption to 33% by 2030 and 100% by 2045.***

Widespread adoption of passenger ZEVs provides a range of benefits including reduced GHG emissions from avoiding local combustion of fossil fuels; improved public health through enhanced overall air quality;[30] and cost savings by reducing dependence on traditional fuel sources.[31] However, it is important that the transition is equitable and accessible. Purchasing or leasing a ZEV and upgrading infrastructure to allow for charging can be an upfront cost difficult for members of disadvantaged and vulnerable communities to prioritize. Similarly, residents of rental and multi-family properties may lack the property rights to make upgrades. Therefore, we will focus on an equitable transition to ZEVs through installation of 270 publicly available chargers by 2030, implementation of financing mechanism, and education. Locations for the chargers will be determined during completion of a preliminary feasibility study that will include an evaluation of opportunities and prioritization of locations to increase the equitable distribution of publicly available EV chargers to residents of multi-family homes and residents living on low- and moderate-incomes, as well as consideration for optimizing daytime charging by placing chargers at locations where people are most frequently during the day. The City will also work with MCE and PG&E to incentivize residential electric vehicle charger installations and panel upgrades through on-bill financing.

30. https://www.sciencedirect.com/science/article/abs/pii/S0048969723003765?via%3Dihub
31. https://afdc.energy.gov/fuels/electricity_benefits.html

Key Performance Indicators:

- Passenger ZEV adoption (%)
- Publicly accessible chargers installed (#)

Emissions Reductions 2030: 3,832 2045: 13,839

TR-4a Adopt an EV reach code by 2025 requiring new commercial and multifamily construction to install the minimum number of EV chargers based on Tier 2 CalGreen requirements (20% of total parking spaces).

TR-4b Adopt an EV reach code by 2026 requiring major multifamily building retrofits to install the minimum number of EV chargers based on Tier 2 CalGreen requirements (20% of total parking spaces) and major commercial retrofits (with a square footage larger than 10,000 square feet or

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

TR-4b cont.	modifications for electric service panels) to meet CalGreen requirements for "EV Ready" charging spaces and infrastructure.
TR-4c	Adopt an ordinance that bans the development of any new, or expansion, renovation or relations of any existing, fossil fuel gas stations in the City prior to the expiration of the Urgency Ordinance. The process should include: 1. Determining and defining an outreach process. 2. Preparing a General Plan, Specific Plan, and Zoning Ordinance text amendment, which would establish Service Station land use as Not Permitted by Table 17.20.030-1 in the PMC, making all existing service stations legal non-conforming and subject to Section 17.14.080 of the Municipal Code. 3. Determine if any streamlining enhancements to existing provisions in the PMC that incentivize the expansion, modification, or retrofit of an existing service station to incorporate biodiesel or other alternative fuels or charging stations for electric vehicles should be considered. 4. Take the Amendments through the required public review process, including Planning Commission recommendation and City Council adoption. 5. Continue to direct staff to explore options for additional charging at City-owned/maintained properties and private facilities for public benefit.
TR-4d	Update Pinole's permit process for EV chargers to create a streamlined process for residents and businesses that is consistent with the State's Electric Vehicle Charging Station Permitting Guidebook (as well as AB 970, AB 1236, and Pinole Municipal Code Chapter 15.58).
TR-4e	Prepare a feasibility study to evaluate opportunities for installation of EV charging stations at City owned facilities. The feasibility study will assess electrical capacity, electrical demand, financial constraints, funding sources and parking utilization to provide a prioritized list of locations to install new publicly accessible EV charging stations.
TR-4f	In the feasibility study, include evaluation of opportunities and prioritization of locations to increase the equitable distribution of publicly available EV chargers to residents of multi-family homes and residents living on low- and moderate-incomes, as well as consideration for optimizing daytime charging.
TR-4g	Work with MCE and PG&E to incentivize residential electric vehicle charger installations and panel upgrades through on-bill financing. Promote the incentives through multi-lingual outreach material on the City's website and at community events.
TR-4h	Work with MCE to promote and provide technical assistance for their Residential EV Rate Plan and MCE Sync charging app to help community members charge during off-peak hours and save money on home charging.
TR-4i	Coordinate with community-based organizations, local agencies, and non-profits such as Charge Up Contra Costa, 511 Contra Costa, and Cool the Earth to conduct zero-emission vehicle (ZEV) education events for residents and targeted events for residents living on low- and moderate-incomes as well as residents living in multi-family buildings that would engage the community to evaluate the barriers to ZEV adoption, promote information on the costs and benefits of owning ZEVs, and detail the steps on how to receive incentives for ZEVs.

TR-4j	Work with Contra Costa County Department of Conservation and Development to create an EV charging etiquette policy that encourages a seamless charging experience, fosters community collaboration, and promotes sustainable practices for the benefit of all electric vehicle users and the environment.
TR-4k	Develop an equitable charging fee structure that provides accessibility for all users, regardless of socio-economic background, fostering inclusivity and promoting widespread adoption of electric vehicles.
TR-4l	Develop outreach and education materials and distribute them to local businesses, property owners, and developers on the financial (e.g., new funding streams), environmental, and health, and safety benefits of ZEVs. Provide information on available funding opportunities and the City's streamlined permitting process.
TR-4m	Collaborate with neighboring jurisdictions and the Contra Costa Transportation Authority to develop a zero-emission vehicle car share network.
TR-4n	Coordinate with car share companies and community-groups to develop an affordable, zero-emission vehicle car share program to serve affordable housing and/or multifamily developments with a priority to target residents living on low- and moderate-incomes.
TR-4o	Based on the prioritized list of locations developed through actions TR-4d and TR-4e, install at least 267 new publicly accessible level II chargers by 2030 and 323 by 2045, through public-private partnerships and on City-owned properties.

Transportation

TR-5 ***Increase commercial zero-emission vehicle (ZEV) use and adoption to 30% by 2030 and 100% by 2045.***

Commercial ZEVs, such as electric delivery vehicles, can help to reduce operating costs by minimizing fuel and maintenance expenses. For this transition to be successful, it is important that businesses of all sizes have access to the resources and support they need to make the transition. Diesel-powered commercial vehicles are a significant source of particulate matter and other harmful pollutants, which can have negative health impacts, especially for vulnerable populations such as children, older adults, and those with respiratory conditions. By transitioning to ZEVs, businesses can contribute to cleaner air and a healthier community and play an active role in establishing the most sustainable future. Implementation will include analyzing the commercial vehicle fleets in the City and identifying employers to work with to accelerate ZEV adoption through outreach and education. Additionally, the City will identify opportunities to fund additional charging infrastructure through leveraging public/private partnerships and implement local tax breaks to incentivize commercial fleet electrification, where feasible.

Key Performance Indicators:

- Commercial ZEV adoption (%)

Emissions Reductions
2030: 2,303
2045: 8,186

TR-5a Work with the Bay Area Air Quality Management District, Pacific Gas & Electric, and or similar entities to identify and provide funding for electric vehicles and charging infrastructure for disadvantaged or vulnerable business owners.

TR-5b Create a summary of commercial vehicle fleets in Pinole and identify employers to work with to accelerate ZEV adoption through targeted education.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

TR-5c	Encourage commercial vehicle fleet operators to accelerate electrification by providing them educational material on the benefits of zero emission vehicles (e.g., fuel cost savings through networked charging and current availability of zero emission vehicles ahead of State mandates), educating them on the City's streamlined permitting process, and compiling and distributing information on potential funding opportunities.
TR-5d	Implement local tax breaks to incentivize commercial fleet electrification.
TR-5e	Investigate opportunities to help fund additional EV charging infrastructure by leveraging public/private partnerships and ensuring the City is charging for EV infrastructure use at City-owned facilities.

Transportation

TR-6 ***Electrify or otherwise decarbonize 15% of off-road equipment operations by 2030 and 100% by 2045.***

Decarbonizing off-road equipment offers significant GHG emission reductions and air quality improvements. Off-road equipment, such as landscaping equipment and construction equipment, emit both GHG emissions (approximately 7 percent of the City's total emissions, as shown in Chapter 2) and local smog-forming emissions. In California, total smog-forming emissions[32] from small off-road engines exceed emissions from light-duty passenger vehicles.[33] Operating a commercial gas-powered leaf blower for one hour emits smog-forming pollution comparable to driving a new light-duty passenger car about 1,100 mile or over 15 hours of driving. These characteristics mean zero-emission alternatives for off-road equipment can help create a cleaner and healthier City. However, decarbonizing off-road equipment requires upfront costs that can be difficult for residential and business members of disadvantaged and vulnerable communities to navigate. An equitable transition to zero-emission off-road alternatives, as supported specifically by Actions TR-6d and TR-6e, requires a multi-faceted approach that addresses both the technical and financial barriers to adoption. As part of this, the City will develop a multi-lingual Off-road Equipment Replacement Outreach Campaign that provides information to contractors, residents, and fleet operators in the City.

32. Although not a GHG emission, smog is directly related and is the most pervasive form of air pollution, immediately impacting our ability to breathe and causing underlying health conditions to worsen. https://ww2.arb.ca.gov/our-work/topics/air-pollution
33. https://ww2.arb.ca.gov/resources/fact-sheets/sore-small-engine-fact-sheet

Key Performance Indicators:

- Off-road equipment decarbonized (%)

Emissions Reductions
2030: 1,245
2045: 10,721

TR-6a Create a phased ordinance by 2026 to ban the local operation of gasoline and diesel-powered off-road equipment by type (e.g., lawn and garden, construction), including banning local operation of gasoline and diesel-powered small off-road equipment (SORE) by 2028. Update the ordinance based on a regular review of relevant state regulations, regional rules, and available technology.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

TR-6b	Establish a communication and outreach program to raise awareness of the ordinance, educate community members on the benefits of and funding opportunities for offroad decarbonization, and collect data on offroad fleet and decarbonization trends in the community (e.g., through outreach sampling and surveying).
TR-6c	As part of Action TR-6b's program, investigate off-road equipment fleets in the City to identify fleets with the highest decarbonization potential, fleets owned by small and minority businesses that will need targeted support and incentives to decarbonize or electrify, and fleets that do not currently have zero-emission alternatives. Utilize these findings to develop the phased off-road ordinances.
TR-6d	As part of Action TR-6b's program, develop a multi-lingual Off-road Equipment Replacement Outreach Campaign that provides information to contractors, residents, and fleet operators in the City, with a target towards those identified in Action TR-6c. Information should include equivalent alternatives to fossil-fueled off-road equipment, public health, and safety benefits of alternative equipment technology, and funding opportunities available (i.e., Clean Off-Road Equipment Voucher Incentive Program [CORE]).
TR-6e	Partner with surrounding jurisdictions and the Bay Area Air Quality Management District (BAAQMD) to develop a rebate and incentive program for upgrading off-road equipment and switching to electric or biofuels. Develop the program with a focus on procedural equity and prioritize funding distribution to disadvantaged and vulnerable communities.

Solid Waste

SW-1 *By 2025, reduce organics to landfill by 75% to meet or exceed SB 1383 organic waste diversion requirements through composting and edible food recovery.*

SW-2 *Reduce landfilled inorganic waste 35% by 2030 and 90% by 2045.*

SW-3 *Meet CalGreen's current 65% construction and demolition (C&D) materials diversion requirements on all covered projects.*

SW-4 *Analyze opportunities to enhance the City's Wastewater Treatment Plant to divert organic waste from the landfill and increase organics recovery.*

SW-5 *Establish new programs to meet the City's SB 1383 annual procurement target (i.e., 1,073 tons of compost) by 2030.*

Solid Waste

SW-1 ***By 2025, reduce organics to landfill by 75% to meet or exceed SB 1383 organic waste diversion requirements through composting and edible food recovery.***

Organic waste, which includes any material that is biodegradable and comes from either a plant or an animal, accounts for more than 33 percent of the State's waste stream.[34] In California alone, there are more than 6 million tons of food waste or food scraps thrown into landfills every year, representing approximately 18 percent of all materials that go to a landfill.[35] Methane gas, a powerful GHG pollutant 28 times more potent than carbon dioxide, as detailed in Chapter 2 and Appendix A, is released from the anaerobic or oxygen free decomposition of organic waste, making landfills a significant source of GHG emissions. Landfilled organic waste emits 20 percent of the state's total methane. Therefore, diverting organic waste from landfills through the recovery of edible food for human consumption or through composting prevents these emissions. To implement a successful organic waste diversion program, the City will establish partnerships with local Community Based Organizations to provide clear, multi-lingual outreach materials for high organic generation commercial accounts to educate management and staff about best practices in food waste reduction and surplus food donation (Action SW-1d) as required by SB 1383. Implementation will include developing a comprehensive organics collection and edible food recovery program for low income and fixed income people to ensure access to edible surplus food recipients such as food banks and other food recovery organizations. Additionally, because names have meaningful connotations, the City's traditional "Dumpster Day" will be rebranded into the City's "Resource Recovery Day," in both name and concept.

34. https://www.sciencedirect.com/science/article/abs/pii/S0048969723003765?via%3Dihub
35. https://afdc.energy.gov/fuels/electricity_benefits.html

Key Performance Indicators:

- Landfilled organic waste (% change)
- Edible food diverted (%)

Emissions Reductions
2030: 2,934
2045: 3,570

SW-1a Through MOUs with the City's waste haulers, establish requirements by 2024 for waste haulers to perform annual performance assessments to determine compliance with SB 1383 requirements. If the performance assessments show the hauler is not on target, meet with the hauler and RecycleMore staff to establish prioritized actions for the hauler and/or RecycleMore to complete. Additionally, utilize the assessments to identify trends in contamination and integrate lessons learned into the educational program as part of Action SW-1e.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

SW-1b	Partner with RecycleMore, Sustainable Contra Costa, or similar entities to complete community based social marketing (CBSM) targeted outreach and education campaign by 2025 to high organic generation commercial accounts to educate and train commercial generators' management and staff about best practices in food waste reduction and surplus food donation. As part of this effort, develop successful case studies for Pinole food facilities to provide best practices, cost savings and other methods to energize food facility managers and staff to fully participate in the organics diversion and edible food recovery programs.
SW-1c	In concert with Economic Development programs, establish a Pinole business outreach campaign and recognition program by 2025 to celebrate restaurants/food facilities with the highest diversion and edible food recovery success. Create a space on the City's CAAP website to highlight the campaign and leaders in the community, as well as provide a plaque or alternative community recognition that emphasizes the successful initiatives.
SW-1d	Establish a program by 2024 to distribute organics pails at grocery stores in lower-resourced areas and community events (e.g., Farmers Markets, California Coastal Cleanup Day, Pinole's Dumpster Day, Earth Walk). Additionally, directly connect with property owners/managers of low- and moderate- income rental housing to distribute food pails directly to housing units. Through the program, track how many pails are distributed quarterly.
SW-1e	Establish and maintain an ongoing education program informing the community about compostable materials and upcoming at-home composting workshops, including regularly updated guidelines on composting, especially paper, distributed bi-annually and made available at the City permit counter, grocery stores, as well as at farmers' markets, California Coastal Cleanup Day, Pinole's Dumpster Day, Earth Walk and other community events.
SW-1f	Transform Pinole's "Dumpster Day" into "Resource Recovery Day," in both name and concept, by introducing a community swap meet element where residents exchange/recycle household goods in preference to conventional commerce and waste. At the event, the City can provide education about organics diversion (including the concept of closing the loop for organics material and edible food recovery) and the "Buy Nothing" movement, and feature special compost giveaway events (e.g., free organics pails). The City will also accept traditionally discarded materials (e.g., glass, clothing, furniture, etc.) and trash item at the Resource Recovery Day.
SW-1g	Work with local grocery stores and retail food markets, the Contra Costa and Solano Food Bank Rescue Program, RecycleMore, and community groups to understand the criteria for acceptable food for recovery and establish a more robust food rescue and distribution program to divert additional edible food to food insecure residents.
SW-1h	Identify and support school organizations in the City (e.g., leadership, sustainability, and environmental groups or clubs) to start "Go Organics" programs to initiate, educate, and implement robust organics collection programs on campus in collaboration with the City's waste hauler and RecycleMore.
SW-1i	Develop presentations for all schools in Pinole to: ▪ Educate students, staff, and teachers on how to implement an efficient, yet robust organics collection program. ▪ Educate students, staff, and teachers on the benefits of diverting organics and reducing GHG emissions.

SW-1i cont.	▪ Engage school leadership on the benefits of establishing a 'closed loop partnership' regarding organics. This could include adding organics end products such as mulch and compost delivered from the City's waste hauler nearby composting facility to school gardens and landscaping, thereby eliminating need for pesticides and herbicides, and increasing water retention in school landscaping.
SW-1j	Continue to partner with the City's waste hauler to include quarterly multi-lingual inserts in residential and commercial billing to highlight important programs and initiatives, including the single-use plastic ban and the no-cost organics pails available to residents and the composting programs in Action ID SW-1h, as well as new programs as they are created.
SW-1k	Develop a comprehensive outreach program to educate Homeowner Associations, neighborhood associations, and communities on social media platforms such as NextDoor and Pinole Community Television on the City's organic waste diversion requirements and available programs and resources to increase diversion.
SW-1l	Implement a comprehensive organics collection and edible food recovery program for low income and fixed income people to ensure access to edible surplus food recipients such as food banks and other food recovery organizations.
SW-1m	Fund the comprehensive organics collection and edible food recovery program using CalRecycle's SB 1383 grant funding cycle.
SW-1n	Partner with local waste management providers, food recovery organizations, and West Contra Costa Unified School District, private schools in Pinole, or similar entities, to analyze existing food waste generation, disposal practices, and potential sources of edible surplus food.
SW-1o	Install compost bins throughout the City in all locations where there are landfill and recycling bins to collect organics generated. Ensure that there is clear signage and the bins are emptied routinely. Incorporate the hauling requirements into the waste hauler's contract to confirm proper management and disposal.

Solid Waste

SW-2 ***Reduce landfilled inorganic waste 35% by 2030 and 90% by 2045.***

Reducing landfilled inorganic waste does not directly reduce GHG emissions, however, it is a supportive measure that contributes to the overall goals of the CAAP. Inorganic waste is composed of waste that is not plant or animal-based, including synthetic materials (plastics, polyester, acrylic, rubber, etc.) sand, dust, and glass. As we continue to reduce and change our consumption patterns, we can make conscientious decisions to implement new solutions to reduce waste. As such, waste reduction is key, followed by implementing new waste management solutions, such as adopting a Zero Waste Policy and Zero Waste Strategic Plan (Action SW-2a) to guide waste reduction and establishing partnerships with unique organizations to create recycling programs for hard-to-recycle items (e.g., snack pouches), as outlined in Action SW-2b. Additionally, we will create new policies and programs to collect materials such as hazardous waste materials (Action SW-2i); establish partnerships with local businesses, nonprofits, and community groups or organizations to create pop-up repair cafes for commonly broken and easily repaired items (Action SW-2d); sponsor businesses to host refill pop-ups at community events (Action SW-2h); and partner with schools to reduce single-use foodware, convert necessary single-use plastic foodware to compostable foodware, and educate students on closing the loop (Action SW-2j).

Key Performance Indicators:

- Landfilled inorganic waste (% change)

Emissions Reductions Not Quantified

SW-2a	Adopt a Zero Waste Policy and Zero Waste Strategic Plan to guide and detail methods to meet the reduction target of 35% by 2030 and 90% by 2045. Include in the Zero Waste Strategic Plan, the milestones of the Sustainable Foodware Ordinance to phase in the reduction, and subsequent elimination of, single-use plastic foodware by food facilities.
SW-2b	Partner with an entity such as Terracycle to create a recycling program at City-owned and operated buildings and other community-based locations

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

SW-2b cont.	to collect hard to reuse/recycle products, such as snack pouches.
SW-2c	Partner with local businesses, nonprofits, and community groups or organizations to establish pop-up repair cafes for commonly broken and easily repaired items. Additionally, engage local home improvement businesses and partner with the Pinole Library to promote reuse by increasing accessibility to shared tools through a tool lending program. In addition to providing available resources, work with experts in various fields to provide quick reference guidance documents or record short videos that residents can refer to when borrowing specific equipment to learn the most effective ways of using the tools available.
SW-2d	Continue the City's single-use plastic education efforts and integrate the efforts into a citywide education program, 'Pinole's Path to Zero Waste,' to expand outreach and resources about zero waste goals and focus education on specific benefits to the City (e.g., reduction of single-use plastic pollution flowing into Pinole Creek and San Pablo Bay, community savings from reduce and reuse efforts).
SW-2e	Partner with community-based organizations such as ReThink Disposables and RecycleMore to engage the Bayfront Chamber of Commerce members and other Pinole businesses to educate the business community about the benefits of reusables and inform them about the new Sustainable Foodware Ordinance.
SW-2f	Work with compostable distributors to achieve competitive pricing for compostable foodware to increase compliance with the Sustainable Foodware Ordinance.
SW-2g	Sponsor businesses to host refill pop-ups at community events (e.g., Farmers Market) where community members can purchase common household products and food in bulk using their own containers and create a network of local businesses that can provide local, bulk products with zero-waste packaging.
SW-2h	Create a Hazardous Waste Material Reuse Program that offers usable household hazardous waste collected at the West Contra Costa County Drive-Through to the community free of charge through a Material ReUse Store. Establish a schedule and location(s) to operate the Material ReUse Store alongside the household hazardous waste collection schedule and promote the store on the City's website and on the City's social media platforms.
SW-2i	Partner with public schools to reduce single-use plastic foodware, convert necessary single-use plastic foodware to compostable/reusable foodware, and educate students on closing the loop (i.e., Loop organics).
SW-2j	Secure financial grants and assistance from Rethink Disposables, CalRecycle's City/County Payment Program (CCPP), and others, to support businesses in developing pilot programs for reusable and returnable foodware and drop-off stations, purchasing and installing dishwashers, and overall gaining compliance with the Sustainable Foodware Ordinance. Highlight and support use of new grant funds available for small and minority-owned businesses to participate. Additionally, seek grant funding to support pop-up repair cafes and a tool lending program.

Solid Waste

SW-3 ***Meet CalGreen's current 65% construction and demolition materials diversion requirements on all covered projects.***

Because current best practices for emissions inventories and reduction plans do not consider lifecycle emissions, this measure will not result in direct GHG emissions attributable to the City, however, this measure aligns with the CALGreen requirements for construction and demolition (C&D) diversion. C&D materials consist of approximately 12 percent of California's current (2021) waste stream and include carpet, wood, aggregate, paint, shingles, and wallboard, as well as other materials that could be generated during site work and clearing processes, such as plastics (e.g., PVC pipes, packaging, etc.), glass, yard waste, and corrugated cardboard from packaging.[36] CalGreen mandates locally permitted building construction, demolition, and certain additions and alteration projects recycle and/or salvage for reuse a minimum 65 percent of the nonhazardous C&D debris (CALGreen sections 4.408, 5.408, 301.1.1 and 301.3).[37] To comply with these requirements, the City of Pinole has established a template to be submitted with each building permit that provides a "Construction Waste Management Plan" (CWMP).[38] To streamline submittal and compliance with the City's Municipal Code, there are three options to satisfy the requirements, as outlined in the CWMP, which include submitting a completed CWMP, using a waste management company that certifies a minimum of 65 percent diversion, or a waste stream reduction option that allows for a calculation. Implementation of this measure will help the City and contractors continue to meet the C&D diversion requirements.

36. https://calrecycle.ca.gov/condemo/
37. https://calrecycle.ca.gov/lgcentral/library/canddmodel/
38. https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/C&D%20Waste%20Management%20Forms%20(Autosaved).pdf

Key Performance Indicators:

- C&D diversion rate (%)

Emissions Reductions Not Quantified

SW-3a Include in, or amend, the franchise agreement with the City's waste hauler to require construction and demolition (C&D) diversion requirements with performance disincentives for non-compliance.

SW-3b Partner with RecycleMore and the City's waste hauler to complete an assessment of projects that were not compliant with the CalGreen C&D 65% diversion requirement. Determine an Action Plan to ensure similar future projects meet the 65% requirement. Complete ongoing review of projects

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

SW-3b cont.	collaboratively with RecycleMore to assess projects that are non-compliant and methods to ensure 65% diversion requirements are met.
SW-3c	Fully engage and inform permit applicants of the 65% requirements at the very beginning of the planning, building, and inspection process and collaborate with RecycleMore to integrate C&D diversion practices into the City's permit process.
SW-3d	Create and distribute a Contractors Guide to educate contractors on the requirements to meet the program conditions that include pre-permit documentation weight tags, post-permit documentation, and consequences for not meeting minimum diversion requirements.
SW-3e	Update C&D information on the City's website to include a more complete comprehensive list of documents, such as: • Pre-permit requirements • Green Halo system requirements • Locations for C&D materials processing/diversion • Weight tag requirements • Post project requirements and signature • Details regarding consequences for not meeting requirements.
SW-3f	Partner with the City's waste hauler, RecycleMore and other C&D organizations to educate on best practices for meeting CalGreen 65% requirements as part of Program 9 in the Housing Element.
SW-3g	Use financial grants and assistance from CalRecycle to fund and provide tools for low- and fixed-income projects to meet requirements.
SW-3h	Continue to offer online-waste tracking options for the community through the Green Halo compliance system, or a similar system, which allows for receipts to be verified online, streamlining the processes substantially

Solid Waste

SW-4 *Analyze opportunities to enhance the City's Wastewater Treatment Plant to divert organic waste from the landfill and increase organics recovery.*

The Pinole-Hercules Water Pollution Control Plant (WTP) was built in 1955 as a primary treatment facility and has undergone two major expansions and several modifications to meet the growing demands of the community.[39] Currently, the WTP treats all the residential and commercial wastewater generated in Hercules and most of the wastewater generated in Pinole, serving a combined population of approximately 40,000, with an average daily flow of 3.5 million gallons. The WTP removes solids and sanitizes the water, then discharges the clean wastewater into the Bay. Currently, solid materials are pumped into an anaerobic digester where methane gas is generated as well as heat as a byproduct. The methane gas is used to power the on-site cogeneration that provides electricity to the WTP, and the heat is captured and used to heat the digesters. To analyze the potential waste volume and assess facility upgrades needed to complete a pilot Organics to Energy Project, a feasibility study will be conducted to identify potential partners, waste volume, and necessary facility upgrades, as well as cost and GHG emissions reduction potential (Action SW-4a). In tandem with the completion of the feasibility study, the City will partner with an organics to energy company to help assess the feasibility of a pilot (Action SW-4c). This supports California's goals established in SB 1383 because biosolids are considered in the overall goal of 75 percent diversion and biosolids which are anaerobically digested and/or composted and land applied constitute a reduction in landfill disposal per the California Code of Regulations Section 18983.1(b)(6)(B).[40]

39. https://www.ci.pinole.ca.us/city_government/public_works/wastewater_treatment_plant
40. https://casetext.com/regulation/california-code-of-regulations/title-14-natural-resources/division-7-department-of-resources-recycling-and-recovery/chapter-12-short-lived-climate-pollutants/article-2-landfill-disposal-and-reductions-in-landfill-disposal/section-189831-landfill-disposal-and-recovery

Key Performance Indicators:

- Feasibility study status

Emissions Reductions: Not Quantified

SW-4a Complete a feasibility study to identify local partners, analyze the potential waste volume, and assess facility upgrades needed to complete a pilot Organics to Energy Project at the WWTP and the potential cost and GHG emission reduction impacts of such a project.

SW-4b Conduct case study assessments of other organics to energy projects at WWTPs to educate City decision makers, the public, and other interested parties on the feasibility of the pilot project and

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

SW-4b cont.	collaboratively with RecycleMore to assess projects that are non-compliant and methods to ensure 65% diversion requirements are met.
SW-4c	Partner with an organics to energy company to help assess the feasibility of a pilot project for the City and impacted communities.
SW-4d	Pursue funding opportunities (e.g.., CalRecyle) and financing alternatives to address capital costs for the pilot project.

Solid Waste

SW-5 ***Establish new programs to meet the City's SB 1383 annual procurement target (i.e., 1,073 tons of compost) by 2030.***

In addition to reducing organic waste generated, beginning in 2022, Senate Bill (SB) 1383 requires jurisdictions annually procure 0.08 tons of compost per capita. Meeting this annual procurement target provides Pinole with an opportunity to reduce GHG emissions, leverage economic development, and foster environmental benefits. Applying compost to City lands (e.g., parks, recreation areas, schools' landscape, and school gardens) is an effective way to sequester carbon by storing it in the soil rather than releasing it to the atmosphere. Compost also provides additional environmental benefits including improving soil health, increasing water conservation, and providing erosion control—all of which can be important benefits for community parks, institutions, and other natural working lands. Distribution of materials would be accomplished by establishing programs to procure and provide compost for City facilities, community garden organizations (e.g., Pinole Garden Club), and residential and commercial landscapers. Additionally, a program would be established to deliver compost to local schools and community organizations. As part of this measure, the City will develop an online mapping tool that will be used to identify existing community gardens in Pinole and provide a list of potential underused park space for expansion (Action SW-5h).

Key Performance Indicators:

- Annual compost procurement (tons)

Emissions Reductions

2030: 425
2045: 513

SW-5a

Establish a program to procure and provide compost for:

- The City's parks, recreation areas, schools' landscaping, and school gardens (where possible, identify opportunities to utilize the online mapping tool included in Action SW-5h to map out additional locations for application)
- Garden community organizations such as the Pinole Garden Club
- Residential and commercial landscapers

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

SW-5b	Amend or otherwise ensure that the Franchise Agreement for the City's waste hauler will provide organic waste products at reduced cost.
SW-5c	Establish a new program to deliver compost to local schools and community organizations. Expand free compost giveaways to residents, local urban farmers, and other organizations. Track the success of the program based on tons of compost given away and promote the program on the City's CAAP website and through the City's social media channels.
SW-5d	Complete a feasibility study in collaboration with RecycleMore to identify cost-effective end uses for organic waste products and methods to distribute the products.
SW-5e	Using established education materials from RecycleMore and other organizations, provide outreach and education to community organizations such as the Pinole Garden Club, in addition to Homeowner's Associations, resident groups, and commercial landscapers in Pinole on the benefits of using organic end products such as compost and mulch.
SW-5f	Partner with the City's waste hauler, or others who own large composting operations in close proximity to the City, to provide organic end product to the community at a cost-effective rate.
SW-5g	Use funds from the SB 1383 fee to pay for a portion of organic end use products. Use financial grants and assistance from CalRecycle to fund the purchase of organic end product. Focus effort on lower income projects to participate in program.
SW-5h	Establish an online mapping location hosted on a City website to identify existing community gardens and make a list of potential underused park space for expansion, setting internal key performance indicators for an appropriate number of new garden spaces.

Water

W-1 *Reduce per capita potable water consumption 10% by 2030 and 25% by 2045, from 2017 levels.*

W-2 *Increase the community's use, supply, and access to recycled water.*

Water

W-1 ***Reduce per capita potable water consumption 10% by 2030 and 25% by 2045, from 2017 levels.***

Water use generates GHG emissions through the consumption of energy to transport, treat, and distribute water. The interconnection between energy and water is considered the water-energy nexus. Reducing potable water consumption would, therefore, also reduce energy use. Climate change will continue to bring increased patterns of extreme precipitation, followed by drought. This new reality underscores the pressing need for communities to take proactive steps to reduce water consumption. By reducing community water consumption, we can help to preserve and protect this precious resource, establishing long-term availability and sustainability. Moreover, reducing water consumption can also lead to significant cost savings for both residents and businesses alike, as lower utility bills can translate into real monetary savings. Implementation of this measure will be achieved through adopting a Water Conservation and Water Shortage Contingency Program Ordinance to establish drought thresholds that trigger varying water use reduction strategies (Action W-1b). Additionally, we will complete a feasibility study as well as an economic study associated with adopting a Dual Drainage Plumbing Ordinance (Action W-1c). Water conservation fixtures and fittings will continue to be provided at low/reduced/no costs through partnerships with EBMUD, as well as rebates for appliances.

Key Performance Indicators:

- Per capita potable water consumption (% change)

Emissions Reductions Not Quantified

W-1a Continue to implement and enforce Pinole Municipal Code Chapter 15.54 (Water Efficient Landscaping) to encourage use of efficient irrigation systems, greywater usage, onsite storm water capture, and limit the portion of landscapes that can be covered in turf.

W-1b Adopt a Water Conservation and Water Shortage Contingency Program Ordinance to establish drought thresholds that trigger varying water use reduction strategies. The Ordinance will focus

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

W-1b cont.	primarily on domestic water use, health and sanitation, and fire protection.
W-1c	Perform a study to understand the feasibility and potential potable water savings of adopting a Dual Drainage Plumbing Ordinance. The feasibility study will help the City determine the size threshold for future development projects subject to the Ordinance.
W-1d	Upon completion of the Feasibility Study in Action W-1c, adopt an appropriate Dual Drainage Plumbing Ordinance.
W-1e	Continue to comply with SB 1087 and Municipal Code Chapter 17.32 (Affordable Housing Requirements) requirements to provide priority water and sewer service allocations to affordable housing developments.
W-1f	Continue to partner with East Bay Municipal Utility District's to provide water conserving fixtures/fittings and rebates for appliances to residents throughout Pinole, with a focus on disadvantaged and vulnerable communities to reduce utility bill burdens. Provide specific updates to the community as new programs are released, such as featuring a new indoor plumbing program to help Customer Assistance Program participants find and fix indoor leaks.
W-1g	Implement a comprehensive, coordinated educational initiative focused on property owners, landlords, property management firms, homeowners' associations, and occupants to reduce water usage in homes and businesses. This campaign will incorporate the water conservation messaging of the East Bay Municipal Utility District (EBMUD), utilizing various communication channels such as publications, websites, community events, workshops, and bill inserts. It will also provide details on available incentives for water-saving appliances, fittings, fixtures, and efficient landscaping irrigation systems, including those offered by EBMUD. Additionally, the campaign will focus on reaching disadvantaged and vulnerable communities to alleviate the burden of utility bills.
W-1h	Partner with EBMUD, the Contra Costa Master Gardeners, and/or Pinole Garden Club to develop community programs to encourage water-wise landscaping and watering practices and to provide a hands-on learning experience such as sheet mulching lawn conversions for members of the community. Include promotion of EBMUD Lawn Conversion rebates.
W-1i	Continue to partner with Rising Sun to provide Green House Calls to residents to provide high-efficiency fixtures/fittings and leak detection tests.
W-1j	Work with EBMUD to provide existing commercial entities that have decorative or non-functional turf onsite with the education and resources necessary to transition to regenerative landscapes with a goal of replacing all existing commercial decorative or non-functional turf by 2030.

Water & Wastewater

W-2 *Increase the community's use, supply, and access to recycled water.*

Increasing recycled water use in the City can increase adaptative capacity while providing environmental and economic benefits. Recycled water can serve as an additional water supply that can be utilized during times of extreme drought or water scarcity. Therefore, as the first step, the City will continue to work with EBMUD to complete a feasibility study to identify opportunities to increase supply of recycled water to the City (Action W-2a). Using recycled water can reduce the environmental impact of upstream water processes when compared to those for "new" water — such as extraction or the energy used to pump and deliver water long distances. When used to replace existing drinking water supplies for non-potable uses (e.g., irrigation and industrial uses), recycled water can lower water utility bills. Additionally, recycled water can be used for groundwater recharge which helps replenish depleted aquifers and plays a crucial role in enhancing water availability during drought periods and mitigating the effects of over-extraction. By injecting treated recycled water into underground aquifers, the natural storage capacity of groundwater is replenished, creating a sustainable and reliable source of water for future generations. These characteristics equate to a dependable and affordable water supply that provides local businesses with an incentive to remain in the City.

Key Performance Indicators:

- Recycled water use (% change)

Emissions Reductions Not Quantified

W-2a Continue to work with EBMUD to complete a feasibility study to identify opportunities to increase supply of recycled water to the City. The feasibility study will:

- Analyze opportunities to expand purple piping infrastructure
- Identify opportunities and technologies to increase recycled water supply
- Evaluate potential impacts to cost of service

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

W-2a Cont.	▪ Investigate ways to maintain or decrease costs of service through the project ▪ Identify customers that would benefit from receiving recycled water within City of Pinole such as industrial uses or parks and adjacent to the City, in Hercules or other surrounding jurisdictions, as applicable
W-2b	Pursue funding opportunities at the state and federal level, such as the Clean Water State Revolving Fund and the US Bureau of Reclamation's WaterSMART grants, to fund recycled water infrastructure and to increase the equitable distribution of recycled water in the City.
W-2c	Investigate working with EBMUD to promote the installation of greywater equipment in homes and businesses through a multi-lingual Laundry-to-Landscape outreach campaign. The campaign shall include: ▪ Educational information on the environmental and financial benefits of greywater systems ▪ Information on how to install and use the systems, including information on EMBUD greywater rebates ▪ Distribution of educational materials at the City's permitting counter ▪ Supplemental event(s) hosted with EBMUD or industry expert to educate community members on the installation and use of the systems, including an existing residential greywater system demonstration ▪ Direct outreach to multi-family property owners.
W-2d	Create and implement a phased outreach campaign to educate the community on the benefits of recycled water as well as dispelling misconceptions to and increase community use.
W-2e	Upon completion of the feasibility study to identify opportunities to increase supply of recycled water to the City, work with EBMUD to develop a Recycled Water Infrastructure Enhancement Plan that outlines the potential for system expansion, identifies opportunities, as applicable, to integrate recycled water sources into non-potable water networks for irrigation, and the promotion of educational campaigns that raise awareness on what recycled water is and how it is used.

Carbon Sequestration

CS-1 *Increase carbon sequestration and prepare the urban forest for climate change, extreme heat, drought, and wildfire by adopting policies developed through the Community Urban Forest Plan.*

CS-2 *Increase nature-based and technological carbon sequestration opportunities in Pinole.*

Carbon Sequestration

CS-1 *Increase carbon sequestration and prepare the urban forest for climate change, extreme heat, drought, and wildfire by adopting policies developed through the Community Urban Forest Plan.*

To help sequester GHG emissions in the City and increase resilience to extreme heat events, there are long-term preventative strategies that we can employ such as the strategic planting of trees and vegetation cover. The Community Urban Forest Plan will include an inventory of the existing urban forest as a baseline and identify areas in Pinole that have below average canopy coverage (Action CS-1a). Once identified, a phased timeframe will be developed to implement a planting program focused on eliminating significant differences in tree canopy coverage between census blocks. In addition to increasing tree canopy, this measure will also increase and protect biodiversity – which is central to California, as the state contains some of the highest rates of native and endemic species in the world.[41, 42] The City of Pinole, along with the rest of North America's Pacific coast is considered the California Floristic Province hotspot, which contains a wide variety of ecosystems as well as species that evolve and live only in those spaces. In that same vein, pressures from human populations have rendered California one of the four most ecologically degraded states in the United States of America. Therefore, this effort works to preserve the urban forest canopy and continue to provide carbon sequestration value as trees mature. A diverse and resilient ecosystem fosters ecological balance, enhances pollination of crops, provides essential ecosystem services, supports sustainable agriculture, and contributes to the overall stability of ecosystems, ultimately benefiting human health, food security, and the long-term sustainability of our communities.[43]

41. https://calrecycle.ca.gov/condemo/
42. https://calrecycle.ca.gov/lgcentral/library/canddmodel/
43. https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/C&D%20Waste%20Management%20Forms%20(Autosaved).pdf

Key Performance Indicators:

- Trees planted (#)
- Standard deviation in canopy coverage across census blocks (#)

Emissions Reductions Not Quantified

CS-1a Develop and adopt a Strategic Tree Plan by 2026 to identify and prioritize tree planting areas in the City. The Plan will:

- Inventory the existing urban forest as a baseline and identify areas in Pinole that have below average canopy coverage (such as census block groups 60133640021, 60133640023, and 60133922004) and high urban heat island effects.
- Design a tree planting program focused on eliminating significant difference in canopy coverage between census blocks by 2040.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CS-1a Cont.	▪ Identify a phased timeframe for program implementation. ▪ Establish a management plan for existing trees that will focus on promoting street tree health, enhancing resilience, increasing the environmental benefits and co-benefits from trees, and engaging the community in urban forest management. ▪ Establish a tracking system to assess progress towards annual goals and annual benchmarks.
CS-1b	Collaborate with community-based organizations with connections to disadvantaged and vulnerable communities in the development of the Urban Forest Inventory and Management Plan and share the plan on the City's website.
CS-1c	Continue protecting existing trees on private property through the provisions of PMC Chapter 17.96 (Tree Removal) and continue to enforce the Municipal Code Chapter 17.996, which requires either planting on-site replacement trees or paying an in-lieu fee equal to at the value of the protected tree as a condition of approval when a Tree Removal Permit is issued, among other requirements.
CS-1d	Prioritize tree planting in areas with populations most at risk to extreme heat impacts (older adults, children, outdoor workers, individuals with disabilities, transit dependent individuals, and individuals with chronic health conditions) pursuant to the Urban Forest Inventory and Management Plan.
CS-1e	Review, enhance, update, and regularly maintain the City's existing "Tree" webpage with relevant information, such as best practices for watering and fertilizing trees, guidelines for pruning and maintenance, information on local tree species, and resources for reporting tree damage or disease. Additionally, provide information on the benefits of a healthy tree canopy, including improved air and water quality, reduced urban heat island effects, and increased property values.
CS-1f	Amend the Municipal Code to include street tree requirements for all zoning districts, increase shade tree requirements for new developments, and include increased permeable surface requirements for new development or substantial redevelopment.
CS-1g	Continue to pursue and obtain grant funding for tree planting and urban forest management. Identify and apply for applicable federal (e.g., USDA) and state (e.g., California ReLeaf, Affordable Housing and Sustainable Communities Program (AHSC), Cal Fire's Urban and Community Forestry Program, and the California Natural Resources Agency's Urban Greening Program) available grants for tree planting and urban greening projects.
CS-1h	Develop a City incentive program for new tree plantings on private properties with a focus on members of disadvantaged and vulnerable communities and in areas where there is below-average tree equity or canopy coverage, pursuant to the Urban Forest Inventory and Management Plan.
CS-1i	Partner with a local nursery to host regular tree planting events and volunteer opportunities to engage community members in the effort to maintain and expand the local tree canopy.
CS-1j	Work with a community non-profit organization to develop an adopt a tree program increase the urban tree canopy in marginalized communities

CS-1k	Establish a Tree Trust or Tree Endowment where the interest on the principal can be used for purchasing and planting trees in prioritized areas pursuant to the Urban Forest Inventory and Management Plan, paying for tree maintenance in disadvantaged and vulnerable communities in the City, or supporting staff resources for the Urban Forest Management Program.

Carbon Sequestration

CS-2 *Increase nature-based and technological carbon sequestration opportunities in Pinole.*

Carbon sequestration is the capturing, removal, and storage of CO_2 from the Earth's atmosphere.[44] Nature-based carbon sequestration, or biologic carbon sequestration, opportunities include regrowing forests and trees, restoring wetlands, and implementing processes to increase soil health and absorption capacity. Technical carbon sequestration includes direct air capture, a system in which carbon is directly captured from the air using an industrial process.[45] Engineered molecules, such as those that could be used in concrete production are another form of technical carbon sequestration that might be viable in the City of Pinole. The City will build off of the work done by the Contra Costa County Resource Conservation District and complete an evaluation of the carbon stock in the City's existing blue carbon ecosystems (e.g., eelgrass in San Pablo Bay; Action CS-2a). Additionally, implementation will include establishing partnerships with concrete producers to research opportunities for technological carbon sequestration in Pinole including potential funding mechanisms (Action CS-2b). A multi-lingual, jargon-free educational campaign will be created to support these initiatives and clearly explain the opportunities and benefits of carbon sequestration in the City to confirm community members are informed.

44. https://calrecycle.ca.gov/condemo/
45. https://calrecycle.ca.gov/lgcentral/library/canddmodel/

Key Performance Indicators:

- Established quantitative carbon sequestration target to be achieved by 2045

Emissions Reductions Not Quantified

CS-2a Seek funding to conduct a study to quantify the carbon stock in existing Pinole blue carbon ecosystems (e.g., eelgrass in San Pablo Bay) and quantify the carbon sequestration potential of blue carbon restoration and expansion.

CS-2b Partner with concrete producers to research opportunities for technological carbon sequestration in Pinole including potential funding mechanisms (e.g., Verra's Methodology for CO_2 Utilization in Concrete Production).

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CS-2c	Based on the studies, develop a plan to increase carbon sequestration in Pinole. The plan shall include a quantitative carbon sequestration target to be achieved by 2045 and a process for regular monitoring of carbon stocks.
CS-2d	Create an educational campaign that informs members of the community about the benefits and methods associated with carbon sequestration and capture that avoids jargon and clearly explains the opportunities and benefits in the City. Confirm that the educational materials are provided in a multi-lingual, culturally considerate manner and distributed specifically to disadvantaged community members.

City Infrastructure & Operations

CIO-1 *Upgrade all City accounts to MCE's Deep Green option by 2025 and electrify or otherwise decarbonize all municipal buildings and facilities by 2035.*

CIO-2 *Electrify or otherwise decarbonize 30% of the municipal vehicle fleet by 2026 and 100% by 2040.*

CIO-3 *Electrify or otherwise decarbonize all municipal off-road equipment by 2035, where feasible.*

CIO-4 *Reduce employee VMT 20% by 2035, from 2019 levels by developing and implementing a municipal Transportation Demand Management (TDM) Plan by 2028.*

CIO-5 *Reduce municipal water consumption 15% by 2030, from 2019 levels.*

CIO-6 *Reduce organic waste by 10% by 2025, from 2019 levels and landfill zero waste by 2035.*

CIO-7 *Retrofit existing infrastructure owned and operated by the City, such as the Pinole-Hercules Water Pollution Control Plant, located in the areas at risk of sea level rise.*

City Infrastructure & Operations

CIO-1 ***Upgrade all City accounts to MCE's Deep Green option by 2025 and electrify or otherwise decarbonize all municipal buildings and facilities by 2035.***

As a leader in climate action and resilience, the City understands the importance of procuring carbon free or 100 percent renewable electricity and prioritizing the electrification and decarbonization of all City buildings to mitigate GHG emissions from the built environment while improving indoor air quality. Therefore, as a first step, an electrification ordinance would be adopted that requires new municipal construction to be fully electric without any natural gas connections. Although the ordinance would apply to new developments, existing municipal buildings and facilities must also be electrified and utilize carbon free and renewable energy. To understand the needs of existing buildings, an audit would be completed that identifies all fossil fuel-powered equipment and then a replacement schedule would be established. This measure would be supported by a City Council resolution to require electrification of all municipal buildings by 2035, ten years ahead of the communitywide goal.

Key Performance Indicators:

- Municipal accounts enrolled in MCE Deep Green option (%)

Emissions Reductions
2030: N/A
2045: N/A

CIO-1a	Adopt an electrification ordinance in 2024 requiring all new municipal construction to be fully electric after calendar year 2024 without any natural gas connections.
CIO-1b	Complete an analysis to identify the electrical capacity and utility infrastructure upgrades needed to electrify the recreational pool heating system at the Swim Center. Pursue replacement funding through PG&E on-bill financing and California Energy Commission (CEC) 1% Loans.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CIO-1c	By 2025, adopt a Resolution requiring the implementation of a building and facility electrification plan to electrify or otherwise decarbonize all municipal buildings by 2035.
CIO-1d	Develop a plan to electrify or otherwise decarbonize all municipal buildings and facilities by 2035 which will include: ▪ An inventory of existing fossil fuel-powered buildings and facility equipment, available electric or zero/low-carbon alternatives for replacing each, and relevant costs and benefits of replacing each (e.g., lifespan, equipment costs, operational quality). ▪ A prioritized schedule for completion based on potential to reduce natural gas and propane usage. ▪ Prioritize upgrades that benefit vulnerable communities first, such as the Library, Senior Center, Youth Center, and Tiny Tots facilities.
CIO-1e	Expand efforts to obtain funding for municipal building and facility decarbonization through grants, incentives, or financing provided by entities such as: ▪ DOE Block Grants ▪ Leases: Capital lease, Operating Lease, Tax-Exempt Lease purchase (4-5%) ▪ Loans and Grants: 1% CEC Loan, Dept. of Energy Grants, Federal Grants (IIJA, IRA) ▪ On-Bill Financing ▪ Energy as a Service (EaaS) ▪ Energy Savings Performance Contract (ESPC, guaranteed energy savings help pay for the project) from Energy Service Companies (ESCOs) ▪ Grant Anticipation Notes or other Short-Term Notes/Loans
CIO-1f	Upgrade all municipal electricity accounts to MCE Deep Green by 2025.
CIO-1g	Plan, fund, and conduct an electrification pilot project at a municipal facility (e.g., the Senior Center). Promote the demonstrated benefits of the fully electric building (e.g., cost-savings, GHG emission reductions) and publicize the planning, design, installation, and post-operation of the project to make the steps to electrification transparent to the community.
CIO-1h	Partner with regional organizations such as the Building Decarbonization Coalition to train City staff, community members and volunteers on the benefits and technical requirements of electrification, help them implement the building and facility electrification plan and empower them to be advocates for electrification across the community.

City Infrastructure & Operations

CIO-2 ***Electrify or otherwise decarbonize 30% of the municipal vehicle fleet by 2026 and 100% by 2040.***

The City of Pinole operates a variety of on-road gasoline and diesel-powered fleet vehicles for different uses throughout the City such as code compliance, Public Works inspections, and more traditional service trucks for landscaping, maintenance, and transportation of materials. The California Air Resources Board released the Advanced Clean Fleets (ACF) Regulation, which requires that at least 50 percent of vehicle purchases are ZEVs by 2024 and all new purchases are ZEVs by 2027.[46] The City currently has a vehicle replacement schedule that will be reviewed and updated bi-annually. As part of this, the existing charging infrastructure will be analyzed and a Municipal Electric Vehicle Infrastructure Plan will be prepared to create a prioritized list of City-owned properties/locations to install new Level II and DC Fast chargers, an assessment of future electricity demand and potentially energy-constrained locations, and a pathway to coordinate with PG&E on installing microgrids or back-up power at City-owned properties to support the ZEVs.

46. https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-summary

Key Performance Indicators:

- Fleet vehicles decarbonized (% of total fleet)

Emissions Reductions

2030: N/A
2045: N/A

CIO-2a Expand and update the City's fleet vehicle replacement schedule to transition 30% of the municipal vehicle fleet to ZEVs by 2026 and 100% by 2040. Review the replacement schedule and ZEV transition goals every 2 years and update them as needed based on updates to state regulation and ZEV market availability.

CIO-2b Complete a Municipal Electric Vehicle Infrastructure Plan to analyze the City's charging needs through 2026 and 2040. The plan shall include:

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CIO-2b cont.	▪ A prioritized list of City-owned properties/locations to install new Level II and DC Fast chargers ▪ An assessment of future electricity demand and potentially energy-constrained locations ▪ A pathway to coordinate with PG&E on installing microgrids or back-up power at City-owned properties to support the ZEVs
CIO-2c	Secure funding from state programs (such as the California Air Resources Board's Clean Vehicle Rebate Project and the Truck and Bus Voucher Incentive Program) and federal sources to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at municipal facilities. Additionally, explore opportunities for Low Carbon Fuel Standard credit generation from use of low carbon fuels/electricity for fleet vehicles.
CIO-2d	Dedicate staff time to implementing, tracking, and updating the City fleet vehicle replacement plan bi-annually.
CIO-2e	Partner with an entity such as Contra Costa Transportation Authority, to train City staff on the use and charging of electric and zero-emission vehicles and educate them on the benefits of EVs/ZEVs.
CIO-2f	Consider highlighting the City's EV/ZEV fleet at community events such as Earth Month.
CIO-2g	Establish electric vehicle charging infrastructure at and around all City-owned facilities. Apply the profit from community charging towards installing electric vehicle infrastructure in vulnerable communities. Additionally, develop a thoughtful pricing plan that is reviewed and updated annually, or more frequently as appropriate.

City Infrastructure and Operations

CIO-3 ***Electrify or otherwise decarbonize all municipal off-road equipment by 2035, where feasible.***

Pinole operates off-road equipment (e.g., lawn and garden equipment as well as other outdoor power equipment) to maintain landscaping, parks, and open space, among other things. In terms of air quality, reducing off-road emissions will be significant. Based on current technologies, operating a lawn mower for one hour generates the same smog-forming pollution (air pollutant) as driving a new light-duty passenger approximately 300 miles, and as mentioned above under Measure TR-6, commercial blower generates the same amount of emissions as driving a new light-duty passenger vehicle approximately 1,000 miles.[47] Therefore, CARB adopted emissions standards for Small Off-Road Engines (SORE), which sets a goal to transition off-road vehicles and equipment operations to 100 percent zero-emission by 2035 where feasible. To establish a clear path towards decarbonization, the City will first complete an inventory of all existing off-road equipment and determine which equipment types are possible to decarbonize based on existing technologies, as well as prepare a cost analysis and schedule for decarbonization (Action CIO-3a). As technology advances, there will be additional opportunities to decarbonize larger or more unique pieces of equipment in the future.

47. https://ww2.arb.ca.gov/resources/fact-sheets/sore-small-engine-fact-sheet

Key Performance Indicators:

- Off road equipment decarbonized (%)

Emissions Reductions

2030: N/A
2045: N/A

CIO-3a Complete an inventory of all municipal off-road equipment every three years and determine which equipment types are possible to decarbonize based on existing technologies. Complete a cost analysis and schedule for decarbonizing.

CIO-3b Adopt an emissions-free equipment purchasing policy by 2025 for light-duty vehicles and small off-road equipment and vehicles to require purchase and replacement of such categories be electric or emissions-free. Regularly update the

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CIO-3b cont.	policy to include more types of equipment and vehicles as electric and emission-free options become available. Use this to promote all-electric equipment in the community, providing information on the City website outlining available incentives as well as the health benefits, for residents and businesses.
CIO-3c	Dedicate staff time to implementing and tracking the success of the emissions-free purchasing policy established as part of CIO-3b.
CIO-3d	Dedicate staff time and pursue funding opportunities to electrify and otherwise decarbonize municipal off-road equipment through programs such as: ▪ CORE Incentives ▪ Bay Area Air Quality Management District (BAAQMD) incentives including the Carl Moyer Program
CIO-3e	Partner with the East Bay Regional Park District to co-lead a multi-lingual educational program for staff and City contractors detailing the benefits of using decarbonized off-road equipment, with an emphasis on improved worker health and details on comparable equipment productivity. Information from the educational program should be summarized into an infographic format and posted at parks, City-owned and operated buildings, and shared in the City's newsletter to highlight the emissions and overall health benefits in a way that is easily understood.
CIO-3f	By 2030, begin procuring biofuels (e.g., biodiesel and biogas) to operate municipally owned off-road equipment with no existing opportunities for electrification. Re-evaluate electrification opportunities regularly to ensure biofuels are not being used for equipment that could otherwise be electrified.

City Infrastructure & Operations

CIO-4 ***Reduce employee VMT 20% by 2035, from 2019 levels by developing and implementing a municipal Transportation Demand Management (TDM) Plan by 2028.***

The City will actively work to lead by example and reduce the number of fossil-fueled single-occupancy-vehicle (SOV) employee commute trips annually. Like Measure TR-3 for the community, emissions reductions from this measure would occur through the development of a municipal TDM Plan, which will be based on input from City staff. As part of the TDM Plan development, the City will create an incentive program to reward City employees for biking, ridesharing, and using public transit to commute to work. Additionally, recognizing that maintaining in-person presence at City Hall and other City offices is important, the occasional ability to work from home allows for a more flexible and adaptive approach. Therefore, this program will also include development of a remote work policy and annual surveys to monitor implementation of the TDM Plan. The TDM Plan will also be available on the City's website and distributed to local businesses to provide the community with an example of comprehensive TDM plans that focused on GHG emission reductions and equity. Based on a 2021 employee commute survey, most City employees drove alone to and from work, with approximately 25 percent of respondents live within six miles (one way) of City Hall.

Key Performance Indicators:

- Development of a Municipal TDM Plan

Emissions Reductions

2030: N/A
2045: N/A

CIO-4a With employee input, develop a municipal Transportation Demand Management (TDM) Plan by 2028 to encourage and incentivize City employees to reduce their VMT in single-occupancy and fossil-fuel-powered vehicles. Update the plan every 2-3 years based on survey results (e.g., Action CIO-4d) and newly available public transit and bike routes in the community.

CIO-4b Create an incentive program to reward City employees for biking, ridesharing, and using public

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CIO-4b cont.	transit to commute to work. The program shall provide free public transit passes and free access to electric bicycle programs (where available) to all municipal employees and may include cash incentives or additional paid time-off for employees who bike, rideshare, and use public transit to commute to work.
CIO-4c	Investigate the opportunity to create zero-interest loan program to help employees purchase ZEVs for commute.
CIO-4d	Develop a remote work policy that encourages municipal office employees to work from home and includes alternative work schedules where feasible.
CIO-4e	Explore options for installing showers in existing City-owned facilities and bike lockers along City-owned streets, where appropriate, to encourage City employees to bike to work and demonstrate the City's commitment to sustainability and community bicycle safety.
CIO-4f	Partner with an entity such as the WestCAT or the Bay Area Air Quality Management District (BAAQMD) to expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ZEV options, and vanpools. Additionally, partner with 511 Contra Costa to help employees find a carpool match and/or develop an internal carpool match policy.
CIO-4g	Promote and encourage employee participation in regional and national bike-to-work days/months.
CIO-4h	Develop funding sources to support incentives for City employees to commute to work via EV/ZEV options such as free or discounted employee charging at work.
CIO-4i	Publish the municipal TDM Plan on the City's website and distribute to local businesses to provide the community an example of comprehensive TDM plans that focused on GHG emission reductions and equity.
CIO-4j	Conduct a survey for City staff commute data annually to monitor emissions, identify potential gaps in planning, and better understand how to elicit employee transportation behavior change. Include space for employee feedback and identification of barriers to commuting without a personal vehicle.
CIO-4k	Dedicate staff time to develop, implement, and update the municipal TDM Plan and conduct the annual survey.

City Infrastructure & Operations

CIO-5 ***Reduce municipal water consumption 15% by 2030, from 2019 levels.***

Reducing municipal water consumption ties directly to reducing energy use through the energy-water-nexus. Municipal water is generally used to water City-owned land including parks and medians, as well as in buildings to maintain general operations (e.g., in restrooms and small staff kitchens). Currently, the City uses a small amount of water that results in a fraction of emissions. However, it is important for us to identify opportunities to lead by example at the City-level and showcase how we can make meaningful, realistic change together. Implementation of this measure will include completion of an indoor and outdoor water audit of all municipal buildings, then development of a schedule to implement identified water efficiency improvements (Action CIO-5a). An update to the municipal purchasing policy would also be made to require WaterSense labeled fixtures and appliances (Action CIO-5c). Additionally, this measure would include submetering at City owned and operated buildings and facilities to track and monitor water use, including creating a succinct way to internally track specific use and complete repairs or prepare targeted education (Action CIO-5h). Currently, water use is aggregated, making it difficult to understand and implement specific opportunities for improvement.

Key Performance Indicators:

- Per capita potable water consumption (%)

Emissions Reductions

2030: N/A
2045: N/A

CIO-5a Conduct an indoor and outdoor water audit at all municipal buildings and schedule develop a schedule for water efficiency improvements, including water fountains, sinks, and other fixtures that have sensors and turn off automatically when not in use.

CIO-5b Adopt a Resolution and assign funding to retrofit or replace all inefficient shower heads, faucets, washing machines, and toilets with low-flow fixtures/water-efficient appliances in existing City-

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CIO-5b cont.	owned, managed, or operated facilities, such as, but not limited to, the Pinole Swim Center, Pinole Senior Center, Pinole Youth Center, and Public Service Facilities by 2030. Additionally, identify opportunities for and implement drip irrigation systems and include systems to monitor operations to reduce leaks and unnecessary watering.
CIO-5c	Update the municipal purchasing policy to require WaterSense-labeled fixtures and appliances where feasible. This includes continuing to install waterless units such as urinals and sensor-activated sinks.
CIO-5d	Require all non-functional lawns (i.e., grass that is ornamental and not used for recreational purposes) on City-owned property to be removed by 2035 and replaced with native and drought-tolerant landscaping and/or multi-use landscaping (e.g., pollinator-friendly landscapes, edible landscapes).
CIO-5e	Identify, track, and actively pursue funding opportunities from entities such as the California Department of Water Resources and the California Environmental Protection Agency.
CIO-5f	Partner with the Pinole Community Garden Club, Contra Costa County Master Gardeners, or Bringing Back the Natives to educate City employees and the community on water-wise gardening practices, native plants, and growing food, with a focus on the most vulnerable communities.
CIO-5g	Develop and implement a plan to update City-owned properties with improved green stormwater infrastructure (e.g., stormwater systems that direct water towards vegetation, permeable surfaces).
CIO-5h	Install submetering at City owned and operated buildings and facilities to track and monitor water use, including creating a succinct way to internally track specific use and complete repairs or prepare targeted education.
CIO-4i	Install rain barrels at the Library to water the native garden as a demonstration project to educate the community about the benefits of collecting rainwater and available incentives. Based on the project's success, consider installing rain barrels at all City facilities for use in landscaping.

City Infrastructure and Operations

CIO-6 ***Reduce organic waste by 10% by 2025, from 2019 levels and landfill zero waste by 2035.***

For the City, organic waste typically includes food, landscape and pruning waste, paper products, and paper. Like all municipal measures, the purpose of this initiative is to demonstrate how the City leads by example and reduces organic waste in line with or beyond the community's goals. To successfully implement this measure, we must first understand the current bin infrastructure and signage at each municipal facility and event. It has been shown that access and convenience play a big role in helping people make the best decisions. For example, a study out of the University of British Columbia found that moving landfill, recycling, and compost bins closer together resulted in an increase in recycling and composting by 141 percent.[48] The colocation of bins as well as adequate signage, which will also be analyzed as part of the audit, will increase proper disposal and reduce organic waste from landfills. Although not a direct reduction of GHG emissions for the City, we will also work with local jurisdictions including surrounding cities and the county to create an inter-office or inter-jurisdiction surplus program where City offices can provide items (e.g., pieces of furniture) for reuse for free to other offices within the City or other jurisdictions. A waste audit would be performed every two years to track the waste sources and identify any gaps in signage or education, as well as opportunities to strengthen the purchasing policy based on current best practice at that time.

48. https://www.sciencedaily.com/releases/2017/04/170421123255.htm

Key Performance Indicators:

- Landfilled organic waste (% change)
- Landfill inorganic waste (% change)

Emissions Reductions

2030: N/A
2045: N/A

CIO-6a Require implementation of the Single Use Plastic Ordinance at all City departments, events, and contracts.

CIO-6b Provide reusable mugs and foodware items to all new and existing employees in an effort to encourage the use of reusable alternatives to single-use items. Provide information on the benefits of reusing resources.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CIO-6c	Complete an audit on current bin infrastructure and bin signage in each municipal facility and at City events. Establish a clear plan to install/distribute adequate compost and recycling bins throughout all facilities and to all events, and improve signage so that accepted landfill, recyclable, and compostable materials are clearly identified for each bin.
CIO-6d	Partner with an entity such as the City's franchised waste hauler to provide annual training to City employees on current waste management practices, any modifications to the practices, and proper disposal methods. Empower them to educate the community on the benefits and proper methods of recycling and composting and use this as an opportunity to promote the City's existing programs, such as the free mulch program, shredding program, household hazardous waste collection, as well as expand programs as appropriate.
CIO-6e	Work with CalRecycle and similar entities to identify and secure grants that fund waste diversion and educational programs.
CIO-6f	Create a shared resource area within each City-owned facility dedicated to lightly used office supplies such as staplers, tape dispensers, pens, and pads of paper, facilitating the reuse of items among staff members and promoting efficiency and reducing waste.
CIO-6g	Partner with local jurisdictions including surrounding cities and the county to create an inter-office or inter-jurisdiction surplus program where City offices can provide items (e.g., pieces of furniture) for reuse for free to other offices within the City or other jurisdictions.
CIO-6h	Create a buy-nothing group for City staff to share resources and items that they may no longer be interested in or have a use for at their homes.
CIO-5i	Perform a waste audit every two years to track waste sources, gaps in signage and education, and opportunities to strengthen the purchasing policy (e.g., based on materials continuing to the landfill or the contaminating recycling and composting streams).

City Infrastructure & Operations

CIO-7 ***Retrofit existing infrastructure owned and operated by the City, such as the Pinole-Hercules Water Pollution Control Plant, located in the areas at risk of sea level rise.***

As detailed in the Vulnerability Assessment prepared for the City of Pinole's Safety Element, because the City of Pinole includes approximately 1.5-mile of coastline along the San Pablo Bay, the City is potentially vulnerable to future sea level rise. The Vulnerability Assessment notes that the City of Pinole is projected to experience significant impacts when a total water level increase of 4 - 6 feet, with 4 feet of total water level increase anticipated to result in moderate inundation at the Pinole-Hercules Water Pollution Control Plant. Additionally, the Vulnerability Assessment notes that although 4 – 6 feet of sea level rise on the upper end of what is projected to occur during the 21st century, it is possible that sea level rise combined with storm surges could contribute to temporary inundation in Pinole. As a specific example, if sea level rose 2 feet, and the community experienced a 100-year storm surge, there could be a total water level of 6 feet. Similarly, if sea level were to rise 4 feet, and the community experienced a 2-year storm event, the water level would similarly reach 6 feet. Therefore, it is important to prepare accordingly and complete a feasibility study to understand the various options related to infrastructure improvements at the Pinole-Hercules Water Pollution Control Plant to mitigate against sea level rise and flood hazards (Action CIO-7a). Implementation of this measure will occur over the longer-term, as we first understand the opportunities and then begin to work together, identify funding, and complete the necessary upgrades to the system to protect it in the long-term.

Key Performance Indicators:

- Feasibility study status

Emissions Reductions

2030: N/A
2045: N/A

CIO-7a Complete a feasibility study to evaluate various options for infrastructure improvements of Pinole-Hercules Water Pollution Control Plant to mitigate against sea level rise and flood hazards. Develop a long-term management plan to address impacts of sea level rise, which incorporates any potential maintenance, relocation, or retrofits and structural changes to accommodate changes in sea level.

CIO-7b Collaborate with the San Francisco Bay Regional Water Quality Control Board to increase the Pinole-Hercules Water Pollution Control Plant's

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CIO-7b cont.	resilience to sea level rise and stronger storms. For example, implement a trigger-based Coastal Hazard Monitoring Program, which would allow to implement improvements or relocate in a timely manner, and conduct feasibility studies from technical experts, retrofitting, relocating, or eliminating outfalls deemed "at risk."
CIO-7c	Provide alternate routes and ensure redundancy of critical transportation routes, as possible, to allow for continued access and movement to and along the coast in instances in which sections of roadways may become temporarily impassible because of shoreline hazards. Additionally, inform City staff, residents, and visitors about alternate routes to shoreline areas.
CIO-7d	Host working groups with community-based organizations, experts in the field, and interested parties to identify and prioritize vulnerable communities, involve them in decision-making, use community benefits agreements, prioritize underserved communities, and consider the financial impact on residents.
CIO-7e	Identify and apply for a grant funding source to fund facility upgrades, relocation, or additional analysis through entities such as the San Francisco Bay Conservation and Development Commission, California Coastal Commission, National Oceanic and Atmospheric Administration (NOAA), or Federal Emergency Management Agency (FEMA).
CIO-7f	Conduct a detailed and City-specific groundwater emergence threat assessment, factoring in local geomorphology and groundwater data, for use in future planning and analysis.
CIO-7g	Incorporate policy guidance and model ordinance language in Citywide plans, policies, and regulations to prioritize strategies that reduce potential impacts due to sea level rise and shoreline hazards and increase the resilience of the City's shoreline areas.

City Governance

CG-1 *Build staffing capacity to effectively implement the CAAP measures and update the CAAP triennially.*

CG-2 *Establish reporting procedures to implement the CAAP measures and transparently communicate progress to the community.*

City Governance

CG-1 ***Build staffing capacity to effectively implement the CAAP measures and update the CAAP triennially.***

One of the first steps in establishing a culture of sustainability is building internal capacity and clearly establishing a foundation of responsibilities to consistently implement identified initiatives. This requires identifying and empowering key team members who are excited to drive sustainability initiatives forward, then providing them with the resources, training, and support needed to lead and implement the strategies effectively and efficiently. By building internal capacity, we will create a coordinated approach to sustainability that is integrated into all aspects of the City's operations. This structure not only helps to support the long-term success of the Plan, but also fosters a culture that inspires and empowers employees at all levels of the organization to contribute to climate-related efforts. Through ongoing monitoring and adaptive management, we can periodically refine and improve the initiatives included in this plan, so that they remain effective and impactful over time and any new technology, or best practices are implemented, where and when appropriate.

Key Performance Indicators:

- New full-time positions (#)
- Climate Coordinators identified (% of departments)
- Annual survey responses (#)

Emissions Reductions
2030: N/A
2045: N/A

CG-1a Create a new full-time staff position in the Community Development Department (such as a Sustainability Manager or Coordinator) to oversee CAAP implementation, monitoring, and reporting in addition to cross-department collaboration.

CG-1b Identify a Climate Coordinator from each of the City's main departments and divisions. The Climate Coordinators will meet quarterly for sustainability peer-to-peer information sharing sessions to discuss challenges, brainstorm

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CG-1b cont.	solutions, and track progress towards reaching the City's CAAP key performance indicators. This team will serve as the key organizers for cross-departmental collaboration needed to implement climate goals, as well as community contacts and key researchers for emerging technologies and best practices in climate action.
CG-1c	Conduct an annual staff survey to determine the following: ▪ Existing staff interest in leading climate initiatives to identify internal champions. ▪ Staff capacity to implement CAAP actions, monitor progress, and report updates; and associated capacity gaps to fill.
CG-1d	Include a description of Pinole's climate goals and values in job postings, improving talent acquisition and potentially boosting retention and worker morale.
CG-1e	Apply for and fund climate staffing assistance through fellowship/internship programs including the Climate Corps Fellowship, California Pacific University, and CivicSpark to increase internal staff capacity for CAAP implementation and bring in innovative ideas.
CG-1f	Earmark funding for CAAP updates.

City Governance

CG-2 ***Establish reporting procedures to implement the CAAP measures and transparently communicate progress to the community.***

Assessing, tracking, and publishing regular progress reports increases transparency and progress towards implementing the initiatives outlined in the CAAP. By doing so, it not only enhances clarity but also generates a sense of importance and urgency in achieving the goals. This measure acts as a bridge between the community and City staff, fostering a stronger connection and a sense of shared responsibility for our sustainable future. To effectively implement this measure, the City will join the Institute for Local Government's Beacon Program to support transparent reporting through access to technical assistance, regional networking and education opportunities, and opportunities to recognize Pinole's climate action achievements (Action CR-1a). Additionally, as part of this initiative, we will complete a community emissions inventory every two years and report progress on the measures annually to provide transparent project updates. Educational and informational materials will be translated to non-English languages (Action CR-2f) to provide consistent and equitable information.

Key Performance Indicators:

- Completion and reporting of communitywide inventories (2 years) and municipal GHG inventories (5 years)

Emissions Reductions
2030: N/A
2045: N/A

CG-2a Join the Institute for Local Government's Beacon Program to support transparent CAAP reporting through access to technical assistance, regional networking and education opportunities, and opportunities to recognize Pinole's climate action achievements.

CG-2b Conduct a communitywide GHG inventory every two years and a municipal GHG inventory every five years.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CG-2c	Report communitywide GHG emissions and progress on Mitigation Measures annually through public reporting tools (e.g., CAPDash) and utilize social media to post updates and results so the community can easily stay up to date.
CG-2d	Regularly update Pinole's CAAP webpage, Sustainability webpages (e.g., Community Choice Energy, EV Charging Stations, Single Use Plastic Reduction), and applicable Public Works webpages (e.g., Water, Garbage and Recycling, Trees) to provide up-to-date information on ordinance, program, and policies as they are updated through CAAP implementation.
CG-2e	Explore and track the success of different ways to communicate climate progress transparently to the public (e.g., a dashboard, semi-regular social media posts, City webpages, Pinole TV). Track the number of clicks made on specific links to identify the most successful mechanisms for engagement.
CG-2f	Translate key climate outreach materials into non-English languages. Explore partnerships through nonprofits and other organizations that can assist in translation of key materials.
CG-2g	Communicate Pinole's climate and green economic development commitments through City branding and communications (beyond dedicated webpages and resources) and utilize existing City meetings and events to emphasize the importance of climate action and bring it into regular City and community discussions.
CG-2h	Earmark annual funding for the CAAP update in the budget to demonstrate commitment to implementation and monitoring and to provide a consistent conduit of funding.

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Adaptation

"A coordinated campaign is important, too, to show actions, completion status, and results. This should not be a "one-off," or something siloed off from other city business; this mindset must be integrated into all city decision making and listened to and committed to…"

– Pinole Community Member

Climate Vulnerability and Adaptation Overview

Climate change is a global phenomenon that impacts local health, natural and cultural resources, infrastructure, emergency response, and many other aspects of society. Projected changes to the climate are dependent on location. As a part of Pinole's 2022-24 update of the General Plan's Safety Element, a Vulnerability Assessment was conducted to evaluate the potential impacts of climate change on community critical facilities (such as government facilities, hospitals and medical centers, police and fire stations, schools, wastewater treatment facility and transportation infrastructure) and populations. Vulnerabilities identified for Pinole were determined based on the exposure of people and critical facilities to different natural hazards and the community's adaptive capacity, or ability to cope with and adjust to the impacts of climate change. The gaps identified between projected climate change impacts and adaptive capacity are the community's major vulnerabilities. The Vulnerability Assessment prepared for the Safety Element Update serves as a foundation for the climate adaptation strategies and actions included in the CAAP.

Key Climate Adaptation Terms

Adaptive Capacity

The ability for a community to cope with and adjust to the impacts of climate change. Actions such as setting up cooling centers and retrofitting buildings to include air conditioning increase adaptive capacity to extreme heat

Climate Hazard

A potential occurrence of climate related physical events or trends that may cause damage and loss. Climate hazards in Pinole include extreme heat, drought, flood, and landslides

Vulnerability

The propensity or predisposition to be adversely affected. Aging can change the body's ability to respond to heat, which makes older adults more vulnerable to heat illnesses during extreme heat events

Assessing Climate Vulnerability in Pinole

Scoring vulnerabilities helps to prioritize strategies and actions for adaptation. Vulnerability scores were determined as part of the Vulnerability Assessment based on a qualitative methodology outlined in the California Adaptation Planning Guide. The vulnerability score is a combination of potential impact from a climate hazard and adaptive capacity. These scores were used to identify which critical facilities and populations face the highest threat to climate hazards. Figure 12 shows how vulnerability is scored using potential impact and adaptive capacity.

Impact scores were based on data from climate models, state and Federal guidance reports, and local documentation. Pinole-specific data from Cal-Adapt were used to project changes to temperature, precipitation, and wildfire. Sea level rise projections were created with Pinole-specific data from California Coastal Commission's 2018 Sea Level Rise Policy Guidance and the National Oceanic and Atmosphere Administration's 2022 Sea Level Rise Technical Report.

The following section summarizes projected changes to climate hazards and key vulnerabilities to populations and critical facilities in Pinole.

Climate Change Impacts in Pinole

Figure 13 on the following page illustrates the projected changes and potential impacts of the key climate hazards of concern in Pinole: extreme heat, drought, flood, landslide, wildfire, and sea level rise.

"I am concerned about climate impacts of energy consumption. I have taken steps to reduce the impact of my consumption by upgrading my furnace and water heater."

– Pinole Community Member

Figure 12 Vulnerability Score Matrix

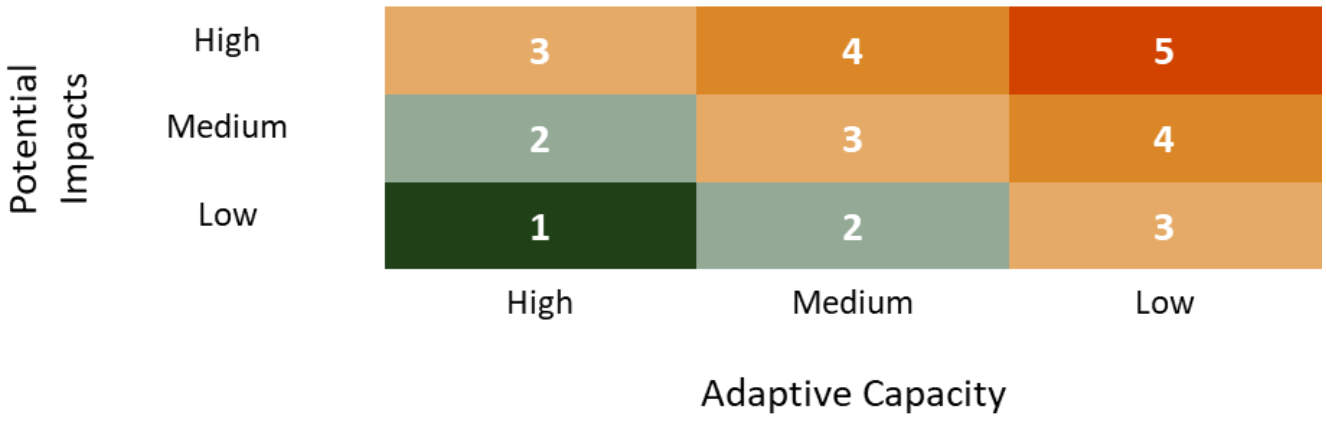


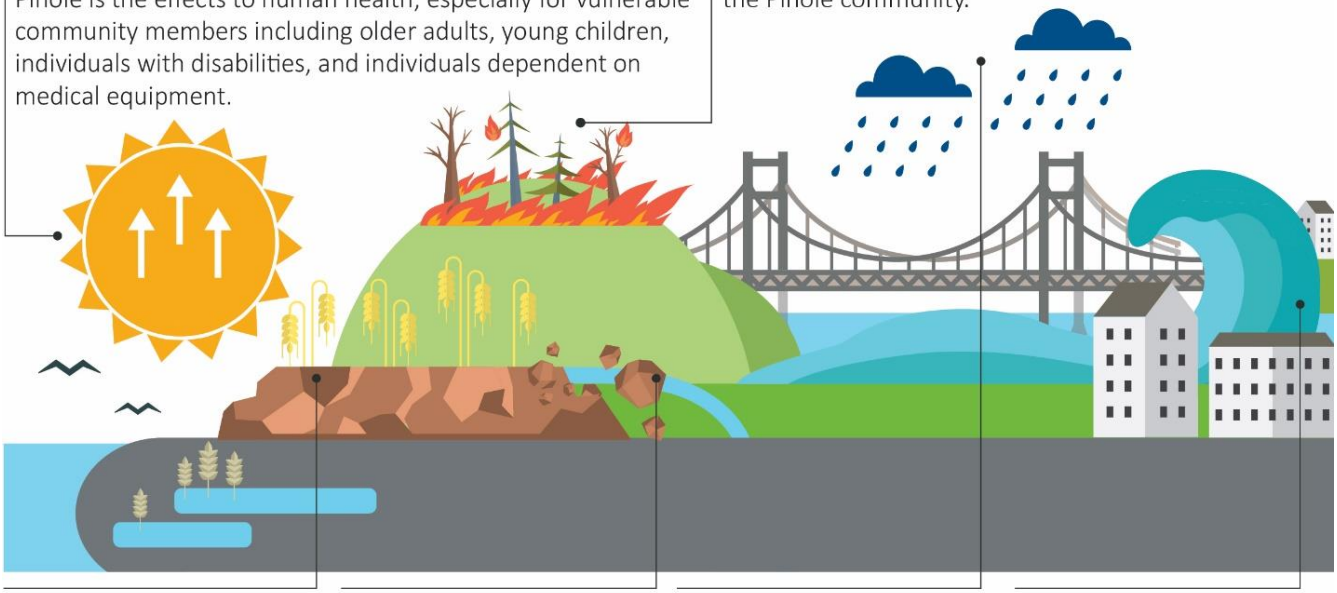
Figure 13 Projected Changes and Potential Impacts of these Climate Hazards

An increase from 4 to 11 days of extreme heat (days over 95°F) per year by midcentury (2035-2064).

Extreme heat can cause heat exhaustion, heat cramps, heat stroke, and other illnesses. Extreme heat generally does not result in physical damage to buildings and infrastructure, although some technology or equipment may be susceptible to damages in high temperatures. Extreme heat events can place extra stress on the power grid which can lead to power outages. The largest concern during extreme heat events in Pinole is the effects to human health, especially for vulnerable community members including older adults, young children, individuals with disabilities, and individuals dependent on medical equipment.

Wildfire intensity and frequency are expected to increase.

Wildfires can cause health and safety risks, and damage to government facilities, such as Argyle #2 Reservoir (located outside of the City's jurisdiction) Pinole Fire Station 74, Pinole Swimming Pool, childcare centers, as well as approximately 122 residential buildings in Pinole. In addition, wildfires in the region can cause degraded air quality, impacting the health and safety of the Pinole community.



Drought is expected to occur more frequently in the future.

Droughts can increase the cost of water, which can lead to financial impacts to vulnerable and low-income populations. Droughts can also dry out vegetation and soils, increasing the probability of ignition and the rate of wildfire spread, decreasing tree canopy, and increasing soil instability. Drought in the region and statewide Is expected to occur more regularly in the future as a result of climate change.

Landslides are expected to increase due to extreme heat, drought, wildfire, and extreme precipitation.

Various government facilities, schools, bridges, homes, and the Kaiser Permanent Pinole Hospital are susceptible to landslides. Landslides can damage structures and lead to human injuries or mortality.

Increased likelihood of extreme precipitation.

Critical facilities such as the Pinole Library, Police Department, and Senior Center, as well as bridges citywide, are vulnerable to flooding which could become worse with larger storms. Flooding could significantly damage or cut off access to these facilities as well as lead to contaminated stormwater runoff and cause public health issues.

Sea level rise combined with projected storm surges are projected to increase water level by 6 feet, inundating coastal areas of Pinole.

In addition to flooding buildings, sea level rise can lead to a rising water table and groundwater emergence including dry weather flooding, deterioration of underground infrastructure such as water and sewer pipelines and resurfacing of underground toxic contamination. Sea level rise combined with storm surges could contribute to temporary inundation in Pinole impacting human and animal health.

Adaptation Measures

In addition to mitigating the impacts of climate change through increased GHG reduction efforts, the community recognizes that adapting to potential impacts outlined above from the changing climate, is an essential component of climate action and adaptation planning. Climate impacts will have disproportionate effects on community members and increasing community resilience in Pinole will require implementing targeted adaptation actions that focus on protecting those who face the greatest impacts. Table 9 includes climate adaptation strategies and measures aimed at each of the identified climate impacts and are designed to increase community resilience in Pinole.

Table 9 Adaptation Strategies and Measures

Measure ID	Measure Text
Strategy CAR: Community Adaptation and Resilience	
Measure CAR-1	Establish a reliable and dependable resilience center in the City to provide relief from extreme weather events, including extreme heat, flooding, and smoke from wildfires.
Measure CAR-2	Provide streamlined communication to the public on climate adaptation preparedness, resilience, and evacuation.
Measure CAR-3	Create an innovative Local Hazard Mitigation Plan (LHMP) to improve Citywide disaster preparedness, plan collaboratively, increase resilience, protect infrastructure and assets, and access available funding.
Strategy FL: Flood Control	
Measure FL-1	Improve the quality of and reduce the quantity of stormwater runoff through a variety of natural and built infrastructure projects.
Strategy SLR: Sea Level Rise	
Measure SLR-1	Create, restore, and protect natural coastal ecosystems.
Strategy EH: Extreme Heat	
Measure EH-1	Reduce the impacts of extreme heat in Pinole by installing green/cool roofs and cool pavement, as well as planting vegetation and trees to reduce urban temperatures and the urban heat island effect.
Measure EH-2	Map out and create a mural or set of murals using reflective paint to reduce interior heat in areas of Pinole that are most impacted by the urban heat island effect by 2026.
Strategy WF: Wildfire	
Measure WF-1	Enforce defensible space and home hardening standards to mitigate structure ignitions from wind blow embers

Community Adaptation & Resilience

CAR-1 *Establish a reliable and dependable resilience center in the City to provide relief from extreme weather events, including extreme heat, flooding, and smoke from wildfires.*

CAR-2 *Provide streamlined communication to the public on climate adaptation preparedness, resilience, and evacuation.*

CAR-3 *Create an innovative Local Hazard Mitigation Plan (LHMP) to improve Citywide disaster preparedness, plan collaboratively, increase resilience, protect infrastructure and assets, and access available funding.*

Community Adaptation & Resilience

CAR-1 ***Establish a reliable and dependable resilience center in the City to provide relief from extreme weather events, including extreme heat, flooding, and smoke from wildfires.***

Per City guidelines, the City's established Senior Center will be opened as a cooling center if the National Weather Service (NWS) forecasts that Pinole will experience two consecutive days with high temperatures of 95 degrees or more to provide relief to community members.[49] Although the City has a centralized space for people to utilize during extreme heat events that offers air conditioning during traditional business hours, there are limitations. Establishing a comprehensive resilience center, which provides essential resources such as health programs, food, refrigeration, charging stations, basic medical supplies, and other emergency supplies, would provide relief to the community from more than just extreme heat, and include safe spaces during flooding and wildfire events, for example. This center would also support social connectedness and community climate solutions through year-round programming and be used by the City to host regular in-person events that educate the community on preparedness. As the first step in developing a more comprehensive facility, the City will conduct an assessment on the current operations as well as existing facilities that could serve as upgraded resilience centers. This would include conducting an audit on the existing heating ventilation and air conditioning (HVAC) systems at City owned facilities and replacing them on a quarterly basis. To meet the needs of the most vulnerable populations in an emergency, we will partner with WestCAT to establish a list of vulnerable community members and a program to transport them to the established resilience center(s) once available.

49. https://www.ci.pinole.ca.us/city_government/senior_center

Key Performance Indicators:

- Number of resilience centers established
- Number of people who use the resilience centers in an emergency

Emissions Reductions 2030: N/A
2045: N/A

CAR-1a Conduct an assessment on the effectiveness of current City resilience center operations. Conduct a study regarding the feasibility of additional community locations (e.g., Pinole Youth Center and Pinole Library) that could serve as resilience centers by evaluating current amenities and resources available. As part of the studies, verify that the needs of vulnerable populations are met during climate hazard events and host focus groups with selected community-based organizations and other interested parties to identify needs for their service population.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CAR-1b	Identify and apply for funding opportunities that support development of a resilience center, and/or staff positions to maintain the center, such as the Office of Planning and Research Regional Resilience Grant Program.
CAR-1c	Utilizing the City's "Energy Conservation, Generation, and Storage Assessment" conducted in 2024, establish an upgrade and maintenance cycle, including replacement of filters with at least a MERV 11 rating on a quarterly basis for all existing HVAC systems in City owned buildings.
CAR-1d	Work with WestCAT to establish a list of vulnerable community members (e.g., older adults, who may not be able to access a vehicle or public transportation during a heat wave), as well as a program to transport them to established resilience centers.
CAR-1e	Partner with local public or private entities to establish resilience centers at privately owned facilities in the City.
CAR-1f	Provide essential resources such as food, refrigeration, charging stations, basic medical supplies, and other emergency supplies at all City resilience centers, as well as educational materials on resources and climate adaptation and preparedness. Audit and refresh supplies on a biannual basis, including information on any new or updated programs or resilience center locations.

Community Adaptation & Resilience

CAR-2 ***Provide streamlined communication to the public on climate adaptation preparedness, resilience, and evacuation.***

Streamlined communication, meaning efficient and direct flow of information without unnecessary complexity or delays, during emergencies is crucial as it assures timely and accurate information reaches the community, enabling swift decision-making and coordinated responses. Clear, accessibly, multi-lingual communication not only helps reduce potential panic but also empowers residents with the knowledge needed to take appropriate actions, fostering a sense of trust, community resilience, and collective preparedness in the face of unexpected challenges. Initially, the City will review and update the Emergency Information webpage to reflect ways to prepare for events that may be likely to increase due to climate change, including wildfires, floods, extreme precipitation, extreme heat, poor air quality, and drought, as well as heat-related illness, exacerbate mental stress, and respiratory diseases (Action CAR-2a). As part of Action CAR-2g, the City will work with Pinole Community Television to broadcast multi-lingual consistent, clear, and reliable information to the community and Action CAR-2h aims to create evacuation procedures for vulnerable populations in partnership with community-based organizations and facilities that serve identified populations.

Key Performance Indicators:

- Number of emergency alerts sent
- Working group established

Emissions Reductions
2030: N/A
2045: N/A

CAR-2a	Review and update the City's Emergency Information webpage to reflect ways to prepare for events that may be likely to increase due to climate change, including wildfires, floods, extreme precipitation, extreme heat, poor air quality, and drought, as well as heat-related illness, exacerbate mental stress, and respiratory diseases
CAR-2b	Assess current City capacity to shelter displaced residents including facilities, infrastructure,

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

CAR-2b cont.	services, and community programs during an extreme weather event.
CAR-2c	Partner with community-based organizations to establish a working group to develop designated temporary housing options for wildfire displaced residents to live in for up to two years after their home is destroyed or severely damaged.
CAR-2d	Require that all emergency preparedness and evacuation communications are provided in plain language and translated into Spanish, Tagalog, and Cantonese to support non or limited English speakers. Increase participation in emergency notification systems including the Community Warning System and PG&E Community Wildfire Safety Program through social media campaigns and physical flyer distribution.
CAR-2e	Provide administrative support and dedicate staff time for grant writing and funding tracking for climate adaptation and resilience projects, including opportunities to increase and enhance communication such as preparation of interactive websites and information sharing resources.
CAR-2f	Identify critical facilities in need of reliable sources of sustained electrical power during events of extreme climate. Assess power loads at each critical facility, determine costs and technology options for battery storage, and make any additional recommendations to the City Council prior to advancing construction.
CAR-2g	Utilize Pinole Community Television (PCTV) to provide consistent information to community members about adaptation preparedness by providing multi-lingual information that is accessible for people including seniors, individuals with disabilities, children, and caregivers.
CAR-2h	Create evacuation procedures for vulnerable populations in partnership with community-based organizations and facilities that serve identified populations. Host and/or participate in in-person engagement and incorporate games/activities to educate the community on preparedness.
CAR-2i	Require that the City's resilience centers have adequate backup power sources and battery storage to mitigate service disruptions and provide redundancy in the event of a power outage.

Flood Control

FC-1 *Improve the quality of and reduce the quantity of stormwater runoff through Implementation of the Pinole Green Infrastructure Plan.*

Flood Control

FC- 1 ***Improve the quality of and reduce the quantity of stormwater runoff through Implementation of the Pinole Green Infrastructure Plan.***

The City of Pinole adopted a Green Infrastructure Plan in 2019 as required by the California Regional Water Quality Control Board for the San Francisco Bay Region's (RWQCB's) Municipal Regional Stormwater Permit (MRP). Green Infrastructure is defined in the plan as the construction and retrofit of storm drainage to reduce runoff volumes, disperse runoff to vegetated areas, harvest and use runoff where feasible, promote infiltration and evapotranspiration, and use bioretention and other natural systems to detain and treat runoff before it reaches the City's creeks and Bay. The Green Infrastructure Plan outlines a pathway to shift from traditional stormwater infrastructure to more resilient, sustainable stormwater management techniques. Implementation of this measure would include preparing a feasibility study to investigate potential infrastructure improvements to relocate critical City infrastructure from the 100-year flood zone. Additionally, the City will implement the stormwater and drainage projects identified in the City Capital Improvement Plan, to mitigate localized flooding incidents and complete the Storm Drainage Master Plan to thoroughly investigate deficiencies in the existing storm drain system and prioritize infrastructure improvements. After any flooding incidents, the City will provide inspections for residents and business owners upon request and provide post-disaster home repair and technical assistance for vulnerable communities.

Key Performance Indicators:

- Feasibility study status

Emissions Reductions

2030: N/A
2045: N/A

FC-1a

Prepare a feasibility study to investigate potential infrastructure improvements to relocate critical City infrastructure, such as the Senior Center, Pinole Police Department, and Tiny Tots, from the 100-year flood zone. The feasibility study would include:

- Identifying potential alternative locations for the City's critical infrastructure that's located in the 100-year flood zone.
- Preliminary design and construction of new buildings or facilities.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

FC-1a Cont.	▪ Analysis of costs associated with relocating facilities as well as the potential costs of doing nothing. ▪ Outreach to community members and other interested parties to confirm that the relocation aligns with the community's needs.
FC-1b	Continue participation in the Contra Costa County Multi-jurisdictional Hazard Mitigation Plan update; identify flood mitigation actions eligible for grant funding through FEMA hazard mitigation assistance programs.
FC-1c	Encourage landlords to consider how to prepare their properties for flooding by providing retrofit informational resources and educational materials on prioritizing low-impact stormwater best practices.
FC-1d	Create educational campaigns that connect with vulnerable populations to increase awareness and knowledge of how to mitigate and weather flooding.
FC-1e	Identify and apply for grant opportunities to fund stormwater related projects from sources such as the State Water Resources Control Board, California Natural Resources Agency, the Coastal Conservancy, California Water Foundation, as well as the United States Environmental Protection Agency and the United States Department of Agriculture.
FC-1f	Review existing best practice and conduct studies of combined riverine/ shoreline flooding and increased severity of rainfall events on watershed flooding.
FC-1g	Complete the Storm Drainage Master Plan as identified in the Capital Improvement Plan to thoroughly investigate deficiencies in the existing storm drain system and prioritize infrastructure improvements.
FC-1h	Implement stormwater and drainage projects identified in the City Capital Improvement Plan, to mitigate localized flooding incidents.
FC-1i	Conduct post-flood inspections for residents and business owners upon request and provide post-disaster home repair and technical assistance for vulnerable communities.

Sea Level Rise

SLR-1 *Create, restore, and protect natural coastal ecosystems.*

Sea Level Rise

SLR- 1 *Create, restore, and protect natural shoreline ecosystems.*

Pinole occupies a unique location on the San Francisco Bay which has been long neglected and is susceptible to coastal erosion and other impacts related to climate change. However, coastal and estuarine[50] ecosystems have the capacity to deliver a wide range of goods and services, many of which provide material benefits such as food supply, regulation of water-quality processes, storm protection, and carbon storage.[51] To truly protect the natural coastal ecosystem, a shoreline stabilization study will be conducted to determine the most effective methods for protecting Pinole's communities and infrastructure from erosion and sea level rise, and to identify opportunities for restoring natural habitats that can serve as a buffer against storm surges and other impacts of climate change (Action SLR-2a). We recognize how crucial it is to provide early and ongoing education about the benefits of our surrounding ecosystems. Therefore, as part of Action SLR-2g, the City will create a partnership to establish a Shoreline Ecosystem Education and Innovation Program that will focus on educating youth in Pinole on the importance of natural ecosystems, their role in climate resilience, biodiversity, and local, native species, and also provide hands-on volunteering opportunities for the community.

50. https://dictionary.cambridge.org/us/dictionary/english/estuarine
51. https://www.sciencedirect.com/topics/earth-and-planetary-sciences/coastal-ecosystem#:~:text=Coastal%20and%20estuarine%20ecosystems%20deliver,storm%20protection%2C%20and%20carbon%20storage.

Key Performance Indicators:

- Shoreline Stabilization Study Status

Emissions Reductions

2030: N/A
2045: N/A

SLR-1a

Conduct a shoreline stabilization study to determine the most effective methods for protecting Pinole's shoreline communities and infrastructure from erosion and sea level rise, and to identify opportunities for restoring natural coastal habitats that can serve as a buffer against storm surges and other impacts of climate change. The study would involve the following:

- Assessing the physical characteristics of the shoreline

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

SLR-1a cont.	▪ Evaluating the potential risks and benefits of different stabilization techniques ▪ Engaging with local community members and other interested parties to ensure that the chosen strategies align with community needs and values. ▪ Prioritizing options that enhance and maximize coastal resources and access including considering innovative nature-based solution approaches.
SLR-1b	In collaboration with Contra Costa County Department of Conservation and Development and state agencies, develop a sea level rise resilience and adaptation strategy with shoreline restoration projects using innovative nature-based solutions and green engineering that would enhance public access, shoreline habitat (e.g., re-establishing native dune habitats, wetlands, and lagoons) and increase shoreline recreational opportunities.
SLR-1c	Partner with the San Francisco Bay Conservation and Development Commission (BCDC), and/or similar entities, regarding regional approaches, strategies, and mitigation actions to address sea level rise. Implement a Shoreline Management Plan, and/or a Shoreline Monitoring Program that would identify erosional hotspots and timely response.
SLR-1d	Establish annual budgets for projects within and benefiting vulnerable populations (2016, Assembly Bill 1550), including seniors, individuals with disabilities, children, low-income communities, and communities in low-lying areas.
SLR-1e	Research external funding opportunities, including grants to support shoreline resilience, shoreline restoration projects, or beach nourishment (e.g., Living Shoreline and Nature-based solution projects). Examples of grantee agencies are California Coastal Conservancy, California Coastal Commission, California Ocean Protection Council, NOAA, California Division of Boating and Waterways).
SLR-1f	Identify replacement opportunities or otherwise plan for how to replace recreational areas and accessways that will be lost due to inundation or damage associated with sea level rise. Consider either the designation and zonation of lands into a Local Coastal Program or providing additional incentives to encourage creation of new recreation areas or opportunities. Additionally, plan for future shoreline recreational space and parkland by protecting open space adjacent to shoreline habitats, allowing the beach and habitats to migrate into these spaces.
SLR-1g	Partner with West Contra Costa Unified School District, private schools in Pinole, East Bay Parks, East Bay Municipal Utility District, Friends of Pinole Creek Watershed, 350 Contra Costa, or similar entities to create educational opportunities for the community around the Pinole Creek Watershed. These programs would focus on educating youth in Pinole on the importance of natural shoreline ecosystems, their role in climate resilience, biodiversity, and local, native species. The programs would also include information on how people can actively get involved in adapting to climate change in their homes and neighborhoods and provide hands-on volunteer opportunities for the community to participate.
SLR-1h	Increase the City's near and long-term capacity building to be able to develop and implement thoughtful shoreline resilience projects by creating a position for and hiring a shoreline resilience expert. The specific title may vary depending on the individual's background and the focus of their work within the broader context of climate change and sea level rise.

Extreme Heat

EH-1 *Reduce the impacts of extreme heat in Pinole by installing green/cool roofs and cool pavement, as well as planting vegetation and trees to reduce urban temperatures and the urban heat island effect.*

EH-2 *Map out and create a mural or set of murals using reflective paint to reduce interior heat in areas of Pinole that are most impacted by the urban heat island effect by 2026.*

Extreme Heat

EH-1 ***Reduce the impacts of extreme heat in Pinole by installing green/cool roofs and cool pavement, as well as planting vegetation and trees to reduce urban temperatures and the urban heat island effect.***

Green roofs, or rooftop gardens, are a vegetative layer grown on a rooftop that provides shade and removes heat from the air to reduce roof surface temperatures and thereby the surrounding area. Based on previous analysis on green roofs, temperatures can be 30–40°F lower than those of conventional roofs and can reduce city-wide ambient temperatures by up to 5°F.[52] Given the anticipated increase in temperature by mid- and end-of-century, a 5°F reduction in ambient temperature could make a significant positive impact. In addition to outdoor temperatures, green roofs can also reduce building energy costs compared to conventional roofs. Similarly, a cool roof, which includes either painted or un-painted options that have high-solar reflectivity and are designed to reflect more sunlight than a conventional roof, absorbing less solar energy.[53] Cool pavement options also include a range of established and emerging technologies that reflect more solar energy, enhance water evaporation, or have been otherwise modified to remain cooler than conventional pavements. This measure will be facilitated through partnership with the West Contra Costa School District and private schools in the City to create a map of the campuses and develop a plan to reduce urban heat islands in schools and adjacent areas. Implementation will also include auditing existing bus stops and creating a prioritized plan for shelter upgrades based on existing operations. As mentioned under the summary for Measure CS-1, California has an incredibly diverse ecosystem, which is reflected in the City. By identifying trees, grasses, and shrubs with the greatest cooling benefits and maximum biodiversity potential, multiple benefits would be achieved.

52. https://www.epa.gov/heatislands/using-green-roofs-reduce-heat-islands
53. https://www.energy.gov/energysaver/cool-roofs#:~:text=A%20cool%20roof%20is%20designed,cool%20on%20a%20sunny%20day.

Key Performance Indicators:

- Cool roofs installed (# and sf)
- Green roofs installed (# and sf)

Emissions Reductions
2030: N/A
2045: N/A

EH-1a Partner with the West Contra Costa Unified School District and private schools in the City to map out each campus in Pinole to understand the current infrastructure and then develop a plan to reduce the heat islands in Pinole's schools and adjacent areas, including on walking routes by plant trees or increasing shade structures as appropriate.

EH-1b Establish a tree removal replacement policy where trees that are removed are replaced with shade trees that are adapted to the area.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

EH-1c	In collaboration with Contra Costa Health Services, establish local early heat warning system that provides public health alerts in Spanish, Tagalog, and Cantonese.
EH-1d	Complete an assessment that evaluates new cool pavement technology, cost/benefits, and challenges and opportunities. Upon completion of the study, conduct a pilot of cool pavement application at a centralized area in Pinole that is most impacted by extreme heat to demonstrate success of the program.
EH-1e	Partner with WestCAT to audit existing bus stops in the City of Pinole with information detailing the current structures around the transit stops. Create a prioritization list of stops with low shading scores. Identify opportunities to add, replace, or upgrade existing transit stop shelters to provide increased shade for the transit riders and work with WestCAT to implement the identified opportunities.
EH-1f	Identify trees, grasses, and shrubs with greatest cooling benefits and maximum biodiversity potential and plant them in prioritized open spaces.
EH-1g	Identify grant funding opportunities and engage with local nurseries (e.g., Oaktown, Watershed Nursery, and Native Here) and tree planting programs to identify appropriate and cost-effective California native plants/trees that can be both planted in the ground or remain potted by residents living in rental/multi-family homes.
EH-1h	Amend the Building Code to require cool roofs for all new construction.
EH-1i	Partner with emergency management services to establish backup power and energy grid shutdown protocols that protect the most vulnerable populations (e.g., seniors, individuals with chronic health conditions, children, individuals with disabilities).
EH-1j	Identify opportunities to apply compost as mulch at City open spaces to improve water-holding capacity and filtration to combat extreme heat.
EH-1k	Identify a location in the City to establish a “Community Corner” redevelopment project as a model design project to reduce urban temperatures. Incorporate trees, grasses, and shrubs with the greatest cooling benefits into the project, utilize compost in the project’s landscaping, and incorporate cool pavement technology, cool roofs, and shade structures where applicable. Further consider incorporating a rain garden and resilience center resources into the redevelopment project and publicize all resilient design elements through signage on the property and community tours.
EH-1l	Support development of community-serving microgrids and prioritize areas with high social vulnerability.

Extreme Heat

EH-2 ***Map out and create a mural or set of murals using reflective paint to reduce interior heat in areas of Pinole that are most impacted by the urban heat island effect by 2026.***

Community murals are brightening and revitalizing communities nationwide in more ways than one by going beyond artwork and acting as economic development tools. According to the Americans for the Arts, a leading nonprofit for advancing the arts, arts drive tourism, support local merchants, and represents a growing portion of the gross domestic product.[54] Reflective mural have been measured to reduce the surface temperature of buildings by approximately 30 percent.[55] To initiate this exciting and innovative project, the City will create a digital map showing neighborhoods where it is the hottest and identify a location or locations to pilot an urban heat mural project (Action EH-2a). To measure indoor temperature, and ultimately, how productive the murals are at reducing indoor temperatures, sensors would be installed in the identified locations prior to completing the mural and be used to continue to track data after the murals are installed (Action EH-2d). Upon completion of the murals, the City would host community unveiling ceremonies that celebrate the project and provide updates on the CAAP implementation, as well as resources such as relevant incentives and rebates.

54. https://uca.edu/cced/2016/07/05/community-murals-as-economic-development-tools/
55. https://www.pacoimabeautiful.org/programs/beat-heat-mural

Key Performance Indicators:

- Murals Complete (#)
- Temperature change between pre- and post-project

Emissions Reductions

2030: N/A
2045: N/A

EH-2a Partner with NASA, or a similar organization to create a digital map of the City showing neighborhoods where it is the hottest and identify locations to pilot an urban heat mural project.

EH-2b Post the map on the City's website and host community feedback sessions to update the analysis included in the map based on real lived experiences. Additionally, post mural design concepts that are created as part of Action EH-2c to foster a sense of ownership over the project.

Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

EH-2c	Create a partnership with Contra Costa College, Pinole Artisans, West Contra Costa Unified School District, private schools, and/or similar interested parties and community-based organizations to design and paint mural(s) that inspire the community while reducing indoor heat using reflective paint.
EH-2d	Install indoor and outdoor temperature sensors in the identified locations prior to completing the mural and continue to track data after the murals are installed to measure indoor changes in temperature to quantify the benefits of the project.
EH-2e	Identify and apply for grants to fund the completion of the mural and/or work with cool paint manufacturers to supply a small amount of paint at no cost for a pilot project where their name would be included on a plaque with volunteer artists who partner with the City to donate their time and expertise to create a unique project.
EH-2f	Host a community unveiling ceremony where the artists and project partners are invited to participate in a meet and greet and celebrate the community in an unveiling celebration that can also be used to provide the community with information on the status of the Climate Action and Adaptation Plan implementation and resources including relevant community incentives and rebates.

Wildfire

WF-1 *Enforce defensible space and home hardening standards to mitigate structure ignitions from wind blow embers, conduct ongoing community workshops on home-hardening techniques, and connect community members to funding resources to implement these techniques.*

Wildfire

WF-1 ***Enforce defensible space and home hardening standards to mitigate structure ignitions from wind-blown embers and direct flame impingement in fire hazard severity zones and protect the community from wildfires.***

Defensible space is defined as the buffer created between a building and the surrounding ecosystem (grass, shrubs, and any wildland area) that is necessary to slow or prevent the spread of wildfire. Not only does defensible space protect buildings from catching on fire from embers, direct flames, or radiant heat, it also provides a physical space for firefighters to work.[56] Hardening (i.e., preparing) homes and businesses for potential wildfire include utilization of noncombustible materials during necessary replacements (e.g., fire rated roofs), caulking and plugging gaps, and installing weather stripping, among other things. Implementation of this measure would include conducting a feasibility study and if recommended, amending the Pinole Building Code to require best-practice Ignition Resistant Construction methods for new construction and substantial redevelopment in the wildfire hazard zone (Action CR-1b). Additionally, a built asset vulnerability assessment will be completed to identify which City-owned facilities and infrastructure have the highest risk to wildfire impacts and then identify opportunities to mitigate the risks. Similar goals are expected to be codified at the state level through AB 2322, which requires the State Fire Marshal to research and develop mandatory building standards for fire resistance prior to the next triennial edition of the California Building Standards Code adoption (January 1, 2026).

56. https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/defensible-space/

Key Performance Indicators:

- Feasibility study status

Emissions Reductions

2030: N/A
2045: N/A

WF-1a Partner with Housing Authority Contra Costa to conduct a study that estimates potential housing displacement impacts associated with wildfire events.

WF-1b Conduct a feasibility study and if recommended, amend the Pinole Building Code Title 15 (Building and Construction) to require best-practice Ignition Resistant Construction methods for new construction and substantial redevelopment in the wildfire hazard zone.

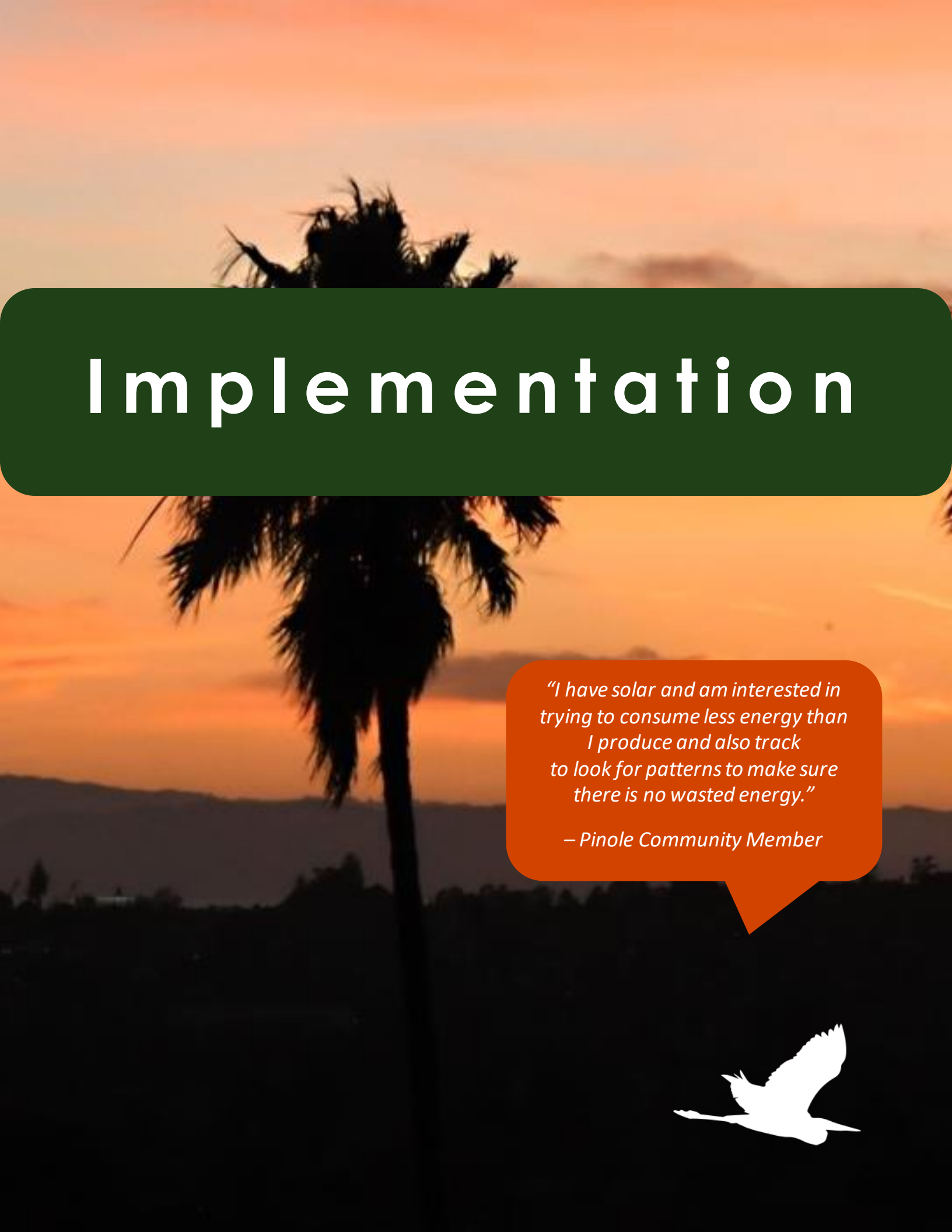
Pillars

- Structural Change
- Funding
- Education
- Partnerships
- Equity
- Feasibility

Co-Benefits

- Access to healthy food
- Cost savings
- Cleaner air/water
- More green spaces
- Improved accessibility
- Improved economy
- Disaster preparedness, safety, and resilience

WF-1c	Develop a subsidy program to improve air quality in the homes of low-income residents or vulnerable community members to mitigate impacts from wildfire smoke.
WF-1d	Partner with West Contra Costa Fire Safe Council to help secure grant funding for mitigation activities that promote fire safe retrofits of existing structures that meet ignition-resistant building codes.
WF-1e	Conduct a built asset vulnerability assessment to identify which City-owned facilities and infrastructure have the highest risk to wildfire impacts, identify opportunities to mitigate risk and implement changes.
WF-1f	Evaluate and help identify and apply for funding for infrastructure improvements at Pinole Fire Station 74 to mitigate against wildfire hazards (fire breaks, fire resistant building materials, etc.).
WF-1g	Actively engage in collaborative efforts to reduce wildfire risks, implementing effective mitigation strategies, and fostering a culture of fire safety through education and community involvement to achieve Firewise recognition
WF-1h	Prepare, adopt, and fully implement a Vegetation Management Plan for high-fire risk areas.
WF-1i	Continue to conduct proactive vegetation/weed abatement enforcement by removing vegetation and/or brush in areas adjacent to wildfire hazard zones, including both public and private property. Establish a comprehensive defensible space zone and fire breaks within the VHFHSZ, and a regular maintenance schedule. A FEMA approved HMP can establish eligibility for grant funding to complete fuel modification projects.
WF-1j	Locate future critical facilities outside of the wildfire hazard zone.
WF-1k	Continue to coordinate with PG&E through Rule 20A Program to underground utility lines to mitigate wildfire risk.
WF-1l	Conduct on-going workshops on defensible space, vegetation management, and home-hardening techniques based upon most up to date CAL FIRE management guidelines and policies for landowners in fire hazard severity zones.
WF-1m	Foster a community partnership that can successfully apply for and receive funding from programs such as the CAL FIRE Defensible Space Assistance Grant program and upcoming opportunities that become available.



Implementation

"I have solar and am interested in trying to consume less energy than I produce and also track to look for patterns to make sure there is no wasted energy."

– Pinole Community Member

Earth Walk Community Art Project, 2023

Implementation and Monitoring

We share a long history of completing projects to reduce GHG emissions and address climate impacts. With the adoption of this CAAP, additional collaboration and action will be necessary to reduce GHG emissions in line with the climate mitigation and adaptation goals. Establishing, maintaining, and enhancing new, and existing, relationships between the City and the community will be a pivotal piece in achieving the Plan's targets. Being transparent about progress over time is critical to building trust with the community.

Additionally, new policies and ordinances will be needed to drive change in tandem with new and innovative funding mechanisms to bolster the transformation of infrastructure and technology. Programs to educate and empower the community will increase awareness and action.

The City will implement measures that mitigate GHG emissions and increase climate change resilience in an equitable manner and avoid traditional hurdles.

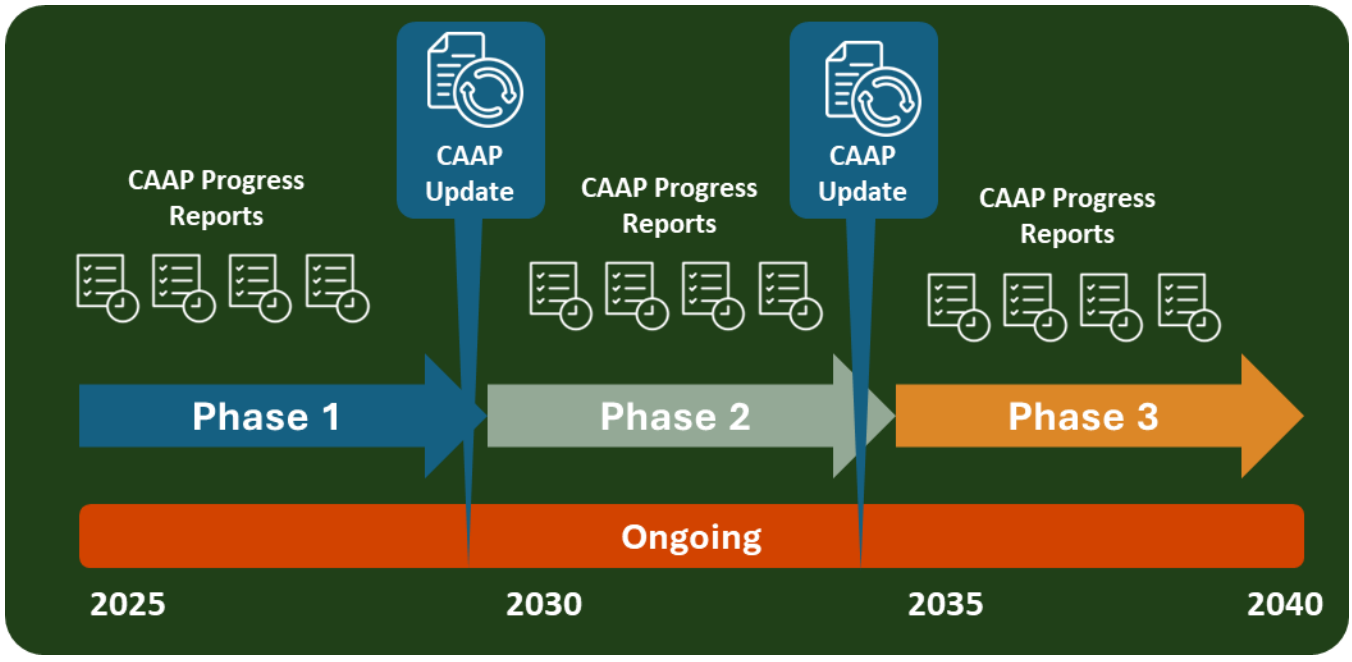
While substantial evidence suggests that the emission reduction measures outlined in this CAAP will achieve the City's 2030 targets, uncertainty increases over time as impacts related to climate change may evolve or intensify. The adoption rates of each measure and action, costs of technology, legislative environment, and benefits assumed in this report will also continue to evolve over time. Therefore, this CAAP should be viewed as a strategic framework that will be re-evaluated regularly. This chapter discusses the implementation plan, monitoring and reporting processes, and how the City will prepare updates over time.

CAAP Implementation

Cities around the world already face challenges in meeting community needs for investment in many types of critical infrastructure and programs. Climate change impacts, such as rising sea levels, severe weather conditions, and wildfires, will only cause further damage to infrastructure, property, and people's livelihoods. Inevitably the City will incur substantial costs in repairing and rebuilding damaged infrastructure and supporting affected communities because of climate change. To minimize these costs, the City has developed an implementation plan that outlines the steps, timelines, and resources required to achieve the goals and objectives of the CAAP. Some actions such as adopting ordinances or resolutions to establish an electrification reach code can be done on a short timetable; while others, such as implementation of the Active Transportation Plan will require longer timelines for both rollout of the infrastructure and use by the community. Tables 10 – 12 included below provide detailed information on implementation of each action, including the department responsible for implementing the action, the phase in which the initiative will be implemented, and examples of what the funding sources could be.

The timeline in Figure 14 shows the five-year implementation and update schedule, with a phased approach to measure implementation. To achieve the 2030 GHG emissions reductions targets discussed in Chapter 2, Pinole will need to begin implementing the measures and actions immediately following adoption, no later than December 2024. CAAP Updates will follow the phased implementation approach, beginning with Phase 1, which will occur in the short-term over the next five years (2024 – 2029). Phase 2 would include implementation of the mid-term measures, while Phase 3 would include implementation of the longer-term measures, that are anticipated to occur after feasibility studies are complete and initial measures are implemented. If the actions identified in the CAAP are not implemented or the GHG inventories don't track progress towards the 2030 target, additional actions will need to be developed and adopted in a CAAP update.

Figure 14 CAAP Implementation and Monitoring Schedule



The first CAAP progress report will be prepared in 2025 and the CAAP will be reviewed and updated in 2029, based on current best practice at that time.

CAAP Monitoring

Monitoring and reporting processes are essential for accountability towards achieving the adopted targets. As part of the CAAP, the City will complete an annual progress report as well as a five-year CAAP review and update. The annual progress reports will include both evaluating implementation progress against the schedule and calculating an annual communitywide GHG emissions inventory. The City will also appoint a dedicated team responsible for monitoring and reporting on the implementation of the CAAP. This team will collaborate with interested parties to collect data and information on the effectiveness of implemented strategies and report the progress to the City Council and the public. The City Council will in turn provide oversight and guidance on the implementation of the CAAP.

CAPDash

CAPDash, shown in Figure 5, is a web-based dashboard developed by Rincon Consultants, Inc. that allows Pinole to monitor the annual emission reductions achieved through the implementation of each measure and fulfill the requirements of CEQA Section 15183.5(b)(1)(e). The City will conduct annual implementation monitoring of the GHG emissions reduction measures. The process for tracking and quantifying measure implementation status relies on specific target metrics identified for each of the quantifiable CAAP measures and actions. By committing to annual monitoring of implementation progress and adjusting as needed, Pinole can effectively mitigate GHG emissions and adapt to climate change. In doing so, Pinole will make it's fair-share contribution to meeting statewide GHG emission reduction goals, increase resilience across the community and reap the co-benefits in public health, economic growth, resilience, and more. This strategic plan represents another significant step in the City's dedication to a sustainable future.

Figure 15 CAPDash

Table 10 Implementation of Mitigation Strategies, Measures, and Actions

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
Strategy CR. Cornerstone				
CR-1. Leverage the CAAP's work around electrification, transportation infrastructure buildout, organic waste diversion, and carbon sequestration to establish Pinole as a center for green economic development and high-road jobs.				
CR-1a	Coordinate with the City's Economic Development staff to review and update the Pinole Economic Development Strategy every three years (2026/28, 2029/31, 2032/34, etc.) and adjust fees to specifically attract green and clean energy businesses to Pinole by reflecting changing economic trends, evolving community needs, and emerging opportunities. Include an annual review of the fee schedules (including a survey of competitor's fees) to assess their impact on green businesses.	Community Development	Phase 1	▪ Office of Planning and Research Covid Economic Relief Fund: Implementation Program ▪ Economic Development Administration's Public Works and Economic Adjustment Assistance Programs ▪ Office of Business and Economic Development Accelerate California Grant
CR-1b	Work with the City's Economic Development staff to perform direct outreach to existing Pinole businesses to identify climate change impacts (e.g., climate hazards, increasing water and natural gas costs, etc.) that may affect the long-term viability and growth of existing core industries and small business. Include regional green and clean energy businesses in a "short list" of industries to focus these initial outreach and business retention efforts during Phase 1.	Community Development	Phase 1	▪ Office of Planning and Research Integrated Climate Adaptation Plan ▪ Economic Development Department Workforce Development Fund
CR-1c	In partnership with organizations such as the Workforce Development Board of Contra Costa County or Contra Costa College, create a green workforce development program to connect Pinole residents to workforce development training courses for climate industries with high-road jobs. Additionally, use the program to develop a network of local professional associations active in Pinole and to incorporate green workforce development training courses into the periodic "Pinole Workforce Development Consortium" meetings identified in the Economic Development Strategy. Focus this program on members of the most disadvantaged and vulnerable communities in the City and track enrollment and success rate by zip code to monitor the reach and distribution of the initiative.	Community Development	Phase 1	▪ Economic Development Administration's Public Works and Economic Adjustment Assistance Programs ▪ Economic Development Department Workforce Development Fund ▪ Office of Planning and Research Covid Economic Relief Fund: Implementation Program

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CR-1d	Partner with the Contra Costa County Green Business Program to help small- and medium-sized businesses in Pinole minimize their impact on the environment and increase the number of certified Green Businesses in Pinole.	Community Development	Phase 1	Economic Development Department Equity Target Population Fund
CR-1e	Create a Green Technology Incubator in partnership with the Workforce Development Board of Contra Costa County, Contra Costa College, the Renaissance Entrepreneur Center, the East Bay Economic Development Alliance, or similar partners, to help startups and companies working on innovative solutions for climate-related challenges to succeed in the market. The Green Technology Incubator would provide access to funding through identification and partnership opportunities for grants, technical assistance, networking support, and community exposure.	Community Development	Phase 2	▪ Office of Planning and Research Covid Economic Relief Fund: Implementation Program ▪ Economic Development Administration's Public Works and Economic Adjustment Assistance Programs ▪ Office of Business and Economic Development Accelerate California Grant ▪ Economic Development Department Workforce Development Fund
CR-1f	Incentivize optimal use of properties with a water view by adoption of Municipal Code Amendments allowing for height exceptions for mixed use developments that include top-floor restaurants that are dense, transit rich and connected to Pinole's growing active transportation network.	Community Development	Phase 2	
CR-1g	Based on the findings and recommendation of the broadband feasibility study (currently in progress), a subsidy or grant program may be developed to improve existing infrastructure of multi-family units (i.e., upgrade internal wiring etc.) to update policies to increase Pinole residents' work-from-home rate, including incorporating work-from-home strategies into the Transportation Demand Management standards of Action TR-3a.	Community Development	Phase 2	California Public Utilities Commission Broadband Adoption Account
CR-1h	Explore locations within the City to create a plan to develop a climate resilience district. The district would receive focused City resources, support, partnerships with local businesses, and engagement to develop resilient communities. Examples could include the Pinole Valley area to focus on funding projects related to wildfire risk, for example.	Community Development	Phase 2	▪ Governor's Office of Planning and Research Integrated Climate Adaptation and Resiliency Program Adaptation Planning Grant Program ▪ Caltrans Sustainable Transportation Planning Grant

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
Strategy BE. Building Energy				
BE-1. Electrify 100% of new construction in the City by 2024.				
BE-1a	Adopt a single margin source energy score or more stringent ordinance in 2024 to avoid new natural gas construction.	Community Development Department	Phase 1	California Automated Processing Program
BE-1b	Partner with organizations such as MCE, Bay Area Regional Energy Network (BayREN), the Building Decarbonization Coalition and the U.S. Green Building Council (USGBC) to compile a suite of case studies (e.g., document/guide on all-electric best practices and examples applicable to Pinole or the Bay Area) and cost-effective strategies (e.g., energy efficiency improvements) for electric buildings by prototype. Provide digital copies on the City's website and hard copies at City Hall for residents and business owners to review and utilize.	Community Development Department	Phase 1	Bureau of Reclamation WaterSMART Water and Energy Efficiency Grants
BE-1c	Partner with organizations such as MCE, BayREN, the Building Decarbonization Coalition, and USGBC to educate building owners, developers, and contractors on the cost savings, environmental benefits, and versatility associated with all-electric construction, as well as the advantages all-electric construction provide for United States Green Building Council LEED certification. Utilize the case studies and cost-effective strategies as well as existing resources such as those provided by MCE as educational materials and share the information on the City's website, at City events (such as Dumpster Day and Earth Walk), and at the City's permit counter.	Community Development Department	Phase 1	
BE-1d	Partner with PG&E to conduct an electrification infrastructure and capacity feasibility study to identify expected increases in electricity demand due to building and vehicle electrification and identify infrastructure improvements (including local renewable energy and storage projects) to increase capacity to meet demand. During this process, work with MCE to provide projections on load changes due to electrification.	Community Development Department	Phase 1	
BE-1e	Partner with MCE, the WFDBCCC and/or other organizations to host regular workforce development trainings for installers, local contractors, and building owners/operators. Trainings would provide financial resources and technical requirements, including information on new electric appliances and approaches to electrification. Partner with community-based organizations to connect members of vulnerable communities to these training programs in plain language and in a culturally appropriate manner.	Community Development Department	Phase 1	Economic Development Department Workforce Development Fund
BE-1f	Advocate for regional policy and programs that allow for utility rates that are supportive of electrification (i.e., electricity rates lower than natural gas rates).	Community Development Department	Phase 2	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
BE-2. Electrify existing residential buildings to reduce natural gas consumption 31% by 2030 and 100% by 2045.				
BE-2a	Adopt a reach code in 2024 requiring all central air conditioning unit installations and replacements be two-way, providing both heating and cooling with a single unit for residential buildings. The ordinance would apply to projects after calendar year 2024. The ordinance would be implemented through the building permit process.	Planning and Building	Phase 1	
BE-2b	After calendar year 2024, include major renovations (i.e., projects that affect over 50% of the building, add an additional 50% of gross floor space to the building, or value more than 50% of the assessed value of the property at time of application submittal) in the all-electric new residential building requirements.	Community Development	Phase 1	
BE-2c	Complete a residential existing building electrification feasibility analysis by 2024 to determine the upfront and on-bill costs associated with building electrification strategies and draw on existing ordinances from similar jurisdictions to identify barriers to replacement and permit compliance (including equity barriers). This information will be used to inform and support future updates to the existing building electrification ordinances as well as the building electrification resource center (Action BE-2e).	Community Development	Phase 1	
BE-2d	Partner with Contra Costa County to create a virtual all-electric building resource center to provide residents information on available electrification assessments, turn-key installations by BayREN/state vetted contractors, low up-front costs and on-bill financing, and equipment and labor warranties.	Community Development	Phase 1	Department of Energy Grid Innovation Program
BE-2e	As part of the building electrification resource center, provide free assessments to rental and multi-family properties, as well as seniors and residents living on low incomes.	Community Development	Phase 1	
BE-2f	Partner with MCE and PG&E to review incentives, rebates, and on-bill financing options for procedural equity and then update the incentives to remove the identified barriers.	Community Development	Phase 2	
BE-2g	Partner with properties in Pinole that provide deed-restricted affordable housing, MCE, PG&E, and BayREN to initiate and complete an affordable housing electrification pilot project. Project will implement energy efficiency strategies to mitigate increased energy bills for occupants. Promote the pilot project as a case study for future projects in the City.	Planning and Building	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
BE-2h	Work with MCE and PG&E to conduct a cost-effectiveness study and design electricity and natural gas billing rates that make electrification the most cost-effective option to reduce energy bill burdens for residents living on low and medium incomes.	Planning and Building	Phase 1	
BE-2i	Provide education around cooking with electric appliances and partner with local chefs and/or restaurants to host cooking demonstrations at community events such as the Farmers' Market. Integrate locally sourced food into the demonstrations to also educate community members on the GHG emission reduction and resilience benefits of local food.	Community Development	Phase 1	
BE-2j	Enforce ordinance compliance through a comprehensive permitting compliance program which may include, but is not limited to: ▪ Providing dedicated time for routine staff training to incorporate into existing building inspections. ▪ Imposing fees for noncompliance to offset staff costs and encouraging voluntary compliance. ▪ Establishing easy-to-understand web-based compliance checklists and permit applications. ▪ Facilitating online permitting. ▪ Providing zero-cost permit fees for heat pump installations.	Community Development	Phase 1	
BE-2k	Develop and implement a water heater loan program where residents who are replacing their natural gas-powered water heaters with electric-powered water heaters at the end of their useful lives can borrow or rent at no cost a working natural gas water heater from the City for a limited period of time (e.g., three weeks) to use during any electrical panel upgrade requirements to install an electric water heater. Participation in this program could serve as a mechanism to support thoughtful residential transition. Consider expanding the loan program to induction stoves as well.	Community Development	Phase 1	California Automated Permit Processing Program: Solar Automated Processing Program
BE-2l	Partner with Rising Sun, or similar entity, to continue providing "Green House Calls" to residents to recommend energy-saving appliances and programs to help offset the costs of electrification.	Community Development	Phase 1	Bureau of Reclamation WaterSMART Water and Energy Efficiency Grants
BE-2m	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. Engage local developers, MCE, and vulnerable populations to assess the feasibility of adopting an end-of-flow ordinance that would require natural gas lines be capped and decommissioned in existing buildings by 2045.	Building	Phase 2 – 3	
BE-2n	Adopt an end-of-flow ordinance that would require natural gas lines by capped and decommissioned in existing buildings by 2045.	Community Development	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
BE-3. Electrify existing commercial and mixed-use (i.e., combined commercial and residential) buildings to reduce natural gas consumption 26% by 2030 and 100% by 2045.				
BE-3a	Complete an existing commercial building electrification feasibility analysis by 2024 to determine the upfront and on-bill costs associated with building electrification strategies and draw on existing ordinances from similar jurisdictions to identify barriers to replacement and permit compliance (including equity barriers).	Community Development	Phase 1	
BE-3b	Adopt a reach code in 2024 requiring all central air conditioning unit installations and replacements be two-way, providing both heating and cooling with a single unit for commercial and mixed-use buildings. The ordinance will be implemented through the building permit process. Track annual progress on commercial and mixed-use building electrification through the same permit tracking program developed for residential building electrification.	Planning	Phase 1	California Electric Homes Program
BE-3c	Evaluate the success of the pilot Pinole Energy Efficiency Rebate Program which offers for calendar year 2024 additional rebates to Pinole residents for energy efficiency improvements stacked on top of federal, state, or regional rebates or discounts. Work with Contra Costa County Department of Conservation and Development to restructure the pilot program as needed. Seek annual grant funding sources to sustain and support the program through.	Planning	Phase 1	
BE-3d	Develop a building performance standard program to meet a specific level of energy use per square foot for all commercial and industrial buildings over 20,000 square feet. Implementation and compliance support, including resources and tools which will be implemented through four phases: 1. Pre-development phase– Phase 1 – Staff to receive technical assistance from the Building Technologies Office in the Federal Office of Energy Efficiency and Renewable Energy (EERE). Per the EERE, technical assistance may take the form of: ▪ Building stock analyses, including analysis of energy and emission impacts associated with building performance standard adoption ▪ Performance target-setting and trajectories ▪ Measure and technology prioritization and packaging ▪ Cost-effectiveness analyses	Planning and Building	Phase 1 – 3	California Electric Homes Program

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
BE-3d cont.	2. Data collection phase – Phase 2 – All commercial and industrial building owners with floor area over 20,000 square feet report electricity and natural gas data through energy star portfolio manager 3. Retro commissioning phase – Phase 3 – All covered building owners complete a retro commissioning process to identify and correct system inefficiencies while identifying opportunities for electrification and downsizing of oversized equipment. 4. GHG Performance Standard – Phase 4 – Implement a building performance standard that requires buildings to meet a specific GHG performance level			
BE-3e	Conduct targeted outreach and complete tailored campaigns during development of the building performance program (Action BE-3d) and electrification ordinance (Action BE-3b) to identify potential barriers to commercial and mixed-use electrification (including equity barriers) and educate commercial and mixed-use property owners on the potential cost savings and other benefits of electrification. Include targeted outreach to building owners that rent or lease space to small businesses and minority-owned businesses as well as the business owners and conduct a survey to such businesses to identify specific resources needed to support an equitable building electrification.	Planning and Building	Phase 1	▪ Economic Development Department Workforce Development Fund ▪ Economic Development Department Equity Target Fund
BE-3f	Partner with Contra Costa Health Services to provide small and minority-owned businesses/commercial property owners or property owners that rent or lease space to small or minority-owned business, electrification assessments, turn-key installations by BayREN/state vetted contractors, low up-front costs, and equipment and labor warranties through the building electrification resource center (Action BE-2e). Additionally, partner with MCE or PG&E to provide on-bill financing.	Community Development	Phase 1	Economic Development Department Equity Target Fund
BE-3g	Partner with the Bay Area Council, Bay Front Chamber of Commerce, and Contra Cost County Green Business Program to inform, encourage, and facilitate electrification for commercial business owners.	Community Development	Phase 1	
BE-3h	Review incentives and rebates (from Action BE-3g) for procedural equity and develop a process so that existing and updated incentive programs continue to be equitably distributed to the community. Hurdles to equitable implementation could include credit checks, excessive procedural roadblocks, and lack of targeted outreach.	Community Development	Phase 1	
BE-3i	Work with MCE and PG&E to incentivize all-electric retrofits by combining rebate programs and financing mechanisms to create cost-effective	Planning and Building	Phase 2	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
BE-3i cont.	electrification packages and develop bulk-purchasing opportunities for multi-unit development owners. Additionally, work with BayREN to educate the business community about the available incentives and include direct outreach to small, and frontline community-owned businesses and property owners who rent and lease space to frontline community-owned businesses.			
BE-3j	Work with BayREN to identify highly efficient net zero energy building owners that meet the CPUC's hard-to-reach criteria and publicize commercial tax breaks to these building owners as well as commercial developers in Pinole.	Community Development	Phase 2	
BE-3k	Re-evaluate the building performance program (Action BE-3d) every three years to gauge implementation progress and phase expansion of program to smaller buildings.	Building	Phase 2 – 3	
BE-3l	Review and update Section 15.46.020 of the Municipal Code to require upon a transfer of ownership the disclosure of additional relevant weatherization information (e.g., ventilation standards, wall insulation, and installation of programmable thermostats) for residences and commercial buildings over 5,000 square feet. As part of this, work with Contra Costa County Department of Conservation and Development to promote the Weatherization Program for qualifying residents. Additionally, develop a City-specific disclosure checklist and coordinate with realtors/brokers to engrain the City's resale requirements into their work with buyers and sellers.	Building	Phase 2	
BE-4. Work with MCE to provide carbon-free and renewable energy to at least 95% of the community by 2030.				
BE-4a	Support MCE in building capacity and funding to provide all Pinole customers 100% carbon-free and renewable energy and adopt a City resolution to enroll all Pinole residents and businesses in carbon-free and renewable from MCE (e.g., MCE's Deep Green option) by 2030. The resolution shall include identification of a funding or subsidy plan/program to avoid cost increases to customers enrolled in the California Alternate Rates for Energy (CARE) or Family Electric Rate Assistance (FERA) programs (Action BE-4b).	Planning	Phase 1	
BE-4b	In support of Action BE-4a, work with MCE to create a funding and subsidy plan/program for customers enrolled in the CARE or FERA programs to opt-up to MCE's Deep Green option. This may include subsidizing costs to customers who participate in CARE/FERA programs through non-discounted customer rate increase or obtainment of funding for vulnerable communities.	Planning	Phase 1	
BE-4c	Continue to work with MCE to conduct an annual analysis of opt-out rates in the City and expand the research to understand why residents and businesses opt out of MCE. Include targeted outreach to residents living on low and fixed incomes and vulnerable communities to identify barriers to remaining with MCE.	Planning	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
BE-4d	Continue to partner with MCE to conduct educational campaigns, including tabling at community events, establishing informational resources on the City's website, regularly posting on social media, and developing energy bill inserts, to highlight the benefits of 100% renewable energy and promote the available incentives.	Community Development	Phase 1	
BE-4e	Conduct targeted outreach campaigns to convert PG&E direct access customers to MCE by promoting available incentives and promoting the economic and business benefits of 100% renewable energy.	Community Development	Phase 2	
BE-5. Increase generation and storage of local community-scale renewable energy.				
BE-5a	Adopt a PV (Solar) Ordinance requiring newly constructed and majorly renovated multi-family and commercial buildings to install PV systems and storage that meet minimum requirements of Tier 2 Voluntary Standards under CalGreen.	Planning	Phase 1	California Automated Permit Processing Program: Solar Automated Processing Program
BE-5b	Continue to establish and streamline standards and permit requirements for electrification-related installations and battery storage systems to allow for easier implementation of these technologies in the City.	Planning	Phase 1	
BE-5c	Install a co-located community solar and storage facility to benefit affordable housing sites using Equity Resilience Incentives under the Self-Generation Incentive Program available through the California Public Utilities Commission.	Public Works	Phase 1	California Energy Commission Block Grant for Electric Vehicle Charger Incentive Projects
BE-5d	Collaborate with PG&E, MCE, and/or other community partners to support and incentivize local on-site energy generation and storage resources. This could include: ▪ Connecting home and business owners, particularly those in vulnerable communities, to incentives for renewable energy and storage including Net Metering Programs through PG&E for bill credits, the Disadvantaged Communities-single-family Solar Homes (DAC_SASH) program, Self-Generation Incentive Program (SGIP), and Equity Resilience rebates that provide an upfront rebate for battery storage, as well as the federal investment tax credit. ▪ Promoting installation of storage technology in concert with renewable energy infrastructure through multilingual education programs, outreach, and information provided via City platforms. ▪ Providing workshops to large commercial developers and large business property owners on the benefits of microgrids and energy resilience. ▪ Creating a strike team to conduct engagement efforts for the commercial sector to identify ways the City can support commercial energy storage installations and neighborhood scale microgrid opportunities.	Community Development	Phase 1	Department of Energy Grid Innovation Program

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
BE-5e	Expand the partnership with GRID Alternatives through increased funding/support and promote the benefits of renewable energy through multi-lingual educational programs to facilitate an equitable transition to renewable energy.	Community Development	Phase 1	
BE-5f	Partner with CBOs and homeowner's associations (HOAs) through the City's professional grant writing consultant, who will support the identification, conceptualization, preparation, and submittal of grant applications to secure funding for community-scale renewable energy projects. Utilize any grant funded projects as City pilot projects to demonstrate the success of the program and opportunities available.	Community Development	Phase 2	
Strategy TR. Transportation				
TR-1. Create a safe and connected active transportation network linked to Pinole Creek to increase active transportation mode share to 4% by 2030 and 10% by 2045.				
TR-1a	Conduct an analysis of existing bicycle and pedestrian conditions during the development of the Active Transportation Plan with a focus on identifying residential communities, commercial uses, schools, and open spaces currently disconnected from the Creek, due to freeways and lack of connections on busy roads. Build on the interactive map created to solicit community input regarding the Active Transportation Plan on "Pinole Speaks," the City's public input website to display the active transportation conditions identified and allow community feedback through the webpage.	Public Works	Phase 1	▪ Department of Transportation's Safe Streets and Roads for All program ▪ Department of Transportation's Active Transportation Infrastructure Investment Program California Transportation Commission's Active Transportation Program
TR-1b	Complete the Active Transportation Plan with a focus on creating safe and connected active transportation networks that link residential neighborhoods, schools, and commercial centers to Pinole Creek and thereby to each other. The plan will include: ▪ A prioritized list of pathways to be installed or upgraded to include shared-use paths, buffered bike lanes, bike boulevards, and separated bikeways. ▪ A prioritized list of bicycle parking or storage and equipment repair infrastructure. ▪ Information on additional infrastructure installed as part of the plan, such as trash and recycling receptacles to prevent waste from entering the creek due to increased usage. ▪ A schedule for reducing vehicle speed limits at prioritized locations. ▪ Available funding sources for infrastructure buildout. ▪ Use of sustainable materials, when feasible	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
TR-1b cont.	Prioritization shall focus on achieving an equitable active transportation system where all Pinole residents have access to critical connections and mobility options.			
TR-1c	Partner with Contra Costa Transportation Authority to pursue funding from Caltrans' Active Transportation Program or similar funding opportunities to implement improvements from the City's Active Transportation Plan.	Public Works	Phase 2	
TR-1d	Partner with an entity such as the Metropolitan Transportation Commission, 511 Contra Costa, or the Contra Costa Transportation Authority to expand existing rebate programs to help families living on low- and fixed-incomes purchase alternative modes of transportation (e.g., bicycles, scooters, rollerblades, skates, skateboards) and appropriate safety gear.	Public Works	Phase 2	▪ Department of Transportation's Safe Streets and Roads for All Program ▪ Department of Transportation's Active Transportation Infrastructure Investment Program ▪ California Transportation Commission's Active Transportation Program
TR-1e	Partner with Bike East Bay and/or other non-profit groups to periodically close streets with connections and vistas of the Creek to cars to host walk/bike/roll (car-free) community events that demonstrate the benefits of a safe and connected active transportation network. Coincide these community events with regular active transportation events to encourage and reward residents for participation.	Public Works	Phase 2	
TR-1f	Partner with schools, youth sports leagues, the Pinole Police Department, and community groups such as Friends of Pinole Creek Watershed, 511 Contra Costa, Pinole Valley Earth Team, Pinole Rotary, Pinole Community Services Commission and local Tribes to teach students and families bicycle and pedestrian safety and educate them on the safe route availability and the health and environmental benefits of walking and bicycling, as well as the history of the Pinole Creek ecosystem and surrounding natural lands.	Public Works, Community Services	Phase 2	▪ Department of Transportation's Safe Streets and Roads for All program ▪ Department of Transportation's Active Transportation Infrastructure Investment Program ▪ California Transportation Commission's Active Transportation Program ▪ California Transportation Commission's Local Partnership Program

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
TR-1g	Partner with an electric bike provider or rental company to pilot an electric-bike rental program at the Pinole Library. Track use of the program, including equity indicators, to monitor its success and evaluate continuation of the program.	Community Development	Phase 2	California Climate Investments Program
TR-1h	Install bike repair stations along the Pinole Creek and consider partnering with a local bike shop to provide quarterly bicycle repair support for residents traveling along the bike path or at a designated, central location.	Public Works	Phase 2	California Transportation Commission's Local Partnership Program
TR-1i	Implement 100% of the Active Transportation Plan by 2030 to achieve a 5.5% active transportation mode share by 2030 and 10% by 2045.	Public Works	Phase 2 – 3	California Transportation Commission's Active Transportation Program
TR-2. Implement public and shared transit improvements and programs to achieve a 14% public transit mode share by 2030 and 18% by 2045.				
TR-2a	Partner with Western Contra Costa Transit (WestCAT) to conduct a prioritization study to determine transit priority corridors and best potential locations for WestCAT expansions (including the Hercules Intermodal Transit Center and Richmond BART Station) to reduce transit travel times from/to Pinole. The study shall include an analysis of existing stops and schedules, a survey of existing commuter patterns, analysis of potential latent demand, and targeted outreach to residents living on low- and moderate-incomes and members of vulnerable communities to understand the concerns around or equity barriers to using public and/or shared transit.	Public Works	Phase 1	California Transportation Commission's Local Partnership Program
TR-2b	Conduct a feasibility study to assess the potential impacts and costs of a park-and-ride facility in Pinole and identify potential locations.	Public Works	Phase 1	
TR-2c	Work with WestCAT to complete an analysis of potential design improvements, such as seating and shading bus stops and along active transportation routes to increase use.	Public Works	Phase 1	CalTrans Sustainable Transportation Planning Grant
TR-2d	Work with WestCAT to improve transit accessibility for people with disabilities by ensuring physical accessibility (i.e., ramps, lifts, and tactile paving), providing both audio and visual information; training staff on how to assist people with disabilities and handle equipment; and actively engage people with disabilities in the decision-making process.	Public Works	Phase 1	
TR-2e	Partner with WestCAT and the Contra Costa Transportation Authority to implement a free public transit pilot program for students, foster youth, and unhoused youth in Pinole that makes it free for participants to travel via WestCAT.	Community Development	Phase 1	Section 5310 Grant for Senior Access

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
TR-2f	Based on the prioritization studies (TR-2a - TR-2c), develop a plan to prioritize infrastructure improvements in existing neighborhoods that increase access to and use of public transit. The plan shall include projects and timelines to: ▪ Expand WestCAT routes and schedules ▪ Cohesively label all existing and new stops ▪ Provide safe and convenient shelters with benches, shade. hand sanitizing stations, area maps, and native plants ▪ Establish a schedule to annually monitor routes and schedules to confirm they meet the needs of the community	Public Works	Phase 2	
TR-2g	Engage with Caltrans to design and install a park and ride facility, which may include implementing efficient traffic flow systems.	Public Works	Phase 2	
TR-2h	Partner with 511 Contra Costa to educate Pinole residents, commuters, and students on available transit opportunities through free commute consultations, and provide qualifying commuters with financial incentives to take transit, such as pre-loaded Clipper cards and a Guaranteed Ride Home program.	Public Works, Community Development	Phase 2	
TR-2i	Partner with WestCAT and the Contra Costa Transportation Authority to pursue funding for the prioritization study and plan (TR-2a - c and TR-2f) through MTC's One Bay Area Grant funding, or similar funding opportunities.	Public Works, Community Development	Phase 2	
TR-2j	Partner with the West Contra Costa Unified School District and/or private schools to evaluate mobility needs and expand bus routes where necessary to increase access to and use of school bus transportation to schools, including services for after-school hours for student and their guardians	Public Works, Community Development	Phase 2	
TR-3. Develop programs and policies to discourage driving single passenger vehicles and to support the active transportation and public transit mode share goals of Measures TR-1 and TR-2.				
TR-3a	Adopt an ordinance requiring all employers to develop a Transportation Demand Management (TDM) Plan and require large employers (i.e., more than 25 employees) to include money-based incentives for employees to bike, walk, carpool, or take public transit to work. Additionally, complete a comprehensive study to establish an Average Vehicle Ridership (AVR) that accurately reflects Measure TR-1 and TR-2's goals.	Public Works	Phase 1	
TR-3b	Create a Pinole Parklets Program to install parklets in the downtown and other commercial areas of the City and engage with businesses to gain sponsorship for the parklets.	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
TR-3c	Require informative signage be included at the parklets designed through the Pinole Parklet Program (Action TR-3b) that provide information on the benefits of ecosystem services at all scales, and the health impacts associated with reducing single occupancy vehicle trips.	Public Works	Phase 1	
TR-3d	Partner with local jurisdictions, public transit providers, and CBOs to identify gaps in the transportation network that can be prioritized for cross-jurisdictional collaboration to connect the region and reduce the need for single occupancy vehicles.	Public Works	Phase 1	
TR-3e	Conduct an analysis of the potential community impacts and feasibility and benefits of implementing disincentive-based policies for driving single-passenger vehicles, including a congestion charge program, limiting parking options, increased local taxes (income tax, gasoline tax, or car registration tax), and Transportation Network Companies (TNC) user taxes. Include analysis of potential equity impacts of the policies and identification of potential equity metrics to address equity concerns when developing policies.	Public Works	Phase 1	
TR-3f	Consider opportunities to fund transportation system improvements through disincentive-based program revenues and/or a tiered TDM fee for employers who do not achieve the established AVR by 2030 to establish an equitable transition to more sustainable modes of transportation.	Public Works	Phase 2	
TR-3g	Conduct AVR surveys of Pinole businesses every three years to determine weekday AVR and mode share split as well as perceived barriers to telecommuting and alternative modes of transportation (i.e., modes other than single occupancy vehicles), and interest in sustainable transportation amenities, infrastructure, and events/resources.	Public Works	Phase 3	
TR-3h	Consider development applications that will improve the community by increasing density in transit-rich areas and connecting residents of multi-family, and/or affordable housing sites to public and shared transit options.	Public Works	Ongoing	
TR-4. Increase passenger zero-emission vehicle (ZEV) use and adoption to 30% by 2030 and 100% by 2045.				
TR-4a	Adopt an EV reach code by 2025 requiring new commercial and multifamily construction to install the minimum number of EV chargers based on Tier 2 CalGreen requirements (20% of total parking spaces).	Community Development	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
TR-4b	Adopt an EV reach code by 2026 requiring major multifamily building retrofits to install the minimum number of EV chargers based on Tier 2 CalGreen requirements (20% of total parking spaces) and major commercial retrofits (with a square footage larger than 10,000 square feet or modifications for electric service panels) to meet CalGreen requirements for "EV Ready" charging spaces and infrastructure.	Community Development	Phase 1	
TR-4c	Adopt an ordinance that bans the development of any new, or expansion, renovation or replacement of any existing, fossil fuel stations in the City prior to the expiration of the Urgency Ordinance. The process should include: 1. Determining and define an outreach process. 2. Prepare a General Plan, Specific Plan, and Zoning Ordinance text amendment, which would establish Service Station land use as Not Permitted by Table 17.20.030-1 in the PMC, making all existing service stations legal non-conforming and subject to Section 17.14.080 of the Municipal Code. 3. Determine if any streamlining enhancements to existing provisions in the PMC that incentivize the expansion, modification, or retrofit of an existing service station to incorporate biodiesel or other alternative fuels or charging stations for electric vehicles should be considered. 4. Take the Amendments through the required public review process, including Planning Commission recommendation and City Council adoption. 5. Continue to direct staff to explore options for additional charging at City-owned/maintained properties and private facilities for public benefit.	Community Development	Phase 1	
TR-4d	Update Pinole's permit process for EV chargers to create a streamlined process for residents and businesses that is consistent with the State's Electric Vehicle Charging Station Permitting Guidebook (as well as AB 970, AB 1236)..	Community Development	Phase 1	
TR-4e	Prepare a feasibility study to evaluate opportunities for installation of EV charging stations at City owned facilities. The feasibility study will assess electrical capacity, electrical demand, financial constraints, funding sources and parking utilization to provide a prioritized list of locations to install new publicly accessible EV charging stations.	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
TR-4f	In the feasibility study, include evaluation of opportunities and prioritization of locations to increase the equitable distribution of publicly available EV chargers to residents of multi-family homes and residents living on low- and moderate-incomes, as well as consideration for optimizing daytime charging.	Public Works	Phase 1	
TR-4g	Work with MCE and PG&E to incentivize residential electric vehicle charger installations and panel upgrades through on-bill financing. Promote the incentives through multi-lingual outreach material on the City's website and at community events.	Community Development	Phase 1	
TR-4h	Work with MCE to promote and provide technical assistance for their Residential EV Rate Plan and MCE Sync charging app to help community members charge during off-peak hours and save money on home charging.	Community Development	Phase 1	
TR-4i	Coordinate with community-based organizations, local agencies, and non-profits such as Charge Up Contra Costa, 511 Contra Costa, and Cool the Earth to conduct zero-emission vehicle (ZEV) education events for residents and targeted events for residents living on low- and moderate- incomes as well as residents living in multi-family buildings that would engage the community to evaluate the barriers to ZEV adoption, promote information on the costs and benefits of owning ZEVs, and detail the steps on how to receive incentives for ZEVs.	Community Development	Phase 1	
TR-5j	Work with Contra Costa County to create an EV charging etiquette policy that encourages a seamless charging experience, fosters community collaboration, and promotes sustainable practices for the benefit of all electric vehicle users and the environment.	Community Development	Phase 1	
TR-k	Develop an equitable charging fee structure that provides accessibility for all users, regardless of socio-economic background, fostering inclusivity and promoting widespread adoption of electric vehicles.	Public Works	Phase 1	
TR-4l	Develop outreach and education materials and distribute them to local businesses, property owners, and developers on the financial (e.g., new funding streams), environmental, and health, and safety benefits of ZEVs. Provide information on available funding opportunities and the City's streamlined permitting process.	Community Development	Phase 2	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
TR-4m	Collaborate with neighboring jurisdictions and the Contra Costa Transportation Authority to develop a zero-emission vehicle car share network.	Community Development, Public Works	Phase 2	Department of Transportation Charging and Fueling Infrastructure Grant
TR-4n	Coordinate with car share companies and community-groups to develop an affordable, zero-emission vehicle car share program to serve affordable housing and/or multifamily developments with a priority to target residents living on low- and moderate-incomes.	Public Works	Phase 2	
TR-4o	Based on the prioritized list of locations developed through actions TR-4d and TR-4e, install at least 270 new publicly accessible Level II and DC Fast chargers by 2030 and 935 by 2045, through public-private partnerships and on City-owned properties.	Public Works	Phase 2 – 3	
TR-5. Increase commercial zero-emission vehicle (ZEV) use and adoption to 25% by 2030 and 100% by 2045.				
TR-5a	Work with the Bay Area Air Quality Management District, Pacific Gas & Electric, and or similar entities to identify and provide funding for electric vehicles and charging infrastructure for disadvantaged or vulnerable business owners.	Public Works	Phase 1	▪ Bay Area Air Quality Management District's Clean Cars for All ▪ BAAQMD's Vehicle Buy Back Program, Clean Vehicle Assistance Program's Clean Vehicle Assistance Program ▪ California's Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project
TR-5b	Create a summary of commercial vehicle fleets in Pinole and identify employers to work with to accelerate ZEV adoption through targeted education.	Public Works	Phase 1	
TR-5c	Encourage commercial vehicle fleet operators to accelerate electrification by providing them educational material on the benefits of zero emission vehicles (e.g., fuel cost savings through networked charging and current availability of zero emission vehicles ahead of State mandates), educating them on the City's streamlined permitting process, and compiling and distributing information on potential funding opportunities.	Community Development	Phase 1	
TR-5d	Implement local tax breaks to incentivize commercial fleet electrification.	Community Development	Phase 2	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
TR-5e	Investigate opportunities to help fund additional EV charging infrastructure by leveraging public/private partnerships and ensuring the City is charging for EV infrastructure use at City-owned facilities.	Community Development	Phase 2	California Energy Commission's Charging Infrastructure for Government Fleets
TR-6. Electrify or otherwise decarbonize 8% of off-road equipment operations by 2030 and 100% by 2045.				
TR-6a	Create a phased ordinance by 2026 to ban the local operation of gasoline and diesel-powered off-road equipment by type (e.g., lawn and garden, construction), including banning local operation of gasoline and diesel-powered small off-road equipment (SORE) by 2028. Update the ordinance based on a regular review of relevant state regulations, regional rules, and available technology.	Community Development	Phase 1	
TR-6b	Establish a communication and outreach program to raise awareness of the ordinance, educate community members on the benefits of and funding opportunities for offroad decarbonization, and collect data on offroad fleet and decarbonization trends in the community (e.g., through outreach sampling and surveying).	Community Development , Public Works	Phase 1	California Energy Commission Local Government Building Decarbonization Challenge
TR-6c	As part of Action TR-6b's program, investigate off-road equipment fleets in the City to identify fleets with the highest decarbonization potential, fleets owned by small and minority businesses that will need targeted support and incentives to decarbonize or electrify, and fleets that do not currently have zero-emission alternatives. Utilize these findings to develop the phased off-road ordinances.	Public Works	Phase 1	California Energy Commission Local Government Building Decarbonization Challenge
TR-6d	As part of Action TR-6b's program, develop a multi-lingual Off-road Equipment Replacement Outreach Campaign that provides information to contractors, residents, and fleet operators in the City, with a target towards those identified in Action TR-6c. Information should include equivalent alternatives to fossil-fueled off-road equipment, public health, and safety benefits of alternative equipment technology, and funding opportunities available (i.e., Clean Off-Road Equipment Voucher Incentive Program [CORE]).	Community Development, Public Works	Phase 1	Clean Off-Road Equipment Voucher Incentive Program
TR-6e	Partner with surrounding jurisdictions and the Bay Area Air Quality Management District (BAAQMD) to develop a rebate and incentive program for upgrading off-road equipment and switching to electric or biofuels. Develop the program with a focus on procedural equity and prioritize funding distribution to disadvantaged and vulnerable communities.	Community Development, Public Works	Phase 2	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
Strategy SW. Solid Waste				
SW-1. By 2025, reduce organics to landfill by 75% to meet or exceed SB 1383 organic waste diversion requirements through composting and edible food recovery.				
SW-1a	Through MOUs with the City's waste haulers, establish requirements by 2024 for waste haulers to perform annual performance assessments to determine compliance with SB 1383 requirements. If the performance assessments show the hauler is not on target, meet with the hauler and RecycleMore staff to establish prioritized actions for the hauler and/or RecycleMore to complete. Additionally, utilize the assessments to identify trends in contamination and integrate lessons learned into the educational program as part of Action SW-1e.	Public Works	Phase 1	
SW-1b	Partner with RecycleMore, Sustainable Contra Costa, or similar entities to complete community based social marketing (CBSM) targeted outreach and education campaign by 2025 to high organic generation commercial accounts to educate and train commercial generators' management and staff about best practices in food waste reduction and surplus food donation. As part of this effort, develop successful case studies for Pinole food facilities to provide best practices, cost savings and other methods to energize food facility managers and staff to fully participate in the organics diversion and edible food recovery programs.	Public Works, Community Development	Phase 1	
SW-1c	In concert with Economic Development programs, establish a downtown Pinole outreach campaign and recognition program by 2025 to celebrate restaurants/food facilities with the highest diversion and edible food recovery success. Create a space on the City's CAAP website to highlight the campaign and leaders in the community, as well as provide a plaque or alternative community recognition that emphasizes the successful initiatives.	Public Works	Phase 1	
SW-1d	Establish a program by 2024 to distribute kitchen food pails at community events (e.g., Farmers Markets, California Coastal Cleanup Day, Pinole's Dumpster Day, Earth Walk), distribute food pails at grocery stores in lower-resourced areas, and directly connect with property owners of low- and moderate- income rental housing to distribute food pails directly to housing units. Through the program, track how many pails are distributed quarterly.	Public Works	Phase 1	
SW-1e	Establish and maintain an ongoing education program informing the community about compostable materials and upcoming at-home composting workshops, including regularly updated guidelines on composting, especially paper, distributed bi-annually and made available at the City permit counter, grocery stores, as well as at farmers' markets, California Coastal Cleanup Day, Pinole's Dumpster Day, Earth Walk and other community events.	Community Development	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
SW-1f	Transform Pinole's "Dumpster Day" into "Resource Recovery Day," in both name and concept, by introducing a community swap meet where residents exchange/recycle household goods in preference to conventional commerce and waste. At the event, the City can provide education about organics diversion (including the concept of closing the loop for organics material and edible food recovery) and the "Buy Nothing" movement, and feature special compost giveaway events (e.g., free kitchen food pails).	Public Works, Community Development	Phase 1	
SW-1g	Work with local grocery stores and retail food markets, the Contra Costa and Solano Food Bank Rescue Program, RecycleMore, and community groups to understand the criteria for acceptable food for recovery and establish a more robust food rescue and distribution program to divert additional edible food to food insecure residents.	Public Works, Community Development	Phase 1	
SW-1h	Identify and support school organizations in the City (e.g., leadership, sustainability, and environmental groups or clubs) start "Go Organics" programs to initiate, educate, and implement robust organics collection programs on campus in collaboration with the City's waste hauler and RecycleMore.	Public Works, Community Development	Phase 1	Edible Food Recovery Grant Program
SW-1i	Develop presentations for all schools in Pinole to: ▪ Educate students, staff, and teachers on how to implement an efficient, yet robust organics collection program ▪ Educate students, staff, and teachers on the benefits of diverting organics and reducing GHG emissions ▪ Engage school leadership on the benefits of establishing a 'closed loop partnership' regarding organics. This could include adding organics end products such as mulch and compost delivered from the City's waste hauler nearby composting facility to school gardens and landscaping, thereby eliminating need for pesticides and herbicides, and increasing water retention in school landscaping.	Public Works, Community Development	Phase 1	Edible Food Recovery Grant Program
SW-1j	Continue to partner with the City's waste hauler to include quarterly multi-lingual inserts in residential and commercial billing to highlight important programs and initiatives, including the single-use plastic ban and the no-cost organics pails available to residents and the composting programs in Action ID SW-1h, as well as new programs as they are created.	Public Works, Community Development	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
SW-1k	Develop a comprehensive outreach program to educate Homeowner Associations, neighborhood associations, and communities on social media platforms such as NextDoor and Pinole TV on the City's organic waste diversion requirements and available programs and resources to increase diversion.	Public Works, Community Development	Phase 1	
SW-1l	Implement a comprehensive organics collection and edible food recovery program for low income and fixed income people to ensure access to edible surplus food recipients such as food banks and other food recovery organizations.	Public Works, Community Development	Phase 1	
SW-1m	Fund the comprehensive organics collection and edible food recovery program using CalRecycle's SB 1383 grant funding cycle.	Public Works, Community Development	Phase 1	
SW-1n	Partner with local waste management providers, food recovery organizations, and West Contra Costa Unified School District, private schools in Pinole, or similar entities, to analyze existing food waste generation, disposal practices, and potential sources of edible surplus food.	Public Works, Community Development	Phase 1	
SW-1o	Install compost bins throughout the City where there are landfill and recycling bins to collect organics generated. Incorporate the hauling requirements into the waste hauler's contract to confirm proper management and disposal.	Public Works, Community Development	Phase 1	
SW-2. Reduce landfilled inorganic waste 35% by 2030 and 90% by 2045.				
SW-2a	Adopt a Zero Waste Policy and Zero Waste Strategic Plan to guide and detail methods to meet the reduction target of 35% by 2030 and 90% by 2045. As a part of the Zero Waste Strategic Plan, adopt a Sustainable Foodware Ordinance by 2024 to phase in the reduction, and subsequent elimination of, single-use plastic foodware by food facilities.	Public Works, Community Development	Phase 1	
SW-2b	Partner with an entity such as Terracycle to create a recycling program at City-owned and operated buildings and other community-based locations to collect hard to recycle products, such as snack pouches.	Public Works, Community Development	Phase 1	
SW-2c	Partner with local businesses, nonprofits, and community groups or organizations to establish pop-up repair cafes for commonly broken and easily repaired items. Additionally, engage local home improvement businesses and partner with the Pinole Library to promote reuse by increasing accessibility to shared tools through a tool lending program. In addition to providing available resources, work with experts in various fields to provide quick reference guidance documents or record short videos that residents can refer to when borrowing specific equipment to learn the most effective ways of using the tools available.	Public Works, Community Development	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
SW-2d	Continue the City's single-use plastic education efforts and integrate the efforts into a citywide education program, ' Pinole's Path to Zero Waste,' to expand outreach and resources about zero waste goals and focus education on specific benefits to the City (e.g., reduction of single-use plastic pollution flowing into Pinole Creek and San Pablo Bay, community savings from reduce and reuse efforts).	Public Works, Community Development	Phase 1	
SW-2e	Partner with community-based organizations such as ReThink Disposables and RecycleMore to engage Bayfront Chamber of Commerce members and other Pinole businesses to educate the business community about the benefits of reusables and inform them about the new Sustainable Foodware Ordinance.	Public Works, Community Development	Phase 1	
SW-2f	Work with compostable distributors to achieve competitive pricing for compostable foodware to increase compliance with the Sustainable Foodware Ordinance.	Public Works, Community Development	Phase 1	
SW-2g	Sponsor businesses to host refill pop-ups at community events (e.g., Farmers Market) where community members can purchase common household products and food in bulk using their own containers and create a network of local businesses that can provide the pop-up local, bulk products with zero-waste packaging.	Community Development	Phase 1	
SW-2h	Create a Hazardous Waste Material Reuse Program that offers usable household hazardous waste collected at the West Contra Costa County Drive-Through to the community free of charge through a Material ReUse Store. Establish a schedule and location(s) to operate the Material ReUse Store alongside the household hazardous waste collection schedule and promote the store on the City's website and on the City's social media platforms.	Public Works, Community Development	Phase 2	
SW-2i	Partner with public schools to reduce single-use plastic foodware, convert necessary single-use plastic foodware to compostable/reusable foodware, and educate students on closing the loop (i.e., Loop organics).	Public Works, Community Development	Phase 2	
SW-2j	Secure financial grants and assistance from Rethink Disposables, CalRecycle's City/County Payment Program (CCPP), and others, to support businesses in developing pilot programs for reusable and returnable foodware and drop-off stations, purchasing and installing dishwashers, and overall gaining compliance with the Sustainable Foodware Ordinance. Highlight and support use of new grant funds available for small and minority-owned businesses to participate. Additionally, Seek grant funding to support pop-up repair cafes and a tool lending program.	Public Works, Community Development	Phase 2	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
SW-3. Meet CalGreen's current 65% construction and demolition (C&D) materials diversion requirements on all covered projects.				
SW-3a	Include in, or amend, the franchise agreement with the City's waste hauler to require C&D diversion requirements with performance disincentives for non-compliance.	Public Works, Community Development	Phase 1	
SW-3b	Partner with RecycleMore and the City's waste hauler to complete an assessment of projects that were not compliant with the 65% diversion requirement. Determine an Action Plan to ensure similar future projects meet the 65% requirement. Complete ongoing review of projects collaboratively with RecycleMore to assess projects that are non-compliant and methods to ensure 65% diversion requirements are met.	Public Works, Community Development	Phase 1	
SW-3c	Fully engage and inform permit applicants of the 65% requirements at the very beginning of the planning, building, and inspection process and collaborate with RecycleMore to integrate C&D diversion practices into the City's permit process.	Public Works, Community Development	Phase 1	
SW-3d	Create and distribute a Contractors Guide to educate contractors on the requirements to meet the program conditions that include pre-permit documentation weight tags, post-permit documentation, and consequences for not meeting minimum diversion requirements.	Public Works, Community Development	Phase 1	
SW-3e	Update C&D information on the City's website to include a more complete comprehensive list of documents, such as: ▪ Pre-permit requirements ▪ Green Halo system requirements ▪ Locations for C&D materials processing/diversion ▪ Weight tag requirements ▪ Post project requirements and signature ▪ Details regarding consequences for not meeting requirements.	Public Works, Community Development	Phase 1	
SW-3f	Partner with the City's waste hauler, RecycleMore and other C&D organizations to educate on best practices for meeting CalGreen 65% requirements as part of Program 9 in the Housing Element.	Public Works, Community Development	Phase 1	
SW-3g	Use financial grants and assistance from CalRecycle to fund and provide tools for low- and fixed-income projects to meet requirements.	Public Works, Community Development	Phase 1	
SW-3h	Continue to offer online-waste tracking options for the community through the Green Halo compliance system, or a similar system, which allows for receipts to be verified online, streamlining the processes substantially	Public Works, Community Development	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
SW-4. Analyze opportunities to enhance the City's Wastewater Treatment Plant to divert organic waste from the landfill and increase organics recovery.				
SW-4a	Complete a feasibility study to identify local partners, analyze the potential waste volume, and assess facility upgrades needed to complete a pilot Organics to Energy Project at the WWTP and the potential cost and GHG emission reduction impacts of such a project.	Public Works, Community Development	Phase 1	
SW-4b	Conduct case study assessments of other organics to energy projects at WWTPs to educate City decision makers, the public, and other interested parties on the feasibility of the pilot project and opportunities to enhance the WWTP for organic waste diversion.	Public Works, Community Development	Phase 1	
SW-4c	Partner with an organics-to-energy company to help assess the feasibility of a pilot project for the City and impacted communities.	Public Works, Community Development	Phase 1	
SW-4d	Pursue funding opportunities (e.g., CalRecycle) and financing alternatives to address capital costs for the pilot project.	Public Works, Community Development	Phase 1	
SW-5. Establish a new program to meet the City's SB 1383 annual procurement target (i.e., 1,849 tons of compost) by 2030.				
SW-5a	Establish a program to procure and provide compost for: ▪ The City's parks, recreation areas, schools' landscaping, and school gardens ▪ Garden community organizations such as the Pinole Garden Club ▪ Residential and commercial landscapers	Public Works, Community Development	Phase 1	
SW-5b	Amend or otherwise ensure that the Franchise Agreement for the City's waste hauler will provide organic waste products at reduced cost.	Public Works, Community Development		
SW-5c	Establish a new program to deliver compost to local schools and community organizations. Expand free compost giveaways to residents, local urban farmers, and other organizations. Track the success of the program based on tons of compost given away and promote the program on the City's CAAP website and through the City's social media channels.	Public Works, Community Development		
SW-5d	Complete a feasibility study in collaboration with RecycleMore to identify cost-effective end uses for organic waste products and methods to distribute the products.	Public Works, Community Development		
SW-5e	Using established education materials from RecycleMore and other organizations, provide outreach and education to the City's garden community organizations such as the Pinole Garden Club, resident groups, and commercial landscapers in Pinole on the benefits of using organic end products such as compost and mulch.	Public Works, Community Development	CalRecycle SB1353 Grant	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
SW-5f	Partner with Republic Services, or others who own large composting operations in close proximity to the City to provide organic end product to the community at a cost-effective rate.	Public Works, Community Development		
SW-5g	Use the SB 1383 fee to pay for a portion of organic end use products. Use financial grants and assistance from CalRecycle to fund the purchase of organic end product. Focus effort on lower income projects to participate in program.	Public Works, Community Development	Phase 1	
SW-5h	Establish an online mapping location hosted on a City website to identify existing community gardens and make a list of potential underused park space for expansion, setting internal key performance indicators for number of new garden spaces.	Public Works, Community Development	Phase 1	
Strategy W. Water				
SW-1. Reduce per capita potable water consumption 10% by 2030 and 25% by 2045, from 2017 levels.				
W-1a	Continue to implement and enforce Pinole Municipal Code Chapter 15.54 (Water Efficient Landscaping) to encourage use of efficient irrigation systems, greywater usage, onsite storm water capture, and limit the portion of landscapes that can be covered in turf.	Public Works	Phase 1	
W-1b	Adopt a Water Conservation and Water Shortage Contingency Program Ordinance to establish drought thresholds that trigger varying water use reduction strategies. The Ordinance will focus primarily on domestic water use, health and sanitation, and fire protection.	Public Works	Phase 1	Bureau of Reclamation WaterSMART Drought Resiliency Program
W-1.c	Perform a study to understand the feasibility and potential potable water savings of adopting a Dual Drainage Plumbing Ordinance. The feasibility study will help the City determine the size threshold for future development projects subject to the Ordinance.	Public Works	Phase 1	
W-1d	Upon completion of the Feasibility Study in Action W-1c, adopt an appropriate Dual Drainage Plumbing Ordinance.	Public Works	Phase 1	
W-1e	Continue to comply with SB 1087 and Municipal Code Chapter 17.32 (Affordable Housing Requirements) requirements to provide priority water and sewer service allocations to affordable housing developments.	Public Works	Phase 1	
W-1f	Continue to partner with East Bay Municipal Utility District's to provide water conserving fixtures/fittings and rebates for appliances to residents throughout Pinole, with a focus on disadvantaged and vulnerable communities to reduce utility bill burdens. Provide specific updates to the community as new programs are released, such as featuring a new indoor plumbing program to help Customer Assistance Program participants find and fix indoor leaks.	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
W-1g	Implement a comprehensive, coordinated educational initiative focused on property owners, landlords, property management firms, homeowners' associations, and occupants to reduce water usage in homes and businesses. This campaign will incorporate the water conservation messaging of the East Bay Municipal Utility District (EBMUD), utilizing various communication channels such as publications, websites, community events, workshops, and bill inserts. It will also provide details on available incentives for water-saving appliances, fittings, fixtures, and efficient landscaping irrigation systems, including those offered by EBMUD. Additionally, the campaign will focus on reaching disadvantaged and vulnerable communities to alleviate the burden of utility bills.	Public Works	Phase 1	▪ Bureau of Reclamation WaterSMART Drought Resiliency Program ▪ Bureau of Reclamation WaterSMART Water and Energy Efficiency Grant ▪ Department of Water Resources Urban Community Drought Relief Program
W-1h	Partner with EBMUD, the Contra Costa Master Gardeners, and/or Pinole Garden Club to develop community programs to encourage water-wise landscaping and watering practices and to provide a hands-on learning experience such as sheet mulching lawn conversions for members of the community. Include promotion of EBMUD Lawn Conversion rebates.	Public Works	Phase 1	
W-1i	Continue to partner with Rising Sun to provide Green House Calls to residents to provide high-efficiency fixtures/fittings and leak detection tests.	Public Works	Phase 1	
W-1j	Work with EBMUD to provide existing commercial entities that have decorative or non-functional turf onsite with the education and resources necessary to transition to regenerative landscapes with a goal of replacing all existing commercial decorative or non-functional turf by 2030.	Public Works	Ongoing	
W-2. Increase the community's use, supply, and access to recycled water.				
W-2a	Continue to work with EBMUD to complete a feasibility study to identify opportunities to increase supply of recycled water to the City. The feasibility study will: ▪ Analyze opportunities to expand purple piping infrastructure ▪ Identify opportunities and technologies to increase recycled water supply ▪ Evaluate potential impacts to cost of service ▪ Investigate ways to maintain or decrease costs of service through the projects ▪ Identify customers that would benefit from receiving recycled water within City of Pinole and adjacent to the City, in Hercules or other surrounding jurisdictions, as applicable	Public Works	Phase 1	Water Recycling Funding Program

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
W-2b	Pursue funding opportunities at the state and federal level, such as the Clean Water State Revolving Fund and the US Bureau of Reclamation's WaterSMART grants, to fund recycled water infrastructure and to increase the equitable distribution of recycled water in the City.	Public Works	Phase 1	Water Recycling Funding Program
W-2c	Investigate working with EBMUD to promote the installation of greywater equipment in homes and businesses through a multi-lingual Laundry-to-Landscape outreach campaign. The campaign shall include: ▪ Educational information on the environmental and financial benefits of greywater systems ▪ Information on how to install and use the systems, including information on EMBUD greywater rebates ▪ Distribution of educational materials at the City's permitting counter ▪ Supplemental event(s) hosted with EBMUD or industry expert to educate community members on the installation and use of the systems, including an existing residential greywater system demonstration ▪ Direct outreach to multi-family property owners.	Public Works	Phase 1	
W-2d	Create and implement a phased outreach campaign to educate the community on the benefits of recycled water as well as dispelling misconceptions to and increase community use.	Public Works	Phase 1	
W-2e	Upon completion of the feasibility study to identify opportunities to increase supply of recycled water to the City, work with EBMUD to develop a Recycled Water Infrastructure Enhancement Plan that outlines the potential for system expansion, identifies opportunities, as applicable, to integrate recycled water sources into non-potable water networks for irrigation, and the promotion of educational campaigns that raise awareness on what recycled water is and how it is used.	Public Works	Phase 1	Water Recycling Funding Program
Strategy CS. Carbon Sequestration				
CS-1. Increase carbon sequestration and prepare the urban forest for climate change, extreme heat, drought, and wildfire by adopting policies developed through the Community Urban Forest Plan.				
CS-1a	Develop and adopt a Community Urban Forest Plan by 2026 to identify and prioritize tree planting areas in the City. The Plan will: ▪ Inventory the existing urban forest as a baseline and identify areas in Pinole that have below average canopy coverage (such as census block groups 60133640021, 60133640023, and 60133922004) and high urban heat island effects. ▪ Design a tree planting program focused on eliminating significant difference in canopy coverage between census blocks by 2040.	Public Works	Phase 1	Urban and Community Forestry Grant Program

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CS-1a cont.	▪ Identify a phased timeframe for program implementation. ▪ Establish a management plan for existing trees that will focus on promoting street tree health, enhancing resilience, increasing the environmental benefits and co-benefits from trees, and engaging the community in urban forest management. ▪ Establish a tracking system to assess progress towards annual goals and annual benchmarks.			
CS-1b	Collaborate with community-based organizations with connections to disadvantaged and vulnerable communities in the development of the Urban Forest Inventory and Management Plan and share the plan on the City's website.	Public Works	Phase 1	CalFire Urban and Community Forestry Grant
CS-1c	Continue protecting existing trees on private property through the provisions of PMC Chapter 17.96 (Tree Removal) and amend the Municipal Code to require as a condition of approval when a Tree Removal Permit is issued either planting on-site replacement trees or paying an in-lieu fee equal to at the value of the protected tree.	Public Works	Phase 1	Arbor Day Foundation Tree City USA Designation
CS-1d	Prioritize tree implementation in areas with populations most at risk to extreme heat impacts (older adults, children, outdoor workers, individuals with disabilities, transit dependent individuals, and individuals with chronic health conditions) pursuant to the Urban Forest Inventory and Management Plan.	Public Works	Phase 1	Office of Planning and Research Integrated Climate Adaptation: Extreme Heat Mitigation
CS-1e	Review, enhance, update, and regularly maintain the City's existing "Tree" webpage with relevant information, such as best practices for watering and fertilizing trees, guidelines for pruning and maintenance, information on local tree species, and resources for reporting tree damage or disease. Additionally, provide information on the benefits of a healthy tree canopy, including improved air and water quality, reduced urban heat island effects, and increased property values.	Public Works	Phase 1	
CS-1f	Amend the Municipal Code to include street tree requirements for all zoning districts, increase shade tree requirements for new developments, and include increased permeable surface requirements for new development or substantial redevelopment.	Community Development	Phase 1	
CS-1g	Continue to pursue and obtain grant funding for tree planting and urban forest management. Identify and apply for applicable federal (e.g., USDA) and state (e.g., California ReLeaf, Affordable Housing and Sustainable Communities Program (AHSC), Cal Fire's Urban and Community Forestry Program, and the	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CS-1g cont.	California Natural Resources Agency's Urban Greening Program) available grants for tree planting and urban greening projects.			
CS-1h	Develop a City incentive program for new tree plantings on private properties with a focus on members of disadvantaged and vulnerable communities and in areas where there is below average tree equity or canopy coverage, pursuant to the Urban Forest Inventory and Management Plan.	Public Works	Phase 2	CalFire Urban and Community Forestry Grant
CS-1i	Partner with a local nursery to host regular tree planting events and volunteer opportunities to engage community members in the effort to maintain and expand the local tree canopy.	Public Works	Phase 2	Arbor Day Foundation
CS-1j	Work with a community non-profit organization to develop an adopt a tree program increase the urban tree canopy in marginalized communities	Public Works	Phase 2	
CS-1k	Establish a Tree Trust or Tree Endowment where the interest on the principal can be used for purchasing and planting trees in prioritized areas pursuant to the Urban Forest Inventory and Management Plan, paying for tree maintenance in disadvantaged and vulnerable communities in the City, or supporting staff resources for the Urban Forest Management Program.	Public Works	Phase 3	
CS-2. Increase nature-based and technological carbon sequestration and capture opportunities in Pinole.				
CS-2a	Seek funding to conduct a study to quantify the carbon stock in existing Pinole blue carbon ecosystems (e.g., eelgrass in San Pablo Bay) and quantify the carbon sequestration potential of blue carbon restoration and expansion.	Public Works	Phase 1	
CS-2b	Partner with concrete producers to research opportunities for technological carbon sequestration in Pinole including potential funding mechanisms (e.g., Verra's Methodology for CO_2 Utilization in Concrete Production).	Public Works	Phase 1	
CS-2c	Based on the studies, develop a plan to increase carbon sequestration in Pinole. The plan shall include a quantitative carbon sequestration target to be achieved by 2045 and a process for regular monitoring of carbon stocks.	Public Works	Phase 1	
CS-2d	Create an educational campaign that informs members of the community about the benefits and methods associated with carbon sequestration and capture that avoids jargon and clearly explains the opportunities and benefits in the City. Confirm that the educational materials are provided in a multi-lingual, culturally considerate manner and distributed specifically to disadvantaged community members.	Public Works	Phase 1	

Table 11 Implementation of Adaptation Strategies, Measures, and Actions

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
Strategy CAR. Community Adaptation and Resilience				
CAR-1. Establish a reliable resilience center in the City to provide relief from extreme weather events, including extreme heat, flooding, and smoke from wildfires.				
CAR-1a	Conduct an assessment on the effectiveness of current City resilience center operations. Conduct a study regarding the feasibility of additional community locations (e.g., Pinole Youth Center and Pinole Library) that could serve as resilience centers by evaluating current amenities and resources available. As part of the studies, verify that the needs of vulnerable populations are met during climate hazard events and host focus groups with selected community-based organizations and other interested parties to identify needs for their service population.	Public Works	Phase 1	
CAR-1b	Identify and apply for funding opportunities that support development of a resilience center, and/or staff positions to maintain the center, such as the Office of Planning and Research Regional Resilience Grant Program.	Community Development	Phase 1	
CAR-1c	Utilizing the City's "Energy Conservation, Generation, and Storage Assessment" conducted in 2024, establish an upgrade and maintenance cycle, including replacement of filters with at least a MERV 11 rating on a quarterly basis for all existing HVAC systems in City owned buildings.	Public Works	Phase 1	
CAR-1d	Work with WestCAT to establish a list of vulnerable community members (e.g., older adults, who may not be able to access a vehicle or public transportation during a heat wave), as well as a program to transport them to established resilience centers.	Public Works	Phase 1	5310 Senior Access Fund
CAR-1e	Partner with local public or private entities to establish resilience centers at privately owned facilities in the City.	Community Development	Phase 2	
CAR-1f	Provide essential resources such as health programs, food, refrigeration, charging stations, basic medical supplies, and other emergency supplies at all City resilience centers, as well as educational materials on resources and climate adaptation and preparedness. Audit and refresh supplies on a biannual basis, including information on any new or updated programs or resilience center locations.	Community Development, Public Works	Phase 2	
CAR-2. Provide streamlined communication to the public on climate adaptation preparedness, resilience, and evacuation.				
CAR-2a	Review and update the City's Emergency Information webpage to reflect ways to prepare for events that may be likely to increase due to climate change, including wildfires, floods, extreme precipitation, extreme heat, poor air quality, and drought, as well as heat-related illness, exacerbate mental stress, and respiratory diseases	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CAR-2b	Assess current City capacity to shelter displaced residents including facilities, infrastructure, services, and community programs during an extreme weather event.	Public Works	Phase 1	
CAR-2c	Partner with community-based organizations to establish a working group to develop designated temporary housing options for wildfire displaced residents to live in for up to two years after their home is destroyed or severely damaged.	Community Development	Phase 1	
CAR-2d	Require that all emergency preparedness and evacuation communications are provided in plain language and translated into Spanish, Tagalog, and Cantonese to support non or limited English speakers. Increase participation in emergency notification systems including the Community Warning System and PG&E Community Wildfire Safety Program through social media campaigns and physical flyer distribution.	Community Development	Phase 1	
CAR-2e	Provide administrative support and dedicate staff time for grant writing and funding tracking for climate adaptation and resilience projects, including opportunities to increase and enhance communication such as preparation of interactive websites and information sharing resources.	Community Development	Phase 1	
CAR-2f	Identify critical facilities in need of reliable sources of sustained electrical power during events of extreme climate. Assess power loads at each critical facility, determine costs and technology options for battery storage, and make any additional recommendations to the City Council prior to advancing construction.	Public Works	Phase 1	
CAR-2g	Utilize Pinole Community Television (PCTV) to provide consistent information to community members about adaptation preparedness by providing multi-lingual information that is accessible for people including seniors, individuals with disabilities, children, and caregivers.	Community Development	Phase 1	
CAR-2h	Create evacuation procedures for vulnerable populations in partnership with community-based organizations and facilities that serve identified populations. Host and/or participate in in-person engagement and incorporate games/activities to educate the community on preparedness.	Community Development	Phase 1	
CAR-2i	Require that the City's resilience centers have adequate backup power sources and battery storage to mitigate service disruptions and provide redundancy in the event of a power outage.	Public Works	Phase 2	
Strategy FC. Flood Control				
FC-1. Improve the quality of and reduce the quantity of stormwater runoff through Implementation of the Pinole Green Infrastructure Plan.				
FL-1a	Prepare a feasibility study to investigate potential infrastructure improvements to relocate critical City infrastructure, such as the Senior	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
FL-1a cont.	Center, Pinole Police Department, and Tiny Tots, from the 100-year flood zone. The feasibility study would include: 1. Identifying potential alternative locations for the City's critical infrastructure that's located in the 100-year flood zone. 2. Preliminary design and construction of new buildings or facilities. 3. Analysis of costs associated with relocating facilities as well as the potential costs of doing nothing. 3. Outreach to community members and other interested parties to confirm that the relocation aligns with the community's needs.	Public Works	Phase 1	
FL-1b	Continue participation in the Contra Costa County Multi-jurisdictional Hazard Mitigation Plan update; identify flood mitigation actions eligible for grant funding through FEMA hazard mitigation assistance programs.	Public Works	Phase 1	
FL-1c	Encourage landlords to consider how to prepare their properties for flooding by providing retrofit informational resources and educate them on prioritizing low-impact stormwater best practices.	Community Development	Phase 1	
FL-1d	Create educational campaigns that connect with vulnerable populations to increase awareness and knowledge of how to mitigate and weather flooding.	Community Development	Phase 1	
FL-1e	Identify and apply for grant opportunities to fund stormwater related projects from sources such as the State Water Resources Control Board, California Natural Resources Agency, the Coastal Conservancy, California Water Foundation, as well as the United States Environmental Protection Agency and the United States Department of Agriculture.	Community Development	Phase 2	
FL-1f	Review existing best practice and conduct studies of combined riverine/ shoreline flooding and increased severity of rainfall events on watershed flooding.	Public Works	Phase 2	
FL-1g	Complete the Storm Drainage Master Plan as identified in the Capital Improvement Plan to thoroughly investigate deficiencies in the existing storm drain system and prioritize infrastructure improvements.	Public Works	Phase 2	
FL-1h	Implement stormwater and drainage projects identified in the City Capital Improvement Plan, to mitigate localized flooding incidents.	Public Works	Ongoing	
FL-1i	Conduct post-flood inspections for residents and business owners upon request and provide post-disaster home repair and technical assistance for vulnerable communities.	Public Works	Ongoing	
Strategy SLR. Sea Level Rise				
SLR.1. Create, restore, and protect natural coastal ecosystems.				
SLR-1a	Conduct a shoreline stabilization study to determine the most effective methods for protecting Pinole's shoreline communities and infrastructure from erosion and sea level rise, and to identify opportunities for restoring	Public Works	Phase 1	Division of Boating and Waterways Beach Grant

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
SLR-1a cont.	natural shoreline habitats that can serve as a buffer against storm surges and other impacts of climate change. The study would involve the following: 1. Assessing the physical characteristics of the shoreline 2. Evaluating the potential risks and benefits of different stabilization techniques 3. Engaging with local community members and other interested parties to ensure that the chosen strategies align with community needs and values. 4. Prioritizing options that enhance and maximize shoreline resources and access including considering innovative nature-based solution approaches.			
SLR-1b	In collaboration with Contra Costa County and state agencies, develop a sea level rise resilience and adaptation strategy with shoreline restoration projects using innovative nature-based solutions and green engineering that would enhance public access, shoreline habitat (e.g., re-establishing native dune habitats, wetlands, and lagoons) and increase shoreline recreational opportunities.	Public Works	Phase 1	
SLR-1c	Partner with the San Francisco Bay Conservation and Development Commission (BCDC), and/or similar entities, regarding regional approaches, strategies, and mitigation actions to address sea level rise. Implement a Shoreline Management Plan, and/or a Shoreline Monitoring Program that would identify erosional hotspots and timely response.	Public Works	Phase 1	
SLR-1d	Establish annual budgets for projects within and benefiting vulnerable populations (2016, Assembly Bill 1550), including seniors, individuals with disabilities, children, low-income communities, and communities in low-lying areas.	Public Works	Phase 1	
SLR-1e	Research external funding opportunities, including grants to support shoreline resilience, shoreline restoration projects, or beach nourishment (e.g., Living Shoreline and Nature-based solution projects). Examples of grantee agencies are California Coastal Conservancy, California Coastal Commission, California Ocean Protection Council, NOAA, California Division of Boating and Waterways).	Public Works	Phase 1	
SLR-1f	Identify replacement opportunities or otherwise plan for how to replace recreational areas and accessways that will be lost due to inundation or damage associated with sea level rise. It might be done through the designation and zonation of lands into a Local Coastal Program or providing additional incentives to encourage creation of new recreation areas or opportunities. Additionally, plan for future shoreline recreational space and	Public Works	Phase 2	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
SLR-1f cont.	parkland by protecting open space adjacent to shoreline habitats, allowing the beach and habitats to migrate into these spaces.	Public Works	Phase 2	
SLR-1g	Partner with West Contra Costa Unified School District, private schools in Pinole, East Bay Parks, East Bay Municipal Utility District, Friends of Pinole Creek Watershed, 350 Contra Costa, or similar entities to create educational opportunities for the community around the Pinole Creek Watershed. These programs would focus on educating youth in Pinole on the importance of natural shoreline ecosystems, their role in climate resilience, biodiversity, and local, native species. The programs would also include information on how people can actively get involved in adapting to climate change in their homes and neighborhoods and provide hands-on volunteer opportunities for the community to participate.	Public Works	Phase 2	
SLR-1h	Increase the City's near and long-term capacity building to be able to develop and implement thoughtful shoreline resilience projects by creating a position for and hiring a shoreline resilience expert. The specific title may vary depending on the individual's background and the focus of their work within the broader context of climate change and sea level rise.	Public Works	Phase 1	
Strategy EH. Extreme Heat				
EH-1. Reduce the impacts of extreme heat in Pinole by installing green/cool roofs and cool pavement, as well as planting vegetation and trees to reduce urban temperatures and the urban heat island effect.				
EH-1a	Partner with West Contra Costa School District and the private schools in the City to map out each campus in Pinole to understand the current infrastructure and then develop a plan to reduce the heat islands in Pinole's schools and adjacent areas, including on walking routes by plant trees or increasing shade structures as appropriate.	Community Development	Phase 1	CalFire Urban Community Forestry Grant: Green Schoolyards
EH-1b	Establish a tree removal replacement policy where trees that are removed are replaced with shade trees that are adapted to the area.	Public Works, Community Development	Phase 1	CalFire Urban Community Forestry Grant
EH-1c	In collaboration with Contra Costa Health Services, establish local early heat warning system that provides public health alerts in Spanish, Tagalog, and Cantonese.	Public Works	Phase 1	
EH-1d	Complete an assessment that evaluates new cool pavement technology, cost/benefits, and challenges and opportunities. Upon completion of the study, conduct a pilot of cool pavement application at a centralized area in Pinole that is most impacted by extreme heat to demonstrate success of the program.	Public Works	Phase 1	Caltrans Sustainable Transportation Planning Grant

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
EH-1e	Partner with WestCAT to audit existing bus stops in the City of Pinole with information detailing the current structures around the transit stops. Create a prioritization list of stops with low shading scores. Identify opportunities to add, replace, or upgrade existing transit stop shelters to provide increased shade for the transit riders and work with WestCAT to implement the identified opportunities.	Public Works	Phase 1	Caltrans Sustainable Transportation Planning Grant
EH-1f	Identify trees, grasses, and shrubs with greatest cooling benefits and maximum biodiversity potential and plant them in prioritized open spaces.	Public Works	Phase 1	
EH-1g	Identify grant funding opportunities and engage with local nurseries (e.g., Oaktown, Watershed Nursery, and Native Here) and tree planting programs to identify appropriate and cost-effective California native plants/trees that can be both planted in the ground or remain potted by residents living in rental/multi-family homes.	Public Works	Phase 1	
EH-1h	Amend the Building Code to require cool roofs for all new construction.	Public Works	Phase 1	
EH-1i	Partner with emergency management services to establish backup power and energy grid shutdown protocols that protect the most vulnerable populations (e.g., seniors, individuals with chronic health conditions, children, individuals with disabilities).	Public Works	Phase 1	FEMA Hazard Mitigation Grant
EH-1j	Identify opportunities to apply compost as mulch at City open spaces to improve water-holding capacity and filtration to combat extreme heat.	Public Works	Phase 1	
EH-1k	Identify a location in the City to establish a "Community Corner" redevelopment project as a model design project to reduce urban temperatures. Incorporate trees, grasses, and shrubs with the greatest cooling benefits into the project, utilize compost in the project's landscaping, and incorporate cool pavement technology, cool roofs, and shade structures where applicable. Further consider incorporating a rain garden and resilience center resources into the redevelopment project and publicize all resilient design elements through signage on the property and community tours.	Public Works	Phase 1-2	California Natural Resources Urban Greening Grant, Strategic Growth Council Community Resilience Center Grant
EH-1l	Support development of community-serving microgrids and prioritize areas with high social vulnerability.	Public Works	Phase 2	
EH-2. Map out and create a mural or set of murals using reflective paint to reduce interior heat in areas of Pinole that are most impacted by the urban heat island effect by 2026.				
EH-2a	Partner with NASA, or a similar organization to create a digital map of the City showing neighborhoods where it is the hottest and identify a location or locations to pilot an urban heat mural project.	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
EH-2b	Post the map on the City's website and host community feedback sessions to update the analysis included in the map based on real lived experiences. Additionally, post mural design concepts that are created as part of Action EH-2c to foster a sense of ownership over the project.	Public Works	Phase 1	
EH-2c	Create a partnership with Contra Costa College, Pinole Artisans, West Contra Costa Unified School District, private schools, and/or similar interested parties and community-based organizations to design and paint mural(s) that inspire the community while reducing indoor heat using reflective paint.	Public Works	Phase 1	
EH-2d	Install indoor and outdoor temperature sensors in the identified locations prior to completing the mural and continue to track data after the murals are installed to measure indoor changes in temperature to quantify the benefits of the project.	Public Works	Phase 1	
EH-2e	Identify and apply for grants to fund the completion of the mural and/or work with cool paint manufacturers to supply a small amount of paint at no cost for a pilot project where their name would be included on a plaque with volunteer artists who partner with the City to donate their time and expertise to create a unique project.	Public Works	Phase 1	
EH-2f	Host a community unveiling ceremony where the artists and project partners are invited to participate in a meet and greet and celebrate the community in an unveiling celebration that can also be used to provide the community with information on the status of the Climate Action and Adaptation Plan implementation and resources including relevant community incentives and rebates.	Public Works	Phase 1	
Strategy WF. Wildfire **WF-1. Enforce defensible space and home hardening standards to mitigate structure ignitions from wind-blown embers and direct flame impingement in fire hazard severity zones and protect the community from wildfires.**				
WF-1a	Partner with Housing Authority Contra Costa to conduct a study that estimates potential housing displacement impacts associated with wildfire events.	Community Development	Phase 1	
WF-1b	Conduct a feasibility study and if recommended, amend the Pinole Building Code Title 15 (Building and Construction) to require best-practice Ignition Resistant Construction methods for new construction and substantial redevelopment in the wildfire hazard zone.	Public Works	Phase 1	
WF-1c	Develop a subsidy program to improve air quality in the homes of low-income residents or vulnerable community members to mitigate impacts from wildfire smoke.	Contra Costa Fire Protection District, Community Development	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
WF-1d	Partner with West Contra Costa Fire Safe Council to help secure grant funding for mitigation activities that promote fire safe retrofits of existing structures that meet ignition-resistant building codes.	Community Development	Phase 1	
WF-1e	Conduct a built asset vulnerability assessment to identify which City-owned facilities and infrastructure have the highest risk to wildfire impacts, identify opportunities to mitigate risk and implement changes.	Public Works	Phase 1	
WF-1f	Evaluate and help identify and apply for funding for infrastructure improvements at Pinole Fire Station 74 to mitigate against wildfire hazards (fire breaks, fire resistant building materials, etc.).	Contra Costa Fire Protection District	Phase 1	
WF-1g	Actively engage in collaborative efforts to reduce wildfire risks, implementing effective mitigation strategies, and fostering a culture of fire safety through education and community involvement to achieve Firewise recognition	Contra Costa Fire Protection District	Phase 1	
WF-1h	Prepare, adopt, and fully implement a Vegetation Management Plan for high-fire risk areas.	Contra Costa Fire Protection District, Community Development	Phase 2	
WF-1i	Continue to conduct proactive vegetation/weed abatement enforcement by removing vegetation and/or brush in areas adjacent to wildfire hazard zones, including both public and private property. Establish a comprehensive defensible space zone and fire breaks within the VHFHSZ, and a regular maintenance schedule. A FEMA approved HMP can establish eligibility for grant funding to complete fuel modification projects.	Public Works	Ongoing	
WF-1j	Locate future critical facilities outside of the wildfire hazard zone.	Community Development Department	Ongoing	
WF-1k	Continue to coordinate with PG&E through Rule 20A Program to underground utility lines to mitigate wildfire risk.	Community Development Department and Public Works	Ongoing	
WF-1l	Conduct on-going workshops on defensible space, vegetation management, and home-hardening techniques based upon most up to date CAL FIRE management guidelines and policies for landowners in fire hazard severity zones.	Contra Costa Fire Protection District	Ongoing	▪ USDA Community Wildfire Defense Grant ▪ CAL FIRE Wildfire Defense Grant

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
WF-1m	Foster a community partnership that can successfully apply for and receive funding from programs such as the CAL FIRE Defensible Space Assistance Grant program and upcoming opportunities that become available.	Community Development	Ongoing	

Table 12 Implementation of Municipal Strategies, Measures, and Actions

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
Strategy CIO: City Infrastructure and Operations				
CIO-1. Upgrade all City accounts to MCE's Deep Green option by 2025 and electrify or otherwise decarbonize all municipal buildings and facilities by 2035.				
CIO-1a	Adopt an electrification ordinance in 2024 requiring all new municipal construction to be fully electric after calendar year 2024 without any natural gas connections.	Public Works	Phase 1	California Energy Commission Energy Partnership Program
CIO-1b	Complete an analysis to identify the electrical capacity and utility infrastructure upgrades needed to electrify the recreational pool heating system. Pursue replacement funding through PG&E on-bill financing and California Energy Commission (CEC) 1% Loans.	Public Works	Phase 1	
CIO-1c	By 2025, adopt a Resolution requiring the implementation of a building and facility electrification plan to electrify or otherwise decarbonize all municipal buildings by 2035.	Public Works	Phase 1	
CIO-1d	Develop a plan to electrify or otherwise decarbonize all municipal buildings and facilities by 2035 which will include: ▪ An inventory of existing fossil fuel-powered buildings and facility equipment, available electric or zero/low-carbon alternatives for replacing each, and relevant costs and benefits of replacing each (e.g., lifespan, equipment costs, operational quality). ▪ A prioritized schedule for completion based on potential to reduce natural gas and propane usage. ▪ Prioritize upgrades that benefit vulnerable communities first, such as the Senior Center, Youth Center, and Tiny Tots facilities.	Public Works	Phase 1	
CIO-1e	Expand efforts to obtain funding for municipal building and facility decarbonization through grants, incentives, or financing provided by entities such as: ▪ DOE Block Grants ▪ Leases: Capital lease, Operating Lease, Tax-Exempt Lease purchase (4-5%) ▪ Loans and Grants: 1% CEC Loan, Dept. of Energy Grants, Federal Grants (IIJA, IRA) ▪ On-Bill Financing ▪ Energy as a Service (EaaS) ▪ Energy Savings Performance Contract (ESPC, guaranteed energy savings help pay for the project) from Energy Service Companies (ESCOs) ▪ Grant Anticipation Notes or other Short-Term Notes/Loans	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CIO-1f	Upgrade all municipal electricity accounts to MCE Deep Green by 2025.	Public Works	Phase 1	
CIO-1g	Plan, fund, and conduct an electrification pilot project at a municipal facility (e.g., the Library). Promote the demonstrated benefits of the fully electric building (e.g., cost-savings, GHG emission reductions) and publicize the planning, design, installation, and post-operation of the project to make the steps to electrification transparent to the community.	Public Works	Phase 2	
CIO-1h	Partner with regional organizations such as the Building Decarbonization Coalition to train City staff, community members and volunteers on the benefits and technical requirements of electrification, help them implement the building and facility electrification plan and empower them to be advocates for electrification across the community.	Public Works	Phase 2	
CIO-2. Electrify or otherwise decarbonize 30% of the municipal vehicle fleet by 2026 and 100% by 2040.				
CIO-2a	Expand and update the City's fleet vehicle replacement schedule to transition 30% of the municipal vehicle fleet to ZEVs by 2026 and 100% by 2040. Review the replacement schedule and ZEV transition goals every 2 years and update them as needed based on updates to state regulation and ZEV market availability.	Public Works	Phase 1	
CIO-2b	Complete a Municipal Electric Vehicle Infrastructure Plan to analyze the City's charging needs through 2026 and 2040. The plan shall include: ▪ A prioritized list of City-owned properties/locations to install new Level II and DC Fast chargers ▪ An assessment of future electricity demand and potentially energy-constrained locations ▪ A pathway to coordinate with PG&E on installing microgrids or back-up power at City-owned properties to support the ZEVs	Public Works	Phase 1	
CIO-2c	Secure funding from state programs (such as the California Air Resources Board's Clean Vehicle Rebate Project and the Truck and Bus Voucher Incentive Program) and federal sources to increase procurement of EV or ZEV cars, trucks, and other vehicles and installation of EV/ZEV charging/fueling infrastructure at municipal facilities. Additionally, explore opportunities for Low Carbon Fuel Standard credit generation from use of low carbon fuels/electricity for fleet vehicles.	Public Works	Phase 1	
CIO-2d	Dedicate staff time to implementing, tracking, and updating the City fleet vehicle replacement plan bi-annually.	Public Works	Phase 1	
CIO-2e	Partner with an entity such as Contra Costa Transportation Authority, to train City staff on the use and charging of electric and zero-emission vehicles and educate them on the benefits of EVs/ZEVs.	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CIO-2f	Consider highlighting the City's EV/ZEV fleet at community events such as Earth Month.	Public Works	Phase 1	
CIO-2g	Establish electric vehicle charging infrastructure at and around all City-owned facilities. Apply the profit from community charging towards installing electric vehicle infrastructure in vulnerable communities. Additionally, develop a thoughtful pricing plan that is reviewed and updated annually, or more frequently as appropriate.	Public Works	Phase 2	
CIO-3. Electrify or otherwise decarbonize all municipal off-road equipment by 2035, where feasible.				
CIO-3a	Complete an inventory of all municipal off-road equipment and determine which equipment types are possible to decarbonize based on existing technologies. Complete a cost analysis and schedule for decarbonizing.	Public Works	Phase 1	
CIO-3b	Adopt an emissions-free equipment purchasing policy by 2025 for light-duty vehicles and small off-road equipment and vehicles to require purchase and replacement of such categories be electric or emissions-free. Regularly update the policy to include more types of equipment and vehicles as electric and emission-free options become available. Use this to promote all-electric equipment in the community, providing information on the City website outlining available incentives as well as the health benefits, for residents and businesses.	Public Works	Phase 1	
CIO-3c	Dedicate staff time to implementing and tracking the success of the emissions-free purchasing policy established as part of CIO-3b.	Public Works	Phase 1	
CIO-3d	Dedicate staff time and pursue funding opportunities to electrify and otherwise decarbonize municipal off-road equipment through programs such as: ▪ CORE Incentives ▪ Bay Area Air Quality Management District (BAAQMD) incentives including the Carl Moyer Program	Public Works	Phase 1	
CIO-3e	Partner with the East Bay Regional Park District to co-lead a multi-lingual educational program for staff and City contractors detailing the benefits of using decarbonized off-road equipment, with an emphasis on improved worker health and details on comparable equipment productivity. Information from the educational program should be summarized into an infographic format and posted at parks, City-owned and operated buildings, and shared in the City's newsletter to highlight the emissions and overall health benefits in a way that is easily understood.	Public Works	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CIO-3f	By 2030, begin procuring biofuels (e.g., biodiesel and biogas) to operate municipally owned off-road equipment with no existing opportunities for electrification. Re-evaluate electrification opportunities regularly to ensure biofuels are not being used for equipment that could otherwise be electrified.	Public Works	Phase 2 – 3	
CIO-4. Reduce employee VMT 20% by 2035, from 2019 levels by developing and implementing a municipal Transportation Demand Management (TDM) Plan by 2028.				
CIO-4a	With employee input, develop a municipal Transportation Demand Management (TDM) Plan by 2028 to encourage and incentivize City employees to reduce their VMT in single-occupancy and fossil-fuel-powered vehicles. Update the plan every 2-3 years based on survey results (e.g., Action CIO-4d) and newly available public transit and bike routes in the community.	Community Development	Phase 1	
CIO-4b	Create an incentive program to reward City employees for biking, ridesharing, and using public transit to commute to work. The program shall provide free public transit passes and free access to electric bicycle programs (where available) to all municipal employees and may include cash incentives or additional paid time-off for employees who bike, rideshare, and use public transit to commute to work.	Community Development	Phase 1	
CIO-4c	Investigate the opportunity to create zero-interest loan program to help employees purchase ZEVs for commute.	Human Resources	Phase 1	
CIO-4d	Develop a remote work policy that encourages municipal office employees to work from home and includes alternative work schedules where feasible.	Community Development	Phase 1	
CIO-4e	Explore options for installing showers in existing City-owned facilities and bike lockers along City-owned streets, where appropriate, to encourage City employees to bike to work and demonstrate the City's commitment to sustainability and community bicycle safety.	Public Works	Phase 1	
CIO-4f	Partner with an entity such as the WestCAT or the Bay Area Air Quality Management District (BAAQMD) to expand employee use of carbon-free and low carbon transportation by providing education programs on the benefits of commute options including public transportation, EV/ZEV options, and vanpools. Additionally, partner with 511 Contra Costa to help employees find a carpool match.	Community Development	Phase 1	
CIO-4g	Promote and encourage employee participation in regional and national bike-to-work days/months.	Community Development	Phase 1	
CIO-4h	Develop funding sources to support incentives for City employees to commute to work via EV/ZEV options such as free or discounted employee charging at work.	Community Development	Phase 2	

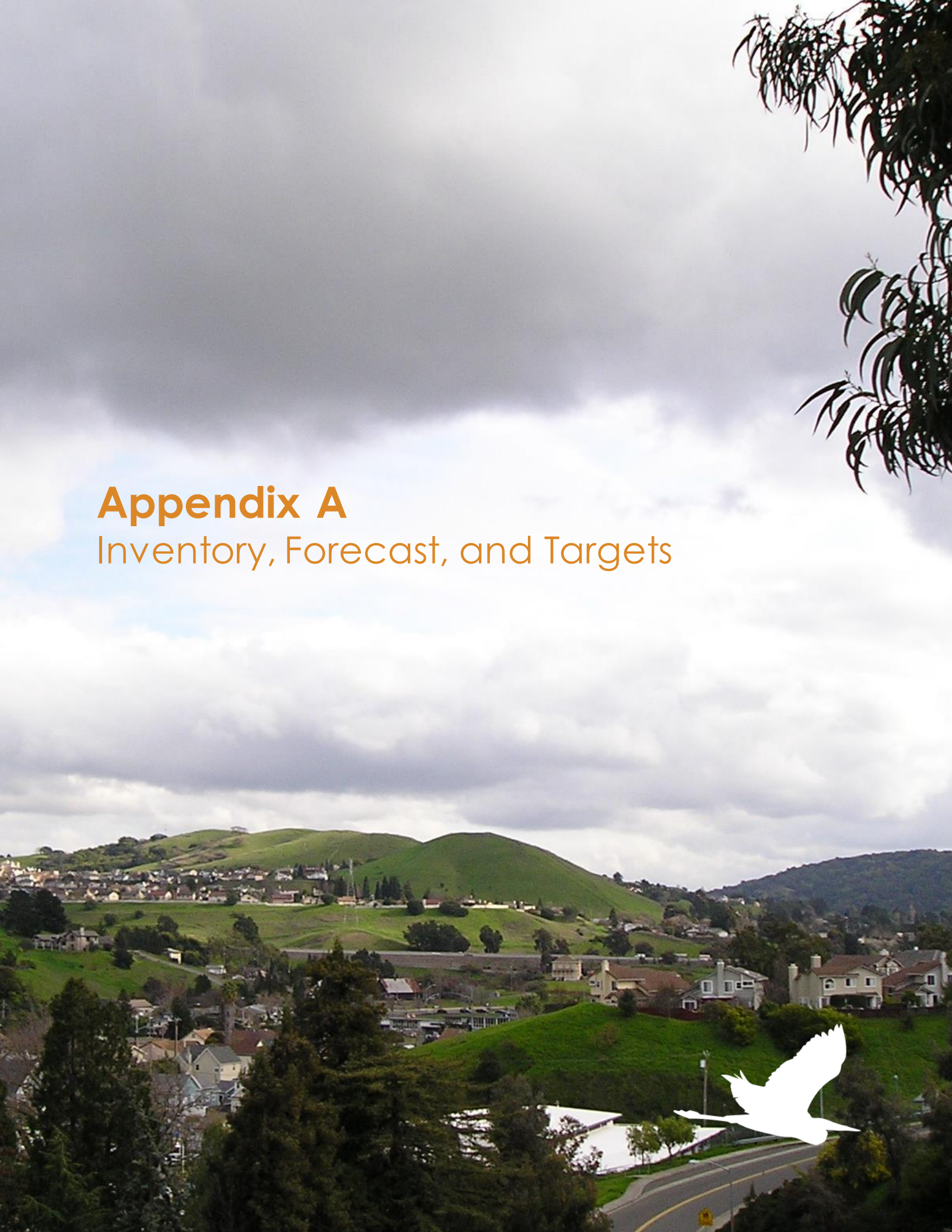
Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CIO-4i	Publish the municipal TDM Plan on the City's website and distribute to local businesses to provide the community an example of comprehensive TDM plans that focused on GHG emission reductions and equity.	Community Development	Phase 2	
CIO-4j	Conduct a survey for City staff commute data annually to monitor emissions, identify potential gaps in planning, and better understand how to elicit employee transportation behavior change. Include space for employee feedback and identification of barriers to commuting without a personal vehicle.	Community Development	Ongoing	
CIO-4k	Dedicate staff time to develop, implement, and update the municipal TDM Plan and conduct the annual survey.	Community Development	Ongoing	
CIO-5. Reduce waste generation by 15% by 2025, from 2019 levels and landfill zero waste by 2035.				
CIO-5a	Conduct an indoor and outdoor water audit at all municipal buildings and schedule develop a schedule for water efficiency improvements.	Public Works	Phase 1	
CIO-5b	Adopt a Resolution and assign funding to retrofit or replace all inefficient shower heads, faucets, washing machines, and toilets with low-flow fixtures/water-efficient appliances in existing City-owned, managed, or operated facilities, such as, but not limited to, the Pinole Swim Center, Pinole Senior Center, Pinole Youth Center, and Public Service Facilities by 2030.	Community Development	Phase 1	
CIO-5c	Update the municipal purchasing policy to require WaterSense labeled fixtures and appliances, where feasible. This includes continuing to install waterless units such as urinals and sensor activated sinks.	Community Development	Phase 1	
CIO-5d	Require all non-functional lawns (i.e., grass that is ornamental and not used for recreational purposes) on City-owned property to be removed by 2035 and replaced with native and drought-tolerant landscaping and/or multi-use landscaping (e.g., pollinator-friendly landscapes, edible landscapes).	Community Development	Phase 1	
CIO-5e	Identify, track, and actively pursue funding opportunities from entities such as the California Department of Water Resources and the California Environmental Protection Agency.	Community Development	Phase 1	
CIO-5f	Partner with the Pinole Community Garden Club, Contra Costa County Master Gardeners, or Bringing Back the Natives to educate City employees and the community on water-wise gardening practices, native plants, and growing food, with a focus on the most vulnerable communities.	Community Development	Phase 1	
CIO-5g	Develop and implement a plan to update City-owned properties with improved green stormwater infrastructure (e.g., stormwater systems that direct water towards vegetation, permeable surfaces).	Community Development	Phase 2	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CIO-5h	Install submetering at City owned and operated buildings and facilities to track and monitor water use, including creating a succinct way to internally track specific use and complete repairs or prepare targeted education.	Public Works	Phase 2	
CIO-5i	Install rain barrels at the Library to water the native garden as a demonstration project to educate the community about the benefits of collecting rainwater and available incentives. Based on the project's success, consider installing rain barrels at all City facilities for use in landscaping.	Public Works	Phase 2	
CIO-6. Reduce municipal water consumption 10% by 2030, from 2019 levels.				
CIO-6a	Require implementation of the Single Use Plastic Ordinance at all City departments, events, and contracts.	Community Development	Phase 1	
CIO-6b	Provide reusable mugs and foodware items to all new and existing employees to use in an effort to encourage the use of reusable alternatives to single-use items. Provide information on the benefits of reusing resources.	Community Development	Phase 1	
CIO-6c	Complete an audit on current bin infrastructure and bin signage in each municipal facility and at City events. Establish a clear plan to install/distribute adequate compost and recycling bins throughout all facilities and to all events, and improve signage so that accepted landfill, recyclable, and compostable materials are clearly identified for each bin.	Community Development	Phase 1	
CIO-6d	Partner with an entity such as Republic Services to provide annual training to City employees on current waste management practices, any modifications to the practices, and proper disposal methods. Empower them to educate the community on the benefits and proper methods of recycling and composting and use this as an opportunity to promote the City's existing programs, such as the free mulch program, shredding program, household hazardous waste collection, as well as expand programs as appropriate.	Community Development	Phase 1	
CIO-6e	Work with CalRecycle and similar entities to identify and secure grants that fund waste diversion and educational programs.	Community Development	Phase 1	
CIO-6f	Create a shared resource area within each City-owned facility dedicated to lightly used office supplies such as staplers, tape dispensers, pens, and pads of paper, facilitating the reuse of items among staff members and promoting efficiency and reducing waste.	Community Development	Phase 2	
CIO-6g	Partner with local jurisdictions including surrounding cities and the county to create an inter-office or inter-jurisdiction surplus program where City offices can provide items (e.g., pieces of furniture) for reuse for free to other offices within the City or other jurisdictions.	Public Works	Phase 2	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CIO-6h	Create a buy-nothing group for City staff to share resources and items that they may no longer be interested in or have a use for at their homes.	Public Works	Phase 2	
CIO-6i	Perform a waste audit every two years to track waste sources, gaps in signage and education, and opportunities to strengthen the purchasing policy (e.g., based on problem-some materials continuing to the landfill or the contaminating recycling and composting streams).		Ongoing	
CIO-7. Retrofit existing infrastructure owned and operated by the City, such as the Pinole-Hercules Water Pollution Control Plant, located in the areas at risk of sea level rise.				
CIO-7a	Complete a feasibility study to evaluate various options for infrastructure improvements of Pinole-Hercules Water Pollution Control Plant to mitigate against sea level rise and flood hazards. Develop a long-term management plan to address impacts of sea level rise, which incorporates any potential maintenance, relocation, or retrofits and structural changes to accommodate changes in sea level.	Community Development	Phase 1	
CIO-7b	Collaborate with the San Francisco Bay Regional Water Quality Control Board to increase the Pinole-Hercules Water Pollution Control Plant's resilience to sea level rise and stronger storms. For example, implement a trigger-based Coastal Hazard Monitoring Program, which would allow to implement improvements or relocate in a timely manner, and conduct feasibility studies from technical experts, retrofitting, relocating, or eliminating outfalls deemed "at risk."	Community Development	Phase 1	
CIO-7c	Provide alternate routes and ensure redundancy of critical transportation routes, as possible, to allow for continued access and movement to and along the coast in instances in which sections of roadways may become temporarily impassible because of shoreline hazards. Additionally, inform City staff, residents, and visitors about alternate routes to shoreline areas.	Public Works	Phase 1	
CIO-7d	Host working groups with community-based organizations, experts in the field, and interested parties to identify and prioritize vulnerable communities, involve them in decision-making, use community benefits agreements, prioritize underserved communities, and consider the financial impact on residents.	Community Development	Phase 1	
CIO-7e	Identify and apply for a grant funding source to fund facility upgrades, relocation, or additional analysis through entities such as the San Francisco Bay Conservation and Development Commission, California Coastal Commission, National Oceanic and Atmospheric Administration (NOAA), or Federal Emergency Management Agency (FEMA).	Community Development	Phase 1	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CIO-7f	Conduct a detailed and City-specific groundwater emergence threat assessment, factoring in local geomorphology and groundwater data, for use in future planning and analysis.	Public Works	Phase 2	
CIO-7g	Incorporate policy guidance and model ordinance language in Citywide plans, policies, and regulations to prioritize strategies that reduce potential impacts due to sea level rise and shoreline hazards and increase the resilience of the City's shoreline areas.	Community Development	Phase 2	
Strategy CG: City Governance				
CG-1. Build staffing capacity to effectively implement the CAAP Mitigation Measures and update the CAAP triennially.				
CG-1a	Create a new full-time staff position to oversee CAAP implementation, monitoring, and reporting; and cross-department collaboration (i.e., Climate Coordinator work in Action CG-1).	Community Development	Phase 1	
CG-1b	Identify a Climate Coordinator from each of the City's main departments and divisions. The Climate Coordinators will meet for quarterly sustainability peer-to-peer information sharing sessions to discuss challenges, brainstorm solutions, and track progress towards reaching the City's CAAP key performance indicators. This team will serve as the key organizers for cross-departmental collaboration needed to implement climate goals, as well as community contacts and key researchers for emerging technologies and best practices in climate action.	All Departments	Phase 1	
CG-1c	Conduct an annual staff survey to determine the following: ▪ Existing staff interest in leading climate initiatives to identify internal champions. ▪ Staff capacity to implement CAAP actions, monitor progress, and report updates; and associated capacity gaps to fill.	Community Development Department	Ongoing	
CG-1d	Include a description of Pinole's climate goals and values in job postings, improving talent acquisition and potentially boosting retention and worker morale.	Human Resources	Phase 1	
CG-1e	Identify and apply for climate staffing assistance through fellowship/internship programs including the Climate Corps Fellowship, California Pacific University, and CivicSpark to increase internal staff capacity for CAAP implementation and bring in innovative ideas.	Community Development Department	Phase 1	
CG-1f	Earmark funding for CAAP updates.	Finance	Ongoing	

Action ID	Action Text	Responsible Department	Phase	Potential Grant Funding Sources
CG-2. Establish reporting procedures to implement the CAAP measures and transparently communicate progress to the community.				
CG-2a	Join the Institute for Local Government's Beacon Program to support transparent CAAP reporting through access to technical assistance, regional networking and education opportunities, and opportunities to recognize Pinole's climate action achievements.	Community Development	Phase 1	
CG-2b	Conduct a communitywide GHG inventory every two years and a municipal GHG inventory every five years.	Community Development	Ongoing	
CG-2c	Report communitywide GHG emissions and progress on Mitigation Measures annually through public reporting tools (e.g., CAPDash) and utilize social media to post updates and results so the community can easily stay up to date.	Community Development	Ongoing	
CG-2d	Regularly update Pinole's CAAP webpage, Sustainability webpages (e.g., Community Choice Energy, EV Charging Stations, Single Use Plastic Reduction), and applicable Public Works webpages (e.g., Water, Garbage and Recycling, Trees) to provide up-to-date information on ordinance, program, and policies as they are updated through CAAP implementation.	Community Development Department	Ongoing	
CG-2e	Explore and track the success of different ways to communicate climate progress transparently to the public (e.g., a dashboard, semi-regular social media posts, City webpages, Pinole TV). Track the number of clicks made on specific links to identify the most successful mechanisms for engagement.	Community Development Department	Ongoing	
CG-2f	Translate key climate outreach materials into non-English languages. Explore partnerships through nonprofits and other organizations that can assist in translation of key materials.	Community Development Department	Ongoing	
CG-2g	Communicate Pinole's climate and green economic development commitments through City branding and communications (beyond dedicated webpages and resources) and utilize existing City meetings and events to emphasize the importance of climate action and bring it into regular City and community discussions.	Community Development Department	Ongoing	
CG-2h	Earmark annual funding for the CAAP update in the budget to demonstrate commitment to implementation and monitoring and to provide a consistent conduit of funding.	Finance	Ongoing	



Appendix A
Inventory, Forecast, and Targets

Rincon Consultants, Inc.

449 15th Street, Suite 303
Oakland, California 94612

510 834 4455 OFFICE

info@rinconconsultants.com
www.rinconconsultants.com

January 3, 2024
Project No: 21-11885

Lilly Whalen
Community Development Director
City of Pinole
2131 Pear Street
Pinole, California 94564

Subject: City of Pinole 2017 Community Greenhouse Gas Emissions Inventory Review and Reconciliation Memo

Dear Ms. Whalen:

Rincon Consultants, Inc. (Rincon) has been contracted by the City of Pinole (City) to conduct a peer review of the 2017 greenhouse gas (GHG) emissions community inventory (2017 Inventory), which was originally prepared by East Bay Energy Watch (EBEW) as part of a regional GHG emissions inventory in June 2020. Establishing a consistent methodology and accurate baseline emissions inventory provides the City with an opportunity to track the success of their sustainability and climate action efforts and establish a pathway to reduce GHG emissions in accordance with the City's and state's goals. Therefore, Rincon has conducted a peer review of the 2017 Inventory to verify that it was completed following the ICLEI Local Governments for Sustainability Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol) and with current and accurate data sources and emission factors.[1] This memo contains the results of Rincon's review and reconciliation of the 2017 Inventory. As part of this scope of work, Rincon completed the following:

- Reviewed the activity data, emission factors, and calculations associated with GHG emissions estimates in the 2017 Inventory.
- Identified that water, wastewater, waste, electricity transmission and distribution (T&D) loss, and natural gas methane leak sectors were omitted in the 2017 Inventory.
- Worked with the City to obtain community-level activity data and emission factors related to waste, water, and wastewater, and obtained loss factors and emission factors for electricity T&D losses and methane leaks and completed GHG emissions calculations for these sectors which were added to the updated GHG emissions inventory.
- Identified data source and emission factor improvement opportunities for the off-road sector, on-road transportation sector, and direct access electricity sector.
- Updated the GHG emissions calculations for the off-road sector, on-road transportation sector, and direct access electricity sector using updated models and GHG emission factors.

[1] ICLEI – Local Governments for Sustainability USA. July 2019. U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions Version 1.2.

The sections below provide details on the review and reconciliation process, an overview of the data sources and methodologies used to perform the GHG emissions updates, and calculations for the offroad, transportation, energy, waste, water, and wastewater sectors, as well as a summary of the updated 2017 inventory (Updated Inventory). The Updated Inventory results are intended to be used by the City of Pinole to develop GHG emissions forecasts and reduction targets and support the City's climate action planning (CAP) efforts.

Inventory Review and Reconciliation

Background

As mentioned above, the City of Pinole's 2017 Inventory was completed by EBEW as part of a regional GHG emissions inventory in June 2020. The 2017 Inventory was completed in accordance with the Community Protocol. ICLEI protocols serve as the national standards for local-scale accounting of GHG emissions that contribute to climate change and provide authoritative guidance to account for GHG emissions accurately and consistently. The Community Protocol serves to guide the measurement and reporting of GHG emissions in a standardized way and is used by other jurisdictions to support their own inventory, forecast, and climate action planning efforts.

In accordance with recommendations in the Community Protocol, the 2017 Inventory includes carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) emissions, measured collectively in units of metric tons (MT) of carbon dioxide equivalent (CO_2e) from activities that occurred in the 2017 calendar year under the operational control of Pinole. The 2017 Inventory used 100-year global warming potentials (GWP) for each gas that are consistent with the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report, which were also used by the state in their latest GHG emissions inventory.[2] The GWP refers to the ability of each gas to trap heat in the atmosphere. For example, one pound of CH_4 gas has 28 times more heat capturing potential than one pound of CO_2 gas. In other words, one MT CH_4 is equivalent to 28 MT CO_2e in terms of warming potential. The GWPs used for each gas as part of the GHG emissions calculations for the 2017 Inventory, as well as primary sources for each gas, are shown in Table 1.

Table 1 2017 Inventory GHGs and GWPs

Greenhouse Gas	Primary Source	100-year GWP
Carbon dioxide (CO_2)	Combustion	1
Methane (CH_4)	Combustion, anaerobic decomposition of organic waste (e.g., in landfills, wastewater treatment plants)	28
Nitrous Oxide (N_2O)	Leaking refrigerants and fire suppressants	265

Source: IPPC Fifth Assessment Report

[2] International Panel on Climate Change. 2014. Fifth Assessment Report.

Generally, GHG emissions were calculated by multiplying the activity data in each GHG emissions sector (e.g., transportation, energy, waste, water) by an associated emission factor. Activity data refer to the relevant measured or estimated energy use or GHG-generating process. Emission factors are observation-based conversion factors used to equate activity data to generated GHG emissions. The original 2017 Inventory results are summarized in Table 2. In general, the 2017 Inventory used up-to-date and appropriately aggregated activity data, data sources, and emission factors, and was consistent with calculation methodologies in the Community Protocol.

Table 2 Original 2017 GHG Emissions Inventory for Pinole (East Bay Energy Watch)

GHG Emissions Sector	GHG Emissions Subsector	Activity Data	Activity Data Source	Emissions Factor	Emission Factor Source	GHG Emissions (MT CO_2e)
Energy: GHG emissions associated with the consumption of energy for residential and commercial buildings in the jurisdiction.	Residential Electricity	37,413,247 kWh	PG&E	0.000096 MT CO_2e/kWh	PG&E, eGRID[1]	3,605
	Nonresidential Electricity	32,505,137 kWh	PG&E	0.000096 MT CO_2e/kWh	PG&E, eGRID	3,132
	Direct Access	0 kWh	PG&E	N/A	N/A	0
	Residential Natural Gas	2,777,511 therms	PG&E	0.00531 MT CO_2e/therm	PG&E	14,750
	Nonresidential Natural Gas	810,175 therms	PG&E	0.00531 MT CO_2e/therm	PG&E	4,302
Transportation: GHG emissions associated with the operation of passenger, commercial, transit, and off-road vehicles within the jurisdiction	Passenger Vehicles	51,150,262 miles	MTC[2]	0.000344 MT CO_2e/mile	EMFAC2017[3]	17,593
	Commercial Vehicles	8,743,810 miles	MTC	0.001242 MT CO_2e/mile	EMFAC2017	10,862
	BART	2,455,392 miles	BART	0.000093 MT CO_2e/mile	BART	228
	Off-road	Various	Unknown off-road model	Various	Unknown off-road model	4,753
Waste: GHG emissions associated with decomposition of solid waste in a landfill generated by the jurisdiction	Waste	N/A	N/A	N/A	N/A	0
Water and Wastewater: GHG emissions associated with the electricity used for acquisition, distribution, and treatment of water, as well as with wastewater treatment processes	Water and Wastewater	N/A	N/A	N/A	N/A	0

Source: EBEW

kWh = kilowatt hours; PG&E = Pacific Gas & Electric; MTC = Metropolitan Transportation Commission; MT CO_2e = metric tons of carbon dioxide equivalent; VMT = vehicle miles travelled; BART = Bay Area Rapid Transit

1. eGRID is the Environmental Protection Agency's (EPA) Emissions & Generation Resource Integrated Database (eGRID), which provides regional GHG emission factors for electricity grids across the United States, and is accessed at: https://www.epa.gov/egrid

2. The MTC VMT data portal provides VMT data by jurisdiction and is accessed at: http://capvmt.us-west-2.elasticbeanstalk.com/data

3. EMFAC2017 is the California Air Resources Board's (CARB) 2017 Emission FACtor (EMFAC) model, which estimates the official emissions inventories of on-road mobile sources in California, and is accessed at: https://arb.ca.gov/emfac/2017/

During the review and reconciliation process, the following improvement opportunities and specific solutions to improve the analysis were identified, with the methodologies used to complete these updates further discussed in the next section:

- The 2017 Inventory did not include GHG emissions from waste, water, wastewater, natural gas methane leaks, or electricity T&D losses, which are recommended sectors for inclusion according to the Community Protocol. The inventory was updated to include these sectors.
- EBEW completed the 2017 Inventory in 2020 using the California Air Resources Board's (CARB) OFFROAD2017 model to estimate GHG emissions in the off-road sector. Subsequently, CARB has released OFFROAD2021,[3] which contains updated off-road fuel estimates to better account for off-road equipment usage. The off-road sector was updated using results from OFFROAD2021.
- EBEW completed the 2017 Inventory in 2020 using CARB's EMFAC2017 model to estimate emission factors for the on-road transportation sector. Subsequently, CARB has released EMFAC2021, which contains updated emission factors and additional data to better account for electric vehicle usage. The passenger and commercial VMT sectors were updated using results from EMFAC2021 to provide updated transportation emissions estimates.
- In 2017, direct access electricity was not available for the community due to data privacy regulations in the 15/15 rule.[4] Direct access electricity was estimated using a proxy from 2018, when data privacy regulations were not triggered.

Updated GHG Emissions Inventory Methods

The 2017 Inventory was updated to leverage the latest available models and best available data[5] in accordance with the Community Protocol. The Updated Inventory serves to provide a comprehensive understanding of the City of Pinole's GHG emissions and was developed to serve the following purposes:

- Provide an understanding of where the highest sources of GHG emissions in the City originate and where the greatest opportunities for GHG emissions reductions exist.
- Create a GHG emissions baseline from which the City can establish a forecast, reduction targets, and evaluate future progress.
- Aid in the development of a future CAP.

The following sections contain further information on the inventory update approach, calculation methodologies, data used, and results.

Water

GHG emissions from water conveyance, delivery, and treatment were calculated following Method WW.14 from the Community Protocol. Activity data (acre-feet [AF] of water delivered to the City of Pinole) were provided directly by East Bay Municipal Utilities District (EBMUD), which provides water

[3] CARB's OFFROAD2021 model can be accessed at: https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9

[4] The 15/15 Rule is a California Public Utilities Commission (CPUC) regulation which limits the sharing of aggregated energy usage data when that data includes usage for fewer than 15 customers with any one customer's load exceeding 15 percent of the group's energy consumption.

[5] The concept of "best available data" is referenced by the World Resources Institute's Greenhouse Gas Protocol (2014).

services for the City of Pinole. Water volume data were used to calculate electricity usage, based on an energy intensity factor for EBMUD's water supply. The energy intensity factor for water was obtained specifically from EBMUD's 2020 Urban Water Management Plan (UWMP).[6] Electricity usage was further converted to GHG emissions using PG&E's electricity emission factor, as shown in Table 3.

Table 3 Water GHG Emissions Calculations

Activity Data (AF)	Energy Intensity (kWh/AF)	Electricity (kWh)	Electricity Emission Factor (MT CO_2e/kWh)	GHG Emissions (MT CO_2e)
1,710	379.64	649,204	0.000096	63

Wastewater

GHG emissions associated with wastewater treatment in Pinole arise from stationary combustion and processing at the in-boundary Pinole-Hercules Water Pollution Control Plant, which serves the majority of the population of Pinole.[7] In 2017, the Pinole-Hercules Water Pollution Control Plant used conventional aerobic treatment systems with nitrification/denitrification processes, as well as operated an anaerobic digester which sent gas to be combusted at a cogen. Wastewater GHG emissions were calculated using Community Protocol Method WW.1.a and WW.2.a to capture CH_4 and N_2O emissions from the anaerobic digester;[8] Method WW.7 to capture N_2O emissions from nitrification/denitrification; and Method WW.12 to capture fugitive N_2O emissions from effluent discharge. Finally, Community Protocol Method WW.13 was used to attribute GHG emissions at the Water Pollution Control Plant to the City of Pinole, based on information from the City of Pinole that 48 percent of water treated at the Plant comes from Pinole. GHG emissions calculations associated with wastewater are shown in Table 4.

Table 4 2017 Wastewater GHG Emissions Calculations

Sector	Community Protocol Method	Activity Data Input	Activity Data	GHG Emissions (MT CO_2e)
Digester Gas CH_4	WW.1.a, WW.13	Digester gas (cubic feet per day)	60,725	0.59
Digester Gas N_2O	WW.2.a, WW.13			1.10
Denitrification Process N_2O	WW.7, WW.13	Population served	44,895	40
Effluent Discharge Fugitive N_2O	WW.12, WW.13	Nitrogen load (kilograms of nitrogen per day)	336	61

Waste

GHG emissions associated with the waste sector result from the decomposition of waste at a landfill and from waste processing equipment. GHG emissions from waste decomposition were calculated using Community Protocol Method SW.4, using the default emission factor for mixed waste and assuming

[6] East Bay Municipal Utility District. 2020. EBMUD Urban Water Management Plan 2020. Appendix J; Table J-1.
[7] A small portion of the City of Pinole served by West County Wastewater District. Wastewater emissions for this portion of the population were not captured as part of the inventory update because they were considered negligible.
[8] It was assumed that fraction of CH_4 in the biogas was approximately equal to 60%, based on specifications for the anaerobic digesters.

operation of a landfill gas collection system.[9] GHG emissions from waste processing equipment were estimated using Community Protocol Method SW.5. Activity data for community-generated waste were provided directly by West Contra Costa Integrated Waste Management Authority, on behalf of Republic Services, the waste service provider in Pinole. The GHG emissions calculations for waste are shown in Table 5.

Table 5 2017 Waste GHG Emissions Calculations

Sector	Community Protocol Method	Activity Data Input	Activity Data (wet short ton)	GHG Emissions (MT CO_2e)
Landfill Decomposition	SW.4	Community-generated waste	8,367	3,163
Process Emissions	SW.5			137

Transportation: Off-road

Off-road activity data, measured in gallons of fuel consumed by fuel type, were updated using the recently released OFFROAD2021 emissions database, per CARB recommendations.[10] OFFROAD2021 provides fuel usage results from off-road equipment operation at the county level; fuel usage results were then apportioned to Pinole using demographics data calculated from Plan Bay Area 2040 and Plan Bay Area 2050.[11] The updated analysis includes the same vehicle classes used in the 2017 Inventory, using the newer model of vehicle classes for which there is updated data. Emission factors for diesel, gasoline, and natural gas usage in off-road vehicles were obtained from the EPA Emission Factors for Greenhouse Gas Inventories report.[12] Off-road GHG emissions calculation details are shown in Table 6.

Table 6 2017 Off-road GHG Emissions Calculations

Fuel Type	Activity Data (gallons)	Emission Factor (MT CO_2e/gallon)	GHG Emissions (MT CO_2e)
Diesel	302,801	0.01021	3,140
Gasoline	210,947	0.00878	1,877
Natural Gas	38,014	0.00568	219

Transportation: Passenger and Commercial VMT

Transportation emissions from passenger and commercial vehicles were updated to leverage the latest on-road transportation emissions data from CARB's EMFAC2021 model.[13] Passenger and commercial

[9] West Contra Costa Integrated Waste Management Authority communicated that solid waste in Pinole is hauled to Keller Canyon Landfill and West Contra Costa SLF, which both operate landfill gas collection systems, according to the LMOP Database accessed at: https://www.epa.gov/system/files/documents/2021-09/opprjslmopdata-detailed.xlsx.

[10] Updates to CARB's OFFROAD model in 2021 include more accurate accounting of fuel usage in each off-road category, especially in the agricultural equipment sector.

[11] Accessed at: http://projections.planbayarea.org/.

[12] Environmental Protection Agency. April 2021. Emission Factors for Greenhouse Gas Inventories.

[13] Output from the CARB 2021 EMission FACtor (EMFAC) model version 1.0.1 was used to facilitate analysis of VMT data (accessed at: https://arb.ca.gov/emfac/emissions-inventory/d7e33b22a7ef163d2dc9fd91182391d41cb025f9). EMFAC2021 is the primary data source for estimating project- and plan-level mobile source emissions in California. County-specific emissions factors, in units of MT CO_2e/mile, for buses, passenger, and commercial vehicles were calculated based on EMFAC2021 model output for the year 2017. Percent electric vehicle (EV) share and electricity used per EV-mile were also calculated at the county level for each year based on EMFAC2021 model output to quantify EV mileage and EV electricity usage for Pinole is based on the VMT data. Each variable calculated from EMFAC2021 output was aggregated over all

VMT data were originally obtained from Metropolitan Transportation Commission (MTC). However, MTC data does not include VMT from motorcycles, motor homes, or buses. VMT data from MTC were, therefore, adjusted using data from EFMAC2021 to include the missing VMT sources. VMT data were further disaggregated to electric VMT (EVMT). EVMT can be converted to electricity usage (in kWh) by applying an estimated energy per mile factor from EMFAC2021. Activity data were then converted to GHG emissions using emission factors from EMFAC2021. These calculations are shown in detail in Table 7 and Table 8.

To avoid double counting electricity emissions contained in the transportation sector and in the electricity sector, residential and nonresidential electricity activity data were adjusted by subtracting the electricity used for vehicle charging. These changes are reflected in the next section.

vehicle categories (i.e., LDA, LDT1, LDT2, MCY, MDV, MH for passenger vehicles; LHDT1, LHDT2, HHDT, MHDT for commercial vehicles; OBUS, SBUS, UBUS for buses) and fuel types (i.e., gasoline, diesel, natural gas, electric vehicle, and plug-in) using a VMT-weighted average.

Table 7 2017 On-road VMT Calculations

Sector	MTC Activity Data (miles/day)	EMFAC Adjustment Description	EMFAC Adjusted Activity Data (miles/day)	Annual VMT (miles)[1]	EMFAC EV share	Annual EVMT (miles)	EMFAC Energy per Mile (kWh/mile)	Annual EVMT (kWh)
On-road Passenger VMT	146,501	Augment MTC data to include motorcycle VMT. Per EMFAC2021, 0.45% of passenger VMT is from motorcycles.	147,169	51,067,556	1.03%	525,996	0.362	190,196
On-road Commercial VMT	23,932	Augment MTC data to include motor home VMT. Per EMFAC2021, 1.59% of commercial VMT is from motor homes.	24,318	8,438,221	0.00%	0	N/A	0
On-road Bus VMT	N/A	Augment MTC data to include bus VMT. Per EMFAC 2021, bus VMT is equal to 3.67% of commercial VMT.	892	309,457	0.12%	371	1.743	647

1. Daily VMT is converted to annual VMT using a standard conversion factor of 347 days per year, which accounts for reduced VMT on some days of the year. See CARB's Review of Metropolitan Transportation Commission's Draft 2021 RTP/SCS.[14]

Table 8 2017 On-road GHG Emissions Calculations

Sector	Activity Data	Emission Factor	GHG Emissions (MT CO_2e)
On-road Passenger VMT	51,067,556 miles	0.000370 MT CO_2e/mile	18,895
On-road Commercial VMT	8,438,221 miles	0.001288 MT CO_2e/mile	10,868
On-road Bus VMT	309,457 miles	0.001530 MT CO_2e/mile	473
On-road Passenger EVMT	190,196 kWh	0.000096 MT CO_2e/kWh	18
On-road Commercial EVMT	0 kWh	0.000096 MT CO_2e/kWh	0
On-road Bus EVMT	647 kWh	0.000096 MT CO_2e/kWh	0.06

[14] California Air Resources Board. July 2021. CARB Review of Metropolitan Transportation Commission's Draft 2021 RTP/SCS Senate Bill 375 Greenhouse Gas Emissions Technical Quantification Methodology. Accessed at: https://ww2.arb.ca.gov/sites/default/files/2021-08/2021.07.16%20CARB%20MTC%202021%20SCS%20TM%20Response%20Letter_signed_ADA.pdf

Energy: Residential and Nonresidential Electricity

As mentioned above, residential and nonresidential electricity activity data and GHG emissions were updated to accurately account for the electricity used for electric vehicle charging and to avoid double-counting. Specifically, on-road passenger EVMT electricity was subtracted from the residential electricity activity data,[15] while bus EVMT electricity was subtracted from the nonresidential electricity activity data. These updates are shown in Table 9.

Table 9 2017 Residential and Nonresidential Electricity Adjustment

Sector	Original Activity Data (kWh)	Annual EVMT (kWh)	Adjusted Activity Data (kWh)	Emission Factor (MT CO_2e/kWh)	Adjusted GHG Emissions (MT CO_2e)
Residential Electricity (PG&E)	37,413,247 kWh	190,196	37,223,051	0.000096	3,587
Nonresidential Electricity (PG&E)	32,505,137 kWh	647	32,504,490	0.000096	3,132

Energy: Direct Access Electricity

Electricity emissions were updated to include estimated direct access electricity. While direct access electricity data was not available from PG&E in 2017 due to the 15/15 rule, direct access electricity data from 2018 were used as a proxy for 2017 data and added to the Updated Inventory. Direct access electricity data for 2018 were calculated based on data provided by PG&E and MCE Clean Energy, as shown in Table 10.[16]

Table 10 2018 Direct Access Electricity Calculation

Electricity Provider	Electricity Sector	Activity Data (kWh)
PG&E	Direct Access – Including MCE Electricity	52,455,782
MCE	Residential 60% Renewable	22,838,750
	Residential 100% Renewable	101,218
	Nonresidential 60% Renewable	18,839,092
	Nonresidential 100% Renewable	83,493
Non-MCE Direct Access (PG&E Direct Access minus MCE Electricity)		**10,593,229**

GHG emissions from direct access electricity for 2017 were then calculated by multiplying the 2018 proxy activity data by the 2017 direct access electricity emission factor from eGRID (Table 11).[17]

Table 11 2017 Direct Access GHG Emissions Calculations

Electricity Sector	Activity Data (kWh)	Emission Factor (MT CO_2e/kWh)	GHG Emissions (MT CO_2e)
Direct Access	10,593,229	0.0002404	2,546

[15] It was assumed that the majority of electric vehicle charging occurs at home.
[16] Starting in April 2018, MCE Clean Energy began procuring and providing electricity to the City of Pinole. MCE Clean Energy is a community choice aggregation (CCA).
[17] Accessed at: https://www.epa.gov/egrid

Energy & Transportation: Electricity T&D Losses

Electricity T&D losses arise from electricity lost during delivery to the buildings and associated end-uses in the City of Pinole. Electricity T&D losses occur in the electricity delivery system and are therefore upstream of the delivery endpoints located in Pinole but are still associated with energy usage in the City of Pinole. GHG emissions from electricity T&D losses are calculated using an electricity T&D loss factor of 4.23 percent, obtained from eGRID.[18] GHG emissions from electricity T&D losses were calculated separately for each electricity stream in the energy sector (residential, nonresidential, and direct access) using the associated emission factor. Electricity T&D GHG emission calculation details are shown in Table 12.

Table 12 Electricity T&D Loss GHG Emissions Calculations

Sector	Activity Data (kWh)	T&D Losses (kWh)	Emission Factor (MT CO_2e/kWh)	GHG Emissions (MT CO_2e)
Residential Electricity	37,223,051	1,574,535	0.000096	152
Nonresidential Electricity	32,504,490	1,374,940	0.000096	132
Direct Access Electricity	10,593,229	448,094	0.000240	108

Energy: Natural Gas Methane Leaks

Natural gas methane leaks arise from natural gas lost during delivery to the buildings and associated end-uses in the City of Pinole. Natural gas methane leaks occur in the pipeline delivery system and are therefore upstream of the delivery endpoints located in Pinole but are still associated with energy usage in the City of Pinole. GHG emissions from natural gas methane leaks are calculated using a methane leak factor of 2.3 percent.[19] GHG emissions from natural gas methane leaks were calculated separately for the residential and nonresidential natural gas streams in the energy sector, using a natural gas methane leak emission factor. Electricity T&D GHG emission calculation details are shown in Table 13.

[18] Accessed at: https://www.epa.gov/egrid
[19] Alvarez, Ramón et al. (2018). Assessment of methane emissions from the U.S. oil and gas supply chain. Science. 361. https://www.science.org/doi/abs/10.1126/science.aar7204.

Table 13 Natural Gas Methane Leaks GHG Emissions Calculations

Natural Gas Sector	Activity Data (therms)	Methane Leaks (therms)	Emission Factor (MT CO_2e/therm)[1]	GHG Emissions (MT CO_2e)
Residential Natural Gas	2,777,511	63,883	0.053067	3,390
Nonresidential Natural Gas	810,175	18,634	0.053067	989

1. Calculated using the equation: $2.85 \frac{cubic\ meters}{therm} * 95\%\ methane\ content * 0.7 \frac{kg}{cubic\ meter} * 28 \frac{CO_2e}{CH_4} * 0.001 \frac{MT}{kg}$

Updated GHG Emissions Inventory Summary

The results for all GHG emissions sectors for the City of Pinole's Updated Inventory are summarized in Figure 1 and shown in detail in Table 14.

Figure 1 Updated Inventory GHG Emissions by Sector

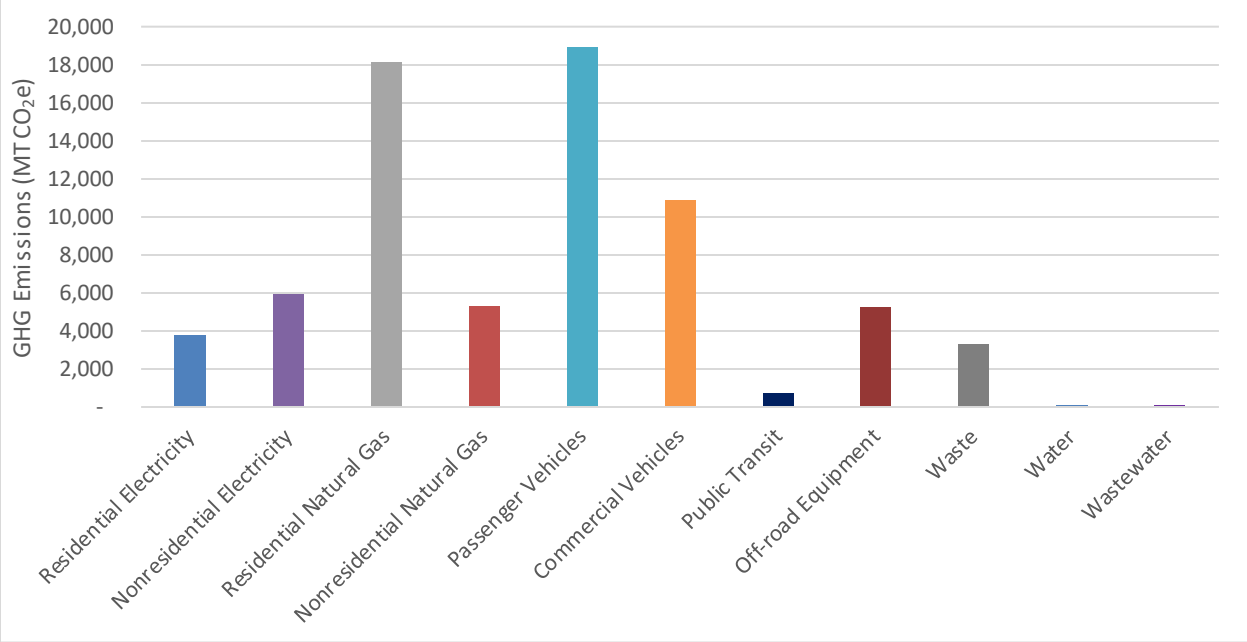


Table 14 Updated 2017 GHG Emissions Inventory

GHG Emissions Sector	GHG Emissions Subsector	Activity Data	Emission Factor	GHG Emissions (MT CO_2e)
Energy	Residential Electricity	37,223,051 kWh	0.000096 MT CO_2e/kWh	3,587
	Residential Electricity T&D	1,574,535 kWh	0.000096 MT CO_2e/kWh	152
	Nonresidential Electricity	32,504,490 kWh	0.000096 MT CO_2e/kWh	3,132
	Nonresidential Electricity T&D	1,374,940 kWh	0.000096 MT CO_2e/kWh	132
	Direct Access Electricity	10,593,229 kWh	0.000240 MT CO_2e/kWh	2,546
	Direct Access Electricity T&D	448,094 kWh	0.000240 MT CO_2e/kWh	108
	Residential Natural Gas	2,777,511 therms	0.00531 MT CO_2e/therm	14,750
	Residential Natural Gas Leaks	63,883 therms	0.053067 MT CO_2e/therm	3,390
	Nonresidential Natural Gas	810,175 therms	0.00531 MT CO_2e/therm	4,302
	Nonresidential Natural Gas Leaks	18,634 therms	0.053067 MT CO_2e/therm	989
Transportation	Passenger VMT	51,067,556 miles	0.000370 MT CO_2e/mile	18,895
	Commercial VMT	8,438,221 miles	0.001288 MT CO_2e/mile	10,868
	Bus VMT	309,457 miles	0.001530 MT CO_2e/mile	473
	Passenger EVMT	190,196 kWh	0.000096 MT CO_2e/kWh	18
	Commercial EVMT	0 kWh	0.000096 MT CO_2e/kWh	0
	Bus EVMT	647 kWh	0.000096 MT CO_2e/kWh	0.06
	BART	2,455,392 miles	0.000093 MT CO_2e/mile	228
	Off-road Diesel	357,578 gallons	MT CO_2e/gallon	3,140
	Off-road Gasoline	206,631 gallons	MT CO_2e/gallon	1,877
	Off-road Natural Gas	45,523 gallons	MT CO_2e/gallon	219
Waste	Landfill CH_4	8,367 tons	N/A	3,163
	Process Emissions		N/A	137
Water	Water Conveyance, Treatment, and Distribution	57,398 kWh	0.000096	63
Wastewater	Digester Gas CH_4	60,725 std cubic ft/day	N/A	0.59
	Digester Gas N_2O		N/A	1.10
	Denitrification Process N_2O	44,895 population served	N/A	40
	Effluent Discharge Fugitive N_2O	336 kg N/day	N/A	61
Total				**72,273**

The Updated Inventory provides the City with accurate baseline GHG emissions estimates that follow the Community Protocol and include, as mentioned previously, the following modifications for improved GHG accounting:

- Addition of GHG emissions from the waste, water, wastewater, natural gas methane leaks, and electricity T&D loss sectors, which were excluded from the 2017 Inventory.
- Use of CARB's updated OFFROAD2021 model in place of the older off-road model, for updated off-road fuel estimates and better accounting of off-road equipment usage.
- Use of CARB's updated EMFAC2021 model in place of the older EMFAC2017 model, for updated on-road transportation sector emission factors and additional data to better account for electric vehicle usage.
- Addition of estimated direct access electricity for 2017, using proxy data from 2018, which were excluded from the 2017 Inventory.

The Updated Inventory resulted in a 21.9 percent increase in GHG emissions attributed to the City of Pinole in 2017, primarily due to the addition of the waste, water, wastewater, electricity T&D loss, and natural gas methane leakage sectors to the inventory. The changes from the original 2017 Inventory and the Updated Inventory are shown in detail in Table 15.

Table 15 Original 2017 Inventory versus Updated Inventory

GHG Emissions Sector	GHG Emissions Subsector	GHG Emissions ($MT CO_2e$)		Percent Change (%)	Summary of Reason for Change
		Inventory Update	Original 2017 Inventory		
Energy	Residential Electricity	3,738	3,605	3.6%	Adjusted to exclude GHG emissions from passenger EV charging and include GHG emissions from T&D losses
	Nonresidential Electricity	5,918	3,132	88.9%	Adjusted to include GHG emissions from direct access electricity and T&D losses
	Residential Natural Gas	18,140	14,750	23.0%	Adjusted to include GHG emissions from methane leaks
	Nonresidential Natural Gas	5,291	4,302	23.0%	Adjusted to include GHG emissions from methane leaks
Transportation	Passenger Vehicles	18,913	17,593	7.5%	Adjusted to use updated emission factors and include GHG emissions from passenger EV charging and T&D losses.
	Commercial Vehicles	10,868	10,862	0.1%	Adjusted to use updated emission factors and exclude GHG emissions from buses.
	Public Transit (buses and BART)	701	228	207.9%	Adjusted to include GHG emissions from buses and EV bus charging and T&D losses.
	Off-road Equipment	5,236	4,753	10.2%	Adjusted to use updated fuel usage data and emission factors.
Waste	Waste	3,300	N/A	N/A	Sector originally excluded from inventory and updated to be included.
Water and Wastewater	Water	63	N/A	N/A	Sector originally excluded from inventory and updated to be included.
	Wastewater	103	N/A	N/A	
Total		**72,273**	**59,226**	**18.1%**	**N/A**

The Updated Inventory is intended to be used for further climate action planning efforts in the City of Pinole, including the development of GHG emissions targets, GHG emissions reduction measures, and as a baseline for comparing future GHG emissions inventories. Since 2017, GHG emissions in the City of Pinole have likely declined due to renewable energy procurement from MCE and increased efficiency in the energy and transportation sectors. Future emissions can be estimated in a GHG emissions forecast developed from the Updated Inventory.

Sincerely,

Rincon Consultants, Inc.

Erik Feldman, MS, LEED AP
Principal

Hannah Mize
Sustainability Project Manager

Rincon Consultants, Inc.

449 15 St #303
Oakland, California 94612

(510) 834-4455 OFFICE AND FAX

info@rinconconsultants.com
www.rinconconsultants.com

March 14, 2022
Project No: 21-11885

Lilly Whalen
Community Development Director
City of Pinole
2131 Pear Street
Pinole, California 94564

Subject: City of Pinole 2021 Municipal Greenhouse Gas Emissions Inventory

Dear Ms. Whalen:

Rincon Consultants Inc. (Rincon) has prepared this 2021 Municipal Greenhouse Gas (GHG) Emissions Inventory (Municipal GHG Inventory) for the City of Pinole (the City) for the 2021 calendar year as part of a baseline assessment to be used in GHG reduction planning efforts. The Municipal GHG emissions inventory is based on the most recent full year of available activity data (2021) and calculates the GHG emissions associated with the buildings and facilities, streetlights and traffic signals, vehicle fleet, employee commute, water consumption, wastewater emissions and solid waste generation under the City's operational control. The GHG inventory was competed using the *Local Government Operations Protocol*[1] (LGOP) developed by Local Governments for Sustainability (ICLEI), California Air Resources Board (CARB), California Climate Action Registry, and The Climate Registry (TCR), and includes the calculation of the municipal GHG emissions inventory which can be attributed directly to Pinole's operations in 2021.

California Regulatory Setting

California considers GHG emissions and the impacts of climate change to be a serious threat to public health, the environment, economic well-being, and natural resources of the state, and has taken an aggressive stance to mitigate the impact on climate change through the adoption of legislation and policies, the most relevant of which are summarized below.

- **Executive Order (EO) S-3-05,** signed by the Governor in 2005, establishes statewide GHG emissions reduction targets to achieve long-term climate stabilization as follows: by 2020, reduce GHG emissions to 1990 levels and by 2050, reduce GHG emissions to 80% below 1990 levels. The 2050 target was accelerated by the 2045 carbon neutral target in EO B-55-18, as discussed below.[2]
- **Assembly Bill (AB) 32,** known as *the Global Warming Solutions Act of 2006,* requires that California's GHG emissions be reduced to 1990 levels by the year 2020 (approximately a 15% reduction from 2005 to 2008 levels). The AB 32 Climate Change Scoping Plan (2008) identifies mandatory and voluntary measures to achieve the statewide 2020 emissions goal and encourages local

[1] ICLEI. May 2010. Local Government Operations Protocol for the quantification and reporting of greenhouse gas emissions inventories.
[2] Executive Orders are binding only unto state agencies. Accordingly, Executive Order S-3-05 will guide state agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions.

governments to reduce municipal and community GHG emissions proportionate with state goals.[3] This state achieved this goal in 2016, reducing GHG emissions below 1990 levels three years before the target.[4]

- **Senate Bill (SB) 32,** signed by the Governor in 2016, establishes a statewide mid-term GHG reduction goal of 40% below 1990 levels by 2030. The California Air Resources Board (CARB) formally adopted an updated Climate Change Scoping Plan in December 2017, establishing a roadmap to achieve the 2030 goal and providing guidance to achieve substantial progress toward California's long-term goals.
- **Executive Order B-55-18,** signed by the Governor in 2018, expanded upon EO S-3-05 by creating a statewide GHG goal of carbon neutrality by 2045. EO B-55-18 identifies CARB as the lead agency to develop a framework for implementation and progress tracking toward this goal.

California has encouraged local governments and agencies to develop strategies to reduce their contribution to the state's total GHG emissions proportional to the levels established by state legislation, by demonstrating their "fair share" of GHG emissions reduction. The GHG emissions inventory presented here is the first step towards evaluating how the City can demonstrate their commitment to mitigating their contribution towards climate change.

Greenhouse Gases

The Municipal GHG Emissions Inventory was developed based on methodologies outlined in ICLEI's LGOP. The LGOP states that local governments should assess emissions of all six internationally recognized GHGs. These gases are outlined in Table 1, which also includes their sources and global warming potential (GWP).[5] This inventory incorporates the latest 100-year GWP values published in the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5).[6] The GWP refers to the ability of each gas to trap heat in the atmosphere. For example, one pound of methane has approximately 28 times more heat capturing potential than one pound of carbon dioxide. This report focuses on the three GHGs most relevant to local government policymaking: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). These gases comprise a large majority of GHG emissions at the municipal and community level. The other gases such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluorides are emitted primarily in private sector manufacturing and electricity transmission and are the subject of regulation at the state level and therefore, have been omitted from this inventory. GHG emissions are reported in metric tons of carbon dioxide equivalent (MT CO_2e) units. When dealing with an array of emissions, the gases are converted to their carbon dioxide equivalents for comparison purposes.

[3] Specifically, the AB 32 Scoping Plan states that CARB, "encourages local governments to adopt a reduction goal for municipal operations emissions and move toward establishing similar goals for community emissions that parallel the State commitment to reduce GHG emissions by approximately 15% from current levels by 2020" (p. 27). "Current" as it pertains to the AB 32 Scoping Plan is commonly understood as between 2005 and 2008.
[4] How California is working to reduce greenhouse gas emissions. March 2020. Clear Center, UC Davis. Accessed at https://clear.ucdavis.edu/explainers/how-california-working-reduce-greenhouse-gas-emissions. Accessed March 1, 2022.
[5] The IPCC 5th Assessment report outlines different GWP's that CARB uses in their inventory reporting https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_full.pdf. Accessed March 14, 2022
[6] International Organization for Standardization (ISO) published ISO 14064-1 in 2006 (revised 2018) to provide an international standard for the quantification and reporting of GHG emissions.

Table 1 Summary of Greenhouse Gas Emission

Greenhouse Gas	Formula	Primary Source(s)	GWP (CO_2e)
Carbon Dioxide	CO_2	Fuel combustion	1
Methane	CH_4	Fuel combustion, anaerobic decomposition of organic waste (landfills, wastewater treatment plants), fuel handling	28
Nitrous Oxide	N_2O	Combustion and wastewater treatment	265
Hydrofluorocarbons	Various	Leaking refrigerants and fire suppressants	4 – 12,400
Perfluorocarbons	Various	Aluminum production, semiconductor manufacturing, HVAC equipment manufacturing	6,630 – 11,100
Sulfur Hexafluoride	SF_6	Transmission and distribution of power	23,500

Source: Intergovernmental Panel on Climate Change (IPCC), Fifth Assessment Report AR5, Chapter 8 Anthropogenic and Natural Radiative Forcing. 2014. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf. Accessed March 1, 2022.
GWP: Global Warming Potential

2021 Municipal GHG Inventory Overview

The 2021 Municipal GHG Emissions Inventory includes all emissions occurring within the City of Pinole's direct jurisdictional authority (i.e., sources of emissions resulting from facilities that the City owns and/or operates). The municipal inventory allows the City to track its GHG emissions resulting from the municipally owned facilities, vehicles, and equipment over which it is able to exert control with GHG reduction policies and ultimately lead by example.

The City of Pinole operates and maintains multiple buildings, and facilities across the City. The City's primary GHG emissions originate from building heating and cooling, operational energy use, fossil fuels burned in vehicles, streetlights and traffic signals, water consumption, wastewater generation, and waste generation. Fleet data includes employee vehicles and agency-owned vehicles and rentals. Water consumption data includes water service provided to the City's facilities. Wastewater generation data includes the emissions generated from treating water at the Pinole-Hercules Water Pollution Control Plant, which is located in Pinole. Because the City owns and operates the Wastewater facility it is considered a direct Scope 1 source of emissions under the LGOP.[7] Solid waste generation data include tonnage generated by the City's facilities across the 2021 calendar year.

The reporting and calculation of GHG emissions are consistent with the recommendations of LGOP and ICLEI. The operational inventory reports GHG emissions by their source, which includes buildings and facilities, vehicle fleet, water delivery facilities, employee commute, water consumption, fugitive wastewater emissions, and solid waste generation. The calculation of GHG emissions uses the best available data and guidance of the LGOP methodologies.

The results of GHG emission calculations are presented by emissions *scope*, relating to the degree of control the City has over emissions sources, and the specific sources that the emissions are associated with. Emissions sources are categorized as direct (Scope 1) or indirect (Scope 2 or Scope 3), in

[7] The wastewater facility is owned and operated by the city of Pinole and serves the nearby city of Hercules in addition to Pinole. Because the municipal inventory is a subset of the community inventory there is no double counting despite the qualification of wastewater emissions as Scope 1 emissions for this municipal inventory.

accordance with the World Resources Institute and the World Business Council for Sustainable Development's Greenhouse Gas Protocol Corporate Standard, which are summarized below:

- **Scope 1:** Direct GHG emissions from sources within a local government's operations that it owns and/or controls. This includes stationary combustion to produce electricity, steam, heat, and power equipment; mobile combustion of fuels; process emissions from physical or chemical processing; fugitive emissions that result from production, processing, transmission, storage, and use of fuels; and other sources.
- **Scope 2:** Indirect GHG emissions associated with the consumption of electricity, steam, heating, or cooling that are purchased from a utility provider that also provides energy to other jurisdictions and/or is located outside City boundaries.
- **Scope 3**: All other indirect GHG emissions not covered in Scope 2, such as emissions resulting from the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the City (e.g., employee commuting and business travel, outsourced activities, waste disposal, etc.).

2021 Municipal GHG Inventory Results

A discussion of the emissions by source follows for the seven primary emission sources of: buildings and facilities, streetlights and traffic signals, vehicle fleet, employee commute, water consumption, wastewater emissions, and solid waste generation.

Table 2 2021 Municipal GHG Emission Inventory Results (MT CO_2e)

Sector	Scope 1	Scope 2	Scope 3	Total
Buildings and Facilities	337.0	150.9	N/A	487.9
Streetlights and Traffic Signals	N/A	2.8	N/A	2.8
Vehicle Fleet	346.6	N/A	N/A	346.6
Employee Commute	N/A	N/A	298.4	298.4
Water Consumption	N/A	N/A	1.4	1.4
Wastewater Emissions	221.1	N/A	N/A	221.1
Solid Waste Generation	N/A	N/A	356.3	356.3
Business Travel	N/A	N/A	490.5	490.5
Cumulative Emissions	**904.8**	**153.7**	**1,146.6**	**2,205.0**

Notes: All values presented are in units of metric tons of carbon dioxide equivalent (MT CO_2e); N/A = Not applicable; Values may not add due to rounding

Buildings and Other Facilities

Buildings and facilities generate Scope 1 and Scope 2 emissions that relate to the combustion of natural gas and propane (Scope 1) and the use of electricity (Scope 2) in the City's facilities.

As of 2021, the City sources its electricity from one provider, Marin Clean Energy (MCE) and purchases electricity at the Light Green level, sourcing 60% of its electricity from carbon-free sources. The City is provided natural gas by Pacific Gas and Electric (PG&E), which is used for heating and cooling buildings and facilities. Activity data was provided directly through MCE and PG&E invoices while emissions

factors were provided for MCE electricity through their website and the natural gas emissions factor was gathered from the PG&E data delivery form. The GHG emissions associated with buildings and other facilities sector sources in the Municipal GHG Emissions Inventory are provided in Table 3.

Table 3 Buildings and Other Facilities Sector Operational GHG Emissions

GHG Emission Source	Activity Data	Emissions Factor	Emissions (MT CO_2e)	Emission Source Scope
Natural Gas Consumption	63,467 Therms	0.0053105	337	Scope 1
Electricity Consumption	4,319,353 kWh	0.0000349	150.9	Scope 2
Cumulative Sector Emissions			**487.9**	

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; Values may not add due to rounding

Vehicle Fleet

Vehicle fleet emissions include Scope 1 sources that relate to the combustion of fossil fuels in the City's fleet vehicles, equipment rentals, and personal use of vehicles for work. Fleet vehicles include light and medium-duty vehicles, trucks, and off-road equipment. This sector also includes emissions from the use of personal vehicles for work. The employee commute sector accounts for emissions generated by City employees' trips to and from work and is treated as separate from the use of personal vehicles for work trips and is discussed further below. The City tracks data for vehicle fleet including diesel and gasoline use for 2021 in gallons. Using 2021 United States Environmental Protection Agency (USEPA) emissions factors, the total emissions were calculated for each fuel type. The GHG emissions associated with vehicle fleet sector sources in the Municipal GHG Emissions Inventory are provided in Table 4.

Table 4 Vehicle Fleet Sector Operational GHG Emissions

GHG Emission Source	Activity Data (Gallons)	Emissions Factor	Emissions (MT CO_2e)	Emission Source Scope
Diesel	10,789	0.01024268	110.5	Scope 1
Gasoline	26,795	0.00881184	236.1	Scope 1
Cumulative Sector Emissions			**346.6**	**Scope 1**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; Values may not add due to rounding

Employee Commute

Emissions from employee commute include Scope 3 GHG emissions sources that relate to the combustion of fossil fuels generated by the City of Pinole's employees' vehicles. The employee commute activity data was gathered through an employee survey while the emissions factors used were pulled by vehicle type from CARB's EMFAC 2021 analysis.[8] The employee commute sector accounts for emissions generated by City employees' trips to and from work and is treated as separate from the use of personal vehicles for work trips described above under vehicle fleet sector emissions. The GHG emissions associated with the employee commute sector are found in Table 5.

[8] EMFAC is used to calculate offroad and on road emissions and also provides data to calculate emissions factors by fuel type and vehicle class. https://arb.ca.gov/emfac/. Accessed March 14, 2021.

Table 5 Employee Commute GHG Emissions

GHG Emission Source	Activity Data (VMT)	Emissions Factor	Emissions (MT CO_2e)	Emission Source Scope
Employee Commute	10,789	0.01024268	298.4	Scope 3
Cumulative Sector Emissions			**298.4**	**Scope 3**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; Values may not add due to rounding

Water Consumption

Water consumption generates Scope 3 emissions from the electricity used to deliver water to the City facilities, as well as the energy used to treat and convey the water prior to delivery. The City owns and operates several buildings and facilities receiving water service from East Bay Municipal Utilities District (EBMUD) exclusively. The water consumption metered data was collected from monthly invoices and used to calculate emissions by pulling emissions factors from EPA eGRID, IPCC Fifth Assessment Report, and PG&E data delivery forms. The 2021 municipal water consumption and GHG emissions are provided in Table 6.

Table 6 Water Consumption GHG Emissions

Activity Data (AF)	Energy Intensity (kWh/AF)	Electricity (kWh)	Electricity Emission Factor (MT CO_2e/kWh)	GHG Emissions (MT CO_2e)
38.55	379.6	14,636.9	0.000094	1.38

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; Values may not add due to rounding

Wastewater Emissions

The wastewater treatment plant activity produces emissions through every stage of the process and falls under Scope 1 as it is a City owned and operated facility. Data was provided by the Pinole-Hercules Water Pollution Control Plant in the form of effluent nitrogen and anerobic digester gas. Emissions factors used with the provided data to calculate emissions were pulled from the ICLEI community protocols for wastewater emissions calculations. The total stationary, process, and fugitive wastewater emissions generated by the City can be found in Table 7.[9]

[9] See ICLEI Community Protocol Methods WW.1.a, WW.2.a, WW.12, and WW.13 for all default inputs including emissions factors used to calculate wastewater emissions.

Table 7 2021 Wastewater GHG Emissions

Sector	Community Protocol Method	Activity Data Input	Activity Data	GHG Emissions (MT CO_2e)
Digester Gas CH_4	WW.1.a, WW.13	Digester gas (cubic feet/day)	55,323.29	1.1
Digester Gas N_2O	WW.2.a, WW.13			2.1
Denitrification Process N_2O	WW.7, WW.13	Population served	44,895	83.3
Effluent Discharge Fugitive N_2O	WW.12, WW.13	Nitrogen load (kilograms of nitrogen per day)	354.57	134.6
Cumulative Sector Emissions				**221.1**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; Values may not add due to rounding

Solid Waste

GHG emissions from solid waste include Scope 3 emissions from waste generated by municipal facilities. These GHG emissions occur in the form of methane as disposed waste decays in landfills over time. The GHG emissions captured here account methane commitment for the waste generated in 2021 calculated with activity data of total tonnage and ICLEI community protocol method SW.4 and SW.5.[10] The 2021 total tons of solid waste disposed of from the City of Pinole's Municipal operations and the associated emissions can be found in Table 8.

Table 8 2021 Waste GHG Emissions

Sector	Community Protocol Method	Activity Data Input	Activity Data (wet short ton)	GHG Emissions (MT CO_2e) [11]
Landfill Methane Emissions	SW.4	Municipal-generated waste	915.98	346.3
Landfill Process Emissions	SW.5	Municipal-generated waste	915.98	10.1
Cumulative Sector Emissions				**356.3**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; Values may not add due to rounding

Business Travel

Business travel results in Scope 3 emissions from passenger and airplane associated business travel. The business travel sources account for emissions generated by City employees' travel that is related to work. Activity data was provided by the City and emissions factors used in calculations were pulled from

[10] Because emissions from solid waste are attributed to municipal solid waste produced by municipal facilities (Scope 3 emissions as a subset of community waste emissions), ICLEI Community Protocol Methods SW.4 and SW.5 were deemed most appropriate to use in this case.

[11] See ICLEI Community Protocol Methods SW.4, and SW.5 for all default inputs including emissions factors used to calculate solid waste emissions.

CARB's 2021 EMFAC analysis and the BlueSkyModel.[12] The GHG emissions associated with business travel sector sources are found below in Table 9.

Table 9 2021 Business Travel GHG Emissions Calculations

GHG Emission Source	Activity Data (Mileage)	Emissions Factor	Emissions (MT CO_2e)	Emission Source Scope
Passenger Car	3,865	0.000305274	1.2	Scope 3
Airplane	20,238	0.024176721	489.3	Scope 3
Cumulative Sector Emissions			**490.5**	**Scope 3**

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; Values may not add due to rounding

Conclusion

Given the progress of the City of Pinole's baseline assessment, Rincon believes the City is well-positioned to advance towards the development of a Climate Action Plan (CAP), establishing a GHG emissions forecast and reduction plan to achieve net carbon neutrality by 2045 in accordance with state legislated targets. The data within this GHG Municipal inventory is a subsector of the community inventory that can be used to develop specific measures for the city of Pinole in a CAP. With a CAP, the City will be able to chart a transparent pathway towards GHG reduction in line with the state goals. GHG reduction strategies can be identified through a comprehensive assessment of existing local and regional policies, programs, and actions and by assessing any gaps and identifying additional opportunities. Please feel free to contact us if you have any questions, comments, or concerns regarding the material provided, such as the excel workbook titled "Pinole Municipal Inventory" and provided via email with this submittal.

Sincerely,
Rincon Consultants, Inc.

Hannah Mize
Sustainability Planner

Erik Feldman, MS, LEED-AP
Principal

[12] The BlueSkyModel was used to determine the emissions factor of airplane business travel. https://blueskymodel.org/air-mile#:~:text=On%20average%2C%20a%20plane%20produces,(CO2)%20per%20mile. Accessed March 14, 2022.

Rincon Consultants, Inc.

449 15th Street, Suite 303
Oakland, California 94612

510 834 4455 OFFICE

info@rinconconsultants.com
www.rinconconsultants.com

Updated: January 19, 2024
Project No: 21-11885

Lilly Whalen
Community Development Director
City of Pinole
2131 Pear Street
Pinole, California 94564

Subject: **City of Pinole Greenhouse Gas Emissions Forecasts and Provisional Target Memorandum**

Dear Ms. Whalen,

Rincon Consultants, Inc. (Rincon) has calculated the greenhouse gas (GHG) emissions forecast and provisional GHG reduction targets based on the 2017 GHG emission inventory completed for the City of Pinole by East Bay Energy Watch (EBEW) and updated by Rincon as described in the City of Pinole 2017 Community Greenhouse Gas Emissions Inventory Review and Reconciliation Memorandum (updated January 3, 2024). The 2017 GHG emissions inventory identifies the major sources and quantities of GHG emissions produced by communitywide activities within Pinole's boundaries. The inventory was developed to provide the City with the data necessary to establish an emissions baseline, track emissions trends, identify the greatest sources of GHG emissions within their jurisdiction, and set targets for future reductions.

The GHG emissions forecast provides an estimate of how the City's GHG emissions are expected to change in the years 2025, 2030 (Senate Bill [SB] 32 horizon year), 2035, 2040, and 2045 (Assembly Bill [AB] 1279 horizon year) as a result of economic and population growth, as well as the impacts that state climate related legislation will have on these future GHG emissions. Additionally, this memorandum includes GHG emission reduction targets based on the State's goals and provides a pathway to determine the quantity of GHG emissions that Pinole needs to reduce to contribute their fair share reduction towards achieving California's long-term GHG emission reduction goals.[1] Below, please find a brief regulatory background detailing California's GHG reduction goals and strategies followed by a summary of the methodology for calculating the forecasts and the provisional GHG reduction targets.

Regulatory Background

California considers GHG emissions and the impacts of climate change to be a serious threat to public health, the environment, economic well-being, and natural resources of the State, and has taken an aggressive stance to mitigate the impact on climate change at the state-level through the adoption of legislation and policies, the most relevant of which are summarized below.

[1] California's long-term GHG emissions reduction goals were established by AB 32, SB 32, and AB 1279. Collectively, these legislative actions provide a GHG reduction trajectory for the State of reducing statewide GHG emissions to 40 percent below 1990 GHG emissions levels 2030, and carbon neutrality by 2045.

- **Executive Order S-3-05,** signed by the Governor in 2005, establishes statewide GHG emission reduction targets to achieve long-term climate stabilization as follows: by 2020, reduce GHG emissions to 1990 levels and by 2050, reduce GHG emissions to 80 percent below 1990 levels. The 2050 target was accelerated by the 2045 carbon neutral target in Executive Order (EO) B-55-18 and AB 1279, as discussed below.[2]
- **Assembly Bill 32,** known as *the Global Warming Solutions Act of 2006,* requires that California's GHG emissions be reduced to 1990 levels by the year 2020 (approximately a 15 percent reduction from 2005 to 2008 levels). The AB 32 Climate Change Scoping Plan, 2008, identifies mandatory and voluntary measures to achieve the statewide 2020 emissions goal, and encourages local governments to reduce municipal and community GHG emissions proportionate with state goals.[3] AB 32 is discussed in order to provide context, however, because 2020 has passed, emissions were not forecast, and no targets were identified for this year.
- **Senate Bill 32,** signed by the Governor in 2016, requires a statewide GHG reduction of 40 percent below 1990 levels by 2030. The California Air Resources Board (CARB) formally adopted an updated Climate Change Scoping Plan in December 2017, laying the roadmap to achieve the 2030 goal and giving guidance to achieve substantial progress toward the 2050 state goal.
- **Executive Order B-55-18,** signed by the Governor in 2018, expanded upon EO S-3-05 by creating a statewide GHG goal of carbon neutrality by 2045. EO B-55-18 supersedes the targets set by EO S-3-05 for state agencies. Additionally, EO B-55-18 identifies the CARB as the lead agency to develop a framework for implementation and progress tracking toward this goal.
- **Assembly Bill 1279**, known as the California Climate Crisis Act, signed by the governor in 2022, codifies the GHG emissions reduction goals of achieving carbon neutrality by 2045 and expands upon this goal to define carbon neutrality as reducing direct emissions 85 percent below 1990 levels and removing or sequestering the remaining emissions. The 2022 Scoping Plan Update (November 2022) provides the pathway for reaching the State's AB 1279 goal.

GHG Emissions Forecasts

Pinole's 2017 inventory establishes a baseline reference point. However, annual GHG emissions change over time and GHG emissions forecasts provide a way to estimate future emission levels based on both the continuation of current activities and external factors such as population and job growth. Forecasts also account for state legislative actions that are anticipated to reduce GHG emissions. Calculating the difference between the forecasted GHG emissions and the reduction target determines the gap to be closed through local policies. This section includes an estimate of the future emissions for the City of Pinole in the years 2025, 2030, 2035, 2040, and 2045 in a *business-as-usual scenario* (BAU) forecast and an *adjusted scenario* (adjusted) forecast, which are defined as follows:

- B*usiness-as-usual scenario*- Provides a forecast of how future GHG emissions would change if current activities continued as they did in 2017 and growth trends were to occur absent of any

[2] Executive Orders are binding only unto state agencies. Accordingly, Executive Order S-03-05 will guide state agencies' efforts to control and regulate GHG emissions but will have no direct binding effect on local government or private actions.

[3] Specifically, the AB 32 Scoping Plan states that CARB, "encourages local governments to adopt a reduction goal for municipal operations emissions and move toward establishing similar goals for community emissions that parallel the State's commitment to reduce GHG emissions by approximately 15 percent from current levels by 2020" (p. 27). "Current" as it pertains to the AB 32 Scoping Plan is commonly understood as between 2005 and 2008.

policies or legislation that would reduce local emissions. The BAU forecast is based on growth trends projected in population, housing, employment, and transportation activity over time, consistent with regional projections.

- *Adjusted scenario*- Provides a forecast of how currently adopted legislation would reduce GHG emissions from the *business-as-usual scenario*. The *adjusted scenario* represents the State's contribution to reducing local GHG emissions to meet state goals without any additional contribution from local policies or actions.

Business-as-usual Forecast

The BAU forecast provides an estimate of how GHG emissions would change in the forecast years if existing action continued as in 2017, absent any new regulations or actions which would reduce local GHG emissions. Future GHG emissions were calculated using projected city-specific demographic and vehicle activity data as well as emission factors utilized in the 2017 community GHG emissions inventory. On-road transportation and off-road equipment GHG emissions were separately projected using modeled activity data for the forecast years.[4] A description of the demographic metrics used to project activity data and associated growth factors for each forecasted GHG emission source are provided in Table 1 for each for the GHG emission sources in the 2017 community GHG emissions inventory.

[4] California Air Resources Board (CARB). Modeling Tools On-road and Off-road. 2022. https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools. Accessed April 1, 2022

Table 1 GHG Emission Sources and Growth Factors for BAU Scenario Forecast

GHG Emissions Source	Demographic Projection Metric	Growth Factor	Value
Energy			
Residential Electricity	Households	Electricity Consumption (kWh) per Household	5,393.53
Non-residential Electricity	Employment	Electricity Consumption (kWh) per Employment	4,078.14
Direct Access Electricity	Employment	Electricity Consumption (kWh) per Employment	1,329.07
Residential Natural Gas	Households	Natural Gas Consumption (therms) per Household	402.45
Non-residential Natural Gas	Employment	Natural Gas Consumption (therms) per Employment	101.65
Transmission and Distribution Losses (T&D Losses)	N/A	T&D Losses Factor (1.28%) applied to total Electricity Consumption	N/A
Transportation			
On-Road Transportation	N/A	Annual Vehicle Miles Traveled as obtained from EMFAC2021 and MTC	N/A
Off-Road Equipment	N/A	MT CO_2e as obtained from CARB's OFFROAD2021 off-road transportation emissions model	N/A
BART	SP	Public Rail Vehicle Miles Traveled (VMT) per Service Population	88.86
Water			
Conveyance, Treatment, Distribution	SP	Water Supply Electricity Consumption (kWh) per Service Person	23.49
Wastewater Process and Fugitive Emissions	SP	Wastewater Process and Fugitive Emissions (MT CO_2e) per Service Person	0.00373
Solid Waste			
Solid Waste Disposal	SP	Solid Waste Disposed (tons) per Service Person	0.119

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent; kWh = kilowatt-hour; VMT = vehicle miles traveled; N/A = Not Applicable; SP = Service Population – the combined total number of employees and residents in the City

The BAU forecast relies on demographics projections from the Association of Bay Area Governments estimates of population, employment, and households using Plan Bay Area 2040 and Plan Bay Area 2050 projections.[5] On-road transportation VMT projections utilize data obtained from the EMFAC2021 model and Metropolitan Transportation Commission (MTC) Transportation Demand Model, using the same methodology as for the 2017 inventory and explained in detail in the 2017 Community Greenhouse Gas Emissions Inventory Review and Reconciliation Memo (February 25, 2022). Off-road transportation fuel consumption was projected using CARB's OFFROAD2021 model. A summary of the demographics and projection metrics for each forecast year in the BAU forecast are provided in

[5] Plan Bay Area 2050 accounts for Regional Housing Needs Allocation (RHNA) from the 2023-2031 Housing Element cycle. However, it only provides demographic projections by superdistrict. Plan Bay Area 2040 does not account for RHNA from the most recent cycle but does provide demographic data on a city-level. For these reasons, initial Pinole-specific estimates from Pan Bay Area 2040 were used and growth factors for Pinole's superdistrict and the region were applied from Play Bay Area 2050 to project the initial demographic estimates through the year 2050.

Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC). 2017. Plan Bay Area Projections 2040. http://projections.planbayarea.org/data. Accessed March 22, 2022.

Association of Bay Area Governments (ABAG) and Metropolitan Transportation Commission (MTC). 2021. Plan Bay Area Projections 2050. https://www.planbayarea.org/finalplan2050. Accessed January 17, 2024.

Table 2.

Table 2 BAU Forecast Demographic and Projection Metrics by Forecast Year

Demographics/ Sector	Data Source	2025	2030	2035	2040	2045
Population[1]	Plan Bay Area 2040 and Plan Bay Area 2050	21,718	23,110	24,592	26,168	27,845
Employment[2]	Plan Bay Area 2040 and Plan Bay Area 2050	8,963	9,645	10,379	11,168	12,018
Households[2]	Plan Bay Area 2040 and Plan Bay Area 2050	7,431	7,783	8,151	8,536	8,940
Service Population[3]	Calculated	30,681	32,755	34,970	37,336	39,864
Passenger VMT[4]	MTC and EMFAC2021	53,068,488	56,269,980	56,974,378	57,678,777	58,383,176
Commercial VMT[5]	MTC and EMFAC2021	9,378,483	9,774,662	10,325,871	10,856,256	11,382,970
Off-road Diesel (gallons)[6]	EMFAC 2021	472,841	547,673	605,283	666,526	732,098
Off-road Gasoline (gallons) [6]	EMFAC 2021	256,674	275,967	293,882	312,115	328,790
Off-road Natural Gas (gallons) [6]	EMFAC 2021	45,294	50,123	55,327	61,212	63,296

1 Population estimates were calculated by applying Bay Area region growth factors from Play Bay Area 2050 to Pinole's 2015 estimates from Play Bay Area 2040 (i.e., 2.83 people/household in 2015). Growth factors were calculated to represent the compound annual growth rate (i.e., -0.32% annual growth in people/household) from the modeled change in people per household in the Bay Area region between the years 2015 and 2050.
2 Employment and household estimates were calculated by applying West Contra Costa County growth factors from Play Bay Area 2050 to Pinole's 2015 estimates from Play Bay Area 2040 (i.e., 7,740 jobs in 2015 and 6,775 households in 2015). Growth factors were calculated to represent the compound annual growth rate (i.e., 1.48% annual growth in employment and 0.93% annual growth in households) from the modeled change in employment and households in West Contra Costa County between the years 2015 and 2050.
3 Service population is the sum of the estimated population and employees in the City of Pinole.
4 Passenger VMT was calculated based on results from the MTC Transportation Demand Model and augmented to include motorcycle VMT using data from EMFAC2021.
5 Commercial VMT was calculated using percent increase metrics in commercial VMT for Contra Costa County from EMFAC2021, which were applied to the commercial VMT total for 2017 from the 2017 community inventory, originally obtained from MTC. Commercial VMT was augmented to include motorhome and bus VMT using data from EMFAC2021. While VMT from buses was segmented and GHG emissions were calculated separately, the commercial VMT data shown here includes bus VMT.
6 Offroad fuel usage is calculated by applying the attribution metrics calculated from the demographics to the OFFROAD2021 model outputs for the forecast years to attribute the county-level outputs to Pinole.

The BAU forecast was calculated using the growth factors in Table 1, the demographic and projection metrics in

Table 2, and the 2017 community inventory emission factors. In the BAU forecast, GHG emissions are expected to increase through 2045. A summary of the BAU forecast results by GHG emission sector is provided in Table 3.

Table 3 BAU Forecast Results Summary by Emission Sector

GHG Emissions Sector	2025	2030	2035	2040	2045
Energy	36,252	38,331	40,537	42,877	45,359
Transportation	39,401	42,076	43,841	45,625	47,413
Waste	3,664	3,912	4,176	4,459	4,761
Water	69	74	79	85	90
Wastewater	114	122	130	139	148
Total	**79,501**	**84,515**	**88,764**	**93,183**	**97,772**

Adjusted Forecast

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

The adjusted forecast additionally includes GHG emissions reductions from the City's switch from Pacific Gas and Electric (PG&E)-provided electricity to Marin Clean Energy (MCE)-provided electricity in 2018. MCE is a community choice aggregation (CCA) in Contra Costa County, which provides lower-emissions electricity options to Pinole. The GHG emissions reductions from this local action were included in the adjusted forecast because the action has already occurred and the GHG emissions reductions for the forecast are significant. GHG emissions reductions from MCE-provided electricity are detailed separately from state-driven legislative reductions in the following section for increased transparency. Detailed calculations for the adjusted forecast are included in Attachment A titled "Adjusted (State Legislation + MCE").

Transportation Legislation

Major regulations incorporated into CARB's 2021 transportation model (EMFAC2021) include Advanced Clean Car Standards (LEV III, ZEV program, etc.), Senate Bill 1, and Phase 2 Federal GHG Standards. Additional reductions were calculated for the Innovative Clean Transit (ICT) regulations from CARB. Signed into law in 2002, AB 1493 (Pavley Standards) required vehicle manufacturers to reduce GHG emissions from new passenger vehicles and light trucks from 2009 through 2016. Regulations were adopted by CARB in 2004 and took effect in 2009 when the United States Environmental Protection Agency (USEPA) issued a waiver confirming California's right to implement the bill. The CARB anticipates that the Pavley I standard will reduce GHG emissions from new California passenger vehicles by about 30 percent in 2016, while simultaneously improving fuel efficiency and reducing motorists' costs.[6]

[6] CARB. Clean Car Standards – Pavley, Assembly Bill 1493. May 2013. http://www.arb.ca.gov/cc/ccms/ccms.htm

Prior to 2012, mobile emissions regulations were implemented on a case-by-case basis for GHG and criteria pollutant emissions separately. In January 2012, CARB approved a new emissions-control program combining the control of smog, soot-causing pollutants, and GHG emissions into a single coordinated package of requirements for passenger cars and light trucks for model years 2017 through 2025. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles, Zero Emissions Vehicles, and Clean Fuels Outlet programs into a single coordinated package of requirements for model years 2017 to 2025. The new standards are anticipated to reduce GHG emissions by 34 percent in 2025.[7]

Public transit GHG emissions will also be reduced in the future through the ICT regulation, which was adopted in December 2018. It requires all public transit agencies to gradually transition to a 100-percent zero-emission bus fleet by 2040. Under ICT, large transit agencies are expected to adopt Zero-Emission Bus Rollout Plans to establish a roadmap towards zero emission public transit buses.[8]

Reductions in GHG emissions from the above referenced standards were calculated using CARB's EMFAC2021 model for Contra Costa County with additional reductions for ICT regulations modeled by Rincon. The EMFAC2021 model integrates the estimated reductions into the mobile source emissions portion of the model.[9] The degree to which GHG emissions from on-road transportation will be reduced can be quantified as the difference between transportation emissions calculated using the 2017 provided emission factors and calculated using the reduced emission factors for the target years.

Advanced Clean Cars II was approved by CARB in August 2022 and expands the Advanced Clean Car Standards' roadmap so that by 2035 all new cars and passenger trucks will be zero-emission vehicles (ZEV). This regulation effectively binds the State to EO N-79-20, which was passed by the governor in 2020 and requires all new cars and passenger trucks sold in California be ZEV by 2035. While this legislation will lead to an expedited timeline for ZEV adoption in California, modeling data is not yet available, and emissions reductions attributable to the Advanced Clean Cars II program were therefore excluded from the GHG forecast.

Title 24

The California Code of Regulations Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption, which in turn reduces fossil fuel consumption and associated GHG emissions. The standards are updated triennially to allow consideration and possible incorporation of new energy-efficient technologies and methods. Since the 2017 inventory year, the 2019 Title 24 Energy Efficiency Standards have come into effect, creating significantly more efficient new building stock. Starting in 2020, new residential developments must include on-site solar generation and near-zero net energy use. For projects implemented after January 1, 2020, the California Energy Commission

[7] CARB. Facts About the Advanced Clean Cars Program. December 2011. http://www.arb.ca.gov/msprog/zevprog/factsheets/advanced_clean_cars_eng.pdf

[8] Innovative Clean Transit. Approved August 13, 2019. https://ww2.arb.ca.gov/sites/default/files/2019-10/ictfro-Clean-Final_0.pdf?utm_medium=email&utm_source=govdelivery

[9] Additional details are provided in CARB's EMFAC2017 Technical Documentation, July 2018. (https://www.arb.ca.gov/msei/downloads/emfac2017-volume-iii-technical-documentation.pdf). Note that the Low Carbon Fuel Standard (LCFS) regulation is excluded from EMFAC2017 because most of the emissions benefits due to the LCFS come from the production cycle (upstream emissions) of the fuel rather than the combustion cycle (tailpipe). As a result, LCFS is assumed to not have a significant impact on CO_2 emissions from EMFAC's tailpipe emission estimates.

(CEC) estimates that the 2019 standards will reduce electricity consumption by 53 percent for residential buildings and 30 percent for non-residential buildings, relative to the 2016 standards. The CEC further estimates electricity efficiency increases of seven percent for residential end uses. No efficiency increases were estimated for commercial natural gas end uses, based on lack of requirements in this sector in the 2019 standards. These percentage savings relate to heating, cooling, lighting, and water heating only and do not include other appliances, outdoor lighting that is not attached to buildings, plug loads, or other energy uses.

The 2022 standards have also been released since the 2017 inventory, but no guidance has been provided by the State on the energy reductions expected from these new standards. The 2022 standards were conservatively excluded from the GHG forecast.

The calculations and GHG emissions forecast assume that all growth in the residential and non-residential sectors is from new construction. The SB 32 Scoping Plan calls for the continuation of ongoing triennial updates to Title 24 that will yield regular increases in the mandatory energy and water savings for new construction, including the recent adoption of the 2022 standards. These recent and future updates to Title 24 standards for residential and non-residential alterations past 2025 are not taken into consideration due to lack of data and certainty about the magnitude of energy savings that will be realized with each subsequent update.

Renewables Portfolio Standard, SB 100, & SB 1020

Established in 2002 under Senate Bill 1078, enhanced in 2015 by Senate Bill 350, and accelerated for the first time in 2018 under Senate Bill 100, California's Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, publicly owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 50 percent of total procurement by 2026 and 60 percent of total procurement by 2030. The RPS program further requires these entities to increase procurement from GHG-free sources to 100 percent of total procurement by 2045.

California's RPS was further accelerated in 2022 by SB 1020 which established additional requirements that procurement from eligible renewable energy resources increase to 90 percent of total procurement by 2035 and 95 percent of total procurement by 2040. The requirements of SB 1020 do not affect those previously set forth and are to be considered additional to the existing RPS requirements.

PG&E and MCE currently provide electricity in Pinole and are subject to RPS requirements. [10] The RPS program and SB 1020 were incorporated into the GHG forecast by adjusting the electricity emissions factors for future years. As shown in Table 4, the RPS and SB 100 requirements to reduce overall carbon intensity would reduce Pinole's emissions.

[10] MCE provides two electricity options in Pinole: Light Green and Deep Green portfolios. The Light Green portfolio contains 60 percent renewables while the Deep Green portfolio contains 100 percent renewables.

Table 4 Pinole Forecasted RPS and Electricity Emission Factors

Metric	2025	2030	2035	2040	2045
PG&E Renewables Mix	47.3%	60%	90%	95%	100%
PG&E Emission Factor (lbs CO_2e/MWh)	179.17	135.95	33.99	16.99	0
MCE Light Green Renewables Mix	65%	85%	90%	95%	100%
MCE Light Green Emission Factor (lbs CO_2e/MWh)	67.38	28.88	19.25	9.63	0
MCE Deep Green Renewables Mix	100%	100%	100%	100%	100%
MCE Deep Green Emission Factor (lbs CO_2e/MWh)	0	0	0	0	0

Notes: lbs CO_2e = pounds of carbon dioxide equivalent; MWh = megawatt-hour

MCE. Operational Integrated Resource Plan 2021-2030. 2020. https://www.mcecleanenergy.org/wp-content/uploads/2021/11/MCE-Operational-Integrated-Resource-Plan_2022.pdf.pdf. Accessed March 23, 2022

State Legislation not Considered in Adjusted Forecast

The following discussion highlights state legislation that plays an integral role in reducing GHG emissions, however, was not included in the emissions forecast calculations.

AB 939 & AB 341

In 2011, AB 341 set the target of 75 percent recycling, composting, or source reduction of solid waste by 2020 calling for the California Department of Resources Recycling and Recovery (CalRecycle) to take a statewide approach to decreasing California's reliance on landfills. This target was an update to the former target of 50 percent waste diversion set by AB 939.

SB 1383

In 2016, SB 1383 established a methane emission reduction target for short-lived climate pollutants[11] (SLCP) in various sectors of the economy. Specifically, SB 1383 establishes targets to achieve a 50 percent reduction in the level of the statewide disposal of organic waste from the 2014 level by 2020 and a 75 percent reduction by 2025 (CalRecycle 2019).[12] Additionally, SB 1383 requires a 20 percent reduction in "current" edible food disposal by 2025. Although SB 1383 has been signed into law, compliance at the jurisdiction-level is unproven. For example, Santa Clara County, in their *SB 1383 Rulemaking Overview* presentation (June 20, 2018),[13] suggest that the 75 percent reduction in organics is not likely achievable under the current structure; standardized bin colors are impractical; and the general requirement is too prescriptive. As such, SB 1383 has not been included as part of the adjusted

[11] Short-lived climate pollutants (SLCP) are powerful climate forcers that have relatively short atmospheric lifetimes. These pollutants include the greenhouse gases methane and hydrofluorocarbons, and anthropogenic black carbon. CARB 2019. https://ww2.arb.ca.gov/our-work/programs/short-lived-climate-pollutants

[12] CalRecycle. April 16, 2019. Short-Lived Climate Pollutants (SLCP): Organic Waste Methane Emissions Reductions (General Information). https://www.calrecycle.ca.gov/climate/slcp

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

forecast. Instead, measures addressing compliance with SB 1383 will be included and quantified through GHG reduction measures included in the CAP.

SB X7-7

Senate Bill (SB) X7-7, also known as the Water Conservation Act of 2009, requires that all water suppliers increase their water use efficiency. SB X7-7 establishes an urban water use reduction target of 20 percent below 2010 per capita daily water use levels by 2020.

Legislative GHG Emission Reduction Contribution

Based on the above-described legislation and emission reduction potential for each, the City of Pinole can expect significant help from these state regulations in meeting state GHG emission reduction goals. These GHG emissions reductions primarily contribute to the energy sector and transportation sectors, with some impact from California RPS on GHG emissions from water due to the energy required to treat, transport, and deliver water. Emissions reductions from legislation reductions and MCE reductions were calculated sequentially and separately to reflect the additivity of reductions. Title 24 reductions were accounted for first followed by California RPS reductions associated exclusively with PG&E electricity while MCE reductions were calculated outside of the legislation and added into the forecasted emissions separately. PG&E and MCE proportions of electricity were calculated by taking opt-out rates and applying them to total projected electricity use through 2045. The legislative emissions reductions for Title 24, California RPS, and MCE are known to be additive and were calculated to avoid double counting. A summary of the reductions from the BAU forecast that can be expected under the adjusted forecast are provided in Table 5.

Table 5 Summary of Legislative GHG Emissions Reductions

Legislation	2025	2030	2035	2040	2045
California RPS	2,281	4,578	10,231	11,799	13,478
Title 24	374	625	890	1,170	1,467
Transportation Legislation (Pavley, Innovative Clean Transit, etc.)	3,936	7,039	9,747	11,693	12,926
MCE	3,352	3,371	492	259	0
Total	**9,943**	**15,613**	**21,361**	**24,921**	**27,871**

Notes: All values are presented in metric tons of carbon dioxide equivalent (MT CO_2e)

Adjusted Forecast Results

In the adjusted forecast, the electricity and water sectors all experience a strong downward trend, approaching near-zero in 2045 due to stringent RPS requirements from SB 100 and SB 1020. Natural gas emissions are expected to continue an upward trajectory until 2045 due to housing and employment growth projections. This trend is partially offset due to the increasingly stringent efficiency requirements for new construction from Title 24. Transportation emissions are expected to decrease through 2045 due to existing fuel efficiency requirements, fleet turnover rates, and increasing vehicle electrification driven by the electric vehicle market. As most current regulations expire in 2025 or 2030, emissions standards will experience diminishing returns while VMT continues to increase, leading to lower rates of emissions reduction in the transportation sector. A detailed summary of the projected GHG emissions under the adjusted forecast by sector and year through 2045 can be found in Table 6.

Table 6 Adjusted Forecast Results

GHG Emissions Source	2017	2025	2030	2035	2040	2045
Residential Electricity	3,738	1,492	794	405	207	0
Non-residential Electricity	3,264	1,520	904	417	221	0
Direct Access Electricity	2,654	1,928	1,565	421	227	0
Residential Natural Gas	18,140	19,435	20,294	21,194	22,137	23,124
Non-residential Natural Gas	5,291	5,950	6,403	6,890	7,414	7,978
Energy Sector Total	**33,088**	**30,324**	**29,960**	**29,327**	**30,206**	**31,102**
On-road Passenger Vehicles	18,913	16,597	15,899	15,059	14,718	14,654
On-road Commercial Vehicles	10,868	10,773	10,024	9,033	8,313	8,025
On-road Buses	474	435	368	301	220	161
BART	228	253	270	288	308	329
Off-road Equipment	5,236	7,339	8,299	9,074	9,893	10,721
Transportation Sector Total	**35,719**	**35,397**	**34,860**	**33,757**	**33,452**	**33,890**
Waste	**3,300**	**3,664**	**3,912**	**4,176**	**4,459**	**4,761**
Water	**63**	**59**	**47**	**13**	**7**	**0**
Wastewater	**103**	**114**	**122**	**130**	**139**	**148**
Total GHG Emissions	**72,273**	**69,558**	**68,902**	**67,403**	**68,262**	**69,901**

Notes: All values are presented in metric tons of carbon dioxide equivalent (MT CO_2e)

Municipal Emissions Forecast

The municipal emissions are a subset of the community-wide emissions and therefore are included within the community-wide forecast presented above.[14] The municipal emissions inventory is used as a tool to track progress in reducing GHG emissions for municipally owned facilities, and these emissions are not required to meet state goals. Therefore, the municipal emissions are not directly forecasted, and municipal emission reduction targets are not set according to state legislation.

GHG Reduction Targets

GHG reduction targets are used in climate action plans to establish measurable metrics intended to guide the community's commitment to achieve GHG emissions reductions and help gage progress with reducing emissions over time. GHG targets are developed relative to a baseline emissions level. California has established statewide GHG reduction goals for 2030 and 2045. CARB's 2017 Scoping Plan recommends that local agencies provide their fair share GHG reduction to achieve the State's goals. Thus, local agencies are recommended to establish equivalent reduction targets at the local level by establishing community wide GHG reduction goals for climate action that will help California achieve its 2030 and 2045 goals.

[14] Except for wastewater, which is processed for Pinole in the wastewater treatment plant located in Pinole that serves both Pinole and the neighboring community of Hercules. In the community inventory and forecast the wastewater sector includes GHG emissions from the wastewater treatment plant attributable to Pinole only, but in the municipal inventory includes all GHG emissions from the wastewater treatment plant.

CARB has issued several guidance documents concerning the establishment of GHG emission reduction targets for climate action plans to comply with legislated GHG emissions reductions targets and California Environmental Quality Act Guidelines (CEQA) § 15183.5(b). For example, as mentioned above, in the first California *Climate Change Scoping Plan,*[15] CARB encouraged local governments to adopt evidence based GHGs reduction target for community emissions that are based on local emissions sectors and population projections that parallel the state commitment to reduce GHG emissions. In 2016, the State adopted SB 32 mandating a reduction of GHG emissions by 40 percent below 1990 levels by 2030 and AB 1279 establishes a state goal of carbon neutrality by 2045. Pursuant to the Scoping Plan's recommendations, the community GHG reduction targets will be developed based on local levels of GHG emissions that would be proportional to the statewide goals, relative to 1990.

1990 Back-cast

Pinole does not have a 1990 GHG inventory from which to estimate GHG reductions, however, equivalent targets can be calculated for the community relative to the State's 2017 statewide baseline and targets.

Pinole's 1990 GHG emissions have been calculated using the states 2017 GHG emissions inventory as compared to the State's GHG emissions inventory in 1990 to calculate specific percent reduction in Pinole between 2017 and 1990. This approach assumes that the City's community GHG emissions have generally tracked with the State's GHG emissions The calculation is developed using the published statewide emissions results from CARB, after removing emissions from sectors not included in the City's inventory (i.e., agricultural, industrial, and high GWP sectors). The 1990 back-cast for Pinole is shown in Table 7.

Table 7 1990 Back-cast

1990 Back-cast Calculations	
2017 Statewide GHG Emissions (MMT CO_2e)	283.30
1990 Statewide GHG Emissions (MMT CO_2e)	309.60
2017 to 1990 Statewide GHG Emissions Change (%)	9.28%
2017 Pinole GHG Emissions (MT CO_2e)	72,273
1990 Pinole GHG Emissions Back-cast (MT CO_2e)	78,982
1990 Pinole Population	17,000
1990 Pinole per Capita GHG Emissions Back-cast (MT CO_2e/person)	4.65

Provisional GHG Reduction Targets

GHG reduction targets can be set as either an efficiency target (MT CO_2e per capita) or as a community-wide mass emissions target (total MT CO_2e). With CARB's 2017 Scoping Plan Update, the State recommends using efficiency metrics for local targets to incentivize growth in a coordinated manner and

[15] 2008 Climate Change Scoping Plan https://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf

not penalize cities which are growing at significant rates.[16] Efficiency metrics continue to be used and are recommended in the 2022 Scoping Plan.

GHG Emissions Reduction Target Setting

Target setting is an iterative process which must be informed by the reductions that can realistically be achieved through the development of feasible GHG reduction measures. As such, the targets identified herein should remain provisional until the quantification and analysis of potential GHG reduction measures has been completed. The purpose of target setting is to develop the trajectory toward achieving the State's 2030 goal and prepare for the deep decarbonization needed by 2045 in a cost-effective manner by setting an incremental path toward achieving the AB 1279 goals. CARB guidance is for jurisdictions to first strive to exceed the SB 32 targets of reducing GHG emissions 40 percent below 1990 levels, while establishing a policy framework to work towards the long-term target of carbon neutrality by 2045. Additionally, Pinole's City Council adopted a Climate Emergency Resolution in October 2021 that directed staff to develop a GHG inventory and CAP that align with State's GHG reduction targets for SB 32 and EO B-55-18 (which was codified by AB 1279). With GHG emission reduction targets in place, the reduction gap that the City will be responsible for through local action can be calculated. The City's future Climate Action and Adaptation Plan (CAAP) will assess the GHG reduction gap based on the difference between the adjusted forecast, discussed previously, and the established GHG reduction targets. Table 8 provides a summary of the GHG emission reduction targets and gap in both mass emissions and per capita emissions metrics. The per capita targets are calculated by dividing forecasted GHG emissions by the expected City population in each target year.

Table 8 GHG Emission Reduction Targets and Gap Analysis

Emissions Forecast or Pathway	2017	2025	2030	2035	2040	2045
Mass Emissions Target Pathway Scenario						
Adjusted Forecast (MT CO_2e)	72,273	69,558	68,902	67,403	68,262	69,901
SB 32 Mass Emissions Target Pathway (MT CO_2e)[1]	72,273	56,960	47,389	31,593	15,796	0
Remaining Emissions Gap (MT CO_2e)	0	12,598	21,512	35,810	52,466	69,901
Per Capita Emissions Target Pathway Scenario						
Population	19,663	21,718	23,110	24,592	26,168	27,845
Per Capita Adjusted Forecast (MT CO_2e/person)	3.68	3.20	2.98	2.74	2.61	2.51
SB 32 Per Capita Target Pathway (MT CO_2e/person)[2]	3.68	3.13	2.79	1.86	0.93	0
Remaining Per Capita Emissions Gap (MT CO_2e/person)	0	0.07	0.19	0.88	1.68	2.51

Notes: MT CO_2e = Metric tons of carbon dioxide equivalent

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

1. The target pathway is calculated by reducing 1990 mass emissions by 40% in 2030 and to 0 MT CO_2e in 2045. This target pathway is consistent with both SB 32 and a trajectory set forth to achieve AB 1279.

2. The target pathway is calculated by reducing 1990 per capita emissions by 40% in 2030 and to 0 in 2045. This provisional target pathway is consistent with both SB 32 and a trajectory set forth to achieve AB 1279.

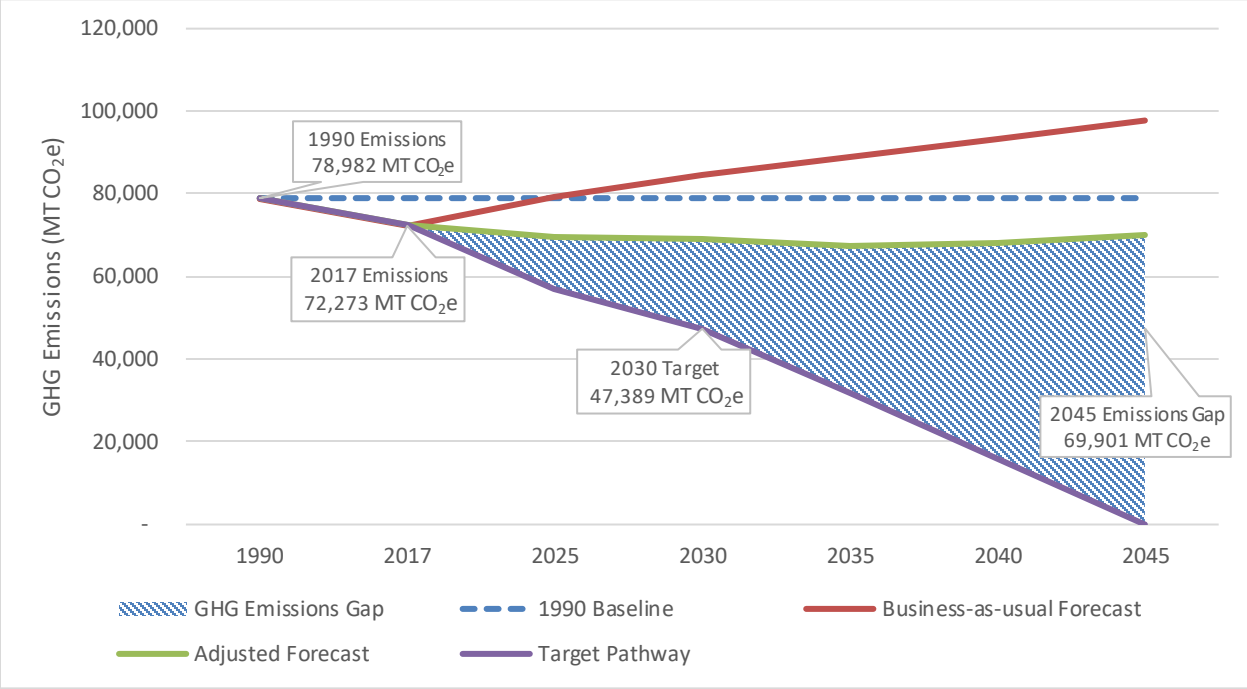
[16] California Air Resources Board. 2017. California's Climate Change Scoping Plan, p. 99-102.

According to the Association of Environmental Professionals (AEP), the feasibility of achieving substantial reductions through local action only is questionable given limitations on local municipality authority. The AEP also states that no city or county is completely autonomous in matters of energy and transportation systems; and notes that a municipality can influence certain matters; however, many decisions about the electricity and transportation systems are under the control of the State and federal government, and/or are controlled by market determinations. Achieving the established target will require major shifts in how communities within California obtain and use energy, transport themselves and goods, and how the population lives and builds. These transformations would require implementation across all levels of the economy, not just what local jurisdictions have authority over. As such, placing the burden predominantly on local jurisdictions would thus be highly disproportional, costly, and potentially subject to litigation.[17]

Establishing a minimum 2030 target of **2.79 MT CO_2e per person, or 47,389 MT CO_2e per year, for 2030** (the SB 32 target year) and a long-term target of **0 MT CO_2e per person, or carbon neutrality**, for 2045 will demonstrate the City's commitment to aligning with state goals. The 2030 target will maintain compliance with SB 32, as well as align with the AB 1279 emissions reduction trajectory. However, as noted at the beginning of this memorandum, the long-term reduction targets are provisional and may need to be adjusted based on the reductions that can realistically be achieved from feasible GHG reduction measures that will be identified during the climate action planning process. The intent of the City's future CAAP will be to demonstrate substantial progress toward the long-term state reduction goals. New opportunities are anticipated to emerge that could yield additional reductions beyond those identified in the City's future CAAP. Another phase of local climate action planning will be needed to continue and expand the actions in the future CAAP and to explore new strategies to meet the 2045 GHG reduction target. Figure 1 provides a visual representation of future GHG emissions, with the impacts of state legislation and the remaining gap Pinole will be responsible for the meet the mass GHG emission reduction targets.

[17] AEP. Beyond Newhall and 2020: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets in California. October 2016.

Figure 1 GHG Emissions Forecast and Provisional Target Pathways (Mass Emissions)



Meeting the Targets

The 2025, 2030, 2035, 2040, and 2045 targets identified above will be achieved through a combination of existing state measures and the implementation of local measures that will be identified in the City's CAAP. Local measures will be identified through a comprehensive assessment of existing local and regional policies, programs, and actions and by assessing any gaps and identifying additional opportunities. Additional measures will be developed from best practices of other similar and neighboring jurisdictions, as well as those recommended by organizations and agencies, such as the California Air Pollution Control Officers Association, the Office of Planning and Research, CARB's 2017 Scoping Plan, and AEP.

Sincerely,
Rincon Consultants, Inc.

Erik Feldman, MS, LEED AP
Principal

Hannah Mize
Sustainability Project Manager

Attachment A Detailed GHG Emissions Forecast Calculations

Appendix B
Regulatory Background

Regulatory Summary

As the impacts of climate change are being recognized, many strategies that address climate change have emerged at all levels of government. This section provides an overview of the regulatory context at the international, state, and local levels relative to the City of Pinole's actions toward reducing greenhouse gas (GHG) emissions.

International Climate Action Guidance

United Nations Framework Convention on Climate Change (1992)

The primary international regulatory framework for GHG reduction is the United Nations Framework Convention on Climate Change Paris Agreement (UNFCCC). The UNFCCC is an international treaty adopted in 1992 with the objective of stabilizing atmospheric GHG concentrations to prevent disruptive anthropogenic climate change. The framework established non-binding limits on global GHG emissions and specified a process for negotiating future international climate-related agreements.[1]

Kyoto Protocol (1997)

The Kyoto Protocol is an international treaty that was adopted in 1997 to extend and operationalize the UNFCCC. The protocol commits industrialized nations to reduce GHG emissions per country-specific targets, recognizing that they hold responsibility for existing atmospheric GHG levels. The Kyoto Protocol involves two commitment periods during which emissions reductions are to occur, the first of which took place between 2008-2012 and the second of which has not entered into force.[2]

The Paris Agreement (2015)

The Paris Agreement is the first-ever universal, legally binding global climate agreement that was adopted in 2015 and has been ratified by 190 countries worldwide.[3] The Paris Agreement establishes a roadmap to keep the world under 2° C of warming with a goal of limiting an increase of temperature to 1.5° C. The agreement does not dictate one specific reduction target, instead relying on individual countries to set nationally determined contributions (NDCs) or reductions based on GDP and other factors. According to the International Panel on Climate Change (IPCC), limiting global warming to 1.5° C will require global emissions to be reduced through 2030 and hit carbon neutrality by mid-century.[4]

Glasgow Climate Pact (2021)

The Glasgow Climate Pact[5] (Pact) was adopted by nearly 200 nations in 2021 and builds on the 2015 Paris Agreement. The Pact includes an agreement to revisit the emissions reduction plans to keep the 1.5°C target achievable. It is the first global climate agreement to commit to phasing down the use of

1 United Nations Framework Convention on Climate Change (UNFCCC). United Nations Framework Convention on Climate Change. https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf
2 UNFCCC. What is the Kyoto Protocol? https://unfccc.int/kyoto_protocol
3 UNFCCC. Paris Agreement - Status of Ratification. https://unfccc.int/process/the-paris-agreement/status-of-ratification
4 IPCC. Global Warming of 1.5 C. https://www.ipcc.ch/sr15/

5 https://unfccc.int/documents/310475

unabated coal. Further, the Pact includes a commitment to provide climate finance to developing countries.

California Regulations and State GHG Targets

California remains a global leader in the effort to reduce GHG emissions and combat climate change through its mitigation and adaptation strategies. With the passage of Assembly Bill (AB) 32 in 2006, California became the first state in the United States to mandate GHG emission reductions across its entire economy. To support AB 32, California has enacted legislation, regulations, and executive orders (EO) that put it on course to achieve robust emission reductions and address the impacts of a changing climate. The following is a summary of executive and legislative actions most relevant to the City of Pinole's Climate Action and Adaptation Plan (CAAP).

Senate Bill 1078 (2002)

In 2002, (Senate Bill) SB 1078 established the California Renewables Portfolio Standards (RPS) Program and was accelerated in 2006 by SB 107, requiring that 20 percent of retail electricity sales be composed of renewable energy sources by 2010. EO S-14-08 was signed in 2008 to further streamline California's renewable energy project approval process and increase the State's RPS to the most aggressive in the nation at 33 percent renewable power by 2020.

Assembly Bill 1493 (2002)

In 2002, the California State Legislature enacted Assembly Bill 1493 (aka "the Pavley Bill"), which directs CARB to adopt standards that will achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles," considering environmental, social, technological, and economic factors. In September 2009, CARB adopted amendments to the "Pavley" regulations to reduce GHG emissions in new passenger vehicles from 2009 through 2016. The Pavley Bill is considered to be the national model for vehicle emissions standards. In January of 2012, CARB approved a new emissions control program for vehicle model years 2017 through 2025. The program combines the control of smog, soot, and GHGs and the requirement for greater numbers of zero emission vehicles into a single package of standards called Advanced Clean Cars.

Executive Order S-3-05 (2005)

EO S-3-05 was signed in 2005 establishing statewide GHG emissions reduction targets for the years 2020 and 2050. The EO calls for the reduction of GHG emissions in California to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The 2050 emission reductions target would put the State's emissions in line with the worldwide reductions needed to reach long-term climate stabilization as concluded by the IPCC *2007 Fourth Assessment Report*.

Assembly Bill 32 (2006)

California's major initiative for reducing GHG emissions is outlined in AB 32, the "California Global Warming Solutions Act of 2006," which was signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main state strategies for reducing GHG emissions to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions.

Based on this guidance, CARB approved a 1990 statewide GHG baseline and 2020 emissions limit of 427 million metric tons of CO_2 equivalent (MMT CO_2e). The Scoping Plan was approved by CARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards,[6] and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2014 Scoping Plan update defined CARB's climate change priorities for the next five years and set the groundwork to reach post-2020 statewide goals. The update highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the State's longer-term GHG reduction strategies with other State policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use.

Senate Bill 107 (2006)

SB 107 builds on SB 1078 and requires investor-owned utilities, energy service providers, and Community Choice Aggregations to procure an additional 1 percent of retail sales per year from eligible renewable sources until 20 percent is reached, no later than 2010. The California Public Utilities Commission and California Energy Commission are jointly responsible for implementing the program.

Executive Order S-1-07 (2007)

Also known as the Low Carbon Fuel Standard, EO S-1-07, issued in 2007, established a statewide goal that requires transportation fuel providers to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. EO S-1-07 was readopted and amended in 2015 to require a 20 percent reduction in carbon intensity by 2030, the most stringent requirement in the nation. The new requirement aligns with California's overall 2030 target of reducing climate-changing emissions 40 percent below 1990 levels by 2030, which was set by SB 32 and signed by the governor in 2016.

Senate Bill 97 (2007)

Signed in August 2007, SB 97 acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Natural Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

Senate Bill 375 (2008)

SB 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and

6 On September 19, 2019 the National Highway Traffic Safety Agency (NHTSA) and the US Environmental Protection Agency (EPA) issued a final action entitled the One National Program on Federal Preemption of State Fuel Economy Standards Rule. This action finalizes Part I of the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule. This rule states that federal law preempts State and local tailpipe greenhouse gas (GHG) emissions standards as well as zero emission vehicle (ZEV) mandates. The SAFE Rule withdraws the Clean Air Act waiver it granted to California in January 2013 as it relates to California's GHG and zero emission vehicle programs.

2035. In addition, SB 375 directs each of the State's 18 major Metropolitan Planning Organizations (MPOs) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the MPO's Regional Transportation Plan (RTP).

Executive Order S-14-08 (2008)

EO S-14-08 was issued in 2008 and sets a statewide target of 33 percent renewable energy use by 2020.

California Green Building Code (2009)

The California Green Building Standards Code (CALGreen) is Part 11 of the California Building Standards Code or Title 24 and is the first statewide "green" building code in the nation. The purpose of CALGreen is to improve public health, safety, and general welfare by enhancing the design and construction of buildings. Enhancements include reduced negative impact designs, positive environmental impact designs, and encouragement of sustainable construction practices. The first CALGreen Code was adopted in 2009 and has been updated in 2013, 2016, and 2019. The CALGreen Code will have subsequent, and continually more stringent, updates every three years.

Senate Bill X7-7 (2009)

In 2009, SB X7-7, also known as the Water Conservation Act, was signed, requiring all water suppliers to increase water use efficiency. This legislation sets an overall goal of reducing per capita urban water use by 20 percent by 2020.

Senate Bill 2X (2011)

SB 2X was signed in 2011, requiring California energy providers to buy (or generate) 33 percent of their electricity from renewable energy sources by 2020.

Assembly Bill 341 (2012)

AB 341 directed the California Department of Resources Recycling and Recovery (CalRecycle) to develop and adopt regulations for mandatory commercial recycling. As of July 2012, businesses were required to recycle, and jurisdictions had to implement a program that includes education, outreach, and monitoring. AB 341 also set a statewide goal of 75 percent waste diversion by the year 2020.

Assembly Bill 32 Scoping Plan Update (2014)

In 2014, CARB approved the first update to the Scoping Plan. This update defines CARB's climate change priorities and sets the groundwork to reach the post-2020 targets set forth in EO S-3-05. The update highlights California's progress toward meeting the near-term 2020 GHG emissions reduction target, defined in the original Scoping Plan. It also evaluates how to align California's longer-term GHG reduction strategies with other statewide policy priorities, such as water, waste, natural resources, clean energy, transportation, and land use.

Assembly Bill 1826 (2014)

AB 1826 was signed in 2014 to increase the recycling of organic material. GHG emissions produced by the decomposition of these materials in landfills were identified as a significant source of emissions contributing to climate change. Therefore, reducing organic waste and increasing composting and

mulching are goals set out by the AB 32 Scoping Plan. AB 1826 specifically requires jurisdictions to establish organic waste recycling programs by 2016, and phases in mandatory commercial organic waste recycling over time.

Senate Bill 350 (2015)

SB 350, the Clean Energy and Pollution Reduction Act of 2015, has two objectives: to increase the procurement of electricity from renewable sources from 33 percent to 50 percent by 2030 and to double the energy efficiency of electricity and natural gas end users through energy efficiency and conservation.

Executive Order B-30-15 (2015)

In 2015, EO B-30-15 was signed, establishing an interim GHG emissions reduction target to reduce emissions to 40 percent below 1990 levels by 2030. The EO also calls for another update to the CARB Scoping Plan.

Senate Bill 32 (2016)

On September 8, 2016, the governor signed SB 32 into law, extending AB 32 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). The bill charges CARB to adopt the regulation so that the maximum technologically feasible emissions reductions are achieved in the most cost-effective way.

Senate Bill 1383 (2016)

Adopted in September 2016, SB 1383 requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

SB 1383 also requires CalRecycle, in consultation with the CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills. The bill further requires 20 percent of edible food disposed of at the time to be recovered by 2025.

Scoping Plan Update (2017)

On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 goal set by SB 32. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies, such as SB 350 and SB 1383 .

The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2014 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of six metric tons (MT) CO_2e by 2030 and two MT CO_2e by

2050. As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the State (CARB 2017).

Senate Bill 100 (2018)

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's RSP Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

Executive Order B-55-18 (2018)

On September 10, 2018, the governor issued Executive Order B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

Executive Order N-79-20 (2020)

In September 2020, EO N-79-20 requires that, by 2035, all new cars and passenger trucks sold in California be zero-emission vehicles. EO N-79-20 also requires that 100 percent of medium- and heavy-duty vehicles in the State be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks and notes that the State shall transition to 100 percent zero-emission off-road vehicles and equipment by 2035, where feasible.

Executive Order N-79-20 (2020)

On September 23, 2020, the governor issued EO N-79-20, which sets new statewide goals for phasing out gasoline-powered cars and trucks in California, which is applicable to state agencies. The EO requires 100 percent of in-state sales of new passenger cars and trucks to be zero-emission by 2035; 100 of in-state sales of medium- and heavy-duty trucks and busses to be zero-emission by 2045, where feasible; and 100 percent of off-road vehicles and equipment sales to be zero-emission by 2035, where feasible.

Senate Bill 27 (2021)

Adopted on September 23, 2021, SB 27 requires the state Natural Resources Agency to establish carbon sequestration goals for natural and working lands by July 2023. SB 27 also requires the Natural Resources Agency to create a registry of projects for public and private investment and track the carbon benefits of each project. The projects that would be part of this program may not generate compliance offsets under California's Cap-and-Trade program. Additionally, as part of the next Scoping Plan Update, CARB is required to establish specific CO_2 removal targets starting in 2030.

Senate Bill 379 (2022)

Adopted September 16, 2022, SB 379 requires cities and counties to implement an online, automated permitting platform to verify solar installation code compliance and issue permits in real time for residential solar energy systems no larger than 38.4 kilowatt hours.

Senate Bill 1020 (2022)

Adopted September 16, 2022, SB 1020 expedites the previous goals established by SB 100, by establishing a clean electricity goal for end-use customers of 90 percent by 2035, and 95 percent by 2040. Additionally, SB 1020 requires 100 percent of all electricity procured to serve all state agencies to be clean energy by December 31, 2035.

Senate Bill 1063 (2022)

Adopted September 16, 2022, SB 1063 creates appliance efficiency standards set by the State Energy Resources Conservation and Development Commission, which may now take effect sooner than one year after their adoption/revision. SB 1063 builds on Title 20 efficiency standards enforced through the California Energy Commission and first adopted in 1977.

Assembly Bill 1909 (2022)

Adopted September 16, 2022, AB 1909 removes prohibition of operating motorized electric bicycles or Class 3 bikes on bicycle paths or trails, bikeways, or bicycle lanes. However, the bill also includes an exemption for the Department of Parks and Recreation, which may prohibit these classes of bicycles on any bicycle path or trail within the department's jurisdiction, where appropriate.

Assembly Bill 1857 (2022)

Adopted September 16, 2022, AB 1857 amends various sections of the California Integrated Waste Management Act of 1989, which required jurisdictions to divert 50 percent of solid waste through source reduction, recycling, and composting activities, with no more than 10 percent through transformation. AB 1857 repeals the provision that jurisdictions may divert 10 percent through transformation (e.g., incineration). Additionally, AB 1857 requires the Department of Resources Recycling and Recovery to establish the Zero-Waste Equity Grant Program to support targeted strategies and investments in communities transitioning to zero-waste circular economies.

Assembly Bill 1985 (2022)

Adopted September 16, 2022, AB 1985 establishes penalties for jurisdictions that do not meet SB 1383 requirements. The penalty will be based on the percentage of the target the jurisdiction was able to achieve.

Assembly Bill 1279 (2022)

In September 2022, AB 1279 (e.g., the California Climate Crisis Act) was approved, which established a legally binding requirement for California to achieve and maintain carbon neutrality no later than 2045. Assembly Bill 1279 also established the requirement to achieve a Statewide reduction in GHG emissions of 85 percent below 1990 levels by 2045. This indicates that the remaining 15 percent to achieve carbon neutrality can be achieved via carbon sequestration and other non-direct-GHG-emissions-reductions techniques.

2022 Scoping Plan Update (2022)

In response to the passage of AB 1279 and the identification of the 2045 GHG reduction target, CARB adopted the Final 2022 Climate Change Scoping Plan in November 2022. The 2022 Update builds upon

the framework established by the 2008 Climate Change Scoping Plan and previous updates while identifying new, technologically feasible, cost-effective, and equity-focused paths to achieve California's climate goals. The 2022 Update includes policies to achieve a significant reduction in fossil fuel combustion, further reductions in short-lived climate pollutants, support for sustainable development, increased action in natural working lands to reduce emissions and sequester carbon, and the capture and storage of carbon. The 2022 Update assesses the progress California is making toward reducing its GHG emissions by at least 40 percent below 1990 levels by 2030, as called for in SB 32 and laid out in the 2017 Scoping Plan, addresses recent legislation and direction from Governor Newsom, extends and expands upon these earlier plans, and implements a goal of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045, as well as taking an additional step of adding carbon neutrality as a science-based guide for California's climate work.[7]

Advanced Clean Cars II (2022)

By 2035 all new passenger cars, trucks and SUVs sold in California will be zero emission vehicles. The Advanced Clean Cars II regulations take the state's already growing zero-emission vehicle market and robust motor vehicle emission control rules and augments them to meet more aggressive tailpipe emissions standards and ramp up to 100 percent zero-emission vehicles.

Senate Bill 1020 (2022)

SB 1020, also known as the Clean Energy, Jobs, and Affordability Act of 2022, would build off of existing laws and require that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by December 31, 2035, 95 percent of all retail sales of electricity to California end-use customers by December 31, 2040, 100 percent of all retail sales of electricity to California end-use customers by December 31, 2045, and 100 percent of electricity procured to serve all state agencies by December 31, 2035, as specified.

City of Pinole Sustainability Plans and Policies

The City of Pinole has established initiatives related to increasing adaptive capacity and reducing GHG emissions and the potential impacts of climate change. These initiatives are primarily detailed in the Pinole Creek Watershed Vision Plan, General Plan – Sustainability Element, Three Corridor Specific Plan, Pinole Green Infrastructure Plan, City of Pinole Climate Resolution, updated emissions inventory, and Pinole Capital Improvement Plan (FY 22/23 – 26/27), each of which is discussed in detail below.

Pinole Creek Watershed Vision Plan (2004)

The Pinole Creek Watershed Vision Plan[8] provides a consolidated list of goals and actions developed to outline the proposed future of the Pinole Creek Watershed. In total, the Pinole Creek Watershed Vision Plan includes nine overarching goals and a variety of actions that were developed to help achieve the goals. Goals included improving the water quality of Pinole Creek, restoring health and quality of the

[7] CARB. 2022. 2022 Scoping Plan for Achieving Carbon Neutrality. https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf (accessed November 2023)

8 Urban Creeks Council. June 2004. Pinole Creek Watershed Vision Plan: A Local Community-Based Effort. https://s3-us-west-2.amazonaws.com/ucldc-nuxeo-ref-media/c6f48c7b-fe69-41f2-a4fb-c5c0382f1689 (accessed April 2024)

surrounding environment, providing educational opportunities, increasing flood protection, and improving recreation among others.

General Plan – Sustainability Element (2010)

The City adopted an updated General Plan in 2010, which includes 12 chapters. Chapter 11, the Sustainability Element,[9] supports land use patterns and programs that will enhance opportunities to improve ecological conditions, enhance the local economy, and provide equal job, housing, education, recreation, and transportation opportunities. This chapter was developed to begin addressing climate change in the City and develop goals related to reducing greenhouse gas emissions, encouraging renewable energy sources, expanding local use of green technology, and educating Pinole's residents on how they can live fully while preserving Pinole for future generations. As outlined in the Sustainability Element, because sustainability is at the core of the General Plan, it is integrated through each chapter. According to the Sustainability Element, "*a sustainable Pinole is one where members [of the community] meet their needs and express their greatest potential in the present and plan and act on or the ability to maintain these ideals indefinitely.*"

Three Corridor Specific Plan (2010)

The purpose of the Three Corridor Specific Plan[10] is to facilitate revitalization of the San Pablo Avenue, the Pinole Valley Road, and the Appian Way commercial corridors, which are designated as Priority Development Areas (PDAs). Though the project area contains three distinct corridors, each of which has a unique character, they are combined into one Specific Plan to coordinate land use planning where they intersect, efficiently communicate common standards and provisions, and provide consistency in planning for these three areas. While the General Plan is the primary guide for growth and development within Pinole, this Specific Plan seeks to establish a direct connection between the City of Pinole's General Plan and economic and revitalization opportunities within the three Specific Plan corridors. An overall goal is the orderly development of three project area(s) – San Pablo Avenue, Pinole Valley Road, and Appian Way –consistent with the City's General Plan and, more specifically, with the community's vision developed through the Specific Plan public outreach process.

Pinole Green Infrastructure Plan (2019)

The City's Green Infrastructure Plan[11] was developed to meet the requirements of the California Regional Water Quality Control Board for the San Francisco Bay Region's (RWQCB's) Municipal Regional Stormwater Permit (MRP), which mandates implementation of a comprehensive program of stormwater control measures and actions designed to limit contributions of urban runoff pollutants to San Francisco Bay. Specifically, MRP Provision C.3.j.i. requires the City to prepare a Green Infrastructure Plan. For the

9 Pinole, City of. 2010. Sustainability Element of the General Plan (Chapter 11). (accessed April 2024) https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Planning/General%20Plan/City_of_Pinole_General_Plan_12.2010-Chapter11.pdf

10 Pinole, City of. November 2010. Three Corridors Specific Plan. (accessed April 2024) https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Planning/General%20Plan/Three%20Corridors/City_of_Pinole_Corridor_Specific_Plan_2010%20-%20updated%206.16.20.pdf

11 Pinole, City of. December 2019. City of Pinole Green Infrastructure Plan. (accessed April 2024) https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Public%20Works/Storm%20Water/2019.12.16%20Pinole%20GI%20Plan_Final.pdf

purposes of the plan, Green Infrastructure (GI) refers to the construction and retrofit of storm drainage to reduce runoff volumes, disperse runoff to vegetated areas, harvest and use runoff where feasible, promote infiltration and evapotranspiration, and use bioretention and other natural systems to detain and treat runoff before it reaches our creeks and Bay. As outlined under the Plan's Objective and Vision, the Plan will guide a shift from conventional "collect and convey" storm drain infrastructure to more resilient, sustainable stormwater management systems that reduce runoff volumes, disperse runoff to vegetated areas, harvest and use runoff where feasible, promote infiltration and evapotranspiration, and use natural processes to detain and treat runoff.

City of Pinole Climate Emergency Resolution (2021)

On October 19, 2021, the Pinole City Council adopted Resolution No. 2021-93 that declared a Climate Emergency. This resolution acknowledges the disastrous effects that climate change threatens to have on the City's public health, economy, infrastructure, and overall wellbeing. The Climate Resolution outlined the need for preparation of a Climate Action Plan that aligns with the state's goals for emissions reductions. Additionally, the Climate Emergency Resolution states that the health, social-economic, and racial equity considerations should be included in policymaking and climate solutions across all sectors to protect all community members, with an emphasis on youth, older adults, low-income or communities of color, and other vulnerable populations.

Updated Greenhouse Gas Emissions Inventory (2021)

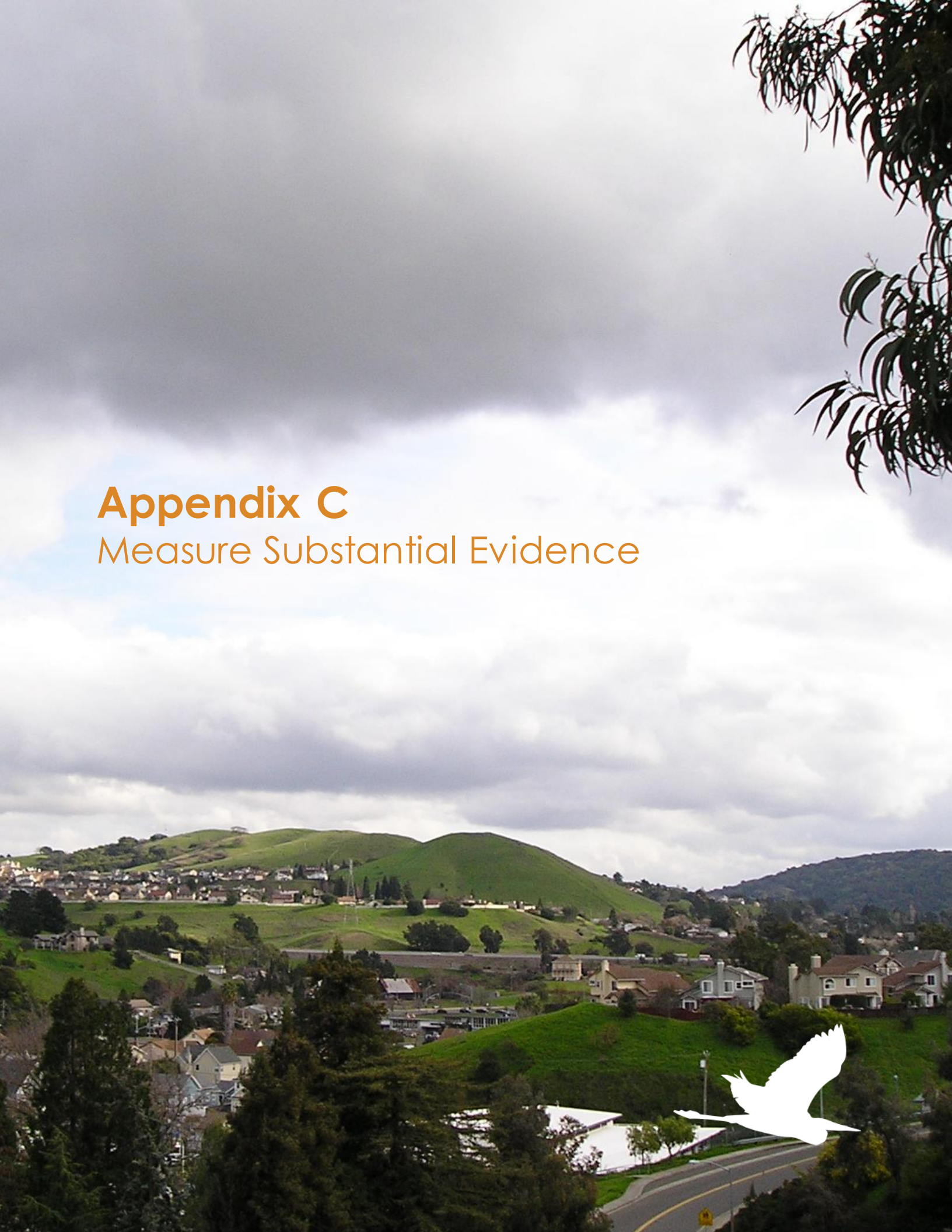
The City of Pinole updated the 2017 GHG emissions community inventory (2017 Inventory), which was originally prepared by East Bay Energy Watch (EBEW) as part of a regional GHG emissions inventory in June 2020. Establishing a consistent methodology and accurate baseline emissions inventory provides the City with an opportunity to track the success of sustainability and climate action efforts and establish a pathway to reduce GHG emissions in accordance with the City's and state's goals. As part of the review, the inventory was updated following the ICLEI Local Governments for Sustainability Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (Community Protocol) and with current and accurate data sources and emission factors.[12]

Pinole Capital Improvement Plan (FY 22/23 – 26/27) (2022)

As outlined in the Capital Improvement Plan,[13] it is a multi-year planning tool used to identify and implement the City's capital needs over the upcoming five-year period. The CIP aligns the needs with appropriate funding, scheduling, and implementation. This document is a working blueprint for building and sustaining publicly funded physical infrastructure. Capital improvements refer to physical assets and include the design, purchase, construction, maintenance, or improvement of public resources (i.e. parks public infrastructure, equipment, public spaces). These improvements influence Pinole's built and natural environment and help guide the trajectory of future growth or change.

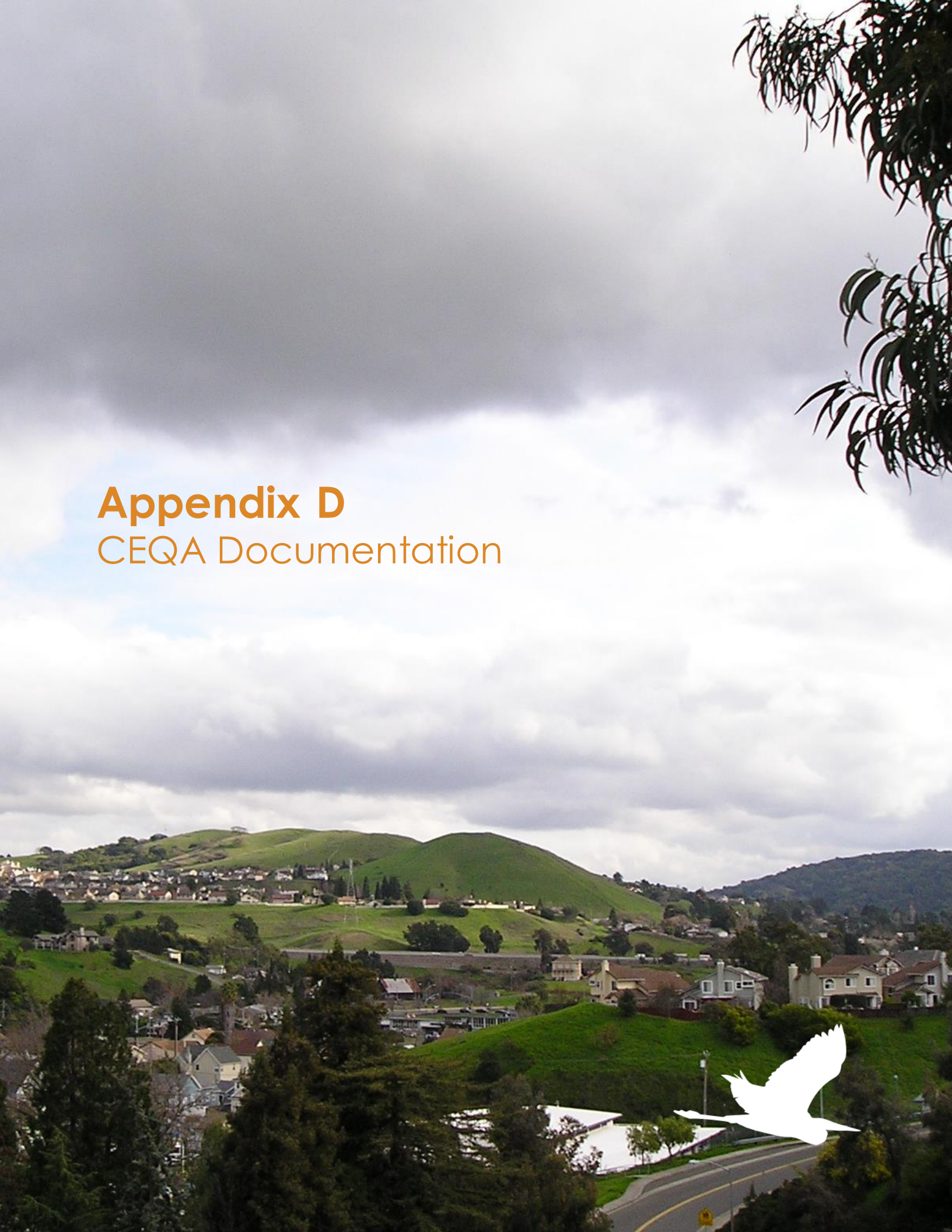
12 ICLEI – Local Governments for Sustainability USA. July 2019. U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions Version 1.2.

13 City of, Pinole. June 21, 2022. Pinole Capital Improvement Plan (FY 22/23 – 26/27). (accessed April 2024) https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_10946972/File/City%20Government/Public%20Works/Capital%20Projects/AttachmentA_Final_Proposed_CIP.pdf

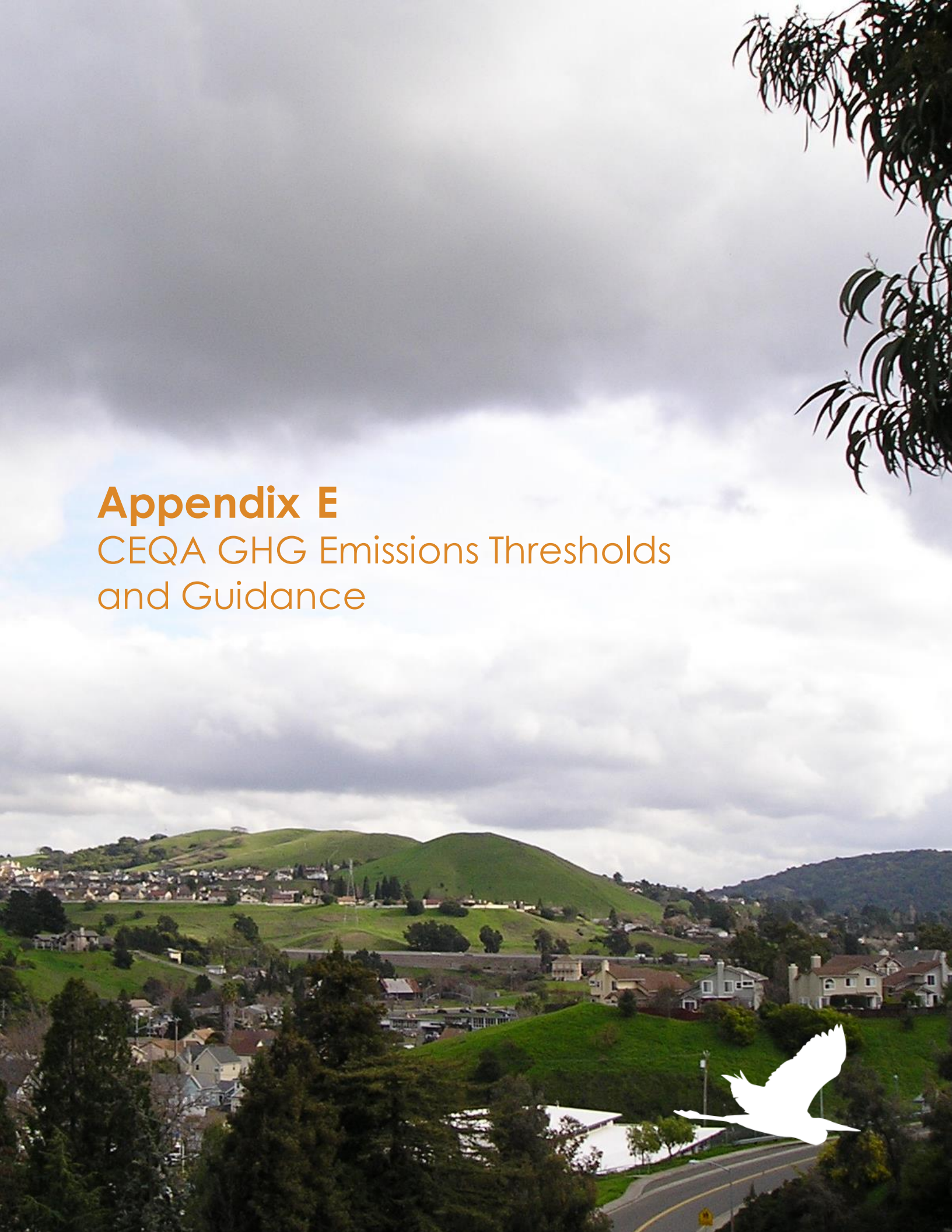


Appendix C

Measure Substantial Evidence



Appendix D
CEQA Documentation



Appendix E
CEQA GHG Emissions Thresholds and Guidance