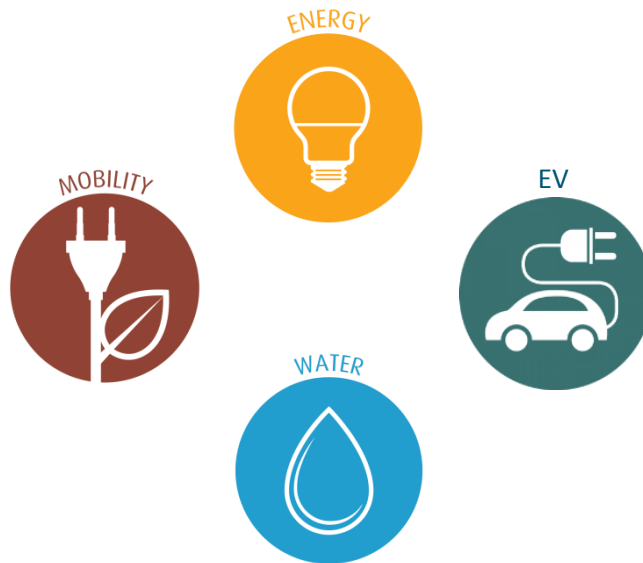




CITY OF
PALO ALTO



Sustainability Implementation Plan (SIP)

Key Actions

2018-2020



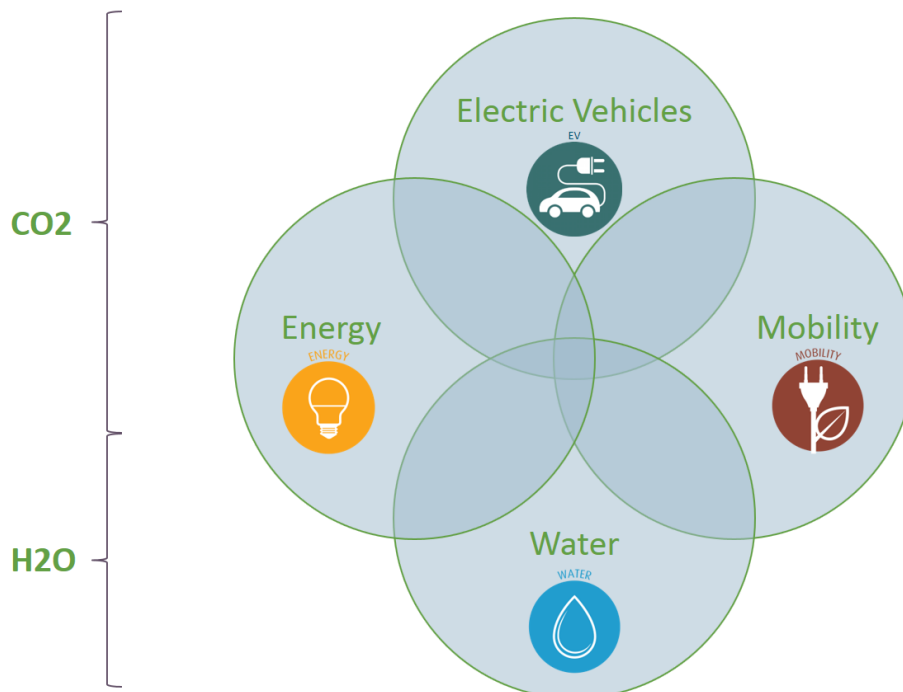
SUSTAINABILITY IMPLEMENTATION PLAN KEY ACTIONS

2018-2020

On November 28, 2016, City Council approved the Sustainability Climate Action Plan (S/CAP) **FRAMEWORK** for the City of Palo Alto, including **GOALS** and **STRATEGIES**. Council directed Staff to return with a Sustainability Implementation Plan (SIP) specifying **ACTIONS** needed to build City capacity to achieve the “80x30” GHG reduction goal unanimously endorsed by Council on April 18, 2016. (Note: GHG reduction is not S/CAP’s only goal, but is a key indicator tied to other goals and co-benefits addressed by SIP actions.)

In response, staff created a 2017-2020 Sustainability Implementation Plan that included all the **GOALS** from the S/CAP Framework, and **KEY ACTIONS for 2017 to 2020** (a subset of all SIP **ACTIONS** which are being finalized by staff). That document, which was presented to Council on June 5, 2017, also identified potential budget requests for FY 2018. Council directed staff to return with a more targeted Sustainability Implementation Plan, which is presented here.

This document is a shorter, more tightly focused **2018-2020 Sustainability Implementation Plan (SIP)** that focuses on two key concerns—CO₂ emissions and Water—and four key areas of activity: Energy, Mobility, Electric Vehicles, and Water.¹



¹ These actions reflect staff's best judgement of the significant and currently feasible steps to move Palo Alto towards its goals. At the same time, we recognize that technologies are evolving rapidly, and that we will learn and build capacity along this journey; for those reasons, we will continually ask not only "what is feasible now?" but also "what might be possible if...?"

Some of the Key Actions can be readily implemented at a staff level; some will require review and approval by Council; and some may require environmental review, including under the California Environmental Quality Act (CEQA), prior to adoption and implementation.

As this work proceeds within the 2018-2020 time-frame, Staff will revise plans as necessary, based on implementation experience—returning to Council for policy and budget approvals as needed. SIP actions and budgets will be added and amended based on evaluating progress at least every three years, beginning in 2020. The remaining S/CAP areas—Zero Waste and Circular Economy; Municipal Operations; Climate Adaptation and Sea Level Rise; Regeneration and Natural Environment; Financing Strategies; and Community Behavior, Culture, and Innovation—will also be included in future plans.

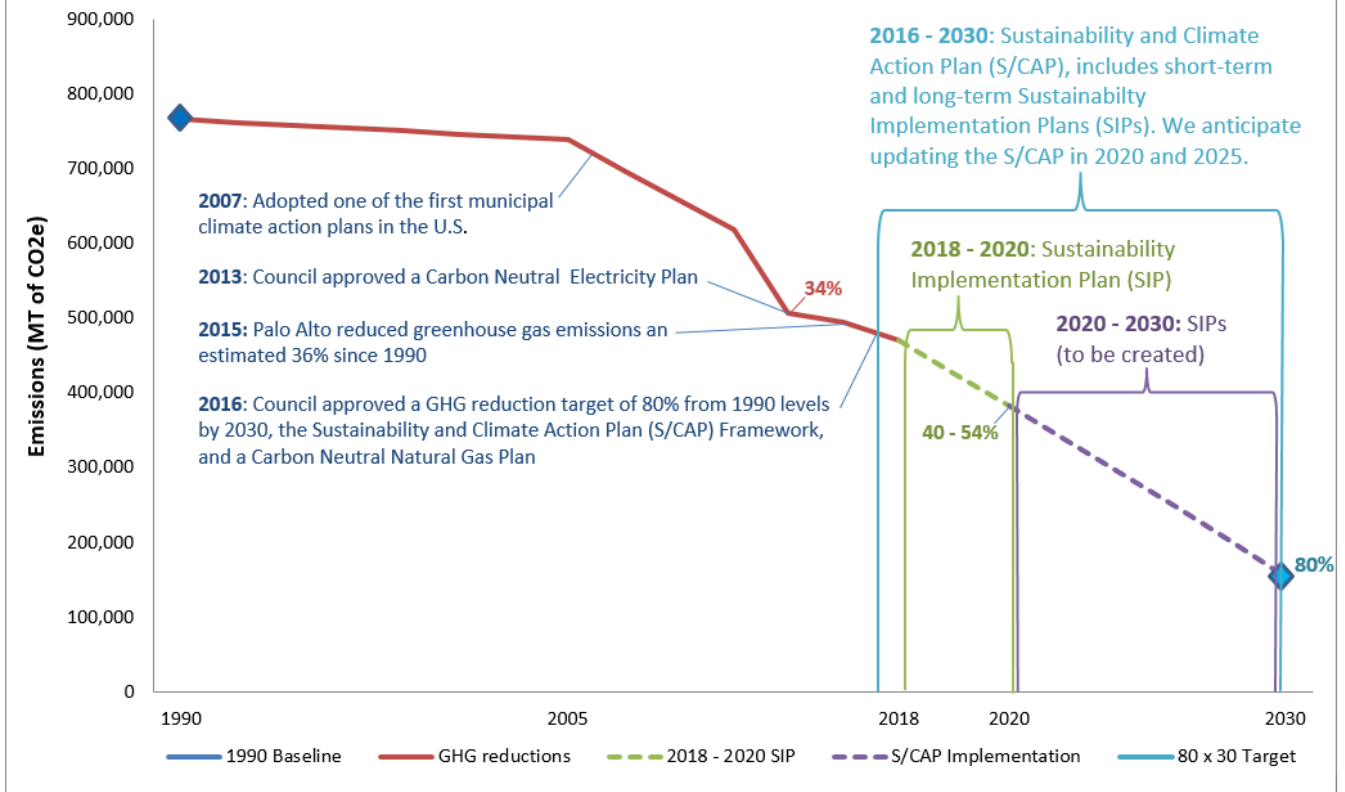
Staff estimates that these Key Actions and other actions underway could enable Palo Alto to reduce GHG emissions to about 40 percent below the 1990 base year by 2020 as the SIP is implemented (depending of course on the pace of implementation), and by about 54 percent if we include the “bridging” contribution of natural gas offsets². That will be a major step forward towards the S/CAP’s 2030 Goal of 80 percent GHG reduction, which far exceeds the state of California’s world-leading reduction goals of 40 percent by 2030 and 80 percent by 2050. As the rest of the country looks to California for leadership in sustainability, the City of Palo Alto will continue to lead by example.

Key Timeline Dates:

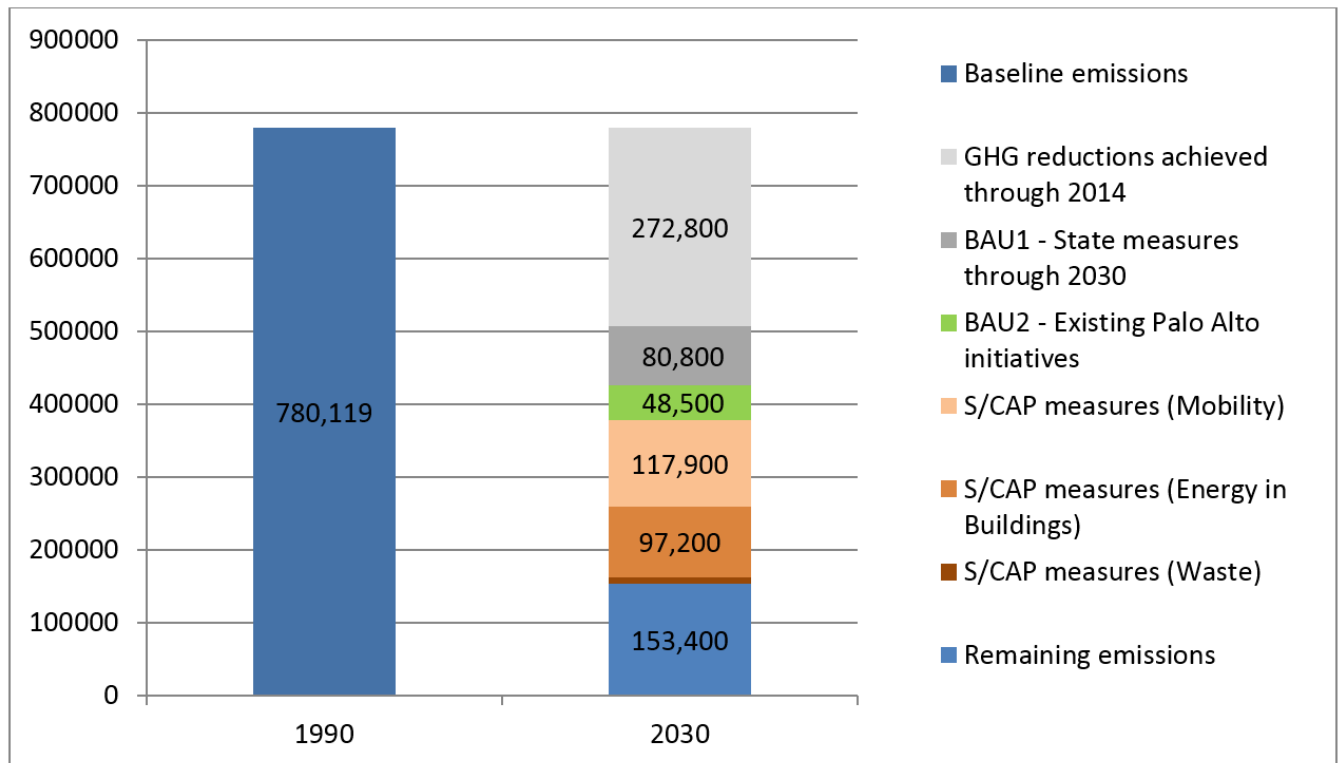
- January 2016 — Community Climate Summit
- April 2016 — SCAP to Council; Council adopts 80x30 goal
- July 2016 – Begin development of SIP with department leaders and staff
- November 2016 — Council adopts S/CAP Framework
- June 2017 – SIP Key 2017-2020 Actions to Council
- Dec 2017 – Revised SIP Key 2018-2020 Actions to Council
- 2018 – 2020 - Specific 2018-2020 SIP Projects, Policies, and/or Budget items requiring additional resources and/or CEQA review to Council.
- 2020 – Update the Draft S/CAP and bring forward a complete S/CAP to Council for adoption, with an update in 2025 including further key actions at that time.
- 2030 – Achieve S/CAP Goals including 80% GHG Reduction

² Based on 1) SCAP projections (for which we are behind schedule) and 2) Carbon Neutral Natural Gas. Staff estimates that Carbon Neutral Natural Gas will result in an additional 18% reduction in GHG emissions.

Palo Alto Greenhouse Gas (GHG) Emissions and Reduction Targets



80x30 GHG Reduction Budget (MT CO2e)



SUSTAINABILITY AND CLIMATE ACTION PLAN: Guiding Principles, Design Principles, and Design Criteria³

On November 28, 2016, Council approved these guiding principles, design principles and decision criteria to assist Staff in developing and refining near term strategies that support the City’s long-term vision and goals. Fully anticipating that many things will change on the path to 2030, Council expects that Staff and Council will apply these Principles and Criteria in designing and selecting specific programs and policies to pursue, and in allocating public resources to support them.

The Vision Statement for the 1998 Comprehensive Plan Governance Element declares that:

“Palo Alto will maintain a positive civic image and be a leader in the regional, state, and national policy discussions affecting the community. The City will work with neighboring communities to address common concerns and pursue common interests. The public will be actively and effectively involved in City affairs, both at the Citywide and neighborhood levels.”

S/CAP builds on that vision with these principles as a basis for effective and sustainable decision-making:

<p>Guiding Principles</p> <ul style="list-style-type: none"> • Consider “sustainability” in its broadest dimensions, including quality of life, the natural environment and resilience, not just climate change and GHG emissions reductions. • Address the sustainability issues most important to the community and select most cost-effective programs and policies—recognizing that this will entail moral and political, as well as economic, decision factors. • Seek to improve quality of life as well as environmental quality, economic health and social equity. • Foster a prosperous, robust and inclusive economy. • Build resilience—both physical and cultural—throughout the community. • Include diverse perspectives from all community stakeholders, residents, and businesses. • Recognize Palo Alto’s role as a leader and linkages with regional, national and global community. 	<p>Design Principles</p> <ul style="list-style-type: none"> • Focus on what’s feasible—recognizing that technology and costs are shifting rapidly. • Prioritize actions that are in the City’s control – recognizing that we can urge others to join us, but leading by example is most effective • Be specific about the actions and costs to achieve near-term goals, while accepting that longer-term goals can be more aspirational • Use ambient resources: Maximize the efficient capture and use of the energy and water that fall on Palo Alto. • Full cost accounting: Use total (life cycle) cost of ownership and consideration of externalities to guide financial decisions, while focusing on emission reductions that achievable at a point in time (i.e. not on life cycle emissions). • Align incentives: Ensure that subsidies, if any, and other investment of public resources encourage what we want and discourage what we don’t want. • Flexible platforms: Take practical near-term steps that expand rather than restrict capacity for future actions and pivots.
<p>Decision Criteria</p> <ul style="list-style-type: none"> • Greenhouse gas impact • Quality of life impact • Mitigation cost 	<ul style="list-style-type: none"> • Return on investment (ROI) • Ecosystem health • Resilience • Impact on future generations

³ From the S/CAP Framework, approved by Council Nov 2016

SUSTAINABILITY IMPLEMENTATION PLAN 2018—2020 GOALS



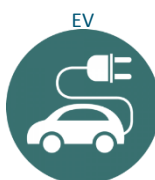
ENERGY

- Drive building efficiency and electrification
- Mitigate the impacts of natural gas use



MOBILITY

- Reduce SOV travel
- Make it more convenient not to drive



ELECTRIC VEHICLES

- Accelerate EV penetration for both PA & inbound vehicles
- Make “Going EV” more convenient and economical than using fossil fueled vehicles



WATER

- Reduce inefficient water consumption
- Ensure an adequate water supply from sustainable sources
- Protect canopy, creeks, groundwater and the bay

ENERGY

Efficiency, renewables and electrification are key to Palo Alto's—and California's—low carbon energy strategy, but pace of implementation will depend on technology evolution and cost-effectiveness as well as market acceptance. 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). (Lead departments: Utilities, Development Services)



GOALS

- ➔ Drive building efficiency and electrification through voluntary and mandatory programs
- ➔ Mitigate the impacts of natural gas use through carbon offsets (in the short term) and electrification (in the mid-to long-term)

STRATEGIC MOVES

- ➔ Identify utility projects needed to support S/CAP decarbonization goals through utility planning processes such as the Utilities Strategic Plan, Smart Grid Implementation Plan, Distributed Energy Resources Plan, distribution planning processes and Electric Integrated Resources Plan.
- ➔ Develop a ZNE Roadmap and benchmarking energy study to identify opportunities to increase efficiency of new and existing building stock from construction through operation.

KEY ACTIONS



- EGY1** - Continue to purchase carbon offsets to match natural gas emissions as a transitional measure. Evaluate potential local offset purchases. (UTL, PW, S)
- EGY2** - Achieve cumulative energy efficiency savings of 2-5% by 2020 through voluntary and mandatory energy efficiency measures in buildings. (UTL, DS)
- EGY3** - Encourage voluntary electrification (and mandates as appropriate) of natural gas appliances through actions such as pilot programs, process streamlining, evaluating barriers (rates/fees, financing), and contractor/supplier engagement. (UTL, DS)
- EGY4** - Complete construction of a replacement facility for sludge incinerators, the City facility with the largest energy use (PW)
- EGY5** - Develop programs that will result in even greater efficiency savings and decarbonization from 2020 to 2030. Potential evaluations include higher efficiency standards for new and existing buildings. (DS, UTL)
- EGY6** - Develop building benchmarking requirements, and commissioning / retro-commissioning programs to ensure efficient post-occupancy building operation (DS, UTL)

KPIs: Building Energy Efficiency. Electrification percentage.



Emissions from natural gas use represent ~25% of Palo Alto's remaining carbon footprint. 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. Palo Alto will first seek to reduce natural gas usage through energy efficiency and conservation, followed by electrification of water heating, space heating, clothes drying and cooking where practical and cost effective.

MOBILITY

Road transportation represents about two-thirds of Palo Alto's existing carbon footprint – and a congestion headache. GHG's 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 and EV adoption can be influenced by local programs. (Lead departments: Transportation, Sustainability)



GOALS

- ⇒ Reduce Single Occupancy Vehicle (SOV) travel
- ⇒ Make it more convenient not to drive

STRATEGIC MOVES

- ⇒ Implement solutions and incentives to reduce SOV travel (T)
- ⇒ Advocate for regional transportation solutions that reduce emissions and congestion (S)

KEY ACTIONS

- MOB1** - Fund the TMA with the goal of reducing SOV commute-trips downtown by 30% (T)
- MOB2** - Ensure that Palo Alto's transportation policies and investments support integrated mobility services (S)
- MOB3** - Develop "commuter wallet" mobility app(s) to make it easier for people to use and pay for transit, rideshare, bike share, and mobility services, and take other steps to ensure supportive infrastructure and services (S)
- MOB4** - Increase bicycle boulevard mileage by 13.1 miles, and redesign streets to support active and non-SOV modes of travel (T)
- MOB5** - Explore parking management strategies, including dynamic pricing, to support transportation and sustainability goals and better align the cost of commuting by car with the cost of commuting by transit (T)
- MOB6** - Explore options for aligning City fleet management with the "three revolutions" of electric, shared and connected; evaluate using City vehicles as "ride share" vehicles and/or contracting with a 3rd party for pool management (S, PW)
- MOB7** - Explore housing strategies (such as transit oriented development, trip caps, parking maximums and unbundling parking) that reduce auto trips (T)
- MOB8** - Explore re-establishing and expanding access to citywide bike share program, integrated with regional transit, perhaps in collaboration with neighboring cities (T)
- MOB9** - Advocate for policies that enable provision of universal transit passes to residents in transit served areas (T)
- MOB10** - Explore providing flexible/responsive first-and-last-mile solutions (T)

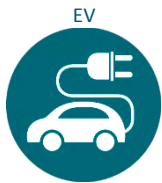
KPIs: Single Occupancy Vehicle (SOV) commute mode share. Transit ridership. Commute Benefits participation.



The mobility marketplace is changing rapidly: Lyft and Uber are growing in significance; Autonomous Vehicles are on the way; and, land use and mobility interact in substantial and complex ways.

ELECTRIC VEHICLES

Powering transportation through Zero Emission Vehicles (ZEV) as opposed to fossil fuel powered Internal Combustion Engine (ICE) vehicles can significantly reduce GHGs and reduce climate pollution. The electric vehicle landscape is evolving rapidly as less expensive and longer ranged vehicles come on line. Because the largest portion of Palo Alto's GHG emissions are from road transportation, Palo Alto is actively encouraging its residents and non-resident commuters to adopt ZEVs to help reduce its carbon footprint—through policies, incentives and provision of EV charging infrastructure. (Lead departments: Sustainability, Utilities, Public Works)



GOALS

- ➔ Accelerate EV penetration for both PA-based & inbound vehicles
- ➔ Make “Going EV” more convenient and economical than using fossil fueled vehicles

STRATEGIC MOVES

- ➔ Build out public and private infrastructure to support rising EV penetration, including anticipated local ownership of 4-6,000 EVs by 2020 (UTL, PW, DS, S)
- ➔ Evaluate incentives, outreach, policies, and financing options to stimulate charging infrastructure and EV ownership/use (UTL, DS)

KEY ACTIONS



- EV1** - Publicize streamlined permitting and CPAU-funded transformer upgrades (DS, UTL)
- EV2** - Consider requiring EV Readiness and charger installation in existing buildings (DS)
- EV3** - Evaluate programs to expand EV charger deployment on private property, including rebates and financing options (e.g. on-bill financing, etc.) (UTL, S)
- EV4** - Develop a plan for expanding EV charging infrastructure in the public right-of-way and on publicly-owned property. (PW, DS, UTL, S)
- EV5** - Expand EV deployment in City fleet (PW, S)
- EV6** - Support regional EV group-buy programs (UTL)
- EV7** - Build public awareness of EV options through communications, RideAndDrive events, etc. (UTL, DS)

KPIs: GHG emissions. EV penetration.



Palo Alto has one of the highest EV ownership rates in the country - estimated by staff at 3-4% of registered vehicles. In 2016 Palo Alto surpassed Saratoga, Los Altos, and Los Gatos to become the #1 city in California by percentage of new vehicles that are electric. Following a 5% decline in sales from 2014 to 2015, U.S. EV sales jumped by 37% in 2016⁴ and “range anxiety” is softening as 200-300 mile range EVs hit the market.

⁴ Rapier, Robert. “U.S. Electric Vehicle Sales Soared In 2016”. Forbes, 5 February 2017.

WATER

Palo Alto has done an outstanding job of meeting annual water use reduction requirements of the current “drought.” But 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. (Lead departments: Utilities, Public Works)



GOALS

- ➔ Reduce inefficient water consumption
- ➔ Ensure adequate water supply from sustainable sources
- ➔ Protect canopy, creeks, groundwater and the bay

STRATEGIC MOVES

- ➔ Explore incorporating an evaluation of the costs and benefits of non-potable water sources to supplement potable sources, as well as a high-level “water balance” chart, into a single strategic planning document (such as the Water Integrated Resources Plan) (UTL, PW, DS, S)



KEY ACTIONS

- WAT1** - Develop programs and ordinances to maximize water efficiency (UTL, PW, DS)
- WAT2** - Develop programs and ordinances to facilitate the use of non-traditional, non-potable water sources (e.g. graywater, storm water, black water, etc.) (DS, PW, UTL)
- WAT3** - Develop Recycled Water Strategic Plan and explore the most effective uses of recycled water, both inside and outside Palo Alto (PW, UTL, DS)
- WAT4** - Develop a Green Storm Water Infrastructure Plan to better capture and infiltrate storm water back into the hydrologic cycle. (PW, DS)
- WAT5** - Reduce salinity of Palo Alto’s recycled water to increase desirability of use (PW, UTL)

KPIs: Per capita water use. Percentage recycled water use.



Perhaps more than most of the other SIP elements, Water management will require extensive public engagement, since many people will assume the “drought” is over, or bristle at rising water rates as deeper consumption cuts take hold (and cling to their attachment to lawns).