



UTILITIES AT A GLANCE

FISCAL YEAR 2023



Hello Neighbor!

The City of Palo Alto Utilities (CPAU) provides you with five municipal utility services: electricity, water, wastewater, natural gas and fiber optics. The City's Public Works Department provides refuse collection and processing for recycling, compost and garbage, wastewater treatment, and stormwater management services. You receive one monthly bill for all of these services.

We work hard to deliver safe, reliable, environmentally sustainable, and cost-effective services.

CPAU is owned by the people we serve—you! Our employees are your friends and neighbors and we take great pride in public service. CPAU is an award-winning utility recognized nationally as innovative, and a leader in reliability, safety, environmental sustainability, workforce development, and system improvement.

When you share your voice and viewpoints with us, you help influence our decisions. By working together, we can produce better results. We welcome your input on important issues. Please stay engaged with us and feel free to join us at a City Council or other advisory committee meeting at cityofpaloalto.org/councilagendas

Important decisions are made locally, by both citizens and their elected officials, through public processes and civic engagement. We call that "local solutions for local issues." In Palo Alto, we put the "public" in "Public Power."

CPAU customers benefit from local control of utilities in several ways:

- community values-driven policies, programs and services;
- reliable and safe operations;
- a high level of responsiveness and accountability to our customer-owners; and
- competitive prices.

This document provides information for the time period of July 1, 2022 through June 30, 2023 (fiscal year 2023).

Your electricity is carbon neutral. All of it. Since 2013, Palo Alto has provided 100% carbon neutral electricity. Carbon neutral means that we match electricity demand with carbon free resources on an annual basis while accounting for the emissions associated with purchases and sales of grid electricity every hour of the year.

ELECTRICITY

Our electric portfolio includes solar, wind, and hydroelectric generation—all carbon free! We also generate electricity from landfill gas, which keeps harmful methane out of the environment while powering local homes and businesses.

The chart below shows where our electricity came from in calendar year 2022. Our fuel mix may change from year to year primarily due to hydrological conditions. Power content labels are available at cityofpaloalto.org/powercontentlabel.

On top of these sustainability benefits, CPAU's electric power rates are still competitive with other public utility providers and generally lower than private utilities in the Bay Area.

CPAU has long been a leader in reducing greenhouse gas (GHG) emissions and energy consumption since establishing its first Climate Protection Plan in 2007. Strong community support for renewable energy has enabled CPAU to surpass the state's requirement that renewable energy account for 60% of a utility's electricity resources by 2030. For the year ending June 30, 2023, CPAU received 57% of its electricity supply from renewable resources, compared to the state Renewable Portfolio Standard (RPS) target of 40% for this period.

In 2022, the Palo Alto City Council adopted an ambitious goal of achieving carbon neutrality by 2030, building on the City's existing goal of cutting emissions 80% below 1990 levels by 2030. As of 2021, Palo Alto's GHG emissions were 54%

below 1990 levels, largely in part through our carbon neutral energy supply. Learn more at cityofpaloalto.org/climateaction

We are continually investigating new carbon free resource options as well as innovative programs to keep the electricity portion of your bill as low as possible. CPAU offers a variety of energy efficiency services and programs to support you in using electricity as wisely as possible whether that be at your home or business. Through energy efficiency and sustainability programs, we are helping customers reduce energy consumption to improve the comfort of their home or building and keep utility bill costs low.

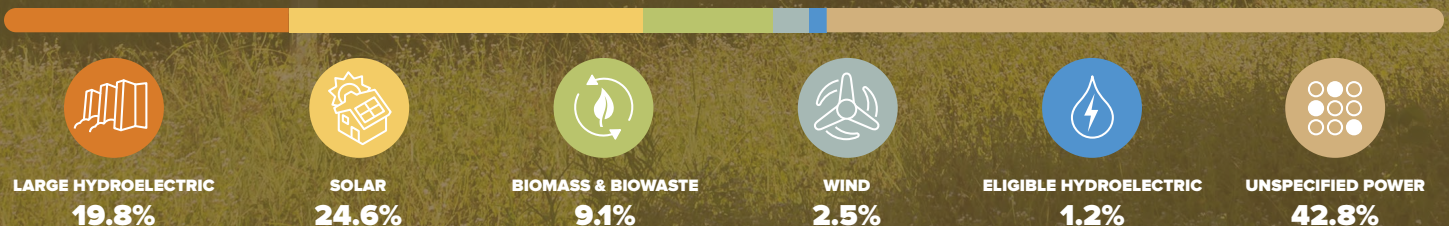
CPAU holds workshops and webinars to share helpful information on ways you can improve the efficiency and comfort of your home and building energy use. Your community-owned utility offers free utility bill consultations, subsidized home efficiency assessments, and rebates to make it easy on your pocketbook and help keep your ongoing utility costs low.

We can't clean our air and prevent global climate change simply by using renewable energy. Our transportation options must be expanded to include awareness of alternatives to single-occupant and internal combustion engine vehicles. Examples of this include electric vehicles (EVs) and electric bikes (eBikes) that can be charged with renewable electricity or active transportation modes such as biking, public transit, and walking.

Palo Alto sources renewable energy from all over the state of California.

-  Hydroelectric
-  Landfill Gas
-  Wind Farm
-  Solar

Palo Alto's 2022 Power Mix



Road transportation represents the largest percentage of Palo Alto’s existing carbon footprint. Reducing vehicle miles traveled (VMT) is one solution for reducing transportation-related GHG emissions.

Our community has embraced electric transportation, and now about one out of every four households in Palo Alto drives an EV—one of the highest adoption rates in the country. Each EV that replaces a fossil fuel vehicle removes over 4 metric tons of carbon dioxide a year.

Toward that end, we offer incentives for multifamily and mixed-use properties, schools and nonprofits to install EV charging equipment on their premises. Businesses are not eligible for these incentives. CPAU also partners with state and regional groups to leverage EV rebates to our community members. Interested in learning more? Check out cityofpaloalto.org/ev

Promoting Healthy and Active Transportation

Encouraging more active means of transportation, such as walking, biking and transit, is a strategic priority for the City. Other public policy efforts that will lower GHG emissions include increasing the availability of mass transit and shared mobility services.

Did you know that more than 62% of Palo Alto families walk, bike, bus, carpool or take transit to school on a given day? To learn more about carbon free school route safety, check out the City’s Safe Routes webpage at cityofpaloalto.org/saferoutes. To learn how to start biking to reduce your personal VMT, check out the City’s walking and biking webpage at cityofpaloalto.org/Departments/Transportation/Bicycling-Walking

For those who need to travel distances that are not reachable via biking or transit, CPAU is encouraging EV adoption by:

- expanding the City’s EV charging infrastructure;
- offering rebates, in partnership with the state, to customers who purchase or lease an eligible battery electric or plug-in hybrid EV;
- providing rebates and technical assistance to customers who install EV chargers at multifamily properties and nonprofits;
- working with community members to find other ways to increase the number of EVs registered in Palo Alto.

As important as alternate mobility is to fighting GHG emissions and climate pollution, it is still only another piece of the puzzle. Reducing the use of natural gas in homes, buildings and businesses is another important step the City is taking to improve our climate.

Palo Alto has been promoting the benefits of an all-electric lifestyle to homeowners with resources such as our electrification webpage at cityofpaloalto.org/electrification. The City offers a program to help residents upgrade their gas water heater to a heat pump water heater through financial incentives, including rebates and on-bill financing, as well as assistance with permits and installation. Details on this program can be found at cityofpaloalto.org/switch



The City also has programs and rebates for businesses interested in improving energy efficiency and pursuing electrification projects. In 2022, the City launched two new programs that offer free assessments and ongoing technical assistance to support businesses through efficiency and electrification projects. Participants in these programs are also eligible for rebates for these upgrades. Details can be found at cityofpaloalto.org/businessenergyadvisor and cityofpaloalto.org/business electrification.

CPAU is working on ways to integrate these technologies into our community while continuing to provide you with the same reliable, low-cost utility service you have come to expect.

At the same time, we are continuing to digitize our business processes to improve worker safety, streamline workflows, lower costs and improve your CPAU experience.

CPAU Electric System at a Glance—Fiscal Year (FY) 2023

Number of customer meters	Residential	26,220
	Commercial	3,640
	City	142
Miles of 60 kilovolt sub-transmission lines		19 miles
Miles of primary overhead distribution lines		116 miles
Miles of primary underground distribution lines		195 miles
Highest peak load in megawatts		178 MW
Substations (with 300 megavolt amps total capacity)		9
Total annual kilowatt-hours purchased		852,570,000 kWh
Total carbon neutral power sources		100%
Traffic signals (intersections) maintained		109
Streetlights maintained		7,033
Savings through efficiency programs (cumulative savings, FY 2008–2023, in kilowatt-hours)		75,006,234 kWh

More information is available at cityofpaloalto.org/UtilitiesataGlance

The water that comes out of your faucet starts as snow in the Sierra Nevada and Yosemite National Park approximately 200 miles east of Palo Alto. As the snow melts each spring, water drains into the Tuolumne River, beginning its three-day journey to our community. The system for delivering that water is almost entirely gravity-fed, requiring almost no use of fossil fuels to move water from the mountains to your tap.

WATER RESOURCES



Palo Alto's drinking water, which comes from the Tuolumne River in the Sierra Nevada mountains, is among the purest in the world.

PROGRESS FACTS

15%

per capita reduction in water use by Palo Alto residents over the past 10 years

60

miles of drinking water pipes repaired and replaced in recent years

602,671,493

gallons of water saved from 2008-2023—enough to fill more than 900 Olympic-sized swimming pools

Drinking Water

Water usage typically rises during the summer due to outdoor watering of lawns and plants and declines in the winter.

To ensure that the water we deliver to homes and businesses meets or exceeds federal and state drinking water standards, your water is tested and treated every day. Thousands of tests are performed to ensure that the water we deliver is safe and pure.

California benefits from a Mediterranean climate, but that also means it is not uncommon for our State to experience multi-year drought cycles that challenge our water supplies. Water consumption, although not frequently thought about by most of us, must be a conscious choice. Thank you for using water wisely!

CPAU has many water conservation programs in place, such as outdoor water surveys, rebates for landscape and irrigation system upgrades, laundry graywater reuse, and indoor water-saving measures. Conservation is becoming a way of life for all of us to prevent undue strain on our water resources. You can find useful information and ideas for reducing your water use at cityofpaloalto.org/waystosave or by logging in to your WaterSmart portal at cityofpaloalto.org/watersmart

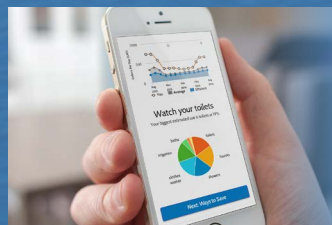
CPAU is also investing in advanced metering technology and other system

upgrades to ensure that we can provide for the growing needs of our community. Our century-old network of pipes, pumps and distribution services needs to be maintained and upgraded to reduce water leaks and to make sure the system continues to meet your needs. In recent years, we have repaired or replaced over 60 miles of drinking water pipes so we can continue delivering safe, reliable water to homes and businesses.

Wastewater Treatment and Recycled Water

Ever wonder what happens to water after you flush the toilet or wash the dishes? In most parts of Palo Alto, your wastewater travels through sewer lines to the Regional Water Quality Control Plant (RWQCP). This water is combined with wastewater from Mountain View, Los Altos, Los Altos Hills, Stanford University, and the East Palo Alto Sanitary District for treatment at the RWQCP. Each day about 20 million gallons of wastewater undergo a day-long treatment process that removes pollutants before it is released to the Palo Alto Baylands and the Renzel Marsh Freshwater Pond along East Bayshore Road. Ultimately, water from the Renzel Marsh Pond ends up in San Francisco Bay, where it helps to maintain a healthy ecosystem.

Some of the wastewater is treated to high-quality recycled water standards that meet rigorous state requirements for non-potable



Residents and businesses can track their water use and learn how to save water through the City's WaterSmart portal.

Hetch Hetchy Regional Water System



uses. This recycled water is transported through a network of purple pipes that are separate from the drinking water network.

CPAU uses recycled water to irrigate the municipal golf course, Byxbee Park, and Greer Park. Recycled water also supplies the duck pond, Animal Services Center, and industrial processes at the Regional Water Quality Control Plant.

Using recycled water instead of clean drinking water for non-potable purposes such as irrigating landscapes and construction dust control takes the pressure off our freshwater resources and helps buffer our community against drought. Recycled water is available for pickup at the Regional Water Quality Control

Plant for use by Palo Alto residents and construction projects. Recycled water permit application and instructions are available at cityofpaloalto.org/recycledwater.

We are evaluating other ways to increase the use of treated wastewater. Learn more at cityofpaloalto.org/recycledwater or contact us at RecycledWater@CityofPaloAlto.org with questions.



In 2023 the RWQCP produced 240 million gallons of recycled water, and cleaned and treated more than 7 billion gallons of wastewater before its release to San Francisco Bay.

CPAU Water System at a Glance—Fiscal Year (FY) 2023

Number of customer meters	Residential	16,616
	Commercial	3,572
	City	345
Miles of water main		231 miles
Number of wells		8
Number of reservoirs		7
Total storage capacity		13 million gallons
Total water purchased		2.83 billion gallons
Peak flow in million gallons per day		16.5 MGD
Fluoride added in parts per million		0.7 ppm
Savings through water conservation (cumulative savings, FY 2008-2023, in gallons)		602,671,493

CPAU Wastewater System at a Glance—Fiscal Year (FY) 2023

Number of accounts	Residential	20,637
	Commercial	1,816
	City	46
Effluent treated from Palo Alto sewers		2 billion gallons per year
Total miles of sanitary sewer lines		216 miles

More information is available at cityofpaloalto.org/UtilitiesataGlance

In our community, natural gas (methane) is one option customers can use to heat homes and businesses, cook food, dry clothes, and heat water for showers and industrial processes. CPAU has operated a gas distribution system in Palo Alto since 1917. Safety is our top priority, and we work hard to ensure that our gas systems are operated and maintained to deliver a safe and reliable supply for our customers.

NATURAL GAS (METHANE)

Natural gas is a fossil fuel that produces carbon dioxide, a common GHG, when burned. In addition, natural gas itself is primarily methane, a GHG more potent than carbon dioxide. Some methane inevitably leaks into the atmosphere when natural gas is produced and transported.

Natural gas is a non-renewable fossil fuel so its use will always produce GHG emissions. Since 2017, CPAU has provided carbon offset natural gas to its customers. This means that carbon offsets are purchased to balance natural gas use in Palo Alto.

Offsets are actions taken to reduce or “offset” the amount of GHGs emitted. For example, buying new forest growth to store GHGs in one geographic area can act to offset GHG emissions in another area.

In October 2022, Palo Alto City Council passed an ambitious carbon neutral by 2030 goal, building on the City’s existing goal of reducing carbon emissions 80% by 2030, relative to 1990 levels (our “80 x 30” goal). Once we achieve 80 x 30, we will need to purchase offsets or invest in carbon removal to achieve carbon

A CPAU employee replacing a natural gas main.



neutrality. In the short term, the carbon offsets purchased to balance natural gas use in Palo Alto will help us achieve carbon neutrality. In the long term, we will continue to reduce emissions and look for opportunities to invest in carbon removal.

As you might imagine, we use more gas during the winter to heat our homes and buildings, and we use less gas during the summer.

The good news is that the expansion of renewable electricity and the deployment of new heat pump technologies make electric water and space heating a more climate-friendly alternative. We recognize that support for these new products is increasing across the Bay Area and beyond, and we are committed to helping Palo Altans find more ways to reduce their carbon emissions. In fiscal year 2023, CPAU's gas efficiency programs reduced gas use by 12,765 therms.

A big part of a decarbonized energy future starts with stakeholder engagement. Talking to customers, business leaders, and energy experts is the first step in planning a long-term transition away from natural gas. Our programs, policies, and education efforts are developed with support and input from our community stakeholders and customers.

If you have a gas service at your home or business, consider switching gas-fueled appliances to electric or if that is not an option, look for ways to improve energy efficiency to reduce your carbon footprint. The City offers rebates and discounts for installing heat pump water heaters

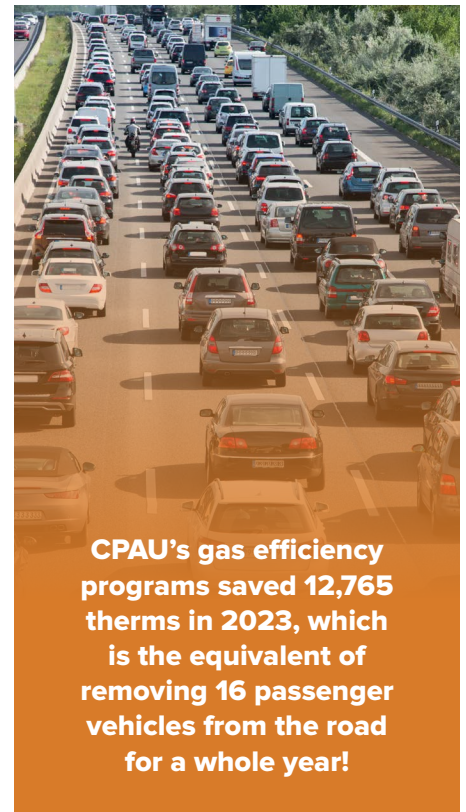


The City offers rebates of up to \$3,500 for installing a heat-pump water heater.

at homes and electrification rebates for appliance upgrades at businesses. Since CPAU's electricity is carbon neutral, there will be an immediate positive impact for the climate. Residents can also contact the Home Energy Advisor for advice on efficiency and/or electrification projects. Visit cityofpaloalto.org/electrification to learn more about these programs.

Though we recognize the industry's movement toward building electrification, CPAU is committed to maintaining the existing gas distribution system safely as long as it operates. Learn more about how to safely operate gas appliances at your home and what our responsibilities are for maintaining the natural gas distribution system at cityofpaloalto.org/safeutility

A big part of a decarbonized energy future starts with stakeholder engagement. Talking to customers, business leaders, and energy experts is the first step in planning a long-term transition away from natural gas.



CPAU's gas efficiency programs saved 12,765 therms in 2023, which is the equivalent of removing 16 passenger vehicles from the road for a whole year!

CPAU Natural Gas at a Glance — Fiscal Year (FY) 2023

Number of customer accounts	Residential	21,599
	Commercial	2,202
	City	36
Pressure of distribution system (in pounds per square inch)	The City of Palo Alto operates the natural gas distribution system at a maximum operating pressure of 25 psi, with the exception of the Veterans Administration Hospital, which is operated at 40 psi	
Total miles of gas mains	210.5 miles	
Total miles of gas service lines to customer premises	204 miles	
Savings through efficiency programs (cumulative savings, FY 2008–2023)	2,602,666 therms	

More information is available at cityofpaloalto.org/UtilitiesataGlance

Palo Alto is recognized worldwide as a leader in cutting-edge technological development, and a place where innovative ideas are developed and launched. Known as the “Birthplace of Silicon Valley,” Palo Alto is where a number of today’s major high-tech companies were incubated.

FIBER OPTICS

CPAU got into the fiber optic business nearly 30 years ago for the same reason it got into the electricity business more than 120 years ago: to better serve residents and businesses at a competitive price.



Little surprise, then, that CPAU has developed a “dark” fiber optic ring of nearly 48 miles for ultra-fast internet access to support innovation, education and commerce. Dark fiber consists of fiber optic cables that are unused and available to be “lit” via light wavelengths to transmit data. The City leases sections of its dark fiber to businesses that work with an Internet Service Provider (ISP) to light leased cables for superior capacity, speed, and secure reliable internet service.

Local businesses and organizations are honing their digital edge using CPAU’s fiber optic network. In a tech-oriented economy, having secure access to fast internet service is no longer a luxury. It is a necessity.

The City is now exploring providing fiber optic broadband services directly to homes and businesses. The goal is to provide high-speed and reliable internet to all community members to support work, education and learning, health care and delivery of government services. Learn more at cityofpaloalto.org/paloaltofiber

CPAU Dark Fiber at a Glance — Fiscal Year (FY) 2023

Year of fiber optic backbone construction	1997
Route miles of fiber cable (complete backbone):	58.06 miles
Miles of overhead fiber optic cable	30.24 miles
Miles of underground fiber optic cable	73.43 miles
Commercial buildings connected to fiber optic backbone in Palo Alto	164
Gross sales “dark fiber* licensing”—customer & City sales combined	\$2.8 million

* “Dark” refers to fiber infrastructure that is leased to customers.

ZERO WASTE PALO ALTO

The goals for the Refuse Fund are to minimize waste generation and maximize recycling and reuse to achieve zero waste by 2030; to protect the environment by safely collecting and disposing of hazardous waste; and to effectively maintain and monitor the City’s closed landfill to meet all regulatory requirements.

Zero Waste Palo Alto at a Glance — Fiscal Year (FY) 2023

Percent of waste diverted from landfill	91% (calendar year 2022)
Tons of materials recycled or composted	52,500 tons
Percent of households with mini-can garbage service	50%
Number of households participating in the Household Hazardous Waste (HHW) program	5,187



Achieving zero waste together

Learn more about the City’s Zero Waste programs at cityofpaloalto.org/zerowaste or call (650) 496-5910.

FACTS & FIGURES

Understanding and planning for your energy and water usage can be challenging, but CPAU's resources can help you make the right decisions for your family.



RESIDENTIAL RESOURCES

Understanding Resource Terms

What can a kilowatt do?

One thousand watts of electricity used for one hour equals one kilowatt-hour (kWh). The electricity in one kWh can light a 100-watt incandescent light bulb for 10 hours, a 23-watt compact fluorescent bulb for 43 hours, or a 14-watt LED bulb for 71 hours. A 200-watt (50") LED television uses one kWh every 5 hours.

Note: energy consumption can vary in TVs depending on the specific technology (NLED, QLED, OLED) and graphics, sound settings, and energy saving settings on the TV (i.e. user preferences).

**1 kWh =
5 Hours of
TV Time**



What can a therm do?

One therm of gas equals 100,000 British Thermal Units (BTUs). A BTU is the amount of heat required to raise one pound (~ one pint) of water one degree Fahrenheit. One therm is enough energy to run a typical gas clothes dryer for five hours, operate an oven for four hours, a gas fireplace for one and a half hours, or a gas swimming pool heater for 30 minutes.

**1 Therm =
5 Hours of
Clothes
Drying**



What can a ccf do?

One hundred cubic feet (ccf) of water equals approximately 748 gallons. One ccf of water is typically enough for a person to take 62 six-minute showers with a 2 gallon per minute showerhead or wash 30 loads of laundry with a high efficiency clothes washer.

**1 ccf =
62 Showers**



FACTS & FIGURES: RESIDENTIAL RESOURCES

Carbon Neutral Electricity

Our electricity comes from carbon free sources, including solar, wind, and hydroelectric. These sources often generate enough electricity to equal annual customer demands. In years when renewable supplies are low (dry year/low hydro), CPAU purchases market power.

Renewable energy credits (RECs) are purchased at the end of the year to “true-up” any market electric power purchased. On a daily basis, when renewable resources are not producing electricity, our power may come from carbon-emitting sources. At the end of the year, these carbon emissions are “neutralized” through our own surplus generation and sale of renewable energy credits, or true-up with REC purchases.

Carbon-offset projects are used for natural gas, as no natural gas use is free of carbon emissions. Learn more at cityofpaloalto.org/carbonneutral

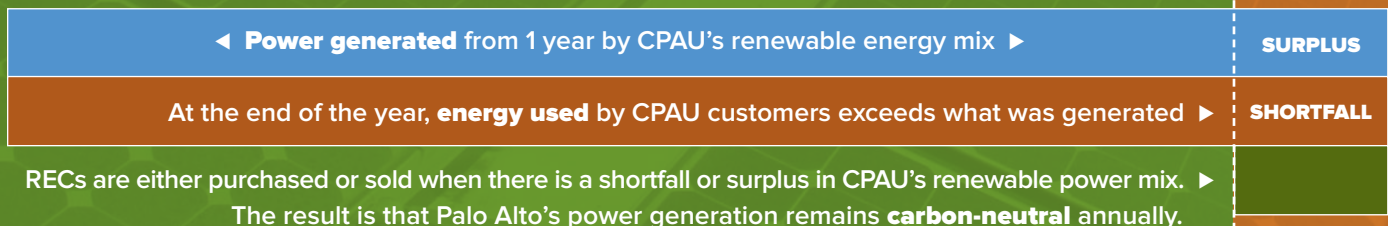
What Does it Mean to be Carbon Neutral?

For electricity, carbon neutral means that we match electricity demand with carbon free supply on an annual basis. For natural gas, carbon neutral means that we buy carbon offsets to balance emissions from natural gas use in Palo Alto.

Example Scenario







CPAU calculates hourly greenhouse gas emissions and procures additional RECs if net emissions occur during hourly variations on the electric grid. If the power needed by CPAU customers for a year exceeds what was generated through CPAU’s renewable energy mix, CPAU will purchase RECs to maintain a carbon neutral electric supply.

CARBON-NEUTRAL



FINANCIAL HIGHLIGHTS

Fiscal Year 2023 (in thousands)

	 Electric	 Gas	 Water	 Sewer	 Fiber Optics	 Refuse
Sales Revenue	\$ 171,605	\$ 72,474	\$ 41,802	\$ 20,694	\$ 2,629	\$ 29,542
Interest, Fees & Other Revenue	\$ 28,869	\$ 2,817	\$ 1,920	\$ 606	\$ 50	\$ 2,480
Commodity Purchase Costs	\$ 120,004	\$ 45,926	\$ 21,744	\$ 10,784	–	\$ 20,839
Operating Costs	\$ 55,350	\$ 18,126	\$ 21,486	\$ 10,058	\$ 2,727	\$ 11,857
Capital Depreciation	\$ 8,528	\$ 3,819	\$ 3,532	\$ 3,095	\$ 423	\$ 78

SERVICE INFORMATION

Area served: approximately 26 square miles

Population served: 69,700 residents and nearly 100,000 jobs

BILLING & RATE INFORMATION

Electric (based on 30-day month)

Tier One	0–330 kWh
Tier Two	331+ kWh








Gas (based on 30-day month)

Summer Tier One	20 therms
Summer Tier Two	Over 20 therms
Winter Tier One	60 therms
Winter Tier Two	Over 60 therms

Water (based on 30-day month)

Tier One	0–6 ccf
Tier Two	Over 6 ccf

Fiscal Year (FY) 2023 Average Monthly Residential Bill*

	 Electric	 Gas	 Water	 Sewer	 Refuse	 Stormwater	 Total
Dollars (without UUT)	\$ 103.23	\$ 125.15	\$ 107.99	\$ 48.64	\$ 50.07	\$ 16.76	\$ 451.84
Usage	518 kWh	44 Therms	9 CCF				

* Prices for services may change year to year; these rates were effective for FY 2023. The utility user tax (UUT) is not included in these amounts. Electric kWh = kilowatt-hours; water CCF = hundred cubic feet.

CONTACT INFORMATION



Utilities Emergencies

Electric Downed Lines and Outages	(650) 496-6914
Gas Leaks & Pipe Breaks	(650) 329-2579
Water Main & Hydrant Leaks	(650) 329-2579
Sewer Issues	(650) 329-2579
Street Light Outages	(650) 496-6914

Customer Service

Billing Questions	(650) 329-2161
Low Income Assistance	(650) 329-2161
Credit & Collections	(650) 329-2161
Utility Service On/Off	(650) 329-2161

Call 811 Before You Dig (avoid underground utilities)

Key Utilities Contacts

Homepage:	cityofpaloalto.org/utilities
Service Disruptions:	cityofpaloalto.org/outages
Efficiency and Sustainability Services	(650) 329-2241
Fiber Optic Information	(650) 329-2275
Electric Engineering	(650) 566-4500
Electric Operations	(650) 496-6934
Water/Gas/Wastewater Engineering:	(650) 566-4501
Water/Gas/Wastewater Operations	(650) 496-6982
Refuse Collection Services	(650) 493-4894
Recycle/Compost/Landfill FAQs	(650) 496-5910
Household Hazardous Waste	(650) 496-5910

PaloAlto311, available on the app store

Have questions about your bill? Contact Utilities Customer Service at **(650) 329-2161** or log in to MyCPAU at mycpau.cityofpaloalto.org to access your account information online.



CITY OF
PALO ALTO
UTILITIES