City of Palo Alto (ID # 8487)

City Council Staff Report

Report Type: Action Items **Meeting Date: 12/11/2017**

Summary Title: Discuss and Accept S/CAP 2020 Implementation Plan (SIP)

Title: Discuss and Accept the Draft 2018-2020 Sustainability Implementation Plan (SIP) Key Actions as a Work Program for 2018-2020 and Direct Staff on Next Steps

From: City Manager

Lead Department: City Manager

Recommendation

Staff recommends that City Council:

1. Accept the attached (Attachment A) revised 2018-2020 Sustainability Implementation Plan (SIP) "Key Actions" as a summary of the City's work program under the S/CAP Framework for the years 2018-2020;
2. Find this action exempt from environmental review under CEQA Guidelines Section 15061(b)(3).

Executive Summary

The attached 2018 - 2020 Sustainability Implementation Plan (SIP) (Attachment A) focuses on two key S/CAP concerns—CO2 and H2O (Greenhouse Gasses (GHG) and Water)—and four action areas: Energy, Mobility, Electric Vehicles, and Water. In each of these four areas, staff proposes specific near-term key actions to advance the City's S/CAP goals, and broader "strategic moves" to support those actions.

Within each of the four focus areas, the SIP represents a specific workplan to advance the goals of the S/CAP across programmatic and departmental lines. In many cases, the actions described also require new community and regional partnerships to develop and test new strategies that will build on Palo Alto's leadership role in sustainability and innovation.

These key actions identify what can be accomplished within the three-year period between now and 2020 to continue progress toward the Council–adopted S/CAP goal of reducing GHG emissions by 80 percent from 1990 levels by 2030. Some of the key actions have already undergone CEQA review and are underway. Staff will return to Council as needed for additional consideration of those specific S/CAP 2018-2020 SIP Projects, Policies and/or Budget items which require additional resources and/or CEQA review. Staff envisions updating the Draft

S/CAP and bringing forward a completed S/CAP for Council adoption in 2020, with an update in 2025, and including further key actions at those times.

Background
On 4/18/16 City Council first received and discussed the draft Sustainability/Climate Action Plan (S/CAP), and unanimously (8-0) approved the following motions[1]:

A. Adopt a goal of 80% greenhouse gas (GHG) reduction by 2030, calculated utilizing the 1990 baseline;
B. Direct staff to return within two months with a process for integration of the Sustainability and Climate Action Plan (S/CAP) with the Comprehensive Plan Update;
C. Support the general framework of the S/CAP;
D. Support the S/CAP Guiding Principles, which are to be reviewed and formally adopted within six months.

In response to these directives, Staff formed seven inter-departmental teams to develop implementation plans covering the key S/CAP Chapters (Mobility, Energy, Water, Zero Waste, Municipal Operations, Adaption and Sea Level Rise, and Natural Environment), and has worked to integrate the S/CAP and the Comprehensive Plan Update, as described under Policy Implications, below (See also Attachment C).

On November 28, 2016, Council adopted Palo Alto's S/CAP Framework, including Guiding Principles, and directed staff to return with a Sustainability Implementation Plan that would include the more detailed action items.

On June 5, 2017, Staff presented these detailed action items, identified as "Key Actions" for Council consideration. Council directed staff to prepare a shorter, more tightly focused 2018 - 2020 Sustainability Implementation Plan (SIP) for Council review, which is the revised SIP presented here.

Discussion
Staff has undertaken the development of the S/CAP in several phases. An overview of the S/CAP organization and definition of terms is provided in Attachment B, with the key milestones described here:

- The draft S/CAP, including draft anticipated Actions through 2030, as well as GHG reduction analysis and financial impact analysis for most critical measures, was presented to Council April 18, 2016. Council "supported" the S/CAP framework and Guiding Principles, and adopted S/CAP's "80 percent by 2030" GHG reduction goal.

[1] http://www.cityofpaloalto.org/civicax/filebank/documents/52025

- A subset of the S/CAP called the "Framework", including Guiding Principles, Design Principles and Decision Criteria, and Goals and Strategies, (with draft Actions in the April 2016 Draft removed; and Goals and Strategies enhanced in several Chapters). The S/CAP Framework was adopted by Council on November 28, 2016. (These terms are explained in the Glossary section of Attachment B.)

- A draft "Sustainability Implementation Plan" (SIP) covering each Chapter of the S/CAP Framework was presented to Council in June 2018. The work program identified in the "Key Actions" of the SIP (Attachment A) is in progress.

- A revised 2018-2020 SIP, focusing on four key chapters of the draft SIP, in response to Council guidance

- Staff will return to Council with a complete S/CAP, including SIP and any requisite environmental review in 2020.

In addition, summary S/CAP FAQs are included in Attachment D, and a summary of key S/CAP analytics and decision logic in Attachment E. In the future, staff will report progress annually (or more often as warranted), and anticipates bringing a completed S/CAP forward to Council for consideration and adoption in 2020, with updates every 5 years thereafter.

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

Resource Impacts

Much of the funding to carry out the SIP work program is already embedded in existing Department Budgets. Additional funding or staffing may be required to complete some of the Key Actions in the SIP. Staff will identify these needs as we move ahead and will submit separate resource requests to Council as needed. Staff recommends that Council accept the 2018-2020 SIP work program now, with the understanding that if future funding requests are not approved, some Key Actions in the SIP will not be undertaken.

Policy Implications
As indicated above, the City Council has adopted the S/CAP overall target of reducing Palo Alto's GHG emissions to 80% below 1990 levels by 2030, which is the horizon year of the updated Comprehensive Plan. The draft S/CAP also addresses other sustainability topics that overlap and complement the updated Comprehensive Plan, making coordination between the two planning efforts a critical exercise. Staff has worked to ensure this integration, has conducted a "cross-walk" analysis of both plans, assisted by a sustainability subcommittee of the Comprehensive Plan Community Advisory Committee (CAC).

This effort has included:

- Incorporation of key S/CAP goals and strategies into the Comprehensive Plan as C Comprehensive Plan policies and programs;
- "Cross-walk" and identification and resolution of potential conflicts between the draft S/CAP and the Comprehensive Plan;
- Exploration of Comprehensive Plan references *within* the S/CAP as well.

(Attachment C includes the handout prepared for the sustainability summit that summarized our initial approach to the integration of these two planning efforts.)

Questions regarding the relationships, consistency, and integration among planning efforts are to some extent inevitable, as Palo Alto has placed a high priority on strategic decision making while advancing multiple priorities. While this was particularly relevant for the Comprehensive Plan, it is also an important consideration between the S/CAP and priority areas such as the Urban Forest Master Plan, Parks/Trails/Open Space Master Plan, and Utilities plans. Given the likelihood of overlapping update timeframes among these plans, staff endeavors to ensure that current efforts reflect the latest developments within areas of specialized knowledge and are coordinated accordingly among departments and stakeholders. This coordination challenge reinforces the importance of timely completion of planning efforts, both for the efficient use of resources and to minimize the potential for changes in underlying assumptions to require significant rework before priorities can be finalized.

Environmental Review
Acceptance by Council of and direction to staff regarding next steps concerning the 2018-2020 SIP is exempt from review under California Environmental Quality Act (CEQA) Guidelines Section 15061(b)(3) because the action would accept a work program that is subject to change (i.e. it's non-binding). Individual tasks identified in the work program are subject to separate funding decisions and environmental review, so their potentially significant environmental impacts (if any) will be fully considered at another time. Ongoing projects identified in the SIP that have already been approved by Council were previously subject to any necessary environmental review and where new tasks in the SIP may have far reaching consequences,

they have been framed as tasks to “consider” or “evaluate” possible actions. Those actions will be subject to individual CEQA review as necessary if/when they have been fully analyzed and brought forward for a decision on implementation.

Attachments:
Attachment A: 2018-2020 Sustainability Implementation Plan
Attachment B: S/CAP Definition of Terms
Attachment C: Comp Plan/SCAP Integration Handout
Attachment D: 2018-2020 Sustainability Implementation Plan FAQs
Attachment E: 2018-2020 Sustainability Implementation Plan Background

Attachments:
- Attachment A: 2018-2020 Sustainability Implementation Plan
- Attachment B: S/CAP Definition of Terms
- Attachment C: CompPlan/SCAP Integration Handout
- Attachment D: 2018-2020 Sustainability Implementation Plan FAQs
- Attachment E: 2018-2020 Sustainability Implementation Plan Background

Attachment A: 2018-2020 Sustainability Implementation Plan

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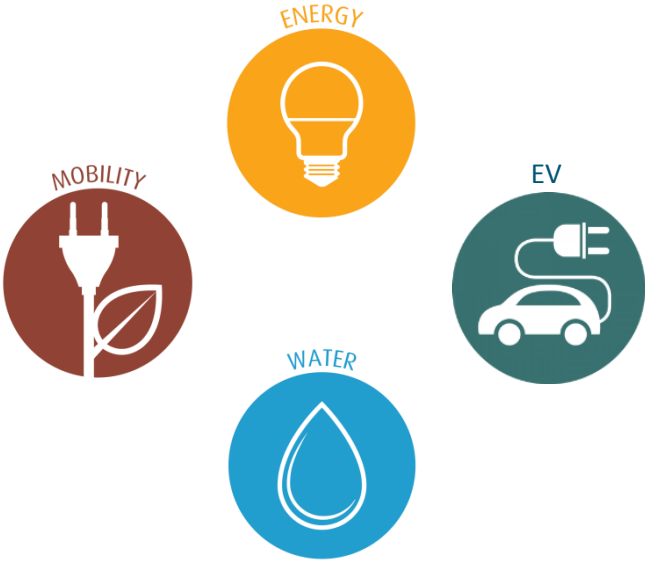


Sustainability Implementation Plan (SIP) Key Actions

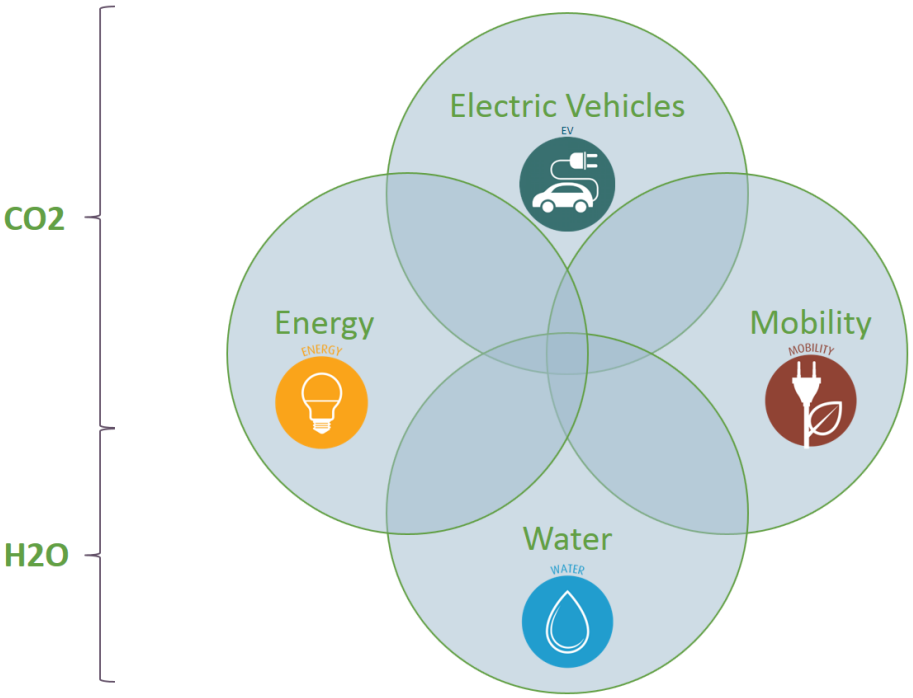
2018-2020

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 SOP 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 it 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 Adaption 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 offsets[2]. 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
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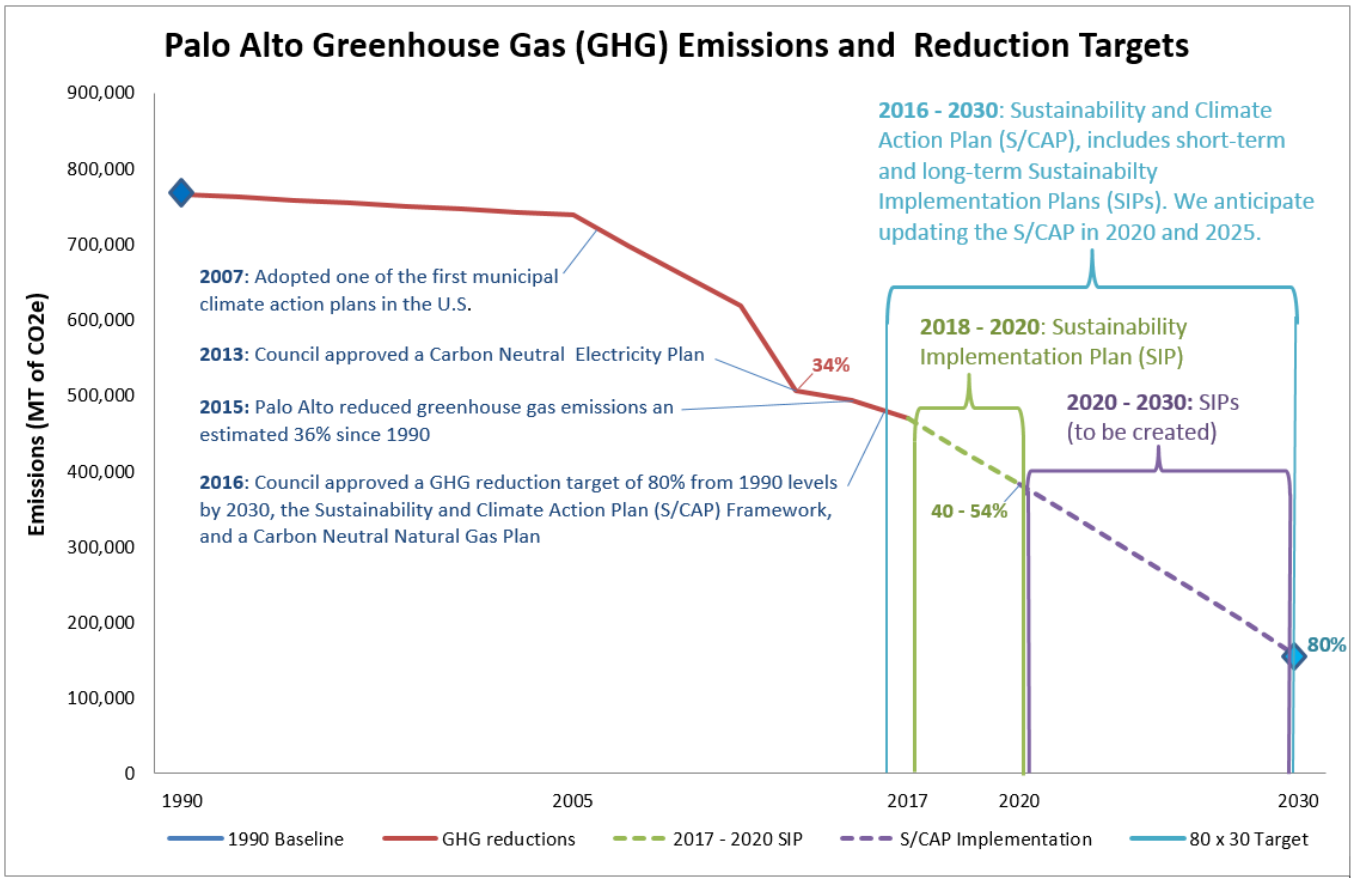
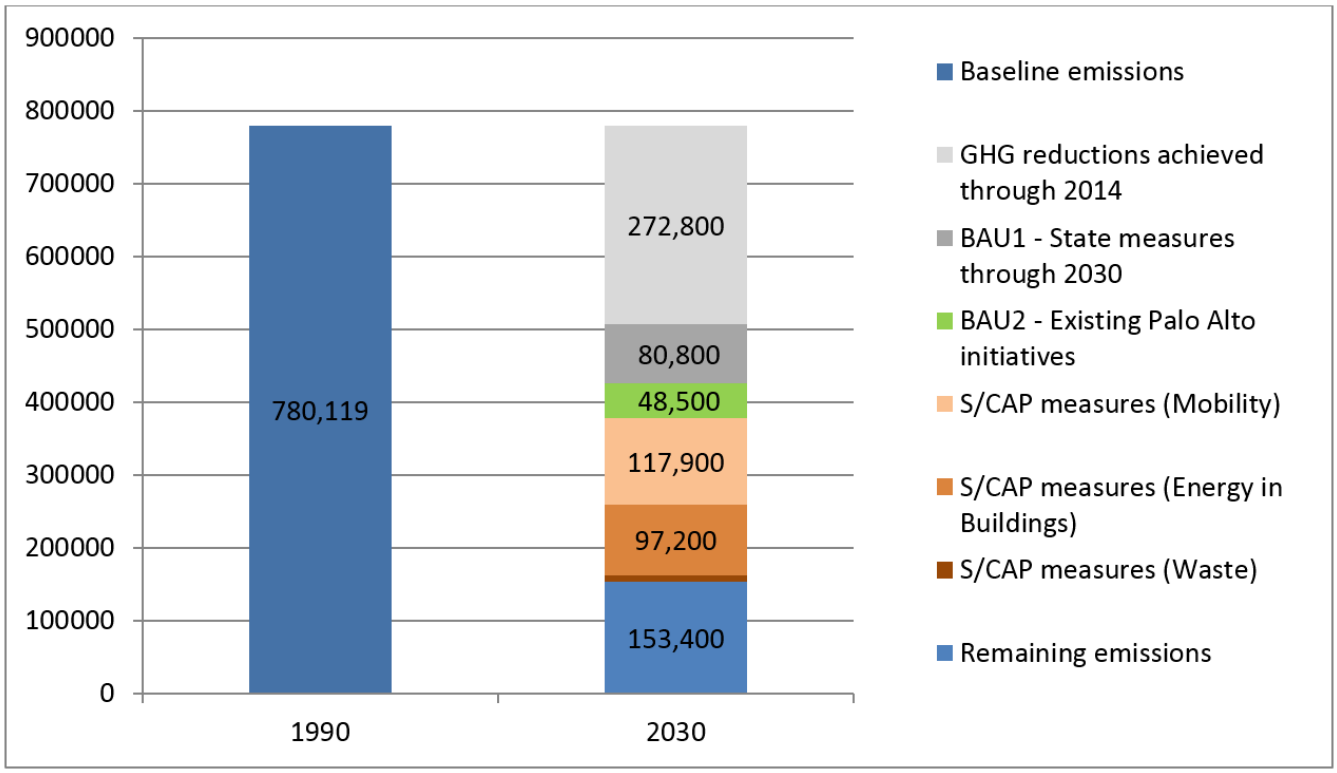
- 2020 – Update the Draft S/CAP and bring forward a complete S/CAP to Council for adoption, with an update in 2025 including further key actions at that time.
- 2030 – Achieve S/CAP Goals including 80% GHG Reduction

[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.



80x30 GHG Reduction Budget (MT CO2e)



SUSTAINABILITY AND CLIMATE ACTION PLAN: Guiding Principles, Design Principles, and Design Criteria[3]

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:

Guiding Principles	**Design Principles**
• 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.	• 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.

Decision Criteria	
• Greenhouse gas impact • Quality of life impact • Mitigation cost	• Return on investment (ROI) • Ecosystem health • Resilience • Impact on future generations

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

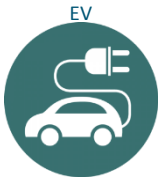
SUSTAINABILITY IMPLEMENTATION PLAN 2018—2020 GOALS

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 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 - Use 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)

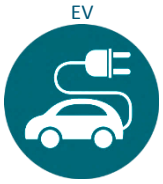
MOB10 - Explore providing flexible/responsive first-and-last-mile solutions (T)

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 2016[4] 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 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).

Attachment B: S/CAP Definition of Terms

Definition of Terms

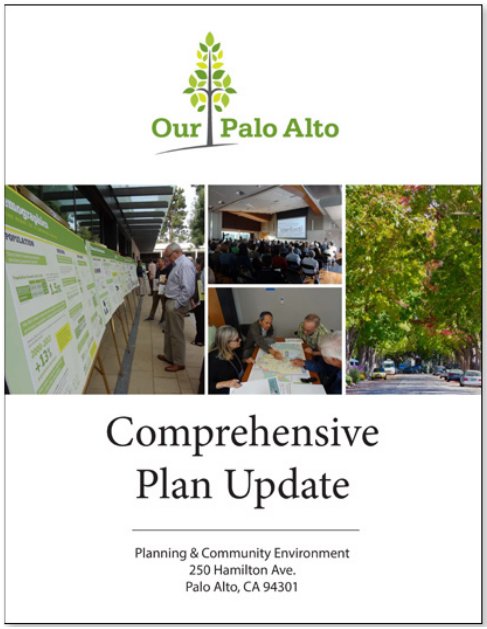
2016-2030 Sustainability and Climate Action Plan (S/CAP) – An ambitious plan to reduce the city and community's greenhouse gas emissions to meet climate protection goals and to address broader issues of sustainability, such as land use and biological resources. S/CAP includes an overall Greenhouse Gas (GHG) reduction target, Guiding Principles, Design Principles, Decision Criteria, Chapters, Goals, Strategies, Actions, and 2030 Performance Targets. Staff anticipates reviewing and revising the SCAP for 2020 and every five years thereafter.

- **Overall Target –** The overall GHG reduction target of the S/CAP - achieving an 80% reduction in Greenhouse Gases (GHGs) below 1990 levels by 2030 – was unanimously approved by Council on April 18, 2016.
- **Framework –** The S/CAP Framework includes the Guiding Principles, Decision Criteria, Design Principles, and key Goals and Strategies. The Framework is the road map for development of the Sustainability Implementation Plans, and was adopted unanimously by Council on Nov. 28, 2016.
- **Chapter –** The topic-specific sustainability levers outlined in the S/CAP. These include: Mobility; Energy; Water Management; Zero Waste & Circular Economy; Municipal Operations; Climate Adaptation & Resilience; Regeneration & Natural Environment; Financing Strategies; Community Behavior, Culture, and Innovation; and Utility of the Future.
- **Goals** – The desired results or intended outcomes for each S/CAP Chapter that will contribute to achieving overall S/CAP overall targets.
- **Strategies** – The overarching approaches for meeting the S/CAP Goals for each S/CAP Chapter
- **Actions** – Specific actions, measures, or policies designed to fulfill S/CAP Strategies for each S/CAP Chapter.
- **Principles and Criteria** – Guiding principles, design principles and decision criteria to assist Staff in developing, refining and selecting near term strategies that support the City's long-term vision and goals.

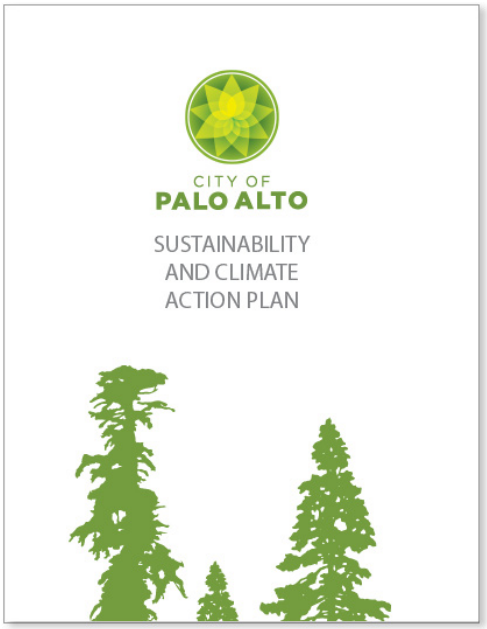
2018-2020 Sustainability Implementation Plan (2018-2020 SIP) – A near-term plan outlining goals from the S/CAP Framework and key actions for 2018 to 2020. Goals and key actions are grouped in four key areas: Energy, Mobility, Electric Vehicles and Water Management. Staff anticipates creating a new near-term SIP every three years.

2020-2030 Sustainability Implementation Plans (2020-2030 SIPs) – Specific strategies and actions for each S/CAP chapter, to be determined based on the experience of implementing the 2018-2020 SIP. Staff anticipates creating a new SIP every three years.

How Will the **Comprehensive Plan Update** & the **Sustainability & Climate Action Plan** Work Together?



Palo Alto's Comprehensive Plan Update and the Sustainability and Climate Action Plan are being prepared in parallel and will both address issues related to sustainability.



Palo Alto's **Comprehensive Plan Update** and the **Sustainability and Climate Action Plan** (S/CAP) are being prepared in parallel and will both address issues related to sustainability, including reducing greenhouse gas (GHG) emissions and single occupant vehicle trips, conserving energy, water, and other natural resources, and adapting to expected changes in climate and resulting impacts such as sea level rise, drought, increased flooding and fire risk, etc. The following points describe how these two concurrent planning efforts interact with each other.

The **Comprehensive Plan Update** will embrace principles of sustainability via new goals, policies, and implementation programs, particularly in the Transportation, Land Use & Community Design, Natural Environment, and Safety elements of the updated plan. A subcommittee of the Citizens Advisory Committee has been formed to work across elements on this issue. Also, the use of icons or a special section in the final plan can allow readers to find goals, policies, and programs related to sustainability and climate change adaption wherever they occur in the document.

The **Comprehensive Plan Update** will describe the intent and scope of the **Sustainability and Climate Action Plan** and explicitly incorporate the plan by reference, similar to how other important community plans will be referenced (e.g. the Baylands Master Plan; the Local Hazard Mitigation Plan; the Parks, Trails and Open Space Master Plan; the Urban Forest Master Plan, etc.).

As a more focused plan, the **Sustainability and Climate Action Plan** will be much more specific than the Comprehensive Plan Update when it comes to strategies for reducing greenhouse gas (GHG) emissions and for addressing other sustainability-related topics. **The Sustainability and Climate Action Plan** will also look out farther than the Comprehensive Plan Update horizon year of 2030.

Both the **Comprehensive Plan Update** and the **Sustainability and Climate Action Plan** will require review pursuant to the California Environmental Quality Act (CEQA) and the Draft Environmental Impact Report (EIR) that is being prepared for the **Comprehensive Plan Update** will contain a conservative (i.e. probably high) forecast of community-wide GHG emissions in the year 2030. **The Sustainability and Climate Action Plan** will be more aspirational in assuming aggressive emission reductions.

Finalization, adoption and implementation of the **Sustainability and Climate Action Plan** will be included as a mitigation measure in the **Comprehensive Plan Update** Draft EIR to ensure that the City meets or exceeds the State's targets for GHG emission reductions in 2030 and 2050.

Interested in helping craft solutions to the critical issues facing us now and into the future? Join us at the Sustainability and Climate Action Summit: **www.cityofpaloalto.org/scapreg**

Attachment D: 2018-2020 Sustainability Implementation Plan FAQs

2018-2020 Sustainability Implementation Plan (SIP) FAQ's

Have we set interim greenhouse gas (GHG) emissions reductions targets?

No, just the 80x30 target; we'll manage reduction trends, rather than attempt to manage them on a year to year basis. That said, we estimate that the Key Actions outlined in the 2018-2020 Sustainability Implementation Plan and other actions (aside from purchasing carbon offsets) could enable Palo Alto to reduce GHG emissions to more than 50% of 1990 levels by 2020 as the SIP is implemented—but this will depend on the pace of implementation.

What GHG emissions reductions will we achieve in FY 18?

Palo Alto's recently approved Carbon Neutral Natural Gas Plan will help us reduce reportable GHG emissions to about 54% of 1990 levels. By purchasing carbon offsets for our natural gas emissions, Palo Alto will finance cost-effective GHG reductions elsewhere, while we continue to explore ways to further reduce natural gas use and emissions through efficiency and electrification initiatives.

What are carbon offsets?

A carbon offset is a financial instrument that "offsets" one actor's GHG emissions by investing in reducing the GHG emissions of another actor, generally to provide greater emission reductions at lower cost. Common examples include tree planting and clean-energy projects ranging from distributing efficient cook stoves in Africa to capturing methane gas from landfill sites to generating methane from dairy waste. Offsets are subject to rigorous certification protocols, and are sold in units of metric tons of carbon dioxide equivalent (MTCO2e).) Offsets are a bridge, not a solution. Offsets move capital in support of further GHG emissions reductions.

How will the City of Palo Alto use offsets?

Palo Alto's "Carbon Neutral Natural Gas Plan" achieves carbon neutrality for the gas supply portfolio by 1) purchasing high-quality environmental offsets equivalent to our City and community natural gas emissions (~29% of our carbon footprint); 2) pursuing efficiency strategies to reduce natural gas use, and 3) seeking opportunities to fund *local* offsets that finance actual emissions reductions in Palo Alto and the surrounding region. Natural gas offsets will help us reduce reportable GHG emissions to about 54% of 1990 levels. (See also: The Role and Prices of RECs and Offsets in Climate and Energy Plans[1])

What are the carbon savings from electrification?

The City Council approved a Carbon Neutral Electric Resource Plan in March 2013 - committing Palo Alto to using carbon neutral electric resources. This makes our town

[1] https://epicenergyblog.com/2016/04/27/the-role-and-prices-of-recs-and-offsets-in-climate-and-energy-plans/

one of only a handful of places on Earth that is using 100%* carbon-neutral electricity. (*Note: This refers to emissions from electricity generation, not the construction of generating facilities.)

In keeping with the City's efforts to combat climate change, this plan effectively eliminates all GHG emissions from the City's electric portfolio. The Carbon Neutral Plan achieves carbon neutrality for the electric supply portfolio at a cost expected to be less than $0.001/kWh above the already anticipated cost of $0.004/kWh to meet the City's renewable energy portfolio standard goal.

In 2012, before the Carbon Neutral Plan was approved, GHG emissions related to brown power supply were 145,404 MT of CO2e, or about 25% of our total GHG emissions.

What is the future evolution of the City's carbon neutral electric portfolio?

When the Carbon Neutral Electric Plan was approved, the City initially purchased short-term renewable resources and/or renewable energy certificates (RECs) to supplement existing and committed long-term renewable and hydroelectric resources.

Moving forward, long-term renewable resources will provide about a 50% RPS level within the existing 0.5 ¢/kWh annual RPS rate limit. Since about 50% of the electric supply portfolio is already sourced from carbon-free hydroelectric resources, the additional cost of achieving carbon neutrality between 2017 and 2020 is very small.

What are product life cycle emissions and consumption-based emissions?

Product life cycle emissions (also called "embodied emissions") are all the emissions associated with the production and use of a specific product, from cradle to grave, including emissions from raw materials, manufacture, transport, storage, sale, use and disposal. These are not reportable under our GHG reporting protocols, but they do represent real climate impacts generated by City and community purchases and use of products.

Consumption-based emissions are emissions associated with local consumption of goods and services, regardless of where they were produced. Emissions tied to goods produced locally for export are typically excluded.

The life cycle emissions approach encompasses the full lifecycle emissions of goods and services. Emissions are estimated based on spending by households and government entities, and in certain inventory approaches, certain types of purchases made by businesses (e.g., capital and inventory formation).

Unsurprisingly, this type of emissions accounting typically results in a much higher total carbon footprint as it counts global, not just local, emissions related to a community's economic activity.

For Palo Alto, the estimate is more than three times our currently reportable emissions.

- More than half of this impact is tied to consumption of food, goods and services. The remainder comes from home energy use and transportation fuels - the traditional focus of many urban sustainability programs.
- Household consumption contributes the majority of consumption-based emissions with government and businesses contributing the remainder.
- The majority of consumption based emissions come from three categories: vehicles and parts, appliances (including heating/cooling) and food.

Does Palo Alto include airport and air-travel emissions in its GHG calculations?

Airport emissions are considered consumption-based emissions, and are not included in community GHG emissions inventories. GHG emissions related to air travel are not reportable in community GHG emissions inventory (but would be included in a consumption-based GHG emissions inventory, presenting an estimated 6% of total household carbon footprint).

Why is the City of Palo Alto building more parking garages? Won't that encourage people to drive instead of using other means to get downtown?

The City Manager and staff (as well as the 1998 Comp Plan and the ongoing update) envision a future in which the use of single occupant vehicles will decline, reducing the need for parking. We are actively nurturing this vision with policies and actions in Downtown and elsewhere (including establishment of the TMA, introduction of parking pricing, more effective management of the parking we already have, and development of Mobility As A Service solutions through our Federal Transit Administration grant and other programs). This future will also be advanced by changes in the marketplace, such as the expansion of ridesharing companies and the development and deployment of autonomous vehicles.

Meanwhile, we need to address today's challenges, including current parking demand, without precluding or discouraging future progress, and without wasting resources. We'll also need to anticipate how current parking lots could be redeveloped with other uses as parking demand declines in the future.

How is the Sustainability Implementation Plan being integrated with the Comprehensive Plan Update?

Palo Alto's Comprehensive Plan Update and the 2017-2020 Sustainability Implementation Plan are being developed in parallel; both address issues related to sustainability, including reducing greenhouse gas (GHG) emissions and single occupant

vehicle trips, conserving energy, water, and other natural resources, and adapting to expected changes in climate and resulting impacts such as sea level rise, drought, increased flooding and fire risk, etc.

The Comprehensive Plan Update embraces principles of sustainability via new goals, policies, and implementation programs, particularly in the Transportation, Land Use & Community Design, Natural Environment, and Safety elements of the updated plan. A subcommittee of the Citizens Advisory Committee worked across elements on this issue.

The S/CAP and the SIP will in some cases be more specific than the Comprehensive Plan Update with regard to GHG reduction strategies and addressing other sustainability-related topics.

Both the Comprehensive Plan Update and the Sustainability Implementation Plan will require review pursuant to the California Environmental Quality Act (CEQA); the Environmental Impact Report (EIR) that is being prepared for the Comprehensive Plan Update will contain a conservative (i.e. probably high) forecast of community-wide GHG emissions in the year 2030.

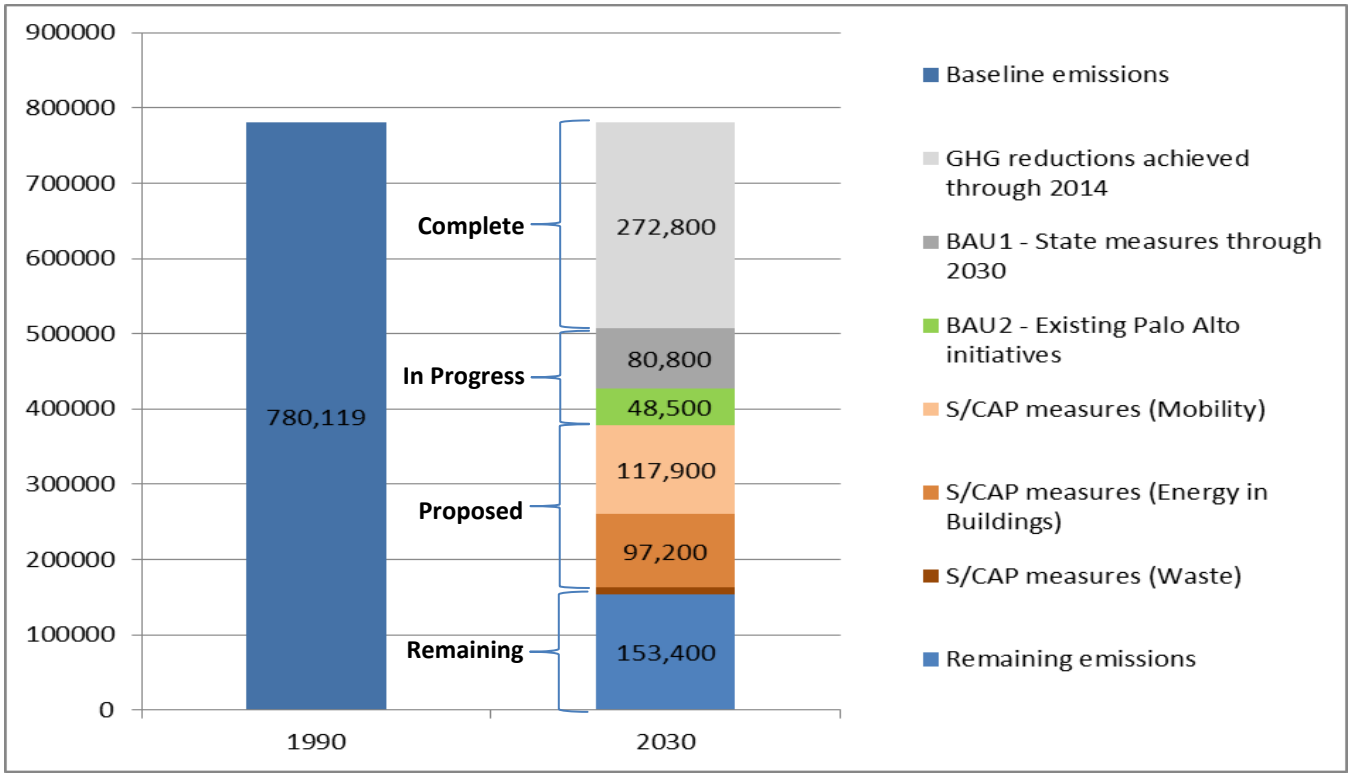
2018-2020 Sustainability Implementation Plan (SIP) Background

In response to Council questions on June 5, staff has prepared this informational report, which both brings forward specific data from the Sustainability and Climate Action Plan (S/CAP) presented to Council April 2016 (and the 2015 analyses that supported it), provides additional background and context to Council concerns, and clarifies the prioritization logic behind staff recommendations. Staff prepared, as requested, a shorter, more tightly focused FY18 Sustainability Implementation Plan (SIP) for Council review.

1. GHG Reduction Budget

To achieve an 80% reduction target by 2030, Palo Alto will need to meet a target "GHG reduction budget" of about 224,600 MT CO2e. The S/CAP analysis projected that 117,900 MT CO2e, or more than half of the needed additional reductions, can come from mobility related measures, 97,200 MT CO2e, or just under half from efficiency and fuel switching measures (largely in buildings), and 9,500 MT CO2e, or 4% from continuation and extension of Palo Alto's zero waste initiatives.[1]

1.1. 80x30 GHG Reduction Budget (MT CO2e)[2]

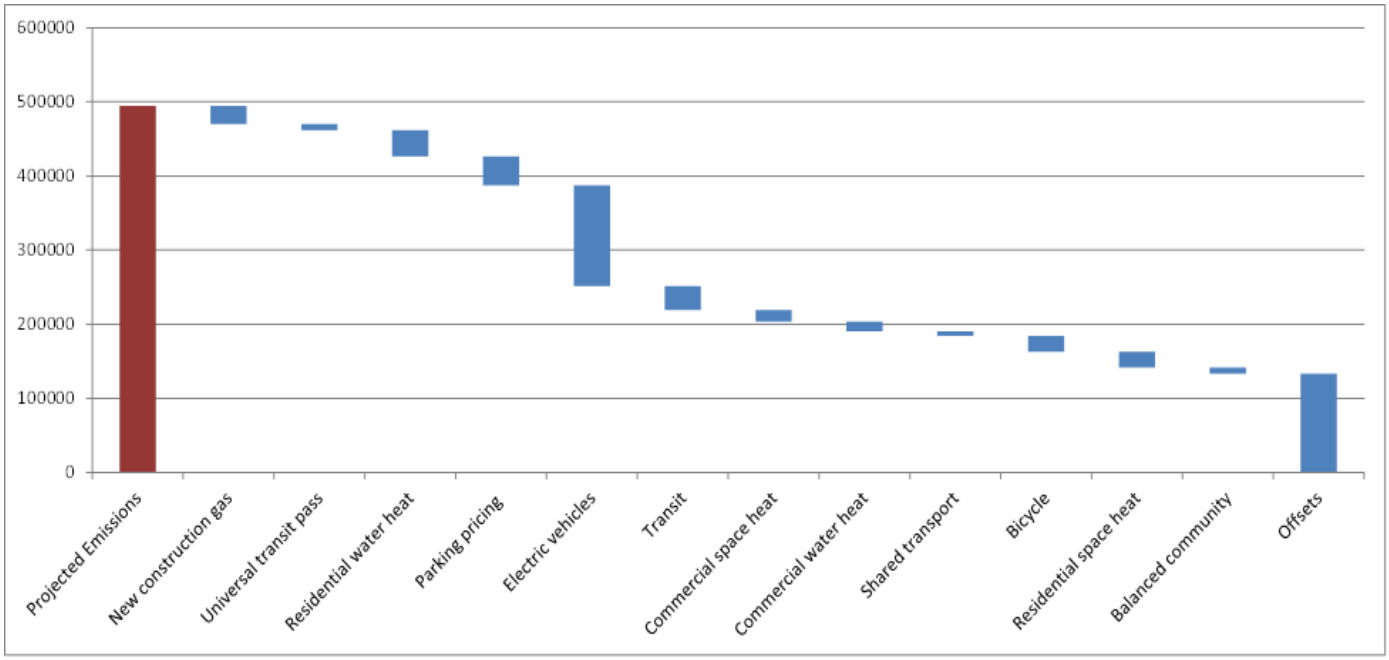


[1] As explained in detail in the S/CAP, BAU1 represents the impacts of State measures already in force. BAU2 represents existing PA initiatives. If Palo Alto does nothing more than these, projected emissions will be ~368,000 mT by 2030. If Palo Alto enacts the measures proposed in the S/CAP, projected emissions will be ~153,000 mT.

[2] Palo Alto emissions in the 1990 baseline year are estimated at 765,920 MT CO2e, a restatement of prior estimates of 780,119 MT CO2e due to changes in "Lifecycle Emissions from Annual Total Waste placed in Landfills" and "Landfilling Recyclable Material" emissions, which have been updated based on the most recent EPA Waste Reduction Model (WARM) methodology

1.2. Scale of projected reductions from each strategy/action (in order of cost-effectiveness)

This "waterfall" chart summarizes the estimated emissions reduction potential of the proposed strategies (which is broken out in more detail in the table following).



1.3. S/CAP Strategies to Achieve 80 x 30 Goal[3]

This table summarizes the estimated emissions reduction potential of the proposed strategies, and the key jurisdictions responsible for implementation of each measure.

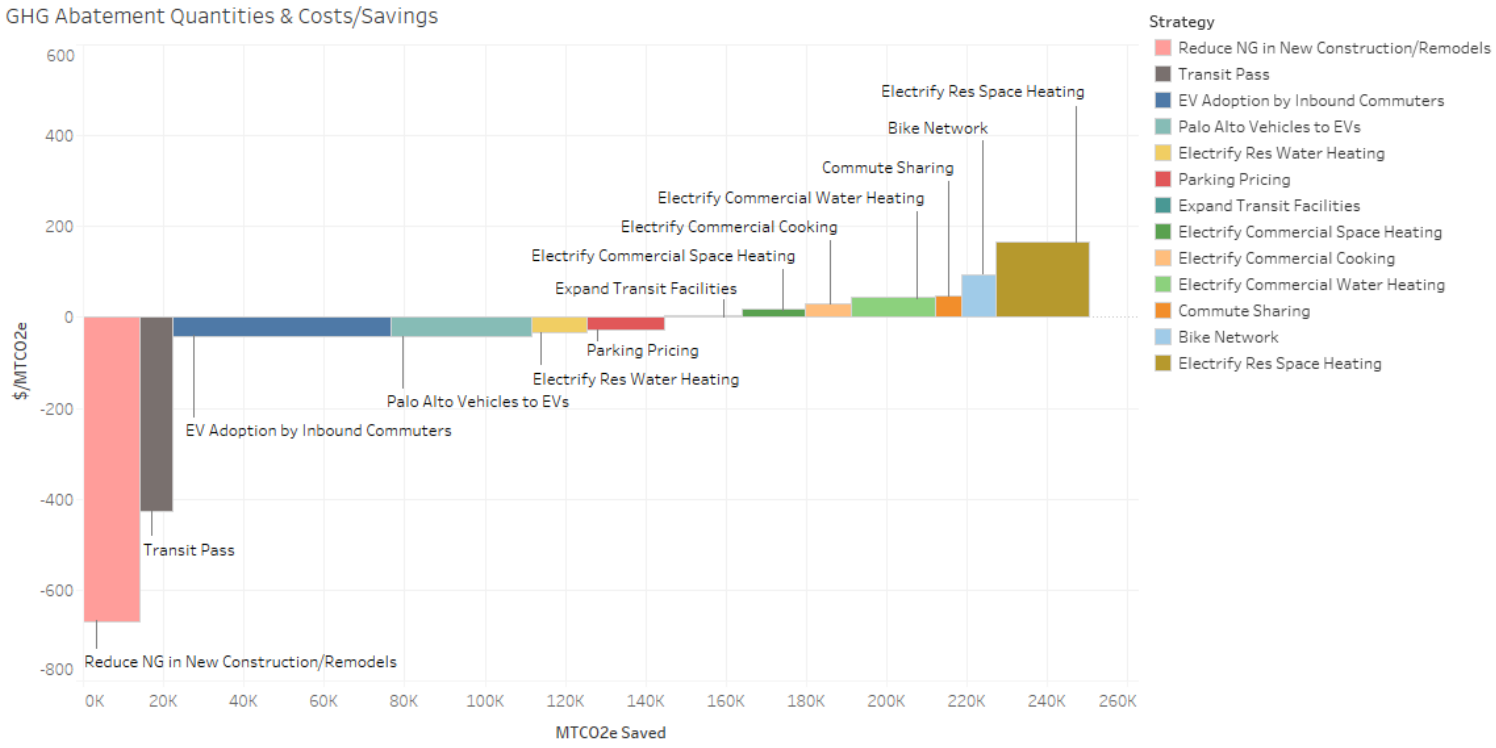
Levers	Goals	Strategy	2030 Performance Target	GHG Avoided in 2030 (MT CO2e)	Percent of Total _S/CAP_ Emissions Reductions	Percent of Reductions from 1990 Baseline	Jurisdiction PA = Palo Alto R = Regional S = State
Rethinking Mobility	Expand non-auto mobility options	T-FAC-1. Expand bicycle infrastructure	Increase bike boulevard miles to 26 miles Increase in bike mode share to 30%	8,400	4%	1%	PA
		T-FAC-2. Expand transit options	Increase transit ridership by 60%	19,200	9%	2%	PA, R
		T-FAC-3. Grow ridesharing services and mobility apps	Increase in rideshare mode	6,400	3%	1%	PA
	Create right financial incentives	T-INC-1. Provide universal transit passes	75% of residents and employees have universal transit passes	7,600	3%	1%	PA
		T-INC-2. Implement parking pricing and "feebates"	50% of sites have parking pricing	18,400	8%	2%	PA
	Adapt land use patterns	T-LU-1. Increase zero-impact, mixed use housing	Target 2.95 jobs-housing ratio	2,900	1%	0.5%	PA
	Reduce carbon intensity of vehicles	T-EV-1. Electrify Palo Alto-based vehicles	90% of vehicles based in Palo Alto are zero emission	25,200	11%	3%	PA
		T-EV-2. Electrify inbound vehicles	50% of inbound (not based in Palo Alto) vehicles are zero emission	29,800	13%	4%	PA, R
Electrifying our City	Reduce use in existing businesses	NG-COMM-1. Electrify water heating in businesses	85% of commercial water heating is electric	21,200	9%	3%	PA, S
		NG-COMM-2. Electrify space heating in businesses	85% of commercial space heating is electric	15,900	7%	2%	PA, S
		NG-COOK-1. Electrify commercial cooking	50% of commercial cooking is electric	11,300	5%	1%	PA, S
	Reduce use in existing homes	NG-RES-1. Electrify residential water heating	Close to 100% of water heaters are electric	13,600	6%	2%	PA, S
		NG-RES-2. Electrify residential space heating	70% of residential space heating is electric	23,300	10%	3%	PA, S
	Reduce use in new buildings	NG-GAS-1. Encourage all-electric new buildings	New buildings are zero net energy ahead of state targets	11,900	5%	2%	PA, S
Zero Waste	Enhance programs $ infrastructure	SW-1. Achieve zero waste	Achieve 95% diversion rate	9,500	4%	2%	PA
TOTAL				224,600	100%	29%	

[3] The figures in this table are *estimates* based on staff and consultant analyses of potential GHG reductions from each strategy. These estimates are built on documented assumptions, and are subject to many variables (including technology and costs) that could change over the 2030 horizon. (The Percent of Total _S/CAP_ Emissions Reductions does not appear to total 100% due to rounding of the individual items.)

2. Greenhouse Gas (GHG) Mitigation Costs

This "McKinsey Chart" summarizes the abatement potential, cost and required investment of GHG mitigation options. The height of each box represents the average net cost of abating one ton of CO2e (carbon dioxide equivalent) through that activity. The chart is ordered left to right, from the lowest mitigation cost opportunities to the highest. The opportunities that appear below the horizontal axis offer net financial savings; opportunities that appear above the horizontal axis are expected to come at a net cost.

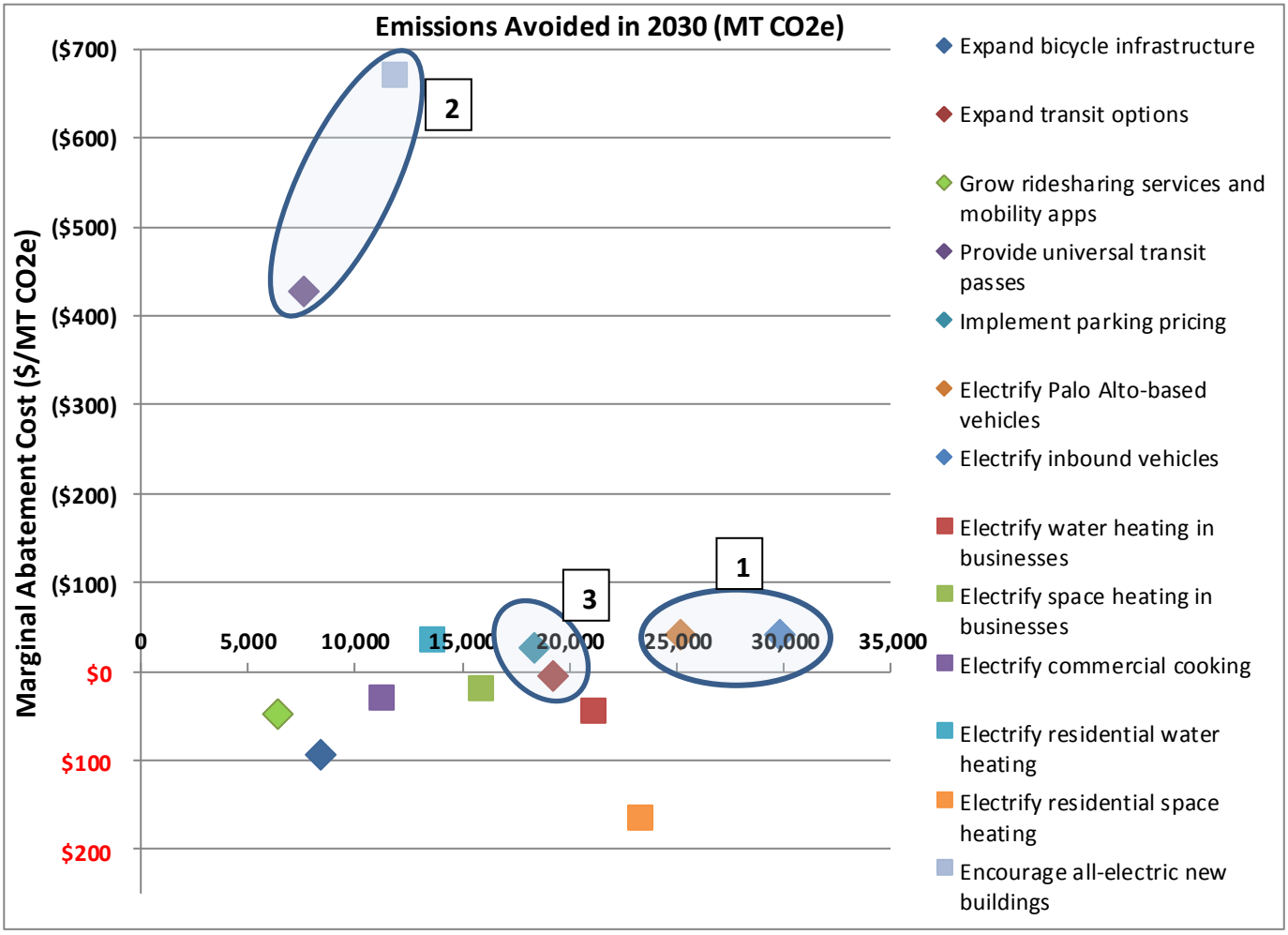
2.1. Figure: GHG Abatement Cost Curve



3. Action priorities

3.1. Prioritizing Actions by GHG Impact and Mitigation Cost

The relative GHG reduction impacts and associated "mitigation costs" to achieve those reductions (in $/mT CO2e reduction) are shown in the figure below. The measures further to the right indicate greater GHG reduction impact; the measures higher on the chart indicate more favorable economics. The ovals highlight proposed implementation priorities (reflecting impact, cost and feasibility).



Priority 1: Electrify Palo Alto-based and inbound vehicles
Priority 2: Encourage all-electric new buildings; Provide universal transit passes
Priority 3: Expand transit options; implement parking pricing

4. Climate Action Plan Practices

Local Climate Action Plans vary in scope and depth, but there are common elements in all of them. The Climate Action Plans we reviewed—a few of which are summarized below—all had a main GHG reduction goal; supporting goals; strategies to support the goals; and measures or actions for each strategy. There were only two areas that every Climate Action Plan included: Transportation and Energy.

4.1. Table Comparing Scope and Depth of Selected Climate Action Plans

Jurisdiction/Agency	Total # of Measures	# of Transportation Measures	# of Municipal Operations Measures	# of Energy Measures	# of Adaptation Strategies Measures	# of Water Measures	# of Natural Environment Measures	# of Waste Management Measures	# of Financing Measures	# of Utilities Measures	# of Community Measures
City of New York, NY	**216**	27	14	14	121	15	23	2	27	23	16
City of Portland, OR	**144**	46	21	20	29	3	14	11			21
City of Palo Alto, CA (SCAP)	**127**	32	20	26	23	10	9	7	5	20	12
City of Cambridge, MA	**98**	41	10	30			5	12			11
City of Palo Alto, CA (SIP)	**77**	17	12	11	11	10	9	7	5		
Port of San Diego, CA	**68**	31	14	12	5	3		3			
City of Copenhagen, Denmark	**64**	17	18	29							
City of National City, CA	**61**	11	14	12	7	12		5			
San Diego Association of Governments	**59**	11	12	12	6	12		6			
City of San Francisco, CA	**50**	25		5	7		4	9			
City of Boulder, CO	**41**	8		13	7	3	7	3			3
City of Burlington, VT	**39**	7	3	16	3	1	3	6			3
City of Vancouver, Canada	**37**	4	3	11		4	11	4	6		8
City of Santa Monica, CA[4]	**15**	3	1	3	2	1	4	1			

[4] A 2013 plan focused on 15 measures to deliver 15% GHG reduction by 2015.

5. Community Engagement[5]

City staff has relied on the contributions of community members and other stakeholders (in addition to consultants from DNV GL and Rocky Mountain Institute) in shaping its sustainability efforts. These include:

5.1. A **community climate summit** on January 24, 2016 brought together more than 500 engaged and committed citizens (including most Councilmembers) who worked on the challenges of water, energy, and transportation.

5.2. The City hosted an open-invitation "**Climate Ideas Expo**" in November 2018 to invite ideas from the community to help advance the City's sustainability goals. This dynamic event introduced the S/CAP and highlight global best practices and municipal advancements in sustainability. More than 80 community members participated; 18 presented "poster sessions" proposing initiatives to advance sustainability and climate action in Palo Alto and the region.[6]

5.3. About 40 local and national experts participated in a day-long SCAP **design charrette** in October 2014 to frame the SCAP approach, share best practices, etc.

5.4. 400+ people participated in a richly textured **on-line poll** identifying community concerns and priorities

5.5. Staff engaged regularly with members of the **Urban Sustainability Directors Network** to share and validate analyses, best practices and practical concerns in the development and adoption of climate plans.

5.6. An SCAP **advisory board**, appointed by City Manager, met every month or two through the SCAP development process to advise and guide staff and consultants

- Fahmida Ahmed, Stanford Sustainability
- Lisa Altieri, Go CO2 Free
- Karrie Armel, Stanford
- Jim Baer, Palo Alto Land Use
- Stuart Bernstein, Goldman Sachs
- Bruce Cahan, Urban Logic
- Peter Drekmeier, Tuolumne River Trust
- Jessica Epstein, Silicon Valley Association of Realtors
- Marianna Grossmann, Sustainable Silicon Valley (former director)
- Russell Hancock, Joint Venture Silicon Valley
- Walt Hays, CEAP
- Bruce Hodge, Carbon Free Palo Alto
- AC Johnston, Morrison Foerster
- Judy Kleinberg, Palo Alto Chamber

[5] http://www.cityofpaloalto.org/services/sustainability/sustainability_and_climate_action_plan/community_engagement/default.asp

[6] http://www.cityofpaloalto.org/civicax/filebank/documents/45052

- Adina Levin, Friends of Caltrain
- Demetra McBride, Santa Clara County
- Melanie Nutter, SF Dept of Environment (former director)
- Thomas Odenwald, SAP (former)
- LisaMarie Santiago, VM Ware
- Tony Seba, Stanford
- Sandra Slater, Cool Block
- Mitch Slomiak, Menlo Spark
- Lisa Van Dusen, SV2
- Kathi Vian, Institute for the Future
- Mila Zelkha, Palantir