CITY OF PALO ALTO UTILITIES

OVERVIEW:

The City of Palo Alto Utilities (CPAU) is the only city-owned utility in California that operates its own utilities for electric, natural gas, water, fiber optic, storm drain, wastewater and refuse services. We have been providing quality services to the citizens and businesses of Palo Alto since 1896.

MISSION:

To provide safe, reliable, environmentally sustainable and cost-effective services.

STRATEGIC DIRECTION:

At CPAU, our people empower tomorrow's ambitions while caring for today's needs. We make this possible with our outstanding professional workforce, leading through collaboration and optimizing resources to ensure a sustainable and resilient Palo Alto.

PRIORITIES:

Workforce: We must create a vibrant and competitive environment that attracts, retains, and invests in a skilled and engaged workforce.

Collaboration: We must collaborate with internal teams and external stakeholders to achieve our shared objectives of enhanced communication, coordination, education, and delivery of services.

Technology: We must invest in and utilize technology to enhance the customer experience and maximize operational efficiency.

Financial Efficiency and Resource Optimization: We must manage our finances optimally and use resources efficiently to meet our customers' service priorities.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This Demand Side Management (DSM) Report for Fiscal Year (FY) 2021 is a public document summarizing the achievements of CPAU's customer efficiency and sustainability programs. CPAU is committed to supporting environmental sustainability through conservation of electric, gas and water resources. Additionally, CPAU promotes distributed renewable generation, building electrification, and electric vehicles using incentives and educational programs. CPAU accomplishes these goals by delivering a wide range of customer programs and services as described in this report and strives to do so while remaining in touch with customer needs.

Fiscal Year 2021 was marked by shelter-in-place and work-from-home due to the Covid-19 pandemic, as well as wrapping up program contracts for large-commercial customers and an associated issuance of a Request for Proposals to establish new programs for these customers. In response to the pandemic, CPAU's customer programs group developed a virtual version of its in-home efficiency and electrification readiness assessments, converted in-person educational events to online webinars and offered energy efficiency tips relevant to working from home. The year was also marked by wildfires, heatwaves and rolling power outages. In response to these conditions, staff developed a load shedding program with incentives to large customers for powering down during times of grid stress.

The year was characterized by transition, as reflected in changes to some of the sections of this report. The section on "Electrification/Gas Efficiency Achievements" reflects that CPAU programs are now aligned with the City's Sustainability/Climate Action Plan (S/CAP) goals of reducing natural gas use in the building sector; this is achieved through replacing gas equipment with high efficiency electric equipment as well as building envelope improvements, and behavioral, retro-commissioning and operational changes. A new section on "Transportation Electrification" covers progress in CPAU's programs that support EV adoption. The report also includes a new section on "Resiliency", which covers solar and battery installation within the city.

ENERGY EFFICIENCY AND WATER CONSERVATION GOALS AND ACHIEVEMENTS

CPAU offers incentives and education programs for customers to encourage energy and water efficiency – Table ES.1 summarizes FY 2021 efficiency goals and achievements. The energy and water efficiency savings achieved through the City's energy reach code and green building ordinance are included. FY 2021 represents the sixth year of increased energy savings targets[1] established since SB 350 was enacted with the aim to double the energy efficiency savings in electricity and natural gas in buildings by 2030. CPAU has previously adopted gas efficiency goals to reduce gas use; these goals ranged from 0.5% to 1.1% gas use reduction per year. These goals are no longer relevant and are superseded by the S/CAP goal for the building sector. For FY 2021, CPAU fell short of its electricity and water savings targets. There are many factors that contributed to the decline in energy savings and below-target efficiency achievements, including the suspension of many residential customer in-home

[1] Electric goals: https://www.cityofpaloalto.org/civicax/filebank/documents/56087;
Gas goals: https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/reports/city-manager-reports-cmrs/year-archive/2017/final-staff-report-id-7862_update-of-ten-year-gas-efficiency-goals.pdf

services as well as programs serving the Small Medium Business customer segment as a result of Covid-19. In addition, there have been delays with launching Home Energy and Water reports due to a combination of vendor challenges and staffing constraints.

Table ES.1: Efficiency Goals versus Achievements

Resource	FY 2021 Savings Goals (% of load)	FY 2021 Savings Achieved (% of load)	FY 2021 Savings Achieved
Electricity	0.80%	0.46%	3,744 MWh
Gas	NA	0.23%	60,071 therms
Water	0.91%	0.39%	18,451 CCF

CPAU is committed by its own policies and State law to implementing all cost-effective energy and water efficiency measures (i.e. those that are less expensive than supply-side resources). Table ES.2 summarizes the cost of efficiency over the last three years compared to the projected cost of supply resources. The rolling 3-year average is a suitable metric to track the cost effectiveness of efficiency portfolios, as it accounts for yearly variations in program engagement and funding. The current 3-year average cost for each efficiency portfolio is well below the cost of supply resources, demonstrating the cost effectiveness of all efficiency portfolios. The gap between the portfolio-level cost of efficiency and the cost of supply resources exists even while the portfolio supports high-touch programs such as the Home Efficiency Genie, a customer service program that provides great educational value to Palo Alto residents but delivers only modest energy efficiency savings. The gap also leaves room for increasing customer incentives while maintaining overall portfolio cost effectiveness.

Table ES.2: Actual Levelized Efficiency Costs versus Projected Supply Costs

		FY 2019 Efficiency	FY 2020 Efficiency	FY 2021 Efficiency	3-yr average Efficiency	Future Supply
Electric	$/kWh	$0.02	$0.06	$0.03	$0.04	$0.11
Gas*	$/therm	$0.56	$0.45	$0.51	$0.51	$0.90
Water	$/CCF	$0.26	$2.67	$2.73	$1.89	$6.24

*Note: Gas efficiency cost excludes electrification program expenditures

CPAU supports a variety of programs designed to promote sustainability and reduce carbon emissions in Palo Alto. In addition, CPAU works closely with Planning and Development Services (PDS) to adopt local Green Building regulations and Energy Reach Code to further reduce resource usage and carbon emissions in the new construction or remodeling of residential and nonresidential buildings. Over the past several years, CPAU has claimed energy and water savings achieved through the City's Energy Reach Code and Green Building Ordinance (jointly referenced as "Reach Codes").

1 ELECTRIC EFFICIENCY ACHIEVEMENTS

1.1 Electric Efficiency Savings versus Goals

City Council approved CPAU's first Ten-Year Energy Efficiency Portfolio Plan in April 2007, which included a 10-year cumulative savings target of 3.5% of the forecasted energy use. As mandated by California law, the electric efficiency targets have been periodically updated, with the most recent 10-year cumulative savings goal set at 5.7% between 2018 and 2027. Statewide building standards and appliance standards have become increasingly stringent, which shrinks the efficiency savings potential that CPAU can pursue through customer incentive programs and local energy reach codes. With stricter codes and standards, higher efficiency goals and over 30 years of running efficiency programs in Palo Alto (which has captured many of the easier opportunities, such as lighting retrofits), staff needs to continue to innovate to maintain and increase efficiency savings.

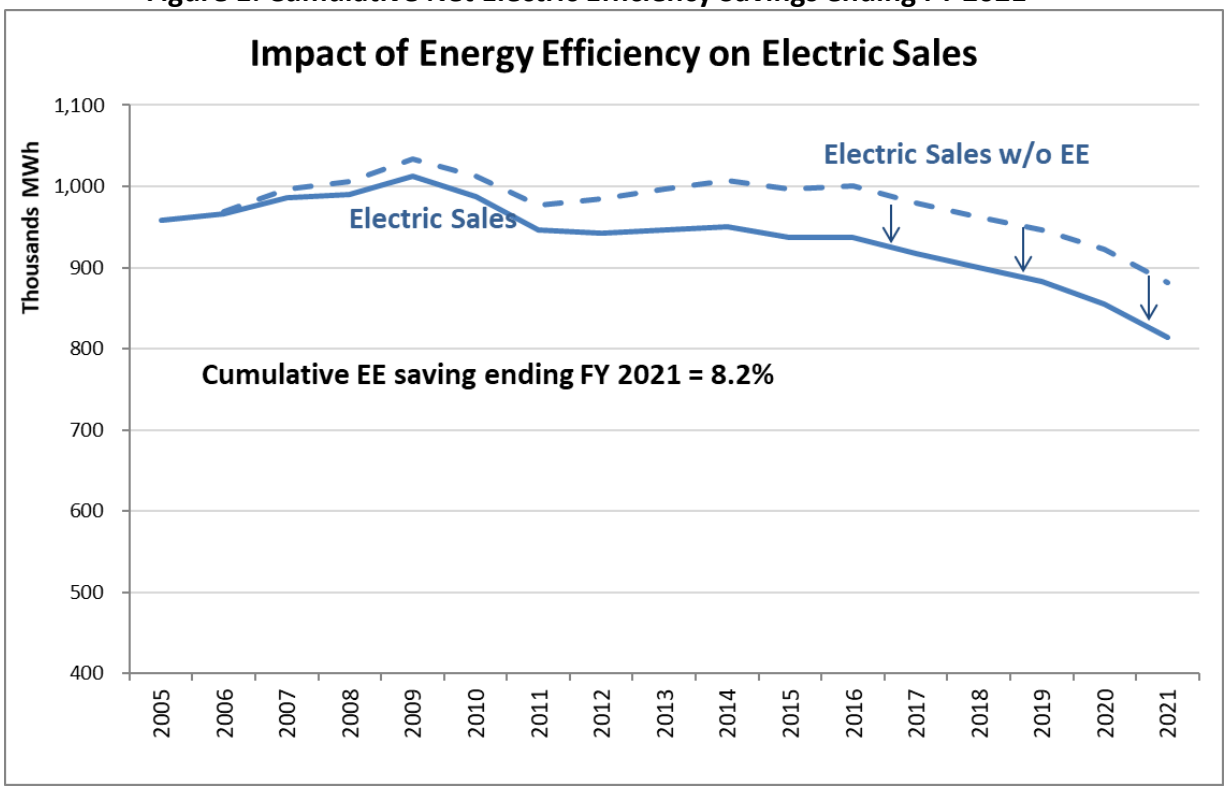
CPAU's electric efficiency savings goals and achievements as a percentage of the City's electricity usage are shown in Table 1 below and cumulative net savings are shown in Figure 1. In FY 2021, on a net efficiency savings basis, CPAU delivered electric efficiency savings of 0.46% of its total electricity sales through its customer efficiency programs.

Table 1: Electric Savings versus Goals[2]

Year	Annual Savings Goal (% of load)	Savings Achieved (% of load)	Savings Achieved (MWh)	Goal Source
FY 2008	0.25%	0.44%	4,399	2007
FY 2009	0.28%	0.46%	4,668	
FY 2010	0.31%	0.53%	5,270	
FY 2011	0.60%	0.58%	5,497	2010
FY 2012	0.65%	1.31%	12,302	
FY 2013	0.70%	0.85%	8,074	
FY 2014	0.60%	0.86%	8,218	2012
FY 2015	0.60%	0.65%	6,063	
FY 2016	0.60%	0.59%	5,548	
FY 2017	0.60%	0.65%	5,986	
FY 2018	0.75%	0.85%	7,640	2017
FY 2019	0.75%	0.86%	7,633	
FY 2020	0.80%	0.27%	2,305	
FY 2021	0.80%	0.46%	3,744	

[2] The reported Achieved Electric Savings are net efficiency savings; efficiency savings from free-riders, i.e. participants who would have pursued efficiency projects in the absence of EE incentives, are excluded. For FY 2018 through FY 2021, a net-to-gross ratio of 0.85 is assumed for the achieved EE savings.

Figure 1: Cumulative Net Electric Efficiency Savings ending FY 2021



While the 0.46% achieved savings fell short of the 0.80% goal, achieved kWh savings increased compared to FY 2020 because a number of large commercial efficiency projects whose progress slowed or halted at the end of FY 2020 due to the Covid-19 pandemic were completed in FY 2021. The decline in savings in FY 2021 compared to years prior to the pandemic is attributed to a number of factors, including lower savings from the commercial and industrial program, lower savings associated with the City's energy reach code due to increasing statewide building energy efficiency standards, delayed launch of the Small Medium Business program and residential Home Energy reports, and significant portfolio-wide impacts resulting from local shelter in place orders brought on by the pandemic. The shelter-in-place orders stopped on-site work in nearly all program areas for all of FY 2021, with the exception of work on large commercial-sector projects that recommenced at the end of FY 2021. These combined factors led to significantly fewer projects, fewer implemented energy efficiency measures, and less overall energy savings in FY 2021 than CPAU has achieved historically.

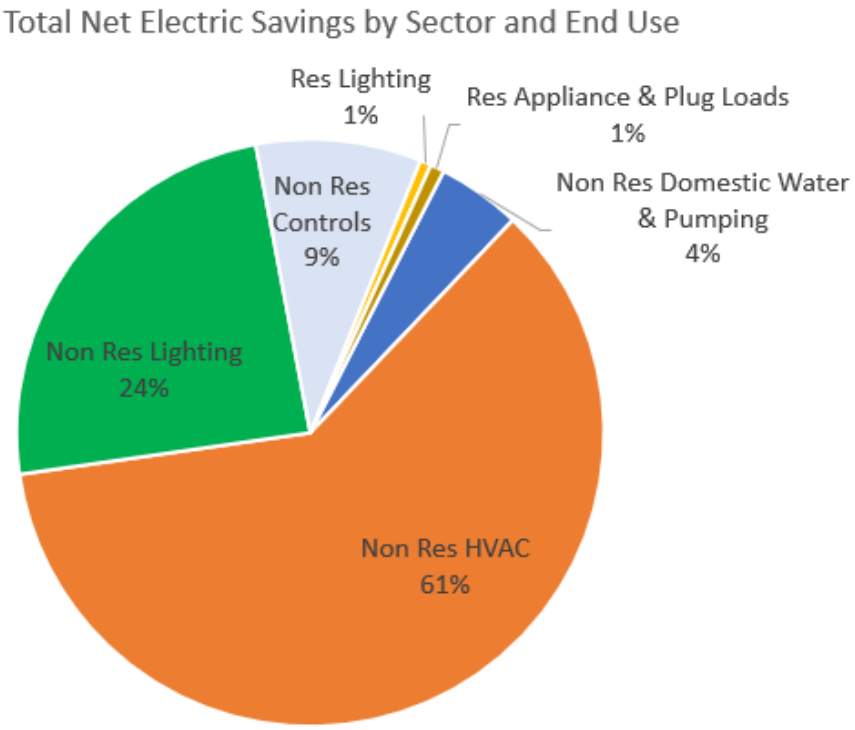
1.2 FY 2021 Electric Efficiency Savings by End Use and Customer Segment

In FY 2021, non-residential customers account for approximately 80% of CPAU's electric sales, and non-residential efficiency program savings represent about 98% of CPAU's total electric efficiency savings, as shown in Figure 2. Non-residential HVAC and non-residential lighting accounted for approximately 85% of the total electric portfolio savings.

To achieve additional savings and to better serve the small and medium business (SMB) customer sector, the City launched the Business Advantage Program in March 2021, providing HVAC control

systems at no cost to support small and medium businesses that had been adversely impacted by the pandemic. The program provides businesses with a free Energy Management System, a cloud-based energy management portal, and free MERV-13 air filters to improve indoor air quality.

Figure 2: Composition of Net Electric Efficiency Savings in FY 2021



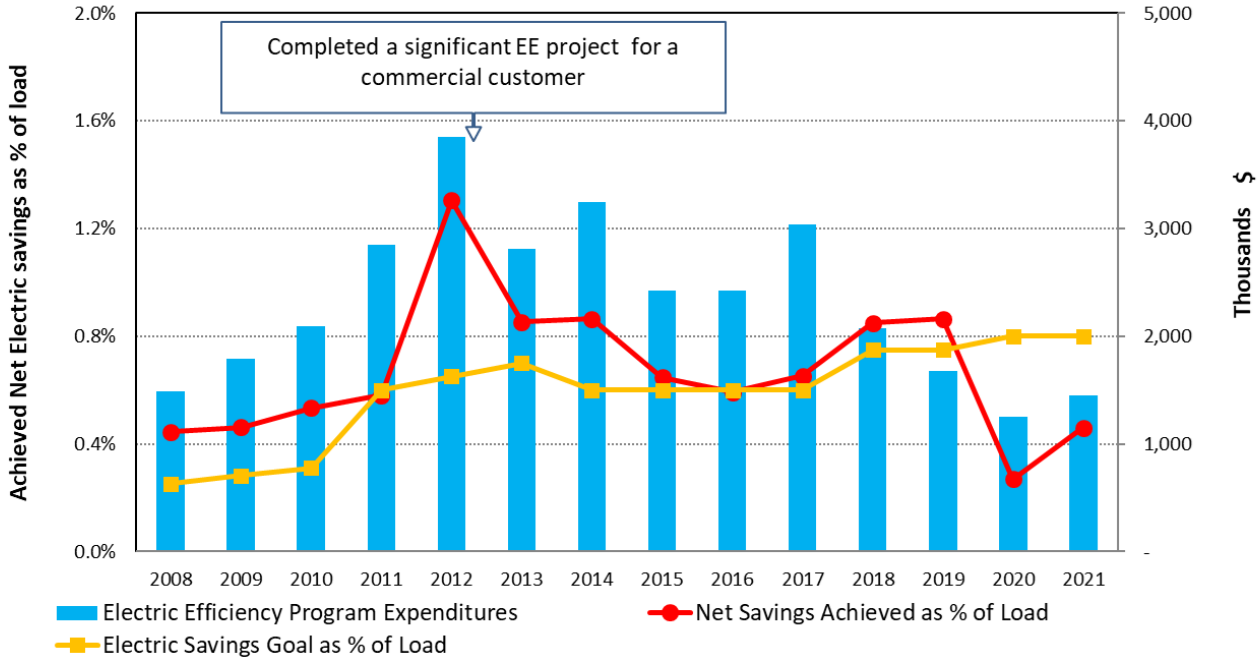
Electric savings in the residential customer sector account for only 7% of total electric savings. This small contribution is in contrast to earlier years (FY 2012 through FY 2015) when CPAU ran a residential Home Energy Report (HER) program. Paper reports were mailed to customers showing their electricity consumption relative to customer in similar homes, resulting in customers changing their behavior to reduce their electricity consumption and perform more favorably. This behavioral savings program resulted in a 1 to 2% reduction in electricity consumption by program participants and accounted for 22% of electric savings by FY 2015 (as reported in the FY 2015 DSM Report. The program was discontinued in FY 2015 because the algorithm used to generate the HERs was unable to account for beneficial electricity consumption (such as that from charging electric vehicles) as well as residential solar electricity generation. Persistent savings were claimed for five years following the program's end, with claimed savings dropping by 20% per year as dictated by studies that measure reductions in electricity consumption from behavioral programs. FY 2020 was the first year with no HER savings claimed.

The City of Palo Alto's Energy Reach Code is a local requirement for new construction projects to exceed the state's building energy efficiency standards (Title 24). Effective April 1, 2020, Palo Alto requires all low-rise residential new construction projects to be all-electric; commercial new construction projects can be proposed as all-electric design with no additional efficiency requirements above Title 24 standards, or if proposed as mixed-fuel design, the project must

exceed Title 24 standards by a margin of 5% to 12% depending on the building type. The adoption of this latest set of Energy Reach Code is consistent with the City's greenhouse gas (GHG) reduction goals. In FY 2021, the Energy Reach Code accounted for 13% of the total electric efficiency savings.

Figure 3 shows the historical annual electric efficiency savings and annual electric efficiency program expenditures.

Figure 3: FY 2008 to FY 2021 Electric Efficiency Savings and Expenditures



2 ELECTRIFICATION/GAS EFFICIENCY ACHIEVEMENTS

2.1 Gas Use Reduction Goals

In April 2016, Palo Alto City Council adopted the ambitious goal of reducing the community's GHG emissions to 80% below 1990 levels by 2030 ("80x30") for the city's Sustainability and Climate Action Plan (S/CAP). To achieve this goal, the City is committed to reducing direct emissions from natural gas use through building electrification. As of 2020, natural gas use in buildings (including fugitive emissions) accounts for 36% of the city's greenhouse gas emissions. Under the 2021 Draft S/CAP Plan, the building sector will need to reduce GHG emissions from the direct the direct use of natural gas in Palo Alto's building sector by at least 60% below 1990 levels by 2030 (or 50% below 2018 levels). This will be achieved by:

a. Electrifying most single-family appliances
b. Electrifying most non-residential rooftop packaged HVAC units
c. Reducing gas use in major facilities by at least 20%
d. Seeking additional opportunities for commercial and multi-family electrification

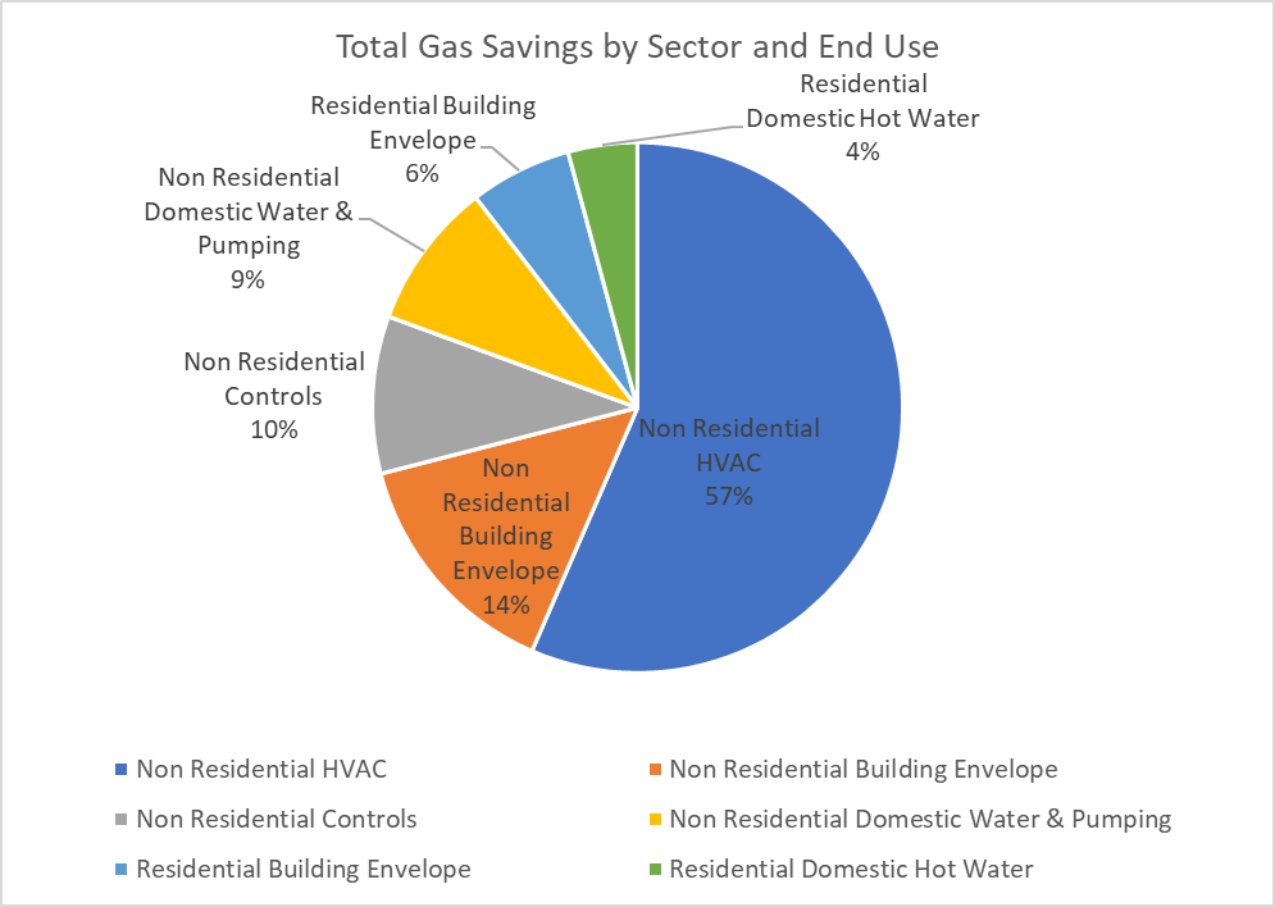
CPAU has previously adopted gas efficiency goals to reduce gas use; these goals ranged from 0.5% to 1.1% gas use reduction per year. These goals are no longer relevant as they are superseded by the S/CAP goal for the building sector. Rather than continuing gas efficiency rebates and services to support the installation of new gas equipment that would remain in place for the next decade or longer, CPAU has for the most part ended these types of rebate offerings and will instead begin offering technical assistance and rebates to help customers with the electrification of gas equipment. Building envelope improvements will remain a priority for energy efficiency program services.

Going forward, staff will report on the gas use reductions achieved through customer programs as part of the Annual DSM Report, rather than reporting on gas efficiency achievements. In addition to customer programs, additional gas use reductions are achieved through the City's Energy Reach Code which mandates all-electric low-rise residential new construction projects and electrification-readiness for mixed-fuel nonresidential new construction projects beginning in January 2020. However, gas use reductions achieved through the City's Reach Codes will not be included in the DSM report in the future as the City moves towards mandating new construction projects to be all-electric.

2.2 FY 2021 Gas Use Reductions by Customer Segment

In FY 2021, total gas use reduction attributed to customer programs is around 54,000 therms; this is equivalent to avoiding 285 MT of GHG emissions each year. Figure 5 shows the breakdown of gas savings in FY 2021 by end use.

Figure 5: Composition of Natural Gas Use Reduction in FY 2021



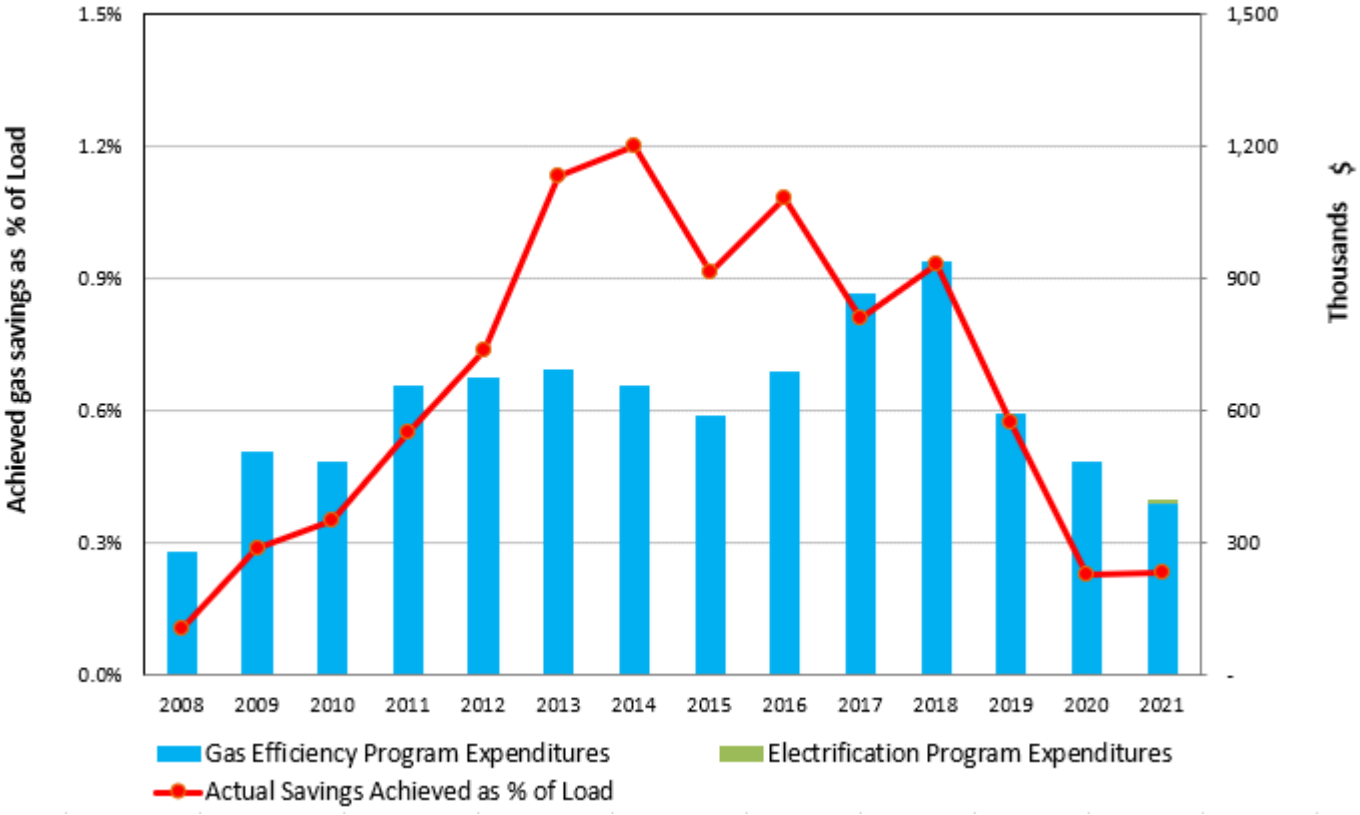
Non-residential customers account for 51% of CPAU's gas sales, and, as shown in Figure 5, in FY 2021 non-residential gas efficiency savings represented 90% of CPAU's total gas savings, primarily from retro- commissioning and upgrade of equipment such as boilers.

During FY 2021 staff continued to administer the Heat Pump Water Heater Rebate program to incentivize residential customers to replace their gas water heater with heat pump alternatives. The program continues to have relatively low participation, with roughly 20 to 25 rebates paid to customers each year, and contributed 4% of the total gas savings in FY 2021.

2.3 Building Electrification Program Expenditures

Figure 6 compares historical annual expenditures on gas reduction programs. Prior to FY 2021, expenditures covered only gas efficiency programs. Building electrification program expenditures are added beginning in FY 2021.

Figure 6: FY 2008 to FY 2021 Gas Efficiency and Building Electrification Expenditures



Expenditures for building electrification (BE) activities have to date been funded using Electric Public Benefits Research and Development (R&D) funds. In FY 2021, total BE expenditure was around $100,000; this covers HPWH rebates, marketing and outreach activities, and a pilot project at a multifamily site to convert gas furnaces to heat pump systems.

3 WATER EFFICIENCY ACHIEVEMENTS

3.1 Water Efficiency Savings versus Goals

Table 3: Water Savings

Year	Savings Achieved (CCF)	Savings Achieved (% of load)
FY 2008	39,323	0.72%
FY 2009	52,983	0.98%
FY 2010	68,948	1.35%
FY 2011	23,409	0.47%
FY 2012	55,067	1.09%
FY 2013	26,513	0.53%
FY 2014	32,324	0.64%
FY 2015	68,209	1.54%
FY 2016	74,484	1.96%
FY 2017	57,154	1.40%
FY 2018	21,548	0.47%
FY 2019	134,242	3.04%
FY 2020	21,144	0.45%
FY 2021	18,451	0.39%

The City partners with the Santa Clara Valley Water District (Valley Water) to provide water conservation programs. Valley Water administers the programs for Palo Alto customers, and CPAU markets and promotes the programs. Water efficiency goals are in transition as old legislation is being replaced by new legislation and state regulations.

The Water Conservation Bill of 2009 (SBx7-7) was enacted in November 2009. It required water suppliers to reduce the statewide average per capita daily water consumption by 20% by December 31, 2020. The City Council, through Resolution 9174, adopted a compliance methodology based on one of the allowable options, and, as reported in the City's 2020 Urban Water Management Plan, the City met the target (180.3 GPCD) by more than 20% (141.7 GPCD).

Water conservation efforts by Palo Alto and Valley Water contributed to achieving the SBx7-7 target. However, drought conditions and the resulting state mandates had a profound impact on water use behaviors which caused a systemic change in water demand across California, in effect rendering the targets meaningless by 2020.

The State Water Resources Control Board (SWRCB) is in the process of developing urban water use objectives with water use targets for (1) residential indoor per capita water use, (2) residential outdoor water use, and (3) outdoor irrigation with dedicated irrigation meters. Palo

Alto's 2021 S/CAP draft goals and key actions include: exceed the forthcoming Making Conservation a California Way of Life indoor and outdoor water use targets by 5%. Once the urban use objectives are established by the SWRCB, the goal may or may not be revised, and new water efficiency program goals will be determined.

3.2 FY 2020 Water Efficiency Savings by End Use and Customer Segment

In FY 2021, Palo Alto achieved 18,451 CCF in water efficiency savings. The Green Building Ordinance accounted for nearly 62% of all water savings with the remaining majority, 38% coming from residential water rebate programs administered by Valley Water (see Figure 7). The bulk of these residential savings are a result of landscape conversion projects. The Residential Energy Assistance Program (REAP) and the MultiFamily Plus and Home Efficiency Genie programs also typically contribute small amounts of water savings from faucet and shower aerator measures installed directly in residents' homes. However, in FY 2021 all in-home visits were paused; thus, no water savings from these programs were realized. To increase water savings by commercial customers, staff is exploring ways to leverage WaterFluence, which provides data to assist commercial customers with irrigating their landscapes efficiently.

Figure 7: Composition of Water Efficiency Savings in FY 2021

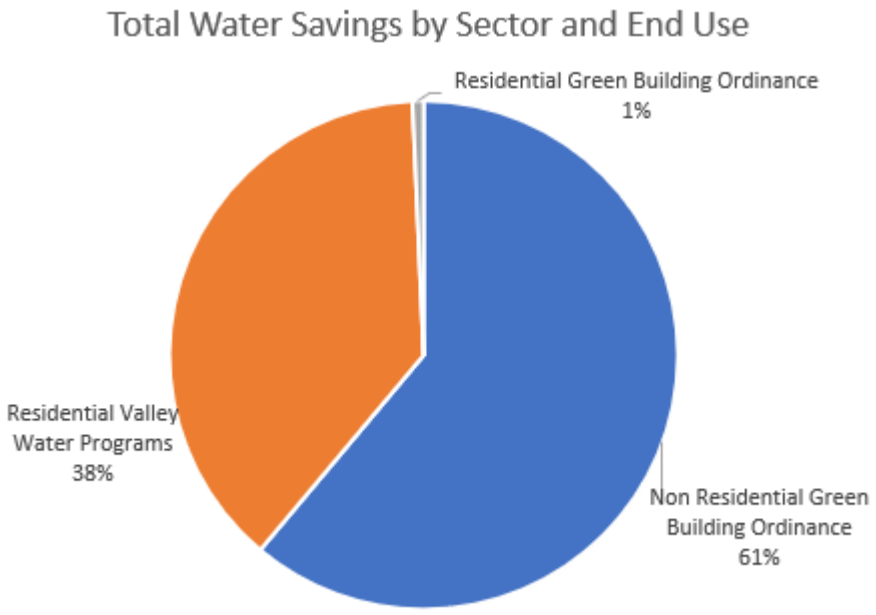
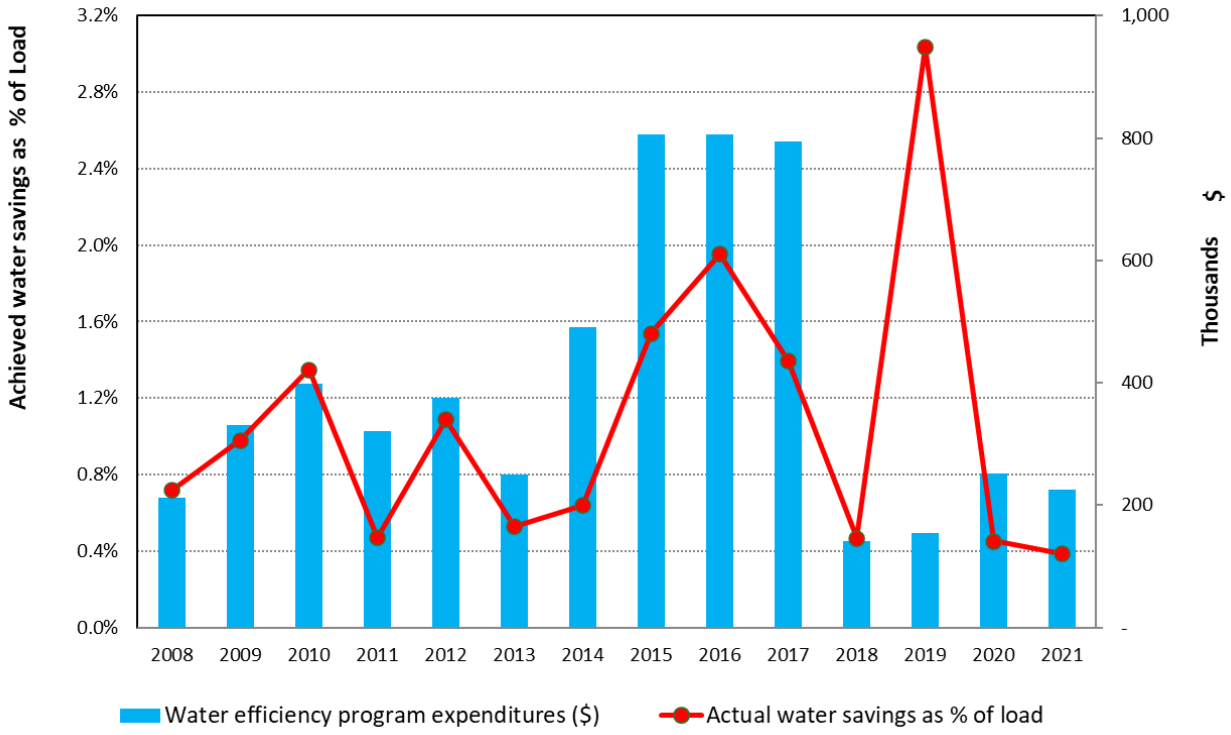


Figure 8 compares the historical annual water efficiency savings and annual water DSM expenditures.

Figure 8: FY 2008 to FY 2021 Water Efficiency Savings and Expenditures [3]



[3] Water savings increased substantially in FY2019 as a result of one large commercial retrofit project that implemented many water savings measures as a result of the green building ordinance.

4 TRANSPORTATION ELECTRIFICATION ACHIEVEMENTS

4.1 Transportation Electrification Goals

Powering transportation through Electric Vehicles (EVs) as opposed to fossil fuel powered vehicles can significantly reduce GHG emissions and climate pollution. As of 2020, the transportation sector accounts for 65% of the city's greenhouse gas emissions. A key priority under the City's S/CAP is to increase the number of EVs registered in Palo Alto, and ensure adequate EV charging infrastructure throughout the City to support mass EV adoption, with equitable access for multifamily and lower income residents, as well as workplaces, public parking lots and retail areas. Correspondingly, cross-departmental work is progressing on proposals for curbside charging, fleet electrification and permit streamlining.

Under the 2021 Draft S/CAP Plan, the transportation sector will need to reduce GHG emissions by at least 65% below 1990 levels by 2030. This will be achieved by:

a. Increasing EVs registered in Palo Alto from 4,500 (2019) to 28,000 (44% of vehicles)
b. Develop a public and private charging network to support these levels of EV penetration

4.2 Programs and Achievements

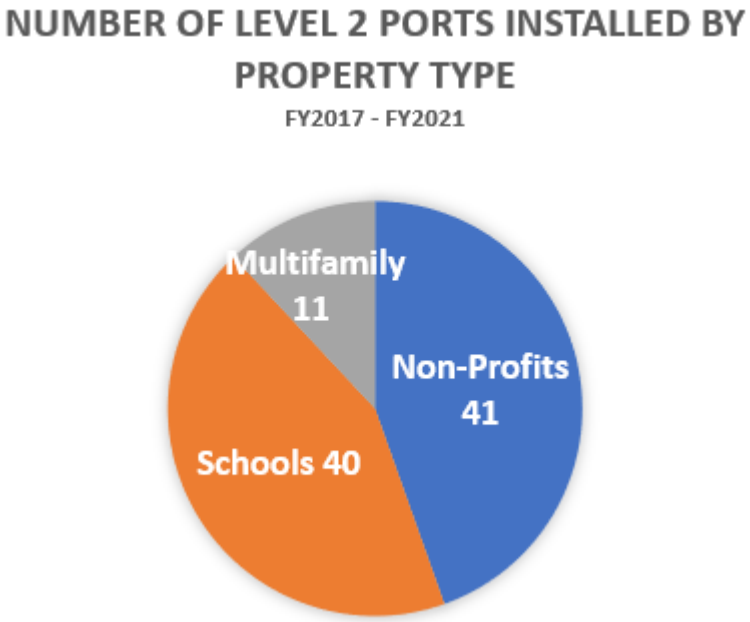
With internal and external stakeholder input, CPAU's programs are focused on building out EV charging infrastructure for commuters, residents and visitors, with a focus on multifamily (MF) households and lower income populations.

EV Charger Rebate Program:

Goal: Incentivize the installation of EV chargers at nonprofits and MF properties. CPAU currently offers up to $8000 per port for up to 10 ports.

Since the launch of the program in 2017, UTL has facilitated the installations of 92 new EV charging ports/connectors at 13 sites. Each project has averaged 12 months to complete and the average cost of each port is $10,000.

Figure 9: Ports Installed Through the EV Charger Rebate Program



EV Technical Assistance Program (EVTAP)

Goal: Facilitate the installation of 180-360 ports @ 60-90 sites by 2024

This end-to-end EV charging consulting program launched in fall of 2019, offering technical assistance for the installation of EV chargers at MF properties, non-profits and small to medium businesses (SMB). The program involves a series of site visits, technical evaluations, project designs, engineering reviews, review of contractor bids, building permit submittal support, application for incentives and project management of the installation. Projects are expected to take up to 2 years or more to reach completion.

COVID19 slowed things down as customers faced economic uncertainties and on-site visits were halted, but by the end of FY2021 interest began picking up, boosted by a call campaign to the largest MF properties and SMB properties.

Status at the end of FY2021:

- 0 installations complete
- 2 permit applications submitted
- 26 sites enrolled and working through the program
- Potential for 150 Level 2 ports and 10 Level 1 ports

Transformer Upgrade Rebate Program

Goal: Defray the cost of utility distribution system upgrades triggered by EVSE installations - costs that would otherwise be borne by the customers. CPAU offers up to $100,000 for multifamily & non-profit properties and up to $10,000 for single-family homes

Status at the end of FY2021:

0 Installations complete

California Electric Vehicle Incentive Project (CALeVIP)
Goal: Facilitate and incentivize the installation of EV chargers at commercial sites.
Status at the end of FY2021:

A total of $1.4M of funds were reserved by 6 site owners through CALeVIP, a commercial EV charging matching grant program sponsored by the California Energy Commission (CEC) with a total of $2 million in funding over two years. The sites include 2 hotels, 3 office sites and 1 Midtown retail parking lot and can potentially lead to 91 new Level 2 ports and 14 DC Fast Chargers.

California Clean Fuel Rewards (CCFR)
Goal: Incentivize the purchase of new EVs

Status at the end of FY2021: 563 participants since program launch in November 2020

Since the launch of this statewide point-of-sale-rebate, Palo Alto residents have earned rebates valued at $800,000. This translates to 2% of Palo Alto households that have purchased an EV taking advantage of this program. To date, the most popular battery EV continues to be the Tesla Model Y and Model 3 and the most popular plug-in hybrid continues to be the Toyota Prius Prime. CPAU will continue to contribute funds to this program as directed by the California Air Resources Board (CARB).

Curbside Charger Pilot
Goal: Install 10 curbside EV charging ports to expand the types and locations of charging options. Staff hopes to learn from this 5-year pilot.

Status at the end of FY2021:

- 0 installations
- 1 permit submitted
- 4 interested households

Education and Outreach
Goal: Answer all questions residents may have about EVs and micromobility to help them transition to clean modes of transportation.

Raising awareness about transportation electrification and alternative modes of transportation has been a top priority. Contract negotiations are in progress to offer a robust online and in-person calendar of EV education and outreach events. The goal is to offer monthly EV education classes including the City's first e-Bike workshop, EV financial incentives clinics and one-on-one case management for income qualified customers. There are also plans to offer EV group buy discount opportunities

Other Projects: Workplace Charging at SAP
Goal: Install EV infrastructure to meet employee demand. At the beginning of 2019, SAP Palo Alto

had 23 ports to provide charging for 349 registered users. This created many difficulties for the employees who had to move their vehicles promptly when their sessions were completed to enable others to connect. After attending a CPAU presentation about workplace charging at a Facility Manager's Meeting, SAP used the COVID lockdown as an opportunity to install more chargers.

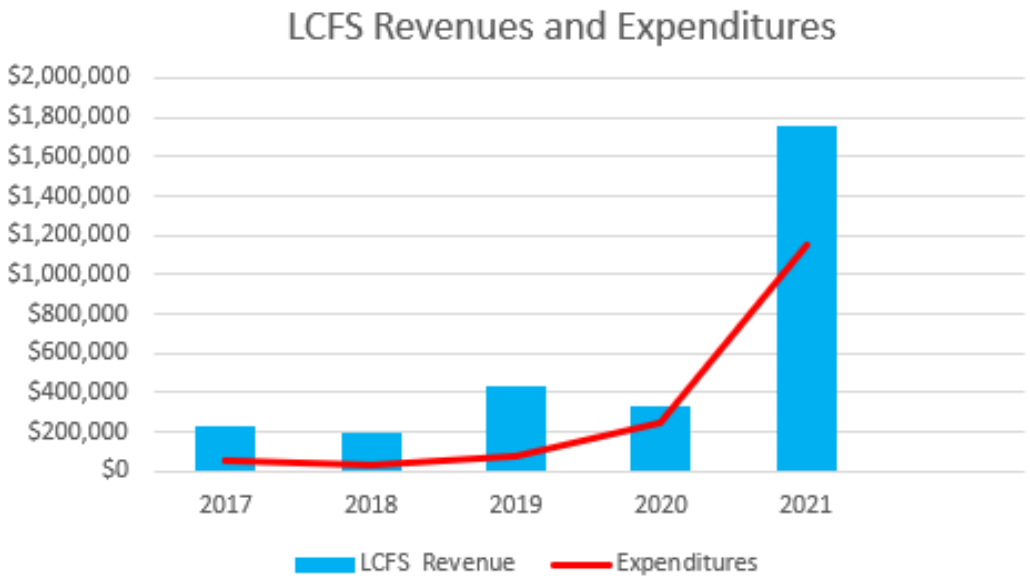
End of FY2021:

- 135 ports installed in 2021

4.3 Funding and Expenditures:

All CPAU EV programs are funded using income generated from Low Carbon Fuel Standard (LCFS) credits issued by the California Air Resources Board (CARB). These credits are received based on the number of EVs in CPAU territory and as producer of clean electricity. Income generated from LCFS proceeds must be used to accelerate transportation electrification. In FY2021, LCFS revenue totaled $1.7M and dollars spent was $1.15M of which $893,000 was transferred to the state-run point-of-sale CCFR EV rebate program and $150,000 was spent on rebates. At the end of FY2021, CPAU has cumulative LCFS revenues of $6.9M for future EV projects and programs.

Figure 10: FY 2017 to FY 2021 LCFS Revenue vs. Expenditures



5 RESILIENCY

5.1 Overview of Resiliency

Solar-plus-storage systems generally consist of a solar array connected to a battery storage system. These systems allow solar energy to be deployed both day and night, making the electricity grid more resilient to changes in demand. Rooftop solar-plus-storage systems also provide resiliency by providing backup power during power outages or public safety power shutoff events[4]. CPAU offers a solar calculator tool to help residents evaluate the economics of purchasing a solar or solar-plus-storage system for their home. The City also participates in BayArea SunShares – a group-buy program that offers discounts and vetted contractors for installing rooftop solar and battery storage systems.

In recent years, California's electric grid has been strained by wildfires and heat waves. As a means of addressing potential rolling outages during these events, in FY 2021 CPAU began planning an Emergency Load Reduction Pilot Program that will offer commercial customers financial incentives to voluntarily reduce energy use – either through conservation measures or operating back-up generation – during grid emergency events when the California Independent System Operator (CAISO) requires CPAU to reduce load. The goal is to avoid rotating outages and minimize customer costs. Program launch is planned for FY 2022.

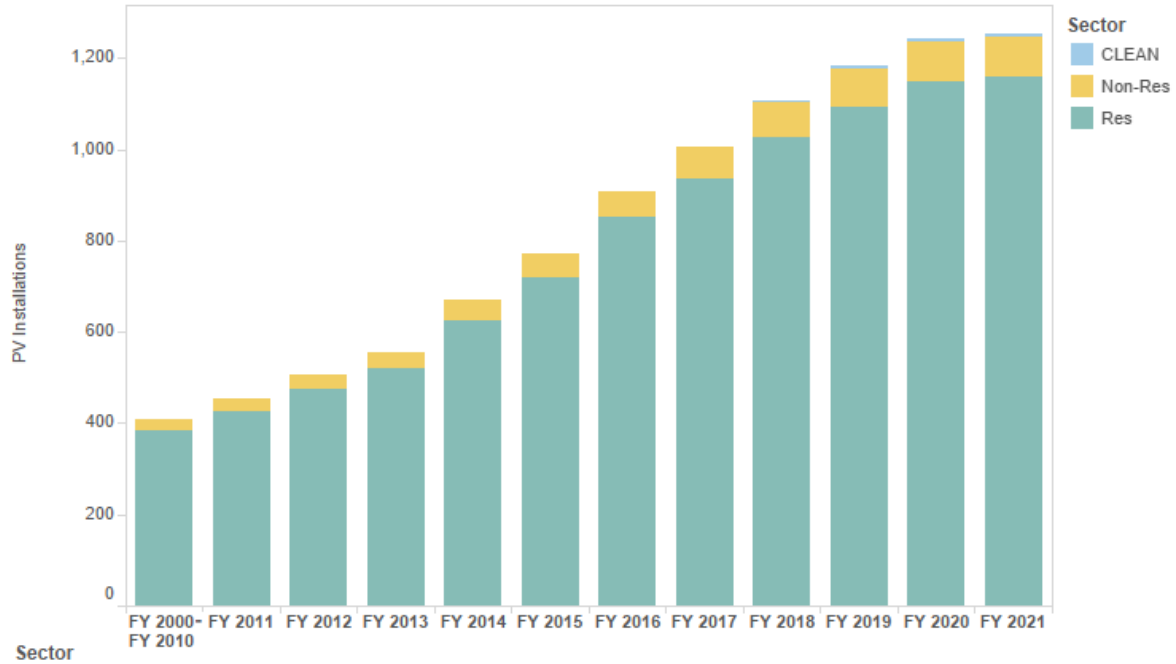
5.2 PV and Battery Storage System Installations in Palo Alto

At the end of FY 2021, PV installations in Palo Alto totaled 1,254, with 1,160 residential, 88 non-residential, and 6 Clean Local Energy Accessible Now (CLEAN) projects[5] installed since CPAU began supporting local solar PV installations in FY 2000. These customer-side generation systems represent 15.7 megawatts (MW) of generating capacity and are not included in CPAU's Renewable Portfolio Standard (RPS) supply requirements.

[4] During a power outage, a standard grid-tied rooftop solar system without battery system is required to disconnect from the grid and therefore will not provide electric power to the home.

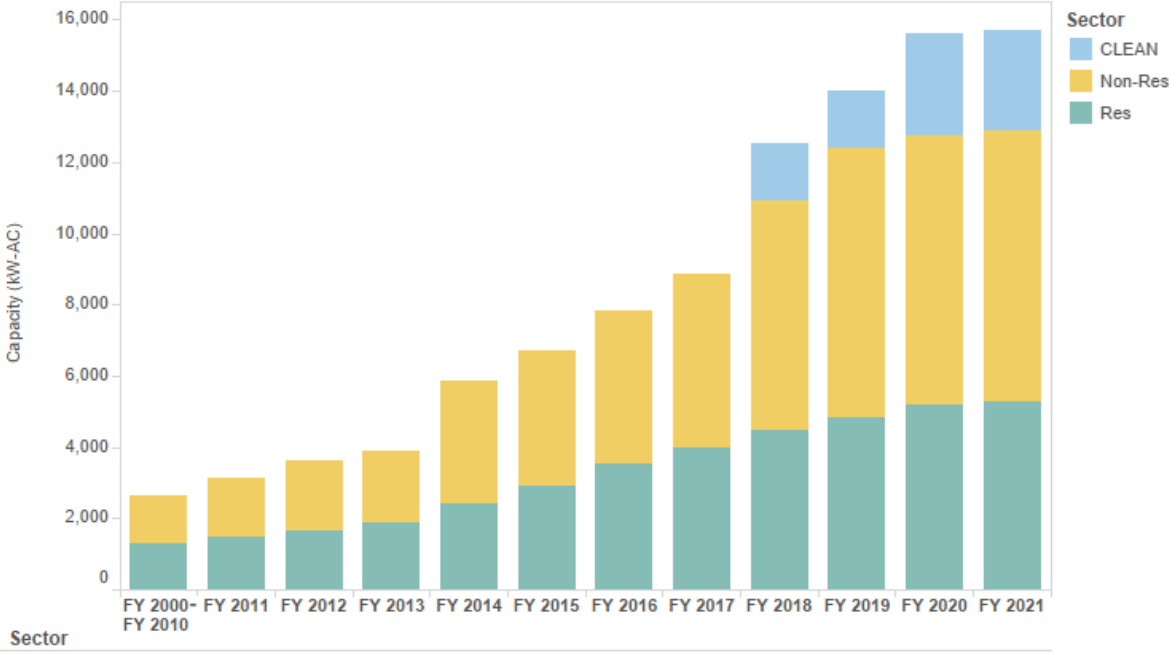
[5] CLEAN is a program that purchases electricity generation by renewable energy generation systems located in CPAU's service territory. The program provides a Feed-in-Tariff rate of $0.0165/kWh for the first 3 MW of installed solar capacity.

Figure 11: Photovoltaic (PV) Installations, Cumulative, up to June 2021



Sector	FY 2000-FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Res	384	426	475	522	626	719	851	936	1,027	1,092	1,149	1,160
Non-Res	24	27	30	34	43	53	59	69	77	86	87	88
CLEAN									5	5	6	6
Total	408	453	505	556	669	772	910	1,005	1,109	1,183	1,242	1,254

Figure 12: PV System Capacity (kW), Cumulative through June 2021



Sector	FY 2000-FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Res	1,279	1,455	1,657	1,865	2,427	2,906	3,544	3,971	4,466	4,848	5,175	5,268
Non-Res	1,384	1,682	1,988	2,042	3,424	3,804	4,289	4,887	6,469	7,564	7,583	7,619
CLEAN									1,588	1,588	2,841	2,841
Total	2,663	3,137	3,645	3,907	5,852	6,710	7,834	8,859	12,523	13,999	15,599	15,728

Palo Alto also continues to participate in the SunShares program, which is a group-buy residential solar and battery storage discount program serving the nine Bay Area counties. For CY 2020, Palo Alto ranked in first place among outreach partners for the number of SunShares signups (154 signups), number of contracts signed (32 contracts), number of kilowatts (kW) of solar capacity (178.92 kW), and number of kilowatt-hours (kWh) of storage capacity (211 kWh) that will be installed in Palo Alto through the program. Palo Alto's committed solar and storage capacity represents 13% and 16% of the total SunShares program capacity, respectively.

CPAU utilized SunShares as a launch-point from which to inform customers about programs such as the Home Efficiency Genie and heat pump water heater rebates. In CY 2020, eight SunShares participants continued with the Home Efficiency Genie's in-home assessments and one participant applied for a Heat Pump Water Heater rebate.

As of the end of FY 2021, there are a total of 35 battery storage installations with a total capacity of 362 kW, all of which were in the residential sector.

Figure 13: Battery Storage System Installations, cumulative through June 2021

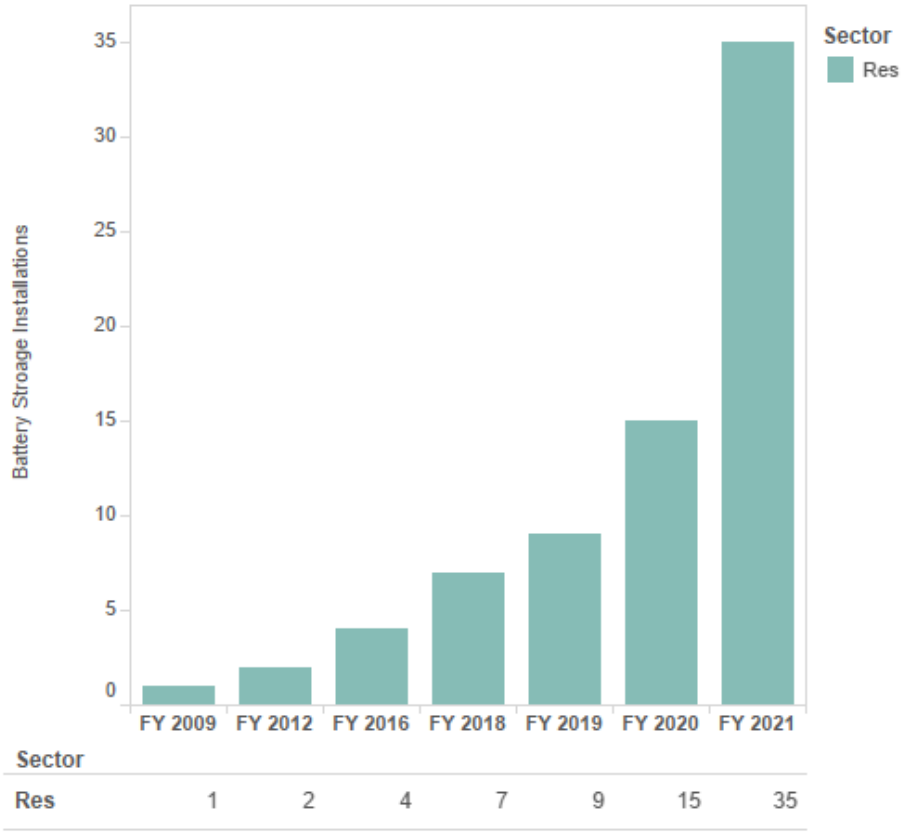
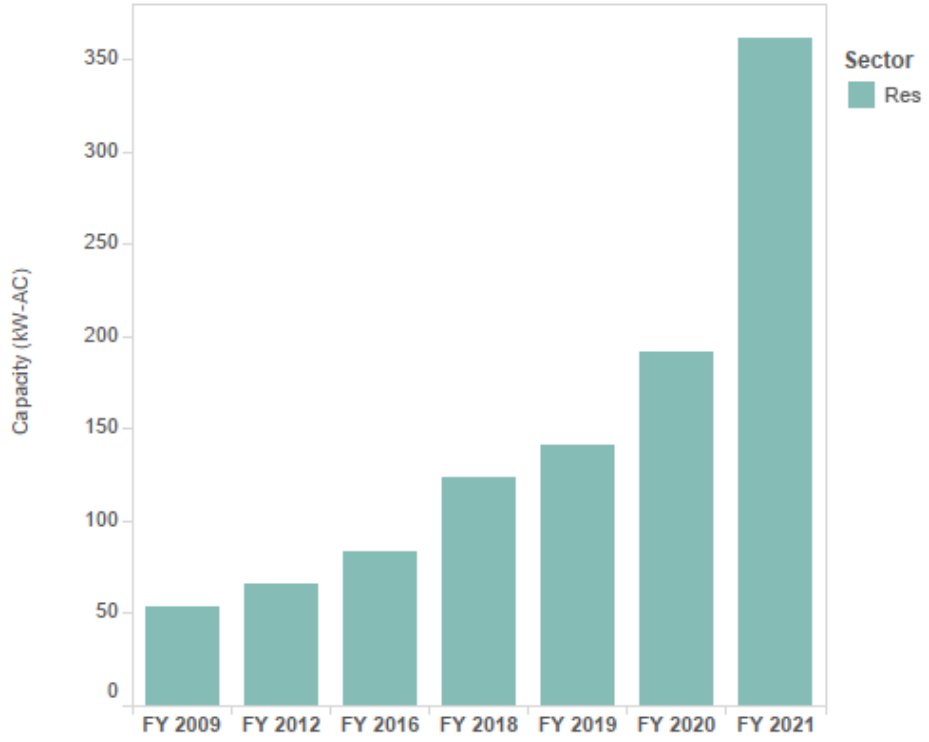


Figure 14: Battery Storage System Capacity (kW), cumulative through June 2021



Sector							
Res	54	66	83	124	141	192	362

APPENDIX A: PROGRAM DESCRIPTIONS

The programs offered by CPAU are designed to assist all customer groups achieve efficiency savings in electricity, natural gas and water in a cost-effective manner. Please see Appendix B for the savings totals associated with each program.

RESIDENTIAL PROGRAMS

- **Home Efficiency Genie**
  The Home Efficiency Genie (HEG) has become CPAU's flagship residential program. Launched in June 2015, the program enables our residents to call the 'Genie' to get free utility bill reviews and phone consultations. For a fee, residents also have the option to receive an in-depth home efficiency assessment which includes air leakage testing, duct inspections, insulation analysis, energy modeling and a one-on-one review of assessment reports with an energy expert. This package is also followed up with guidance and support throughout home improvement projects. The HEG program has a high educational component for Palo Alto residents, which likely leads to additional savings that staff cannot track and include in this program's savings totals.

- **MultiFamily Residence Plus+ Program**
  This CPAU program focuses on multifamily buildings, especially below-market rate apartment complexes, providing free, direct installation of energy efficiency measures to multifamily residences with 4 or more units including hospices, care centers, rehab facilities and select small and medium commercial properties.

- **Residential Energy Assistance Program (REAP)**
  REAP provides weatherization and equipment replacement services at no cost to low-income residents and those with certain medical conditions. This program has equal focus on efficiency and comfort, and therefore it is not included in the cost effectiveness calculation used in reporting. The program provides LED lighting, heating system upgrades, insulation for walls and roofs and weather-stripping for doors and windows.

- **Refrigerator Recycling Program**
  The Refrigerator Recycling Program was launched in March 2019 in collaboration with City of Santa Clara and funded by the Bay Area Air Quality Management District. Recycling old refrigerators and freezers saves energy, helps curtail growing peak load demand, and prevents the release of greenhouse gases through proper disposal of refrigerants. This program came to a close at the end of December 2021 when the grant funding was depleted. Through the program, over 450 old refrigerators and freezers were collected in Palo Alto, and 2,475 metric tons of greenhouse gas emissions were avoided.

- **Do-It-Yourself Water-Wise Indoor Survey**
  Palo Alto residents can request a free indoor water survey kit that can help conserve water and save money on utility bills. Residents also become educated on opportunities for conservation in their homes, and they can request free tools to improve efficiency. The program is offered in partnership with the Valley Water.

- **Free Water-Wise Outdoor Survey**
  Palo Alto residents can schedule a free outdoor survey with a trained irrigation professional. The trained specialist will provide an on-site evaluation of the resident's irrigation system and provide recommended upgrades and repairs. The program is offered in partnership with the Valley Water.

- **Landscape Rebate Program (LRP)**
  The Landscape Rebate Program provides rebates for various irrigation hardware upgrades, including rain sensors, high-efficiency nozzles, dedicated landscape meters, and weather-based irrigation controllers, as well as landscape conversion rebates that encourage residential and commercial customers to replace high-water-use landscaping with low-water-use landscaping. During FY 2016 residents were eligible to receive rebates of $3.00/square foot ($2.00 from Valley Water and $1.00 from CPAU). A new agreement with Valley Water was signed in early 2017, continuing our partnership in the LRP. Residents are now eligible to receive rebates of $2/square foot of replaced landscaping ($1.00 from Valley Water and $1.00 from CPAU).

- **Educational Programs and Workshops**
  A variety of educational programs and workshops are held throughout the year. Typically, residential workshops on water and energy programs occur in the spring near Earth Day and in the "Summer Workshop Series." Many workshops focus on water efficiency, landscaping, energy efficiency, solar, home comfort and green building. CPAU is also invited to table at various events throughout the year to educate residents about the various programs we offer. Customers also receive timely E-newsletters on a variety of efficiency matters.

BUSINESS PROGRAMS

- **Business Advantage Program**
  The Business Advantage Program provides energy efficiency and economic relief to small and medium businesses impacted by COVID-19. Because heating and cooling accounts for up to 60% of a business's energy bill, the BAP targets HVAC reductions by controlling use. The Business Advantage Program offers a free Energy Management System (EMS) with "smart" thermostat, controller, zone temperature sensors, cloud-based energy management portal, and air filter for indoor air quality improvements. Additionally, the Program also provides free Merv-13 air filters to participants and will enable customers to implement American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommended actions that improve indoor air quality through hourly air circulation.

- **Commercial Advantage Program**
  Business customers are offered rebates for energy efficiency upgrades including lighting, motors, HVAC, and custom projects that target peak demand and energy reductions.

- **Commercial and Industrial Energy Efficiency Program (CIEEP)**
  The Commercial and Industrial Energy Efficiency Program (CIEEP) offers free site assessment to identify cost effective energy efficiency opportunities, as well as technical assistance and efficiency rebates to key account customers to implement energy efficiency projects. Typical EE projects including lighting upgrades, lighting control including occupancy sensors, HVAC equipment upgrades, refrigeration system upgrades, etc.

- **Commercial and Industrial Water Efficiency Program**
  CPAU partners with the Valley Water to provide non-residential customers with free landscape irrigation audits, and direct installation of high-efficiency toilets and urinals. Rebates are available for facility process improvements, landscape conversions, irrigation hardware upgrades and weather-based irrigation controllers.

- **Landscape Survey and Water Budget Program**
  In collaboration with Valley Water, the City offers landscape irrigation surveys, water budgets and customized consumption reports for customers with large landscape sites through Waterfluence. Through a web portal, customers can access site-specific recommendations, verify water budget assumptions and request a free landscape field survey from an irrigation expert. This program has been in place since 2012 and to date there are 118 large landscape sites covered under this program.

- **PaloAltoGreen**
  This program enabled residents and businesses to pay a small premium for 100% renewable energy. In June 2014, Council terminated PaloAltoGreen for residential customers since the City's electric supplies are 100% carbon neutral. Commercial customers can still participate in this program by enrolling in the PaloAltoGreen 100% option or by purchasing blocks in 1,000 kWh increments. Participation enables commercial customers to be recognized under the U.S. EPA Green Power Leadership program or to earn Leadership in Energy and Environmental Design (LEED) Green Power credits.

- **Palo Alto Clean Local Energy Accessible Now (CLEAN) Program**
  Through the CLEAN (Clean Local Energy Accessible Now) program CPAU offers a feed-in tariff, wherein developers of renewable energy generation projects in Palo Alto can receive a long-term purchase agreement for the output of their projects. The generated electricity contribute towards fulfilling Palo Alto's Renewable Portfolio Standard (RPS) requirement. At the end of FY 2021, 2.8 MW were reserved of the program's 3 MW limit.

- **EV Charger Rebate Program**
  The California Air Resources Board (CARB) developed the Low Carbon Fuel Standard (LCFS) program in compliance with AB 32 (the Global Warming Solutions Act of 2006) to reduce the carbon intensity of transportation fuels used in California 10% by 2020. Electric utilities that provide electricity to charge electric vehicles (EVs) are eligible to receive LCFS credits. The City began participating in the program in April 2014 and CARB has been allocating LCFS credits to the City since then. Using funds from the sale of LCFS credits, CPAU launched an EV charger rebate program in FY 2017 to help build out EV infrastructure in anticipation of an increase in the number of EVs in Palo Alto from its current level of 2,500 to between 4,000 and 6,000 EVs by 2020. Staff determined that providing EVSE rebates for underserved segments of the market would be valuable, which would include multi-family and mixed-use buildings, schools and non-profits.

PROGRAMS FOR ALL CUSTOMER SEGMENTS

- **Solar Water Heating**
  CPAU began to offer rebates to residential and commercial customers that install solar water heating (SWH) systems in 2008. The SWH rebate program was mandated by CA AB 1470 and is administered by the Center for Sustainable Energy, which also administers SWH rebate programs in the San Diego area. Incentives are limited to solar water heating for domestic use; solar water heating systems for pools, spas, or space heat are not eligible. AB 797 (2017) extended the SWH mandate for two additional years, but the program expired on January 1, 2021.

- **Green Building Ordinance**
  In December 2019, City Council adopted an Energy Reach Code which requires additional energy efficiency savings beyond California's Title 24 building energy standards for non-residential mixed-fuel new construction projects. The City's Energy Reach Code has been in place since 2008 and has continued to evolve with California's building standards (Title 24). As a reach code specific to only the City of Palo Alto, energy savings from this code are savings that may be counted towards energy efficiency. CPAU is coordinating with Development Services to report the energy savings attributed to the Green Building Ordinance.

APPENDIX B: FY 2021 ACHIEVEMENTS BY DSM PROGRAM

Table B.1: FY 2021 Achievements by Efficiency Program

Sector / Program	Gross Annual Savings (kWh)	Net Annual Savings (kWh)	Annual Savings (Therms)	Water Savings (CCF)
Non Residential	**4,344,064**	**3,692,454**	**53,802**	**11,276**
Commercial Advantage Program	158,733	134,923	-	-
Commercial and Industrial Energy Efficiency Program	3,549,652	3,017,204	44,952	
Energy Reach Code/Green Building Ordinance	626,450	532,483	8,692	11,276
Small and Medium Business	9,229	7,845	158	-
Residential	**45,118**	**38,350**	**6,269**	**7,175**
Energy Reach Code/Green Building Ordinance	24,075	20,464	2,571	129
Home Efficiency Genie	29,132	24,762	10,307	575
Home Energy Reports	-	-	-	-
Home Water Reports	-	-	-	-
Heat Pump Water Heater	(15,498)	(13,173)	2,538	-
Multi Family Plus	2,900	2,465	1,160	
Residential Energy Assistance Program	-	-	-	-
Refrigerator Recycling	33,641	28,595	-	-
Water Programs	-	-	-	7,046
Grand Total	**4,389,182**	**3,730,804**	**60,071**	**18,451**

Table B.2: FY 2020 Achievements by CPAU's Solar Programs

Program	Number of Installations	Electricity		
		kW	Saved kWh/yr	%
PV – Residential	51	293	468,000	**18%**
PV – Commercial (w/ CLEAN)	3	1,330	2,128,000	**82%**
Solar Water Heating – Single Family Residential	0	-	-	**-**
Solar Water Heating – Multi-Family Residential Low-Income	0	-	-	**-**
Solar Water Heating – Commercial	0	-	-	**-**
Solar Programs Total	**54**	**1,623**	**2,596,800**	**100%**

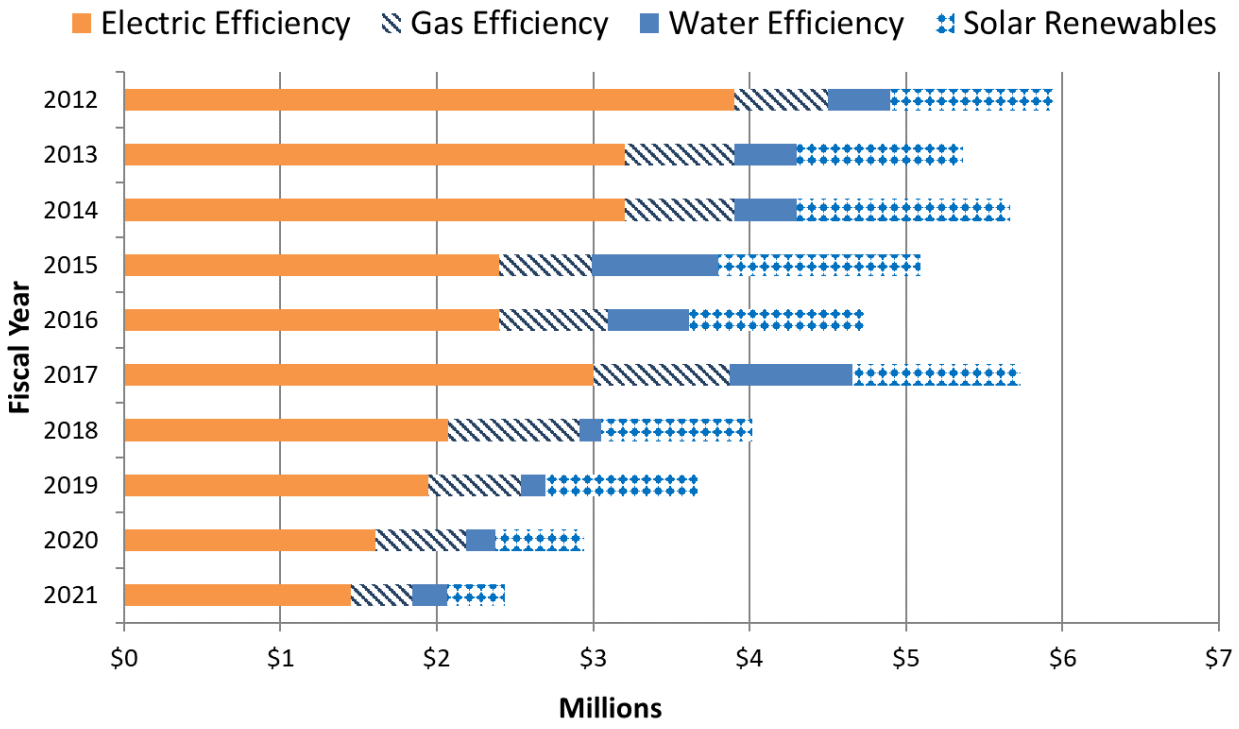
Table B.3: FY 2021 Expenditures by Program and Utility

Sector/Program	Electric Program Costs	Gas Program Costs	Water Program Costs
All	**$ 270,037**	**$ 96,191**	**$ 26,313**
Portfolio Admin	$ 270,037	$ 96,191	$ 26,313
Non Residential	**$ 1,363,912**	**$ 164,140**	**$ 13,709**
Commercial Advantage Program	$ 29,804	$ 4,644	$ -
Commercial and Industrial Energy Efficiency Program	$ 926,853	$ 135,676	$ -
Commercial Admin	$ 26,947	$ 16,168	$ 5,389
Green Building Ordinance	$ 10,399	$ 2,080	$ 8,319
Small and Medium Business	$ 32,869	$ 5,572	$ -
Solar Performance Based Incentive	$ 337,040	$ -	$ -
Residential	**$ 372,366**	**$ 127,298**	**$ 184,543**
Green Building Ordinance	$ -	$ -	$ -
Home Efficiency Genie	$ 69,270	$ 88,412	$ -
Home Water Reports	$ -	$ -	$ 37,500
Heat Pump Water Heater	$ 49,415	$ -	$ -
Mutli Family Plus	$ 5,207	$ 11,239	$ -
Residential Energy Assistance Program	$ 4,453	$ 4,453	$ -
Refrigerator Recycling	$ 41,678	$ -	$ -
Residential Admin	$ 28,993	$ 23,195	$ 5,799
Solar PV	$ 173,351	$ -	$ -
Water Programs	$ -	$ -	$ 113,188
Water Waste	$ -	$ -	$ 28,056
Grand Total	**$ 2,006,315**	**$ 387,628**	**$ 224,564**

APPENDIX C: HISTORICAL DSM PROGRAM EXPENDITURES

The chart below shows expenditures by type from FY 2012 through FY 2021. The Solar Renewables category is the sum of expenditures for solar water heating and PV Partners programs.

Figure C.1 DSM Expenditures for Electricity, Gas and Water by Year and Function



APPENDIX D: CITY POLICIES/PLANS AND STATE MANDATES IMPACTING DSM PROGRAM GOALS AND IMPLEMENTATION

CITY POLICIES/PLANS

Title	Description
Resolution No. 9241	LEAP, the Long-term Electric Acquisition Plan (April 2012)
Resolution No. 9322	Carbon Neutral Plan for Electric Supply (March 2013)
Resolution No. 9402	Local Solar Plan (April 2014)
Staff Report 3706	Program for Emerging Technology (April 2013)
Staff Report 2552	GULP, the Gas Utility Long-term Plan (April 2012)
Staff Report 6851	2015 Urban Water Management Plan (May 2016)
Staff Report 7304	Sustainability and Climate Action Plan (November 2016)
Staff Report 7718	Update of Ten-Year Energy Efficiency Goals for 2018 to 2027 (March 2017)
Staff Report 9761	2018 Electric Integrated Resource Plan (EIRP)
Staff Report 11789	Updated 10 Year Energy Efficiency Goals for 2022 to 2031

FULL LIST OF STAFF REPORTS

- **CY 2015:** cityofpaloalto.org/gov/agendas/city_managers_reports/2015.asp
- **CY 2016:** cityofpaloalto.org/gov/agendas/city_managers_reports/2016.asp
- **CY 2017:** cityofpaloalto.org/gov/agendas/city_managers_reports/2017.asp
- **CY 2018:** cityofpaloalto.org/gov/agendas/city_managers_reports/2018.asp
- **CY 2019:** cityofpaloalto.org/gov/agendas/city_managers_reports/2019.asp

STATE MANDATES

AB 209 (2022) Directs the California Energy Commission to develop and implement an Equitable Building Decarbonization Program, which includes a direct install program focused on low-to-moderate income households and a statewide incentive program to accelerate deployment of low-carbon building technologies. AB 179 (2022) provides CEC with $112 million for the Equitable Building Decarbonization Program for its first year (2022-2023) , and up to $922 million in funding over the next four fiscal years.

SB 1206 (2022) Prohibits the sale or distribution of bulk hydrofluorocarbons (HFCs) or HFC blends that exceed by a specified global warming potential (GWP) threshold. Reclaimed refrigerants are exempt from this requirement. The GWP limits for bulk HFCs are:

< 2,200 beginning January 1st, 2025 (includes R-404A and R-507)

<1,500 beginning January 1st, 2030 (includes R-410A)

<750 beginning January 1st, 2035 (includes R-134A, R-448A/B, R-440A/B)

AB 1279 (2022) Codifies California's existing goal of carbon neutrality by 2045.

EO N-79-20 (2020) Governor Executive Order: Establishes a statewide goal that 100% of in-state sales of new passenger cars and trucks will be zero-emissions by 2045, and that all operations of medium and heavy-duty vehicles in the State shall be zero-emissions by 2045 where feasible.

EO B-55-18 (2 (2018) Governor Executive Order: Establishes a statewide carbon neutrality goal by 2045.

AB 3232 (2018) Requires all new buildings after 2030 to be zero-emissions buildings. Also requires the state to establish a strategy to reduce GHG emissions from existing buildings by 50 percent below the 1990 levels by January 1, 2030.

SB 606, AB 1668 (2018) Establish a new foundation for long-term improvements in water conservation and drought planning to adapt to climate change and the resulting longer and more intense droughts in California.

AB 797 (2017) Extends existing Solar Water Heating Programs and changes the terminology of "water heating" to "solar thermal."

EO B-37-16 (2016) Governor Executive Order: Establishes "Making Water Conservation a California Way of Life", with four primary goals: (1) use water more wisely, (2) eliminate water waste (water loss from distribution systems), (3) strengthen local drought resilience, and (4) improve agricultural water use efficiency and drought planning.

AB 802 (2015) Requires utilities to maintain records of the energy usage data of all buildings to which they provide service for at least the most recent 12-month period and, upon the request and authorization of the owner (or owner's agent), provide aggregated energy usage data to the owner in the ENERGY STAR Portfolio Manager.

AB 1164 (2015) Prohibits cities and counties from enacting or enforcing any ordinance or regulation prohibiting the installation of drought tolerant landscaping, synthetic grass, or artificial turf on residential property.

AB 1236 (2015) Obliges cities and counties to adopt an ordinance, with certain specific elements, creating an expedited permitting process for electric vehicle charging stations. For a city the size of Palo Alto, the ordinance must be passed by September 30, 2017. The adopted ordinance passed 9-0 on June 27th, 2017: http://www.cityofpaloalto.org/civicax/filebank/blobdload.aspx?BlobID=59416

SB 350 (2015) The Clean Energy and Pollution Reduction Act of 2015 sets targets for utilities of 50%

renewable electricity retail sales and double the energy efficiency savings in electricity and natural gas, both by 2030. The law grants compliance flexibility for POUs that achieve 50% or more of retail sales from certain large hydroelectric power.

AB 2188 (2014) Requires a city and/or county to adopt an ordinance creating an expedited, streamlined permitting process for small residential rooftop solar energy systems.

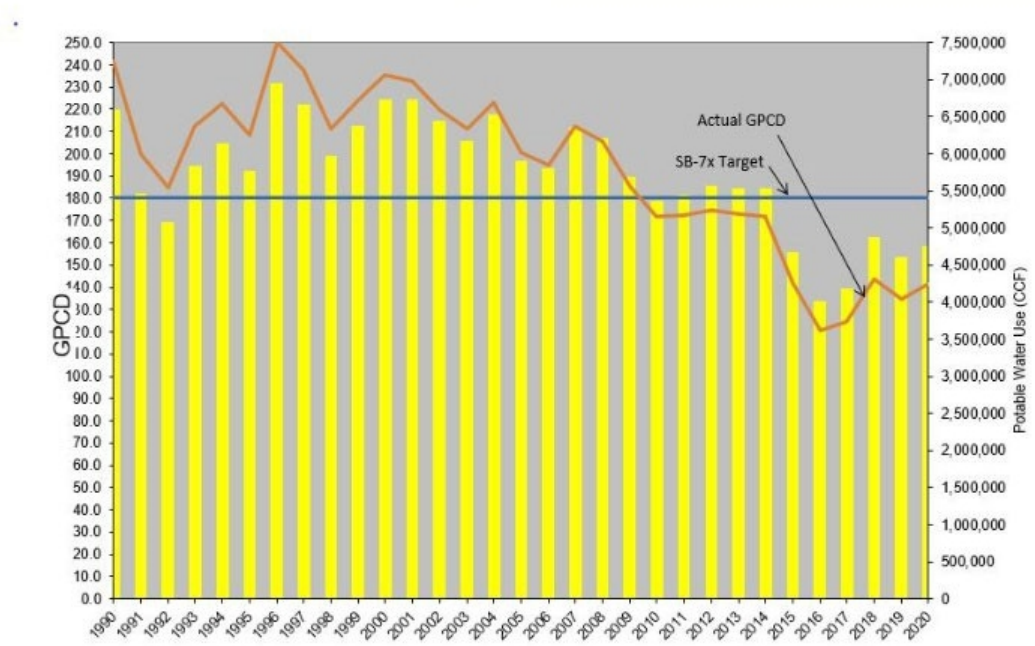
EO B-36-15 **Governor Executive Order**: Due to continued water shortages**,** on January 17, 2014, the Governor proclaimed a State of Emergency and directed state officials to take all necessary actions to make water immediately available. Part of the proclamation included a 20 percent water reduction goal. On April 1, 2015, the Governor issued an Executive Order (B-36-15) mandating the State Water Resource Control Board impose restrictions leading to a 25 percent reduction in potable water use through February 28, 2016.

SB 1420 (2014) Added a requirement to report on distribution system water loss to the UWMP.

AB 2227 (2012) AB 2227 changed the triennial energy efficiency target-setting schedule to a quadrennial schedule, beginning March 15, 2013 and every fourth year thereafter. The last EE goals update was due to be submitted to the California Energy Commission by March 15, 2017. The next EE goals update will need to be submitted by March 15, 2021.

AB 2514 (2010) Mandates a local publicly owned electric utility to determine appropriate targets, if any, for the utility to procure viable and cost-effective energy storage systems and to adopt an energy storage system procurement target, if appropriate, to be achieved by the utility by December 31, 2016, and a second target to be achieved by December 31, 2021.

SBx7-7 (2009) Mandates a statewide per capita potable water use reduction of 20% by the year 2020. Urban water suppliers are required to identify a baseline usage (expressed in gallons per capita per day, or GPCD) for their service area, calculate a target to meet the 20% reduction, and report on compliance in the 2020 UWMP. The City's 2020 UWMP confirms the City met the Conservation target by more than 20%.



"Making Conservation a California Way of Life" is the new generation legislation for water conservation. The targets under SBx7-7 were pretty easy to meet especially given the drought and the water use reductions that resulted. The new targets will include and indoor residential per capita use, outdoor residential use, water loss, and some C&I audit requirements. That is all currently under development.

AB 1103 (2007) Requires electric and gas utilities maintain records of the energy consumption data of all nonresidential buildings to which they provide service and that by January 1, 2009, upon authorization of a nonresidential building owner or operator, an electric or gas utility shall upload all of the energy consumption data for the specified building to the EPA Energy Star Portfolio Manager in a manner that preserves the confidentiality of the customer. This statute further requires a nonresidential building owner or operator disclose Energy Star Portfolio Manager benchmarking data and ratings, for the most recent 12-month period, to a prospective buyer, lessee, or lender. Enforcement of the latter requirement began on January 1, 2014.

AB 1470 (2007) Solar Water Heating and Efficiency Act of 2007. Requires the governing body of each publicly owned utility providing gas service to retail end-use gas customers, to adopt, implement, and finance a solar water heating system incentive program.

SB 1 (2006) The California State Legislature enacted SB 1 to encourage the installation of 3,000 megawatts (MW) of photovoltaic (PV) solar energy by the year 2017. SB 1 requires all publicly owned utilities to adopt, finance and implement a solar initiative

program for the purpose of investing in and encourage the increased installation of residential and commercial solar energy systems. CPAU's share of the state goal is 6.5 MW. In 2007, CPAU increased the PV Partners program funding to meet SB1 requirements. CPAU has fully reserved all rebate funds as of April 2016.

AB 2021 (2006) Requires the CEC on or before November 1, 2007, and every 3 years thereafter, in consultation with the commission and local publicly owned electric utilities, to develop a statewide estimate of all potentially achievable cost-effective electricity and natural gas efficiency savings and establish statewide annual targets for energy efficiency savings and demand reduction over 10 years.

AB 1881 (2006) Requires cities and counties to implement a Water Efficient Landscape Ordinance which is "at least as effective as" the Department of Water Resources (DWR) Model Ordinance in reducing landscape water use. Requirements include enforcing water budgets, planting and irrigation system specifications to meet efficiency criteria.

SB 1037 (2005) Requires each local publicly owned electric utility, in procuring energy, to first acquire all available energy efficiency and demand reduction resources that are cost-effective, reliable, and feasible. Also requires each local publicly owned electric utility to report annually to its customers and to the (CEC) its investment on energy efficiency anddemand reduction programs.

AB 1890 (1996) Requires electric utilities to fund low-income ratepayer assistance programs, public purpose programs for public goods research, development and demonstration, demand- side management and renewable electric generation technologies

AB 797 (1983) The Urban Water Management Planning Act (AB 797) requires all California urban water retailers supplying more than 3,000 acre feet per year or providing water to more than 3,000 customers to develop an UWMP. The plan is required to be updated every five years and submitted to the Department of Water Resources before December 31 on years ending in 5 and 0.