Davis
CALIFORNIA

FINAL DRAFT

# DAVIS 2020–2040 Climate Action & Adaptation Plan

December 6, 2022

2020–2040


## LAND ACKNOWLEDGEMENT STATEMENT

We should take a moment to acknowledge the land on which we are gathered. For thousands of years, this land has been the home of Patwin people. Today, there are three federally recognized Patwin tribes: Cachil Dehe Band of Wintun Indians of the Colusa Indian Community, Kletsel Dehe Band of Wintun Indians, and Yocha Dehe Wintun Nation.

The Patwin people have remained committed to the stewardship of this land over many centuries. It has been cherished and protected, as elders have instructed the young through generations. We are honored and grateful to be here today on their traditional lands.

*Approved by Yocha Dehe Tribal Council (July 23, 2019)*

# Key Contributors

This Climate Action and Adaptation Plan (CAAP) is dedicated first and foremost to all Davis Community members, with special thanks to those who participated and attended CAAP workshops; completed online surveys; visited 'pop-ups'; supported working groups and equity discussions; provided comments in online forums, at Commission meetings, and via emails; responded to CAAP document's public comment period; who are members of faith communities, community-based organizations, and other groups who talked amongst themselves; and who have taken actions to live sustainably and respond to climate change in ways both small or significant. The Community values you!

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# List of Abbreviations, Acronyms, and Definitions

| | |
|---|---|
| AB | Assembly Bill |
| Actions | Specific measures or steps identified in a CAAP for jurisdictions to reduce GHG emissions or increase their resilience to climate impacts |
| Active Transportation | Walking, biking, or rolling as a mode of transportation |
| Adaptation | Actions to prepare for and protect people, assets, and ecosystems from the current and future impacts of climate change |
| ASAP | Action Selection and Prioritization |
| Ascent | Ascent Environmental |
| BAU Forecast | Business as usual forecast; projected future GHG emissions if a jurisdiction undertook no new actions to reduce emissions and continued its current trajectory in job and population growth |
| CAAP | Climate Action and Adaptation Plan |
| CARB | California Air Resources Board |
| Carbon neutrality | GHG emissions generated by an entity are balanced by an equivalent quantity of emissions sequestered, captured, or removed from the atmosphere |
| Carbon sequestration | Capturing and storing carbon, removing it from the atmosphere on a long-term basis. Carbon sequestration occurs naturally, in biological sequestration by trees, soils, grasslands, and oceans. Methods for geological and technological sequestration are also being developed |
| CEC | California Energy Commission |
| CEQA | California Environmental Quality Act |
| CFP | Comprehensive Funding Plan |
| City | City of Davis |
| CH4 | Methane |
| Climate equity | Ensuring that historically underserved and frontline communities are able to equitably access and benefit from climate mitigation actions, avoid negative unintended consequences (e.g., gentrification and displacement), and are protected from the disproportionate impacts of climate change |
| $CO_2$ | Carbon dioxide |
| CCA | Community choice aggregation; a program that allows local governments and other not-for-profit entities to act as an electric utility, procuring power from alternative sources while using transmission, distribution, and other services from the existing utility. Valley Clean Energy is the Davis CCA |

| | |
|---|---|
| Cost-effectiveness analysis | An analysis of all costs and savings associated with an action to understand its cost to impact ratio. For GHG mitigation actions, this produces a net cost per metric ton of GHG emissions reductions metric |
| DDSP | Downtown Davis Specific Plan |
| DEI | Diversity, equity, and inclusion |
| EIE | Environmental Insights Explorer |
| EIR | Environmental Impact Report |
| e.g. | exempli gratia (Latin), meaning "for example" |
| EJ | Environmental Justice |
| Electrification | Converting natural gas or other fossil fuel equipment to electric equivalents |
| EMFAC | Emissions Factor model |
| EV | Electric vehicle |
| First/last mile | The segment of a trip between the nearest transit station and the other destination (home, work) used in the CAAP to refer to internal Davis short-trip transportation needs |
| FTA | Federal Transit Administration |
| GHG emissions | Greenhouse gases released by human activity or natural processes that contribute to warming of the Earth's atmosphere by trapping heat, resulting in significant shifts to our climate |
| GHG inventory | A quantification of the GHG emissions produced by a jurisdiction or entity during a specific year, categorized by sector and emissions source, based on guidance outlined in an inventory protocol |
| Global warming | The long-term heating of the Earth since the pre-Industrial period due to human activities, primarily the combustion of fossil fuels |
| GWP | Global warming potential |
| i.e. | id est (Latin), meaning "that is" or "in other words" |
| IPCC | Intergovernmental Panel on Climate Change |
| Low-income | Households earning less than 80% of the area median income |
| Microgrid | Network of electricity users (often small) with a local source of supply that is usually attached to a centralized grid but is able to function independently |
| Micromobility | Transportation using lightweight vehicles such as bicycles or scooters, especially electric |

| | |
|---|---|
| Mitigation | Actions to reduce GHG emissions or to reduce climate risks |
| MMBtu | Metric Million British Thermal Unit |
| MOU | Memorandum of Understanding |
| $MTCO_2e$ | Metric tons of carbon dioxide equivalent |
| MWh | Megawatt hour |
| LID | Low impact development |
| N2O | Nitrous oxide |
| NPDES | National Pollutant Discharge Elimination System |
| NRC | Natural Resources Commission |
| NEVI | National Electric Vehicle Infrastructure Formula |
| PG&E | Pacific Gas & Electric |
| RPS | Renewable Portfolio Standard |
| SACOG | Sacramento Area Council of Governments |
| SB | Senate Bill |
| TAC | Technical Advisory Committee |
| TDM | Transportation Demand Management |
| UC Davis | University of California, Davis |
| UFMP | Urban Forest Management Plan |
| UWMP | Urban Water Management Plan |
| VCE | Valley Clean Energy |
| VMT | Vehicle miles traveled |
| Vulnerable populations | Populations who may be disproportionately burdened by government policy or external shocks and stressors |
| WWTP | Wastewater Treatment Plant |
| Zero net energy | A highly efficient building whose annual energy use is equal to or exceeded by renewable energy generated onsite |

# Climate Action in Davis: Overview and Context

## OVERVIEW

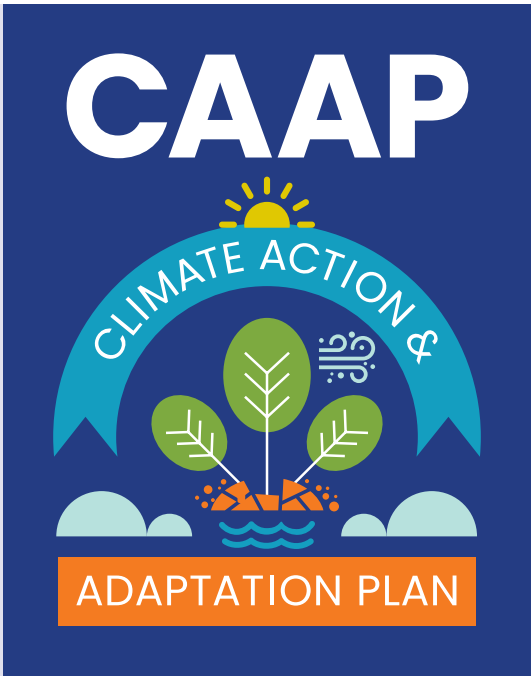
The City of Davis 2020-2040 Climate Action and Adaptation Plan (CAAP) is the result of the City's and community's vision to attain 2040 carbon neutrality by building transformative networks and policies. The CAAP showcases characteristics Davis is known for—insight, drive, and capacity; a proactive, engaged community; regional collaboration; and a commitment to leading with environmental justice.

The CAAP is a living document that shares how the City will address climate change and collaborate with residents and businesses. The plan and the proposed actions will be regularly reviewed through community engagement, progress monitoring and an online dashboard, and exploration of emerging opportunities. CAAP updates are planned in 2025 and every five years thereafter (2030, 2035, 2040) and greenhouse gas (GHG) inventories will be conducted biannually.

## CAAP HISTORY

The first City of Davis CAAP was adopted in 2010. Since then, climate conditions have continued to decline and urgent, decisive action is crucial. Due to GHG emissions heating the atmosphere, scientists expect increasing trends toward more extreme weather, including longer, more frequent and intense heat waves, more severe wildfire seasons, extended droughts, increased flooding, rising sea levels, and changes to winter conditions such as more intense storm events and less snowpack.

All of these changes impact public health and safety, air quality, local jobs, the economy, natural environment, urban forest, and quality of life. Of special note, these climate change impacts drastically affect vulnerable populations and community members, including communities of color, indigenous people, low-income residents, youth, seniors, people with disabilities, unhoused people, and the health impaired. Addressing environmental justice through diversity, equity, and inclusion (DEI) is a fundamental aspect of Davis' climate action and adaptation planning efforts.




## WORKING TOGETHER

Although Davis alone cannot solve the impending catastrophic climate-related changes to the Earth's system, it is imperative that we, as dedicated community members and the local government, commit to taking responsibility for a share of the problem. As stated in the March 2019 City Council Climate Emergency Resolution, we all face an existential climate emergency. We must act locally and advocate broadly to address climate change.

This 2020-2040 CAAP process, started in mid-2019, has been developed in response to these imperatives. It has included extensive community input during the COVID-19 pandemic, including virtual workshops, online surveys and community forums, small group meetings with targeted community members, tabling at community events, monthly Commission meetings/staff reports, and several presentations to the City Council.

In addition to municipal efforts, the entire Davis community—residents and businesses—will be essential partners in implementing CAAP actions to reach carbon neutrality and address climate risk. We all have a role to play, whether it seems small and incremental or large and significant. For example, every electric replacement for a natural gas appliance sends a strong signal. Every time a Davis resident chooses to walk, bike, carpool, or take public transit reduces emissions and local pollution. Many climate-friendly actions are available to everyone in the community, including eating local, plant-based foods, using less water, creating less waste, meeting with neighbors to create a resilient community, or planting trees and beneficial, native, and drought-tolerant landscapes.

The City will develop education and outreach materials to help engage the community and help people make a difference. Collaborative partnerships and engagement across the region will also support CAAP actions.

## IMPLEMENTATION

CAAP implementation is intended to provide achievable, measurable GHG emission reductions and responses to climate risk that align with the Davis General Plan, the Downtown Davis Specific Plan, and other City goals and priorities, including energy efficiency, transportation and land use, waste, stormwater, water management, facilities, open space, parks and urban forestry policies. The CAAP also brings the City into compliance with California legislation enacted since 2010 to reduce GHG emissions, address climate risk, and incorporate environmental justice. The CAAP establishes an interim 2030 carbon reduction target and sets the community on a trajectory toward its 2040 carbon neutrality goal.

The actions identified in the current CAAP may not be perfect or comprehensive; this is a starting point. Although it may be difficult to imagine a carbon neutral Davis in 2040, this CAAP is founded on the premise that it is achievable with strong leadership and a community engaged around a common vision. The 2040 carbon neutrality goal will need further study and deeper commitments; these actions represent the continuation of Davis' long history of sustainability and a pathway to a better, more environmentally responsible future. These actions also represent an approach that is within the current community understanding and capacity to embrace and adopt. We anticipate that new technology, funding and partnership opportunities may emerge from regional, state and federal organizations to help Davis accomplish these goals.

This CAAP document provides a framework for further developing and elevating these efforts, incorporating innovative and creative approaches for implementing sustainable GHG reductions along with diverse co-benefits, attracting new investment to provide opportunities for current and future residents, and celebrating a culture of respect, diversity, equity, inclusivity.

# Executive Summary

# Executive Summary

This City of Davis (City) 2020-2040 Climate Action and Adaptation Plan (CAAP) is part of Davis' continuing efforts to embrace innovative and creative efforts to support sustainability and community quality of life.

Davis has historically made long-term commitments and implemented successful programs in biking and alternative transportation; renewable energy and energy efficiency; sustainable land use planning; urban forestry; green management of public facilities, parks and open spaces; waste reduction; water and stormwater management; and resource conservation. The City has demonstrated advocacy and resilient leadership on reducing climate risk and greenhouse gas emissions, addressing environmental justice, and enhancing quality of life in our community.

The CAAP provides a framework for further developing and elevating these efforts, incorporating innovative and creative approaches for sustainability implementation and diverse co-benefits, attracting new investment to provide opportunities for current and future residents, and celebrating a culture of respect, diversity, equity, inclusivity, and sustainability.

The CAAP fulfills the Davis City Council objective to establish a roadmap of carbon reduction policies to achieve the Davis carbon neutrality goal by 2040. This goal stems from the City Council resolution declaring a climate emergency in 2019 in response to current and expected future climate impacts, including increases in extreme heat, drought, tree mortality, wildfire and flooding (*"Resolution Declaring a Climate Emergency and Proposing Mobilization Efforts to Restore a Safe Climate" 2019*).

The CAAP describes achievable, measurable greenhouse gas (GHG) emissions reduction and climate change adaptation actions that align with the City's goals and priorities. When implemented, these actions will reduce GHG emissions by 41% below 2016 levels by 2030 and set the community on a trajectory toward its 2040 carbon neutrality goal. The CAAP actions will prepare the community for climate change impacts, improve public safety, address environmental justice and enhance the quality of life for residents.

The CAAP also makes the City consistent and/or compliant with California legislation to reduce GHG emissions, address climate adaptation and incorporate environmental justice enacted since 2010 including Senate Bills 379 (2015) and 1000 (2018); Executive Order B-55-18; California Air Resources Board 2017 Scoping Plan; and Office of Planning and Research General Plan Guidelines. The CAAP demonstrates ongoing compliance with 2006 AB 32 (California Global Warming Solutions Act) and SB 375 (Sustainable Communities Act, updated 2018). The CAAP includes new emission reduction targets for 2030 that align with Senate Bill 32 as well as emission reduction targets through 2040 to align with Executive Order B-55-18.

Development of the CAAP roadmap of actions was initially guided by background research and technical information. The project management team subsequently developed a climate vulnerability assessment, review of the 2010 CAAP actions progress and status, and GHG emissions inventory, all of which can be found on the City of Davis website.

## RELATIONSHIP TO OTHER CITY PLANS

The recommendations and commitments defined in the CAAP align with, and support, many of the City's goals, policies, programs and recommendations outlined in other plans, including the General Plan, Downtown Davis Specific Plan (DDSP, in progress) and other requirements and approaches pertaining to transportation, energy efficiency, waste, stormwater, water management and urban forestry, among other areas. This CAAP builds on the goals established in the City's first CAAP, adopted in 2010. The City's General Plan update is envisioned to be completed prior to 2025, and the DDSP and its related environmental review are on track to be adopted in early 2023. **Chapter 1: Introduction** includes a description of state regulation and the relationship between the CAAP and other city and regional plans.

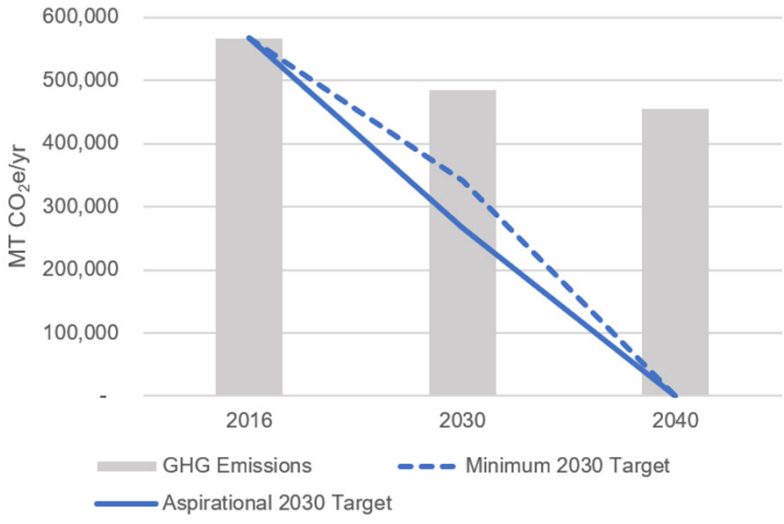
Regular updates are envisioned for the CAAP, with the first update in two years (2025 CAAP), followed by updates every five years (2030, 2035, 2040).

## GHG INVENTORY, FORECASTS AND REDUCTION TARGETS

In 2020, in advance of initiating this CAAP, the City completed a regionally-integrated GHG inventory with partner agencies Yolo County and the Cities of Winters and Woodland, using 2016 as the baseline year for data collection. The CAAP development process included an update to this 2016 GHG emission inventory that incorporated a different on-road transportation emissions calculation methodology to better align with follow-on climate action planning analysis. In 2016, the City of Davis generated 567,000 metric tons of carbon dioxide equivalents ($MTCO_2e$), with most of these emissions generated from on-road transportation (74%). The remaining emissions came from natural gas and electricity use (15%), off-road equipment (4%), wastewater treatment (3%), solid waste disposal (3%), and water supply (<1%). Davis' 2016 base year inventory was used to develop 2030 and 2040 "business-as-usual" forecasts to align with the City's GHG reduction target years.

The 2030 and 2040 forecasts reflect how emissions would change over time in the absence of any further local climate action. The City defined two 2030 GHG targets that are consistent with the state's 2030 target and climate action planning guidance to local governments. The minimum target is to achieve GHG emission reductions of **40% below 2016 levels** by 2030, while the aspirational target is defined as **5.2 MT $CO_2e$/capita/yr** (or 53% below 2016 levels). The aspirational target represents a 57% emissions intensity reduction from 2016 levels of 12.0 MT $CO_2e$/capita. The City's 2040 carbon neutrality goal is five years ahead of the state's most recent target set in Executive Order B-55-18, which called for statewide carbon neutrality by 2045 and is aligned with the IPCC 2018 report that presents multiple pathways to keep global warming levels below a 1.5˚ Celsius threshold. **Figure ES 1** illustrates the City's GHG forecasts and targets.

**Figure ES 1.** GHG Forecasts and Targets



## CLIMATE IMPACTS

The Climate Change Vulnerability Assessment conducted as part of the CAAP examined how climate change hazards will affect City of Davis assets (infrastructure and natural resources), residents, and businesses. Like much of California, the City is already experiencing impacts from extreme heat events, flooding and extreme precipitation, drought, and poor air quality caused by wildfire smoke and the vulnerability assessment identified how these impacts are likely to change through mid-century and end-of-century timeframes.

The vulnerability assessment and GHG emission inventory and forecasts are summarized in **Chapter 3: City of Davis and Climate Change** with further details in Appendices C and D, respectively.

## OVERVIEW OF COMMUNITY ENGAGEMENT PROCESS

The results of the GHG inventory update and target setting process and the climate vulnerability assessment formed the basis of robust community and stakeholder engagement, described in **Chapter 2: Plan Development and Community Engagement,** which included consultation with three main groups:

**1.**

The **internal City team** included representatives from each City department and relevant staff liaisons to City Commissions. The City Council was considered part of this team, with the Natural Resources Commission (NRC) as lead CAAP advisory body to the Council.

**2.**

The **Technical Advisory Committee** (TAC) included local and university representatives providing technical expertise in climate action planning, community engagement, transportation, energy, and other sectors. TAC roles included providing feedback/ insight on CAAP project milestones, insight on technical topics within the Davis context and input on high-level strategies.

**3.**

The **Community** was a primary contributor and focus of the Davis CAAP engagement approach and will be integral to successful plan implementation. Since the CAAP development occurred during "in-person meeting" limitations imposed by the COVID-19 pandemic, every effort was made to engage community members remotely and to meet in person when possible. Community engagement included seven workshops and pop-up meetings and two online surveys, community forums, small group meetings with targeted community members, and tabling at community events between April and November 2021 with a focus on gaining ideas and feedback on climate actions. A dedicated page on the City's website provided information and links to all CAAP actions and meetings.


As the City gathered information from community members on potential actions toward carbon neutrality and climate adaptation, the City shared 'in progress' CAAP products with the community and gathered input to support action development. Draft actions were presented to the community, not as a final, comprehensive plan, but instead as incremental, iterative information as it was being developed. Based on community ideas and input, 95 proposed CAAP actions were evaluated through a methodical process leveraging a climate action planning tool, Action Selection and Prioritization (ASAP) analysis. In addition to addressing two primary goals—carbon reduction and decreasing climate risk—the ASAP analysis factored in implementation feasibility and measurements of key co-benefits associated with each action.

Action evaluation resulted in 28 proposed prioritized CAAP actions, which were presented to City Council in December 2021. At that time, City Council requested further analysis of the draft actions for cost effectiveness and GHG reduction potential. The results were presented to, and approved by, City Council in May 2022. The approved list of actions formed the basis of the draft and final CAAP document and as the 'project description' for completion of required environmental review.

The Administrative Draft CAAP, consisting of community-driven actions, consolidated all the previous work into a single document released for public comment. More than 400 comments were received during the two-month comment period. Some comments addressed a single action, and some were multi-page, multi-issue recommendations. Comments came from community members, City Commissions, and other stakeholders. Community input has been considered and incorporated, where appropriate, as much as possible in order to be responsive to community interests and direction.

## CLIMATE ACTION DEVELOPMENT

Actions to support GHG emissions reduction and climate adaptation were developed based on the results of the GHG emissions inventory, climate vulnerability assessment and extensive stakeholder and community input. **Chapter 4: Climate Actions** summarizes the priority actions which reflect a balance of GHG and climate risk reduction potential, co-benefits, and implementation feasibility. Along with the 28 prioritized actions, additional action ideas from stakeholders are also preserved in the CAAP document to potentially serve as a starting point for subsequent phases of implementation when the initial set of priorities have been completed or are underway. Each action achieves a plan goal, organized by sector, as shown in the following list.

## CAAP GOALS BY SECTOR

| | |
|---|---|
| **Building Energy and Design** | • Transition to high-efficiency, zero-carbon homes and buildings<br>• Expand local renewable energy development and storage |
| **Transportation and Land Use** | • Adopt zero-emission vehicles and equipment<br>• Increase opportunities for active mobility<br>• Strengthen transit service within Davis and between regional neighbors<br>• Reduce single-occupant vehicle use<br>• Expand opportunities for local housing development to balance local employment opportunities |
| **Water Conservation and Waste Reduction** | • Conserve water in buildings and landscapes<br>• Reduce waste generation and increase diversion away from landfills |
| **Climate Adaptation** | • Create a cooler city with more urban forest and green space for people and habitat<br>• Protect public health, safety, and infrastructure against damage and disruption from flooding<br>• Prepare and respond to climate hazards to ensure that the City is equipped to address current and future challenges |
| **Carbon Removal** | • Demonstrate climate leadership through innovation, education, and investment |

**Table ES 1** summarizes each of the 28 prioritized actions within these goal areas and sectors. The actions are described both in this document and in Appendix A: Implementation Roadmaps. This document provides preliminary implementation information for each action, but further development will need to be completed by the lead City agency, along with key regional and community partners. Additionally, each action will have concerted educational and outreach components, require further community engagement and 'buy-in', and will address diversity, equity, and inclusion (DEI) issues and opportunities.

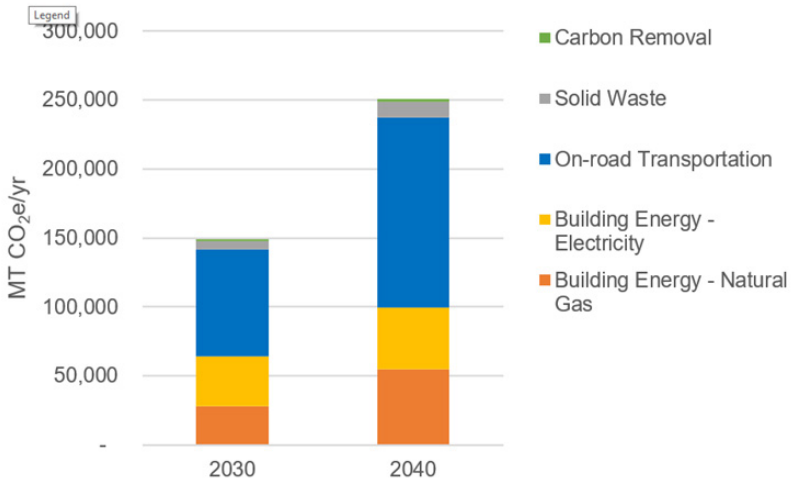
**Table ES 1.** CAAP Goals and Priority Actions

| GOAL | ACTIONS |
|---|---|
| **Building Energy and Design (BE Actions)** | |
| Transition to high-efficiency, zero-carbon homes and buildings | BE.1 Building electrification when permit is needed<br>BE.2 Building electrification for existing buildings<br>BE.3 Energy efficiency and ventilation in rental properties<br>BE.4 All-electric new construction<br>BE.5 Community solar energy<br>BE.6 Carbon mitigation fund<br>BE.7 Renewable energy in City facilities |
| Expand local renewable energy development and storage | BE.8 Create community microgrids and resiliency hubs |
| **Transportation and Land Use (TR Actions)** | |
| Adopt zero-emission vehicles and equipment | TR.1 Electric Vehicle Charging Plan<br>TR.2 Decarbonize municipal fleet |
| Increase opportunities for active mobility | TR.3 "First mile/Last mile" transportation<br>TR.4 Electric micromobility vehicles<br>TR.5 Pedestrian and bicycle safety |
| Strengthen transit service within Davis and between regional neighbors | TR.6 Expand public transit<br>TR.7 Strengthen regional transit |
| Reduce single-occupant vehicle use | TR.8 Downtown parking improvements<br>TR.9 Transportation Demand Management (TDM) program<br>TR.10 Low Emissions Vehicle Program |
| Expand opportunities for local housing development to balance local employment opportunities | TR.11 Develop sustainable housing |
| **Water Conservation and Waste Reduction (WW Actions)** | |
| Conserve water in buildings and landscapes | WW.1 Climate-ready private landscapes |
| Reduce waste generation and increase diversion away from landfills | *No actions prioritized at this time* |
| **Climate Adaptation (AD Actions)** | |
| Create a cooler city with more urban forest and green space for people and habitat | AD.1 Cool surfaces<br>AD.2 Urban forest |
| Protect public health, safety, and infrastructure against damage and disruption from flooding | AD.3 Green stormwater infrastructure<br>AD.4 Flood resilience of critical infrastructure |
| Prepare and respond to climate hazards to ensure that the City is equipped to address current and future challenges | AD.5 Funding and staffing for existing efforts<br>AD.6 Public resources during extreme weather events |
| **Carbon Removal (CR Actions)** | |
| Demonstrate climate leadership through innovation, education, and investment | CR.1 Carbon sequestration and removal<br>CR.2 Carbon farm plans |

## TARGET ACHIEVEMENT

Implementation of all priority actions is estimated to reduce community-wide emissions by 149,200 MT $CO_2e$/yr in 2030 and by 250,600 MT $CO_2e$/yr in 2040. **Figure ES 2** shows the estimated CAAP action GHG reductions in 2030 and 2040 organized into emissions categories that approximately align with the GHG inventory. The greatest reductions in both years are attributed to on-road transportation (blue) which is largely associated with the estimated adoption of electric vehicle (EV) and other zero-emission vehicle technology. The second and third greatest sources of reductions are from building energy electricity (light orange), which reflects Davis' participation in Valley Clean Energy and the expectations for its zero-carbon energy mix by 2030 and building energy natural gas (dark orange). Solid waste (gray) actions provide the next greatest sources of reductions, followed by local carbon removal opportunities illustrated in green.

**Figure ES 2.** GHG Reduction by Sector




The 2030 GHG reductions would result in emissions that are 41% below 2016 levels with an emissions intensity of 6.5 MT $CO_2e$/capita/yr. This current estimate achieves the city's minimum 2030 GHG target (i.e., 40% below 2016 levels), but falls short of the aspirational goal to achieve an emissions intensity level of 5.2 MT $CO_2e$/capita/yr. The aspirational 2030 target achievement gap is approximately 67,800 MT $CO_2e$/yr, and multiple factors will influence the City's ability to achieve it. The state may implement new or more aggressive GHG reduction programs to achieve the SB 32 GHG target (i.e., 40% below 1990 levels by 2030). New GHG-reducing technology may be developed, or uptake of current technology might exceed the estimates included in the CAAP analysis, such as EV adoption rates. CAAP action implementation could occur at a higher rate than initially assumed in the GHG reduction estimates, or the City could develop additional GHG reduction actions focused on the 2030 target year.

The CAAP priority actions start the City on a realistic trajectory toward the 2040 carbon neutrality target. However, the estimated implementation of this current set of actions would not achieve the City's target. Predicting the future through 2040 is not possible with accuracy, and there is likely a role for new technology to be developed and deployed, enhanced state and federal programs to be implemented in pursuit of GHG targets at both levels of government, greater progress on implementing the current suite of CAAP actions, and new or enhanced local climate actions to increase participation within the community. The City will also pursue carbon dioxide removal (CDR) strategies to address any remaining emissions in 2040, including natural sequestration in forests and agricultural lands and industrial CDR at the local and regional level in collaboration with other area governments. The City plans to update the GHG inventory every two years and update the CAAP every five years beginning in 2025.

## IMPLEMENTATION

Implementation roadmaps were developed for the prioritized actions and offer potential pathways to robust execution of each CAAP action. Each roadmap, presented in Appendix A, includes information on next steps, related CAAP actions, the priority level of the action, and outlines potential completion timelines, milestones, and performance tracking metrics. **Chapter 5: Implementation and Monitoring Framework** summarizes potential funding and financing sources for climate action projects and programs within broad categories including grants from local, state, and federal agencies; revenue-generating tools; fiscal policies; and private market financing strategies (e.g., debt instruments) to provide direction for implementation. The CAAP concludes with recommendations for CAAP monitoring and updates — a top-down approach through annual tracking of primary emissions activity data (e.g., energy consumption) and regular GHG inventory development (every 2 years), and a bottom-up approach through performance monitoring of each action (every 1-2 years). Both approaches are important to enable the City to course correct should GHG target progress not be as expected.

The City recognizes the significance of providing an internal organizational structure to elevate and implement the identified CAAP actions. A multi-faceted, multi-disciplinary approach by municipal and community organizations, and individuals will be required to attain interim GHG reduction targets by 2030 and community carbon neutrality by 2040. The City Manager is completing plans to house sustainability leadership functions in the City Manager's Office to facilitate interdepartmental direction and coordination to meet the City's CAAP goals. Once climate action and adaptation measures are adopted, the City team will work closely with regional partners and jurisdictions on implementation and monitoring. Additionally, the City will collaborate with community-based organizations and other City partners to implement community outreach, education and awareness of climate actions.

## COLLABORATION AND PARTNERSHIPS

Regional cooperation, collaboration, and partnerships are crucial for real and measurable responses to climate change. The City is actively engaging in many collaborative efforts, and will continue to prioritize and leverage the benefits of working together, such as with other Sacramento-area government agencies, non-profits, and community-based organizations.

Discussions of CAAP action implementation indicate partnerships in many places, such as the City and County of Sacramento, Valley Clean Energy, Yolo-Solano Air Quality Management District, Unitrans and Yolo County Transportation District, etc. The City also works closely with non-profits and community-based organizations, with active memoranda of understanding (MOUs), and ongoing grant implementation work with Tree Davis, Cool Davis and others.

The City has a well-established partnership with the University of California, Davis (UC Davis) in many areas of operations, research, and implementation. The recent award-winning 'Healthy Davis Together' work on addressing the COVID-19 pandemic is widely acknowledged as ground-breaking. Efforts between the City and campus on achieving climate change goals are also noteworthy and are continuing to be developed and expanded.

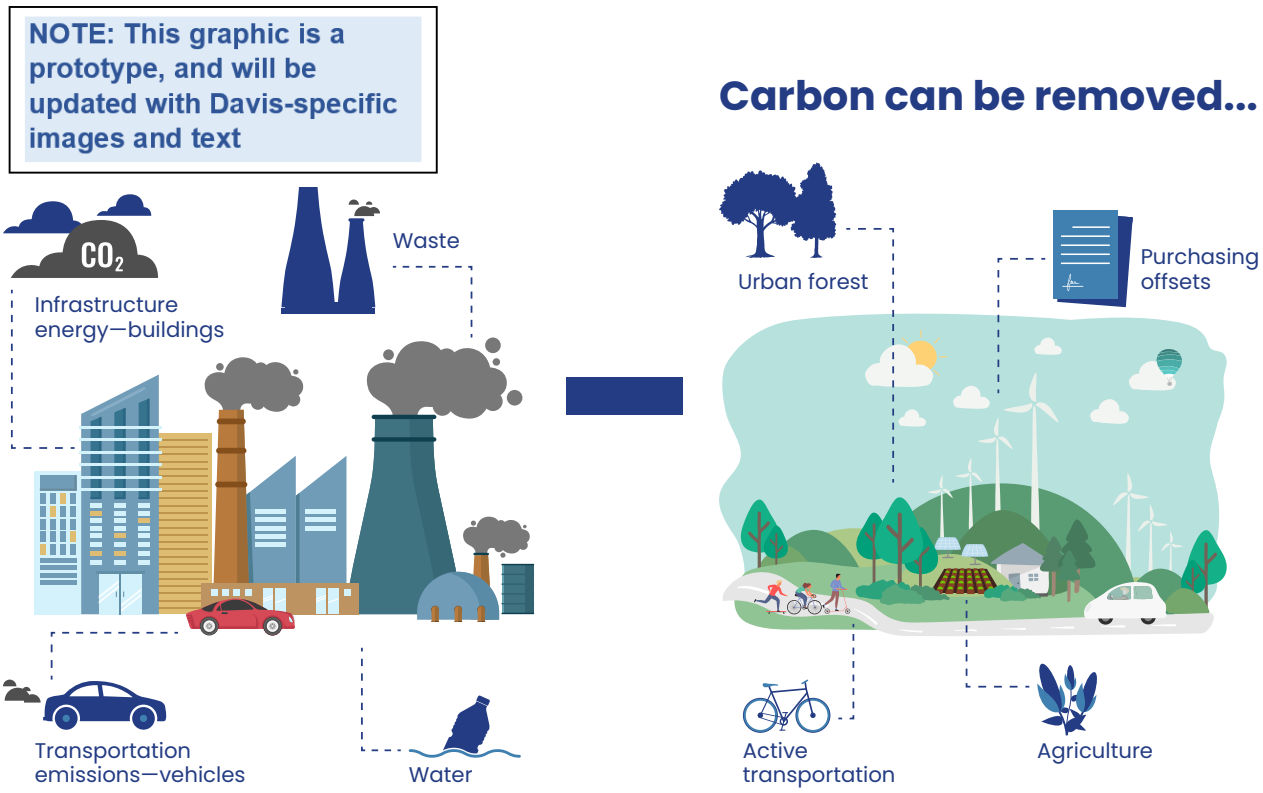
Potential partnerships are not limited to those identified here. As actions are further developed, collaboration opportunities will be considered and prioritized, including cooperatively seeding funding, developing agreements or MOUs, or other approaches.

# CHAPTER 1.

# Introduction

# Climate Action and Adaptation Plan (CAAP) Purpose

1.1




The City of Davis (City) 2020-2040 Climate Action and Adaptation Plan (CAAP) illuminates the City's commitment to reduce greenhouse gas (GHG) emissions and protect public safety consistent with state goals and guidance concerning climate change. The CAAP identifies GHG mitigation and climate adaptation strategies that align with the City's goals and priorities.

The CAAP builds on the City's history of commitment to climate change action and adaptation. In 2008, the Davis City Council adopted GHG emission reduction targets, with minimum targets consistent with then-current guidelines from the State of California and desired targets for deeper reduction. These more ambitious targets included a goal of carbon neutrality in community and City operations by 2050. In 2010, the City of Davis adopted a CAAP outlining strategies by which to achieve these targets ("Davis Climate Action and Adaptation Plan" 2010). In 2019, the City Council adopted a resolution declaring a

## City GHG Reduction Targets


**2030:**
40% below 2016 levels
and
5.2 MT $CO_2e$/capita/yr

**2040:**
Carbon Neutrality

climate emergency in response to future and current climate impacts, including increases in extreme heat, drought, tree mortality, wildfire and flooding ("Resolution Declaring a Climate Emergency and Proposing Mobilization Efforts to Restore a Safe Climate" 2019). The 2019 resolution accelerated the previous 2050 carbon neutrality goal to a 2040 target year.

As part of this CAAP development, Implementation Roadmaps (Appendix A) were developed to detail steps for robust execution of each CAAP action including milestones, timelines, and performance tracking metrics. To support implementation of CAAP actions, a section on funding and financing tools is provided (Appendix B), including specific local, state, and federal grants, bonds and loans and existing consumer incentive programs. A Climate Change Vulnerability Assessment (Appendix C) was conducted to identify climate hazards that may affect residents, assets, and businesses, and to recognize the populations and critical infrastructure that are vulnerable to those hazards. Additionally, a GHG emissions inventory (Section 4.2 and Appendix D) was conducted to identify and categorize sources of GHG emissions from community activities. Together, the vulnerability assessment and GHG emissions inventory informed the development of actions to best advance the City's GHG emission reduction and climate adaptation goals.

Building on these and other City climate commitments, the CAAP provides updated strategies to address climate risk consistent with state recommendations and regulatory requirements, including 14 CCR § 15183.5 (2010) and Government Code § 65302 (2022).

# CAAP Relationship to Other City and Regional Plans/Programs and State Regulation

1.2

## CITY PLANS

The CAAP recommendations and commitments support many of the City's goals, policies and programs as outlined in other plans adopted by the City, including the General Plan, Specific Plans and other requirements and approaches pertaining to transportation, energy efficiency, waste, stormwater, water management and urban forestry, among other areas. Additionally, this CAAP aligns with the overarching goal in the City's first CAAP, adopted in 2010, to reduce GHG emissions across different sectors. While the 2020-2040 CAAP represents a separate plan with new targets and updated GHG emissions analysis, the development process of the 2020-2040 CAAP took into consideration climate actions undertaken since 2010 and incorporated these actions into the new plan, where applicable.

The City's General Plan was initially adopted in 2001 and updated through 2016, with another update to be completed before 2025 (City of Davis 2007). These areas of alignment are summarized in **Table 1**.

The **2013 General Plan Transportation Element** established the vision that Davis residents would be able to travel safely and conveniently "in an environmentally and economically sustainable manner" (City of Davis 2013). The Transportation Element outlines several policies in service of this vision that are closely aligned with the goals established by the City in the CAAP. The Transportation Element sets objectives related to GHG emission reduction, including goals to reduce carbon emissions from the transportation sector by increasing the share of trips conducted by bicycle, strengthening coordination among regional transit agencies, adjusting parking management and incentivizing electric vehicle (EV) use. These objectives are closely aligned with goals established in the CAAP around reducing single-occupant fossil fuel vehicle use and boosting active mobility, transit service and EV use. Overall, many CAAP actions strongly amplify and support the goals and policies of the General Plan Transportation Element.

The **2021-2029 Housing Element Update to the General Plan** was adopted by the City Council on August 31, 2021 but is not currently certified as of December 2022. The plan describes a number of goals, policies and corresponding action items that are closely aligned with actions recommended under the CAAP (City of Davis 2021). The Housing Element addresses the need for affordable housing and recommends evaluating avenues to increase density in Davis and siting multi-family complexes to be transit accessible, objectives that are supported by goals established in the CAAP around local housing development. The Housing Element also encourages incentives for building retrofits and addresses solar installation requirements which are supported by goals in the CAAP concerning building decarbonization. Finally, the Housing Element touches on the need for shade trees and energy-efficient landscaping, an objective that is carried forward by CAAP actions in the goal area of creating a cooler city with more urban forest and green space for people and habitat.

As of December 2022, the Draft Environmental Impact Report (DEIR) for the Draft **Downtown Davis Specific Plan (DDSP) and Form Based Code** has completed the 60-day public review period. Many of the DDSP goals and identified actions align with goals and actions in this CAAP. The proposed project will guide long-term development in Downtown Davis. The Administrative Draft DDSP sets objectives for the downtown area, including developing a framework for carbon neutrality, equitable access, water efficiency, waste reduction, and resilience by 2040; creating a compact, mixed-

use community designed to support active modes of transportation and sustainability; providing a variety of housing options at all levels of affordability near jobs, facilities, services, and destinations where most daily needs can be met without a car; creating green, active, and inclusive public spaces to support the health of the public and the environment; and creating a sense of place that balances new development with historic character.

The CAAP aligns with the tree planting and preservation goals of the **2002 Community Forest Management Plan** (City of Davis 2002). An update to the Urban Forest Management Plan is anticipated for City Council approval by March 2023. Additionally, a **Parks Management Maintenance Plan** is envisioned but plan development has not begun as of December 2022. The **Open Space 2030 Strategic Plan** (City of Davis 2018) supports the City's land conservation vision and sustained efforts to protect, maintain and enhance farmlands and habitat areas surrounding the community. The major goals of the program include 1) securing long-term protection of open space lands around Davis; 2) providing and improving long-term management and monitoring of City-owned open spaces; 3) promoting and supporting the enjoyment of public open space lands; 4) engaging citizens in planning and caring for open space areas; and 5) nurturing productive partnerships with other organizations to achieve the above goals.

The City's **2020 Urban Water Management Plan** (UWMP) references the 2010 CAAP objective to reduce water use by 10% below 2010 levels, a goal that the City achieved in 2019 and 2020 (Brown and Caldwell 2021). The UWMP also notes the importance of water conservation to reduce energy use and increase resilience to future climate conditions, which the UWMP reports are predicted to be increasingly variable in Davis. These goals are supported by the CAAP which outlines incentives to support low-water landscaping.

The CAAP identifies the importance of **stormwater management** through green stormwater infrastructure. While green infrastructure is not explicitly addressed in a specific City plan, the City's National Pollutant Discharge Elimination System (NPDES) permit, required for the operations of the municipal stormwater system, requires properties meeting specific criteria to install stormwater treatment and attenuation facilities, also known as low impact development (LID) in the City. These facilities are typically designed to capture and retain a portion of storm flows, and enable them to filter through a landscape, be used as an alternative water supply, or infiltrate into the ground. For those properties that do not fall into the LID requirements, the City will provide outreach and information to encourage the installation of stormwater treatment facilities to further expand the use of green stormwater infrastructure. The City will also undertake improvements to natural water infiltration in public infrastructure.

The **2018 Yolo County Multi-Jurisdictional Hazard Mitigation Plan** outlines a number of hazard mitigation projects, many already underway, that align with recommended actions of the CAAP (Yolo County 2018). Multiple hazard mitigation projects – including several in Davis – address flood risk, corresponding to the CAAP goal of protecting public health against flood risk. Many other projects and programs are closely aligned with CAAP goals concerning single-occupant fossil fuel vehicle use, building electrification, renewable energy use, water resilience, low-water landscapes, and shelter planning for hazard events.

In 2018, City of Davis was a lead agency in developing the locally governed community choice energy utility, Valley Clean Energy Alliance (VCE), with a mission to provide clean electricity, product choice, and greenhouse gas emission reductions at competitive prices. VCE, a not-for-profit public agency, is the official electricity provider for residential and commercial customers in the cities of Davis, Winters and Woodland, and unincorporated Yolo County. VCE keeps local program control and revenues, creates jobs, builds local clean energy installations, reinvests dollars to boost the local economy and furthers a clean energy future.

In 2020, the Yolo County Board of Supervisors voted to create a new County Climate Action Plan (CAP) (Yolo County Board of Supervisors 2021). The actions recommended in this CAAP are supportive of the forthcoming County CAP, and these two efforts aim to achieve regional collaboration.

These and other regional planning efforts highlight the synergies between the objectives established in the CAAP and existing adopted goals to protect public safety and address risk. Finally, the CAAP aligns with the intention set out in the City Council's 2019 resolution declaring a climate emergency, which affirmed the City's commitment to climate action and environmental justice.

**Table 1.** Alignment between Existing City Plans/Programs and CAAP Goals

| CAAP GOAL | 2013 General Plan Transportation Element | 2013-2021 Housing Element Update to the General Plan | 2002 Community Forest Management Plan | 2018 Open Space 2030 Strategic Plan | 2020 Urban Water Management Plan | Residential Energy Efficiency Reach Code | 2018 Yolo County Multi-Jurisdictional Hazard Mitigation Plan | Davis Downtown Specific Plan *(in progress)* |
|---|---|---|---|---|---|---|---|---|
| Transition to high-efficiency, zero-carbon homes and buildings | | ● | | | | ● | ● | ● |
| Expand local renewable energy development and storage | | ● | | | | ● | ● | |
| Adopt zero-emission vehicles and equipment | ● | | | | | ● | ● | |
| Increase opportunities for active mobility | ● | | | | | | | ● |
| Strengthen transit service within Davis and between regional neighbors | ● | | | | | | | ● |
| Reduce single-occupant vehicle use | ● | | | | | | ● | ● |
| Expand opportunities for local housing development to balance local employment opportunities | | ● | | | | | | ● |
| Conserve water in our buildings and landscapes | | | | ● | ● | | ● | ● |
| Create a cooler city with more urban forest and green space for people and habitat | | ● | ● | ● | | | | |
| Protect public health and safety from extreme heat and wildfire smoke | | | | | | | ● | |
| Protect public health, safety, and infrastructure against damage and disruption from flooding | | | | | ● | | ● | |
| Prepare and respond to climate hazards to ensure that the City is equipped to address current and future challenges | | | | | | | ● | |
| Demonstrate climate leadership through innovation, education, and investment | | | | | | ● | | ● |
| Reduce waste generation and increase diversion away from landfills** | | | | | | | | ● |

***As of December 2022, plans are well underway to implement City of Davis programs to address implementation of Senate Bill 1383, California's Short-Lived Climate Pollutant Reduction Strategy, related to organic waste recycling and surplus food recovery.*

## CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

California Environmental Quality Act (CEQA) Section 15183.5 offers local governments an opportunity to streamline subsequent CEQA review processes by creating a GHG emissions reduction plan which may be used for later CEQA review of plans and projects consistent with the GHG reduction strategies in this plan (*Tiering and Streamlining the Analysis of Greenhouse Gas Emissions* 2010). In compliance with Section 15183.5, the CAAP addresses the six necessary Plan Elements as defined in California law:

- Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.
- Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable.
- Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area.
- 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.
- 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.
- Be adopted in a public process following environmental review.

## SENATE BILL 379 AND CALIFORNIA GOVERNMENT CODE 65302

California Senate Bill 379 (2015) amended Government Code Section 65302 to require cities to adopt comprehensive, long-term general plans that address environmental risks (*General Plan* 2022). The CAAP addresses the following areas in compliance with Section 65302:

- **Vulnerability Assessment [Government Code Section 65302(g)(4)(A)]:**
  Create a vulnerability assessment that identifies both the risks posed by climate change, including flood and wildfire, and the geographic areas at risk.
- **Goals, Policies and Objectives [Government Code Section 65302(g)(4)(B)]:**
  Create adaptation and resilience goals, policies, and objectives based on this vulnerability assessment.
- **Climate Change – Feasible Mitigation [Government Code Section 65302[g][4][C]):**
  Create a set of feasible implementation measures designed to carry out these goals, policies and objectives.

# CHAPTER 2.

# Plan Development and Community Engagement

# 2.1 Community Engagement Summary

Community engagement and environmental justice were integral components of developing the CAAP to address climate vulnerability and attain carbon neutrality by 2040. As stated in the March 2019 *Resolution of the Council Declaring a Climate Emergency and Proposing Mobilization Efforts to Restore a Safe Climate*:

> *"the City of Davis affirms the need for the understanding, participation and support of the entire Davis community…in response to the climate emergency; the City therefore commits to providing outreach, information and education for Davis residents and City staff on the urgency of climate responses, reduction of greenhouse gas emissions, the policies and strategies to advance sustainability and resilience"; and*
>
> *"the City of Davis recognizes community environmental justice and commits to keeping the considerations of disadvantaged communities central to the…planning processes, and to invite and encourage these communities to directly advocate for their specific needs and equity in the environmental justice process."*

The CAAP project engagement framework, guiding the CAAP update, incorporated three main components of input and expertise in developing actions for community carbon neutrality by 2040: 1) internal City team, 2) external Technical Advisory Committee (TAC), and 3) the significant role of community engagement. This section primarily addresses the input and results from the community engagement.

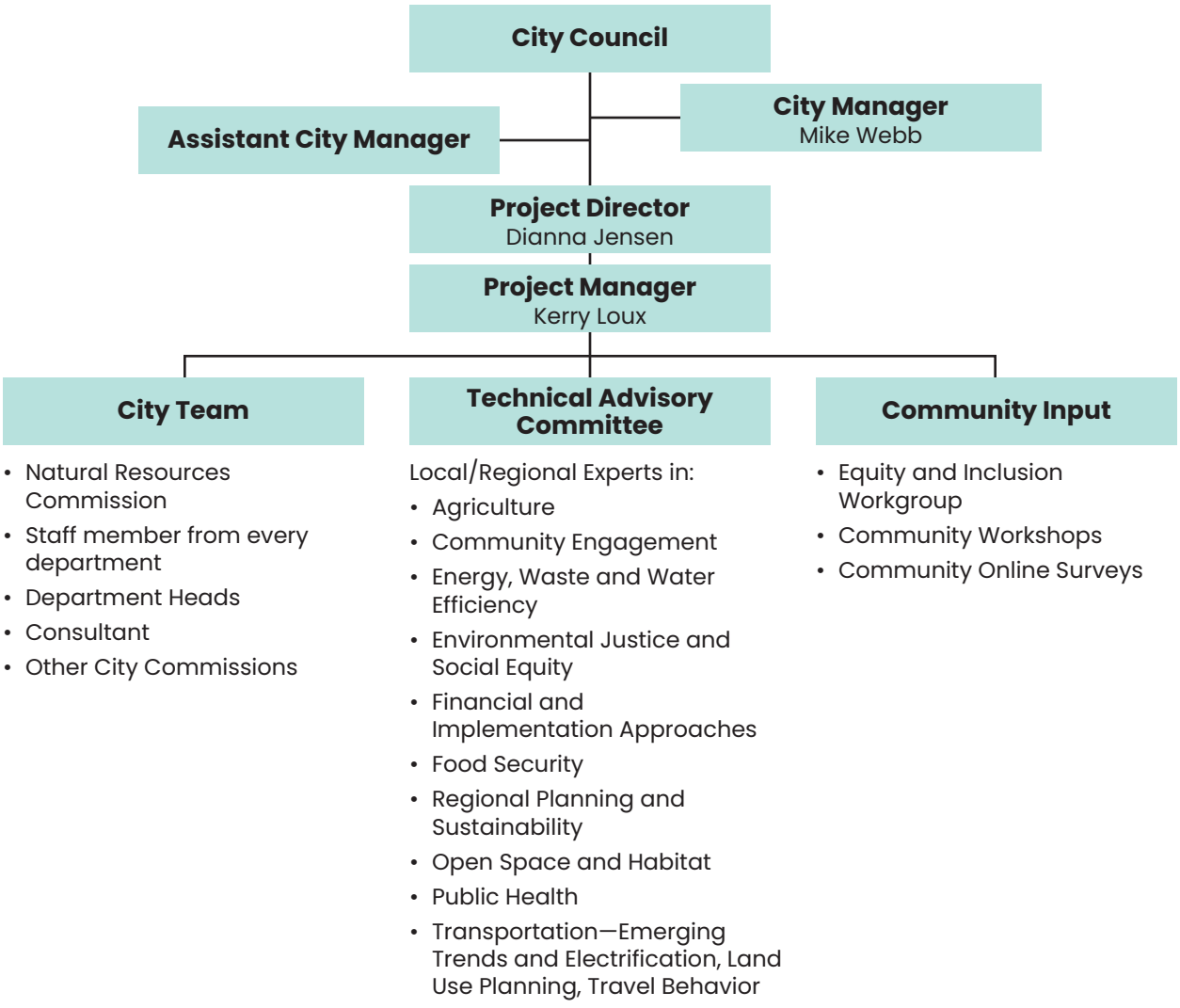
1. The **internal City team** included the CAAP project management team (Project Director and Project Manager), an interdepartmental City staff team with representatives from each City department and relevant staff liaisons to City Commissions. The City Council was considered part of this team, with the Natural Resources Commission (NRC) as lead CAAP advisory body to the Council. All City Commissions were invited to appoint a CAAP NRC liaison to receive monthly CAAP project updates and participate in NRC discussions. The NRC has included a CAAP update on the regular agenda or had a Special CAAP Meeting 24 times between January 2021 and December 2022.

2. The **Technical Advisory Committee** (TAC) included local and university experts representing areas of expertise and knowledge related to climate action planning, community engagement, transportation, energy and other sectors, with the goal of providing technical assistance to the City team. The list of TAC members and their area of research/expertise, the proposed meetings and topics, and other information have been included on the City's CAAP webpage since the TAC was formed in February 2021. TAC roles included providing feedback/insight on CAAP project milestones, expertise on technical topics within the Davis context, input on high-level strategies and how to implement deep carbon reduction actions. The TAC did not have decision-making responsibilities so Brown Act requirements regarding TAC meetings did not apply. The CAAP project engagement framework was specifically established to provide ample opportunity for these other significant stakeholders to fully participate and provide expertise. The TAC met seven times between February 2021 and December 2022.

**3.**

The **Community** was a primary contributor and focus of the Davis CAAP engagement approach and will be integral to successful plan implementation once the CAAP is adopted. Since the CAAP development occurred during "in-person meeting" limitations imposed by the COVID-19 pandemic, every effort was made to engage community members remotely and to meet in-person when possible. Workshops, pop-up meetings, online surveys and a community forum website conducted between April and November 2021 are described in more detail in the following sections. The ad hoc "Equity and Inclusion Workgroup" met twice early in the process, and individuals also provided insight to the project management team throughout action development. A dedicated page on the City's website provided information and links to all CAAP actions and meetings. To implement effective outreach, the project management team used resources of the City's communications team, press releases, lawn signs, social media and internal and external stakeholder and working groups, including the Healthy Davis Together network, the City's Greener Davis monthly newsletter, UC Davis partnerships and support from community-based organizations such as Cool Davis.

**Figure 1.** City of Davis CAAP Engagement Framework



## WORKSHOPS

### 2.1.1.1 Workshop #1—April 22, 2021

The first workshop was designed as an introductory CAAP conversation to help the community understand why Davis is undertaking this plan, learn more about actions that can be taken to reduce community carbon footprint and prepare for extreme events, provide input, and share ideas to shape climate actions and learn about additional opportunities for participation. The two-hour workshop conducted via Zoom meeting on Earth Day 2021 included an additional hour for open discussion. Overall, there were 106 people in attendance.

The workshop presented information on Davis' GHG emissions inventory and forecasts and an overview of the completed Vulnerability Assessment to understand Davis' climate threats. This was interspersed with opportunities for clarifying questions and discussion about the primary CAAP benefits of GHG reduction and addressing climate risks. Two breakout sessions included a small group discussion with a facilitator, notetaker and 8-12 community members participating. The project management team used the information gathered at the workshop to identify key concerns, action ideas and extra or "co-benefits" of interest to community members. The top three co-benefits were:

- air quality and public health,
- environmental stewardship, and
- racial equity and social justice.

Potential feasibility issues for CAAP implementation were identified as:

- City authority to implement action,
- public support, and
- additional capital required to implement action.

### 2.1.1.2 Workshop #1A— May 27, 2021

Based on input from the ad hoc Equity and Inclusion Working Group formed specifically to provide input on addressing the needs of vulnerable populations, an additional introductory workshop specifically addressing Community Resilience and Equity was added to the schedule, with a date to coincide with World Day for Cultural Diversity, recognized in Davis through a City Council proclamation. The meeting goals were to listen to "lived life experience" of community members impacted by climate change, learn from each other about these impacts, and begin to discuss how climate action implementation can address equity and inclusion in the Davis context in an implementable, measurable, and enforceable "roadmap" to community carbon neutrality by 2040. The Zoom workshop included 65 participants.

Two panel discussions were presented at the workshop. The first panel was moderated by Davis Mayor Gloria Partida, with the purpose of sharing personal experiences related to youth, agricultural workers, renter/affordable housing, and indigenous perspectives. Three community members included an elementary school student, a small farm owner and a Davis mother, educator, youth, and community organizer. The second panel, moderated by Jonathan London, Faculty Director, UC Davis Center for Regional Change, targeted providing a vision for how to incorporate community resilience and equity in the CAAP. Three panelists represented advocacy specific to youth/college age, families, mental health, immigrants, gender, race, Spanish-speaking and other equity issues, and included a UC Davis undergraduate Sunrise Movement member, co-founder of ApoYolo, and a representative of Mothers Out Front and Maestra of traditional Aztec dance group Calpulli Tlayolotl.

Interspersed throughout the workshop, community participants were asked to respond to four polling questions related to community and regional efforts, public health and the environment, infrastructure and buildings and transportation. A summary of the key takeaway from the workshop was made by one of the panelists, "resource extraction processes that are most responsible for climate crisis are not created by marginalized communities, but marginalized communities inherently suffer the most."

There was basic agreement that a significant class divide exists in Davis and must be addressed when developing CAAP actions and implementation. Specific suggestions included the need to re-center programming and policy advocacy towards achieving equity. For example, universal design can be used as a model for resilience strategies related to access, affordability, focus on underserved communities, reaching people where they are and opening leadership and program design opportunities. In response to both the *Climate Emergency Resolution* and this workshop's input, during the action evaluation and prioritization process, Racial Equity and Social Justice was weighted at double the value of other co-benefits and feasibility criteria to ensure that equity is centered within the CAAP.

#### 2.1.1.3 Workshops #2A and B; #3A and B—July 14, 16, 28 and 30, 2021

Four Zoom workshops in July 2021 focused on identifying potential actions using community discussion and Mural, an online interactive collaboration tool. Participants recorded ideas directly into the virtual forum using prompts for approaches to GHG reduction and addressing climate risk. Verbal comments and responses in the "Chat" feature were also added by facilitators for those uncomfortable with, or unable to use, the technology. Additionally, the Mural boards were available for more comments and review for a month following the workshops.

The topic of the first two workshops, "Mobility and Public Spaces," included actions related to reducing use of all cars; increasing opportunities and incentives for using electric vehicles, transit, and active transportation—buses, trains, biking, walking, and rolling; design of streets and sidewalks; and plants, urban forest, parks, open space, and habitat. The second set of workshops focused on "Buildings, Waste and Water" and included actions related to increasing energy efficiency, green infrastructure; renewable energy and battery storage, electrifying buildings (to reduce natural gas use); waste reduction, reuse, recycling, and composting; and water conservation and other issues.

#### 2.1.1.4 Workshop #4—November 10, 2021

The November workshop received community responses to the draft prioritized actions and clarified any community questions about actions. With all the proposed actions presented, the discussion included identifying actions with community support and/or least preferred actions and additional actions that should be elevated to priority status. The entire workshop was conducted with the whole group of participants, rather than in breakout groups, so all could participate fully and hear community discussion.

### "POP-UP" MEETINGS AND SMALL GROUP DISCUSSIONS

Specific interest groups were prioritized for engagement through pop-up meetings and discussions to meet key community groups "where they are." These included five events at Davis Farmers Market, presentations to community partners such as the Cool Davis Coalition, Davis Electric Vehicle Association and Davis Chamber of Commerce, talking with seniors at Rancho Yolo, meeting with college students at UC Davis, among other meetings. Results of these conversations were incorporated into the action development and prioritization process.

### ONLINE SURVEYS

Two online surveys, available during May 2021 and July-August 2021, reflected information and sought input that was similar to workshop content. The first online survey was available in English and Spanish, had 238 responses, provided significant background and introductory information, and identified outreach gaps, such as low response by college students and renters, which was then addressed more fully in subsequent outreach to target participation by these groups. An example survey question asked about important co-benefits beyond carbon reduction and minimizing climate risk. Community members identified improving air quality and environmental stewardship as key values. Other values ranked highly were parks, open space and habitat, water conservation, waste reduction and public health improvements.

The second survey, with 112 responses, addressed community preferences for the draft prioritized actions. There was strong support for increasing affordable housing and addressing the relationship between land use and transportation, providing free transit with increased routes/ frequency and a regional express service, incentivizing rental energy efficiency and air filtration, expanding the urban forest and increasing shade to reduce urban heat island impacts, investing in community solar energy and food recovery and distribution.

## OTHER COMMUNITY OUTREACH AND COMMUNITY FORUM

Additional information was provided through other public outreach, including the City's CAAP website, social media, press release channels and monthly progress staff reports to all City Commissions. Monthly public meetings were provided through a regular CAAP item on each NRC agenda since February 2021, allowing for incremental and regular CAAP community engagement. Also, a dedicated CAAP email linked on the website allowed access to the project management team. An online community forum, open from August 2021 to February 2022, gained further input by identifying all prioritized actions with an opportunity to comment and see posts from other community members. Through these avenues, the project management team was able to be responsive to community suggestions, information requests and adjust products and schedules in response to public input, all indicative of the importance of the community-based approach in developing the CAAP update.

## COST-EFFECTIVENESS ANALYSIS

The 28 proposed prioritized CAAP actions were presented to City Council in December 2021. At that time, City Council requested further analysis on each of these actions for cost effectiveness analysis and GHG reduction potential. The results were presented to, and approved, by City Council in May 2022.

The cost-effectiveness analysis evaluated the cost per metric ton of GHG emission reductions resulting from each action, following the methodology used by CARB in their Scoping Plan. The cost-effectiveness analysis was a decision support tool that assessed the relative impacts of the prioritized actions.

The cost-effectiveness analysis included all costs and savings associated with each action, regardless of who pays or benefits (e.g., public agencies, businesses, consumers, and other stakeholders). Specific costs analyzed include upfront or capital expenditures, and operations and maintenance costs. Savings included in the analysis are energy savings in the target year (2030 or 2040), and savings incurred by avoiding all non-energy business-as-usual costs in the target year, such as maintenance costs. All costs and savings were annualized to the target year (e.g., 2030) to illustrate the estimated net costs per metric ton of GHG emission reductions in the target year. The analysis did not consider cumulative costs, or the climate and health benefits associated with GHG reduction measures. It highlighted the correlation between higher costs associated with implementing actions and higher GHG emission reductions.

# Action Selection, Evaluation, and Prioritization Process Summary

2.2

## THE ROLE OF ACTION PRIORITIZATION

Action prioritization is a crucial step in creating a CAAP because it leads to a more implementable and impactful plan. In an ideal world, cities would be able to pursue all actions necessary to achieve carbon neutrality and climate resilience simultaneously, but cities have limited resources and competing needs. When City and community priorities are factored into action selection, the City is more likely to meet its objectives around GHG emissions reduction and climate adaptation goals. Since implementation of actions can result in co-benefits that may not be accounted for in a typical GHG emissions reduction or climate risk analysis, it is useful to assess the additional or indirect impact an action may have. In conducting a CAAP action assessment, establishing evaluation criteria can help select actions that align with City priorities. Additional details on the action selection, evaluation and prioritization process are in Appendix E.

The City of Davis received more than 900 comments during its public outreach process, including many CAAP action ideas. The community comments were consolidated into 95 potential actions that were evaluated using the Action Selection and Prioritization (ASAP) Tool (a freely available tool created by the C40 Cities Climate Leadership Group for city climate action planning). Many of the suggested action ideas relating to outreach, education, and advocacy were not included in the ASAP evaluation process because, while the efforts might enhance or supplement an action, they would not directly result in significant GHG emissions or climate risk reductions. However, those ideas relevant to specific CAAP actions are incorporated into Appendix A: Implementation Roadmaps, as part of the Outreach and Education Opportunities or in other sections of the Roadmaps.

Ideas provided during the community outreach process are considered potential engagement ideas that the City can use to support CAAP implementation. Some of the outreach and education opportunities to be explored included:

- Create a placemaking committee to address local ways to reduce GHG emissions and illustrate these approaches in unique and innovative ways in Davis
- Create an equity committee to address actionable ways to enhance climate justice in Davis
- Promote more community art events to educate on climate issues
- Utilize student community service requirements from elementary through high school and through partnerships with relevant UC Davis programs
- Work with students, teachers, Parent-Teacher Associations, City staff, local businesses, and others to provide classroom workshops for students on local sustainability actions
- Provide information about local healthy food resources
- Create a 'Sustainability Center' to highlight existing and emerging sustainable technology, provide outreach and educational opportunities, include assistance on goal implementation and economic development, and track/communicate progress
- Encourage regular neighborhood and community gatherings to increase social resilience and promote sharing of sustainable ideas and practices

## ASSESSING CAAP ACTION IMPACT: THE ASAP TOOL

The ASAP tool is a decision-making framework designed to help cities weigh the competing benefits and challenges associated with different action options and was used to evaluate and prioritize Davis' potential CAAP actions. Within ASAP, actions are assessed for their primary climate benefits (i.e., GHG emissions and climate risk reduction), co-benefits (e.g., public health, environmental stewardship), and implementation feasibility (e.g., authority level, costs). The outputs of each evaluation are used to compare actions holistically. The ASAP evaluation process is valuable because it offers comparative insights among possible action options and provides a transparent method to identify a sub-set of priorities that will best achieve a community's desired outcomes.

Importantly, the ASAP tool allows users to customize evaluation criteria and tailor the prioritization process to community values. After conducting community outreach and assessing local government considerations, the project team selected three co-benefit and three feasibility evaluation criteria to reflect community priorities. The ASAP tool was then used to evaluate each action's performance on these criteria as well as the actions' GHG and climate risk reduction potential.

## EVALUATION CRITERIA: PRIMARY BENEFITS, CO-BENEFITS & FEASIBILITY

The ASAP tool assigns each potential action a score that can be used to compare the primary climate benefit(s) of an action to other potential actions, as well as to allow the primary benefits to be considered in relation to the co-benefits preferred by the community and the City's feasibility considerations.

### 2.2.1.1 Primary Climate Benefits

The primary benefits of the CAAP are GHG emissions reduction and climate risk reduction. The ASAP tool was used to estimate each action's GHG reduction potential relative to the other actions evaluated. The resulting GHG Reduction Score was a measure of the *potential* for an action to reduce GHG emissions (but not the actions' specific GHG reduction estimates, which were developed in greater detail later in the CAAP development process). Risk reduction scores were also developed to rate each actions' ability to reduce climate risk based on the likelihood of occurrence and severity of impact related to the City's climate hazards (extreme heat, drought, wildfires/air quality and flooding).

### 2.2.1.2 Co-benefit Criteria

Informed by community engagement feedback, the City selected co-benefit criteria that reflect community values. Co-benefits are benefits generated by actions beyond the primary benefits of GHG emissions reduction and climate risk reduction. **Table 2** summarizes the co-benefit criteria the City selected as being the most important secondary factors to consider in the CAAP process (Air Quality & Public Health, Environmental Stewardship, Equity & Inclusion).

**Table 2.** Co-Benefit Criteria Definitions

| EVALUATION CRITERIA | DEFINITION |
|---|---|
| **Air Quality and Public Health** | Improve public health through reduced incidents of diseases and/or death attributed to improved air quality (indoor and outdoor), water quality, or increased physical activity. |
| **Environmental Stewardship** | Promote natural resource, environment, and/or greenspace conservation, creation, or regeneration. |
| **Equity and Inclusion** | Address an existing inequity in the community, such as disproportionate poor air quality, access to transit, energy burden, flood risk, etc. |

Each potential CAAP action was rated on a qualitative ranking scale based on the degree to which implementation of the action would positively or negatively impact the co-benefit. Unless the action language specifically stated that it addresses vulnerable populations, actions were rated for their *potential* impact on Equity & Inclusion. **Table 3** outlines the definitions and scoring rubric.

**Table 3.** Co-Benefit Scoring Rubric

| RATING | SCORE | AIR QUALITY & PUBLIC HEALTH AND ENVIRONMENTAL STEWARDSHIP CO-BENEFIT IMPACT | EQUITY & INCLUSION CO-BENEFIT IMPACT |
|---|---|---|---|
| **Very Positive** | 2 | The action has a positive impact across the community | The action has a positive impact on and specifically targets vulnerable groups |
| **Somewhat Positive** | 1 | The action has a positive impact across a small portion of the community or a slightly positive impact across the entire community | The action has indirect positive impact on vulnerable groups |
| **Neutral** | 0 | The action has no impact, the impact is unknown, or the positive and negative impacts may negate each other | The action has no impact, the impact is unknown, or the positive and negative impacts may negate each other |
| **Somewhat Negative** | -1 | The action has a negative impact across a small portion of the community or a slightly negative impact across the entire community | The action has a negative impact on vulnerable groups |
| **Very Negative** | -2 | The action has a negative impact across the community | The action has a large and disproportionate negative impact on vulnerable groups compared to non-vulnerable groups |

### 2.2.1.3 Feasibility Criteria

Feasibility criteria suggest how easy or difficult it will be to implement a particular CAAP action. Assessing action feasibility provides important context for decision-makers as they contemplate things like optimal launch timing, the need to pursue funding, and gauging staff capacity. These feasibility criteria will influence the likelihood of successful implementation. **Table 4** summarizes the scoring rubric used to rate the three feasibility criteria selected by the City (City Authority, Capital Cost, Public Support).

**Table 4.** Feasibility Criteria Scoring Rubric

| EVALUATION CRITERIA | DEFINITION | RATING GUIDE | SCORE |
|---|---|---|---|
| **City Authority**[1] | Does the City have the legal authority to implement this action, or would it need to be implemented by another entity, such as the national government, a utility or agency outside of the city, or the private sector? | Yes, under existing policy | 2 |
| | | Yes, but would require new policy | 1 |
| | | No, joint authority | -1 |
| | | No, outside City authority | -2 |
| **Additional Capital Required to Implement** | Beyond any funding that is currently secured or identified, how much additional capital would be required to implement the action (capital expenditure)? | No cost: $0 | 2 |
| | | Very low cost: $0-59k | 1 |
| | | Some cost: $60k-499k | 0 |
| | | Large cost: $500k-999k | -1 |
| | | Very large cost: >$1mil | -2 |
| **Public Support** | Is the behavior or technology change encouraged by this action favored or disfavored based on public opinion? | Majority positive | 2 |
| | | Minor positive | 1 |
| | | Neutral/mixed | 0 |
| | | Minor negative | -1 |
| | | Majority negative | -2 |

[1] *No zero rating was defined for this evaluation criterion*

Following the initial action evaluation process, the project management team compared the ASAP results and developed a short-list of draft priorities that reflected a balance of GHG and climate risk reduction potential, co-benefits, and implementation feasibility, with actions selected for each of the primary GHG emissions sources and climate hazards in the community. Additional internal and external stakeholder review of the draft priority list resulted in the final set of prioritized CAAP actions presented in Chapter 4. Additional CAAP action ideas generated through the CAAP engagement process are also presented in Chapter 4 and can serve as a starting point for subsequent phases of action implementation when the initial set of priorities have been completed or are underway.

# Administrative Draft and Final Draft CAAP

2.3

The Administrative Draft CAAP was released for a two-month public review period from August 8 to October 10, 2022. The document included 28 community-driven prioritized actions that had been reviewed and approved by City Council in May 2022 for 1) further development into the Administrative Draft CAAP document; and 2) as the 'project description' for completion of required environmental review. Following this public review period, the project management team considered and responded to community comments and incorporated appropriate changes to the document in order to be responsive to community interests and direction.

The Administrative Draft CAAP consolidated previous background information, analysis, action descriptions, and implementation approach into a single unified CAAP document, along with a set of appendices providing additional technical and implementation information. Intended to generate public review and comment, the Administrative Draft CAAP purposefully did not include all of the layout, color, photos or graphic elements which are now included in the Final CAAP. The Draft was posted on the City's website, promoted on social media, and announced in press releases throughout the review period. The City received more than 400 discrete responses to the CAAP document from the online comment portal or through email.

The most significant change to the proposed CAAP actions was incorporated soon after the close of the public review period, before further development of the Final CAAP. More than half of the comments received were related to the draft building energy action, "electrification at point of sale." Subsequently, this action was modified based on community input. On October 14, 2022, the City released a statement that the action was being changed. The main modifications were to encourage voluntary electrification of buildings; utilize extensive education and outreach materials to help property owners make informed decisions; remove the point of sale requirement; and remove the 2025 timeline for developing a point of sale ordinance. Although the changes to this action could impact attainment of the 2040 carbon neutrality target, the City decided it was most important to listen to community concerns, and to address further efforts toward phased building electrification at a later time when there is stronger community support and more decisive statewide actions on this approach.

Other responses to community comments and edits are incorporated into this resulting Final Draft CAAP, presented to City Council for review and approval on December 6, 2022.

# CHAPTER 3.

# City of Davis and Climate Change

This section describes the impact that climate changes is expected to have on Davis and how Davis is contributing to climate change through its GHG emissions contributions.

# Climate Change Vulnerability Assessment Summary

3.1

The Climate Change Vulnerability Assessment (Appendix C), conducted as part of the CAAP in accordance with California Government Code Section 65302, examined how climate change hazards will affect City of Davis assets (infrastructure and natural resources), residents, and businesses. Like much of California, the City is already experiencing impacts from extreme heat events, flooding and extreme precipitation, drought and poor air quality caused by wildfire smoke and the vulnerability assessment identified how these impacts are likely to change through mid-century and end-of-century timeframes. The projected changes expected for the main climate hazards affecting Davis include:

**Extreme Heat:** An increase in the number of extreme heat days (daily maximum temperature above 103.9°F) experienced annually is projected from 5 days in 2005 to 22-28 days by mid-century and 30-50 days by end-of-century. The frequency of annual heat waves is also expected to increase, from 0.2 days per year in 1976-2005 to 2.9-3.9 per year by mid-century and 4.3 to 8.4 per year by end-of-century. Extreme heat may have serious direct health related impacts, degrade air quality, and increase gradual wear and tear on infrastructure such as energy grid, building mechanical systems, roadway pavement, etc., resulting in increased maintenance costs.

**Wildfire and Air Quality:** Since 1950, the area burned by wildfires in California each year has increased and of the 20 largest fires in California's history, eight have occurred since 2017. Wildfire frequency and intensity may increase as spring and summer temperatures increase and snowmelt occurs sooner. Additionally, wildfires in other areas of the state will result in periods of poor air quality in Davis. As wildfire risk continues to increase, these impacts may become more frequent and more severe annual events. Effects of exposure to wildfire smoke and particulate matter range from eye irritation to more serious health outcomes including heart failure, reduced lung function or death.

**Precipitation:** More intense precipitation events, delivered in a shorter wet season, are projected to increase annual precipitation from 19.7 inches to 20.6-20.8 inches by mid-century and 20.3-22.7 inches by end-of-century. Severe storms could likely increase the frequency of flooding within, as well as expand the extent of the Federal Emergency Management Agency (FEMA) flood hazard zones. Flooding could impact structures and property, including critical City facilities, local roads, and emergency services.

**Drought:** Changes in precipitation patterns could lead to more frequent prolonged droughts and as a result, the City's surface water supply allocation may be reduced substantially. Drought impacts may also include diminished groundwater supplies in the region (which provides a proportion of Davis supply), invasive species issues, potential water quality issues and impacts to the regional agricultural economy and those that depend on it.

The assessment analyzed the vulnerability of assets and populations to the climate stressors affecting Davis. Vulnerability of an asset to a given climate hazard is a function of exposure (whether the asset is in an area that will be impacted), and its sensitivity (degree to which an asset may be affected if exposed). The assessment did not cover regional vulnerabilities, although regional impacts are noted where appropriate and regional collaboration is an important part of the adaptation plan. Additionally, UC Davis assets are not specifically assessed as the university is not located within the City limits.

The assessment found that populations identified by the Sacramento Area Council of Governments' (SACOG) Environmental Justice (EJ) communities index, low-income communities and those with health issues are vulnerable to all climate hazards expected to impact Davis. These communities, in addition to outdoor workers, children and the elderly, are likely to be particularly impacted by extreme heat and poor air quality associated with wildfires due to reduced access to adequate air conditioning or air filtration equipment.

The assessment identified a number of potential infrastructure impacts from extreme heat. Extreme heat events or planned safety power shutoffs could impact emergency response infrastructure if backup power is not available. Extreme heat and poor air quality events may increase air conditioner and air purifier use and increase energy demands across the PG&E service area, which could result in brownouts if energy demand exceeds supply. Additionally, extreme heat is likely to cause impacts to energy infrastructure and electric vehicle (EV) charging/gas stations due to high sensitivity of electronic components under exposure to extreme heat. Parks and open spaces are mostly likely to be impacted by extreme heat and drought, with the greatest impacts being felt in non-natural landscapes like parks, greenbelts, and agriculture without adequate irrigation; additionally, water restrictions may be in place during a drought.

Some critical infrastructure is located within the 100-year floodplain and is vulnerable to flooding, including the Sutter Davis Hospital, potable water wells, all five of the City's stormwater pump stations, approximately one mile of Highway 113 and more than 13 miles of City streets. Additionally, flooding is likely to impact community assets such as the Davis Arts Center, two churches and two assisted living/retirement facilities. The extent of the 100-year flood plain may increase (and flood depth experienced within it) as climate change causes more intense precipitation events, increasing the vulnerability of these assets. Impacts to these assets could impede emergency response and result in major service disruption, water quality issues and flooding.

The results of the assessment informed the development of targeted adaptation strategies, presented in Section 4.2, to address these vulnerabilities.

# GHG Emissions Inventory and Forecasts

3.2

## BASELINE INVENTORY

A GHG inventory describes GHG emissions occurring because of community activities, like building energy use, transportation, and waste disposal. Establishing a "base year" inventory helps cities establish a benchmark against which to measure GHG reduction progress. Davis' baseline inventory is organized into categories, or sectors, based on the source of emissions:

1. **On-road Transportation:** Emissions associated with all on-road vehicles including passenger cars, light-, medium-, and heavy-duty trucks, buses, motorcycles, and mobile homes.

2. **Electricity:** Emissions from metered electricity consumption used in buildings and facilities; these emissions are generated by powerplants that produce electricity consumed in the community.

3. **Natural Gas:** Emissions from metered natural gas consumption.

4. **Off-Road Equipment:** Emissions from the use of off-road vehicles and equipment such as construction, agricultural, and lawn and garden equipment.

5. **Solid Waste:** Emissions from the disposal of waste in landfills; these emissions result from the decomposition of organic material sent to landfills, but do not include waste hauling emissions which are reflected in the on-road transportation sector.

6. **Water Supply:** Emissions associated with energy used for water treatment, transport, and distribution.

7. **Wastewater:** Process and fugitive emissions resulting from the domestic sewage treatment process and effluent discharge.

Davis has completed three GHG Inventories in the last two decades: inventory years 2006, 2010, and 2016. This CAAP is based on data from the 2016 GHG emissions inventory which included the Cities of Davis, Winters and Woodland and unincorporated Yolo County. This inventory, with a regional combined total as well as separate data for each jurisdiction, was prepared to promote consistency across jurisdictions and support a regional approach to climate action planning. Additionally, the inventory followed ICLEI's *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*. This reporting standard accounts for three of the seven Kyoto Protocol GHGs: carbon dioxide ($CO_2$), methane (CH4) and nitrous oxide (N2O). GHG quantities are reported as metric tons of $CO_2$ equivalents ($MTCO_2e$) — a universal unit of measurement that accounts for the global warming potential (GWP) when measuring and comparing GHG emissions from different gases. Individual GHGs are converted into $CO_2e$ by multiplying them by their GWP factors. As part of this regional process, the City of Davis GHG inventory was developed using activity data provided by the City, The Climate Registry's default emission factors and GWP factors from the Intergovernmental Panel on Climate Change's (IPCC's) Fifth Assessment Report.

As part of the CAAP update process, Davis' 2016 GHG inventory was revised and updated in 2020 using a different on-road transportation emissions calculation methodology that better aligns with follow-on climate action planning analysis. Vehicle miles traveled (VMT) estimates were developed using SACOG's SACSIM19 travel demand model and an origin-destination trip methodology that accounts for VMT associated with trips that have at least one trip end in the City of Davis (see Appendix D for details on the VMT and Origin-Destination Analysis memos). On-road vehicle GHG emission factors were obtained from the California Air Resources Board (CARB) Emissions Factor (EMFAC) model for Yolo County and combined with the VMT estimates to calculate the revised on-road transportation emissions, which were incorporated into the original 2016 GHG inventory to develop the final GHG inventory analyzed in the CAAP.

In 2016, the City of Davis generated 567,000 $MTCO_2e$. As shown in **Figure 2**, most of these emissions were generated from on-road transportation (74%). Combined with off-road equipment (4%), all transportation-related emissions represent 79% of the total. The remaining emissions came from natural gas and electricity use (15%), wastewater treatment (3%), solid waste disposal (3%), and water supply (<1%).

**Figure 2.** Davis 2016 GHG Inventory

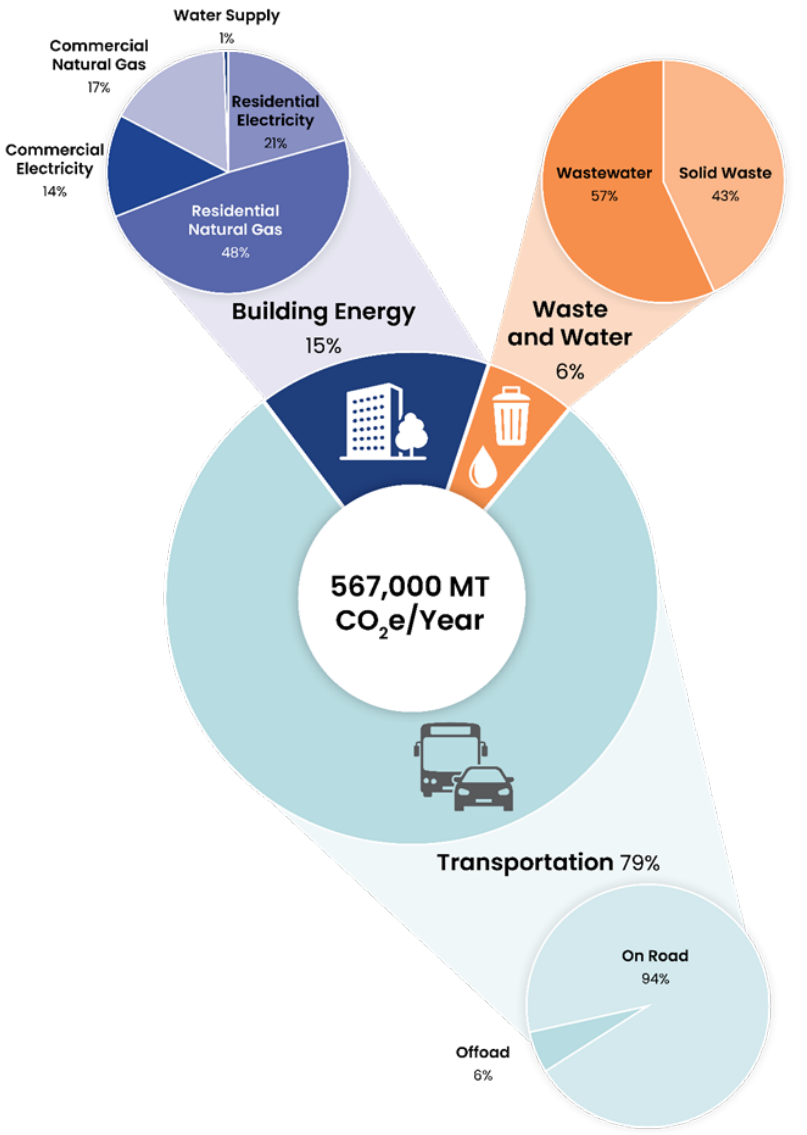


**Table 5** shows the total MT $CO_2e$/yr by emissions sector for the 2016 inventory, and as described earlier, except for the revised on-road transportation emissions, the 2016 inventory was developed by a different team and through a separate process than the CAAP update. Appendix D provides additional details about the 2016 GHG inventory.

**Table 5.** Davis 2016 Activity Data and Emissions

| EMISSIONS SECTOR | EMISSIONS (MT $CO_2e$) | COMMUNITY-WIDE TOTAL |
|---|---|---|
| **Residential Electricity** | 18,005 | 3% |
| **Residential Natural Gas** | 42,003 | 7% |
| **Commercial Electricity** | 11,891 | 2% |
| **Commercial Natural Gas** | 14,505 | 3% |
| **On-Road Transportation** | 421,357 | 74% |
| **Off-Road Equipment** | 24,825 | 4% |
| **Solid Waste** | 14,609 | 3% |
| **Water Supply** | 518 | <1% |
| **Wastewater** | 19,286 | 3% |
| **TOTAL** | 567,000 | 100% |

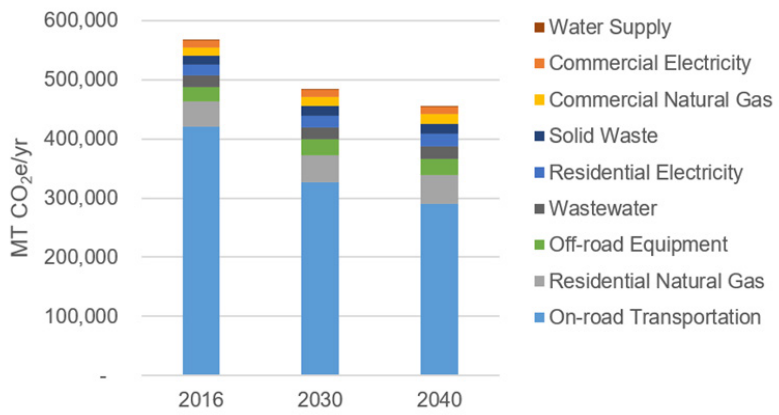
## GHG FORECASTS

Emissions forecasts can help cities understand how emissions may change over time in relation to GHG reduction targets. They also provide insight on the scale and source of reductions necessary to achieve GHG targets. Emissions forecasts can reflect implementation of applicable federal, State, and local actions as well as anticipated growth in the City's population, employment, vehicle travel and other factors.

Davis' 2016 baseline inventory was used to develop 2030 and 2040 "business-as-usual" (BAU) forecasts to align with the City's GHG reduction target years. These forecasts reflect how emissions would change over time in the absence of any further local climate action. For GHG reduction planning purposes, the forecasts incorporate the GHG reductions expected to occur in the on-road transportation sector from the state implementing its own vehicle fuel efficiency programs. However, other impactful statewide actions, such as the Renewables Portfolio Standard (RPS) to increase carbon-free electricity sources and Senate Bill 1383 to divert organic waste away from landfills, are not included in the GHG emissions forecasts due to their overlap with CAAP actions presented in Chapter 4. Emissions for each source were forecast using different growth indicators and regional or state forecasting/planning data, such as local and regional population and employment growth and future vehicle travel demand (see Appendix D).

Compared to 2016 levels, the forecasts estimate that emissions will decrease 15% by 2030 and 20% by 2040 (see **Figure 3**). The estimated reductions occur in the on-road transportation sector. Even though vehicle travel is projected to increase from 2016 to 2040, transportation emissions factors are projected to decrease over time due to implementation of the state's vehicle fuel efficiency standards as mentioned earlier.

**Figure 3.** Business As Usual Emissions Forecasts (including State vehicle fuel efficiency programs)



# 3.3 GHG Reduction Targets

GHG targets help set a community's course for climate action. In California, many communities develop plans to be consistent with the state's adopted GHG targets, including Senate Bill 32 that sets a near-term emissions target of 40% below 1990 levels by 2030. The state also has two unofficial long-term GHG targets established through Executive Orders. The first was established by former Governor Schwarzenegger in Executive Order S-3-05 and set an emissions target for 80% below 1990 levels by 2050. The second was established by former Governor Brown in Executive Order B-55-18 calling for an accelerated and more ambitious target to reach statewide carbon neutrality by 2045. The CAAP update was developed to analyze target achievement pathways for local 2030 and 2040 GHG targets as defined in the following sections. The CAAP update process established both a minimum GHG reduction target based on SB 32, as well as an aspirational target in line with per capita efficiency targets established in the 2017 Scoping Plan.

## 2030 INTERIM TARGETS

For purposes of the CAAP analysis, the City of Davis has established a minimum 2030 GHG target and an aspirational 2030 GHG target. Both targets were selected in a manner consistent with CEQA Guidelines Section 15183.5(b)(1)(B) to demonstrate the community's fair share contribution toward statewide GHG reduction targets and support future project CEQA streamlining as described in Section 2.2.2.

### 3.3.1.1 Minimum 2030 GHG Target

At a minimum, Davis will reduce its GHG emissions **40% below 2016 levels by 2030**. This target mimics the State's GHG target set in SB 32 to achieve GHG reductions of 40% below 1990 levels by 2030. As with most local governments, the City of Davis does not have a 1990 GHG inventory. However, in 2016, California's GHG emissions returned to 1990 levels, which the CAAP analysis uses as a proxy for when local governments statewide also returned to their 1990 GHG emissions levels. Achieving this minimum target will require the city to reduce GHG emissions by 143,692 MT $CO_2e$/yr below the 2030 forecast levels.

### 3.3.1.2 Aspirational 2030 GHG Target

Following guidance to local governments provided in *California's 2017 Climate Change Scoping Plan* (2017 Scoping Plan), which was available at the time of CAAP development, and the Office of Planning and Research (OPR) General Plan Guidelines, the City defined an aspirational 2030 GHG target that is also consistent with the state's 2030 target (OPR 2017; CARB 2017). The updated 2022 Scoping Plan, available at time of CAAP adoption, will be used for subsequent CAAP updates.

The 2017 Scoping Plan recommends "local governments evaluate and adopt robust and quantitative locally-appropriate goals that align with the statewide per capita targets" and that "emissions inventories and reduction goals should be expressed in mass emissions, per capita emissions, and service population emissions." Further, the 2017 Scoping Plan says that local governments should develop a communitywide GHG emissions target consistent with the accepted protocols as outlined in OPR's General Plan Guidelines, which also recommend choosing multiple target years and analyzing both mass emissions and emissions intensity to support a fuller understanding on the issue.

From a statewide perspective, the 2017 Scoping Plan identified a 2030 emissions intensity target of 6.0 tons per capita per year, which is based on the full statewide GHG inventory, the SB 32 GHG reduction target for 2030, and statewide population forecasts developed by the California Department of Finance. Following the 2017 Scoping Plan guidance to local governments, the City derived its own locally-appropriate per capita GHG target. This target-setting process compared the GHG emissions evaluated

in the community GHG inventory and those included in the statewide inventories. Davis does not include all statewide emissions sources in its local GHG inventory, so the CAAP's actions are only designed to address a sub-set of statewide emissions. Therefore, Davis' local GHG emissions intensity target is lower than the overall statewide per capita target to reflect the emissions sources over which the City can exert influence (see Appendix F for GHG Target Options Memo).

Davis' 2030 GHG target is **5.2 MT $CO_2e$/capita/yr**. This represents a 57% emissions intensity reduction from 2016 levels of 12.0 MT $CO_2e$/capita. This is also equal to an absolute GHG target of 266,883 MT $_2e$/yr in 2030 based on the population forecasts used in the GHG emissions forecasts, and would require reductions of 217,008 MT $CO_2e$/yr.

## 2040 CARBON NEUTRALITY TARGET

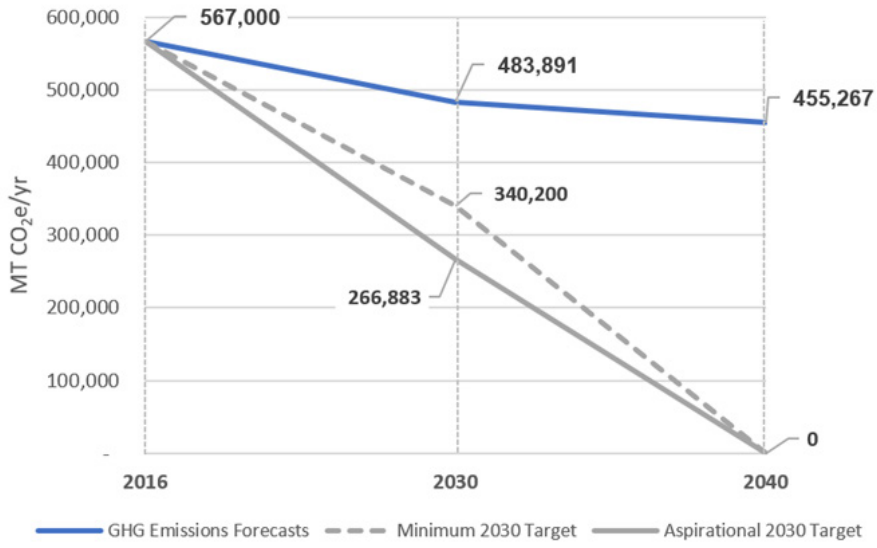
In March of 2019 the City Council approved the "Resolution Declaring a Climate Emergency and Proposing Mobilization Efforts to Restore a Safe Climate" which accelerated the City's carbon neutrality goal from 2050 to 2040 while committing to significant action to implementing carbon reduction actions by 2030. The City's 2040 carbon neutrality goal is five years ahead of the State of California's target set in Executive Order B-55-18, which called for statewide carbon neutrality by 2045 and is aligned with the IPCC 2018 report that presents multiple pathways to keep global warming levels below a 1.5˚ Celsius threshold.

To help understand when and/or how the City can demonstrate achievement of its carbon neutrality goal, the CAAP update developed the following carbon neutrality definition (Appendix F for further information on defining carbon neutrality):

> *Carbon neutrality is a zero balance in the City's emissions, demonstrated through ambitious local CAAP actions that reduce GHG emissions to the extent feasible and combined with implementation of local/regional carbon removal opportunities to remove any remaining emissions estimated to occur in the 2040 target year. These carbon removal opportunities can include agricultural practices, urban forest and open space sequestration, and other carbon removal methods as available and practical. As necessary, the City will monitor carbon markets and industrial carbon removal as secondary options for remaining emissions, including state-wide and out-of-state options.*

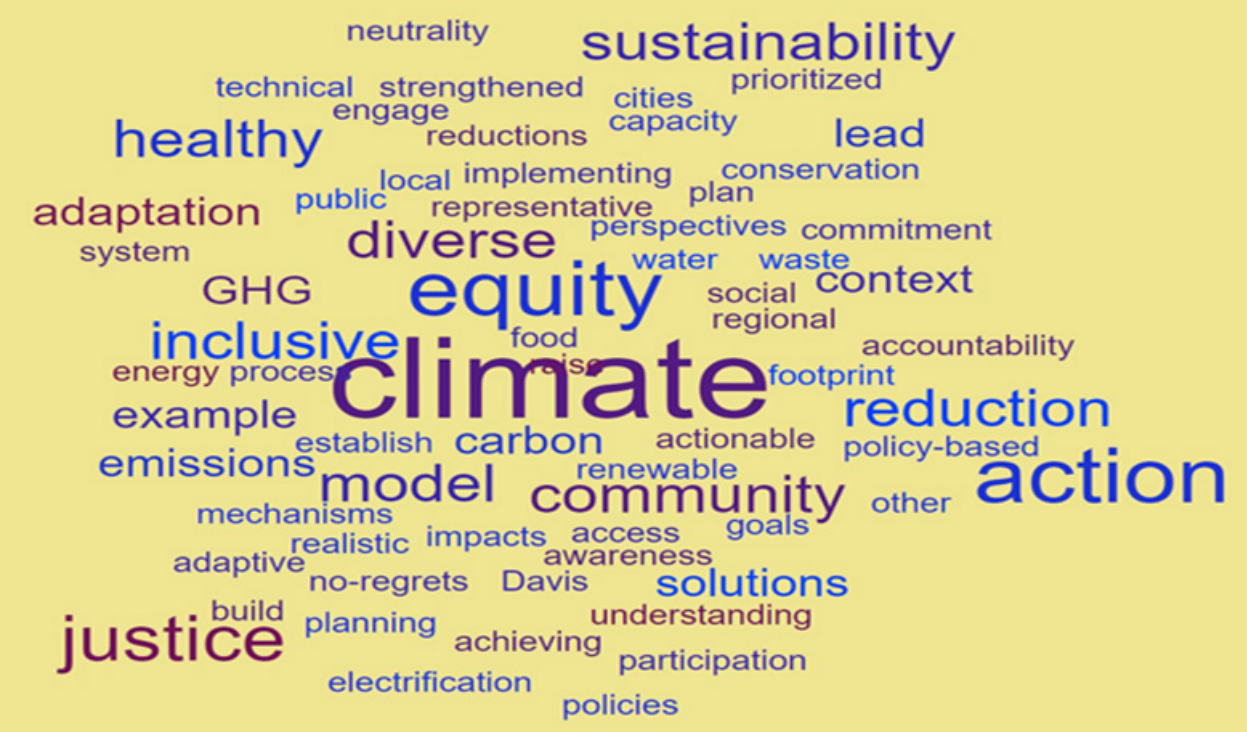
**Figure 4** illustrates the GHG forecasts and targets. The gap between the forecast line and the target lines represents the amount of GHG reductions needed to achieve the 2030 and 2040 targets. The GHG emissions forecast line represents a BAU scenario, in which no further GHG reduction actions are undertaken by the City of Davis or the State of California beyond the State's vehicle fuel efficiency standards.

**Figure 4.** Davis GHG Forecasts and Targets



# CHAPTER 4.

# Climate Actions




The initial list of potential action ideas were evaluated through a methodological and rigorous prioritization process, as discussed in Section 3.2. The prioritization process identified a set of 28 priority actions that can best advance the GHG emission reduction and adaptation goals of the City of Davis in the near-term.

Each action contributes to carbon neutrality and climate adaptation identified in this CAAP. This chapter provides an overview of each action, including substantive information on implementation, supported by Appendix A: Implementation Roadmaps. However, the CAAP is a planning document, not a fully developed implementation plan. Each action will need further development before implementation with more specific or updated information based on the City's implementation phasing and/or direction from City Council. The following sections present starting points to guide the implementation process. The graphic at the top of each action identifies the lead City department and potential key partners who will further develop and implement the action.

The roadmaps in Appendix A include more information on funding and financing resources, implementation details, performance tracking metrics, and outreach and education opportunities. The roadmaps also note where additional information will be provided in the future as implementation details come into focus. The roadmaps were largely developed by the CAAP project management team with important input from City department staff who will help lead implementation.

Successful CAAP implementation requires community understanding, buy-in and participation, requiring changes to behavior and consumption habits or other commitments to action. The City will work with partners to provide outreach and education on how actions can be understood and embraced. Incentives and benefits to community members may support increased community adoption of actions that require behavior changes. As actions are developed, more information, funding sources, and links to resources will be developed. For some actions, new ordinances or other requirements may be proposed, but only following public review, input, and City Council action.

Following CAAP adoption, progress reports on implementation, metrics and completion will be provided through an online dashboard, described in Chapter 5, and through staff reports and updates to key Commissions and City Council.

# 4.1 Addressing Equity and Inclusion in Action Implementation

The City is committed to equity in implementing the CAAP actions. As stated in the City's adopted climate emergency resolution, "remediation of [climate] impacts requires the active consultation and protection of vulnerable and historically exploited populations." In pursuing the goal of carbon neutrality by 2040, the City will continue to address these issues, incorporate honest and open-minded engagement, and adopt approaches that support low-income and vulnerable populations.

A key factor in review and analysis of action priorities was to consider co-benefits, including Equity and Inclusion. For the purpose of action evaluation, the Equity and Inclusion co-benefit was defined as issues that "address an existing inequity in the community, such as disproportionate poor air quality, lack of access to transit, energy burden, flood risk, etc." The proposed actions were ranked on a five-point qualitative ranking scale based on the degree to which implementation of the action will positively or negatively impact this co-benefit. Consideration of Equity and Inclusion through an environmental justice lens was supported through community input during an early CAAP workshop dedicated to understanding lived experiences and action recommendations, as well as through additional interviews and outreach to vulnerable and marginalized groups during the action development and prioritization process.

Actions were rated for their potential impact on Equity and Inclusion in the absence of any additional equity-enhancing measures unless the action language specifically addresses vulnerable populations. The criterion of Equity and Inclusion was given a weight of 2, essentially doubling its relative importance compared to the other co-benefit criteria. This approach was taken to elevate the importance of Equity and Inclusion in the action prioritization process and better reflect the City's values.

As actions are further developed for implementation, a deeper DEI analysis of equity considerations will be incorporated and will include definitions and solutions that are explicit, community-informed, and actionable. For example, each action should identify **who** is impacted or exposed, **what** funding will be secured and distributed to ensure equity, and **how** outreach can focus on under-resourced communities to ensure knowledge of available programs/actions/incentives. What existing conditions might disproportionately affect them? Are there ways to bring in resources beyond what the City and partners can offer? Should the timeline or implementation steps be adjusted to enhance equity? Additionally, performance tracking metrics will be developed to address equity-specific goals, such as number of affordable homes upgraded, number of low-income households benefited and by how much, amount of grant funding used, and other equity-focused metrics.

However, CAAP implementation may result in cumulative equity impacts beyond the individual CAAP action considerations. It is important to acknowledge the challenges in ensuring a fully developed equity lens during action implementation. Davis' marginalized communities bear little responsibility for the climate crisis, but it is they who will suffer the deepest burdens and consequences from the impacts of climate change. If we strive to address the needs of the vulnerable through the CAAP prioritized mitigation and adaptation actions, we take strides in addressing the needs of all.

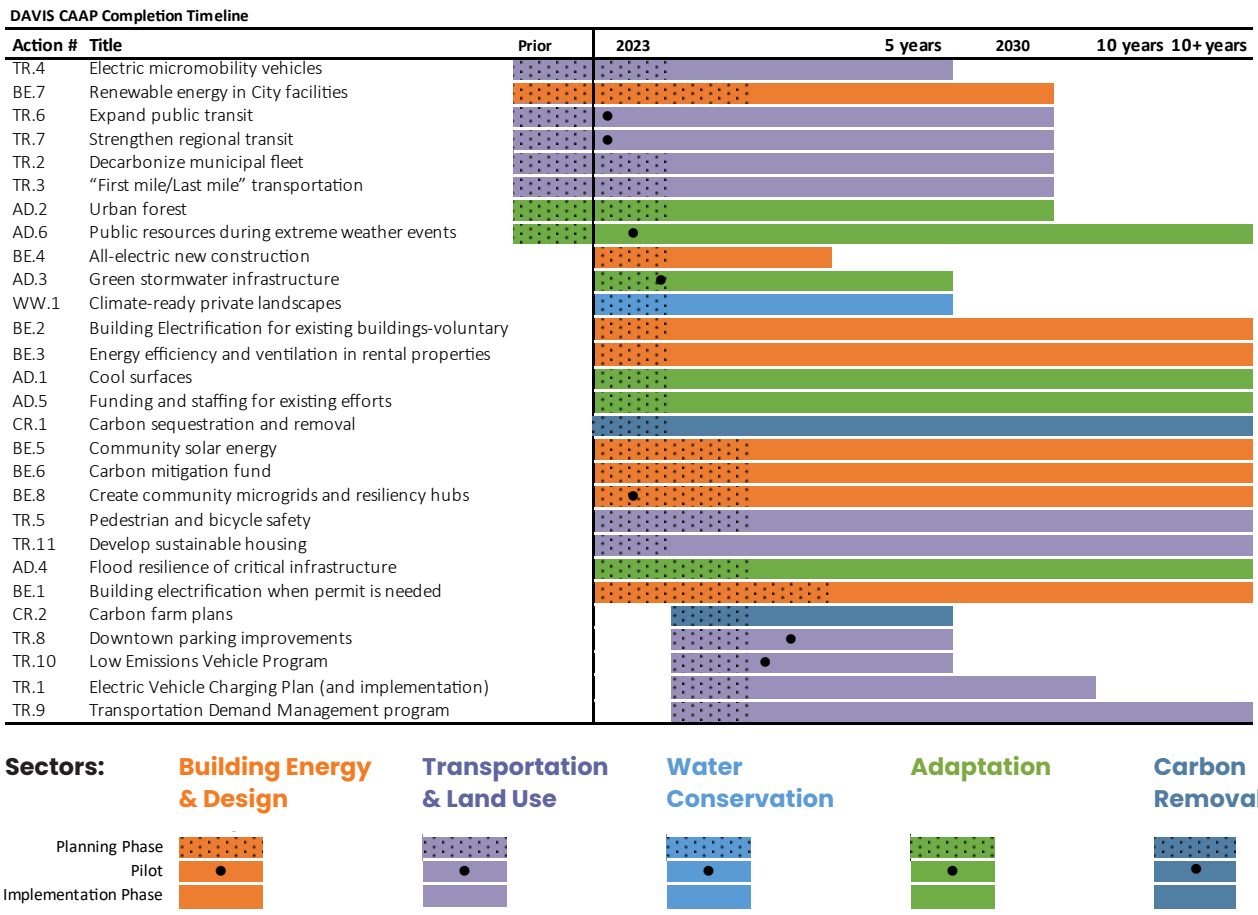
# Action Timeframes

4.2

**Figure 5** summarizes timeframes for action planning, potential pilot projects (if any), and the time for full action completion. For example, Action TR.2, Decarbonize municipal fleet was started in September 2022 with a consultant contract to develop the Fleet Transition Plan. There is no pilot project, as it is a City-only action that will be implemented over time as internal combustion engine fleet vehicles are replaced and municipal charging infrastructure is developed. However, even with an aggressive timeline, full fleet electrification will likely take ten years. Other action timelines and implementation milestones may be unknown or unclear, but best assumptions available at this time are provided where possible.

The City does not have the capacity to initiate all actions simultaneously, nor is every action equally urgent, and some actions have multiple components. Accomplishments will vary by action; some will result in physical improvements, such as number of houses retrofitted, and others will result in studies or ordinances. The relative timeframes may not be exact but provide benchmarks to assess progress.

**Figure 5.** Action Implementation Timeframes



# 4.3 Prioritized Action Organization and Details

This section presents the full list of actions considered during CAAP development, including the 28 prioritized actions. In this section, actions are organized into overarching CAAP goals as shown in **Table 6**. Each section presents a description of the overarching goal, followed by details for the corresponding prioritized actions, including a summary graphic and action descriptions. The included equity considerations are a start to identifying potential equity issues that could arise from action implementation and solutions the City can pursue to mitigate the potential issues. Action details will be further developed and discussed with the community as the actions are planned.

The graphic for each action identifies the lead City department and potential key partners who will further develop the action. Time frames with assumptions for planning over the next four years and implementation efforts between CAAP adoption to 2030 and beyond are provided but may be impacted by grant funding availability or other issues. Other summary information of relative factors is provided in the graphic. Potential staff support required is provided using information developed in the Implementation Roadmaps for each action. Municipal capital cost is provided using information developed during the ASAP process. Note that this information relates only to City costs, not to other social costs that may be incurred. These other costs were analyzed in the cost effectiveness study, but are not presented here. The GHG reduction potential qualitatively with three dots. Actions with 1 dot contribute less than 5% of total GHG reductions, actions with 2 dots contribute 5%-10% of total GHG reductions, actions with 3 dots contribute more than 15% of total GHG reductions, and actions with zero dots could not be evaluated due a lack of information or because the actions do not result in GHG reductions (e.g., adaptation actions). Finally, the climate hazards and co-benefits are illustrated with icons representing these elements. The implementation roadmaps provide progress metrics to track implementation, which will be further refined as the action planning takes shape.

Further details about prioritized action implementation can be found in Appendix A: Implementation Roadmaps, including a list of related CAAP actions, action priority level, potential completion timelines, milestones, performance tracking metrics, funding opportunities and additional equity considerations.

## ACTION TOP BAR DATA

**Lead City Department:**

| | |
|---|---|
| CD | Community Development |
| CMO | City Manager's Office |
| PCS | Parks and Community Services |
| PWET | Public Works Engineering and Transportation |
| PWUO | Public Works, Utilities and Operations |
| SSH | Social Services and Housing Department |

**Key Partners:**

| | |
|---|---|
| Amtrak | Amtrak (Capital Corridor train and bus system) |
| CalTrans | California Department of Transportation |
| Community | Community members and partners |
| DJUSD | Davis Joint Unified School District |
| Contractors | Local contractors and businesses |
| SACOG | Sacramento Area Council of Governments |
| SacRT | Sacramento Regional Transit |
| Unitrans | Davis Bus System funded jointly by Associated Students of UC Davis and City of Davis |
| VCE | Valley Clean Energy |
| YCFCWCD | Yolo County Flood Control & Water Conservation District |
| YCRCD | Yolo County Resource Conservation District |
| YCTD | Yolo County Transportation District |
| YSAQMD | Yolo Solano Air Quality Management District |

**Climate Hazards:**

Air Quality · Extreme Heat · Drought · Flood

**Co-benefits:**

- Air Quality & Public Health (AQPH)
- Biodiversity/Natural Habitat (B/N)
- Cost of Living Reduction (COL)
- Energy Resilience (ER)
- Environmental Stewardship (ES)
- Equity & Inclusion (E&I)
- Facilitates Regional Collaboration (FRC)
- Food Access/Security & Local/Fresh Agriculture (FAS)
- Job Creation & Economic Output (JC)
- Public Safety (PS)
- Quick Wins/Fast Starts (Q/F)
- Waste Reduction (WR)
- Water Conservation/Quality (WC)

**Negative Co-benefits:**

- Cost of Living Increase (CLI)

**Table 6.** CAAP Goals and Action Summary

| GOAL | ACTIONS |
|---|---|
| **Building Energy and Design (BE Actions)** | |
| Transition to high-efficiency, zero-carbon homes and buildings | BE.1 Building electrification when permit is needed<br>BE.2 Building electrification for existing buildings<br>BE.3 Energy efficiency and ventilation in rental properties<br>BE.4 All-electric new construction<br>BE.5 Community solar energy<br>BE.6 Carbon mitigation fund<br>BE.7 Renewable energy in City facilities |
| Expand local renewable energy development and storage | BE.8 Create community microgrids and resiliency hubs |
| **Transportation and Land Use (TR Actions)** | |
| Adopt zero-emission vehicles and equipment | TR.1 Electric Vehicle Charging Plan<br>TR.2 Decarbonize municipal fleet |
| Increase opportunities for active mobility | TR.3 "First mile/Last mile" transportation<br>TR.4 Electric micromobility vehicles<br>TR.5 Pedestrian and bicycle safety |
| Strengthen transit service within Davis and between regional neighbors | TR.6 Expand public transit<br>TR.7 Strengthen regional transit |
| Reduce single-occupant vehicle use | TR.8 Downtown parking improvements<br>TR.9 Transportation Demand Management (TDM) program<br>TR.10 Low Emissions Vehicle Program |
| Expand opportunities for local housing development to balance local employment opportunities | TR.11 Develop sustainable housing |
| **Water Conservation and Waste Reduction (WW Actions)** | |
| Conserve water in buildings and landscapes | WW.1 Climate-ready private landscapes |
| Reduce waste generation and increase diversion away from landfills | *No actions prioritized at this time* |
| **Climate Adaptation (AD Actions)** | |
| Create a cooler city with more urban forest and green space for people and habitat | AD.1 Cool surfaces<br>AD.2 Urban forest |
| Protect public health, safety, and infrastructure against damage and disruption from flooding | AD.3 Green stormwater infrastructure<br>AD.4 Flood resilience of critical infrastructure |
| Prepare and respond to climate hazards to ensure that the City is equipped to address current and future challenges | AD.5 Funding and staffing for existing efforts<br>AD.6 Public resources during extreme weather events |
| **Carbon Removal (CR Actions)** | |
| Demonstrate climate leadership through innovation, education, and investment | CR.1 Carbon sequestration and removal<br>CR.2 Carbon farm plans |

# GHG Mitigation Actions

## GOAL:
## TRANSITION TO HIGH-EFFICIENCY, ZERO-CARBON HOMES AND BUILDINGS

This goal seeks to lower GHG emissions by accelerating the transition from fossil fuel-powered equipment and electricity generation to electric equipment and renewable power sources. The related actions approach this goal through several means, including incentivizing highly efficient and electric new construction and retrofits to existing residential buildings (owner-occupied and leased), commercial buildings and municipal buildings, as well as offering specific programs for low-income residents. Concepts that directly promote electrification may be included in these actions, such as the creation of home- and neighborhood-based integrated electric systems with backup power including microgrids and vehicle-to-grid power management.

Inefficient buildings and systems lead to additional GHG emissions and increase utility costs for residents and businesses. Building energy efficiency can be increased through building envelope improvements with high-quality insulation or triple-paned windows, replacing older equipment like HVAC units and water heaters with newer, high-efficiency equipment, or installing LED lighting, among other strategies. Additionally, some electric appliances are more efficient than their natural gas counterparts, leading to improvements in energy intensity.

Valley Clean Energy (VCE) is the locally governed not-for profit electricity provider for the region, which includes Davis, Woodland, Winters and unincorporated Yolo County. To ensure adequate grid capacity for regional transportation and building electrification, VCE has begun to phase in electricity capacity and plan for the load to increase incrementally in response to the projected demand. The physical equipment necessary to deliver electricity to customers is the responsibility of PG&E which has previously committed to planning for load growth.

VCE programs that could help in grid resiliency include:

- **Load shifting** – increasing awareness of Time of Use Rates
- **Demand response** – responding to grid stress (VCE's Ohm Connect program)
- **Real Time Pricing Rates** – proving rates based on the wholesale energy market (VCE's Ag FIT program)
- **Vehicle to Grid** – two way charging capabilities (potential future VCE program for 2023)
- **Mircogrids** – evaluating locations for protection during grid disruptions (schools, community centers, emergency services, etc.)
- **Battery backup** – potential future VCE program to provide incentives for residential customers to use battery during peak times
- **Energy efficiency** – educating customers on the value of insulation, ducting, and efficient home technologies (as well as rebates that are available)

Electrification reduces GHG emissions by replacing natural gas appliances with electric appliances if the supplied electricity is carbon-free. Thus, this is a significant goal to meet the City's carbon neutrality target, even though building energy is currently only 15% of Davis' total emissions. Unlike the transportation sector where vehicle manufacturers have set aggressive targets to increase electric vehicle sales, there is no industry-wide commitment to decarbonizing existing buildings, which places

most of the responsibility for action at the community level. Building Energy actions primarily emphasize voluntary compliance, through education and outreach about the importance of building electrification. Because of forthcoming federal and state rebate programs such as those funded by the Investment Recovery Act (IRA), these actions should be considered a high priority.

Building Energy actions may result in costs to property owners and/or the community. For example, costs for existing buildings could include outlet and panel upgrades, electric service upgrades, and labor. The City and partners will develop approaches and guidance to help address these issues and explain costs and co-benefits (especially operational cost savings). Outreach material will include availability of funding and rebates to support the replacement of appliances and to show financial savings over time.

The City has chosen to start with community education and outreach to support voluntary electrification. The City will monitor and evaluate the effectiveness of this voluntary approach in achieving its emission reduction goals between CAAP adoption and the next projected State building code update, when mandatory decarbonization is likely to be implemented statewide. State of California updates the Building Code every three years and the latest code update, at time of CAAP publication in December 2022, will take effect on January 1, 2023. The City will continue to monitor proposed changes in the next update, projected to take effect in January 2026, and will inform community members about new requirements as appropriate.

Energy efficiency actions (including electrification) have equity benefits from reducing indoor air pollution and utility bills. Further analysis of equity will be part of action development, but some considerations for building energy actions are provided here:

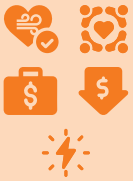
## Equity Issues:

- Cost of electrification may disproportionately burden low-income and vulnerable households.
- For those unable to afford electrification and for occupants in existing buildings with natural gas equipment, natural gas costs may rise as other customers electrify and utilities raise rates to cover the cost of infrastructure with a decreasing customer base.
- For rental properties, including multi- and single-family rentals, landlords may pass the cost of electrification on to renters.
- Electrification and/or code updates may impact the price and availability of affordable housing should the cost of electrification upgrades be reflected in rent and housing prices.
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.
- The cost of electric vehicle charging infrastructure required for new construction or upgrades may disproportionately burden low-income and vulnerable households.
- Programs to increase the availability of community solar energy programs and solar battery storage may not be fully accessible for low-income and vulnerable households.
- Electrification and efficiency financing and incentive programs may not adequately subsidize costly improvements for low-income and vulnerable households.
- For transitioning to 100% renewable energy for community members, the VCE UltraGreen option costs more than the basic electricity rate, which may pose a barrier to enrollment for low-income households.

## Equity Solutions:

- Implementation of all programs should prioritize Environmental Justice communities as identified in the Vulnerability Assessment. Any pilot programs should focus on low-income and vulnerable communities.
- Financing and incentive programs should make specific provisions for low-income and vulnerable households.
- The City should explore options to offer financial support (such as partial or full subsidies, incentives, decreased permit fees, or other actions) for all Davis residents, especially low-income and vulnerable households to offset the household costs of electrification, such as the costs of new appliances.
- Where electric panel upgrades or new service is required to electrify, the City should provide resources for planning and financial support where feasible, and to help avoid potential future impacts of natural gas utility price increases.
- Communications regarding these actions should accommodate community members' language and access needs.
- The incentive options should specifically address the potential for pass-through costs to tenants.
- Provide incentives to low-income neighborhoods to retrofit natural gas equipment with electric options to reduce emissions and avoid any rising natural gas costs associated with a decreasing customer base.
- During the reach code development process, the City should explore options to offer financial support (such as partial or full subsidies) to increase the availability of affordable housing for low-income and vulnerable populations, and any pilot programs should focus on those communities.

# Action BE.1. Building electrification when permit is needed

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CD: Building<br>CMO: Sustainability | Community<br>Contractors |  |  |  |  |  |  |  |

**GHG Reduction Potential:** **2030:** 17,900 MT $CO_2e$/yr **2040:** 33,050 MT $CO_2e$/yr

*Adopt requirements for electrification of all building systems that require permits and/or at time of remodel for additions or alterations, including space and water heating/cooling equipment, swimming pool equipment, indoor/outdoor fireplaces, and major appliances. Include specific provisions for low-income and vulnerable populations. Address financing/incentive options.*

## ACTION DESCRIPTION

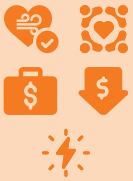
Many residential buildings in Davis have natural gas space heating, water heating, and cooking equipment. Combusting natural gas in these systems generates GHG emissions and local air pollutants (including harmful indoor air pollution), but many residents and businesses may find it financially infeasible to replace existing natural gas equipment with electric options before their end of useful life.

Under this action, the City will develop educational and outreach materials to encourage electrification and advance planning for potential equipment failure. This can also include information on financing and incentive options to increase adoption of permitted electric options for building systems to replace natural gas equipment and appliances when a permit is needed or at the time of building remodel. Other financial incentives can be discussed, such as reduced permit fees, and streamlining the permit process for electrification to incentivize this action.

The City will include specific provisions for low-income and vulnerable populations to facilitate equipment transitions. The City will monitor and evaluate the effectiveness of a voluntary program approach in achieving its emission reduction goals between CAAP adoption and the projected State building code update on January 1, 2026, when mandatory decarbonization is likely to be implemented statewide. This mandatory approach could include new requirements to electrify (or otherwise decarbonize) building equipment and systems that require permits at the time of equipment replacement or during major remodel, while again including specific provisions for low-income and vulnerable populations to assist in compliance.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action BE.2. Building electrification for existing buildings

| Lead City Department | Key Partners | Time Frame Plan-ning: 0-4 years | Time Frame Imple-menta-tion: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CD: Building<br>CMO: Sustainability | Community<br>Contractors |  |  |  |  | |  |  |

**GHG Reduction Potential:** N/A for CAAP analysis purposes, but voluntary participation in this action could provide additional GHG reductions

*Provide education and outreach to assist property owners in making informed decisions for building energy/efficiency upgrades (including information about replacement with electric or other non-fossil fuel equipment replacement) for residential and commercial properties, including any existing or anticipated incentive and financing programs. Develop a Home Energy Score (HES) program. Include specific provisions for low-income and vulnerable populations.*

## ACTION DESCRIPTION

This action works in concert with Action BE.1, Building Electrification when permit is needed. This action provides education and outreach to help property owners with informed decisions for voluntary building electrification. This proposed action was changed by the City prior to CAAP adoption, due to significant community concern about the electrification at point-of-sale timeframe, costs, and uncertainty for Davis property owners. This action now addresses voluntary electrification in existing buildings only, with no proposed ordinance for point of sale, focusing on extensive education and outreach. These changes will give staff time to research and implement incentives and financing mechanisms in support of voluntary electrification for the community.

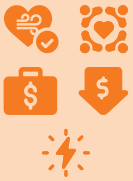
To implement this action, the City will begin by implementing a "Building Energy Score" program to provide information about the existing building energy efficiency 'baseline'. Similar programs have been developed in the Bay Area and elsewhere and will be used as models for a Davis pilot program. This program can be paired with providing outreach and information about City or other sources of financing, funding resources, incentive and other assistance for property owners to voluntarily improve their energy efficiency and/or opt for electrification to replace natural gas equipment.

Electric equipment options can increase property values, decrease operational costs and help ensure that occupants are afforded a healthy, safe and efficient building environment. In implementing this action, the City will include specific provisions for low-income and vulnerable populations.

The City will monitor and evaluate the effectiveness of this voluntary program approach in achieving its emission reduction goals.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action BE.3. Energy efficiency and ventilation in rental properties

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CD: Building<br><br>CMO: SSH & Sustainability | Rental property owners |  |  |  |  |  |  |  |

**GHG Reduction Potential:** **2030:** 8,200 MT $CO_2e$/yr **2040:** 16,900 MT $CO_2e$/yr

*Develop financing and/or incentivized options for rental property owners to make energy efficiency and cooling/ventilation upgrades. Develop policies, and/or modify the rental license program, to require minimum energy efficiency and cooling/ventilation requirements, with a priority on residential rental properties.*

## ACTION DESCRIPTION

Some properties in Davis lack proper cooling and ventilation, which will pose a greater health and occupant comfort problem as temperatures rise and wildfire frequency increases. However, increasing access to these necessities can also increase energy consumption and therefore utility costs.

Space and water heating systems in residential buildings are often natural gas equipment; many buildings also have natural gas ranges for cooking. This action addresses energy efficiency improvements and provision of cooling/ventilation systems for rental homes. Improved cooling/ventilation will help address the effects of extreme heat and wildfire smoke, while energy efficiency improvements will reduce GHG emissions. Improved, energy efficient kitchen ventilation will decrease potential health issues.

To implement this action, the City will design financing and incentive options for rental property owners to make these improvements. As with other electrification actions, the City will monitor and evaluate the effectiveness of a voluntary program approach in achieving its emission reduction goals. To encourage implementation, the City will re-evaluate the option of modifying its rental license program to include minimum energy efficiency and cooling/ventilation requirements.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action BE.4. All-electric new construction

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CD: Building<br>CMO: Sustainability | Developers |  |  | | |  | |  |

**GHG Reduction Potential:** **2030:** 1,650 MT $CO_2e$/yr **2040:** 4,950 MT $CO_2e$/yr

*Continue to update the City's residential and non-residential reach codes to require all-electric new construction and increase electric vehicle charging infrastructure requirements; adopt a requirement that all new municipal building construction must be all-electric.*

## ACTION DESCRIPTION

This action seeks to eliminate installation of natural gas appliances/equipment in new construction, including in new municipal buildings. All-electric (or otherwise decarbonized) new construction avoids "emissions lock-in," when installation of new natural gas equipment commits the community to future GHG emissions for the lifetime of the installed equipment, and future-proofs new buildings against retrofit costs.

Under this action, the City will continue to update its residential and non-residential reach codes to require all-electric new construction. Staff will also develop a requirement that all new municipal building construction will be all-electric.

The current 2019 Davis Residential Reach Code incentivizes all electric new developments by requiring a 10% energy efficiency reach code for approval of mixed fuel developments, but no reach over state code requirements for all-electric. Most new development projects since 2019 have been all-electric (e.g., Chiles Ranch and Bretton Woods). This action will also increase the availability of EV charging infrastructure, which is often one barrier to broader EV adoption. In addition to electrification, upcoming City of Davis building actions and residential and non-residential reach codes will incorporate other upgrades to City codes to decrease GHG emissions, such as actions to address carbon reduction in concrete, water conservation actions, and other approaches.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action BE.5. Community solar energy

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CMO: Sustainability | VCE |  |  |  |  |  | |  |

**GHG Reduction Potential:** **2030:** 35,300 MT $CO_2e$/yr **2040:** 43,350 MT $CO_2e$/yr

*Partner with Valley Clean Energy (VCE) to increase capacity in support of citywide building and transportation electrification, investments in community solar energy, and provide solar battery storage. Encourage all subscribers to enroll in the UltraGreen option. Develop financing/incentive options to support building and transportation energy electrification and energy efficiency improvements.*

## ACTION DESCRIPTION

VCE, the regional Consumer Choice Energy provider, offers a 100% renewable and carbon-free service option called UltraGreen. VCE also offers a variety of community programs to improve energy efficiency and EV access for customers.

This action has three components:

1. Partner with Valley Clean Energy to invest in community solar energy and provide solar battery storage. To implement this, the City may consider integration with Action BE.8, Create community microgrids and resiliency hubs. Solar installations may be developed as solar farms or related to specific community areas, such as affordable or senior housing, with a focus on local community energy projects. An assessment of community needs and potential locations and costs must first be addressed, including the impacts to low-income communities and other vulnerable populations.
2. Encourage all subscribers to enroll in the UltraGreen option. At the time of CAAP adoption, a pilot project of automatic transition to UltraGreen for all Davis customers is being evaluated, which will include developing an outreach strategy to notify customers of the benefits, environmental impacts, and costs of the transition to UltraGreen, and to provide funding to pay for the differential in cost for a pre-determined timeframe, such as three years.
3. Develop financing/incentive options to support building energy efficiency improvements and electrification. Develop additional information for implementation of financing and incentives for community properties.

To implement this action, the City will engage with VCE to expand system capacity in preparation for citywide building and transportation electrification. The City will also partner with VCE to explore opportunities for community solar energy and solar battery storage and develop approaches to encourage greater UltraGreen enrollment by Davis VCE subscribers as an early action item; over time, VCE is expected to shift to a 100% carbon-free portfolio for all customers. Additionally, the City will partner with VCE to offer financing and incentive options for building energy efficiency improvements and electrification to help support the voluntary implementation phases for actions BE.1 to BE.3.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action BE.6. Carbon mitigation fund

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CMO: Sustainability | Regional agency collaboration |  |  |  |  | | |  |

**GHG Reduction Potential:** N/A, but provides funding for CAAP implementation

*Establish a carbon mitigation fund to collect voluntary and/or mandatory payments to mitigate local emissions activities, with collected funds used to support a range of local, climate-change-related projects.*

## ACTION DESCRIPTION

The City proposes developing a carbon mitigation fund to offer financial support to projects that reduce carbon emissions. The purpose of the carbon mitigation fund is to collect and award funding for carbon removal or carbon reduction activities locally.

The City will evaluate a variety of options for program design, including working with regional partners, identifying funding sources (e.g., voluntary or mandatory payments, initial grant funding, recurring allocation from the City budget, developer impact or other local fees, cost savings from energy efficiency and GHG emissions reduction applied to "business as usual" budgets or other approaches) and defining the types of carbon reduction or removal projects that would be eligible to receive funding such as energy efficiency, transportation programs, incentives or other projects (see Appendix B).

Equity issues specific to a carbon mitigation fund include concerns that funding may not be equally accessible by all communities. If funds are generated through a mandatory payment scheme, this could disproportionately affect low-income communities if the payment structure is not carefully defined.

Project evaluation and eligibility criteria should prioritize projects that offer co-benefits to Environmental Justice communities as defined in the Vulnerability Assessment; this could include replacing natural gas equipment with electric options, providing free transit passes and/or micromobility options, installing cooling/ventilation equipment, etc.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action BE.7.
# Renewable energy in City facilities

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWOU | VCE |  |  |  |  |  | |  |

**GHG Reduction Potential:** **2030:** 750 MT $CO_2e$/yr **2040:** 950 MT $CO_2e$/yr

*Switch from fossil gas to electricity, renewable hydrogen, or other non-fossil renewables in all existing City facilities, and include a provision that the City shall upgrade to UltraGreen (100% renewable energy) with Valley Clean Energy for all municipal accounts.*

## ACTION DESCRIPTION

As the first step of implementation, the City will upgrade all municipal electricity accounts from VCE's Standard Green to the UltraGreen, a 100% renewable and carbon-free service option

Under this action, the City will develop a plan to transition municipal buildings and facilities from fossil gas to electricity, renewable hydrogen, or other non-fossil renewables. Beginning with a comprehensive audit of municipal buildings will help to understand current equipment condition and lifespan to establish a phasing schedule for retrofits that can then be integrated into capital budget planning. This audit should consider opportunities for energy efficiency improvements and on-site renewable energy generation to facilitate building decarbonization. This audit should also define City facilities to include only City-owned, or also properties leased, managed, and/or used by other entities.

In addition to its benefits for GHG reduction, cost savings, facilities improvements, and public health, a key objective for this action is for the City to serve as a model for Davis citizens and demonstrate that the City is willing to take the measures requested of its citizens.

## GOAL:
## EXPAND LOCAL RENEWABLE ENERGY DEVELOPMENT AND STORAGE

This goal seeks to expand renewable energy development and use within Davis. The actions in this goal area address municipal and private energy use by incentivizing local installation of solar and other renewable energy systems and by collaborating with VCE, the Community Choice Energy provider for Davis.

Specific equity considerations for this building energy goal include:

### Equity Issues:

- Microgrids tend to be developed in wealthier communities, further increasing climate resiliency disparities. Wealthier communities are likely to have more resources and leverage to access programs and expenditures by utilities and governments to create microgrids.

### Equity Solutions:

- Program evaluation and eligibility criteria should prioritize projects that serve Environmental Justice communities as defined in the Vulnerability Assessment.
- Since microgrids are intended to improve grid reliability and avoid undesirable outcomes, consider developing and applying a set of EJ-neutral, risk-based decision criteria. Risks to consider could include the quality and age of local grid facilities, the ability of residents to adapt to loss of power, and special facilities that would be affected by power failures (e.g., nursing homes).
- Communications regarding this action should accommodate community members' language and access needs.
- Ensure vulnerability communities are made aware of any public community microgrids or battery co-ops that can be accessed during power outages.

# Action BE.8. Create community microgrids and resiliency hubs

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWOU<br><br>CMO: Sustainability, PCS | VCE |  |  |  |  | | |  |

*Address and incentivize the creation of community microgrids, community battery "co-ops", and the networking of local energy sources. Create and/or support resiliency hubs that remain in operation during a power grid outage.*

## ACTION DESCRIPTION

Community microgrids, community battery "co-ops," and the networking of local energy sources support energy resilience by creating alternate localized energy infrastructure. In the event of power grid outages (which may increase in frequency due to extreme heat, wildfire, or public safety power shutoff events) these localized resiliency hubs could remain in operation. Additionally, if stocked with supplies, these resiliency hubs could act as weather relief centers for low-income and vulnerable community members during extreme weather events.

The Urban Sustainability Directors Network defines resilience hubs as community-serving facilities augmented to support residents and coordinate resource distribution and services before, during, or after a natural hazard event. Resilience hubs generally offer more functions beyond weather relief (e.g., cooling centers). Microgrids and resilience hubs can be developed independently of one another, with differing resilience outcomes. Microgrids provide better resiliency in the power system, supporting grid reliability, extreme heat resilience, and public safety objectives. Resilience hubs, which can be developed with or without microgrids, support broader community resilience. This action directs the City to incentivize establishment of these programs to boost energy and community resilience. The City will consider a variety of incentive mechanisms and potential resiliency hub programs. The City may consider undertaking a study on microgrid development as a possible preliminary step.

Due to a lack of current information for data analysis, the potential for GHG reduction for this action is not available. As the action is further developed, more data may become available.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Transportation and Land Use Actions

## GOAL:
## ADOPT ZERO EMISSIONS VEHICLES AND EQUIPMENT TO REDUCE FOSSIL FUEL USE

Actions in this goal area aim to reduce fossil fuel use by promoting zero emissions vehicles and equipment for public and private users. Individual actions propose various means to incentivize electric vehicles and equipment, including financial incentives, preferential electric vehicle charging rates, and trade-in credits for gas equipment.

Transportation and land use actions have equity benefits by improving air quality, addressing public health, and delivering other co-benefits. Further analysis of equity will be part of action development, but some considerations for transportation actions are provided here:

### Equity Issues:

- If infrastructure improvements such as electric vehicle charging infrastructure and shared electric micromobility storage corrals are not prioritized with equity in mind, low-income and vulnerable communities may be last to receive these amenities.
- Low-income and vulnerable communities may be less able to access certain financing and incentive programs, such as a rebate program that requires upfront payment.
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.

### Equity Solutions:

- Updates to physical infrastructure should prioritize service to Environmental Justice communities as defined in the Vulnerability Assessment. Evaluation criteria, plan updates and other implementation actions should specifically address equity considerations.
- Consider prioritizing charging infrastructure at multi-family buildings in addition to public charging stations to help solve renter access to EV charging to create a more equitable long-term solution.
- Communications regarding this action should accommodate community members' language and access needs.

# Action TR.1.
# Electric Vehicle Charging Plan

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CMO: Sustainability<br>PWET | VCE |  |  |  |  |  | |  |

**GHG Reduction Potential:** **2030:** ~~555,500~~ **55,550** MT $CO_2e$/yr **2040:** 117,250 MT $CO_2e$/yr

*Update and implement the Davis Electric Vehicle Charging Plan (2017) to determine public and private charging infrastructure needs, time frame, and implementation approach to enable all vehicles to go electric. Identify and implement the first five-year plan including specific locations and feasibility, costs, potential grant funding and partners, electric vehicle adoption needs and opportunities. Include provisions for low-income and vulnerable community members.*

## ACTION DESCRIPTION

The limited availability of public and private charging infrastructure is a barrier to broader adoption of personal electric vehicles. Strategically installing EV charging stations around the City can enhance charging convenience, attract more business, and encourage residents to transition to EVs. As at-home charging can be an issue for renters, public charging is a necessity to reach EV adoption goals.

To undertake this action, the City will update and implement the original Davis Electric Vehicle Charging Plan (2017). Plan components to be updated include public and private charging infrastructure needs, time frame and implementation approach.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action TR.2. Decarbonize municipal fleet

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET<br>PWUO Fleet<br>CMO: Sustainability | |  |  | | $ $ |  | |  |

**GHG Reduction Potential:** **2030:** 550 MT $CO_2e$/yr **2040:** 1,100 MT $CO_2e$/yr

*Develop an aggressive plan to transition the municipal vehicle fleet to alternative fuels (e.g., electric, battery electric vehicle, hydrogen).*

## ACTION DESCRIPTION

The City owns and operates a fleet of vehicles used to provide services to residents and businesses, such as safety vehicles and equipment, park maintenance vehicles and general-purpose staff vehicles. The fleet includes a mix of vehicle types and fuel use, including gasoline and diesel vehicles.

To implement this action, the City is currently in contract to complete a plan to transition the municipal vehicle fleet from primarily fossil fuel-powered vehicles to alternative fuel-powered vehicles. This plan will include exploration of various alternative vehicle types and technologies, including battery electric vehicles and fuel cell electric vehicles (powered by hydrogen), with the goal to find zero emissions vehicle options for the full fleet.

Based on technology availability, implementation will likely be phased with a focus on passenger and light-duty vehicles first, followed by medium- and heavy-duty vehicles and equipment. The City will also consider if special allowances or delayed implementation phasing should apply to specific vehicle types, such as public safety/emergency vehicles or vehicle types that do not have low-emission alternatives available.

More information on this action can be found in Appendix A: Implementation Roadmaps.

## GOAL:
## INCREASE OPPORTUNITIES FOR ACTIVE MOBILITY IN THE COMMUNITY

The objective of this goal is to transition residents away from single-passenger vehicles and towards transit and active transportation. Actions in this goal area concern micromobility and micro-transit vehicles and infrastructure, including bikes, scooters, and vans, that can provide "first mile/last mile" transportation solutions and offer alternatives to fossil fuel-based transportation.

Transportation and land use actions have equity benefits by improving air quality, addressing public health, and providing other co-benefits. Further analysis of equity considerations will be part of action development, but some considerations for transportation actions are provided here:

### Equity Issues:

- Improvements to physical infrastructure may fail to fairly address the needs of Environmental Justice communities as defined in the Vulnerability Assessment.
- Low-income and vulnerable communities may be less able to access certain financing and incentive programs, such as a rebate program that requires upfront payment.
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.

### Equity Solutions:

- Infrastructure improvements should be piloted in Environmental Justice communities as defined in the Vulnerability Assessment.
- Evaluation criteria for potential financing and incentive programs should specifically address equity considerations.
- Communications regarding this action should accommodate community members' language and access needs.

# Action TR.3. "First/last mile" transportation

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET | Unitrans<br>YCTD<br>SACOG<br>DJUSD |  |  |  |  | | |  |

*Address "first mile/last mile" and short-trip transportation needs by continuing to prioritize, fund, and implement on-going programs/partnerships and develop new programs/partnerships to provide alternative transportation options within Davis. Include specific provisions for low-income or vulnerable populations. Include specific action recommendations, pilot programs, or other ways to implement actions.*

## ACTION DESCRIPTION

Public transit ridership is low where users face limited options for the segment of their trip from their home, work or other destination to the nearest transit station, which is often referred to as "first mile/last mile" challenges. Removing "first mile/last mile" barriers as well as those for other short trips is a strategy to increase public transit use and reduce total VMT from private vehicles. Public transit riders can use micromobility devices such as bikes, e-bikes and scooters to overcome some "first mile/last mile" barriers.

Under this action, the City will evaluate options to address "first mile/last mile" and short trip challenges that might currently push travelers toward single occupant vehicles or ride hailing services like Lyft or Uber. A comprehensive strategy could include developing a shared electric micromobility program and charging plan (e.g., a communitywide program for renting e-bikes or scooters), considering a pedi-cab service program, or providing additional resources for the Safe Routes to School program.

Due to a lack of current information for data analysis, the potential for GHG reduction for this action is not available. As the action is further developed, more data may become available.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action TR.4. Electric micromobility vehicles

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET | YCTD<br>SACOG |  |  | | $ $ |  | |  |

**GHG Reduction Potential:** **2030:** 200 MT $CO_2e$/yr **2040:** 150 MT $CO_2e$/yr

*Develop financing/incentives for purchasing, using, and maintaining electric micromobility vehicles for personal use (such as bicycles, scooters, trailers). Include specific provisions for low-income and vulnerable populations.*

## ACTION DESCRIPTION

Shifting single-occupancy internal combustion engine vehicle trips to alternate modes of transportation reduces on-road vehicle travel emissions. Personal use of electric micromobility vehicles such as bicycles and scooters are one means to achieve this mode shift. Compared to pedal options, electric micromobility options are useful for longer trips, for those with physical limitations, or to improve rider comfort during hot days. These options can better relieve traffic congestion and address the first/last mile problem of accessing other forms of transit.

Under this action, the City will develop financing and incentives for individual purchase, use and maintenance of electric micromobility vehicles. This action will include specific provisions for low-income and vulnerable populations.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action TR.5.
# Pedestrian and bicycle safety

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET<br>PWOU | DJUSD |  |  | |  | | |  |

*Encourage active transportation with infrastructure improvements. Implement roadway and bikeway infrastructure improvements in existing right-of-way, such as "road diets," narrower pedestrian crossing distances, green stormwater infrastructure, etc., to meet Green Streets standards and increase safety for pedestrians and bicycles.*

## ACTION DESCRIPTION

Making travel routes and intersections safe, accessible, and convenient for pedestrians and cyclists is one way to reduce VMT from fossil fuel-powered vehicles. A "road diet" typically involves reducing the number of travel lanes and travel widths for on-road vehicles (e.g., cars, trucks) to provide more space for bike lanes, wider sidewalks, pedestrian crossing islands and other safety features. "Road diets" improve safety for vehicles, pedestrians, and bicycles, including by narrowing pedestrian crossing distances.

Also related to public space and public rights-of-way, "Green Streets" concepts incorporate technology and design elements to better manage stormwater and urban runoff by slowing the movement of stormwater to discharge points, allowing greater infiltration, and acting as an initial filter. Most flooding in Davis is the result of sheet flow on impervious surfaces and the installation of green streets strategies would improve perviousness. Green Streets also include increased tree planting to provide shade coverage for pedestrians and bicyclists.

For this action, the City will evaluate a range of roadway infrastructure improvements, including intersection safety and design, "road diets" and green stormwater infrastructure. The City will implement selected projects to improve stormwater management and pedestrian and cyclist safety, with the goal of increasing active transportation and decreasing flooding from sheet flow.

Due to a lack of current information for data analysis, the potential for GHG reduction for this action is not available. As the action is further developed, more data may become available.

More information on this action can be found in Appendix A: Implementation Roadmaps.

## GOAL:
## STRENGTHEN TRANSIT SERVICE WITHIN DAVIS AND AMONG REGIONAL NEIGHBORS

This goal seeks to expand transit service and access in Davis through different means, including subsidizing transit costs and improving transit interconnections.

Transportation actions have equity benefits by improving air quality, addressing public health, and delivering other co-benefits. Further analysis of equity considerations will be part of action development, but some considerations for transportation actions are provided here:

### Equity Issues:

- Changes to public service routes may deprioritize low-income communities.
- Improvements to physical infrastructure may fail to fairly address the needs of Environmental Justice communities as defined in the Vulnerability Assessment.
- Transit schedules may not address the needs of people working off-peak hours.
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.

### Equity Solutions:

- Route expansion efforts should seek to increase service to Environmental Justice communities as defined in the Vulnerability Assessment.
- Infrastructure improvements, such as additional routes and stops, and improved connections and service, should be piloted in Environmental Justice communities as defined in the Vulnerability Assessment.
- When considering transit schedule improvements, assess the need for transit schedules to accommodate second- and third-shift workers.
- Communications regarding this action should accommodate community members' language and access needs.

# Action TR.6.
# Expand public transit

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET<br>CMO: Sustainability | Unitrans<br>YCTD<br>SacRT<br>Amtrak |  |  |  | $ $ |  | |  |

**GHG Reduction Potential:** **2030:** 2,050 MT $CO_2e$/yr **2040:** 2,000 MT $CO_2e$/yr

*Subsidize public transit so it is free for all to use. Promote expansion of public transit routes and increased operation frequency within Davis to support day-to-day travel needs.*

## ACTION DESCRIPTION

The cost of public transit may serve as a barrier to full ridership, particularly in low-income communities. Additionally, infrequent service of existing routes and inadequate geographical coverage by routes (increasing the distance of "first mile/last mile" travel required) serve to make public transit less useful, decreasing ridership.

Under the recommendations of this action, the City will work with transit partners and local planning/funding agencies such as SACOG to implement a one-year pilot for free transit. Following analysis of the effectiveness of this pilot project, the City will collaborate regionally to identify options to subsidize public transit so that it is available at no cost to anyone. Pursuing this strategy will require discussions and collaboration with transit service providers in the community to determine full costs of action implementation, and/or identify alternative creative solutions that could achieve the same goal of removing cost as a barrier to transit ridership. The City will also work with its transit service providers and neighboring local governments to expand public transit routes and increase operation frequency within Davis and the surrounding region.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action TR.7. Strengthen regional transit

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET<br>CMO: Sustainability | Unitrans<br>YCTD<br>SacRT<br>Amtrak |  |  |  | $ $ |  | |  |

**GHG Reduction Potential:** **2030:** 1,800 MT $CO_2e$/yr **2040:** 1,700 MT $CO_2e$/yr

*Coordinate with regional transit agencies and cities to promote cohesive transit interconnections, including express buses to Woodland, West Sacramento, Sacramento, etc.*

## ACTION DESCRIPTION

Regional transit agencies share a common goal and improved coordination among agencies can increase the number of feasible destinations and frequency of service available for transit passengers. Several transit agencies serve common travel destinations for Davis residents and visitors.

For this action, the City will coordinate with its regional transit agency partners to improve transit interconnections so that public transit is a viable, time-effective option for more riders to more destinations. This coordination should include improvements for express bus options to Woodland, West Sacramento, Sacramento and other high-priority travel destinations for Davis residents and employees, as identified in the travel analysis supporting the 2016 GHG inventory revisions and the City's other transportation analyses. The CAAP origin-destination analysis identified the amount of in-commuting and out-commuting as an important challenge when addressing the City's on-road transportation emissions. Improving the convenience and reliability of regional transit is one potential strategy to reduce some of the private vehicle use in trips that start or end outside of the City.

More information on this action can be found in Appendix A: Implementation Roadmaps.

## GOAL:
## REDUCE SINGLE OCCUPANT VEHICLE USE

Actions in this goal area aim to reduce single occupant vehicle use by implementing parking pricing, considering a Transportation Demand Management (TDM) program, creating a low emissions vehicle program, encouraging carpooling, and adjusting parking space availability for residential buildings.

Transportation actions have equity benefits by improving air quality, addressing public health, and providing other co-benefits. Further analysis of equity considerations will be part of action development, but some considerations for transportation actions are provided here:

### Equity Issues:

- Paid parking poses a greater cost burden for low-income communities.
- Parking meters that only accept credit card or app payments exclude those who only have access to cash.
- Low-income people may not have the at-home resources to telecommute.
- Low-income neighborhoods may have a greater share of residents whose jobs cannot be performed remotely.
- Financial disincentive programs place a higher cost burden on low-income and vulnerable communities.
- Paid parking risks being ineffective at changing the behavior of wealthy drivers, while posing a disproportionate burden on lower-income drivers, especially if alternative modes of transportation are not equally accessible and convenient
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.

### Equity Solutions:

- Program and pilot project design, implementation and evaluation should consider the needs of Environmental Justice communities as defined in the Vulnerability Assessment.
- Pilot project implementation should consider the need for meters that accept multiple payment methods, including cash.
- Increase access to high-quality internet connectivity for low-income households and areas of the City where broadband internet is not easily accessible.
- Program design and implementation should consider the needs of Environmental Justice communities as defined in the Vulnerability Assessment.
- Communications regarding this action should accommodate community members' language and access needs.

# Action TR.8. Downtown parking improvements

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET | Downtown Businesses |  |  |  | $ $ |  | |  |

**GHG Reduction Potential:** **2030:** 14,850 MT $CO_2e$/yr **2040:** 13,200 MT $CO_2e$/yr

*Revisit most recent parking pricing study (Downtown Paid Parking, City Council March 5, 2019) and implement pilot projects to test their effectiveness. Reduce or eliminate minimum parking standards in new developments.*

## ACTION DESCRIPTION

The Downtown Paid Parking study explored the potential for converting some free public parking to paid parking. Only a limited version of this proposal was adopted in 2019.

Under this action, the City will implement pilot projects as discussed in the 2019 study, and will evaluate the effectiveness of these pilots before expanding a paid parking program. The City will also explore the feasibility of allocating parking income to GHG reduction program implementation and/or dedicating the revenue stream to a carbon mitigation fund as described in Action BE.6.

It should be noted that studies and research support the attribution of GHG reductions to parking pricing, there is insufficient data to fully analyze the GHG reduction potential of actions to improve transit and micromobility, which are influenced by multiple factors such as land use design, destination density, etc. Additional study may be needed for these actions to evaluate GHG reductions prior to implementation. For that reason, this action is not one of the higher priorities.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action TR.9. Transportation Demand Management (TDM) program

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET<br>CMO: Sustainability | YCTD<br>SACOG<br>UCD<br>Employers |  |  |  | $ $ |  | |  |

**GHG Reduction Potential:** **2030:** 2,850 MT $CO_2e$/yr **2040:** 2,700 MT $CO_2e$/yr

*Address recommendations for developing, funding, and staffing a coordinated Transportation Demand Management (TDM) program to encourage and/or require "all people, all trips" to implement TDM strategies, such as remote work opportunities, community education and outreach, micromobility, vanpool, rideshare, subsidized transit, employee parking cash-out, etc.*

## ACTION DESCRIPTION

Transportation Demand Management is a strategy by which driving can be disincentivized by promoting using alternative travel modes (public transit, active transport), increasing the number of passengers in vehicles (carpooling) and eliminating trips altogether (working remotely). As many employees have already shifted to working remotely, TDM strategies are becoming more popular and easier to implement.

To implement this action, the City will develop, fund and staff a TDM program designed for "all people, all trips" with the goal of achieving broad participation in the TDM programs, including voluntary participation from residents. Requirements that might be developed as part of this program will focus on employer implementation of TDM strategies, such as providing remote work opportunities, community education and outreach, micromobility options, vanpool or rideshare incentives, subsidized transit passes and employee parking cash-out. In addition, the City will explore options to collaborate with large employers such as UC Davis and the City of Davis, which offers an up-to-50% remote work policy for those employees whose positions can be performed remotely.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action TR.10. Low Emissions Vehicle Program

| Lead City Department | Key Partners | Time Frame Plan-ning: 0-4 years | Time Frame Imple-menta-tion: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET | CARB<br>SACOG | Not known | Not known |  |  | | |  |

*Research, develop, and establish a low-emissions vehicle program that disincentivizes travel by internal combustion engine (ICE) vehicles.*

## ACTION DESCRIPTION

Internal combustion engine vehicles contribute significantly to Davis' GHG inventory. There are multiple pathways available to mitigate this emissions source, including land use and planning strategies that decrease the need and/or distance of vehicle travel, alternative fuel vehicle options like EVs, active transportation and micromobility infrastructure improvements like bike paths and e-scooter rentals, and

Under this action, the City will design and implement a citywide program to disincentivize travel by internal combustion vehicles. The City can look to other climate leaders for program design ideas, including phasing by vehicle types or geographic areas of the community in which the program is implemented, drawing inspiration from other cities zero emissions delivery vehicle zones or broader low emissions zones.

Due to a lack of current information for data analysis, the potential for GHG reduction for this action is not available. As the action is further developed, more data may be available.

More information on this action can be found in Appendix A: Implementation Roadmaps.

## GOAL:
## EXPAND OPPORTUNITIES FOR LOCAL HOUSING DEVELOPMENT TO BALANCE LOCAL EMPLOYMENT OPPORTUNITIES

Actions in this section would increase housing availability in Davis, with a focus on high-density, mixed-use, transit-oriented, multifamily development. These actions incentivize housing construction and address up-zoning and mixed-use developments in commercial corridors.

Transportation actions benefit equity by improving air quality, addressing public health, and providing other co-benefits. Further analysis of equity considerations will be part of action development, but some considerations for transportation actions are provided here:

### Equity Issues:

- New construction may fail to create affordable housing. Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.

### Equity Solutions:

- Program design and implementation should make explicit provisions to ensure that affordable housing stock is created and preserved.
- Infrastructure investment should be prioritized in Environmental Justice communities as defined in the Vulnerability Assessment.
- Communications regarding this action should accommodate community members' language and access needs.

# Action TR.11. Develop sustainable housing

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CD: Planning | Housing advocates<br>Developers<br>Property owners |  |  |  | $ $ | | |  |

*Increase housing opportunities to support the jobs/housing balance and decrease vehicle miles traveled. Develop incentive options to increase housing construction in the city, including high-density, mixed-use (especially office space and food service), transit-oriented, and affordable options.*

## ACTION DESCRIPTION

Residential units in dense developments use less energy per square foot than do single-family homes. Incorporating mixed uses (including office space and food service) in housing developments allows residents pedestrian access to local businesses and employment opportunities, further supporting the goal of limiting vehicle travel and potentially benefiting low-income populations who cannot afford personal vehicles. Transit-oriented development, which maximizes residential, business and leisure space within walking distance of public transit, reduces passenger vehicle use and promotes active mobility. Typical transit-oriented development incentives seek to boost development within a quarter- or half-mile radius of transit stops. Locating this development in infill areas preserves undeveloped spaces and reduces the financial investment, energy, and materials required to construct and maintain new infrastructure.

To further progress this action, the City will consider developing and implementing an incentive program to encourage density and promote new construction. A variety of options can be considered for this action, including providing density bonuses to new development projects, as well as subsidies, fast track processing, tax abatements, fee waivers, reductions and deferrals.

Due to a lack of current information for data analysis, the potential for GHG reduction for this action is not available. As the action is further developed, more data may be available.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Water Conservation and Waste Reduction Actions

## GOAL:
## CONSERVE WATER IN OUR BUILDINGS AND LANDSCAPES

Actions in this goal area seek to reduce water use in buildings and landscapes. These actions address climate-ready private landscapes, public lawns, water pricing, greywater reuse and pool water consumption.

Water conservation and waste reduction actions have equity benefits and co-benefits. Further analysis of equity considerations will be part of action development, but some considerations for these actions are provided here:

### Equity Issues:

- Programs such as rebates that require upfront investment are less accessible to low-income populations, for whom the cost of landscaping poses a greater burden.
- Renters may not have the right to alter property landscaping or appliances under the terms of their lease agreement.
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.
- Landlords may pass on the costs of landscape and watering infrastructure alterations to renters in the form of higher rents. However, this may be partially offset by lower water bills.

### Equity Solutions:

- Program design and implementation should expressly consider accessibility by renters and low-income and vulnerable populations, including Environmental Justice communities as defined in the Vulnerability Assessment.
- Communications regarding this action should accommodate community members' language and access needs

# Action WW.1. Climate-ready private landscapes

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWOU<br>PCS | Tree Davis<br>UC Davis<br>Community members |  |  |  | $ $ |  |  |  |

**GHG Reduction Potential:** **2030:** 50 MT $CO_2e$/yr **2040:** 0 MT $CO_2e$/yr
(2040 reduction is less than 50 $CO_2e$/yr and rounded down to 0 for CAAP purposes)

*Develop financing/incentive options with specific provisions for low-income and vulnerable populations that promote climate-ready private landscapes, such as installing drought tolerant, native, climate-ready plants and/or xeriscaping; programs that support turf removal; installing rainwater capture and harvesting equipment; and the use of green stormwater measures to enhance natural water infiltration.*

## ACTION DESCRIPTION

An objective of this action is to provide guidance and incentives for Davis residents, property owners and landlords to make informed climate-ready landscape decisions as part of the city's landscaping ethos. Private landscapes represent a large component of Davis's environment. The City is already pursuing climate-ready landscape concepts and plant choices in parks, streetscapes, master tree lists and the upcoming Urban Forestry Management Plan. Unlike the water conservation actions robustly pursued by City policies and programs, private landscapes are not addressed by any other City policies. This CAAP action provides the opportunity for education and outreach about climate-ready landscapes to the Davis community.

California experiences periods of prolonged drought, which is expected to increase in frequency and duration due to climate change. In response, lawn irrigation restrictions are a common tactic that cities implement during droughts to conserve water for more urgent uses, but irrigation demand tends to rebound once those temporary restrictions are lifted.

Street and residential trees can shade buildings and reduces heat gain during the summer, reducing cooling/air conditioning needs. Rain capture can also provide deep winter watering that will support trees in the summer and encourage downward root growth.

To reduce outdoor water demand more permanently, many cities offer rebates and incentive programs that encourage property owners to implement climate-friendly landscape designs that can significantly reduce water use from irrigation. These designs can include drought-tolerant and native plants, low-water xeriscaping elements (like succulents and cacti), turf removal and rainwater capturing or harvesting. The strategies can also include green stormwater elements to improve water infiltration back into the ground.

To implement this action, the City will pursue the development of financing and incentive options (local via State programs) to encourage private property owners to install climate-resilient landscaping. The eventual financing and incentive program will make specific provisions for low-income and vulnerable populations as feasible based on fund type and source.

More information on this action can be found in Appendix A: Implementation Roadmaps.

## GOAL:
## REDUCE WASTE GENERATION AND INCREASE DIVERSION AWAY FROM LANDFILLS

The City of Davis is currently implementing actions in response to Senate Bill 1383 and other waste and organics related legislation. Although waste reduction is an important component of climate action, no actions were prioritized as part of the CAAP process, largely because this work is being done through other programs and as required by State law. Additionally, waste-related actions primarily address GHG emissions that are not currently represented in the City's inventory, such as reducing upstream emissions associated with manufacturing goods consumed by residents and businesses, and many of these actions are already required by State law. Although these actions are critical to addressing emissions globally, they are not reflected in current community-based emissions inventorying standards. Future changes to emissions reporting practices could change the prioritization of these actions.

# Climate Adaptation Actions

## GOAL:
## CREATE A COOLER CITY WITH MORE URBAN FOREST AND GREEN SPACE FOR PEOPLE AND HABITAT

Actions in this area aim to adapt the City of Davis to rising temperatures resulting from climate change and to reduce the urban heat island effect by creating a cooler city through trees, parks, cool surfaces, green roofs and community gardens in public and private space.

Climate adaptation actions have equity benefits and co-benefits, including public health, air quality, and climate risk reduction. Further analysis of equity considerations will be part of action development, but some considerations for these actions are provided here:

### Equity Issues:

- If actions increase construction costs and thereby housing costs, the burden will be greatest for low-income populations.
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.
- Without attention to equitable distribution of tree planting, tree installation may systematically occur in higher-income neighborhoods.

### Equity Solutions:

- Communications regarding this action should accommodate community members' language and access needs.
- Program design and implementation should consider costs for renters, low-income, and vulnerable populations
- Program design and implementation should prioritize tree installation and replacement in Environmental Justice communities as defined in the Vulnerability Assessment.
- Ensure that tree planting occurs in areas frequented by renters, low-income residents, and unhoused people.

# Action AD.1. Cool surfaces

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWET<br>PWUO<br>CD | SMAQMD (research) | | | | | | | |

**GHG Reduction Potential:** **2030:** 50 MT $CO_2e$/yr **2040:** 150 MT $CO_2e$/yr

*Develop ordinance(s) to require the use of cool surfaces, reflective materials, coatings, and other emerging technology to reduce the heat island effect. Include building (roof, walls, windows, paint etc.) and transportation (road/bike path surfaces, shade, etc.) measures.*

## ACTION DESCRIPTION

Cool surfaces (such as cool roofs and cool walls) are designed to absorb less heat than standard surfaces, resulting in cooler building interiors during the summer and reducing energy demand and associated GHG emissions from air conditioner use. In addition, by reducing heat transfer from buildings to the air, use of cool building technology can curtail the urban heat island effect. The City currently has a cool roof ordinance that states that, re-roof projects are required to comply with cool roof requirements when more than 50% of a roof is replaced, as per the provisions of the 2013 California Energy Code.

To undertake this action, the City will start with pilot projects to understand local experience and develop data. Alternative materials and surfaces may have higher upfront costs. It is important to evaluate user experiences feedback based on pilot implementation. Long-term costs, wear, and glare are uncertain for ground application of cool surfaces (parking lots, roads, walk and bikeways) and thus should be piloted and deployed based on experience, lesson learned from other cities, and data since

Following analysis of pilot project data, the City will develop one or more ordinances that require the use of cool building and roadway technology such as cool surfaces, reflective materials, and coatings. Cool roofs and other cool building surface implementation can begin earlier as these materials are well known and supported by data and research for their reduction of building heat load. The ordinance(s) could require a percentage of total hardscape and roof area to have a minimum albedo rating.

Note that shading, especially with trees or solar, should be considered as an alternative, including for smaller paved areas where cool surfaces may not be cost-effective.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action AD.2. Urban forest

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWUO | Tree Davis |  |  |  | $ $ |  |  |  |

**GHG Reduction Potential:** **2030:** 150 MT $CO_2e$/yr **2040:** 500 MT $CO_2e$/yr

*Expand urban forest in parks, greenbelts, and open space with climate-ready species that provide shade. Develop a tree-replacement plan for all City trees, based on assessment of age, and vigor. Provide educational materials to community members to encourage planting and care of climate-ready private trees and landscapes.*

## ACTION DESCRIPTION

The City has completed the Open Space Strategic Plan (2018) and is currently completing the Urban Forestry Management Plan update and planning documents for Parks and Community Services related to trees, parks and open space. This action supports those efforts.

Trees reduce greenhouse gas emissions by sequestering carbon in addition to the multiple co-benefits offered by a robust urban forest. Trees shade buildings, helping to regulate building temperature and reducing the need for air conditioning. Trees in parks and greenbelts enhance recreation spaces and provide wildlife habitat. Trees also help to manage stormwater runoff flows, improve property values, and have been shown to reduce stress and improve moods.

To operationalize this action, the City will continue to work with its partners, such as Tree Davis, to expand the urban forest in parks, greenbelts, and open space. Tree species selection will prioritize climate resilience and shade provision. In addition, the City will develop a citywide tree-replacement plan for street trees that are removed for safety concerns or other reasons.

More information on this action can be found in Appendix A: Implementation Roadmaps.

## GOAL:
## PROTECT PUBLIC HEALTH AND SAFETY FROM EXTREME HEAT AND WILDFIRE SMOKE

Actions in this area seek to address negative health outcomes due to climate hazards including extreme heat and wildfire smoke by encouraging policies and programs for air filtration and air conditioning. Although air quality and protection from wildfire smoke is reduction is an ever-increasing concern and an important component of climate adaptation, no actions were prioritized as part of this CAAP development process but should be considered for the CAAP update in 2025.

## GOAL:
## PROTECT PUBLIC HEALTH, SAFETY, AND INFRASTRUCTURE AGAINST DAMAGE AND DISRUPTION FROM FLOODING

Actions in this area seek to protect public health and safety, as well as infrastructure, from the impacts of flooding.

Some equity considerations within this goal area are as follows:

### Equity Issues:

- Improvements to public infrastructure may fail to fairly address the needs of Environmental Justice communities as defined in the Vulnerability Assessment.
- Implementation of many City programs and plans (Action AD.5) involve changes to physical infrastructure, which may inadequately prioritize the needs of Environmental Justice communities as defined in the Vulnerability Assessment.
- Without attention to equitable protection, infrastructure improvements may systematically occur in higher-income neighborhoods.
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.

### Equity Solutions:

- Green infrastructure installation and flood infrastructure improvements should be piloted in Environmental Justice communities as defined in the Vulnerability Assessment.
- Prioritize infrastructure based on physical risk (probability), consequences of events, and abilities of the affected populations to adapt to the events.
- Communications regarding this action should accommodate community members' language and access needs.

# Action AD.3.
# Green stormwater infrastructure

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWUO<br>CD<br>CMO: Sustainability | UC Davis (research) |  |  | |  | |  |  |

*Develop policies to increase the use of green stormwater infrastructure and enhance natural water infiltration in public infrastructure.*

## ACTION DESCRIPTION

Excessive urban runoff pollutes water supplies, causes erosion, and heightens flood risk. Captured urban runoff is costly to treat. Green stormwater infrastructure, which is designed to allow rainwater to infiltrate where it falls, offers an opportunity to mitigate flood risk and improve water quality. Green infrastructure includes both landscape design elements such as landscaped swales to capture runoff and allow infiltration, and technological elements such as porous surfaces for streets, sidewalks and parking lots.

For this action, the City will develop policies to expand the use of green stormwater infrastructure. In addition to compliance with the City's National Pollutant Discharge Elimination System permit, which requires qualifying properties to install stormwater treatment and attenuation facilities to capture and filter storm flows, the City will provide outreach and information to non-qualifying properties to encourage the installation of green stormwater features. Finally, the City will undertake improvements to natural water infiltration in public infrastructure.

Because this is primarily an adaptation action with limited GHG reduction potential and lack of data for analysis, no GHG reduction metrics are provided.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action AD.4. Flood resilience of critical infrastructure

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWUO<br>CMO: Sustainability | Caltrans<br>YCFCWCD |  |  |  |  | |  |  |

*Relocate/elevate or otherwise address flooding issues and concerns for critical public infrastructure in projected flood areas.*

## ACTION DESCRIPTION

The Vulnerability Assessment identified that critical infrastructure lies within the 100-year floodplain and is vulnerable to flooding, including Sutter Davis Hospital, potable water wells, all five of the City's stormwater pump stations, approximately one mile of Highway 113 and more than 13 miles of City streets. Additionally, flooding is likely to impact multiple community assets, such as the Davis Arts Center, two churches and two assisted living/retirement facilities.

Climate change effects on precipitation intensities are uncertain, but storm intensities will likely increase, leading to increased flood risk and frequency as well. Though flooding in Davis has largely consisted of localized shallow flooding, it could potentially worsen, and the City should act with deliberate speed on understanding the risks and preparing plans. Additional hydrologic and hydraulic analysis of watersheds and drainages that flow through Davis, accounting for future projected changes in precipitation, would be required to conduct a more detailed evaluation of future flooding vulnerabilities. To address equity, project locations should be prioritized in EJ communities and ranked according to vulnerability, risk, consequences.

To implement this action, the City will design facility upgrades, relocate, or elevate city-owned critical infrastructure out of likely flood areas. The City will promote flood resilience of other critical infrastructure as well, such as by coordinating with Sutter Davis Hospital, Yolo County, Caltrans and others. Different infrastructure elements will require different approaches depending on the type of asset, the other stakeholders involved, and local geography.

Due to a lack of information for data analysis, the potential for GHG reduction for this action is not available. As the action is further developed, more data may become available.

More information on this action can be found in Appendix A: Implementation Roadmaps.

## GOAL:
## PREPARE AND RESPOND TO CLIMATE HAZARDS TO ENSURE THAT THE CITY IS EQUIPPED TO ADDRESS CURRENT AND FUTURE CHALLENGES

The actions in this goal area address climate vulnerabilities through water management and conservation, urban forestry, and other public services and resources.

Some equity considerations within this goal area are as follows:

### Equity Issues:

- Implementation of many City programs and plans involve changes to physical infrastructure, which may inadequately prioritize the needs of Environmental Justice communities as defined in the Vulnerability Assessment.
- Low-income and vulnerable populations may face financial, technological and logistical barriers that limit their ability to access these resources.
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.

### Equity Solutions:

- Flood infrastructure improvements should be piloted in Environmental Justice communities as defined in the Vulnerability Assessment.
- Communications regarding this action should accommodate community members' language and access needs.

# Action AD.5. Funding and staffing for existing efforts

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWUO | State and regional agencies |  |  |  | |  |  |  |

**GHG Reduction Potential:** **2030:** 5,900 MT $CO_2e$/yr **2040:** 11,200 MT $CO_2e$/yr

*Allocate funding and staff resources to aggressively implement important existing climate-related programs, policies and management, such as City utility infrastructure (water, wastewater and stormwater) and assets (trees, streets, etc.) Continue to conduct assessments at regular intervals to ensure efficient and effective operations that are at pace with industry improvements, and changing needs due to climate change impacts, and implement recommendations in the assessments as technologically and financially feasible.*

## ACTION DESCRIPTION

The City has created several climate-related plans, policies and programs to address crucial needs for climate adaptation and mitigation. However, a lack of funding and staff resources has slowed implementation efforts. The plan, policies and programs cover multiple topics, including water management and conservation, urban forestry and solid waste reduction programs.

Under this action, the City will allocate funding and staff resources for aggressive implementation of these plans. To improve likelihood of success, the City will review its existing list of policies/programs that have not yet been implemented and prioritize action based on urgency of the topics addressed and availability of funding sources, including those sources identified in Appendix B, the CAAP's Funding and Finance Memo.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action AD.6. Public resources during extreme weather events

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| PWUO<br>PCS<br>SSHCMO: Sustainability | YSAQMD |  |  | |  | |  |  |

*Develop policies to expand existing public services and resources provided by the City and community-based organizations during extreme weather events, such as high wind, air quality (smoke), cooling, and weather relief centers.*

## ACTION DESCRIPTION

As extreme weather events grow more frequent and severe under climate change, municipalities and community-based organizations are called upon to offer protective measures to residents. These measures can include cooling and weather relief centers to protect vulnerable residents during extreme heat events and offer safe indoor air quality during wildfire smoke events.

Under this action, the City will create policies to expand the provision of these public services and resources. Additionally, implementation of this action will benefit from coordination with surrounding communities, such as through organization of a regional task force on climate change actions. Equity issues are a driving factor for this action, as vulnerable communities are likely to benefit most from additional resources and services during extreme weather events. As such, vulnerable community members should be intimately involved in planning processes. In addition, this action will go beyond equity by benefiting all members of the community.

Because this is primarily an adaptation action with limited GHG reduction potential and lack of data availability for analysis, no GHG reduction metrics are provided.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Carbon Removal Actions

## GOAL: DEMONSTRATE CLIMATE LEADERSHIP THROUGH INNOVATION, EDUCATION, AND INVESTMENT

Actions in this area support climate leadership through innovation, education, and investment. These actions relate to carbon sequestration research and carbon farming, the promotion of plant-based diets, green investments, and fossil fuel divestment. Carbon removal actions have equity benefits and co-benefits. Further analysis of equity considerations will be part of action development, but some considerations for these actions are provided here:

### Equity Issues:

- Tree planting efforts are usually implemented in wealthier neighborhoods, further increasing climate disparities across income levels.
- Some community members may face additional challenges in understanding and responding to this action due to language barriers or lack of access to technology and resources.

### Equity Solutions:

- Tree planting as a carbon removal strategy should be prioritized in Environmental Justice communities as defined in the Vulnerability Assessment.
- Communications regarding this action should accommodate community members' language and access needs.

# Action CR.1.
# Carbon sequestration and removal

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CMO: Sustainability | CARB<br>YSAQMD<br>SMAQMD |  |  | | $ | | | |

*Develop policies to implement carbon sequestration and removal opportunities the City can pursue to balance remaining emissions by 2030/2040.*

## ACTION DESCRIPTION

Carbon dioxide removal (CDR) is the process of physically removing GHGs such as carbon dioxide from the atmosphere. Natural examples of CDR include forest restoration and soil management, which is also known as carbon sequestration. Industrial CDR mechanisms include direct air capture of GHGs from the atmosphere and using bioenergy with carbon capture and storage. While few examples of commercial-scale direct air capture currently exist, the technology is rapidly developing and municipalities may have increasing opportunities to jointly fund these technologies in the future.

Under this action, the City will explore and evaluate opportunities to maximize local/regional carbon sequestration and removal to help balance the City's remaining emissions in 2040. Based on initial analysis in the CAAP update, it is unlikely that the City has sufficient land area within its boundary to fully balance its estimated remaining emissions in 2040 through natural strategies alone. However, the City can collaborate with regional partners such as Yolo County, which is seeking to achieve a carbon negative footprint by 2030 and has a significantly greater land area for carbon sequestration projects. This regional partnership can also include research into industrial carbon removal technologies and opportunities for a local pilot project to demonstrate proof of concept as a strategy for other local governments to pursue once their GHG mitigation action options have been exhausted. The City will use its findings and recommendations to advance actions in this area.

Due to a lack of current information for data analysis, the potential for GHG reduction for this action is not available. As the action is further developed, more data may become available.

More information on this action can be found in Appendix A: Implementation Roadmaps.

# Action CR.2. Carbon farm plans

| Lead City Department | Key Partners | Time Frame Planning: 0-4 years | Time Frame Implementation: 16 years | Staff Support Required | Municipal Capital Cost | GHG Reduction | Climate Hazards Addressed | Co-Benefits |
|---|---|---|---|---|---|---|---|---|
| CD: Open Space | YCRCD |  |  |  |  |  | |  |

**GHG Reduction Potential:** **2030:** 1,450 MT $CO_2e$/yr **2040:** 1,450 MT $CO_2e$/yr

*Develop carbon farm plans for City-owned agricultural land and seek grant funding to implement recommended strategies for maximum carbon sequestration.*

## ACTION DESCRIPTION

Carbon farming enhances carbon capture on working lands. Carbon farming may involve different techniques, including compost application, conservation tillage and use of cover crops, among others.

Under this action, the City will create plans for carbon farming on City-owned agricultural land. The City will seek grant funding to implement preferred strategies to maximize carbon sequestration, and will share its lessons learned from the program with private agricultural landowners in the city with the goal to expand carbon farming citywide. This action provides important opportunities to strengthen City / UC Davis collaboration with leading researchers on this topic available to help guide the City's program design. It also provides an opportunity for information sharing with Yolo County as it pursues and aggressive carbon negative target by 2030.

More information on this action can be found in Appendix A: Implementation Roadmaps.

**Table 7** summarizes the 2030 and 2040 GHG reduction estimates from the 28 prioritized CAAP actions.

**Table 7.** Summary of GHG Reductions from Prioritized Actions

| ACTION # | ACTION TITLE | 2030 GHG REDUCTIONS (MT $CO_2e$/yr) | 2040 GHG REDUCTIONS (MT $CO_2e$/yr) |
|---|---|---|---|
| **Building Energy and Design (BE Actions)** | | | |
| BE.1 | Building electrification when permit is needed or when appliance is replaced[1] | 17,900 | 33,050 |
| BE.2 | Building electrification for existing buildings | N/A[2] | N/A |
| BE.3 | Energy efficiency and ventilation in rental properties[1] | 8,200 | 16,900 |
| BE.4 | All-electric new construction | 1,650 | 4,950 |
| BE.5 | Community solar energy | 35,300 | 43,350 |
| BE.6 | Carbon mitigation fund | N/A | N/A |
| BE.7 | Renewable energy in City facilities | 750 | 950 |
| BE.8 | Create community microgrids and resiliency hubs | N/A | N/A |
| **Transportation and Land Use (TR Actions)** | | | |
| TR.1 | Electric Vehicle Charging Plan | 55,500 | 117,250 |
| TR.2 | Decarbonize municipal fleet | 550 | 1,100 |
| TR.3 | "First mile/Last mile" transportation | N/A | N/A |
| TR.4 | Electric micromobility vehicles | 200 | 150 |
| TR.5 | Pedestrian and bicycle safety | N/A | N/A |
| TR.6 | Expand public transit | 2,050 | 2,000 |
| TR.7 | Strengthen regional transit | 1,800 | 1,700 |
| TR.8 | Downtown parking improvements | 14,850 | 13,200 |
| TR.9 | Transportation Demand Management (TDM) program | 2,850 | 2,700 |
| TR.10 | Low Emissions Vehicle Program | N/A | N/A |
| TR.11 | Develop sustainable housing | N/A | N/A |
| **Water Conservation and Waste Reduction (WW Actions)** | | | |
| WW.1 | Climate-ready private landscapes | 50 | — |
| **Climate Adaptation (AD Actions)** | | | |
| AD.1 | Cool surfaces | 50 | 150 |
| AD.2 | Urban forest | 150 | 500 |
| AD.3 | Green stormwater infrastructure | N/A | N/A |
| AD.4 | Flood resilience of critical infrastructure | N/A | N/A |
| AD.5 | Funding and staffing for existing efforts | 5,900 | 11,200 |
| AD.6 | Public resources during extreme weather events | N/A | N/A |
| **Carbon Removal (CR Actions)** | | | |
| CR.1 | Carbon sequestration and removal | N/A | N/A |
| CR.2 | Carbon farm plans | 1,450 | 1,450 |
| | **Total[3]** | **149,200** | **250,600** |

*[1]Actions BE.1 and BE.3 are quantified based on planned mandatory implementation that will occur through reach code and ordinance development in alignment with the 2025 building energy code cycle.*

*[2]GHG reductions marked N/A could not be quantified due to a lack of information for data analysis or because the action is adaptation oriented with no GHG reduction potential.*

**Figure 6.** GHG Reductions by Sector

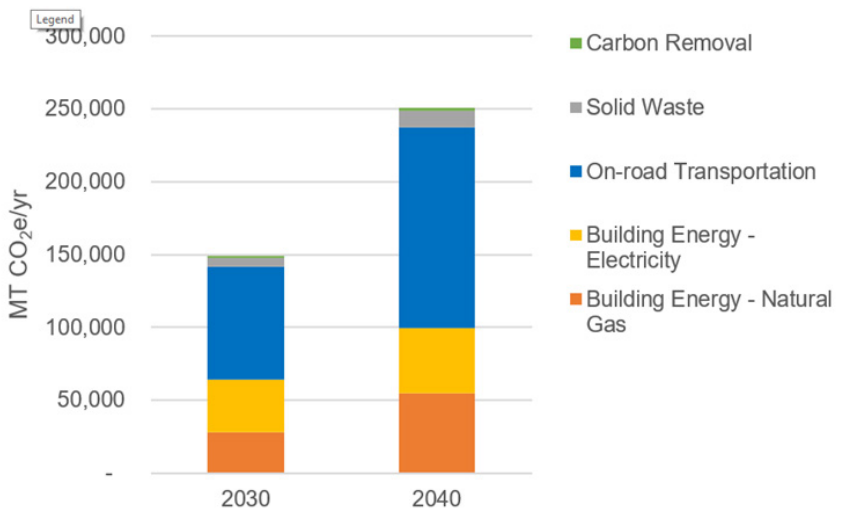



**Figure 6** illustrates the estimated CAAP action GHG reductions in 2030 and 2040 organized into emissions categories that approximately align with the GHG inventory. As shown, the greatest reductions in both years are attributed to on-road transportation (blue) which is largely associated with the estimated adoption of EV and other zero-emission vehicle technology. The second and third greatest sources of reductions are from building energy electricity (light orange), which reflects Davis' participation in Valley Clean Energy and the expectations for its zero-carbon energy mix by 2030 and building energy natural gas (dark orange). Solid waste (gray) actions provide the next greatest sources of reductions, followed by local carbon removal opportunities illustrated in green.

# 4.4 Estimated 2030 GHG Reduction Trajectory

Implementation of all priority actions is estimated to reduce community-wide emissions by 149,200 MT $CO_2e$/yr in 2030 below the emissions forecasts. As shown in **Table 8**, this would result in emissions that are 41% below 2016 levels and an estimated emissions intensity of 6.5 MT $CO_2e$/capita/yr. This current estimate achieves the city's minimum 2030 GHG target (i.e., 40% below 2016 levels), but falls short of the aspirational goal to achieve an emissions intensity level of 5.2 MT $CO_2e$/capita/yr.

**Table 8.** 2030 GHG Targets and CAAP Scenario Results

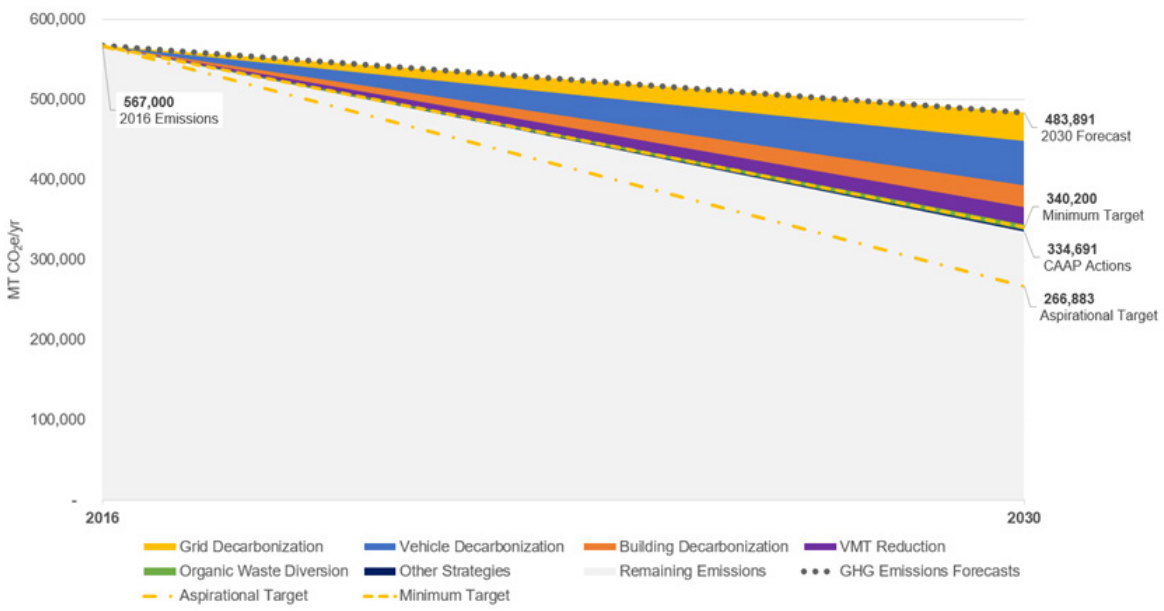
| | 2030 MINIMUM TARGET | 2030 ASPIRATIONAL TARGET | 2030 SCENARIO WITH CAAP ACTIONS |
|---|---|---|---|
| **Total Emissions (MT $CO_2e$/yr)** | 340,200 | 266,883 | 329,741 |
| **2030 Population Estimate (Excluding UC Davis)[1]** | 51,324 | 51,324 | 51,324 |
| **Emissions Intensity (MT $CO_2e$/capita/yr)** | 6.6 | 5.2 | 6.5 |
| **% below 2016 Levels** | 40% | 53% | 41% |
| **Target Achieved?** | YES | NO | — |

*[1]Population estimate excludes UC Davis households as the university's VMT contributions are excluded from the CAAP analysis; population is calculated based on non-UC Davis household estimates from SACOG's SACSIM19 travel demand model and persons per household values from the California Department of Finance (2016).*

## CLOSING THE 2030 GHG TARGET GAP

Figure 5 illustrates the impact of the CAAP actions when applied to the GHG emissions forecasts for 2030. In this figure, the top dotted line shows the emissions forecast scenario described in Chapter 3 and the lower dashed lines illustrate the GHG targets trajectories. The colored wedges represent the amount of GHG reductions estimated to occur from CAAP action implementation organized within six broad strategy areas – Grid Decarbonization, Vehicle Decarbonization, Building Decarbonization, VMT Reduction, Organic Waste Diversion, and Other Strategies – while the light gray area represents the remaining GHG emissions. As shown, the colored wedges extend between the minimum and aspirational 2030 targets, indicating that the minimum target will be achieve but additional effort will be needed to close the gap on the aspirational target.

**Figure 7.** 2030 GHG Reductions from Priority Actions




The aspirational 2030 target achievement gap illustrated in Figure 6 is approximately 67,800 MT $CO_2e$/yr, and multiple factors will influence the City's ability to achieve it. The state may implement new or more aggressive GHG reduction programs to achieve the SB 32 GHG target (i.e., 40% below 1990 levels by 2030). New GHG-reducing technology may be developed, or uptake of current technology might exceed the estimates included in the CAAP analysis, such as EV adoption rates. CAAP action implementation could occur at a higher rate than initially assumed in the GHG reduction estimates, or the City could develop additional GHG reduction actions focused on the 2030 target year.

With all these moving pieces contributing to the City's GHG emissions context, regular GHG emissions inventories, implementation monitoring, and evaluation will be important to staying on course toward the targets. Chapter 5 presents a framework for this ongoing effort.

# 4.5 Estimated 2040 GHG Reduction Trajectory

Implementation of all priority actions is estimated to reduce community-wide emissions by 250,600 MT $CO_2e$/yr in 2040 below the emissions forecasts. As shown in **Table 9**, this would result in emissions that are 64% below 2016 levels and an estimated emissions intensity of 3.8 MT $CO_2e$/capita/yr. This current estimate falls well short of the City's goal to achieve carbon neutrality by 2040 (or 100% below 2016 levels at an emissions intensity level of 0.0 MT $CO_2e$/capita/yr.). However, there is ample time between CAAP adoption and the 2040 target year to identify new actions or improve participation rates and implementation of current actions to close the target achievement gap even more. Additionally, the CAAP analysis provided an important foundation for planning more aggressive long-term actions, including insights into what emission sources are likely to remain in 2040 so that new actions or collaborative partnerships can be strategically developed.

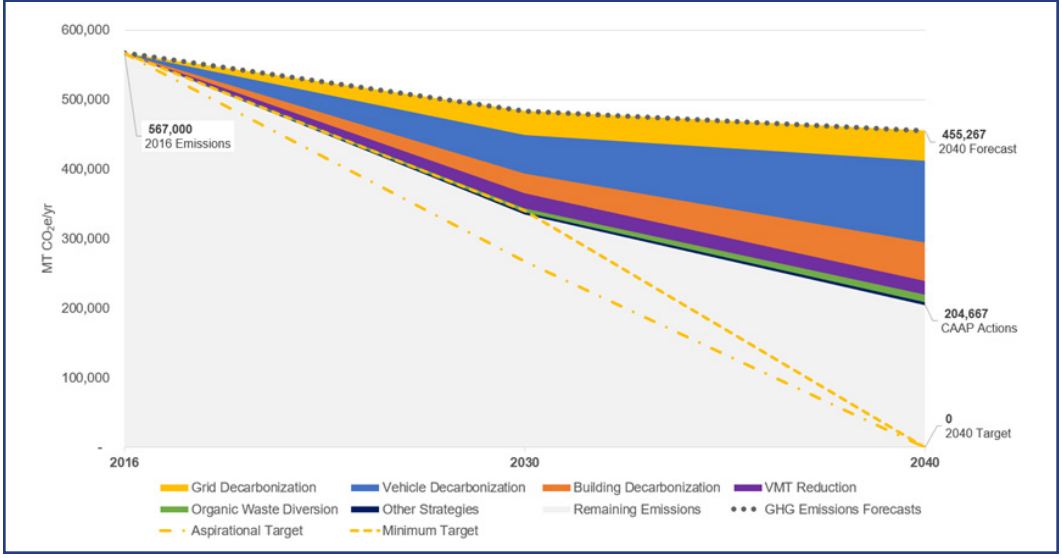
**Table 9.** 2040 GHG Target and CAAP Scenario Results

| | 2040 TARGET | 2040 SCENARIO WITH CAAP ACTIONS |
|---|---|---|
| **Total Emissions (MT $CO_2e$/yr)** | 0 | 204,667 |
| **2040 Population Estimate (Excluding UC Davis)[1]** | 54,165 | 54,165 |
| **Emissions Intensity (MT $CO_2e$/capita/yr)** | 0.0 | 3.8 |
| **% below 2016 Levels** | 100% | 64% |

*[1]Population estimate excludes UC Davis households as the university's VMT contributions are excluded from the CAAP analysis; population is calculated based on non-UC Davis household estimates from SACOG's SACSIM19 travel demand model and persons per household values from the California Department of Finance (2016).*

Figure 7 illustrates the CAAP actions through 2040. As shown, the 2030 target options converge onto the 2040 carbon neutrality target. Implementation of the priority CAAP actions will achieve emissions levels of approximately 205,000 MT $CO_2e$/yr, 64% below 2016 levels. As shown, the colored wedges extend between the minimum and aspirational 2030 targets, indicating that the minimum target will be achieve but additional effort will be needed to close the gap on the aspirational target.

**Figure 8.** 2040 GHG Reductions from Priority Actions



### 4.5.1 Remaining Emissions by Source in 2040

The CAAP priority actions start the City on a trajectory toward the 2040 carbon neutrality target. However, as shown in the previous section the estimated implementation of this current set of actions would not achieve the City's target. Further, predicting the future through 2040 is not possible with accuracy, and there is likely a role for:

- new technology to be developed and deployed,
- enhanced state and federal programs to be implemented in pursuit of GHG targets at both levels of government,
- regional collaboration opportunities,
- greater progress on implementing the current suite of CAAP actions, and
- new or enhanced local climate actions to increase participation within the community.

This section describes the estimated remaining emissions sources in 2040 after implementation of the current CAAP priority actions and will be useful in framing the City's future efforts toward carbon neutrality. As with the 2030 GHG reduction trajectory, the 2040 scenario should be continually re-evaluated based on new information to refine the estimates of the amount of source of remaining emissions that need to be reduced.

**Figure 9.** Remaining GHG Emissions by Source in 2040

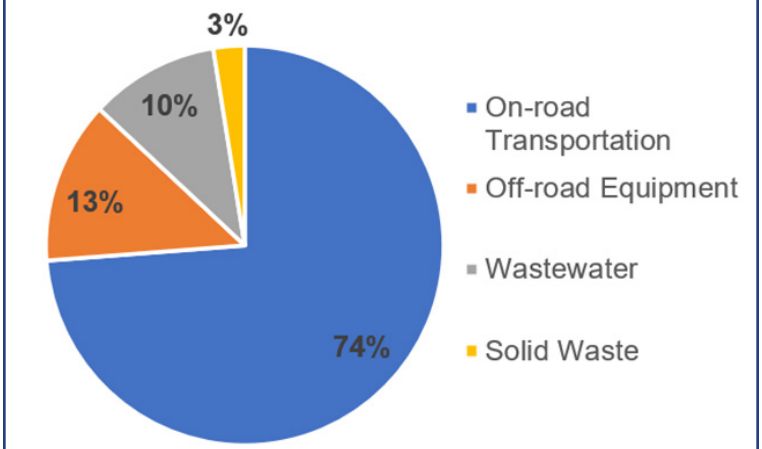



Figure 8 illustrates the estimated remaining GHG emissions in 2040. As shown, nearly three-quarters are associated with on-road transportation. While the CAAP 2040 scenario assumes continued implementation of statewide vehicle efficiency programs, community EV adoption in line with industry forecasts and strategies to reduce total vehicle miles, these transformations are not anticipated to occur quickly enough to align with the City's aggressive 2040 carbon neutrality target. Remaining emissions from off-road equipment (13%) and wastewater treatment (10%) are noteworthy because neither emissions source is currently addressed through a priority CAAP action. Industry trends from equipment manufacturers and state regulations will likely be important factors in decarbonizing off-road equipment over the long-term, and the City will continue to monitor both conditions in future CAAP updates to determine what additional local action could prompt an accelerated conversion of off-road vehicles and equipment in the community. Finally, solid waste emissions are estimated to contribute 3% of remaining emissions in 2040. These emissions come from a combination of organic materials that are assumed to still be disposed in landfills and the effectiveness of receiving landfills at capturing methane emissions escaping from the landfill.

Of these remaining emissions, technology largely already exists to reduce the majority, including those from on-road transportation and some off-road equipment. Remaining emissions from wastewater treatment, solid waste and certain heavy-duty or specialized off-road equipment are technologically challenging to achieve zero emissions at the time of CAAP preparation. It is this kind of remaining emissions source that the City's carbon neutrality target intends could be neutralized through carbon sequestration or other carbon removal strategies. For illustrative purposes, if the City can fully reduce the estimated remaining emissions from all sources except wastewater treatment and solid waste, there would be approximately 27,000 MT $CO_2e$/yr remaining in 2040 to be neutralized through alternative actions.

### 4.5.2 Removal/Sequestration Options

The City's carbon neutrality definition presented in Chapter 3 describes that the preferred approach to target achievement should be a hierarchy based on:

- Maximizing local GHG reductions through CAAP actions
- Sequestering carbon through natural processes, locally or within the region
- Removing carbon through industrial methods (e.g., direct air capture, carbon-embedded concrete)
- Use of carbon markets to purchase carbon credits

Two CAAP priority actions quantify sequestration benefits from known opportunities. Action AD.2 estimates reductions from expanding the urban forest in line with historic tree planting trends in Davis, which would total 500 MT $CO_2e$/yr in 2040, and Action CR.2 quantifies carbon sequestration from compost application on City-owned agricultural lands, which would total 1,450 MT $CO_2e$/yr in 2040. Combined, these two actions total nearly 2,000 MT $CO_2e$/yr compared to the best-case scenario described in the previous section in which 27,000 MT $CO_2e$/yr would remain from wastewater treatment and solid waste. One challenge with natural sequestration actions is the amount of land area required for significant reductions. However, if the City could expand implementation of Action CR.2 to all agricultural land within the City boundary, it could achieve additional reductions of approximately 17,500 MT $CO_2e$/yr, which would then bring the City very near its carbon neutrality target in this best-case scenario.

There may be an opportunity in which the City could help implement natural carbon removal actions regionally (within unincorporated Yolo County, for example, in support of the County's 2030 carbon negative goal), through which the City could reasonably attribute additional GHG reductions to its own carbon neutrality target. Exploration of industrial carbon removal technologies are another pathway that should be explored as described in Action CR.1. Pilot projects are under development around the globe for direct air capture facilities that can extract carbon dioxide directly from the air, and current designs operate at the removal scale of one million MT $CO_2e$/yr. As shown in Table 9, based on the CAAP 2040 GHG reduction scenario, Davis is estimated to have remaining emissions that total approximately 205,000 MT $CO_2e$/yr and a collaborative partnership in the region to fund and construct such a facility could be a shared mitigation strategy that helps multiple local jurisdictions demonstrate achievement of their carbon neutrality goals. Additionally, concrete manufacturers have developed concrete mixes that use sequestered $CO_2$ as a replacement for cement, and such $CO_2$-injected concrete mixes are already being used in US projects. Davis can continue to monitor and evaluate other new products and technologies designed to support carbon removal efforts.

### 4.5.3 Relationship to Implementation Monitoring

In recognition that projections necessarily include an element of uncertainty, Chapter 5 outlines the City's CAAP implementation and monitoring approach with provisions for updating the CAAP as new information becomes available. It will be important to monitor and update the CAAP considering future technologies, regulations, and funding sources, all of which may affect the City's emissions trajectory and achievement of its 2040 goal.

# Additional Actions Identified during Community Outreach

4.6

This section includes additional actions that were also identified by community members during workshops or other outreach. These action ideas were included in the ASAP evaluation process but not prioritized for this CAAP. As such, they have not been reviewed or developed further, and may not necessarily be feasible or appropriate. They are included below, organized by goal area, as a means of retaining the ideas for potential future use. These actions may serve as a starting point for developing new CAAP actions once the initial prioritized actions are completed or underway.

## Building Energy and Design Additional Actions

### GOAL: TRANSITION TO HIGH EFFICIENCY, ZERO CARBON HOMES AND BUILDINGS

- **All-electric equipment replacement:** Pursue grant funding for replacement of existing gas equipment to all-electric as equipment fails for low-income residents *(included in approach to BE.1)*
- **Energy disclosure:** Establish an energy disclosure ordinance that requires building owners and homeowners to complete and publicly report comprehensive energy assessments prior to sale of a house or whole building *(included in approach to BE.2)*
- **Induction cooking:** Provide resources to promote induction cooking, such as test kitchens, incentives, and education
- **Zero-net energy:** Adopt a reach code to require zero-net energy new construction, including new City buildings
- **Development incentives:** Provide development incentives (e.g., density bonus) to projects that voluntarily achieve zero-net carbon design
- **City facilities as models:** Develop and fund a program for energy efficiency and electrification at all city facilities, and use as demonstration projects for businesses and residents, including installing energy efficiency and renewable energy elements such as solar, battery storage, LED lighting, etc., and providing visual meters for energy produced/saved, air quality information, and interpretive signage

### GOAL: EXPAND LOCAL RENEWABLE ENERGY DEVELOPMENT AND STORAGE

- **Municipal solar:** Perform a feasibility assessment for new solar development on City buildings, parking lots, etc.
- **Private parking lot solar:** Develop partnerships with owners of large parking lots to encourage the installation of solar panel shade canopies and storage that are co-owned public/private
- **Solar standards:** Explore regulations to allow solar panels (for shade) above driveway, front yard, side yard etc.
- **Community solar:** Set up sites for community solar complexes, with preference for participation from low-income residents. Use VCE to organize these projects and deliver power to customers at fixed long-term prices
- **Renewable energy diversification:** Develop a strategy to diversify renewable energy sources in the City, including wind, wastewater treatment biogas, and biomass collection
- **Battery storage:** Develop financing/incentive options to support battery storage and demonstrate their feasibility, and include specific provisions for vulnerable populations
- **VCE energy portfolio:** Work with VCE to achieve a zero-carbon portfolio by 2030

## Transportation and Land Use Additional Actions

### GOAL: ADOPT ZERO EMISSIONS VEHICLES AND EQUIPMENT TO REDUCE FOSSIL FUEL USE

- **Electric car share:** Develop an electric car-to-go system as a component to reduce need for private car ownership
- **Incentivize EV adoption:** Identify a funding source to provide financial incentives for new alternative fuel vehicle purchases by residents and local businesses
- **EV charging rates:** Work with VCE to establish preferential electric vehicle charging rates to avoid disincentives to electric vehicle adoption *(note: this action may not be feasible)*
- **EV charging locations:** Develop a Right-to-Charge program to promote direct electric vehicle charger installations near homes or places of work for electric vehicle owners without access to charging, with an initial focus on locations with high rental unit concentrations
- **Banning leaf blowers:** Ban gas leaf blowers/require electric leaf blowers paired with a trade-in credit for gas blowers
- **Public funding requirements:** Require projects benefitting from public funds to use the best available off-road vehicle technologies to minimize GHG emissions, including electric and alternative fuel vehicle options
- **Municipal fleet:** Convert the municipal off-road vehicle and equipment fleet to electric and/or alternative fuel *(this action is included in TR.2)*

### GOAL: INCREASE OPPORTUNITIES FOR ACTIVE MOBILITY IN THE COMMUNITY

- **Bike storage areas:** Provide centralized, monitored storage areas for all mobility devices (e.g., bikes, scooters), especially near high-activity destinations
- **Micro-transit:** Provide small scale, on-demand alternative fuel micro-transit (e.g., minibuses or vans) for intra-city trips through Davis Community Transit
- **Bike lanes:** Expand and improve active mobility infrastructure (e.g., bike lanes) to promote use and increase safety

### GOAL: REDUCE SINGLE OCCUPANT VEHICLE USE

- **Carpooling:** Expand and promote a carpool program to reduce commute trips into/out of Davis
- **Parking maximums:** Establish parking space maximums for new residential development to limit parking supply
- **Unbundling parking costs:** Require parking space costs to be unbundled from housing costs

### GOAL: EXPAND OPPORTUNITIES FOR LOCAL HOUSING DEVELOPMENT TO BALANCE LOCAL EMPLOYMENT OPPORTUNITIES

- **Zoning:** Utilize up-zoning, mixed-use zoning, and/or relaxed single-family zoning to allow for additional multifamily development
- **Shopping and services:** Evaluate existing shopping centers and commercial corridors to identify opportunities for mixed-use development to bring more people near services and energize existing centers

## Water Conservation and Waste Reduction Additional Actions

### GOAL: CONSERVE WATER IN OUR BUILDINGS AND LANDSCAPES

- **Water conservation:** Remove turf grass from public spaces to the extent feasible and replace with native, climate-ready, and drought tolerant landscaping and efficient irrigation systems
- **Water conservation:** Develop pricing mechanisms to disincentivize water waste
- **Greywater:** Develop financing/incentive options to promote the collection and reuse of greywater and recycled water in existing buildings, and include specific provisions for vulnerable populations
- **Greywater:** Develop policies that require greywater reuse in new construction and major remodels
- **Pools:** Develop financing/incentive options to reduce pool water consumption and energy use, and include specific provisions for vulnerable populations
- **Wastewater treatment:** Install a reclaimed water distribution system from the wastewater treatment plant (WWTP) to the City, and specifically to any high water users

### GOAL: REDUCE WASTE GENERATION AND INCREASE DIVERSION AWAY FROM LANDFILLS

- **Food recovery:** Expand on the already-required City-County food recovery and redistribution program
- **Equipment sharing:** Implement equipment sharing programs for maintenance/repair tools, gardening equipment, bikes, etc.
- **Upcycling:** Promote local spring-cleaning upcycling events for residents, including increased bulky items vouchers
- **Waste reduction:** Replace or augment all waste bins at City parks/greenbelts with recycling and organics bins to reduce waste and separate the waste stream. This may mean removing single trash bins in some areas

## Adaptation Additional Actions

### GOAL: CREATE A COOLER CITY WITH MORE URBAN FOREST AND GREEN SPACE FOR PEOPLE AND HABITAT

- **Park Planning:** Update the Parks Management Maintenance Plan for public green spaces that considers plant selection for long-term climate resilience and sequestration benefits, expands drought tolerant greenbelts, and uses succession planting to replace existing greenbelts with drought tolerant and climate-ready species
- **Increased park requirements for new development:** Develop additional policies that require new green spaces in residential, multi-family housing, office, and commercial private developments
- **Shade:** Provide more non-natural shade in public spaces where trees cannot be planted
- **Cool surfaces:** Develop financing/incentive options to promote the use of cool surfaces, reflective materials, and coatings to reduce the heat island effect
- **Cool surfaces:** Develop financing/incentive options to promote the use of green walls and roofs on downtown buildings
- **Community gardens:** Increase community garden opportunities with priority for renters, and incorporate a garden management program

### GOAL: PROTECT PUBLIC HEALTH AND SAFETY FROM EXTREME HEAT AND WILDFIRE SMOKE

- **Air filtration incentives:** Develop incentives for air conditioning and ventilation upgrades and indoor air filters to improve indoor air quality in buildings, and include specific provisions for low-income and vulnerable populations

### GOAL: PROTECT PUBLIC HEALTH, SAFETY, AND INFRASTRUCTURE AGAINST DAMAGE AND DISRUPTION FROM FLOODING

- **Grant funding for infrastructure:** Pursue grant funding to support green infrastructure projects like urban forest management/expansion and sustainable stormwater management
- **WWTP levee:** Conduct analysis to determine if the levee surrounding the wastewater treatment plant would be accepted by the Federal Emergency Management Agency for flood protection from a 500-year storm event

### GOAL: PREPARE AND RESPOND TO CLIMATE HAZARDS TO ENSURE THAT THE CITY IS EQUIPPED TO ADDRESS CURRENT AND FUTURE CHALLENGES

- **ASR:** Investigate aquifer storage and recovery (ASR) systems to capture and store excess river water for later use. Investigate the potential for augmenting aquifer storage with treated wastewater
- **Water access:** Install additional water fountains and undertake other actions (such as upgrading existing water fountains to include bottle fillers and dog water) to increase public access to water
- **Backup power:** Provide backup power for critical infrastructure, including traffic signals

## Carbon Removal Additional Actions

### GOAL: DEMONSTRATE CLIMATE LEADERSHIP THROUGH INNOVATION, EDUCATION, AND INVESTMENT

- **Plant-based diets:** Promote plant-based diets through education and outreach
- **Sustainability Center:** Develop "Sustainability Center" for information and services in downtown Davis (such as opportunities for up-cycling; metrics about how Davis is doing on greenhouse gas reduction, etc.).
- **Asset divestment:** Evaluate the City's financial portfolio and divest assets from the fossil fuel industry
- **Green investments:** Utilize enterprise funds and revolving loan funds to finance green investments

# CHAPTER 5.

# Implementation and Monitoring Framework

# City Organizational Structure to Implement and Monitor Sustainability and Climate Actions

5.1

The City recognizes the significance of providing an internal organizational structure to elevate and implement the identified CAAP actions. A multi-faceted, multi-disciplinary approach by both municipal and community organizations and individuals will be required to attain interim greenhouse gas reduction targets by 2030 and community carbon neutrality by 2040.

The City Manager is completing plans to house sustainability leadership functions in the City Manager's Office to facilitate interdepartmental direction and coordination across all departments to meet the City's CAAP goals. The Sustainability Manager, with supporting sustainability staff, will be primarily responsible for implementation and monitoring of the CAAP actions. This organizational structure will be developed further following the anticipated City Council adoption of the 2020-2040 CAAP in December 2022, including staffing details and an organizational chart.

Once climate action and adaptation measures are adopted, the City team will work closely with regional partners and jurisdictions on implementation and monitoring. The City will develop a CAAP-related contract with a grants management consultant to identify funding strategies and pursue CAAP grant opportunities. Additionally, the City will collaborate with community-based organizations and other City partners to implement community outreach, education and awareness of climate actions.

# 5.2 Implementation Roadmap Summary

The implementation roadmaps (Appendix A), developed in partnership with City of Davis staff, offer potential pathways to robust execution of each CAAP action. Each roadmap includes information on the amount of potential GHG emissions reductions and climate hazards that each action addresses, identifies related CAAP actions and action priority level, and outlines potential completion timelines, milestones, and performance tracking metrics. The roadmaps also include a high-level overview of opportunities to fund the required work via grants and other funding mechanisms, community outreach and education and other tools.

Implementation roadmaps are  a starting point for  implementation of each action and do not provide all necessary details. Each action will be developed further following CAAP adoption. Many actions have multiple components that are identified in the roadmaps, with as much information as is currently available. The relative priority and timeframe for each action are included in the roadmaps and summarized graphically in Figure 5

Roadmaps identify the lead department and likely key partners for implementation. Each action will likely have a planning and an implementation stage, although some actions may be able to be fully completed shortly after initiation, such as converting all municipal electricity accounts to 100% renewable energy (Action BE.7), and others may take significantly longer. For example, a transition plan for decarbonizing the municipal fleet (Action TR.2) may be completed in early 2023 (currently in progress in December 2022), but the complete conversion of all fleet vehicles to electric may take as long as ten years, and may partially depend on technology not yet developed, such as for electric heavy-duty machinery or emergency vehicles.

Some actions will require further community input and discussion, Commission review, or City Council adoption, especially for new or revised ordinances, and budget allocation or expenditures. Additionally, some action implementation may be dependent on other factors such as available resources, technology or statewide implementation guidance and support. Once the CAAP is adopted, the status of each action will be identified in the City's CAAP dashboard, which will be updated on a regular basis to provide accountability for progress to the community.

# Funding and Financing Summary 5.3

As shown in Chapter 4, the CAAP includes 28 priority actions that range from capital-intensive projects like decarbonizing municipal buildings and the City vehicle fleet, to ongoing policies and programs like subsidized public transit and water conservation incentives. Capital-intensive projects will require large sums of upfront funding and agency resources, while policies and programs will require ongoing, annual funding and resources including staffing and consultant support. This section provides an overview and discusses key considerations for developing funding and financing strategies, including criteria for evaluating strategies and identifying funding needs and opportunities for each priority action. Additional opportunities and more detail on funding and financing tools, including specific local, state, and federal grants, bonds and loans, and existing consumer incentive programs, is provided in Appendix B.

## KEY CONSIDERATIONS FOR DEVELOPING FUNDING & FINANCING STRATEGIES

### 5.3.1.1 Evaluation Criteria

When developing funding and financing strategies for the priority CAAP actions, the City of Davis should evaluate strategies based on the following criteria:

1. **Efficiency:** Environmental economists generally agree that the "polluter pays" principle is the most efficient means of curbing pollution at minimal cost to society. To the extent possible, financing mechanisms should place the burden of paying for decarbonization on emitting actors.
2. **Appropriateness of funding strategy for its use:** Ongoing climate action programs, such as household incentives or transit access programs, should be funded by ongoing revenue sources such as taxes or fees. Ideally, these revenue sources should be new and support climate action goals (see "economic efficiency") so that spending on climate action does not come at the expense of other vital City priorities. On the other hand, large, capital-intensive projects may be better suited for grants and financing tools such as bonds that allow the City to issue debt (e.g., borrow money) to pay for investments upfront and repay over time.
3. **Equity:** The burden of paying for climate solutions should not disproportionately fall on low-income households. A funding strategy that creates regressive fees or taxes for low-income residents would not achieve the CAAP's overarching goals of promoting community and social equity. Instead, wherever possible, policies should reduce costs and impacts, generate wealth, and create other economic opportunities for lower-income, Black, Brown, Indigenous and Asian communities. In addition, financing solutions should balance the "polluter pays" criterion with ensuring that the transition to a carbon neutral economy is equitable.
4. **Ease of administration:** Financing tools should be relatively easy for the City and/or its partners to administer. Funding and financing mechanisms should reflect the capabilities of the City and should enable the agency to achieve its level of service goals for its programs.

### 5.3.1.2 Action-Specific Issues & Opportunities

Each action has its own funding challenges and, of course, opportunities. Actions that require large upfront capital investment are likely to have a different funding strategy than actions that require ongoing funding and resources, such as staff and consultant time. Actions that generate revenue could fund themselves and, potentially, other actions. Meanwhile, funding and financing opportunities include bundling similar projects, which could be based on timing, geographic region or co-benefits.

## FUNDING & FINANCING TOOLS

Common funding and financing sources for climate action projects and programs can be broadly categorized as (1) grants from local, state, and federal agencies, (2) revenue-generating tools, (3) fiscal policies and (4) private market financing strategies (e.g., debt instruments).

1.

**Grants:** Successful implementation of Davis' climate action priorities will require a strategy for securing grants that considers staff capacity, the competitive landscape (i.e., other entities from the region that may be pursuing the same grants), opportunities to collaborate across jurisdictions and bundle projects, annual funding priorities of each grant program, and Davis' ability to secure a local match, if required. The State of California and SACOG offer an array of mitigation- and resilience-related grants for which Davis' priority climate actions may be well-suited. Federal grants tend to offer larger dollar amounts per grantee than state and local grants but tend to have more requirements and lengthier application processes, which can be resource-intensive for the receiving entity.[1] Given this, federal grants are generally better suited for higher price tag projects, including regional projects, for which the grant can cover a significant portion. As an example, Governor Newsom's 2022-2023 budget and President Biden's Infrastructure Investment and Jobs Act both provided unprecedented funding for climate action so both state and federal grant opportunities should actively be explored. Grants that are especially relevant to the Davis CAAP are highlighted in Table 10. A full list of applicable local, state, and federal grants is provided in Appendix B. Where possible, actions that are likely to have grant funding opportunities in the short term are identified in Appendix A, Implementation Roadmaps.

2.

**Revenue-generating tools:** Local funding sources are essential for paying for ongoing programming and staffing needs, issuing debt, and securing grants that require a local match. The City of Davis and Yolo County can use a variety of revenue-generating tools to provide funding for their priority climate actions, ranging from revenue bonds to assessment districts to user fees. Each tool, however, has its own set of opportunities and drawbacks that may or may not make it a good fit for the priority actions proposed in the CAAP. These factors relate to timing, revenue-generating potential, political feasibility, administrative complexity, and equity. Where possible, actions that are likely to have return on investment and revenue generation opportunities are identified in the Implementation Roadmaps.

3.

**Fiscal policies:** Another key strategy for funding and financing the City's climate actions is to develop fiscal policies that support and reinforce its climate goals. Climate change creates a long-term financial obligation, in terms of mitigating, adapting, and responding to a climate crisis, and, as such, requires long-term fiscal planning. The City of Davis may consider developing a Climate Action Fund that allocates a portion of its General Fund to specifically fund climate mitigation and adaptation efforts. Additionally, some climate actions may provide economic development and job creation opportunities.

4.

**Financing strategies:** Issuing debt to fund projects is generally suitable for capital-intensive projects and, as such, may only be applicable to a subset of Davis' priority climate actions. Table 10 summarizes loan opportunities that are relevant to Davis' CAAP at the time of writing. Notably, the California Infrastructure and Economic Development Bank's Infrastructure State Revolving Fund can be used as a source of matching funds for grants or other financing needs.

[1] *The City of Davis received $20 million in American Rescue Plan funding, which the City had already allocated to various uses at the time of this publication. Any remaining funding, however, could be used as match funding for climate action grants.*

**Table 10.** Federal, State and Regional Grants Most Applicable to Davis Priority Climate Actions (as of June 2022)[1]

| ADMINISTERING ORGANIZATION | PROGRAM/ GRANT NAME | DESCRIPTION |
|---|---|---|
| Federal Transit Administration | **Low or No Emission Vehicle Program – 5339(c)** | This Program provides funding to state and local government authorities for the purchase or lease of zero-emission and low-emission transit buses as well as acquisition, construction, and leasing of required support facilities. |
| Federal Highway Administration | **National Electric Vehicle Infrastructure Formula (NEVI) Program** | The NEVI Program is intended to provide funds to states to strategically deploy electric vehicle charging infrastructure and to establish an interconnected network to facilitate data collection, access, and reliability. Funds are apportioned to state governments and are in turn distributed to local government agencies. |
| California Energy Commission (CEC) | **Clean Transportation Program** | This program is intended to promote the development and deployment of advanced transportation and fuel technologies, including the development of fueling and charging infrastructure for low- and zero-emission vehicles, the adoption of alternative fuel and advanced technology vehicles, and the production of alternative low-carbon renewable fuel from low-carbon pathways. |
| CEC | **Energy Partnership Program** | This Program offers services to help identify the most cost-effective, energy-saving opportunities for buildings and new construction. These funds may be used to conduct energy audits, prepare feasibility studies, and develop equipment performance specifications, among other construction related plans. |
| California Department of Transportation | **Sustainable Communities Grant** | This grant program is intended to encourage local and regional planning that furthers state goals, including, but not limited to, the goals and best practices cited in the Regional Transportation Plan Guidelines adopted by the California Transportation Commission. |
| California Strategic Growth Council | **Transformative Climate Communities Program** | The Transformative Climate Communities Program funds community-led development and infrastructure projects that achieve major environmental, health, and economic benefits in California's disadvantaged communities. |
| California Natural Resources Agency | **Urban Greening Program** | The Urban Greening Program supports the development of green infrastructure projects that reduce GHG emissions and provide multiple benefits, including direct investments toward disadvantaged communities. |
| SACOG | **Transportation Demand Management (TDM) Program** | This Program provides funding for projects, programs, and events that are effective in changing travel behavior. Eligible projects encourage residents to drive alone less often through the development and implementation of TDM programs, policies, and services that promote bicycling, walking, riding transit, carpooling, or teleworking. |

*1 The City has received more than 40 grants within the last five years, including a Statewide Park Development and Community Revitalization Grant Program for park improvements and bioswales, a California Department of Forestry and Fire Protection grant to fund tree planting, a SACOG grant to support the preparation of a draft affordable housing ordinance, a SACOG Green Region grant to support EV infrastructure and a number of other grants related to housing issues.*

## ARTS AND INNOVATIVE APPROACHES FOR ACTION IMPLEMENTATION

CAAP action implementation will benefit from creative strategies for community education and resiliency. City staff will collaborate with community members and community-based organizations to develop art events to educate the community on climate issues, engage citizens and businesses, and address equity, inclusion, and diversity. Inclusion of these innovative approaches will expand the scope and reach of climate efforts and responses, as the arts provide critical communication tools to educate, inform and inspire action. The arts sector, including theater, storytelling, visual art, music, and other creative endeavors, can offer important contributions to recovery and rebuilding efforts and can unite communities in the wake of climate events such as flood, fire, and drought. Art at every scale, from museum exhibitions to street murals, offers community benefits and builds connection.

## FUNDING AND FINANCING NEXT STEPS

Implementation of Davis' priority climate actions will be most effective and efficient if multiple actions are pursued in tandem, which may include using funding and financing sources to support multiple, or bundled, projects. Near-term next steps (within one to two years) for beginning implementation of priority actions may include:

- **Prioritize actions that will offer savings or other benefits to low-income or vulnerable households.** Successful climate action must facilitate equitable outcomes for Davis residents, which will require prioritizing actions that provide immediate and direct benefits to low-income or vulnerable households. These actions include subsidized public transit and energy efficiency upgrades.
- **Identify partnership opportunities to plan, fund, and implement climate actions.** Other public local and regional public agencies, such as Yolo County and SACOG, that have similar GHG emission reduction goals or face similar climate stressors are ideal candidates for partnerships. Partnerships between public agencies can also increase the competitive edge of grant applications. Other civic institutions, notably UC Davis, may also offer partnership opportunities.
- **Determine which strategies will require environmental review, technical analysis, and/or complex partnerships and permitting.** Some of the priority actions will have longer implementation timelines due to environmental review requirements or financing coordination (e.g., new sales tax, bond issuance). To meet its 2030 and 2040 goals, the City will need to start the first phase of work on these longer-term projects.
- **Be aware of and prepare for unprecedented climate resilience funding allocated through state budgets.** Given climate impacts, more money has been allocated in recent years for carbon reduction and climate resilience efforts.
- **Include CAAP actions in the City's annual Comprehensive Funding Plan (CFP) and address early preparation of application materials for grants from the State and other sources, with consideration for availability and deadlines.** This will allow the City to match actions to grant opportunities, define strong proposal narratives and identify potential partnerships.

# Plan Monitoring and Updates

## 5.4

The City will develop a CAAP-related contract with a grants management consultant to identify funding strategies and pursue CAAP grant opportunities. The City's climate actions and implementation approach will adapt in response to action performance and to the continuing advancement of climate science and policy and advances/price drop in technological solutions. The CAAP will be updated through an iterative process that recognizes the challenges of action implementation and advances the City's ability to meet its targets. The City is committed to a transparent process of monitoring, assessing impact, reporting progress, and stakeholder feedback to ensure that the CAAP is revised routinely as summarized in **Table 11**. The revision process will include a review of the City's GHG emission reduction progress, action implementation performance and updates to emissions forecasts (as needed). Additionally, the City will identify new regional, state, or national legislation that could affect local GHG reductions and any new science-based guidance on target setting. The City will regularly share CAAP implementation progress updates with the community.

**Table 11.** CAAP Monitoring and Communication

| CAAP ELEMENT | CITY APPROACH |
|---|---|
| **GHG Inventory** | The City will collect and review primary GHG emissions activity data bi-annually and prepare a complete GHG inventory no less than every two years to monitor GHG target achievement. Frequency of GHG Inventories will be addressed again in 2030. |
| **CAAP Action Progress Assessment** | The City will regularly track CAAP action implementation progress against each action's individual metrics. The City will document CAAP action progress in a public-facing, user-friendly dashboard that will include graphs that illustration an action's performance over time. |
| **CAAP Updates** | The City will perform a full review of the CAAP in 2025 (approximately two years after 2020-2040 CAAP adoption), followed by reviews every five years. This review will determine if the CAAP must be updated to reflect new information and/or revise the GHG reduction approach based on implementation monitoring results. Each update will include the most recent GHG inventory (and/or primary activity data) and report progress on CAAP actions. Additionally, the City will conduct a comprehensive update to the CAAP following the 2030 target year. |
| **Communications and Feedback** | The City will provide CAAP monitoring progress and updates via the CAAP dashboard. Additionally, the City will regularly communicate updates on CAAP action progress during Natural Resources Committee meetings. These communications will be supported by emails, social media posts and public meetings, as appropriate. |

# 5.5 GHG Inventory Updates

In the context of a CAAP, GHG emissions are monitored through total community GHG emissions, or a "top-down" approach, and individual action performance, or a "bottom-up" approach. These two evaluation considerations are summarized in **Table 12**.

**Table 12.** Top-Down and Bottom-Up GHG Monitoring

| MONITORING APPROACH | TASK | TIMEFRAME |
|---|---|---|
| **Top-Down** | Monitor primary GHG inventory activity data and/or conduct full GHG inventory | Annually for primary activity data; every two years for full GHG inventory |
| **Bottom-Up** | Monitor CAAP action effectiveness through individual metrics | Reviewed every 1-2 years |

## TOP-DOWN MONITORING APPROACH

Future GHG inventories will provide "top-down" information that identifies trends in GHG emissions across sectors and demonstrates progress toward the 2030 and 2040 GHG targets. The City can also get a quick sense of emissions changes without conducting a full inventory based on relatively few primary activity data sources related to the priority CAAP actions to allow more regular and efficient progress monitoring.

To track the City's changing emission profile and to inform action implementation, a "top-down" GHG emissions analysis will be conducted annually using the data summarized in **Table 13**, which will track building energy use, on-road transportation emissions, and solid waste emissions, representing nearly 90% of 2016 GHG emissions. This regular GHG emissions analysis allows the City to identify emissions sectors or activities that demonstrate progress toward the CAAP goals as well as those sectors or activities that are not on track, indicating that an adjustment to the CAAP actions may be necessary. The City will also prepare full GHG inventories on a regular cycle of every two years, which will additionally represent changes in off-road equipment, wastewater treatment and water supply emissions.

**Table 13.** Data Sources for Annual GHG Emissions Analysis

| EMISSIONS SOURCE | DATA NEEDED | DATA SOURCE | PRIMARY DATA TO TRACK ANNUALLY? |
|---|---|---|---|
| **Electricity** | Electricity consumption by sector | Pacific Gas & Electric (PGE)/VCE | Yes |
| | Electricity emissions factor | Electric utility providers | Yes |
| **Natural Gas** | Natural gas consumption by sector | PG&E | Yes |
| | Natural gas emissions factor | EPA | No – City can broadly track changes in natural gas consumption since the emissions factor is relatively constant |
| **Transportation** | VMT* and travel mode split | SACSIM Travel Demand Model, or Google Environmental Insights Explorer (EIE) tool | Yes |
| | Gas and diesel emissions factors | CARB EMFAC model | No – City can broadly track changes in VMT and travel mode to get initial sense of sector level changes |
| **Solid Waste** | Tons of waste disposed by disposal method (e.g., landfill, incineration) | City of Davis or CalRecycle | Yes |
| | Solid waste management emissions factors | EPA Waste Reduction Model (WARM) | No – City can broadly track waste disposal by treatment method to understand if organics diversion programs are being successfully implemented |

**The VMT values used in the 2016 base year inventory were from the SACOG regional travel model, which is updated on an approximately 4- to 5-year cycle, so the frequency of monitoring based on this top-down approach will be limited to the frequency of model updates. Alternatively, Google Environmental Insights Explorer (EIE) VMT data is updated annually and has been identified as an alternative source of on-road transportation data by ICLEI USA, though it does not offer forecasting information that is included in the SACOG model. Davis could decide to replace SACOG VMT data with Google EIE data in the future due to its consistency or collect Google EIE data annually to identify directional changes in the community's vehicle travel volume (i.e., VMT) and travel mode (e.g., transit, driving, biking)*

## BOTTOM-UP MONITORING APPROACH

The City will also track the impact of each action through a "bottom-up" approach to monitor the overall effectiveness of the CAAP. Monitoring action progress is necessary to manage and implement the CAAP, reinforce successful actions, adjust or replace ineffective actions, and develop new actions when needed. Bottom-up action metric tracking can identify which actions in a specific sector are underperforming if top-down monitoring shows that an emissions source is not on track to achieve the City's targets.

The implementation roadmaps in Appendix A present potential implementation metrics to track action progress. **Table 14** presents examples of these metrics. The City will select one or more performance metrics to monitor each action's desired outcome.

**Table 14.** Action Metrics Examples

| CAAP ACTION | POTENTIAL IMPLEMENTATION METRIC | DATA SOURCES |
|---|---|---|
| **BE.1 Building electrification *when permit is needed*** | Percent of space heating system building permits that are for all-electric systems (track by residential and non-residential) | City |
| **BE.5 Community solar energy** | Percent of Davis residents subscribing to UltraGreen | VCE |
| **TR.2 Decarbonize municipal fleet** | Percent of municipal fleet passenger vehicles that are non-fossil fuel vehicles | City |

# Vulnerability Assessment and Adaptation Plan Updates (e.g., SB 379 compliance)

5.6

In addition to the components described in Section 2.2.3, Government Code Section 65302 specifies that the Vulnerability and Adaptation Plan be updated with the General Plan Housing Element at least every eight years. In compliance with Section 65302, the City will update the CAAP, which includes a vulnerability assessment, adaptation goals and adaptation actions, every five years or more often, if needed.

# 5.7 Dashboard

After CAAP adoption, an online dashboard will provide clear, engaging communications to stakeholders and community on the progress of CAAP actions and implementation. The dashboard will provide high-level tracking of key metrics such as electricity and natural gas use by the residential, non-residential, and municipal sectors, relative to the 2016 baseline year. Users will also be able to explore implementation status across broader goal and sector areas, as well as drill down into individual actions, comparing current implementation level to planned. Hosted on the City of Davis' website, the user-friendly dashboard platform will allow City staff to easily update the dashboard with new data over time. On the frontend, the dashboard interface will be attractive and easy-to-understand, enabling a wide range of audiences to engage with climate action metrics and progress updates.

# Social Media and Outreach Efforts 5.8

Following CAAP adoption, the City will focus on encouraging community understanding and awareness, promoting personal decision-making to support carbon reduction, and addressing diversity, equity and inclusion issues. These efforts will continue through 2023 and will be disseminated through social media, online platforms, an online metrics dashboard and more to keep the community updated on key CAAP milestones. Using CAAP branding and graphics, materials will be developed for print media press releases, social media content, community events (such as pens, stickers, pins), and outreach planned specifically for hard-to-reach audiences.

'Fun Fact Friday' social media posts are being developed to engage local businesses, community-based organizations, and community members. Each week, social media posts will highlight a CAAP element or action with three "Fast Facts" and a trivia question, to be posted on Facebook, Twitter, Instagram and NextDoor. Participants who correctly answer the question are entered into a drawing to win a gift card. Winners are announced each Friday along with a new "Fast Fact" post for the next week.

Ideas for traditional and nontraditional methods to notify the community of opportunities to learn about the Davis CAAP may include informational brochures or one-page action descriptions, email notifications, posters at local businesses, lawn signs, postcards, banners and signage in designated neighborhoods and districts, coloring pages, short surveys, door hangers, bus and transit advertisements, creative chalk art throughout the City, pop-up workshops or other ideas. Weekly social media updates will include photos, videos, or animated short clips on CAAP related topics.

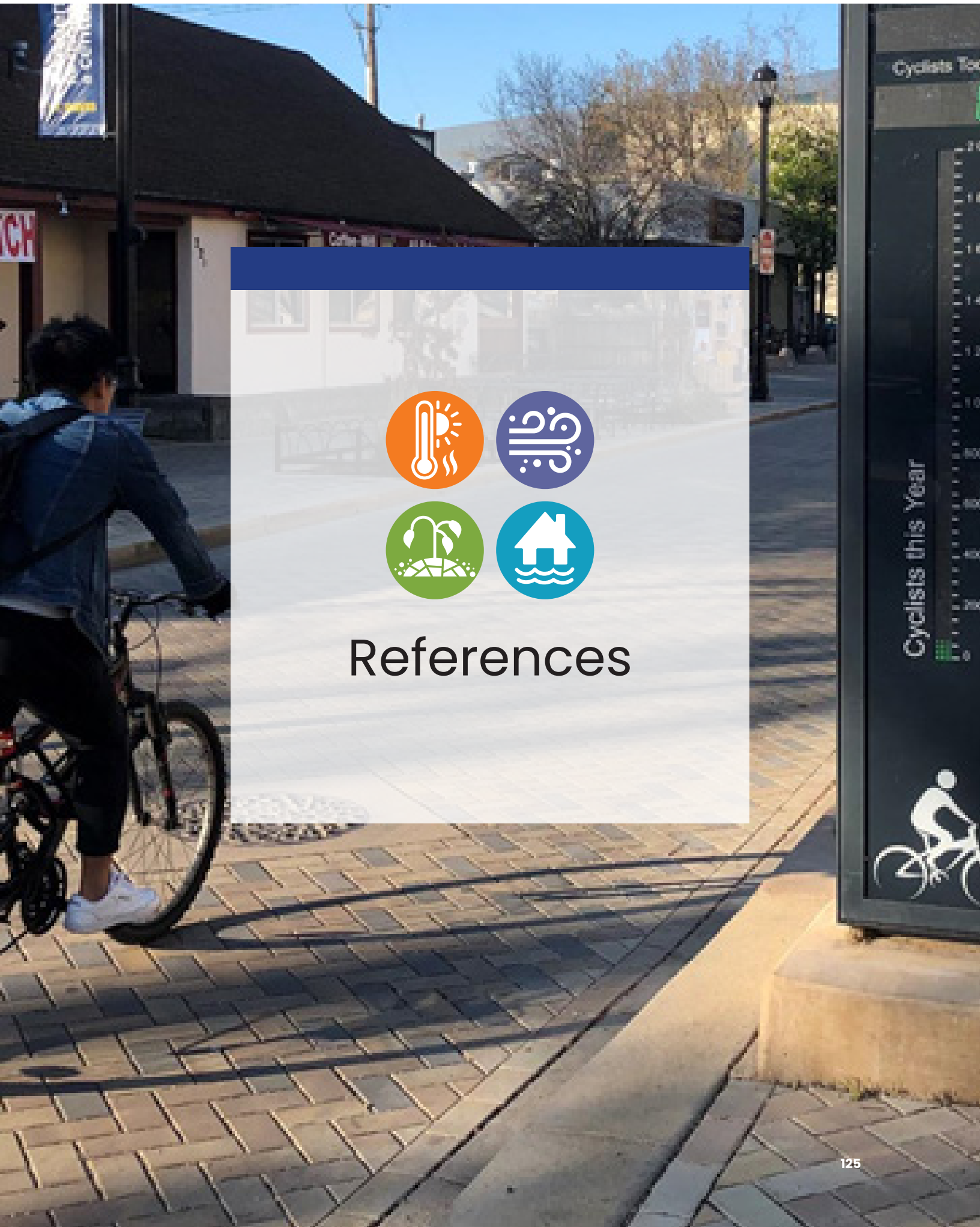
# 5.9 Next Steps

The CAAP is a living document that describes how the City will address climate change and collaborate with residents and businesses. The CAAP and the proposed actions will be regularly reviewed through community engagement, implementation, progress monitoring, and exploration of emerging opportunities. Regular updates are planned, with the first update proposed two years after the CAAP adoption (2025), followed by updates every five years (2030, 2035, 2040). Additionally, GHG inventories will be conducted on a biannual basis.

The City anticipates that there will be emerging technology, funding and partnering opportunities from regional, state and federal organizations over time to help Davis accomplish climate action and adaptation goals. Because it is not possible to know everything that the future holds, and to assist with planning future updates to the CAAP, the following areas for further action or further study are identified to be considered for inclusion with next CAAP update:

1. Consider recommendations in the DDSP. At the time of adopting this CAAP in December 2022, the DDSP was not yet adopted. As CAAP actions are implemented, and with the next CAAP update, the City should consider the added context and actions following adoption of DDSP. This may include developing a Sustainability Master Plan for Downtown Area, transportation programs and policies, green infrastructure improvements and requirements, microgrids and other building energy issues, among other policies and programs identified in the DDSP. Adaptation actions and planning should also be prioritized while implementing the Downtown Plan.
2. Address sustainability issues related to City purchasing, facilities and operations, transitioning to fully renewable energy and other municipal opportunities to lead by example.
3. Further develop ideas provided during the community outreach process. These are considered potential engagement ideas that the City can use to support CAAP implementation. Some outreach and education opportunities to be explored are listed in Section 2.2.
4. Expand on the City's Vulnerability Assessment and climate adaption actions to further address key vulnerabilities and strengthen community systems, structures, households and neighborhoods in anticipation of growing climate impacts.
5. Consider additional actions generated during community engagement, but not prioritized in this CAAP. The list of these ideas is included in Section 4.6.

It is the City's objective that this CAAP sets the stage for further efforts to address climate change risk and attain the Davis 2040 carbon neutrality target. This plan provides a strong framework for the City to act swiftly to incorporate innovative and creative approaches to implement sustainable GHG reductions, focus on diverse co-benefits, attract new investment to provide opportunities for current and future residents, and celebrate a culture of respect, diversity, equity, and inclusivity.

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# Special Recognition to Key Individuals

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**Dan Carson,** City Councilmember, who contributed significantly to the technical data discussions and dedicated additional time to advise the CAAP Project Management Team

**Hannah Safford and Greg Miller,** former Natural Resources Commissioners who contributed significantly to CAAP discussions in an advisory capacity

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# Appendix A
# Implementation Roadmaps

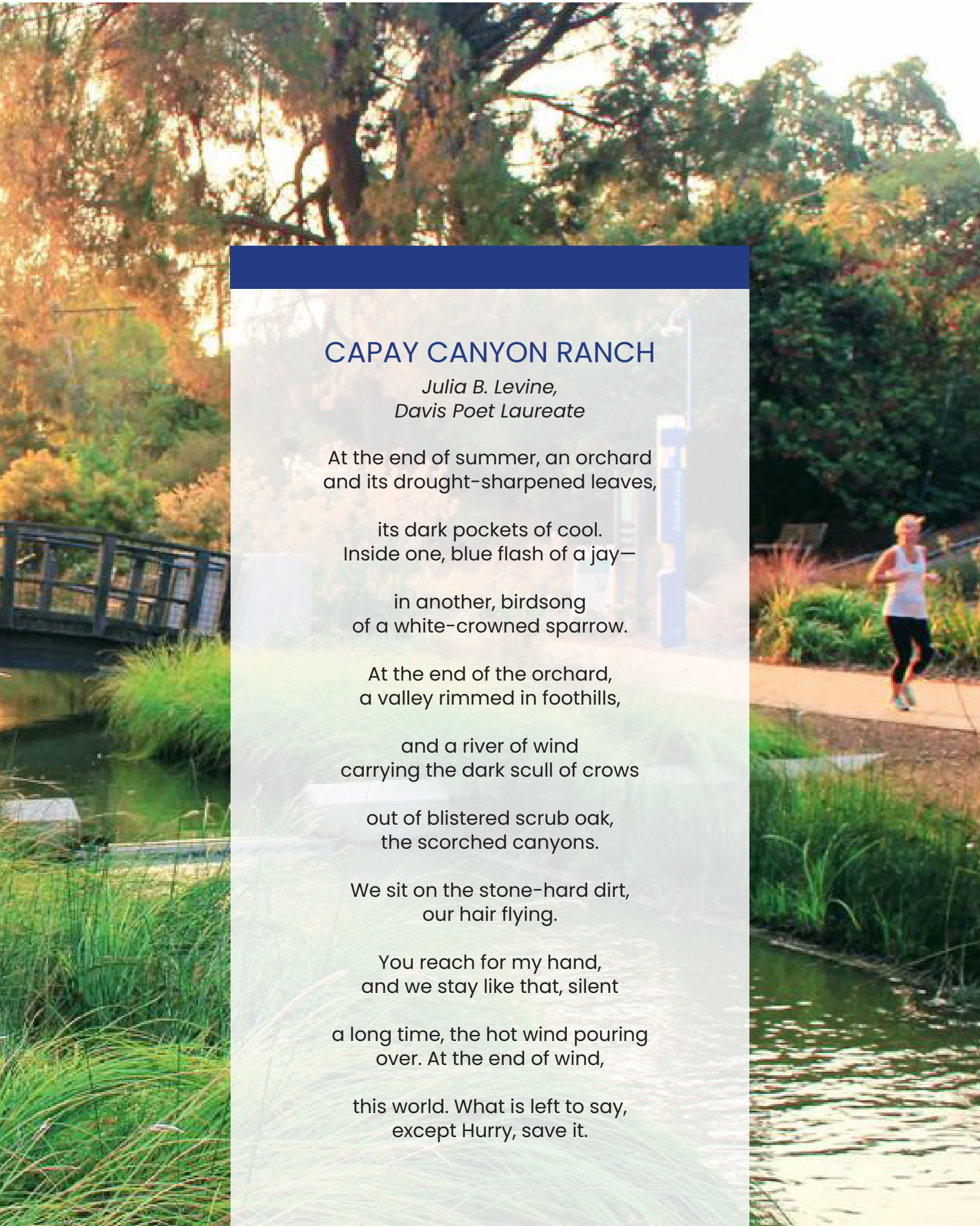
# Appendix B
# Funding and Financing Options

# Appendix C
# Climate Science Memo and Vulnerability Assessment

# Appendix D
# GHG Inventory and Forecasts

# Appendix E
# Action Selection and Prioritization Process

# Appendix F
# GHG Target Options Memo



# CAPAY CANYON RANCH

*Julia B. Levine,*
*Davis Poet Laureate*

At the end of summer, an orchard
and its drought-sharpened leaves,

its dark pockets of cool.
Inside one, blue flash of a jay—

in another, birdsong
of a white-crowned sparrow.

At the end of the orchard,
a valley rimmed in foothills,

and a river of wind
carrying the dark scull of crows

out of blistered scrub oak,
the scorched canyons.

We sit on the stone-hard dirt,
our hair flying.

You reach for my hand,
and we stay like that, silent

a long time, the hot wind pouring
over. At the end of wind,

this world. What is left to say,
except Hurry, save it.

Davis
CALIFORNIA

# DAVIS 2020-2040
# Climate Action & Adaptation Plan