



CITY OF
PALO ALTO



ENERGY



MOBILITY



ELECTRIC
VEHICLES



WATER



CLIMATE
ADAPTATION &
SEA LEVEL RISE



ZERO WASTE



NATURAL
ENVIRONMENT

2020 Sustainability and Climate Action Plan
Potential Goals and Key Actions
With Feedback Incorporated

DRAFT

2020 SUSTAINABILITY AND CLIMATE ACTION PLAN

POTENTIAL GOALS AND KEY ACTIONS

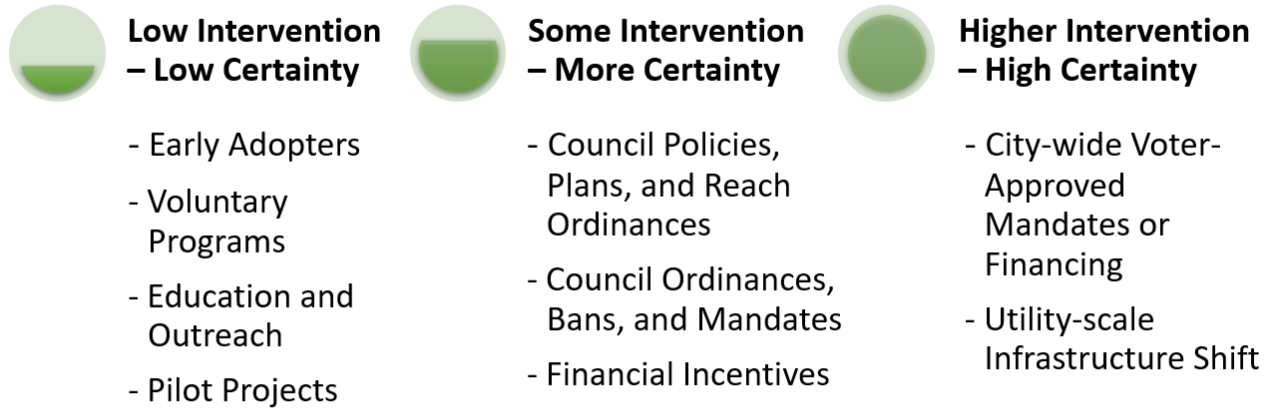
In early 2020, the City of Palo Alto launched a 2020 Sustainability and Climate Action Plan (S/CAP) Update to determine the Goals and Key Actions needed to meet its sustainability goals, including its goal of reducing greenhouse gas (GHG) emissions 80 percent below 1990 levels by 2030. Staff proposed priorities in seven areas: Energy, Mobility, Electric Vehicles, Water, Climate Adaptation and Sea Level Rise, Natural Environment, and Zero Waste. After reviewing different City of Palo Alto Plans and external Climate Action Plans, Staff drafted [2020 S/CAP Potential Goals and Key Actions](#) as a starting point for discussion. Staff solicited feedback from the community through a virtual on-demand 2020 S/CAP Community Engagement Workshop (March 31 – April 14, 2020), the City of Palo Alto Sustainability website (cityofpaloalto.org/sustainabilityplan), and at the April 13, 2020 City Council Study Session ([Staff Report 11201](#)). Staff received feedback from 204 people who participated in the Virtual Workshop, 7 people who responded to the Virtual Workshop invite, 3 people who reviewed the materials on the website, and 21 people who submitted comments for the April 13 Council Study Session.

Feedback from the Virtual Workshop, along with all feedback received between January 22 - April 30, 2020, was used to create a [Summary of All Input on 2020 S/CAP Potential Goals and Key Actions, and Community Engagement Workshop #1 through April 30 2020](#). Staff incorporated the 109 pages of feedback received through April 30, 2020 to draft updated 2020 S/CAP Potential Goals and Key Actions. The 2020 S/CAP Potential Key Actions listed in the following pages do not represent all the work that the City is doing or will be doing related to climate change and sustainability. These are the actions we will potentially be prioritizing. They are numbered to make it easier to refer to specific Actions. They are NOT numbered based on priority.

Each of the 2020 S/CAP Update Potential Key Actions falls along a Spectrum of Tools for Achieving Climate Goals (See Figure 1) below. The Spectrum ranges from market driven solutions that require low intervention but also low certainty of achievement, such as voluntary programs, to government driven solutions that require higher intervention but yield high certainty of achievement, such as city-wide voter-approved mandates. Once Council provides input on the updated 2020 S/CAP Potential Goals and Key Actions, our consultant (AECOM) will estimate the GHG reduction potential, costs, and sustainability co-benefits (such as improved local air quality or reduced cost of living) of the Potential Key Actions. This impact analysis will provide a range of costs per GHG reductions that will have various options along the Spectrum of Tools for Achieving Climate Goals. Staff will use the impact analysis to come up with a set of potential Key Actions that allow multiple options to get us to our 80 x 30 goal, as well as trigger points for when more interventions are needed to achieve the targets for the Key Actions. Some of these measures will require additional legal analysis and potential coordination with other agencies, such as the California Energy Commission, before being presented to Council for final selection.

Figure 1. Spectrum of Tools for Achieving Climate Goals

Spectrum of Tools for Achieving Climate Goals



Market driven solutions

Government driven solutions

We recognize that these are unprecedented times created by the coronavirus pandemic. COVID-19 has brought disruption to cities and communities across the globe. While responding to COVID-19 must remain a priority for governments and businesses, and society as a whole, we cannot forget the importance of the long-term fight against climate change. Like pandemics, climate change can be planned for in advance, if we pay attention to the warnings of scientists who are sounding the alarm. Since the coronavirus pandemic has wreaked havoc on the economy and on people’s lives, we will need to be mindful of how we implement the 2020 S/CAP. For the next two years, we will most likely need to focus on low-cost strategies that might not necessarily have the largest GHG reduction impacts. We will also need to explore revenue sources to fund additional solutions. Options may include establishing a Carbon Fund or a ballot measure for the community to vote on. As suggested in the feedback received, we also need to launch an awareness campaign and educate the community about the various topics covered in the 2020 S/CAP, what programs and policies are needed to get to 80 x 30, and simple actions community members can take to reduce their carbon footprint.

The City is fully committed to a sustainable future and will continue to engage the Community throughout this process. The 2020 S/CAP will be a major step forward towards the 2030 goal of 80 percent GHG reduction.

2020 SUSTAINABILITY AND CLIMATE ACTION PLAN GOALS



ENERGY

- ➔ Reduce GHG emissions from the direct use of natural gas in Palo Alto’s building sector by:
 - a. 40% below 1990 levels by 2030 (or 24% below 2018 level) OR
 - b. 60% below 1990 level by 2030 (or 50% below 2018 level) OR
 - c. 80% below 1990 level by 2030 (or 76% below 2018 level)



MOBILITY

- ➔ Reduce transportation related GHG emissions 80%, from approximately 300,000 MT CO_{2e} to 60,000 MT CO_{2e} by 2030 by:
 - a. Increasing the mode share for active transportation modes (walking, biking, and transit) from 19% to 40% of local work trips by 2030
 - b. Increasing the availability of transit and shared mobility services from 61% to 100% by 2030 by increasing the proportion of residents within a quarter-mile walkshed of frequent transit corridors to 30% and by providing on-demand transit options to the rest of the City
 - c. Utilizing development regulations and standards to continue creating a housing density and land use mix that supports transit and non-SOV transportation modes
 - d. Utilizing pricing, fees, and other program and policy tools to encourage reductions in GHGs and VMT



ELECTRIC VEHICLES

- ➔ Reduce transportation related GHG emissions 80%, from approximately 300,000 MT CO_{2e} to 60,000 MT CO_{2e} by 2030 by:
 - a. Increasing the EVs registered in Palo Alto from 4,500 (2019) to 42,000 (80% of vehicles)
 - b. Increasing the share of EV commute vehicles from single digits to 80% by 2030
 - c. Developing a public and private charging network to support these levels of EV penetration



WATER

- ➔ Exceed the forthcoming Making Conservation a California Way of Life indoor and outdoor water use targets by 5%
- ➔ Achieve 10% of total water demand met by water reuse (recycled or stormwater capture)
- ➔ Improve current recycled water by reducing total dissolved solids by 50% by 2024 compared to 2019 base year
- ➔ Increase pervious surfaces within the City 10% by 2030 compared to 2020 baseline, to manage stormwater by improving water quality to protect the SF Bay and increase beneficial use of captured stormwater



CLIMATE ADAPTATION & SEA LEVEL RISE

- ➔ Develop a multi-year Sea Level Rise Adaptation Plan for Council Review by April 2021 to include a sea level rise vulnerability assessment, plan development and implementation and a community engagement strategy



NATURAL ENVIRONMENT

- ➔ Restore and enhance resilience and biodiversity of our natural environment
- ➔ Increase tree canopy to 40% city-wide coverage by 2030



ZERO WASTE

- ➔ Divert 95% of waste from landfills by 2030, and ultimately achieve zero waste
- ➔ Implement short- and medium-term initiatives identified in the 2018 Zero Waste Plan

ENERGY

Building efficiency and electrification are key to achieving Palo Alto's - and California's - greenhouse gas (GHG) reduction goals. Overcoming building electrification barriers at both the local and regional level will be necessary to increase market adoption in existing buildings. Electrification - and encouraging existing buildings to upgrade to modern energy efficiency levels - may pose significant strategic and operating challenges for the City of Palo Alto Utilities (CPAU) but is an important strategy to meeting the City's aggressive GHG reduction goal.

GOAL¹

- ➔ Reduce GHG emissions from the direct use of natural gas in Palo Alto's building sector by:
 - a. 40% below 1990 levels by 2030² (or 24% below 2018 level) (*Need 36,800 MT CO_{2e} reduction from 2018*), OR
 - b. 60% below 1990 level by 2030 (or 50% below 2018 level) (*Need 75,600 MT CO_{2e} reduction from 2018*), OR
 - c. 80% below 1990 level by 2030 (or 76% below 2018 level) (*Need 114,400 MT CO_{2e} reduction from 2018*)

KEY ACTIONS³

RESIDENTIAL BUILDINGS

1. Increase awareness and adoption of efficient electric alternatives to gas appliances and all-electric buildings through community engagement
2. Streamline permitting process for building electrification
3. Implement an all-electric utility rate
4. Require major alterations of single family homes to meet all-electric requirements⁴ (projected effective date 2022) (*Estimated total reduction of 800 MT CO_{2e}*)
5. Retrofit all gas wall furnaces in multifamily buildings to electric heat pump systems for space heating by 2030⁵ (*Estimated total reduction of 5,600 MT CO_{2e}*)
6. Upon home sale, require an electrification evaluation and provision of information related to City's electrification programs.
7. Electrify gas appliances in single family homes upon home sale beginning in 2025
 - a. Water heating only (*Estimated total reduction of 7,800 MT CO_{2e}*)
 - b. Space heating only (*Estimated total reduction of 10,800 MT CO_{2e}*)

¹ Prior to the AECOM analysis, there are 3 alternative goals to choose from for the Energy Sector, based on 40%, 60% and 80% of GHG reduction from the direct use of natural gas in the building sector. The AECOM analysis will determine the least cost bundle of GHG reduction measures across the different sectors to meet the 80x30 goal, which in turn will establish the goal for the Energy sector.

² This goal is in line with the intent of AB3232 (2018), which directs the California Energy Commission (CEC) to assess the potential for California to reduce GHG emissions from the building sector by 40% below 1990 level by 2030.

³ AECOM will determine the GHG reductions and associated costs for each of these Key Actions.

⁴ Expanding this mandate to major alterations of single family homes will require development of an amended Reach Code, based on an updated a cost effectiveness study, and CEC review.

⁵ This may require an Energy Code amendment and CEC approval.

- c. Full electrification (*Estimated total reduction of 19,600 MT CO_{2e}*)
- 8. Electrify water heating on replacement in all single family homes by 2030 (*Estimated total reduction of 20,000 MT CO_{2e}*)
- 9. Phase out fossil fuel use in existing buildings starting with areas that have older gas lines that need to be repaired or replaced. Disconnect natural gas distribution service to residential areas by 2030.
 - a. Target only single family homes with PVC gas line (*Estimated total reduction of 1,400 MT CO_{2e}*)
 - b. Target 50% of single family homes (*Estimated total reduction of 24,500 MT CO_{2e}*)
 - c. Target 50% of residential buildings (*Estimated total reduction of 36,000 MT CO_{2e}*)
 - d. Target 100% of single family homes (*Estimated total reduction of 49,000 MT CO_{2e}*)
 - e. Target 100% of residential buildings by 2030 (*Estimated total reduction of 72,000 MT CO_{2e}*)
- 10. Create an on-bill financing program to finance the electrification of homes in advance of gas being withdrawn

NON-RESIDENTIAL BUILDINGS

- 11. Electrify water heating and space heating in all K-12 facilities by 2030 (*Estimated total reduction of 3,300 MT CO_{2e}*)
- 12. Convert all rooftop gas packs on non-residential buildings to electric heat pump systems by 2030 (*Estimated total reduction of 1,100 MT CO_{2e}*)
- 13. Require all-electric non-residential new construction projects starting in 2021⁶ (*Estimated total reduction of 2,300 MT CO_{2e}*)
- 14. Electrify 80% of existing city-owned buildings by 2030
- 15. Require all commercial buildings above 25,000 sq ft to meet a carbon emissions intensity target by occupancy class with a goal of reducing carbon emissions by 40%⁷ (*Estimated total reduction of 16,200 MT CO_{2e}*)

OTHER CITY INITIATIVES

- 16. Increase energy resilience by assessing opportunities for local distributed energy resources, energy storage, microgrid installations, and home-to-grid.
- 17. Identify funding sources to fund the decommissioning of gas lines, undergrounding of electric lines, and building fiber to the home in residential areas.
- 18. Identify funding sources for building electrification

KEY PERFORMANCE INDICATORS

- GHG emissions from the building sector

⁶ City Council adopted an all-electric mandate for residential new construction projects effective 4/1/2020. Expanding this mandate to non-residential construction will require an additional cost effectiveness study and coordination with the CEC.

⁷ Buildings > 25,000 sqft represent 75% of total nonresidential square footage in Palo Alto, or around 19,000,000 total sqft. This strategy is modeled after NYC's Local Law 97 (Building Emissions Law) and may need a Green Building Code amendment.

- Number of Heat Pump Water Heaters installed
- Number of all-electric residential and non-residential parcels
- Cumulative gas efficiency savings



Emissions from natural gas use represent about 32 percent of Palo Alto's remaining carbon footprint if we exclude PaloAltoGreen Gas offsets. The decreasing emissions of California and Palo Alto's energy supply due to renewable energy opens the opportunity to reduce natural gas use through electrification in addition to continued efficiency measures.

Explanation of Changes

Updated Goals, Incorporating Feedback

- ➔ Reduce GHG emissions from the direct use of natural gas in Palo Alto's building sector by 40% below 1990 levels by 2030
 - Received input from 3 residents that this goal is not ambitious or soon enough, 1 resident commented that this goal is very ambitious and not realistic, 1 resident opposed this goal, 1 resident advocated for renewable natural gas.
 - Staff modified this goal so that prior to the AECOM analysis, there are 3 alternative goals for the Energy Sector, based on 40%, 60% and 80% of GHG reduction from the direct use of natural gas in the building sector. The AECOM analysis will determine the least cost bundle of GHG reduction measures across the different sectors to meet the 80x30 goal, which in turn will establish the goal for the Energy sector.
- ➔ Increase Heat Pump Water Heater adoption to 25% by 2030
 - 6 Residents provided feedback on this Key Action. 2 residents wanted clarification on the goals, 2 residents thought the goal should be more ambitious, 3 residents recommended developing an infrastructure of contractors trained to do this work, 1 resident noted that not all homes can use this technology, and 1 resident noted from personal experience that it's hard to do.
 - Staff deleted this goal and opted for only 1 overarching goal.
- ➔ Increase all-Electric homes to 20% of all residential single-family homes by 2030
 - Received input from 2 residents that this goal is not aggressive enough.
 - Staff deleted this goal and opted for only 1 overarching goal.

Suggestions for New Goals

- Resident
 - Increase use of Renewable Natural Gas (Biomethane) to replace conventional Natural Gas usage (20% by 2030)

- Greenmeadow Resident
 - o Goal around efficiency and/or conservation
- Resident
 - o Goal around retrofit electrification, not just new building electrification

Updated Key Actions, Incorporating Feedback

Staff created three categories of Key Actions that include many new Key Actions and also incorporate the below revised Key Actions:

~~1. Meet or exceed City Council adopted energy efficiency targets~~

- No feedback received on this goal, which was incorporated into the Customer Programs group of Key Actions.

~~2.1. Explore electrification of Electrify~~ city-owned facilities with the goal of phasing out fossil fuel use in existing municipal buildings

- Received input from 6 residents and 1 non-profit to change the potential key action from “Explore electrification of city-owned facilities” to “Electrify city-owned facilities”.
- Staff incorporated the suggested changes in Key Action 14.

~~3.2. Phase out fossil fuel use in new and existing buildings starting with areas that have older gas lines that need to be repaired or replaced through a combination of programs & mandates (includes partnerships and collaborations to support market transformation)~~

- Received input from 9 residents supporting the phase out of natural gas. 4 residents opposed the use of mandates or other actions to phase out natural gas. 1 resident suggested phasing out natural gas in areas with older gas lines that need to be repaired or replaced. 1 non-profit advocated more specificity for this action, with target dates set for specific programs and mandates. 1 non-profit and 1 resident advocated for on-bill financing for electrification. 1 resident emphasized the need to phase out fossil fuel use in existing buildings. 1 resident also emphasized the need to incentivize residents to electrify their homes, and suggested using focus groups to find out what appeals to residents.
- Staff incorporated the suggested changes in Key Action 9.

~~4.3. Increase awareness and adoption of efficient electric alternatives to gas appliances and all-electric buildings through community engagement~~

- Received input from 4 residents supporting the increase of awareness and adoption of efficient electric alternatives through community engagement.
- Staff incorporated the suggested changes in Key Action 1.

~~5.4. Implement an all-electric utility rate~~

- Received input from 3 residents supporting the implementation of an all-electric utility rate. 1 resident objected to this action if it creates a financial burden to lower income residents who cannot afford to electrify.

- Moved to Key Action 3

~~6.5. Explore opportunities to increase energy resilience by assessing opportunities for (e.g. local distributed energy resources, energy storage, microgrid installations, and home-to-grid)~~

- Received input from 8 residents supporting actions to increase energy resilience. Suggestions include microgrids, local solar farms, EV storage, adding second interconnect, mandating home-to-grid for new homes.
- Key Action updated in incorporate feedback and moved to Key Action 16

~~7.6. Explore the impact of building decarbonization on City's gas utility and develop mitigation strategies~~

- Received input from 3 residents supporting the examination of the impact of building electrification on the gas utility.
- This Key Action was incorporated into other new Key Actions

~~8. Continue to purchase carbon offsets to match natural gas emissions as a transitional measure. Evaluate potential local offset purchases~~

- 7 residents objected to continuing the purchase of offsets, which does not address structural issues. 1 resident commented that local offsets are ok but should not be used for counting toward the City's GHG reduction. 1 non-profit and 1 resident suggested shifting the strategy to reduce natural gas emissions from carbon offsets to investment in electrification infrastructure. 2 residents supporting the continuation of purchasing carbon offsets.
- This Key Action was deleted based on feedback.

~~9.7. Meet or exceed City Council adopted energy efficiency targets. Expand customer programs to increase building efficiency.~~

- Revised and incorporated into new Key Actions.

~~10.8. Streamline permitting process for building electrification~~

- Received input from 4 residents on the need to streamline permitting for electrification projects.
- A new Key Action 2 was added to incorporate this feedback.

~~11.9. Identify funding sources for building electrification~~

- Received input from 2 residents and 1 non-profit on the need to procure funding (e.g. carbon tax) and increase staffing to achieve the aggressive electrification goals.
- A new Key Action 18 was added to incorporate this feedback.

Suggestions for New Key Actions

- Greenmeadow Resident
 - o An Action or two around conservation (e.g., lowering the thermostat), and other universal solutions with low upfront cost.

- Resident
 - o An action (or add to an existing action) about really understanding the barriers to electrification (building department codes, lack of affordable contractors willing to work in Palo Alto, differences between CPAU standards and PG&E standards, Eichlers and other houses that may not work with heat pump technologies etc.) to determine the best programs and incentives to drive electrification. This of course is something we can help with via the Cool Block program.
- Palo Alto Non-Profit
 - o New homes should be wired so that the EV can run the house, known as “home to grid”. (Japanese EVs are already designed this way)
- Palo Verde Resident
 - o Evaluate whether or not key actions are proving useful or impossible to meet. Maybe the need for carbon offsets means there is a problem with the goal that the carbon offsets are meant to meet.
- Professorville Resident
 - o More effort on distributed PV

DRAFT

MOBILITY

Road transportation represents the largest percentage of Palo Alto's existing carbon footprint – and a congestion headache. GHG emissions are a function of two factors: Vehicle Miles Traveled (VMT), addressed here, and the carbon intensity (GHG/VMT), addressed in the next section. Reducing GHG/VMT is largely driven by Federal Standards, state policy, and vehicle offerings (including fuel efficiency and EVs). However, VMT reduction and EV adoption can be influenced by local programs and policies, including roadway engineering, land use, and zoning, since these elements affect travel mode choice. The Mobility and EV plans work in synch to jointly reduce GHG emissions and VMT.

GOALS

- ➔ Reduce transportation related GHG emissions 80%, from approximately 300,000 MT CO_{2e} to 60,000 MT CO_{2e} by 2030⁸ by:
 - a. Increasing the mode share for active transportation modes (walking, biking, and transit) from 19% to 40% of local work trips by 2030
 - b. Increasing the availability of transit and shared mobility services from 61% to 100% by 2030 by increasing the proportion of residents within a quarter-mile walkshed of frequent transit corridors to 30% and by providing on-demand transit options to the rest of the City
 - c. Utilizing development regulations and standards to continue creating a housing density and land use mix that supports transit and non-SOV transportation modes
 - d. Utilizing pricing, fees, and other program and policy tools to encourage reductions in GHGs and VMT

KEY ACTIONS

1. Reduce the current transportation mode split of 64%⁹ Single Occupancy Vehicle (SOV) use for work trips to increase active transportation modes (walking, biking, and transit) by implementing the Bicycle + Pedestrian Transportation Plan, the Complete Streets policy, Vision Zero, and other programs to create safe streets for all road users, particularly vulnerable road users
 - a. Develop a Safe Routes for Older Adults¹⁰ program to address transportation needs of those 65+ years through fixed route and on-demand EV transit options, investing in walking and bicycling infrastructure, and promoting e-bikes/adaptive bikes/adult trikes for older adults. Aim for a 10% alternative mode share by Older Adults.

⁸ Fossil-fuel based vehicle miles traveled (VMT) will need to decrease from 1.02 billion VMT to ~0.2 billion VMT to achieve an 80% reduction of GHG emissions in the transportation sector (VMT estimates based on PlaceWorks February 2017 study).

⁹ US Census, American Community Survey, 5-Year Estimates, 2018

¹⁰ See UC Berkeley SafeTREC, [Safe Routes for Older Adults](#), 2018.

- b.** Adopt a Vision Zero plan to reduce injuries to all road users, particularly vulnerable road users. Reduce traffic injuries to zero.¹¹
 - c.** Conduct a feasibility study to determine candidate streets for protected bicycle infrastructure as this facility type addresses the “interested but concerned” population that would bike if separated from vehicular traffic.
 - d.** Continue the Safe Routes to School program that has an existing 68% active and shared mode split (bike, walk, carpool, transit), aim for 75% in 2030.
 - e.** Encourage the use of bike and/or scooter sharing, and the provision of required infrastructure throughout Palo Alto, especially at transit stations and stops, job centers, community centers, and other destinations.
 - f.** Reduce speed limits to 15mph on 25% of City streets for less bicyclist stress and more bicyclist and pedestrian friendliness and safety.
 - g.** Develop regional and local bicycle highways to provide uninterrupted bike commutes.
 - h.** Increase the number of bike facilities, including bike parking and signalized intersections with bicycle accommodations (e.g. bicycle signal heads, bicycle detection, integrated bike/ped counters into signals, colored/buffered/protected bicycle lanes).
 - i.** Designate vehicle-free streets to encourage economic activity and recreational uses.
- 2.** Reduce SOV use by eliminating free parking and adjusting parking requirements
 - a.** Study parking effects on GHG/VMT in S/CAP and modify parking requirements accordingly.
 - b.** All occupants and businesses of new office buildings that are required to provide their own parking should not be allowed to purchase RPP permits.
 - c.** Institute paid public and private parking and allow for sharing of existing parking resources.
 - d.** Price commuter parking in public garages so that transit is a competitive mode.
 - 3.** Implement key transportation Capital Improvement Projects to significantly increase transit use coverage, service quality, frequency, speed and/or access
 - a.** Support Transit Signal Priority on transit routes.
 - b.** Add Rapid Bus and queue jump lanes to El Camino Real.
 - c.** Add protected bikeways to El Camino Real.
 - d.** Complete the Quarry Road Extension to the PA Transit Center.
 - e.** Provide on-demand shuttle service within Palo Alto for neighborhoods not served by high-frequency transit.
 - 4.** Enhance traffic signals to improve traffic flow and reduce idling and associated GHG emissions.

¹¹ [Vision Zero](#) is a strategy to eliminate all traffic fatalities and severe injuries. Assumption for modeling: BPTP 2012 + 4.3 miles of protected bike lanes/intersections on El Camino Real, upgrade bike facilities on collectors, arterials, and expressways to protected bike lanes/intersections, and set slower speeds in residential areas (<=20mph).

5. Update and strengthen public and private Transportation Demand Management (TDM) programs
 - a. Promote the use of bicycles or electric scooters for deliveries within the city.
 - b. Promote walking and biking to local-serving retail.
 - c. Adopt TDM Ordinance per Comp Plan Policy and include GHG emission targets for TDM plans, EV infrastructure targets, telework requirements, and mitigations/remediations allowing parking maximums and unbundled parking. Require new employment projects to add housing and retail to reduce their VMT.
 - d. Work with PAUSD to reduce SOV trips by staff, students, and parents.
 - e. Increase the number of City Employees utilizing commute benefits and working remotely from home two days per week. Offer all City of Palo Alto employees commute benefits despite their worksite location and support their adoption of bikes/e-bikes/scooters for first/last mile connections. Target 40% of city employees using active modes and 40% of City employees working from home two days per week.
 - f. Fund the Palo Alto Transportation Management Association (TMA) with the goal of reducing SOV commute-trips citywide by 30%.
 - g. Reduce Vehicle Miles of Travel (VMT) by mandating telework two days per week. (Includes both new and existing development.)
6. Use land use strategies to reduce VMT
 - a. Prioritize thoughtful integration of trees along pathways/bikeways for enhanced active transportation experience and increased carbon sequestration.
 - b. Identify new transit-supportive land use corridors for new housing and local-serving retail.
 - c. Identify policies/programs to reduce GHG emissions from parts of the city with high VMT.
 - d. Accommodate new housing and employment growth in areas walkable to retail and Caltrain or corridors that meet requirements for VTA-provided transit via zoning standards, consistent with state law.
7. Improve Private Transit Operators' GHG profiles
 - a. Work with private transportation firms to provide subscription long-distance commute services using electric vehicles.
 - b. Require private electric commuter buses serving employment sites and areas¹²
8. Support telecommuting infrastructure
 - a. Support fiber-connected remote work sites in other communities.
 - b. Support/incentivize fiberoptic infrastructure/robust internet services.
9. Use pricing to discourage commuting via SOV
 - a. Quantify the environmental impact and economic value of existing private parking spots and explore a VMT bank or exchange for managing a VMT budget for the city.

¹² This Key Action is also included in the EV area.

- b. For new development, implement a development impact fee for construction of new non-EV spots.
 - c. Establish congestion pricing and/or toll roads.
 - d. Consider a Palo Alto-specific Internal Combustion Engine (ICE) vehicle fee, tax, and/or other assessment to provide a disincentive for the ownership or use of a fossil fuel vehicle. Consider application of the fee, tax, or assessment to both residential households and workplaces and utilize the revenue to incentivize VMT reduction and EV adoption.¹³
- 10. Eliminate use of gasoline in Palo Alto**
- a. Evaluate programs to reduce the number of fossil fuel vehicles in Palo Alto.¹⁴
 - b. By 2022, develop a strategic plan to encourage EV adoption of inbound vehicles.¹⁵
 - c. Ban the registration of gasoline vehicles in Palo Alto by 2030. (Estimated total reduction of 150,000 MT CO₂e/yr)¹⁶
- 11. Advocacy**
- a. Advocate in the region for the development of Mobility as a Service.¹⁷
 - b. Advocate in the region for VMT banks and exchanges that allow new development to contribute directly to the expansion of transit service.¹⁸
 - c. Advocate in the region for faster, more seamless transit, especially at system borders.
 - d. Advocate for local employers to contribute to a regional shuttle service.
 - e. Advocate in the region for (or mandate in Palo Alto that) delivery and ride-hailing vehicles be electric.
 - f. Advocate in the sub-region for improved transit service and protected bicycle infrastructure in adjacent cities to increase non-SOV commuting.

KEY PERFORMANCE INDICATORS

- Commute mode share for all modes
- Transit ridership, the proportion of residents within a quarter-mile walkshed of frequent transit, and the proportion of residents covered by on-demand transit services.
- Number and proportion of residents within a 15-minute walk of retail land uses
- Commute Benefits participation by City Employees
- Miles of bikeways and number of enhanced intersections

¹³ This Key Action is also included in the EV area.

¹⁴ This Key Action is also included in the EV area.

¹⁵ This Key Action is also included in the EV area.

¹⁶ This Key Action is also included in the EV area.

¹⁷ Mobility as a Service is the concept that travel can be planned, booked, and paid for across a variety of public and private transportation modes using one platform. This [blog post](#) details MaaS features.

¹⁸ See UC Berkeley Institute of Transportation Studies, [Implementing SB 743: An Analysis of Vehicle Miles Traveled Banking and Exchange Frameworks](#), 2018



The mobility marketplace is changing rapidly: Increased telecommuting may reduce the amount of VMT for some sectors of the workforce with anticipated but unknown effects on the real estate market; on-demand ridesharing apps bring mobility as well as congestion; Autonomous Vehicles are anticipated to increase in market share and may allow for driverless extended commutes. The transportation and land use ecosystems interact in substantial and complex ways.

Explanation of Changes

Updated Goals, Incorporating Feedback

Created one main goal for Mobility: Reduce transportation related GHG emissions 80%, from approximately 300,000 MT CO₂e to 60,000 MT CO₂e by 2030

- This is the same main goal for EVs, with different sub goals
- This approach of having one goal with supportive sub goals was suggested by a Resident and has been incorporated
- ➔ Increase active transportation mode share (walking, biking, and transit) from 19% to 2540% for local work trips by 2030
 - 15 Residents provided feedback on this goal. 6 Residents liked the goal, 6 Residents wanted a definition for Action Transportation, 1 Resident wanted to know how this would be achieved, 1 Resident suggested the need for more incentives, and 1 Resident suggested that the goals should be directed towards commuters coming into Palo Alto from other cities.
 - This goal was modified based on feedback and incorporated into one goal for Mobility.
- ➔ Increase availability of transit and shared mobility services from 61% to 100% by 2030 by increasing to 7530% the proportion of residents within a quarter-mile walkshed of frequent transit corridors and providing on-demand transit options to the rest of the City by 2030
 - 3 Residents provided feedback on this goal. 2 Residents liked this goal but noted that public transportation has been poor for a long time in Palo Alto, and 1 Resident wanted clarification on the goal.
 - This goal was modified based on feedback and incorporated into one goal for EVs.
- ➔ Implement Complete Streets and build out the Bicycle and Pedestrian Transportation Plan
 - 6 Residents provided feedback on this goal. 5 residents liked the Complete Streets Concept and emphasized the need to separate engine-powered modes from human-powered modes, and 1 resident noted that Council should modify its "No closed streets" decision which has impacted negatively the options for the Bicycle and Pedestrian Plan.
 - This goal deleted but incorporated into the Key Actions.

➡ Utilize development regulations and standards to continue creating a housing density and land use mix that supports transit

- 12 residents noted that the built environment and land use was missing and needed to be incorporated into the 2020 S/CAP. This sub goal was added to the main Mobility Goal in response to community feedback.

➡ Utilize pricing, fees, and other program and policy tools to encourage reductions in GHGs and VMT

- 3 Residents noted the need for the pricing parking and congestion. This goal was added to incorporate that feedback.

Suggestions for New Goals

- Barron Park Resident
 - o Work from home two days per week for those workers that can work from home, especially those workers living outside of Palo Alto.
- Downtown North Resident
 - o Incentivize local companies to reduce car trips per day by asking employees to work from home several days/ week.

Updated Key Actions, incorporating Feedback

General Feedback on Key Actions

- 20 Residents suggested that the City stop privileging autos over people and subsidizing single passenger vehicles at the expense of our climate goals, including prioritizing completion of the Bike and Ped Transportation Plan, making improvements to bike and pedestrian infrastructure, and considering vehicle-free streets; 9 Residents suggested electrifying all transportation, including shuttles, public transit, Caltrain, and sanitation vehicles; 6 Residents suggested ensuring that bicycle parking is plentiful; 6 Residents suggested increasing parking cost in downtown and on California Ave, 5 Residents suggested providing and encouraging the use of more and better public transit; 5 Residents suggested adding more education and oversight provisions for people who ignore traffic rules and are overly aggressive; 4 Residents suggested making zoning easier for high density residences around public transit; 3 Residents suggested making it easier for everyone (including seniors) to get around without getting in their cars; 2 Residents suggested ending any future construction of parking garages; and 2 Residents suggested supporting planning and research for travel routes, parking, and policy guidelines for new and future mobility modes, including “Mobility as a Service”.
 - o Most of the feedback was incorporated into new / revised Key Actions

1. Fund the Palo Alto Transportation Management Association TMA with the goal of reducing SOV commute-trips ~~downtown-~~ citywide by 30%

- 7 Residents and 1 Non-Profit provided input on this Key Action. 5 Residents suggested that the TMA be expanded throughout the city, 1 Non-Profit suggested implementation a max speed limit of 15 mph on 25% of City Streets, 1 resident suggested the TMA goal should be for gasoline vehicles only, and 1 resident suggested the TMA be funded through a business license tax.

- This was moved to Key Action 5 below and expanded to incorporate feedback
2. Make transit investments that significantly enhance coverage, service quality, frequency, speed and/or access
 - 10 Residents and 1 Non-Profit provided input on this Key Action. 7 Residents noted that transit needs to go to destinations that people actually go to, be more efficient, and coordinate better between various routes and providers, 2 Residents noted that transit won't ever work in our area, 1 non-profit suggested that public transit should be free, 1 Resident suggested adding secure bike parking at train stations, and 1 Resident noted the need for regulatory measures.
 - See Key Action 1 below for how this was changed to incorporate feedback
 3. Expand and improve bicycle and pedestrian facilities, connectivity, convenience, and/or safety in a manner that significantly increases the % of trips taken by walking or biking
 - 9 Residents and 1 Non-Profit provided input on this Key Action. 2 Residents suggested prioritizing the Bike and Ped Transportation Plan, 2 Residents suggested integrating native plants and shade trees along pathways, 2 Residents suggested extending bicycle lanes beyond school routes, 1 Resident suggested closing Churchill and Alma grade crossings and have bike/ped tunnel, 1 Non-Profit suggested adding a measurable goal, and 1 resident didn't want any more bicycle investments.
 - See Key Action 1 below for how this was changed to incorporate feedback
 4. Adopt TDM Ordinance per Comp Plan Policy
 - 3 Residents provided input on this Key Action. 1 Resident suggested adopting and enforcing the TDM Ordinance, 1 Resident suggested taking inventory of existing TDM plans, and 1 Resident asked for clarification of what a TDM Ordinance is.
 - See Key Action 5 below for how this was changed to incorporate feedback
 5. Increase the number of City Employees utilizing commute benefits and working remotely from home two days per week. Offer all City of Palo Alto employees commute benefits despite their worksite location and support their adoption of bikes/e-bikes/scooters for first/last mile connections.
 - 3 Residents provided input on this Key Action. 2 Residents suggested making all commute benefits available to all employees regardless of work site and 1 Resident suggested providing free transit passes and/or low rental rates for micro-mobility.
 - See Key Action 5 below for how this was changed to incorporate feedback
 6. Encourage the use of bike and/or scooter sharing, and the provision of required infrastructure throughout Palo Alto, especially at transit stations and stops, job centers, community centers, and other destinations
 - 4 Residents provided input on this Key Action. 3 Residents suggested increasing bike parking, and 1 Resident suggested requiring the renewal of business permits.
 - See Key Action 1 below for how this was changed to incorporate feedback
 7. Enhance traffic signals to improve traffic flow and reduce idling and associated GHG emissions

- 7 Residents provided input on this Key Action. 3 Residents felt that “improving traffic flow” favors automobiles and should be deleted, 3 Residents suggested that traffic signal improvement should include minimizing acceleration as well as idling, and 1 resident suggested installing cameras for light switching that also do bike and ped counts.
 - This Key Action was renumbered to Key Action 4 below
- 8.** Increase the number of bike facilities, including bike parking and signalized intersections with bicycle accommodations (e.g. bicycle signal heads, bicycle detection, colored bicycle lanes)
- 5 Residents provided input on this Key Action. 3 Residents thought this should be a top priority, 1 Resident suggested increasing low stress bicycle facilities to encourage ridership, and 1 Resident didn’t support this Key Action.
 - See Key Action 1 below for how this was changed to incorporate feedback

Due to the high volume of feedback received for the Mobility Key Actions, in order to incorporate as much input as possible, staff completely changed the format of the Key Actions and added the following:

- 1.** Reduce the current transportation mode split of 64% Single Occupancy Vehicle (SOV) use for work trips to increase active transportation modes (walking, biking) by implementing the Bicycle + Pedestrian Transportation Plan, the Complete Streets policy, Vision Zero, and other programs to create safe streets for all road users, particularly vulnerable road users
 - a.** Build out the 2012 Bicycle and Pedestrian Transportation Plan and implement the Complete Streets policy.
 - b.** Develop a Safe Routes for Older Adults program to address transportation needs of those 65+ years through fixed route and on-demand EV transit options, investing in walking and bicycling infrastructure, and promoting e-bikes/adaptive bikes/adult trikes for older adults. Aim for 10% alternative mode share by Older Adults.
 - This aligns with Comp Plan Program T6.6.2
 - c.** Adopt a Vision Zero plan to reduce injuries to all road users, particularly vulnerable road users. Reduce traffic injuries to zero.
 - This aligns with Comp Plan Policy T6.2.
 - d.** Reduce speed limits to 15mph on 25% of streets for less bike stress and more bike/ped friendliness and safety.
 - This aligns with Comp Plan Policy T6.6.
 - e.** Continue the Safe Routes to School program that has an existing 68% active and shared mode split (bike, walk, carpool, transit), aim for 75% in 2030.
 - Palo Alto’s [Safe Routes to School](#) active commute growth is approximately 1% per year with consistent City staffing, engagement by program partners, and investments in infrastructure supporting active commutes. This growth rate could be accelerated with the provision of a more robust, protected bicycle network and build-out of across-barrier connections.
 - This aligns with Comp Plan Policy T6.1, T6.4, and several programs.
 - f.** Develop regional and local bicycle highways to provide uninterrupted bike commutes.
 - This builds upon the Managers Mobility Partnership initiative to create a [Peninsula Bikeway](#).
 - Assumption for modeling: Existing bike network + 4.3 miles of protected bike lanes/intersections on ECR + 3.8 miles of continuous bike lanes on Middlefield Road +

- protected bike lanes/intersection on Alma, Oregon/Page Mill, Embarcadero, Charleston/Arastradero, Meadow, Sand Hill, and Foothill Expwy/Junipero Serra.
 - This aligns with Comp Plan Policy T8.8 and Program T8.8.1.
 - g.** Encourage the use of bike and/or scooter sharing, and the provision of required infrastructure throughout Palo Alto, especially at transit stations and stops, job centers, community centers, and other destinations.
 - This aligns with Comp Plan Program T1.19.4
 - h.** Increase the number of bike facilities, including bike parking and signalized intersections with bicycle accommodations (e.g. bicycle signal heads, bicycle detection, integrated bike/ped counters into signals, colored/buffered/protected bicycle lanes).
 - This aligns with Comp Plan Policy T1.19
 - i.** Conduct a feasibility study to determine candidate streets for protected bicycle infrastructure as this facility type addresses the “interested but concerned” population that would bike if separated from vehicular traffic.
 - This aligns with Comp Plan Policy T1.19
 - j.** Consider vehicle-free streets to encourage economic activity and recreational uses.
 - [A number of US studies show](#) that protected bicycle facilities increase economic activity.
- 2.** Reduce SOV use by eliminating free parking and adjusting parking requirements
 - a.** Institute paid public and private parking and allow for sharing of existing parking resources.
 - This aligns with comp Plan Policies T5-2, T5.4, Programs T5.2.2, T5.2.3, and T5.4.1
 - b.** Price commuter parking in public garages so that transit is a competitive mode.
 - This aligns with Comp Plan Policy T5.2 and Program T5.2.2
 - c.** All occupants and businesses of new office buildings that are required to provide their own parking should not be allowed to purchase RPP permits.
 - Comp Plan Policy T5.5
 - d.** Study parking effects on GHG/VMT in S/CAP and modify parking requirements accordingly.
 - This aligns with Comp Plan Policy T5.1 and Program T5.1.5.
 - 3.** Implement key transportation Capital Improvement Projects to significantly increase transit use coverage, service quality, frequency, speed and/or access
 - a.** Add Rapid Bus and queue jump lanes to El Camino Real.
 - This aligns with Comp Plan Policy T8.1, T1.12, and Program T1.12.3
 - b.** Add protected bikeways to El Camino Real.
 - The cities of [Mountain View](#) and [Santa Clara](#) plan for protected bikeways on El Camino Real.
 - c.** Complete the Quarry Road Extension to the PA Transit Center.
 - This aligns with Palo Alto Comp Plan Program T3.10.4
 - d.** Support Transit Signal Priority on transit routes.
 - This aligns with Comp Plan Policy T8.1.1, T1.12 and Program T1.12.3
 - e.** Provide on-demand shuttle service within Palo Alto for neighborhoods not served by high-frequency transit.
 - [Cupertino](#) initiated an on-demand shuttle service in 2019. Comp Plan Policy T1.6 and Program T1.6.1
 - 4.** Enhance traffic signals to improve traffic flow and reduce idling and associated GHG emissions.
 - Could add a grade separation here if completion is expected by 2030.
 - This aligns with Comp Plan Program T2.1.1
 - 5.** Update and strengthen public and private Transportation Demand Management (TDM) programs

- a. Reduce Vehicle Miles of Travel (VMT) by mandating telework two days per week. (Includes both new and existing development.)
 - Need to explore legality of telecommuting mandate.
 - b. Adopt TDM Ordinance per Comp Plan Policy and include GHG emission targets for TDM plans, EV infrastructure targets, telework requirements, and mitigations/remediations allowing parking maximums and unbundled parking. Require new employment projects to add housing and retail to reduce their VMT.
 - This aligns with Comp Plan Policy T1.2 and Program T1.2.3
 - Model new developments of a certain size as having a 15% GHG reduction from County average.
 - c. Fund the Palo Alto Transportation Management Association (TMA) with the goal of reducing SOV commute-trips citywide by 30%.
 - This aligns with Comp Plan Program T.1.2.4 and T.1.2.6.
 - d. Increase the number of City Employees utilizing commute benefits and working remotely from home two days per week. Offer all City of Palo Alto employees commute benefits despite their worksite location and support their adoption of bikes/e-bikes/scooters for first/last mile connections. Target 40% of city employees using active modes and 40% of City employees working from home two days per week.
 - e. Work with PAUSD to reduce SOV trips by staff, students, and parents.
 - This aligns with Comp Plan Policy T1.2
 - f. Promote the use of bicycles or electric scooters for deliveries within the city.
 - This aligns with Comp Plan Program T1.3.2
 - g. Promote walking and biking to local-serving retail.
 - This aligns with Comp Plan Policy T1.16 and T1.19 and Program T1.16.2 and T1.16.4
6. Use land use strategies to reduce VMT
- a. Accommodate the bulk of new housing or employment growth in areas walkable to retail and Caltrain or corridors that meet requirements for VTA-provided transit via zoning standards, consistent with state law.
 - Many Comp Plan policies/programs align with this. Policy: H2.1, H5.1, L2.4, L2.6 and Programs H2.1.1, H2.1.11, L2.4.5, L2.4.7, H2.2.7, H2.2.8.
 - Model with the estimate of housing units and supportive retail that will be built by 2030.
 - b. Identify new transit-supportive land use corridors for new housing and local-serving retail.
 - This aligns with Policy: H2.1, H5.1, L2.4, L2.6 and Programs H2.1.1, H2.1.11, L2.4.5, L2.4.7, H2.2.7, H2.2.8.
 - c. Identify policies/programs to reduce GHG emissions from parts of the city with high VMT.
 - d. Prioritize thoughtful integration of trees along pathways/bikeways for enhanced active transportation experience and increased carbon sequestration.
 - This aligns with Comp Plan Policies T3.7, T3.8, and T3.9
7. Improve Private Transit Operators' GHG profiles
- a. Require private electric commuter buses serving employment sites and areas
 - This Key Action is also included in the EV area.
 - This aligns with Comp Plan Program T1.3.2
 - b. Work with private transportation firms to provide subscription long-distance commute services using electric vehicles.
 - This aligns with Comp Plan Program T1.3.2
8. Support telecommuting infrastructure

- a. Support/incentivize fiberoptic infrastructure/robust internet services.
 - b. Support fiber-connected remote work sites in other communities.
 - This aligns with Comp Plan Program T1.2.5.
9. Use pricing to discourage commuting via SOV
- a. Establish congestion pricing and/or toll roads.
 - Need to determine legality/feasibility.
 - b. For new development, implement a development impact fee for construction of new non-EV spots.
 - This aligns with Comp Plan Policy T1.4.2
 - c. Quantify the environmental impact and economic value of existing private parking spots and explore a Cap and Trade or other system for managing a VMT budget for the city.
 - This aligns with Comp Plan Policy T1.23.
 - d. Consider a Palo Alto-specific Internal Combustion Engine (ICE) vehicle fee, tax, and/or other assessment to provide a disincentive for the ownership or use of a fossil fuel vehicle. Consider application of the fee, tax, or assessment to both residential households and workplaces and utilize the revenue to incentivize VMT reduction and EV adoption.
 - This Key Action is also included in the EV area.
 - For example, a residential assessment or tax might apply to each household unless they produce evidence of EV ownership or attest to not owning a vehicle. A workplace fee might be imposed on gasoline vehicles parking at a workplace under a transportation demand management program.
 - This aligns with Comp Plan Policy T1.3.1
10. Eliminate use of gasoline in Palo Alto
- a. Evaluate programs to reduce the number of fossil fuel vehicles in Palo Alto.
 - This Key Action is also included in the EV area.
 - Research legality and viability of city mandates such as:
 - Prohibiting Internal Combustion Engine (ICE) vehicles from parking on the street or public parking garages
 - Charging a fee for ICE vehicle parking vs. free parking for EVs
 - 'Park and Ride' type parking lots near 101 and 280 for people to park their ICE vehicle and e-shuttle to their offices in Palo Alto
 - Imposing a fee for ICE vehicles to fund a Palo Alto Carbon Fund to finance GHG reduction measures.
 - This aligns with Comp Plan Policy T1.3.1.
 - b. By 2022, develop a strategic plan to encourage EV adoption of inbound vehicles.
 - This Key Action is also included in the EV area.
 - An Inbound Vehicle EV Adoption Strategic Plan would be a coordinated effort between Transportation, Planning and Utilities Departments and the business community. Feedback was to accelerate this assessment to 2021; staff will strive for an earlier completion but will need time to work with the City's commercial customers. This study could potentially explore:
 - Mandates for employers to pay a fee for parking spots occupied by ICE vehicle
 - Provision of employer – employees incentives to reduce ICE VMT from a Palo Alto Carbon Fund
 - Reduction of employee density at Palo Alto offices
 - Programs to encourage teleworking

- c. Evaluate programs to reduce the number of fossil fuel vehicles in Palo Alto. Ban the registration of gasoline vehicles in Palo Alto by 2030. (Estimated total reduction of 150,000 MT CO₂e/yr)
 - This Key Action is also included in the EV area.

11. Advocacy

- a. Advocate in the region for the development of Mobility as a Service.
- b. Advocate in the region for VMT Banks that allow new development to contribute directly to the expansion of transit service.
- c. Advocate in the region for a VMT Cap and Trade Market or other system to incentivize existing employers to reduce the VMT of their workforces/increase telecommuting.
 - This aligns with Comp Plan Policy T1.23 and T8.6.
- d. Advocate in the region for faster, more seamless transit, especially at system borders.
 - This aligns with Goal T8 of the Comp Plan and subordinate policies and programs.
- e. Advocate for local employers to implement a regional shuttle service.
 - This aligns with Comp Plan T1.15
- f. Advocate in the region for (or mandate in Palo Alto that) delivery and ride-hailing vehicles be electric.
- g. Advocate in the sub-region for improved transit service and protected bicycle infrastructure in adjacent cities to increase non-SOV commuting.
 - This aligns with Goal T8 of the Comp Plan and subordinate policies and programs.

Suggestions for New Key Actions

- Resident
 - o If somehow we come out of this covid-19 crisis with a business culture that permits more “work from home” days - -and somehow the City fosters and/or incentivizes companies to support more “work from home,” that would be a beautiful thing. This is something to think about for 2021 after we have vaccinations for Covid-19 and businesses are tempted to go back to usual operations.
- Resident, + 8 similar suggestions
 - o Encourage Expansion of Remote Work Options, such as: incentivize companies to allow 70% of their work force to work from home 2-3 days/week; when approving new office developments, consider if the company is open to more work-from-home; make office space smaller; and, create shared work centers for the community
- Resident, + 4 similar suggestions
 - o Develop incentive and disincentive programs, including congestion pricing, to accelerate the reduction in gasoline powered vehicle use by residents and commuters.
- Resident, + 1 similar suggestion
 - o There is a big missing key action: urban infill. Land use reform and TOD are needed actions
- Palo Alto Non-Profit
 - o Prioritize large shade trees in the implementation of Complete Streets programs and in the maintenance and retrofit of existing streets.
- Palo Alto Non-Profit
 - o Recognize public street right-of-way as the largest public environmental asset and use more effectively
 - o Enact a moratorium on building in the 2050 inundation zone.
 - o Walkable development should be prioritized within ¼ mile of transit with emphasis on service density. Delivery and a redesigned curb for e-shared-mobility should be included.

The city should not build for services whose safe access cannot be enforced- infrastructure should be repurposed for safety.

- Update Palo Alto's street design guidelines to include shared micro mobility services and active transportation to create protected and safe spaces for users and riders. Micro mobility allows for safe social distancing.
- Resident
 - Some action will be needed to address commuters coming into Palo Alto to work, not just focus on residents.

DRAFT

ELECTRIC VEHICLES

More than half of Palo Alto's emissions come from transportation, making adoption of Electric Vehicles (EVs) a crucial component to reaching our carbon reduction goals. Compared to fossil fuel vehicles, EVs are cheaper to drive, have lower maintenance costs, and produce no emissions. Driving and charging an EV in Palo Alto especially makes sense given the City's carbon neutral electricity supply and low electric retail rates. The Mobility and EV plans work in synch to jointly reduce GHG emissions and Vehicle Miles Traveled (VMT).

GOAL

- ➔ Reduce transportation related GHG emissions 80%, from approximately 300,000 MT CO_{2e} to 60,000 MT CO_{2e} by 2030 by:
 - a. Increasing the EVs registered in Palo Alto from 4,500 (2019) to 42,000 (80% of vehicles),
 - b. Increasing the share of EV commute vehicles from single digits to 80% by 2030.¹⁹
 - c. Developing a public and private charging network to support these levels of EV penetration

KEY ACTIONS

1. Continue to implement programs to assist and incentivize private EV charging installations in hard to reach locations such as multifamily properties, non-profits, small commercial sites, and for income-qualified residents to ensure adequate and diverse EV charging infrastructure.²⁰
2. By 2021 quantify the public and private EV charger network needed within the community to support 80% EV penetration in Palo Alto, and develop an implementation plan to establish that charging network.
3. Continue to electrify municipal fleet as opportunities arise, and by 2021 develop a comprehensive fleet electrification workplan and associated EV charging needs²¹. Replace City's fleet vehicles with EVs at end of life, whenever suitable EVs are available in the market.²² (*Estimated total reduction of 250 - 500 MT CO_{2e}*)
4. Implement outreach to ensure that at least 75% of the community is aware of the environmental and economic benefits of EVs, available incentives, bulk-buy opportunities and benefits of day-time charging and impacts to the electrical grid.

¹⁹ Fossil-fuel based vehicle miles traveled (VMT) will need to decrease from 1.02 billion VMT to ~0.2 billion VMT to achieve an 80% reduction of GHG emissions in the transportation sector (VMT estimates based on PlaceWorks' February 2017 study). These numbers need to be confirmed by AECOM.

²⁰ Work is in progress to expand Palo Alto's EV charging network through the CPAU EV Charger Rebate Program, the EV Charger Technical Assistance Program, and CALeVIP (Scheduled to launch in fall 2020)

²¹ Study would assess what it would take to electrify 252 Light Duty Vehicles (LDV) in the City fleet - including needs of Police and Fire LDV, age of vehicles and replacement timelines, budgets, location and # of necessary EVSE's and staffing availability to implement projects

²² This is the emission reduction potential if 90% of 252 Light Duty Vehicles could be electrified. Due to lower miles traveled by city vehicles, each vehicle switched assumed to lower GHG by 1 to 2 MT.

5. Advocate to expand the state-wide point-of-purchase EV rebate program to include electric motorcycles and bicycles
6. Coordinate with Mobility to increase the number of Vehicle Miles Traveled (VMT) with Light EVs (LEV) including e-scooters, e-bikes and e-motorcycles while reducing the number of Internal Combustion Engine (ICE) VMT in Palo Alto.²³
7. By 2022, develop a strategic plan to encourage EV adoption of inbound vehicles.
8. Consider providing lower electric retail rates for EV charging.
9. Lobby the state legislature and regulatory bodies for stricter transportation emissions standards and goals for zero emission vehicles.
10. Require at least 50% of all parking spaces at Palo Alto's 800+ multi-family properties (~10,000 units) install EV chargers, with the City providing rebates and technical assistance.
11. Require an appropriate percentage of EV charger installations at all commercial parking spots. (e.g. 25 to 50% of all parking spaces)
12. Consider a Palo Alto-specific Internal Combustion Engine (ICE) vehicle fee, tax and/or assessment to provide a disincentive for the ownership or use of a fossil fuel vehicle. Consider application of the fee, tax, or assessment to both residential households and workplaces²⁴ and utilize the revenue to incentivize VMT reduction and EV adoption.²⁵
13. Require private bus fleets serving Palo Alto office campuses to electrify by 2030.²⁶
14. Evaluate programs to reduce the number of fossil fuel vehicles in Palo Alto. Ban the registration of gasoline vehicles in Palo Alto by 2030. (*Estimated total reduction of 150,000 MT CO_{2e}*)
15. Evaluate additional funding sources to incentivize EVs and potential interventions that the City Council and Community could implement to accelerate EV adoption.

KEY PERFORMANCE INDICATORS

- EVs registered in Palo Alto
- EVs registered in low income households in Palo Alto
- Percentage of EVs in City's fleet and availability of municipal charging infrastructure
- Percentage of incoming vehicles that are EVs
- Number and type of shared/public charging ports in Palo Alto
- Reduction of transportation-related emissions due to EVs
- VMT associated with EVs and other zero emission vehicles compared with total VMT

²³ The range seems to be between 200g CO_{2e}/(passenger-mile) and 350 CO_{2e}/(passenger-mile) for both e-bikes and e-scooters, for trips replacing car trips. If a scooter runs for 1 mile a day on average = 350 grams of carbon per scooter, per day. A city with 10,000 scooters would then potentially reduce emissions by 3,500,000 grams, or 3.5MT CO_{2e}/day.

²⁴ For example, a residential assessment or tax might apply to each household unless they produce evidence of EV ownership or attest to not owning a vehicle. A workplace fee might be imposed on gasoline vehicles parking at a workplace under a transportation demand management program.

²⁵ For example, a \$50/month fee, on the estimated 50,000 vehicles driving into Palo Alto, could raise \$30 million/year

²⁶ Based on input. This Key Action is also included in the list of Key Actions for Mobility.



Palo Alto has the highest adoption rate of Electric Vehicles (EVs) in the US, with 1 in 3 new vehicles registered as electric in 2017. Survey results show that 70% of Palo Alto residents are extremely interested in their next vehicle to be an EV if they knew EV charging would be readily available.

Explanation of Changes

Updated Goals, Incorporating Feedback

Created one main goal for EVs: Reduce transportation related GHG emissions 80%, from approximately 300,000 MT CO₂e to 60,000 MT CO₂e by 2030

- This is the same main goal for Mobility, with different sub goals
- ➔ Increase the number of EVs registered in Palo Alto from 4,500 (2019) to 42,000 (80% of vehicles), as a share of total vehicles registered, from 7% in 2018 to 50% by 2030
 - 5 residents provided feedback on this goal. 2 residents wanted clarification on this goal, 2 residents thought it was too ambitious, and one resident wanted more consumer education.
 - This goal was modified based on feedback and incorporated into one goal for EVs.
- ➔ Target to facilitate 50% of vehicles owned by low income households to be EVs by 2030
 - 1 Youth Group and 1 Resident provided feedback on the goal. Both supported the goals but felt that a clear plan needs to be developed to provide the right incentives.
 - This goal was incorporated into one goal for EVs, and Key Action A2 was added with a footnote to address feedback.
- ➔ ~~Ensure there are adequate numbers and types of EV chargers in Palo Alto to support the growing number of EVs registered in and commuting to Palo Alto~~
 - No feedback received on this Key Action
 - This goal was deleted.
- ➔ ~~Expand the number of EVs in the City's fleet as the EV fleet market evolves~~
 - 2 residents provided feedback on this goal that it needed more clarification.
 - This goal was deleted.

Suggestions for New Goals

- Resident
 - o All multiple use dwellings (apartment and condo buildings) must install electric vehicle chargers.

Updated Key Actions, Incorporating Feedback

Staff created new Key Actions that also incorporate the below revised Key Actions:

1. Implement outreach to ensure that at least 75% of the community is aware of the environmental and economic benefits of electric vehicles, available incentives, bulk-buy opportunities and benefits of day-time charging and impacts to the electric grid. ~~and the programs available to them~~
 - 2 Residents provided feedback on this Key Action. 1 resident suggest a total cost of ownership approach for EVs and 1 resident wanted this to be more ambitious.
 - This Key Action was modified to incorporate general feedback on Electric Vehicles, as well as a suggested new Key Action. 3 Residents suggested bulk-buy programs, and 3 residents suggested encouraging EV charging during the day, which is a good observation from the community. Due to high penetration of solar PV based electric production from roof top systems and large central plants, the market price of electricity and the marginal carbon intensity of electricity production in the CA grid is lowest between 10 am and 3pm daily, making these hours the ideal time of day to charge an EV.
 - This was moved to Key Action 3.
2. By ~~2022~~ 2021 quantify the public and private EV charger network needed within the community to support 580% EV penetration in Palo Alto, and develop an implementation plan to establish that charging network
 - 2 residents and 1 non-profit provided input on this Key Action. 1 resident suggested prioritizing daytime charging, and 1 resident and 1 non-profit suggested accelerating the timeline.
 - Staff moved this to Key Action 2 and accelerated the date per feedback and increased EV penetration from 50% to 80% to account for a more ambitious GHG reduction goal. Staff is in discussion seeking a regional effort to assess EV charger needs, particularly for shared parking spaces (e.g. to understand how much infrastructure is necessary to support 50% EV penetration vs. 80% EV penetration).
3. Develop programs to assist and incentivize private EV charging installations in hard to reach locations such as multifamily properties, non-profits, and small commercial sites to ensure adequate and diverse EV charging infrastructure
 - 3 residents provided input on this Key Action. 1 resident liked the focus on multifamily properties, 1 resident questioned how this would be addressed for tenants, and 1 resident wanted support for chargers at low-income residential facilities.
 - This was moved to Key Action 4.
4. Advocate to expand the state-wide point-of-purchase EV rebate program to include electric motorcycles and bicycles
 - Staff added new Key Action 5 to address feedback from 3 residents to include incentives for electric motorcycles and electric bicycles. Palo Alto is partnering with other electric utilities to fund a new point-of-sale Clean Fuels Reward (CFR) rebate for EVs; expanding the rebate beyond just autos is a good suggestion.

~~3-5.~~ By 2022, develop a strategic plan to encourage charging of inbound EVs within Palo Alto

- 2 residents provided input on this Key Action and both wanted the date to be accelerated.
- No changes were made to this Key Action, which was moved to Key Action 7. An Inbound Vehicle EV Adoption Strategic Plan would be a coordinated effort between Transportation, Planning and Utilities Departments and the business community. Feedback was to accelerate this assessment to 2021; Staff will strive for an earlier completion but will need time to work with the City's commercial customers. This study could potentially explore:
 - o Mandate Employers to pay a fee for parking spots occupied by an Internal Combustion Engine (ICE) vehicle
 - o Provide employer – employees incentives to reduce ICE VMT from a Palo Alto Carbon Fund
 - o Reduce of employee density at Palo Alto offices
 - o Programs to encourage teleworking

6. Continue to electrify municipal fleet as opportunities arise, and by 2021 develop a comprehensive fleet electrification workplan and associated EV charging needs. [Replace City's fleet vehicles with EVs at end of life, whenever suitable EVs are available in the market.](#)

- 2 residents and 1 non-profit provided feedback on this Key Action. 2 residents supported this Key Action and 1 non-profit suggested adding that 50% of fleet be converted to EVs by 2025.
- This was moved to Key Action 2.

7. [Consider providing lower electric retail rates for EV charging.](#)

- 2 residents suggested providing lower electrical retail rates for EV charging.
- Staff added this idea as new Key Action 8. It is unlikely to be financed by electric rate payer funds due to state-law restrictions, but it's a good idea if it could be funded by state funds or an ICE vehicle fee/Carbon Fund.

8. [Lobby the state legislature and regulatory bodies for stricter transportation emissions standards and goals for zero emission vehicles.](#)

- 1 resident suggested advocacy on emissions standards and goals for zero emission vehicles.
- Staff added this suggestion as new Key Action 9.

9. [Evaluate additional funding sources to incentivize EVs and potential interventions that the City Council and Community could implement to accelerate EV adoption.](#)

- 3 residents provided input that the EV goals are ambitious. Staff added new Key Action 15 to acknowledge that a 50% EV penetration rate is ambitious and in order to achieve the goal, the City will need to identify additional funding sources and community/Council mandates; even if the 50% goal is achieved, additional mandates and incentives would be needed to meet the community's GHG reduction goals of 80% by 2030. To reach the 80% by 2030 goal, approximately 75% to 85% of current vehicle miles traveled (VMT) must be eliminated or converted to EVs. (Note: Approximately 50% VMT and associated emissions is from residents. Commuters driving to Palo Alto, account for another 50% of VMT/emissions.)

10. [Evaluate programs to reduce the number of fossil fuel vehicles in Palo Alto.](#)

- 3 residents suggested the need for disincentives for fossil fuel vehicles. Staff added new Key Action 14 that incorporates that suggestion. Staff will need to research the legality and viability of Council/community mandates such as:
 - o Prohibit Internal Combustion Engine (ICE) vehicles from parking on the street or public parking garages
 - o Charge a fee for ICE vehicle parking vs. free parking for EVs
 - o 'Ride and Drive' type parking lots near 101 and 280 for people to park their ICE vehicle and e-shuttle to their offices in Palo Alto
 - o Impose a Fee for ICE vehicles to fund a Palo Alto Carbon Fund to finances GHG reduction measures.

Suggestions for New Key Actions

- Palo Alto Non-Profit
 - o Shift 80% of car charging within the City to daytime hours: 8am-3pm, in order to take advantage of cheap, abundant solar energy.
 - This suggestion was incorporated into Key Action 3.
 - o Require electric construction equipment on municipal projects and large commercial projects.
 - o Require commercial fleet operators to convert 50% of their fleet to EVs by 2025.
- Evergreen Park Resident
 - o City will both educate and encourage CARB to set a ZEV mandate that supports Palo Alto's EV goals.
 - This suggestion was incorporated into Key Action 9

WATER

Water is a limited resource in California, and its availability will be further impacted by climate change and new environmental regulations. Both potable water supplies and hydroelectric needs could be challenged by long-term shifts in California’s precipitation regime. With shifting climate patterns, and significant long-term water supply uncertainty, it would be prudent to reduce water consumption while exploring ways to capture and store water, as well as to increase the availability and use of recycled water.

GOALS

- ➔ Exceed the forthcoming Making Conservation a California Way of Life²⁷ indoor and outdoor water use targets by 5%
- ➔ Achieve 10% of total water demand met by water reuse (recycled or stormwater capture)
- ➔ Improve current recycled water by reducing total dissolved solids by 50% by 2024 compared to 2019 base year²⁸
- ➔ Increase pervious surfaces within the City 10% by 2030 compared to 2020 baseline, to manage stormwater by improving water quality to protect the SF Bay and increase beneficial use of captured stormwater²⁹

KEY ACTIONS

1. Maximize cost-effective water conservation and efficiency through incentives, outreach/education and other programs
2. Expand the use of effluent from the RWQCP by funding and building a water reuse project for Non-Potable Reuse, Indirect Potable Reuse, or Direct Potable Reuse
3. Increase implementation of green stormwater infrastructure on private property, municipal facilities and public rights-of-way to ensure water for urban canopy
4. Design and build a salt removal facility for the Regional Water Quality Control Plant
5. Develop a "One Water" Portfolio for Palo Alto³⁰

²⁷ The California Water Action Plan, first released in 2014 and updated in 2016, is a roadmap to water resilience and reliability. Ten principles define California’s Water Action Plan, including “Make Conservation a California Way of Life.” Executive Order (B-37-16) instructed State agencies to help Californians adopt permanent changes to use water more wisely. New regulations will establish two usage targets for urban water suppliers, one for residential indoor use and one for the total irrigable land within an agency’s service territory.

²⁸ Total dissolved solids (TDS) is a measure of the dissolved combined content of all inorganic and organic substances present in a liquid in molecular, ionized, or micro-granular (colloidal sol) suspended form. Elevated TDS can be toxic and must be monitored regularly.

²⁹ Green Stormwater Infrastructure (GSI) goals will be updated once additional quantification work is conducted over the next three years to provide accurate, realistic and publicly vetted metrics.

³⁰ A “One Water” approach envisions managing all water in an integrated, inclusive, and sustainable manner that is more resilient to the impacts of climate change. The One Water approach recognizes that water must be managed in ways that respect and respond to the natural flows of watersheds and the natural ecosystem, geology, and hydrology of an area. projects and programs focus on achieving multiple benefits—economic, environmental, and social.

6. Create streamlined design guidelines and permitting process with minimal fees for onsite potable and non-potable water reuse on private (residential and commercial) property

KEY PERFORMANCE INDICATORS

- Indoor per capita residential water consumption
- Outdoor water consumption for irrigation
- Percentage of total water demand met by water reuse
- Total dissolved solids in recycled water



Water reuse will increase in importance as California’s population expands and climate change and new environmental regulations pose uncertainties in imported water supply availability. Whether a water supply shortage exists or not, “Making Water Conservation a California Way of Life” is a concept embraced by the City.

Explanation of Changes

Updated Goals, Incorporating Feedback

- ➔ ~~Reduce per capita water use compared to 2019~~ Exceed the forthcoming Making Conservation a California Way of Life indoor and outdoor water use targets by 5%
 - 4 Residents and 1 non-profit provided feedback on this goal. 4 suggestions were to make this goal more specific, which we have incorporated. 1 comment was that conservation is always a good thing.
 - Added footnote: The California Water Action Plan, first released in 2014 and updated in 2016, is a roadmap to water resilience and reliability Ten principles define California’s Water Action Plan, including “Make Conservation a California Way of Life.” Executive Order (B-37-16) instructed State agencies to help Californians adopt permanent changes to use water more wisely. New regulations will establish two usage targets for urban water suppliers, one for residential indoor use and one for the total irrigable land within an agency’s service territory.
- ➔ ~~Increase the percentage of recycled water used (volume of recycled water/recycled water filter capacity) by 10% in 2022 compared to 2019~~ Achieve 10% of total water demand met by water reuse (recycled or stormwater capture)
 - 3 Residents and 1 Palo Alto Small Business Owner provided feedback on this goal. They all suggested that the goal be more aggressive, which we have incorporated.
- ➔ ~~Reduce the total dissolved solids by 50% compared to 2019 base year~~ Improve current recycled water by reducing total dissolved solids by 50% by 2024 compared to 2019 base year

- 3 Residents and 1 non-profit provided feedback on this goal. The three residents asked for an explanation of what total dissolved solids are, which has been added in a footnote. The non-profit suggested this goal be removed.
- Added Footnote: Total dissolved solids (TDS) is a measure of the dissolved combined content of all inorganic and organic substances present in a liquid in molecular, ionized, or micro-granular (colloidal sol) suspended form. Elevated TDS can be toxic and must be monitored regularly.

➡ Manage stormwater to slow the flow to receiving waters and improve water quality to protect the SF Bay, while also treating it as a beneficial resource for alternative uses. Increase pervious surfaces within the City 10% by 2030 compared to 2020 baseline, to manage stormwater by improving water quality to protect the SF Bay and increase beneficial use of captured stormwater

- No feedback received on this goal, but staff revised for clarity.

Suggestions for New Goals

- Resident
 - Reduce the amount of wastewater going to the main plant by incentivizing using washing machine water and shower water used in landscaping for native plantings to promote biodiversity and healthy ecology. Recycled water is energy-expensive. And pumping it back uphill to homes is extremely energy intensive. Much better to FIRST REDUCE the amount of water that goes down the sewer.
 - Use the concept of bioswales for storm water and measure this metric to see how much water can be reduced in the storm water drains and go instead to grow the trees and plants and into the ground water storage. Trees hold and use up tons of storm/rain water - increase the urban forest using green infrastructure.
- Resident
 - Allocation of water to back-yard landscaping of fruit trees and native plantings, so - a cross-benefit rather than Silo type goal to support biodiversity and increase food security
- Resident
 - Complete ban on basement construction and ground water waste.
 - Purple pipes installed whenever possible when we have a utilities project that requires digging.
- Resident
 - Goals related to groundwater (continue ensuring emergency supply)
- Resident
 - Water reuse capability as a long-term goal (for businesses - gray and blackwater for example)

Updated Key Actions, Incorporating Feedback

1. Maximize cost-effective water conservation and efficiency through incentives, outreach/education and other programs

- 3 Residents provided feedback on this Key Action. 2 of the Residents noted that this Key Action was too vague and needed metrics. One resident asked to include a basic educational component on water conservation for PA residents.

2. Expand the use of effluent from the RWQCP by funding and building a water reuse project for Non-Potable Reuse, Indirect Potable Reuse, or Direct Potable Reuse
 - One resident provided feedback on this Key Action. The feedback was that recycled water in toilets is a great idea. No changes were suggested.
3. Establish quantifiable baseline and targets for Increase implementation of green stormwater infrastructure on private property, municipal facilities and public rights-of-way by 2024 to ensure water for urban canopy.
 - 7 Residents and 1 Nonprofit provided feedback on this Key Action. 3 Residents noted that this Key Action was very important. 3 Residents noted that this Key Action was too vague and unclear. 1 Resident suggested that the timeline was too long. All feedback was incorporated.
4. Design and build a salt removal facility for the PA Wastewater Treatment Plant Regional Water Quality Control Plant
 - 2 Residents, 1 Non-Profit, and 1 Palo Alto Small Business Owner provided feedback on this Key Action. 2 Residents wanted more explanation for what this means. 1 Non-Profit and 1 Palo Alto Small Business Owner wanted this Key Action Removed. 1 Resident asked what the cost of the salt removal facility would be.
5. Develop a "One Water" Portfolio for Palo Alto
 - 5 Residents provided feedback on this Key Action. 3 Residents fully supported this Key Action. 2 Residents asked for an explanation of what a "One Water" Portfolio is, which has been added in a footnote. 1 resident suggested that the City value shallow groundwater as an important part of our water portfolio.
 - Added Footnote: A "One Water" approach envisions managing all water in an integrated, inclusive, and sustainable manner that is more resilient to the impacts of climate change. The One Water approach recognizes that water must be managed in ways that respect and respond to the natural flows of watersheds and the natural ecosystem, geology, and hydrology of an area. projects and programs focus on achieving multiple benefits—economic, environmental, and social.
6. Create streamlined design guidelines and permitting process with minimal fees for onsite potable and non-potable water reuse on private (residential and commercial) property
 - This was a New Key Action from a Palo Alto Non-profit that has been added

Suggestions for New Key Actions

- Palo Alto Non-Profit
 - o Require climate-appropriate, drought-tolerant species in public and private plantings. Expand the requirements of the Water Efficient Landscape Ordinance (WELO) to further the S/CAP goals.
 - o Ensure that water conservation measures in the landscape during drought and at all times, adhere to the California State "Save our Water and our Trees" principles to

ensure existing trees are not lost. Trees are the most valuable component of the landscape for the long-term investment they represent and the magnitude of the benefits they provide. The work of converting the Palo Alto urban forest to a drought-tolerant, climate adapted forest has begun but it will take many years to get there. Meanwhile existing trees need to be kept alive.

- Palo Alto Non-Profit
 - o Create streamlined design guidelines and permitting process with minimal fees for onsite potable and non-potable water reuse on private (residential and commercial) property.
 - This suggestion has been added above
- Resident
 - o Mandate inclusion of gray water plumbing in new construction for toilets, etc.
- Resident
 - o Allow for the wide-scale use of gray water on private property. This needs to be a supported option for new construction, as well as a legal possibility for homeowners who want to divert their gray water for yard use.
- Mountainview Resident, Palo Alto Small Business Owner
 - o All new house should have two pipe 1) for grey water and 2) for sewer water - this should be implemented immediately and should take higher priority of all electric houses.
- Palo Verde Resident
 - o Encourage planting of and landscaping with native trees and plant to increase rainfall.
 - o It would be good if the role of native species and plant/tree groundcover encourages rain were talked about here. Less concrete. More native greenery.
- Resident
 - o Develop a program for properties to support backyard habitat and vegetable/fruit gardens
- Resident
 - o Include actions related to groundwater, particularly resilient emergency supply.
- Resident
 - o Rainwater collection as a key action for both residential and commercial.

CLIMATE ADAPTATION AND SEA LEVEL RISE

The State of California anticipates that relative sea level rise projections stemming from GHG emissions and related climate change pose significant economic, environmental and social risks to communities along the San Francisco Bay Shoreline, including the City of Palo Alto. Research shows that these projections may worsen if GHG emission trajectories continue unabated. To prepare for rising tides in the years ahead, the City of Palo Alto City Council adopted a Sea Level Rise Adaptation Policy in March 2019 which bridges the high-altitude general policy statements in various City plans to an eventual nuts-and-bolt Sea Level Rise Adaptation Plan and timeline which staff aims to complete in 2021.

GOAL

- ➔ Develop a multi-year Sea Level Rise Adaptation Plan for Council Review by April 2021 to include a sea level rise vulnerability assessment, plan development and implementation and a community engagement strategy.

KEY ACTIONS

1. Commence work on Sea Level Rise Vulnerability Assessment to identify risks and hazards to the Palo Alto Baylands, City infrastructure, and residential and business property from 12", 24", 36", 48", and 84" of SLR with high tide, 100-year coastal storm event scenarios and rising shallow groundwater impacts (Summer 2020)
2. Develop and implement a Sea Level Rise Adaptation Plan which provides guidance on: managing and enhancing Baylands ecosystem services, suggested adaptation pathways, retreat considerations, updated building codes and specifications, and a development and public education plan for property anticipated to be impacted by sea level rise. (Specific plan elements to be determined for staff and Council consideration during 2020)
3. Review the recommendations of SAFER levee alignment (SAFER is the *Strategy to Advance Flood protection Ecosystems, and Recreation* feasibility report coordinated by San Francisquito Creek Joint Powers Authority)
4. Discuss the Sea Level Rise levee alignment alternatives with Valley Water and other adjacent neighboring agencies
5. Coordinate regionally, act locally

KEY PERFORMANCE INDICATORS

- Completed Sea Level Rise Vulnerability Assessment
- Council-approved Sea Level Rise Adaptation Plan
- Council review of proposed sea level rise levee alignments (2021)



CLIMATE
ADAPTATION &
SEA LEVEL RISE

Sea level rise in San Francisco Bay is anticipated to range between three feet to more than ten feet by 2100 with rising tides likely thereafter. In Palo Alto, many City services and infrastructure that are essential to the City's public health, safety, and economy are located within areas that are predicted to be inundated by Bay water if adaptation measures are not implemented. How will we prepare? What will we protect? How will we adapt? Where will we, if necessary, retreat?

Explanation of Changes

Updated Goals, Incorporating Feedback

- Develop a multi-year Sea Level Rise Adaptation Plan for Council Review by April 2021 to include a sea level rise vulnerability assessment, [plan development and implementation](#) and a community engagement strategy ~~for plan development and implementation.~~
 - 2 Residents and one Palo Alto Small Business Owner provided feedback on this goal. 1 resident requested this goal be expedited and 1 resident requested groundwater be included.

Updated Key Actions, Incorporating Feedback

1. Commence work on Sea Level Rise Vulnerability Assessment [to identify risks and hazards to the Palo Alto Baylands, City infrastructure, and residential and business property from \(Spring 2020\) 12", 24", 36", 48", and 84" of SLR with high tide, 100-year coastal storm event scenarios and rising shallow groundwater impacts \(Summer 2020\)](#)
 - 1 resident noted that the vulnerability assessment should already be implemented by now. 1 resident noted that flooding of homes from creeks and risks to the urban forest from higher temperatures and possible drought years need to be included.
 - Staff updated the Key Action to incorporate feedback.
2. ~~Begin development of~~ [Develop and implement a Sea Level Rise Adaptation Plan which provides guidance on: managing and enhancing Baylands ecosystem services, suggested adaptation pathways, retreat considerations, updated building codes and specifications, and a development and public education plan for property anticipated to be impacted by sea level rise.](#) ~~(Specific plan elements to be determined for staff and Council consideration during 2020)~~
 - 1 resident noted that they would like this to start in the next 3 - 6 months.
 - Staff updated the Key Action to provide more specificity.
3. Review the recommendations of SAFER levee alignment (SAFER is the *Strategy to Advance Flood protection Ecosystems, and Recreation* feasibility report coordinated by San Francisquito Creek Joint Powers Authority)
 - No feedback received on this Key Action
4. Discuss the Sea Level Rise levee alignment alternatives with Valley Water and other adjacent neighboring agencies
 - No feedback received on this Key Action
5. ~~Implement the Sea Level Rise Adaptation Plan after Council adoption~~ [Coordinate regionally, act locally.](#)
 - Staff added a new key action based on feedback from 2 residents to collaborate with other cities and organizations.

Suggestions for New Key Actions

- Palo Alto Non-Profit
 - Notify property owners, both existing and prospective, that their property is located in an inundation zone and is expected to flood by years 20xx per data available using a mapping tool such as: <http://data.pointblue.org/apps/ocof/cms/index.php?page=flood-map>.
 - Include specific vision language calling for the protection of wetlands from development, as they are both a source of carbon sequestration and sea level rise protection.
 - Create a Managed Retreat plan using Transfer of Development Rights.
- Resident
 - There may be other climate adaptation actions beyond sea level rise that should be considered: wildfire, extreme heat, etc.
- Resident
 - Second transmission connection and substation on the other side of town

DRAFT

NATURAL ENVIRONMENT

Sustainability is not only about mitigation, adaptation, and resilience, but also regeneration – identifying opportunities for renewal, restoration, carbon sequestration, and growth of our natural environment. Palo Alto will continue to build and restore the natural environment and its ecosystem services and the bio-capacity that supports it, including soils, tree canopy, biodiversity, and other components. Enhancing and maintaining Green Stormwater Infrastructure will use natural areas and systems to provide habitat, flood protection, stormwater management, cleaner air, cleaner water, and human health enhancement.

GOALS

- ➔ Restore and enhance resilience and biodiversity of our natural environment
- ➔ Increase tree canopy to 40% city-wide coverage by 2030

KEY ACTIONS

1. Explore programs and policies that use Palo Alto’s public and private natural capital (e.g., canopy, soils, watersheds) to provide carbon sequestration and other environmental benefits
2. Evaluate and modify plant palette selection in project plans to maximize biodiversity and soil health to adapt to the changing climate, and incorporate buffers for existing natural ecosystems
3. Coordinate implementation of the Urban Forest Master Plan, Parks Master Plan, and other city-wide functions through interdepartmental collaboration of the City’s internal Sustainability Leadership Team
4. Expand the requirements of the Water Efficient Landscape Ordinance (WELO) to increase native and drought-tolerant species composition.
5. Implement the Green Stormwater Infrastructure plan
6. Ensure No Net Tree Canopy Loss for all projects
7. 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
8. Enhance pollinator habitat by including native plants and pollinator-friendly plant landscaping with all Park capital improvement projects starting in FY22 or when feasible
9. Establish a baseline for carbon storage of tree canopy

KEY PERFORMANCE INDICATORS

- Tree Canopy
- Percent reduction of pesticide use



NATURAL
ENVIRONMENT

In 2005, Palo Alto adopted the [Ahwahnee Principles for Resource Efficient Land Use](#)²⁹ (as modified for local use), a set of guidelines emphasizing sustainable urban planning. These principles were developed by the Local Government Commission and modified to adapt them to the particular situation in Palo Alto.

³¹ <https://www.cityofpaloalto.org/civicax/filebank/documents/32650>

Updated Goals, Incorporating Feedback

- ➔ ~~Renew, r~~Restore, and enhance resilience and biodiversity of our natural environment
 - 1 Resident noted that the City can continue to preserve existing undeveloped land by exercising infill, mixed-use development to help abate the housing crisis and transportation emissions.
- ➔ ~~Maximize biodiversity and stewardship of flora, fauna, and air, soil, and water resources~~
 - No feedback received on this goal. This goal was combined with the goal to Renew, restore, and enhance resilience of our natural environment
- ➔ ~~Reduce environmental impacts of our actions~~
 - 2 Residents provided feedback on this goal. 1 Resident thought this was not a S.M.A.R.T. goal, and 1 Resident thought it should be changed to reduce adverse environmental impacts or increase beneficial environmental impacts.
 - This goal was deleted based on feedback.
- ➔ Increase tree canopy to 40% city-wide coverage by 2030
 - 14 Residents, 1 Youth Group, 1 Non-profit, and 1 Small Business Owner provided feedback on this goal. 9 Residents suggested native species should be prioritized, 3 Residents and 1 Youth Group suggested this goal should be prioritized, 2 Residents suggested that the tree canopy include fruit trees to add resilience to the foodshed, and 1 Non-Profit felt this goal conflicts with Key Action 6, 1 Small Business Owner suggested this be completed sooner than 2030, and 1 Resident suggested that if funding needs to be prioritized, increasing tree canopy should be the highest priority of proposed actions for Natural Environment.
- ➔ ~~Expand the designation of pesticide-free parks and city facilities~~
 - 1 Youth Group suggested to instead move towards 100% pesticide-free Palo Alto
 - This goal was removed. This has been accomplished through thoughtful, long-term implementation of integrated pest management techniques, which include the cautious use of chemical control (pesticides) only as a last resort and only with the use of least-toxic products available.

Suggestions for New Goals

- Resident
 - Help support a market for sustainable wood (FSC certified) and thereby protect forests and reduce reliance on concrete and steel.
- Resident
 - Switch away from all fossil fuel based gardening equipment by 2030.
- Non-Profit
 - Maintain and protect the health of existing trees in addition to increasing the number of trees.
 - Increase education programs for adults and children to teach the roles trees and other parts of the natural environment play in climate-change mitigation and human health and how

individual decisions in plant selection and care, and water and chemical use, affect our natural environment.

Updated Key Actions, Incorporating Feedback

1. Explore programs and policies that use Palo Alto's public and private natural capital (e.g., canopy, soils, watersheds) to provide ~~local~~-carbon ~~offsets~~-sequestration and other environmental benefits
 - 3 Residents and 1 Non-Profit provided feedback on this Key Action. 2 Residents suggested that focusing on tree canopy for health and environmental benefits is more important than carbon offsets, 1 Resident requested an explanation for what is meant by carbon offsets, and 1 Non-Profit did not want carbon offsets limited to local offsets.
 - This Key Action was updated to incorporate feedback
2. Evaluate and modify plant palette selection in project plans to maximize biodiversity and soil health to adapt to the changing climate, and incorporate buffers for existing natural ecosystems
 - 3 Residents and 1 Small Business Owner provided feedback on this Key Action. 3 Residents suggested the focus should be on native plants and 1 Small Business Owner suggested that Palo should set an example and maintain these implementations.
 - This Key Action was updated and feedback was incorporated in other Key actions.
3. Coordinate implementation of the Urban Forest Master Plan, ~~and~~ Parks Master Plan, and other city-wide functions through interdepartmental collaboration of the City's internal Sustainability Leadership Team to create pathways to parks and encourage appreciation of natural ecosystems
 - 1 Resident and 1 Non-Profit provided feedback on this Key Action. 1 Resident suggested a connect green corridor network and 1 Non-Profit suggested that all city-sponsored sustainability-related committees, guide documents, and departments should be synchronized and that implementation of the Urban Forest Master Plan, Parks Master Plan, and Sustainable Green Streets Network needs to be coordinated.
 - This Key Action was updated to incorporate feedback
4. ~~Explore e~~Expanding the requirements of the Water Efficient Landscape Ordinance (WELO) to further the S/CAP Goals increase native and drought-tolerant species composition
 - 1 Small Business Owner and 1 Non-Profit provided feedback on this Key Action. 1 Small Business Owner suggested that this was too much paperwork, and 1 Non-Profit suggested expanding the requirements of the WELO.
 - This Key Action was updated to incorporate feedback
5. Implement the Green Stormwater Infrastructure plan
 - No feedback received on this Key Action
6. Ensure No Net Tree Canopy Loss for all projects

- 2 Residents and 1 Non-Profit provided feedback on this Key Action. 1 Resident and 1 Non-Profit suggested that this Key Action is inconsistent with the goal of increasing canopy by 40%, and 1 Resident suggested this has already happened on California Ave.
- This Key Action was updated to incorporate feedback.

~~7. Develop methods to allow for both solar panels and trees~~

- 1 Non-Profit suggested local solar farms as an alternative to rooftop solar.
- This Key Action was deleted since it is included in the Urban Forest Master Plan

7. Reduce the toxicity and the total amount of pesticides used in the city. 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.

- 2 Residents and 1 Non-Profit provided feedback on this Key Action. 1 Resident suggested making all parks pesticide free, 1 Resident suggested eliminating herbicides as well, and 1 Non-Profit suggested including planting species that are well-suited for the local environment.
- This Key Action was updated to incorporate feedback. Herbicides are included in the definition of pesticides.

~~8. Ensure the protection of our ecosystem through the plan review and permitting process~~

- 1 Non-Profit suggested following clear development review criteria, consistent with the Landscape and Tree Technical Manual.
- This Key Action was deleted because it is already included in existing plans, such as the Landscape and Tree Technical Manual, and work is already included in staff work plans

~~9. Restore degraded areas and channelized creeks and create wildlife corridors~~

- 1 Resident and 1 Non-Profit provided feedback on this Key Action. 1 Resident noted that this is very important and 1 Non-Profit suggested adding incentives for public and private landowners.
- This Key Action was deleted.

10.8. Enhance pollinator habitat by including native plants and pollinator-friendly plant landscaping with all Park capital improvement projects starting in FY22 or when feasible

- This Key Action was added based on feedback.

11.9. Establish a baseline for carbon storage of tree canopy

- This Key Action was added based on feedback.

Suggestions for New Key Actions

- Non-Profit
 - o Ensure access to open space or a park within a 10-minute walk for every resident.
 - o Implement a Sustainable Green Streets network throughout the City that prioritizes implementing green stormwater infrastructure as the backbone of an integrated network for a connected active transportation master plan and green ecology network.

- Resident
 - Protecting the natural environment outside Palo Alto should also be considered. When we fail to provide housing for the people who work in our community, we promote sprawl and the destruction of natural resources elsewhere (in addition to contributing to transportation-related emissions). Urban infill needs to be part of Palo Alto's plan!
- Resident
 - Expand urban gardening amenities, and incentive commercial/industrial clients (e.g, companies big enough for cafeterias) to grow some of their food on site.
 - Create programs to incentivize eating lower on the food chain (less meat and dairy, emphasis on local/organic produce).
- Resident
 - Maintain buffer areas along creeks and restore natural floodplain where possible

DRAFT

ZERO WASTE

Reducing waste is an important strategy for both GHG reductions and overall sustainability. Approximately 42% of GHG emissions in the U.S. are associated with the flow of materials through the economy, from extraction or harvest of materials and food, production and transport of goods, provision of services, reuse of materials, recycling, composting, and disposal. Zero Waste is a holistic approach to managing materials in a closed loop system (circular economy), where all discarded materials are designed to become resources for others to use.

GOALS

- ➔ Divert 95% of waste from landfills by 2030, and ultimately achieve zero waste
- ➔ Implement short- and medium-term initiatives identified in the *2018 Zero Waste Plan*

KEY ACTIONS

1. Expand the Deconstruction and Construction Materials Management Ordinance
2. Eliminate single-use disposable cups and containers by expanding the Disposable Foodware Ordinance
3. Require food waste³² prevention and edible food recovery for human consumption from commercial food generators
4. Promote residential food waste reduction
5. Incentivize the use of reusable diapers³³
6. Champion waste prevention, reduction, reusables, and the sharing economy (e.g., waste prevention technical assistance for businesses, provide waste reduction grants, promote adoption of a “Zero Waste lifestyle”, promote access to goods over ownership)

KEY PERFORMANCE INDICATORS

- Diversion rate
- Number of [Zero Waste Plan](#)³⁴ initiatives implemented



ZERO WASTE

Palo Alto’s current diversion rate is 82%. Diversion includes all waste prevention, reuse, recycling, and composting activities that divert materials from landfills. Getting to our 95% goal will require refinement of existing programs, the addition of new policies and programs, working with manufacturers to redesign products, and working with businesses and residents that purchase products that will eventually become waste. In 2018, Palo Alto City Council accepted the updated *Zero Waste Plan*, which contains new programs and initiatives needed to meet the City’s sustainability and zero waste goals.

³² “Food waste” refers to edible food that is not eaten, goes bad and is thrown away. It does not include food scraps such as banana peels, apple cores and bones – they should be composted.

³³ All sizes of diapers (children, young adult, adult) will be included in this Key Action.

³⁴ www.cityofpaloalto.org/zwplan

Explanation of Changes

Feedback on Goals

General Feedback on Goals

- 4 Residents provided general feedback on the goals. They like the goals and stated Palo Alto has done a good job so far. 1 Resident noted that recycling more is not the solution to Zero Waste and more education is needed to the community to reduce waste overall.
- ➔ Divert 95% of waste from landfills by 2030, and ultimately achieve zero waste
 - 5 Residents and 1 Youth Organization provided feedback on this goal. 2 Residents support anaerobic digestion, which is how the City currently processes its compost waste stream. 1 Resident would like to have all packaging be either recyclable or compostable and wants improved outreach and education. 1 Resident would like to make it easier to recycle certain plastics. 1 Youth Organization is supportive of the goal and recommends Council prioritize it.
 - No changes were made to this goal
- ➔ Implement short- and medium-term initiatives identified in the *2018 Zero Waste Plan*
 - 1 Resident provided feedback on this goal. They believe the City is doing well with the Zero Waste Plan and don't have anything to add.
 - No changes were made to this goal

Updated Key Actions, Incorporating Feedback

1. Expand the Deconstruction and Construction Materials Management Ordinance
 - 4 Residents provided feedback on this Key Action. 2 of the residents felt this Key Action makes a huge difference, one of which wanted it expanded as much as possible. 1 Resident asked to include discouraging the removal of old buildings. 1 Resident cautioned about impacts and requested that construction professionals be consulted, but ideally deconstruction would be incorporated as part of construction in the future.
 - No changes were made to this Key Action
2. Eliminate single-use disposable cups and containers by expanding the Disposable Foodware Ordinance
 - 2 Residents and 1 Palo Alto Small Business Owner provided feedback on this Key Action. 1 Resident questioned how City would exert influence on outside businesses bringing food into the City. 1 Resident is supportive of reducing/eliminating plastic, but wants to see more work done to reduce waste creation overall (even what goes in the recycling and compost). 1 Small Business Owner wants the City to implement a ban on water bottles throughout the City.
 - No changes were made to this Key Action

3. Require food waste prevention and edible food recovery for human consumption measures for from commercial food generators
 - 4 Residents provided feedback for this Key Action. All 4 Residents felt this is an important key action. 2 Residents specifically called out donation for human consumption as important. 1 Resident was unsure what was included in the term “food waste.”
 - Added Footnote: “Food waste” refers to edible food that is not eaten, goes bad and is thrown away. It does not include food scraps such as banana peels, apple cores and bones – they should be composted.
 - This Key Action was updated to incorporate feedback
4. Promote residential food waste reduction
 - 2 Residents provided feedback on this Key Action. 1 Resident thinks this is a big ticket item on GHG reduction. 1 Resident want this taught at schools and wonders how the shelter-in-place orders will affect this waste.
 - No changes were made to this Key Action
5. Incentivize the use of reusable diapers
 - 4 Residents provided feedback on this Key Action. 1 Resident wonders about the impacts of disposable versus reusable diapers and encourages the City to educate the community and pediatricians accordingly. 1 Residents believes this Key Action is very important. 1 Resident asked if adult diapers would be included since our community may have more of those than baby diapers. 1 Resident advised to move forward with caution and for the City to not come across as overly controlling.
 - Added Footnote: All sizes of diapers (children, young adult, adult) will be included in this Key Action.
6. Champion waste prevention, reduction, reusables, and the sharing economy (e.g., waste prevention technical assistance for businesses, provide waste reduction grants, promote adoption of a “Zero Waste lifestyle”, promote access to goods over ownership)
 - 4 Residents provided feedback on this Key Action. Feedback included ways to encourage waste reduction in clothing, packaging, and supply chain management. They also suggested increased outreach and education.

Suggestions for New Key Actions

- Palo Alto Non-Profit
 - o Manage street and other public trees throughout their entire lifecycle by creating or partnering with an urban wood reuse program.