City of Palo Alto Sustainability and Climate Action Plan

Implementation Work Plan (2023 through 2025)

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1. Executive Summary

This work plan implements the City's Sustainability and Climate Action Plan (S/CAP). In November 2016 the Council adopted the S/CAP Framework, which has served as the road map for achieving Palo Alto's sustainability goals. On October 3, 2022, the City accepted an updated set of Goals and Key Actions and is performing CEQA review with the goal of formally adopting the S/CAP in spring of 2023. This work plan implements this updated set of Goals and Key Actions.

The Goals and Key Actions are divided into eight areas, four of which are climate-focused and include actions to achieve the City's "80x30"[1] and carbon neutrality[2] goals (Climate Action, Mobility, Electric Vehicles, and Buildings) and four of which are focused on actions that create a sustainable natural environment and adapting to a warming climate but do not contribute significantly to the 80x30 goal (Natural Environment, Zero Waste, Water, and Sea Level Rise).

Based on Council's acceptance of the S/CAP Goals and Key Actions, staff and the Ad Hoc Subcommittee developed five Climate Action priorities for 2023 through 2025, which are listed in Section 2.i below:

It includes a variety of work items for achieving these priorities, including:

- Promoting electric vehicles (EVs) for residents, commuters, visitors, and other users (e.g. deliveries, rideshare) and regionally, including micromobility (e-bikes, e-scooters, and other small EVs).
- Reducing vehicle miles traveled through citywide Mobility programs, including parking management, piloting on-demand transit, implementing the City's Housing Element, and updating the Bicycle Plan
- Launching an Advanced Heat Pump Water Heater Pilot Program and scaling it up
- Beginning a strategic upgrading of capacity in the residential areas of the electric grid and promoting whole home electrification in the upgraded areas
- Expanding access to EV charging in multi-family buildings (including affordable housing) and exploring ways to electrify those buildings as well
- Electrifying commercial rooftop packaged heating, ventilation, and air conditioning (HVAC).

[1] The 80x30 goal is to reduce Palo Alto greenhouse gas emissions 80% from 1990 levels by 2030

[2] Carbon neutrality means that all GHG emissions emitted into the atmosphere are balanced in equal measure by GHGs that are removed from the atmosphere, either through carbon sinks or carbon capture and storage

- Partnering with major employers on emissions reduction plans, including commuter emissions
- Electrifying City buildings and vehicles where feasible
- Engaging City operations to support these goals
- Exploring additional emissions reduction opportunities by surveying multi-family and non-residential building equipment and exploring other ideas from the community (e.g. shuttles, shared vehicles)
- Evaluating funding and resource needs of the above programs and identifying viable funding sources.

This work plan implements the S/CAP goals for a sustainable natural environment (including reducing waste, creating a sustainable and holistically managed water system, and a thriving urban canopy) by:

- Reducing water consumption while exploring ways to capture and store water, as well as to increase the availability and use of recycled water
- Developing and adopting a multi-year Sea Level Rise Adaptation Plan
- Minimizing wildland fire hazards through Plan implementation, zoning, and collaborating with Fire agencies
- Increasing Palo Alto's Tree Canopy and reducing pesticide use in parks and open space preserves
- Supporting the Green Stormwater Infrastructure (GSI) Plan and incorporating GSI in municipal projects
- Encouraging food waste reduction, prevention, and recovery and providing waste prevention technical assistance
- Eliminating single-use disposable containers and prioritizing domestic processing of recyclable materials

2. 2023-2025 Climate Action Section Work Plan: Making Progress on the 80x30 Goal

The Climate Action section of the S/CAP focuses on achieving the City's 80x30 goal, and includes goals and key actions primarily focused on reducing emissions in transportation and buildings. The climate action sections of the S/CAP itself are divided into four topic areas (Climate Action, Mobility, EVs, and Energy), but this work plan is intended to prioritize and organize those key actions, so work plan items are organized according to five 2023-2025 Climate Action section priorities.

2.i 2023-2025 Climate Action Section Priorities

The following five priorities are intended to focus the City's efforts on the highest potential and lowest cost emissions reduction actions and supporting efforts to enable the City's programs in these areas to be as impactful as possible. Appendix B outlines how the highest priority emissions reduction actions were chosen (single-family residential electrification, expanding EV charging access, commercial rooftop packaged HVAC, and Mobility). EV charging is a complex topic with a variety of different types of vehicle owner needs and potential electric grid impacts and benefits, and Appendix C outlines the guiding principles the City used for developing electric vehicle charging work items. These principles will also be reflected in any studies done on EVs or EV programs developed.

The 2023-2025 climate action section priorities are:

P1. Complete grid modernization plan and begin construction to increase reliability and transformer capacity for electrification
P2. Launch effective programs for emissions reductions with highest impact and lowest cost: single-family electrification, strategic promotion of EVs, commercial rooftop HVAC, and expanded transportation alternatives
P3. Build community awareness and confidence in electrification through engagement, addressing concerns, and program results
P4. Identify an additional 9% in emissions reduction opportunities to achieve the 80x30 goal
P5. By 2024 identify funding needed and potential funding sources for full scale implementation of highest impact emissions reductions

2.ii 2023-2025 Climate Action Summary Timeline

The proposed timeline for the 2023-2025 Climate Action section work items (which are listed below in section 2.c) is outlined below. The proposed timeline is contingent on certification of environmental review and may be modified accordingly. A more detailed timeline for each work plan item is included in Appendix A.

Priority	2023	2024	2025
P1 (Modernize grid)	• Grid modernization study completion, hire contractor • Reliability/Resiliency Strategic Plan	• Begin a 5-7 year construction effort to increase reliability and transformer capacity • Implement Reliability and Resiliency Strategic Plan	
P2 (Launch programs)	Design and launch programs:		
	• Full-scale HPWH program • Pilot commercial HVAC • Municipal electrification • Downtown parking management program • On-demand transit pilot	• Single-family whole home • Full-scale commercial HVAC • Full-scale multi-family EV charger program (tentative)	Design and launch additional programs based on the 2024 studies (See P4 for other studies that may result in new programs) and the EV Strategic Plan
	Studies to guide program launches:		
	• EV Strategic Plan • Multi-family and income-qualified EV work plan • Bicycle Plan update	• Work plan for commuter and visitor EV charging and EV promotion • Vision Zero program (tentative)	
P3 (Build awareness and confidence)	Build awareness of the need for climate action and the City's services and achievements. Drive community actions to achieve S/CAP goals. Build confidence in the City's electric infrastructure. Report results from new and existing programs:		
	• New program: HPWH pilot • Existing programs: • Existing Mobility programs • Multi-family EV charger	• New programs: Full-scale HPWH program, commercial HVAC pilot • Continuation of existing programs	• New programs; Full-scale HVAC, multi-family EV charger • Continuation of programs
P4 (Additional emissions reductions)	• Seek ideas from community members and other experts • Monitor technologies and medium term opportunities	• Multi-family and non-residential electrification study • Study highest potential community ideas/technologies	• Evaluate new programs based on studies
P5 (Funding needs and sources)	• Evaluate implementation cost for full scale high impact / lower cost programs • Preliminary evaluations of potential funding sources	• Decisions on how to fund priority electrification areas • Develop financial and operational plan for gas utility	• Implement follow up from prior-year studies

2.C Climate Action 2023-2025 Work Plan

The climate change topic areas of the S/CAP (Energy, EVs, Mobility, and Climate Change) are highly inter-related. Multiple key actions can affect the same community members in various ways. For example, a multi-family building owner might do a project that builds EV charging, bike storage, and electrifies some building equipment, which touches all three topic areas. Programs should be as simple as possible for the community. As a result, the work plan below is organized according to the type of activity and the part of the community served instead of being organized by the S/CAP topic areas. The key actions being implemented are listed next to each work plan item, and an index is provided in Appendix D to help readers map the Key Actions from the S/CAP to all implementing work plan items.

The work plan is organized according to the priorities above, as follows:

P1. **Grid Modernization:** Complete grid modernization plan and begin construction to increase reliability and transformer capacity for electrification
P2. **Launch Programs:** Launch effective programs for emissions reductions with highest impact and lowest cost: single-family electrification, strategic promotion of EVs, commercial rooftop HVAC, and expanded transportation alternatives
    - P2.1 Residential Emissions Reduction
    - P2.2 Non-Residential Emissions Reduction
    - P2.3 Citywide Mobility
    - P2.4 Municipal Electrification
    - P2.5 EV Strategic Plan
P3. **Build Awareness and Confidence:** Build community awareness and confidence in electrification through engagement, addressing concerns, and program results
P4. **Additional Emissions Reductions:** Identify an additional 9% in emissions reduction opportunities to achieve the 80x30 goal
P5. **Funding Needs and Sources:** By 2024 identify funding needed and potential funding sources for full scale implementation of highest impact emissions reductions

P1: Grid Modernization

Grid modernization is critical, particularly for residential electrification. The programs below will impact the electric grid, and there are also supporting grid-related efforts that could reduce barriers to electrification citywide, such as examining electric rate design, low wattage solutions, and fee structures for transformer upgrades. Electric grid reliability and resilience will be important to inspiring confidence in electrified homes and vehicles.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
1.A	Grid Modernization Study	E8	Complete a grid modernization study covering scope, designs, high level cost estimates, and estimated implementation timelines for electric system upgrades.	Recruitment challenges. Planning fully funded. Implementation funding needs under review.	Dec '22: Complete study Dec '23: Complete design, bring contractor on board Early 2024: Begin construction	Consultant hired, study in progress, nearing release of initial draft study
1.B	Reliability and Resiliency Strategic Plan	E8	Develop Reliability and Resiliency strategic plan based on principles in Appendix D	Fully staffed, funding needs under evaluation	Dec 2023	Not started
1.C	Reliability and Resiliency Strategic Plan Implementation	E8	Implement Reliability and Resiliency Strategic Plan	Staffing and funding needs to be evaluated	To be evaluated as part of 1.B	Policy guidelines for plan development to Council December 5, 2022
1.D	Evaluate Utility Rates and Fees	E6	Evaluate utility rate designs and fee structures in the context of future electrification, implement any needed changes	Fully funded	Mar 2023	Cost of service evaluation in progress

P2.1: Residential Emissions

The long-term goal in residential areas is full electrification of vehicles and buildings, but some electrification of some types of buildings is easier and less costly than others. Single-family homes tend to be easier and less costly to electrify than multi-family buildings. It is easier to install EV charger access as well. Grid capacity is an important consideration that drives the work plan in residential areas. The plan below prioritizes individual heat pump water heating electrification (which is primarily in single-family homes, but also some multi-family) and EV charger access in multi-family homes. Individual heat pump water heaters have

low grid impact compared to other electrification measures and can be installed citywide while grid modernization gets underway. In modernized neighborhoods electrification of space heating and other equipment and appliances can be promoted.

The work plan for multi-family residential emissions reduction prioritizes EV charger access in multi-family homes. EV chargers are relatively easy to install without City assistance in single-family homes, but the City's multi-family EV program will help multi-family building owners and condo associations install EV chargers so residents can access the savings and emissions reductions from EVs. This work plan includes development of a strategy to scale successful existing multi-family EV charging pilot programs to all multi-family buildings in Palo Alto. Multi-family building electrification requires more study to develop cost-effective strategies, since early studies and pilots have found multi-family building electrification to be very expensive. But more pilots in affordable housing projects, where grants and other funding might be available, would help the City get experience and develop strategies. All programs will be developed with equity in mind, considering how to serve low-income residents and renters.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
All Residential						
2.1 A	Promote EV Adoption	EV1, EV4	Offer Workshops and Events to raise awareness of EVs, including electric micromobility options and incentives. Work item subject to change based on EV Strategic Plan (see 2.5A).	Fully staffed and funded, staffing issues may impact this in the short term	Ongoing	In 2022 conduct 33 EV related workshops and expos. Contracting in progress to offer more awareness raising opportunites in 2023.
2.1 B	Emissions Reduction Advisory Services	C1	Provide single points of contact for online and phone advice for residents to reduce building and transportation emissions.	Fully staffed and funded	Dec '23: Phone advising Timeline for launch of online services under evaluation	RFP responses evaluated and contract negotiations are in progress
2.1 C	Evaluate small electric vehicles (e.g. e-bike) program potential	EV4	Evaluate alternatives for providing residential small electric vehicle programs or pilots. Work item subject to change based on EV Strategic Plan (see 2.5A).	Fully staffed and funded, though staffing issues may impact this in the short term	Complete evaluation by December 2023	RFP being written
Single-family Residential						
2.1 D	Heat Pump Water Heater Electrification Pilot Program	E1, E5	Launch a pilot heat pump water heater electrification pilot to achieve 1000 gas water heater replacements by the end of 2023	Partly staffed and funded – sales/ marketing needs being evaluated	Launch late 2022 / early 2023, aim to achieve goal by Dec 2023	Council approved program on October 3, staff implementing the plan

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
2.1 E	Full-Scale Heat Pump Water Heater Electrification Program	E1, E5	As pilot program nears its goals, transition to a full-scale program with the goal of electrifying all water heaters in Palo Alto	Fully staffed for design, staffing / funding needs to be determined	Based on pilot program progress, tentatively late 2023	Some preliminary analysis completed, otherwise not started.
2.1 F	Electrification data collection program	E1	Do home evaluations to collect data and help people plan for equipment or whole home electrification	Fully staffed, funding needs under evaluation	Program up and running by December 2023	Contract negotiations in progress
2.1 G	Pilot Programs for Modernized Neighborhoods	E1, E5	Identify and launch electrification programs for neighborhoods with increased electric capacity such as whole home or heat pump space heating pilot programs	Fully staffed, funding needs under evaluation	Program design and approvals by Dec 2024	Not started
2.1 H	Single-family Electrification Rebates	E1	Establish rebates for all appliances and equipment in single-family homes	Fully staffed and funded	Launch rebates by spring of 2024	Some analysis done, but moving slowly due to conflicting priorities
Multi-family Residential						
2.1 I	Affordable Housing EV Charging and Electrification Pilot	E5, EV5, EV7	Design a pilot electrification and EV project in an affordable housing multi-family building to test potential scalable approaches. Work item subject to change based on EV Strategic Plan (see 2.5A).	Fully staffed, funding needs under evaluation	Complete pilot design by December 2023	Partner identified, grant secured for EV charging, contract negotiations in progress for electrification pilot management, some analysis completed.
2.1 J	Multi-Family EV Charger Program	EV5, EV6, EV7	Establish rebates and EV charging technical assistance , with the goal of expanding charger access to 10% (1,100 units) of multifamily households. Work item subject to change based on EV Strategic Plan (see 2.5A).	Fully staffed and funded	Aiming for 1,100 units by December 2025	100+ multifamily properties actively proceeding in programs to install EV chargers

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
2.1 K	Multi-family and Affordable Housing Electrification and EV Charger Access Strategy Development	C8, EV6, EV7, EV8	Evaluate potential scalable strategies for multi-family and affordable housing EV charger and electrification programs, including the role of publicly-owned EV charging, such as in rights-of-way. Work item subject to change based on EV Strategic Plan (see 2.5A).	Fully staffed and funded for evaluation, implementation needs TBD	Complete evaluation by December 2023	Evaluating responses to RFP issued for multi-family electrification services, analyses of potential program designs / funding sources in progress.

P2.2: Non-Residential Emissions

City staff has less experience and knowledge with electrification of non-residential building equipment than with electrification of other types of building equipment. In section 6 of this work plan there are several studies planned that could help staff develop building electrification strategies for the non-residential sector. In the meantime, rooftop packaged heating, ventilation, and air conditioning (HVAC) units are potentially cost-effective to electrify. This work plan includes running a small initial pilot while simultaneously designing a potential advanced pilot and evaluating the potential for mandated electrification for end of life replacements. These rooftop HVAC programs and/or mandates can reduce emissions in major facilities as well (see Section 5)

In addition, staff plans to partner with major facility owners in Palo Alto to help them achieve their sustainability goals. Ideally these partnerships would include both building electrification, promotion of alternative transportation and EVs for commuters, and expanded EV charger access. A successful partnership with at least one major employer could provide an example that could lead to future employer partnerships, while a partnership with the schools could be an educational opportunity that leads to more awareness of electrification among residents.

Staff estimates about a third of transportation emissions come from drivers entering Palo Alto to visit or do business. The City is limited in its ability to affect these emissions, but partnering regionally to promote alternative transportation modes and personal and fleet EVs should help.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
2.2 A	Rooftop Packaged Heating, Ventilation, and Air Conditioning (HVAC) Pilot	E2, C8, E7	Continue HVAC pilot with the goal of completing 4-5 installations	Fully funded	December 2023	Program launched, recruiting participants
2.2 B	Rooftop Packaged HVAC Advanced Pilot Design	E2, C8, E7	Develop proposal for an advanced pilot program and/or mandate	Fully funded	Proposal to Council for approval by Dec 2023, implementation 2024	Not started

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
2.2 C	Major Employer Partnerships	C2, E2, E3, EV3, other	Develop custom sustainability partnership with at least one major employer, electrification pilots with City facilities, and support PAUSD electrification efforts. Work item subject to change based on EV Strategic Plan (see 2.5A).	Fully funded for design, not implementation	Complete goals listed in "Description" column by December 2023	Started discussions with various employers and PAUSD
2.2 D	Commuter Transportation and EV Charging Strategy	C8, EV1, EV3, EV8	Develop a strategy to promote EV adoption (including small EVs like e-bikes/e-scooters) and alternative transportation to commuters. Evaluate workplace charger programs and/or mandates, including role of publicly owned business district EV charging. Work item subject to change based on EV Strategic Plan (see 2.5A).	Fully staffed, consultant funding needs being evaluated. Implementation needs TBD.	Complete plan by end of December 2024, implementation timeline TBD	Not started
2.2 E	Regional and State Partnerships	EV2, EV10	Identify promising regional partnerships and State programs for potential City participation. Work item subject to change based on EV Strategic Plan (see 2.5A).	Under evaluation	Ongoing	Not started

P2.3: Citywide Mobility

Road transportation represents the largest percentage of Palo Alto's existing carbon footprint – and a congestion headache. Reducing vehicle miles traveled is an important element in reducing these emissions. Reductions are achieved through a comprehensive citywide effort to increase access to alternative modes and awareness of the benefits complemented by programs for specific groups within the community. Land use is an important lever for affecting vehicle miles traveled. The City already has a variety of transportation programs and is addressing land use via its Comprehensive Plan process (including the Housing Element) and subsequent implementation. The work plan below acknowledges those efforts and aims to modestly expand them as staff time and funding permit.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
2.3 A	Transportation and Land Use Policies and Programs	M1	Continue to implement existing transportation policies and programs to reduce VMT	Fully funded	Ongoing	Continuing to work on Council Transportation priorities including grade separation, street closures
2.3 B	Housing Element Adoption	M7, M9	Update the Housing Element for 2023-2031.	Fully funded	January 2023	Reviewing comments from the California Housing & Community Development Department, planning on bringing updated draft to PTC and Council in May.
2.3 C	Housing Element Implementation	M7, M9	Implement the 2023-2031 Housing Element, which is projected to reduce VMT	Funding via grants and annual City budget process	2031	Not started – awaiting Housing Element adoption
2.3 D	Micro-mobility evaluations	M2	Evaluate opportunities to pilot bike/scooter share and neighborhood mobility hub pilots to provide last-mile connections	Proceed as staff time is available	No target, proceed as time is available	Some design work and research completed, staff aims to develop potential funding and/or staffing proposals as time permits.
2.3 E	On-demand transit pilot	M2	Launch on-demand transit pilot to provide last-mile connections for 100% of the city for a limited time	Fully funded for two years	Launch by Mar 2023	Reviewing proposals for on-demand transit provider
2.3 F	Update Bicycle Plan	M3	Update the 2012 Bicycle and Pedestrian Transportation Plan	Fully funded	Dec 2024	Initiated update of the Plan
2.3 G	Vision Zero Program	M3	Program to reduce roadway severe injuries and fatalities to zero	Awarded grant funding for planning	To be determined	Awarded Federal Safe Streets for All grant to fund a safety action plan. Implementation will require additional staffing and funding

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
2.3 H	Evaluate expansion of employer transportation demand management (TDM)	M4	Evaluate possible alternatives to expand TDM ordinance requirements and/or voluntary TDM services (e.g. expanding the Transportation Management Association)	Proceed as staff time is available	No target, proceed as time is available	Some design work and staff research has been done, staff exploring ways to fund and staff a study of options as time permits.
2.3 I	Proposals for Managing Downtown Parking Availability	M5	Develop proposals for pricing strategies to manage parking supply and availability	Fully funded	Ongoing	Proposals to be shared with Council
2.3 J	Implement Efficient Downtown Parking Management	M5	Implement proposals for pricing strategies to manage parking supply and availability	Funding and staffing to be determined	To be determined	RFP for management services in development
2.3 K	Traffic Signal Improvements & Transit Signal Priority	M8	Maintain and modernize current traffic signals and central management systems. Use technology to improve traffic operations and safety. Work with transit providers on transit signal priority where feasible.	Mostly funded, long-term funding needs being evaluated	Ongoing	Long-term system plan in development. Supporting transit signal priority project for Dumbarton Express. Implementing Automated Traffic Signal Performance Measures to improve signal timing.

P2.4: City Facilities and Fleet Emissions

A priority for the Council in development of the S/CAP was that we lead by doing. Electrification of City facilities and the vehicle fleet is a critical part of that. In addition, if increased publicly-owned EV charging becomes a part of multi-family and/or business district EV charger strategies (see P2.1K and P2.2D), a detailed plan for maintenance and operation will be needed.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
2.4 A	Facility Electrification Assessment Plan	E4	Complete an assessment of electrification opportunities at City facilities	Fully funded	Under evaluation	Assessment of all City facilities is underway

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
2.4 B	Facility Electrification Assessment Implementation	E4	Implement recommendations from the Facility Electrification Assessment Plan where feasible	Under evaluation	Under evaluation	Will begin after 2.4 A is complete
2.4 C	Electrify Equipment at City Facilities during Routine Replacement	E4	Evaluate the feasibility of electrification when doing end of life equipment replacements	Under evaluation	Under evaluation	On-going. The mechanical equipment at MSC-B is at the end of its service life and we are currently looking into electric replacement solutions
2.4 D	Electrify City Vehicle Fleet	EV9	Convert all Palo Alto municipal vehicles to EVs when feasible and when the replacement is operationally acceptable. Evaluate leasing as a bridging strategy.	Evaluated with each replacement	On-going	There are two units identified in FY23 for potential EV replacements, pending manufacturer availability and cost
2.4 E	Build City Fleet and Employee Charging Infrastructure	EV9, EV3	Expand charging at City facilities to support an electrified fleet and employee EV adoption	Under evaluation	Under evaluation	We are currently testing a low cost EV charger solution that could be used for future employee charging locations
2.4 F	Publicly-owned charger strategic plan	EV8	Evaluate potential publicly-owned EV charger strategies. Work item subject to change based on EV Strategic Plan (see 2.5A).	Staffing and funding needs under evaluation	Residential plan – by Dec '23 (see P2.1 K) Business district plan – by Dec '24 (see P2.2 F)	Not started

P2.5: Electric Vehicles Strategic Plan

Several work plan items relate to electric vehicle promotion and programs to improve access to charging. Coordinating staff effort across a variety of efforts focused on many different parts of the community requires some level of coordination. This strategic plan will guide development of other work items.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
2.5 A	Electric Vehicle Strategic Plan Development	EV1 thru EV10	Develop a strategic plan based on principles in Appendix C to guide coordination of various work items, including 2.1 A, C, I, J, and K, 2.2 C, D, and E, and 2.4 F. Align with Reliability and Resiliency Strategic Plan (1B and 1C)	Fully funded	Under evaluation	Policy guidelines for plan development to Council December 5, 2022

P3: Build Awareness and Confidence

To achieve high participation in electrification programs and other emissions reduction efforts and continuing support for S/CAP climate action programs requires building community awareness and confidence through engagement, addressing concerns, and achieving program results.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
3.1 A	Build awareness of the need for climate action and the benefits the City and its utility can receive and provide	N/A	Achieve widespread awareness of the need for and benefits of climate action and the City's services and achievements, including low electric rates. Use partnerships and volunteers to help deliver the message.	Fully staffed, partially funded	Ongoing	Sustainability hub and various other engagement efforts implemented.
3.1 B	Drive community actions to achieve S/CAP goals	N/A	Run effective marketing and outreach that drives community action on S/CAP goals	Under evaluation	Ongoing	Marketing plan in development
3.1 C	S/CAP Survey Program	N/A	Continuing surveys of community sentiment and engagement to guide decision making and track certain key performance indicators	Under evaluation	Under evaluation – requires coordination with other City surveys	Exploring a partnership with Stanford to develop a survey to collect baseline data
3.1 D	S/CAP Reporting	N/A	Ongoing reporting of S/CAP results, including key performance indicators	Under evaluation	Ongoing	Annual reporting provided in Earth Day report, to be expanded to cover all S/CAP KPIs

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
3.1 E	Build confidence in the City's electric infrastructure	N/A	Communicate actions the City is taking to improve electric reliability and grid capacity, to help residents and businesses build resiliency, and successes in these areas	Under evaluation	Under evaluation – requires coordination with other City surveys	Not started

4. Additional Emissions Reductions

A variety of planning efforts are needed to achieve 80x30. Emissions reductions identified to date only achieve 71% from 1990 levels, so the City must identify additional reductions to achieve its 80x30 goals. The multi-family and commercial building sectors have the smallest contribution to the emissions reductions identified to-date, so this will be an area of focus where staff is likely to find the most additional emissions reductions. Note that carbon dioxide removal technologies are not included in this effort, these are part of a separate future study on the City's carbon neutrality goal.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
4.A	Multi-family and Commercial End Use Study	C3, E9	Do end use study of commercial and multi-family buildings to identify potential building electrification measures	Fully staffed, consultant funding needs being evaluated	December 2024	Writing consultant RFP
4.B	Idea generation and additional research	C3, M10	Consult community members and experts (including Stanford) and research new technologies to identify other potential approaches to reducing emissions in Palo Alto	Staffing and funding needs to be evaluated	December 2024	Not started
4.C	Additional Emissions Reduction Project Prioritization	C3	Prioritize the most cost-effective approaches to achieving the additional emissions reduction needed to achieve 80x30 in establishment of next three-year work plan	Staffing and funding needs to be evaluated	December 2025	Not started

5. Funding Needs and Funding Sources

A high-level assessment of resource needs and funding sources will be done by fall of 2023 to allow for Council discussions on potential funding sources in late 2023 and early 2024. The needs of low- and middle-income residents will be assessed as part of this effort. Full-scale implementation of high potential programs will cause significant reductions in gas utility sales, necessitating careful planning to manage contracting revenues and operational needs.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
5.A	Resource Needs Assessment	C4	Complete study of staffing and other resources needed for programs and operations to implement all 80x30 activities	Fully staffed, consultant funding needs being evaluated	Dec 2023	Writing consultant RFP
5.B	Funding Alternatives	C5, M5	Complete study of funding alternatives for 80x30, taking into account Federal policy such as the Inflation Reduction Act.	Fully staffed, consultant funding needs being evaluated	Dec 2023	Writing consultant RFP
5.C	Affordability Study	C6, E5	Identify vulnerable populations who may need help electrifying and subsidy needed	Fully staffed and funded	Dec 2023	Consultant beginning work
5.D	Gas Utility Financial and Operating Plan	N/A	Develop a financial and operating plan for declining gas utility sales that maintains safety and solvency while providing affordable gas service to remaining gas users	Staffing and funding needs to be evaluated	Dec 2024	Not started

3. 2023-2025 Sustainability Section Work Plan: Creating a More Sustainable Natural Environment

In Palo Alto, we have a Sustainability and Climate Action Plan (S/CAP) because we include sustainability areas that don't necessarily have a direct impact on greenhouse gas reductions, but have critically important sustainability, public health and safety, regional, resource conservation, and equity benefits that contribute to overall climate action. The Sustainability area Key Actions were prioritized based on the co-benefits analysis conducted by AECOM.

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
8.A	Maximize Water Conservation and Efficiency	W1	Maximize cost-effective water conservation and efficiency through incentives, outreach/education, and other programs	Fully funded	On-going	This is an on-going effort
8.B	Design and build a salt removal facility for the Regional Water Quality Control Plant	W2	Facility that will remove salt from the recycled water produced at the RWQCP resulting in an enhanced product	Negotiating with Valley Water and the City of Mountain View	Bring to Council for approval by 2023	Design is 90% complete. Council has not approved construction of the facility
8.C	Develop a "One Water" Portfolio for Palo Alto	W3	Develop a "One Water" Portfolio that includes stormwater, recycled water, on-site reuse, conservation, and groundwater	Fully funded	August 2023	Study underway by staff and consultant
8.D	Develop a tool for dynamic water planning in the future	W4	Excel-based tool for water planning	Fully funded	August 2023	Included as deliverable under One Water consulting contract
8.E	Complete the Sea Level Rise Vulnerability Assessment	S1	Complete a Sea Level Rise Vulnerability Assessment to identify risks and hazards to the Palo Alto Baylands, City infrastructure, and residential and business property, considering high tide, 100-year coastal storm event scenarios and rising shallow groundwater impacts	Fully funded	Fall 2022	Completed in Fall 2022

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
8.F	Develop a Sea Level Rise Adaptation Plan	S2	Develop a Sea Level Rise Adaptation Plan with goals to 1) Preserve and Expand Habitat, and 2) Protect City and Community Assets, and Private Property	Partially funded to develop the plan, and funding needed for plan and implementation	2024	Preparing a contract amendment AECOM so that we can move to the second phase of the project, which is to develop a Sea Level Rise Adaptation Plan over the coming months with the goal of bringing a plan to Council in 2024
8.G	Begin design process for a levee projects	S3	Determine levee alignment and begin design process for a levee project that protects the Palo Alto community from sea level rise, and incorporates other related priorities including habitat restoration, recreation, transportation, City facilities, and community properties	Funded by US Army Corps of Engineers (50% Fed) and Valley Water / CA Coastal Commission (50% Non-Fed) *PA staff is participating in the analysis	2024	Levee alignment will be determined by 2024
8.H	Identify Protection Strategies from Significant Flood Events at Newell Road Bridge	S4	Complete Newell Road Bridge improvements	Funded by Caltrans / local sponsor (SFCJPA)	2024	Preparing construction documents and initiating right-of-way aquisition
8.I	Identify Protection Strategies from Significant Flood Events at Pope Chaucer Bridge and Creek	S4	Complete Pope Chaucer Bridge and Creek widening improvements	Applied for grants and secured partial funding through SFCJPA / partner agencies contributions	2025-2026	Analysing existing conditions within Creek to verify structural integrity

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
8.J	Identify Protection Strategies from Significant Flood Events	S4	Working with San Francisquito Creek Joint Powers Authority (SFCJPA) partner agencies to identify strategies to protect the community from flows that exceed the 70-year + storm event	Part of SFCJPA operating budget – Palo Alto contributes 1/5 of operating budget	On-going	This is an on-going coordination effort with Stanford (the entity not the University)
8.K	Implement Foothills Fire Management Plan	S5	Implement the Foothills Fire Management Plan to balance conservation of natural resources with reduction of fire hazards especially in open space areas	Partially funded	On-going	This is an on-going effort
8.L	Minimize Fire Hazards Through Zoning	S6	Minimize fire hazards by maintaining low density zoning in wildland fire hazard areas and enforcing building codes for fire resistant construction	Staff available	On-going	This is an on-going effort
8.M	Collaborate on Reducing Wildfire Hazards	S7	Coordinate with other Fire agencies through the Santa Clara County Fire Chiefs Association and CalFire	Staff available	On-going	This is an on-going effort
8.N	Implement CAL FIRE Public Education Programs	S8	Implement CAL FIRE recommended programs in educating and involving the local community to diminish potential loss caused by wildfire and identify prevention measures to reduce those risks	Fully Funded	On-going	This is an on-going effort
8.O	Increase Palo Alto's Tree Canopy and establish a baseline and Key Performance Indicator for carbon storage of tree canopy	N1 N5	Develop programs to plant trees to increase tree canopy – that will be integrated with traditional tree planting programs and Green Stormwater Infrastructure programs – and provide carbon sequestration, improve water quality, capture stormwater when feasible, and reduce the urban heat island effect	Partially funded, Staff available as time permits	Establish baseline by 2024	New canopy cover GIS tool recently launched, which will help establish a baseline

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
8.P	Ensure No Net Tree Canopy Loss for all Projects	N2	Ensure no net tree canopy loss for all Projects	Staff available	On-going	This is an on-going effort to implement the updated Tree Ordinance (effective July 21, 2022)
8.Q	Reduce Pesticide Use in Parks and Open Space Preserves	N3	Continue to review the use of pesticides in all parks and open space preserves to identify opportunities to further reduce and eliminate the use of pesticides	Staff available as time permits	On-going	This is an on-going effort
8.R	Coordinate Implementation of City Natural Environment-Related Plans	N7	Coordinate implementation of the Urban Forest Master Plan, Parks Master Plan, Green Stormwater Infrastructure Plan and other citywide planning efforts through interdepartmental collaboration	Staff available as time permits	On-going	This is an on-going effort
8.S	Support the Green Stormwater Infrastructure (GSI) Plan and incorporate GSI in Municipal Projects	N10 N11	Establish policies and ordinance changes as needed to support the Green Stormwater Infrastructure Plan as required due to Municipal Regional Stormwater Permit	Staff available as time permits; Partially funded through GSI	On-going	This is an on-going effort to achieve a 10% increase in land area that uses green stormwater infrastructure to treat urban water runoff
8.T	Encourage Food Waste Prevention and Require Food Recovery from Commercial Food Generators	ZW1	Encourage food waste prevention and require edible food recovery for human consumption from commercial food generators	Staff and County funded program staff available; Funded for FY 2023, may need funding for FY 2024	On-going	Began 1/1/2022 per SB1383 requirements
8.U	Promote Residential Food Waste Reduction	ZW2	Create a new campaign to promote residential food waste reduction	Existing outreach funding	Launch by July 2023	Campaign strategy in development, for launch by July 2023

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
8.V	Champion Waste Prevention, Reduction, Reusables, and the Sharing Economy	ZW3	Promote adoption of a "Zero Waste lifestyle", stimulate value of reuse, repair	Existing outreach funding for initial promotion of a "Zero Waste lifestyle"; may need future funding for stimulating reuse, repair	On-going	This is an on-going effort
8.W	Provide Waste Prevention Technical Assistance to the Commercial Sector	ZW4	Develop an outreach tool and technical assistance to the commercial sector	Existing outreach funding	Launch in 2023	Outreach tool and technical assistance in development, for launch in 2023
8.X	Prioritize Domestic Processing of Recyclable Materials	ZW5	Prioritize domestic processing of recyclable materials	Request for additional $500,000	On-going	Domestic processing for Mixed Paper and Mixed Rigid Plastics began April 2022. Went to Council in November 2022 to request additional funding
8.Y	Eliminate Single-Use Disposable Containers	ZW6	Eliminate single-use disposable containers by expanding the Disposable Foodware Ordinance	Funded for Ordinance Requirement, need additional funding for infrastructure and implementation of future requirements	Launch in 2024	Strategy and timeline in development, for launch in 2024

Work Item		Key Action	Description	Resource Availability	Target Completion Date	Status (Apr 2023)
8.Z	Expand the Deconstruction and Construction Materials Management Ordinance	ZW7	Expand the Deconstruction and Construction Materials Management Ordinance	Additional staff and funding needed	Launch by January 2026	Expand types of covered projects or increase diversion requirements, collaborate with other Departments; consider including in next Reach Code Cycle to be implemented in January 2026
8.aa	Implement Reach Code standard for Low Carbon Construction Materials	ZW8	Implement Reach Code standard for low carbon construction materials	Additional staff and funding needed	Launch January 1, 2023	Reach Code approved by Council in October 2022. Went into effect January 1, 2023.

Appendix A: S/CAP Work Plan Timeline

				2023						2024						2025					
				Jan/ Feb	Mar /Apr	May/ June	July/ Aug	Sep /Oct	Nov /Dec	Jan/ Feb	Mar /Apr	May/ June	July/ Aug	Sep /Oct	Nov /Dec	Jan/ Feb	Mar /Apr	May/ June	July/ Aug	Sep /Oct	Nov /Dec
Sustainability and Climate Action Plan (S/CAP) and Climate Change - Protection and Adaptation	**Staff and Consultant Work**			Finalize S/CAP and 2021 GHG Inventory			Complete 2022 GHG Inventory						Complete 2023 GHG Inventory					Start Work Plan Update			
				Finalize CEQA Documents		S/CAP Implementation				S/CAP Implementation						S/CAP Implementation					
	Climate Change (Buildings, Mobility, EVs)	**Priority 1. Grid Modernization**	**P1.A Grid Modernization Study**	Complete study, design, and bring contractor on board						Construction to increase capacity											
			P1.B Reliability and Resiliency Strategic Plan Development	Develop strategic plan																	
			P1.C Reliability and Resiliency Strategic Plan Implementation							Implementation based on timelines in Reliability and Resiliency Strategic Plan											
		Priority 2: Launch Programs	**2.1 Residential Emissions Reduction Programs** — **All Residential** — **P2.1 A Promote EV Adoption**	Ongoing						Ongoing						Ongoing					
				P2.1 B Emissions Reduction Advisory Services	Get phone advisory services up and running Determine work plan for online services, begin implementation																
				P2.1 C Small electric vehicles (e.g. e-bike) program	Complete evaluation					Program implementation? To be determined depending on results of program evaluation and staffing and funding analysis.											
			Single-	**P2.1 D Heat Pump Water Heater Electrification Pilot Program**	Work to achieve program goals																

					P2.1 E Full-Scale Heat Pump Water Heater Electrification Program		Do program evaluation, assuming advanced pilot program goals are on track to be met.	Transition to full scale program	Ongoing program operation
					P2.1 F Electrification data collection program	Get program up and running by December 2023		Ongoing data collection	Ongoing data collection
					P2.1 G Pilot Programs for Modernized Neighborhoods			Program design and approvals	Assuming grid modernization has made enough progress, launch program(s)
					P2.1 H Single-family Electrification Rebates	Cost-effectiveness studies to determine rebate amounts, software configuration, launch preparation		Rebate launch	
				Multi-Family Residential	**P2.1 I Affordable Housing EV Charging and Electrification Pilot**	Complete pilot design, hire consultant		Implement pilot project	
					P2.1 J Multi-Family EV Charger Program	Ongoing program activity with the goal of providing EV charging in buildings representing 10% of multi-family units in Palo Alto by 2025		Complete evaluation of potentially scalable strategies for multi-family and affordable housing EV charging and/or building electrification, including evaluating the role of publicly-owned EV charging+L20:U20	Ongoing program activity with the goal of providing EV charging in buildings representing 10% of multi-family units in Palo Alto by 2025
					P2.1 K Multi-Family and Affordable Housing EV Charger Access Strategy	Complete evaluation of potentially scalable strategies for multi-family and affordable housing EV charging and/or building electrification, including evaluating the role of publicly-owned EV charging			
			2.2. Non-Residential Emis		**P2.2 A Rooftop Packaged Heating, Ventilation, and Air Conditioning (HVAC) Pilot**	Achieve installations at four to five sites through existing rooftop HVAC pilot program			

			sions Reduction Programs	**P2.2 B Rooftop Packaged HVAC Advanced Pilot Design**	Develop proposal for an advanced pilot program and/or mandate and present to Council	Launch program and/or mandate if approved	Ongoing program management, if program is approved
				P2.2 C Major Employer Partnerships	Develop custom emissions reduction and sustainability partnership with at least one major employer. Develop electrification pilots with City facilities and PAUSD	Develop additional employer partnerships	Develop additional employer partnerships
				P2.2 D Commuter Transportation & EV Charging Strategy		Complete evaluation and develop recommendations for future programs	Implement any adopted commute or EV charging programs
				P2.2 E Regional and State Partnerships	Develop work plan and identify promising partnerships	Continued participation in chosen partnerships, exploration of new partnerships	Continued participation in chosen partnerships, exploration of new partnerships
			2.3 City wide Mobility	**P2.3 A Transportation and Land Use Policies and Programs**	Continue ongoing transportation programs, traffic management, and partnerships and land use regulatory activity		
				P2.3 B Housing Element Adoption	Adopt plan		
				P2.3 C Housing Element Implementation		Implementation of Housing Element programs as outlined in Housing Element and as funded via grants and annual budget requests	
				P2.3 D Micro-mobility evaluations	Evaluate opportunities to pilot bike/scooter share and neighborhood mobility hub pilots to provide last-mile connections as staff time becomes available		
				P2.3 E On-demand transit pilot	Launch Pilot	Pilot program in operation	
				P2.3 F Update Bicycle Plan	Hire consultant, kick off study	Study completion and plan adoption	Plan implementation
				P2.3 G Vision Zero Program	Timeline to be determined, depends on staffing and funding availability		

				P2.3 H Evaluate expansion of employer transportation demand management (TDM)	Evaluate possible alternatives to expand TDM ordinance requirements and/or voluntary TDM services (e.g. expanding the Transportation Management Association) as staff time becomes available			
				P2.3 I Proposals for Managing Downtown Parking Availability		Bring proposals to Council		
				P2.3 J Implement Efficient Downtown Parking Management	Hire parking management consultant	Ongoing program management		
				P2.3 K Traffic Signal Improvements & Transit Signal Priority	Maintain and modernize current traffic signals and central management systems. Use technology to improve traffic operations and safety. Work with transit providers on transit signal priority where feasible.			
			2.4 City Facilities and Fleet	**P2.4 A Facility Electrification Assessment Plan**	Finalizing Facility Electrification Assessment Plan			
				P2.4 B Facility Electrification Assessment Implementation			On-going	On-going
				P2.4 C Electrify Equipment at City Facilities during Routine Replacement	On-going		On-going	On-going
				P2.4 D Electrify City Vehicle Fleet	On-going		On-going	On-going
				P2.4 E Build City Fleet and Employee	Building City Fleet Infrastructure is on-going, assessing Employee Charging Infrastructure		On-going	On-going

			Charging Infrastructure			
			P2.4 F Publicly-owned charger strategic plan	Explore Public Charging Pilot	Develop publicly-owned charger strategic plan	
		2.5 EV Strategic Plan	**P2.5A Electric Vehicle Strategic Plan Development**	Develop EV Strategic Plan to coordinate efforts on various EV work items		
		Priority 3: Build Confidence and Awareness	**P3.1 A Build awareness of the need for climate action**	Ongoing engagement, including Sustainability Newsletter, Climate Action Blog, Social Media, Sustainability Hub, Electrification Portal, Website Updates, Utility Bill Inserts, Workshops, webinars, and departmental collaboration		
			P3.1 B Drive community actions to achieve S/CAP goals	On-going marketing	On-going Marketing	On-going Marketing
			P3.1 C S/CAP Survey Program	Develop Surveys	Conduct Surveys	Conduct Surveys
			P3.1 D S/CAP Reporting	Earth Day Report; CDP Report	Earth Day Report; CDP Report	Earth Day Report; CDP Report
			P3.1 E Build confidence in the City's electric infrastructure	Ongoing engagement, including Sustainability Newsletter, Climate Action Blog, Social Media, Sustainability Hub, Electrification Portal, Website Updates, Utility Bill Inserts, Workshops, webinars, and departmental collaboration		
		Priority 4. Studies and Analysis	**P4 A Multi-family and Commercial End Use Study**	Complete RFP for consultant to do end use survey.	Complete multi-family and non-residential end use survey to identify promising emissions reduction opportunities, develop recommendations based on survey	
			P4 B Idea generation and additional research	Seek ideas for emissions reductions from community, experts. Monitor emerging technologies.	Study those ideas and technologies with highest potential	

			P4 C Additional Emissions Reduction Project Prioritization			Evaluate new programs based on findings of studies
		Priority 5. Funding Needs and Funding Sources	**P5 A Resource Needs Assessment**	Summarize resource needs for a selection of pilots, advanced pilots, full-scale programs + commercial end-use research program		
			P5 B. Funding Alternatives	Study funding options available to fund programs evaluated in work item 4.B for most promising electrification programs, present findings to Council.	Continuing Council discussions of potential funding options	Implement any follow-up actions from prior year studies
			P5 C. Affordability Study	Complete affordability study to inform funding needs and program design		
			P5 D. Gas Utility Financial and Operating Plan		Develop financial and operating plan for contracting gas utility	Implement any follow-up actions from prior year studies
	Sustainability	**Water**	**8.A Maximize Water Conservation and Efficiency**	Maximize cost-effective water conservation and efficiency through incentives, outreach/education, and other programs		
			8.B Design and build a salt removal facility for the Regional Water Quality Control Plant	Design is 90% complete. Bring to Council for approval of construction of the facility		
			8.C Develop a "One Water" Portfolio for Palo Alto	Study underway by staff and consultant	Implementation of a "One Water" Portfolio that includes stormwater, recycled water, on-site reuse, conservation, and groundwater	
			8.D Develop a tool for dynamic water planning in the future	Included as deliverable under One Water consulting contract		
		Climate Adaptation and Sea Level Rise	**8.E Complete the Sea Level Rise Vulnerability Assessment**	Completed		

			8.F Develop a Sea Level Rise Adaptation Plan		Develop a Sea Level Rise (SLR) Adaptation Plan	CEQA Review of Sea Level Rise Adaptation Plan	Bring SLR Adaptation Plan to Council for Approval	Implement Sea Level Rise Adaptation Plan
			8.G Begin design process for a levee projects	Determine levee alignment for a levee project that protects the Palo Alto community from sea level rise, and incorporates other related priorities including habitat restoration, recreation, transportation, City facilities, and community properties				Begin design process
			8.H Identify Protection Strategies from Significant Flood Events at Newell Road Bridge	Preparing construction documents and initiating right-of-way acquisition		Construction of Newell Road Bridge improvements		
			8.I Identify Protection Strategies from Significant Flood Events at Pope Chaucer Bridge and Creek	Analyzing existing conditions within Creek to verify structural integrity		Prepare construction documents		Construction of Pope Chaucer Bridge and Creek widening improvement
			8.J Identify Protection Strategies from Significant Flood Events	On-going work with San Francisquito Creek Joint Powers Authority (SFCJPA) partner agencies to identify strategies to protect the community from flows that exceed the 70-year + storm event				
			8.K Implement Foothills Fire Management Plan	On-going implementation of the Foothills Fire Management Plan to balance conservation of natural resources with reduction of fire hazards especially in open space areas				
			8.L Minimize Fire Hazards Through Zoning	Ongoing work to minimize fire hazards by maintaining low density zoning in wildland fire hazard areas and enforcing building codes for fire resistant construction				
			8.M Collaborate on Reducing Wildfire Hazards	On-going coordination with other Fire agencies through the Santa Clara County Fire Chiefs Association and CalFire				
			8.N Implement CAL FIRE Public Education Programs	On-going implementation of CAL FIRE recommended programs in educating and involving the local community to diminish potential loss caused by wildfire and identify prevention measures to reduce those risks				

		Natural Environment	**8.O Increase Palo Alto's Tree Canopy and establish a baseline and Key Performance Indicator for carbon storage of tree canopy**	Develop programs to plant trees to increase tree canopy – that will be integrated with traditional tree planting programs and Green Stormwater Infrastructure programs – and provide carbon sequestration, improve water quality, capture stormwater when feasible, and reduce the urban heat island effect	Establish baseline and Key Performance Indicator for carbon storage of tree canopy; implement programs to increase tree canopy	On-going implementation of programs to increase tree canopy
			8.P Ensure No Net Tree Canopy Loss for all Projects	On-going effort to implement the updated Tree Ordinance (effective July 21, 2022)		
			8.Q Reduce Pesticide Use in Parks and Open Space Preserves	On-going effort to review the use of pesticides in all parks and open space preserves to identify opportunities to further reduce and eliminate the use of pesticides		
			8.R Coordinate Implementation of City Natural Environment-Related Plans	On-going effort to coordinate implementation of the Urban Forest Master Plan, Parks Master Plan, Green Stormwater Infrastructure Plan and other citywide planning efforts through interdepartmental collaboration		
			8.S Support the Green Stormwater Infrastructure (GSI) Plan and incorporate GSI in Municipal Projects	On-going effort to achieve a 10% increase in land area that uses green stormwater infrastructure to treat urban water runoff		
		Zero Waste	**8.T Encourage Food Waste Prevention and Require Food Recovery from Commercial Food Generators**	On-going effort to encourage food waste prevention and require edible food recovery for human consumption from commercial food generators. Began 1/1/2022 per SB1383 requirements. May need funding for FY 2024		
			8.U Promote Residential Food Waste Reduction	Campaign strategy in development	Implement campaign to promote residential food waste reduction	

			8.V Champion Waste Prevention, Reduction, Reusables, and the Sharing Economy	On-going effort to promote adoption of a "Zero Waste lifestyle" and stimulate value of reuse, repair.	On-going effort to promote adoption of a "Zero Waste lifestyle" and stimulate value of reuse, repair. May need funding for stimulating reuse, repair outreach	
			8.W Provide Waste Prevention Technical Assistance to the Commercial Sector	Develop an outreach tool and technical assistance to the commercial sector	Implement outreach tool and technical assistance to the commercial sector	
			8.X Prioritize Domestic Processing of Recyclable Materials	On-going effort to prioritize domestic processing of recyclable materials. Domestic processing for Mixed Paper and Mixed Rigid Plastics began April 2022.		
			8.Y Eliminate Single-Use Disposable Containers	Developing strategy and timeline to eliminate single-use disposable containers by expanding the Disposable Foodware Ordinance		Implement the expanded Disposable Foodware Ordinance
			8.Z Expand the Deconstruction and Construction Materials Management Ordinance	Determine the most effective way of expanding the Deconstruction and Construction Materials Management Ordinance	Expand types of covered projects or increase diversion requirements, collaborate with other Departments; consider including in next Reach Code Cycle to be implemented in January 2026	
			8.aa Implement Reach Code standard for Low Carbon Construction Materials	Implement Reach Code standard for low carbon construction materials (pending Council approval in October 2022)		
COMMUNITY ENGAGEMENT				S/CAP Implementation Resources, Updates, Outreach, and Webinars	S/CAP Implementation Resources, Updates, Outreach, and Webinars	S/CAP Implementation Resources, Updates, Outreach, and Webinars

			Cross-promotional efforts with external partners and COPA departments (e.g. Library)			Cross-promotional efforts with external partners and COPA departments (e.g. Library)			Cross-promotional efforts with external partners and COPA departments (e.g. Library)		
COUNCIL AND COMMISSION MEETINGS			Council certification of CEQA and adoption of S/CAP, acceptance of Three-Year Workplan, Council Meeting on Earth Day Report			Council Study Session on S/CAP Progress Report		Council Approval of Sea Level Rise Adaptation Plan	Council Study Session on S/CAP Progress Report		

Appendix B: How Climate Actions were Prioritized

The chart below gives an overview of how various emissions reduction activities were prioritized based on various factors. Activities were divided up into four priority tiers:

A. Prioritize for immediate action
B. Prioritize in areas where grid modernization has been completed
C. Requires additional study or stakeholder engagement to determine priority
D. Prioritize only if resources are available

A fuller blue bubble denotes a program that ranks more favorably when considering S/CAP implementation efforts. For example, a program with a full blue bubble in the "Total emissions reduction potential" column has more emissions reduction potential than one with a partially filled bubble. See next page for more detail.

Activity	Cost effective (per metric ton basis)	Total emissions reduction potential	Minimizes Electric Utility Impacts	Policy leverage – City ability to impact	Funding Source Availability	Priority Tier
Mobility – Bicycling / Alternative Modes	●	●	●	◔	◔	C
Visitor EV adoption	●	◔	●	○	◔	D
New buildings/ADU	●	◔	◑	●	●	A
Single-Family						
Water Heating	◔	◑	◔	◔	◔	A
Space Heating (w/ A/C)	◑	◔	◔	◔	◔	B
Space Heating (w/o A/C)	◔	◑	◔	◔	◔	B
Other Building Equipment	○	◔	◑	◔	◔	B
Electric Vehicles	●	●	◔	◑	◔	A
Multi-Family						
Building retrofits	○ (1)	◔	◔	●	◔	C
Electric Vehicles	◑	◑	◔	◔	◔	A
Non-Residential						
Rooftop HVAC	◑	◑	◔	●	◔	A
Other building equipment	○ (2)	●	◔	●	◔	C
Fleet Electrification	◔	○	◔	◔	◔	D
Commuter EVs						
Small/Med Business	●	◔	◔	◔ (1)	◔	B
Major Facilities	●	●	◔	◔ (1)	◔	B

1. Tentative ranking based on some preliminary ideas that need more exploration, which will take staff time

2. Tentative conclusion based on initial impact analysis, needs more study

Insights:

- Mobility and EVs are the most cost-effective actions and the City has significant policy leverage in the Mobility area.
- The City has less policy leverage to drive EV adoption, but there are a few areas where it has potential policy leverage, such as increasing EV charger access.
- Electrification of single-family building equipment is worth prioritizing under most criteria. Heat pump water heaters can be promoted citywide. Other equipment should be promoted primarily in neighborhoods with upgraded utility infrastructure.

- Commercial building rooftop packaged HVAC units are worth prioritizing and may have fewer electric utility impacts than other electrification measures.
- More study is needed to identify other viable building electrification actions in the commercial sector.
- More study is also needed on multi-family building electrification.

How to Ratings were Determined:

 - Rating, high (filled bubble) to low (empty bubble)

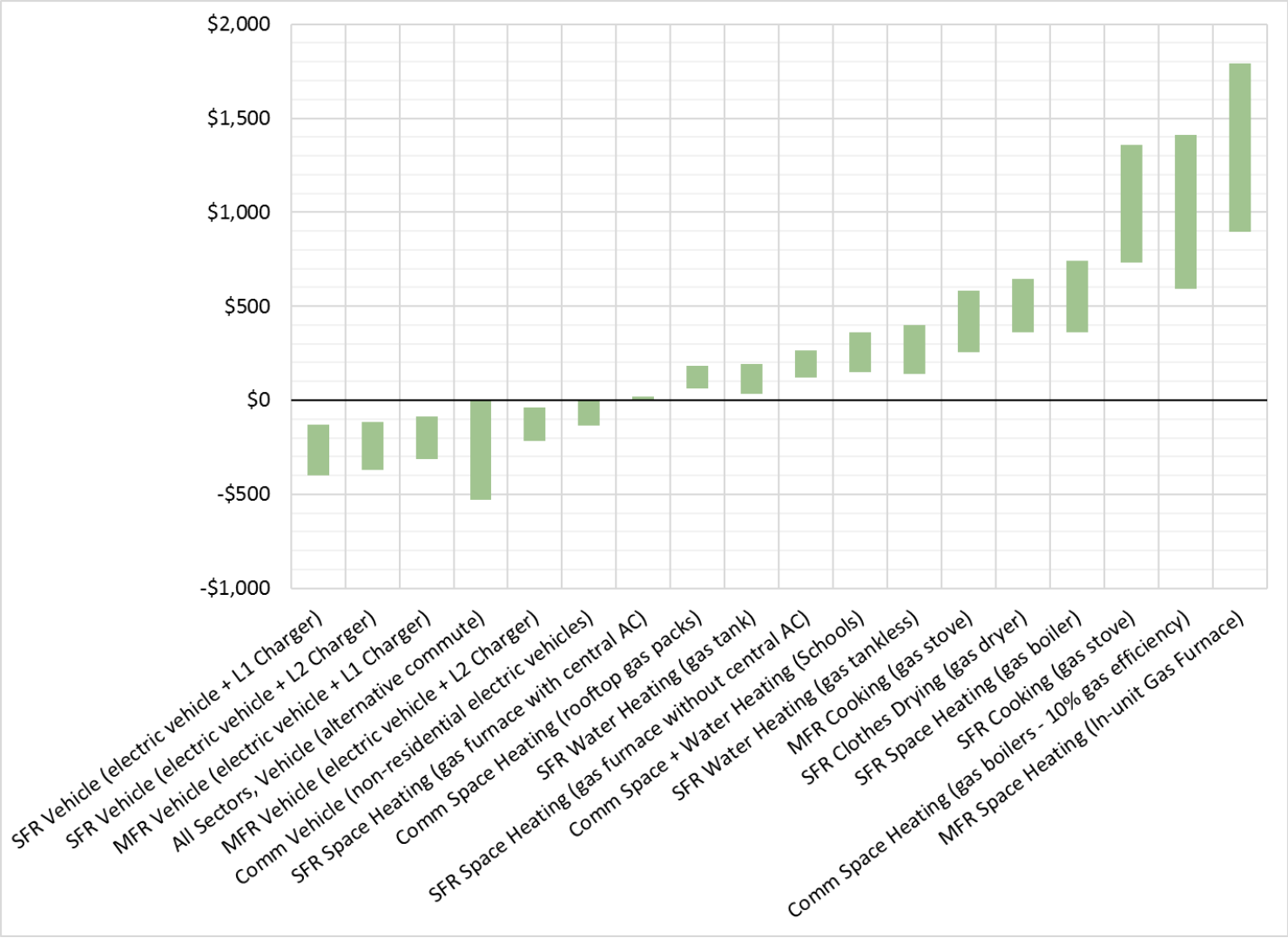
	Cost effective (MT CO_2-e)[3]	Total emissions reduction potential**	Minimizes Electric Utility Impacts	Policy leverage – City ability to impact	Funding Source Availability*
●	Deep cost savings	>25,000 MT/yr	No permit review, does not impact utilities	City policy has high impact	Resources / staffing available in existing budget, no added funds needed
◔	Modest cost savings	15,000 – 25,000 MT/yr	Permit review, but rare utility upgrades		Dedicated funding source under City control, sufficient for pilot programs
◑	Break even	10,000 – 15,000 MT/yr	Permit review, causes some utility upgrades		
◕	Lower cost ($0/MT -$200/MT)	5,000 – 10,000 MT/yr	Frequent utility impacts, must develop programs to limit impact.		No dedicated funding source for S/CAP pilots, grants may be available
○	High cost (>$200/MT)	Minimal potential	Utility upgrades often needed, cannot be avoided	Little or no ability to impact	No dedicated funding source for S/CAP pilots

* It may not be possible to use the same funding source to achieve all goals using the same funding source. For example, Low Carbon Fuel Standard revenue might be available to fund residential EV programs or workplace charging programs, but not both.

** This represents the full potential contribution of this type of activity to achieving the 80x30 goals, not just the emissions reductions associated with the 2022-2024 work plan.

[3] Metric tons (MT) of carbon-dioxide equivalent (CO_2-e), a common measure of greenhouse gas emissions quantity.

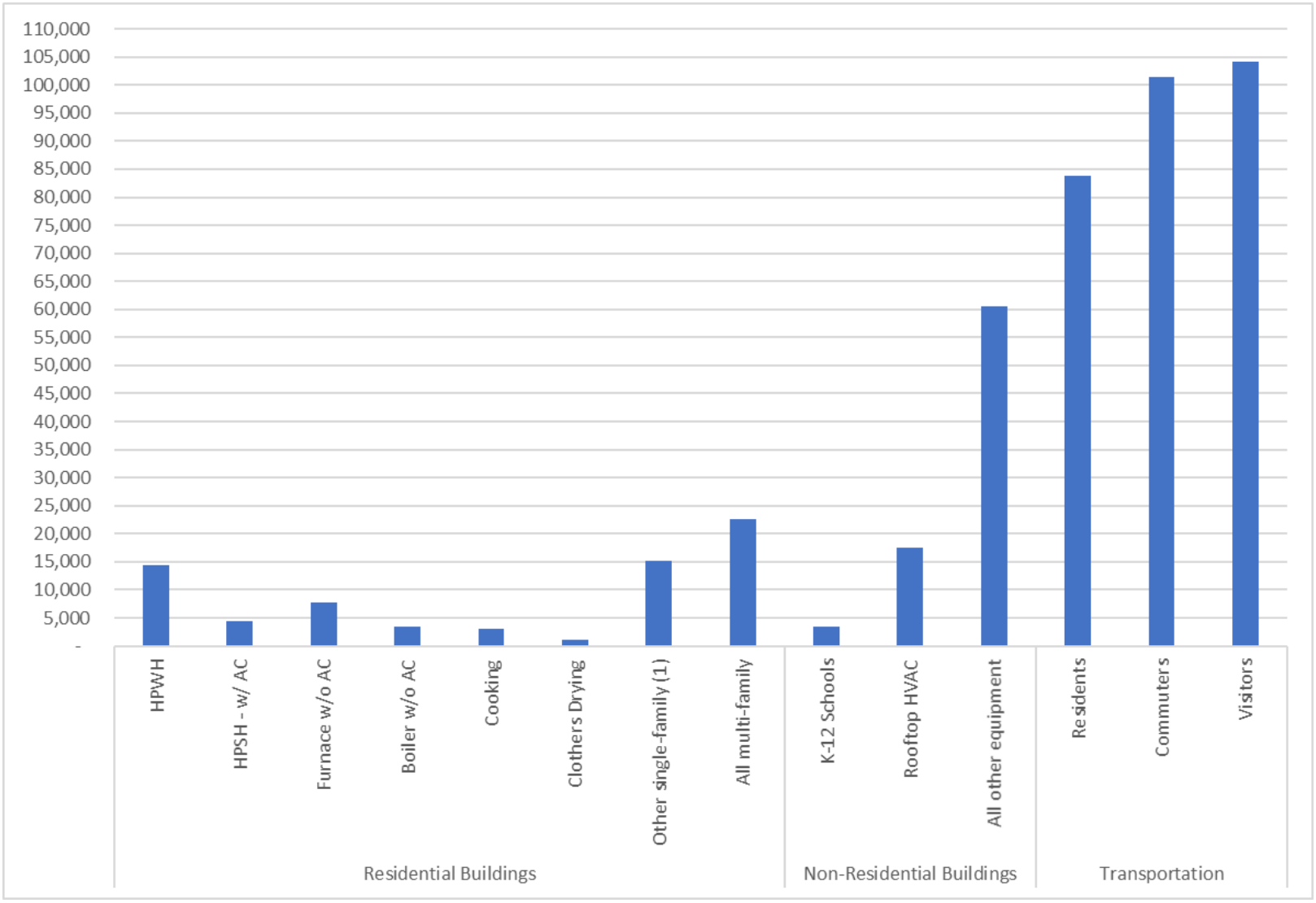
Key Actions by Cost per Metric Ton of Carbon Dioxide Equivalent Reduced[4]



Total Citywide Emissions by Source (MT CO_2-e)[5]

[4] Cost per metric ton shown as a range from a low-cost scenario to a high-cost scenario

[5] Metric tons (MT) of carbon-dioxide equivalent (CO_2-e), a common measure of greenhouse gas emissions quantity.


110,000
105,000
100,000
95,000
90,000
85,000
80,000
75,000
70,000
65,000
60,000
55,000
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45,000
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30,000
25,000
20,000
15,000
10,000
5,000
-
HPWH
HPSH - w/ AC
Furnace w/o AC
Boiler w/o AC
Cooking
Clothers Drying
Other single-family (1)
All multi-family
K-12 Schools
Rooftop HVAC
All other equipment
Residents
Commuters
Visitors
Residential Buildings
Non-Residential Buildings
Transportation

Appendix C: Policy Guidelines for Electric Vehicle Strategic Plan Development

Work item 2.5A calls for the development of an electric vehicles strategic plan, which would guide implementation of several work items. The strategic plan would also relate to a reliability and resiliency strategic plan to be developed in parallel.

Objectives

1. Promote residential, workplace, and visitor electric vehicle adoption
2. Lower the cost and carbon emissions of EV charging as much as possible
3. Decrease the impact of electric vehicle charging on the local electric distribution system
4. Explore how electric vehicles could contribute to the efficient and reliable operation of the statewide and local electric system
5. Explore the use of electric vehicles for increased home resiliency
6. Evaluate the reliability and resiliency needs of an electrified transportation system and the City's role in fulfilling those needs

Concepts to explore adding to Strategic Plan

- Scalable programs to provide charging for multi-family and income-qualified households
- Scalable programs to provide workplace and visitor charging
- The role of publicly-owned charging in providing multi-family, income-qualified, workplace, and visitor charging
- How much high-speed charging is needed in Palo Alto and where it should be located
- Business models to make commuter and visitor mid-day low-cost, low-carbon charging more attractive than overnight home charging
- New technologies such as vehicle to load, vehicle to home, and vehicle to grid and their roles in providing home resiliency and improving the efficiency and reliability of the statewide and local electric systems
- Lower wattage chargers and charging behaviors
- Time of day pricing and other ways to encourage off-peak and mid-day charging
- The role of smaller electric vehicles such as e-bikes and e-scooters in transportation emissions reduction
- The role of regional partnerships in driving electric vehicle adoption for commuters and visitors

Appendix D: Policy Guidelines for Reliability and Resiliency Strategic Plan Development

Work item 1B calls for the development of a reliability and resiliency strategic plan, which would guide implementation of reliability and resiliency work items. This would be coordinated with development of an electric vehicle strategic plan.

Objectives

1. Maintain and improve electric system reliability
2. Improve utility outage communication
3. Prepare the electric system for increased penetration of solar, batteries, electric vehicles and chargers, electrified building equipment, and similar new technologies
4. Optimize the use of local grid capacity in a cost-effective way
5. Promote technologies and behaviors that contribute to the efficient and reliable operation of the statewide and local electric system

Concepts to explore adding to Strategic Plan

- Addressing utility workforce issues
- Replacing aging infrastructure as part of a grid modernization plan
- Installing additional switching and other solutions to improve reliability and recovery from outages as part of a grid modernization effort
- Improving utility outage management system and communications protocols
- Technologies like vehicle to load or vehicle to home for home resiliency
- Equity in resiliency – how to provide resiliency to income-qualified residents
- Neighborhood-level resiliency solutions such as microgrids and local utility-scale battery storage
- Community emergency center resiliency
- Mobile battery strategies, such as large electric vehicles that could double as emergency resiliency solutions
- Promoting low-wattage electrification solutions to reduce grid impacts of vehicle and building electrification
- Time of day pricing and other ways to encourage shifting electric use to times of day with lower emissions, lower utility cost, and lower local grid impact
- Increasing transformer capacity to accommodate higher loads

Appendix E: Index of Key Actions and the Work Items that Implement them

Key Action Title	Work Item(s)
C1. Provide Building and Transportation Emissions Consultations for Residents	P2.1B
C2. Develop Major Employer Custom Emissions Reduction Plans	P2.2C
C3. Study Additional Key Actions Needed for 80 x 30	P4.A, P4.B, P4.C
C4. Study Staffing and Budgetary Needs	P5.B
C5. Study Funding Alternatives	P5.C
C6. Conduct an Electrification Affordability Study	P5.D
C7. Study Carbon Neutrality Options	
C8. Accelerate GHG reductions through Mandates or Price Signals	P2.1K, P2.2A, P2.2B, P2.2D
E1. Reduce GHG emissions in Single-Family Appliances and Equipment	P2.1D, P2.1E, P2.1F, P2.1G, P2.1H
E2. Reduce GHG emissions in Non-Residential Equipment	P2.2A, P2.2B, P2.2C
E3. Reduce Gas Use in Major Facilities	P2.2C
E4. Reduce Natural Gas Use at City facilities	P2.4A, P2.4B, P2.4C
E5. Support Income-Qualified Residents and Vulnerable Businesses with Electrification	P5.D, P2.1D, P2.1I
E6. Develop Electric Rate Options	P1.D

Key Action Title	Work Item(s)
E7. Use Codes and Ordinances to Facilitate Electrification	P2.2A, P2.2B
E8. Electric Grid Modernization Plan	P1.A, P1.B, P1.C
E9. Additional Electrification Opportunities in Commercial and Multi-Family Buildings	P4.B
EV1. Raise Awareness of Alternative Transportation Modes, Micromobility, and EVs.	P2.1A, P2.2D
EV2. Collaborate to Promote EV Adoption Regionally	P2.2E
EV3. Promote EV Adoption and Alternative Commutes for Commuters	P2.2C, P2.2D
EV4. Facilitate the Adoption of EVs, E-bikes and other Light EVs.	P2.1A, P2.1C, P2.2D
EV5. Promote Alternative Transportation Modes and Infrastructure To Support Adoption	P2.1I, P2.1J
EV6. Expand EV Charging Access for Multi-Family Residents	P2.1J, P2.1K P2.4F
EV7. Improve EV Charging Access for Income-Qualified residents	P2.1I, P2.1J, P2.1K P2.4F
EV8. Ensure EV Charging Capacity Supports EV Growth	P2.1K, P2.2D, P2.4C P2.4F

Key Action Title	Work Item(s)
EV9. Electrify Municipal Vehicle Fleet	P2.4D, P2.4E
EV10. Support Policy to Electrify Fleet Vehicles	P2.2E
M1. Increase Active Transportation and Transit for Local Work Trips	P2.3A
M2. Expand Availability of Transit and Shared Mobility Services	P2.3D, P2.3E
M3. Implement the Bicycle and Pedestrian Transportation Plan	P2.3F, P2.3G
M4. Improve Transportation Demand Management for Employees and Residents	P2.3H
M5. Implement Smart Parking Infrastructure in Public Garages and Parking Fees in Business Districts	P5.C, P2.3I, P2.3J
M6. Study Land Use and Transportation	
M7. Continue to Implement the City's Housing Element	P2.3B, P2.3C
M8. Improve Transit and Traffic Flow	P2.3K
M9. Create Housing Density and Land Use Mix that Supports Transit and Non-SOV Transportation	P2.3B, P2.3C
M10. Encourage Reductions in GHGs and VMT	P4.A, P4.C
W1. Maximize Water Conservation and Efficiency	8.A
W2. Build a Salt Removal Facility	8.B
W3. Implement One Water Portfolio Projects	8.C
W4. Develop a Dynamic Water Planning Tool	8.D

Key Action Title	Work Item(s)
S1. Complete a Sea Level Rise Vulnerability Assessment	8.E
S2. Implement a Sea Level Rise Adaptation Plan	8.F
S3. Begin Design Process for a Levee Project	8.G
S4. Identify Protection Strategies from Significant Flood Events	8.H, 8.I, 8.J
S5. Implement the Foothills Fire Management Plan	8.K
S6. Minimize Fire Hazards Through Zoning	8.L
S7. Collaborate on Reducing Wildfire Hazards	8.M
S8. Implement CAL FIRE Public Education Programs	8.N
N1. Increase Palo Alto's Tree Canopy	8.O
N2. Ensure No Net Tree Canopy Loss for all Projects	8.P
N3. Reduce Pesticide Use in Parks and Open Space Preserves	8.Q
N4. Enhance Pollinator Habitat	
N5. Establish a Carbon Storage of Tree Canopy Baseline and KPI	8.O
N6. Maximize Biodiversity and Soil Health	
N7. Coordinate Implementation of City Natural Environment-Related Plans	8.R
N8. Expand Water Efficient Landscape Ordinance (WELO) Requirements	
N9. Phase out Gas-Powered Lawn and Garden Equipment	
N10. Support the Green Stormwater Infrastructure Plan	8.S

Key Action Title	Work Item(s)
N11. Incorporate Green Stormwater Infrastructure in Municipal Projects	8.S
ZW1. Encourage Food Waste Prevention and Require Food Recovery from Commercial Food Generators	8.T
ZW2. Promote Residential Food Waste Reduction	8.U
ZW3. Champion Waste Prevention, Reduction, Reusables, and the Sharing Economy	8.V
ZW4. Provide Waste Prevention Technical Assistance to the Commercial Sector	8.W
ZW5. Prioritize Domestic Processing of Recyclable Materials	8.X
ZW6. Eliminate Single-Use Disposable Containers	8.Y
ZW7. Expand the Deconstruction and Construction Materials Management Ordinance	8.Z
ZW8. Implement Reach Code standard for Low Carbon Construction Materials	8.aa