



City of Palo Alto

City Council Staff Report

(ID # 11469)

Report Type: Action Items

Meeting Date: 8/17/2020

Council Priority: Climate/Sustainability and Climate Action Plan

Summary Title: Carbon Neutral Plan Updates

Title: Staff and Utilities Advisory Commission Recommend the City Council Adopt a Resolution Amending the City's Electric Supply Portfolio Carbon Neutral Plan and Electric Utility Reserves Management Practices

From: City Manager

Lead Department: Utilities

Recommendation

Staff and the Utilities Advisory Commission (UAC) recommend that the City Council:

- 1) Adopt a resolution (Attachment A) amending the Carbon Neutral Plan (as shown in Exhibit A to Attachment A) to:
 - a. Modify the definition of carbon neutrality to use an hourly carbon emissions accounting standard;
 - b. Minimize electric supply portfolio costs by authorizing the exchange of bundled RECs from the City's long-term renewable resources (Bucket 1 RECs) for Renewable Portfolio Standard (RPS) eligible, unbundled RECs (Bucket 3 RECs),¹ to the maximum extent possible, while maintaining compliance with the state's RPS regulations ("REC Exchanges");
 - c. For calendar years 2020 through 2024, authorize the purchase of RPS-eligible, unbundled RECs (Bucket 3 RECs) as needed to neutralize any residual emissions resulting from the difference between emissions calculated under an annual accounting and hourly accounting methodology;
- 2) Direct staff to return to Council in 2022 to review the authorization to minimize electric supply portfolio costs via REC Exchanges;
- 3) Direct staff to return to Council with a review of the Carbon Neutral Plan by the end of 2024 to evaluate the effectiveness of these policy changes and to modify them if necessary (with

¹ See Attachment C for a description of different types of RECs.

a particular focus on reviewing the use of Bucket 3 RECs to neutralize any residual emissions resulting from the switch to an hourly emissions accounting methodology); and

- 4) Create a Cap and Trade Program Reserve in the Electric Fund which will hold revenues from the sale of carbon allowances freely allocated to the electric utility under the State's Cap and Trade Program. (See Attachment B for background information on the State's Cap and Trade Program.)

Staff and the UAC recommend that the Council provide the following guidance on the use of revenues:

Consistent with the [City's Cap and Trade Revenue Use Policy](#), adopted in January 2015, for Fiscal Years 2021 and 2022, an amount equivalent to at least one-third of the revenues earned from the REC Exchanges would be allocated from the City's Cap and Trade Reserve to local decarbonization efforts; thereafter the City would prioritize local decarbonization efforts with these funds. This action, which would require only City Manager approval, will have little to no impact on rates due to the amendments to the Carbon Neutral Plan described above (specifically, the REC Exchanges).

Executive Summary

This report is a follow-up to a series of reports to the UAC covering the topics of carbon emissions accounting and Renewable Portfolio Standard (RPS) procurement strategy (e.g., reports from [May 2019](#), [June 2019](#), [August 2019](#), [February 2020](#), [March 2020](#) and [July 2020](#)). The two topics are not only highly complex and esoteric, but also highly interrelated. Further, policy decisions related to these two topics can have potentially significant impacts on supply costs, retail rates, and funding for customer programs. As a result, staff, the UAC, and a number of community members have had extensive discussions about these topics in an attempt to arrive at a policy position that balances the City's sustainability goals with its desire to lower costs and rates.

The attached amendments to the Electric Supply Portfolio Carbon Neutral Plan will:

1. Change the City's methodology for accounting for the carbon emissions of its electric portfolio from an annual methodology to a more accurate hourly methodology. This will result in a small increase in the cost of the electric portfolio to maintain carbon neutrality under the hourly standard. However, this cost will be minimized in the near term because the amendments also allow the use of Bucket 3 RECs through 2024 for any additional renewable energy purchases needed due to the change in methodology. The policy of using Bucket 3 RECs for this compliance requirement will be revisited prior to 2024, which is the timeline for completing an electric portfolio rebalancing analysis in anticipation of the end of the City's Western Base Resource contract for Federal hydropower from the Central Valley Project. This topic is summarized in previous UAC reports and Attachment C.

2. Allow for REC Exchanges² to take advantage of the current significant cost difference between Bucket 1 and Bucket 3 RECs to generate earnings for the City's electric utility. These REC Exchanges are authorized going forward without a specific end date, but a review of the policy is required prior to 2024. The earnings would be used either to offset electric utility operational costs or they would be reserved for local decarbonization. This topic is the primary focus of this report.

During the course of the UAC discussions, the Palo Alto community experienced a truly fundamental shift in everyday life—as well as in the City's financial outlook—due to the COVID-19 pandemic. The measures put in place throughout the state to contain the spread of the novel coronavirus have had a profound negative impact on the City's General Fund; they have also led to a reduction in the electric utility's total sales, which is projected to cause a multi-million dollar revenue shortfall over the next few years. As a result, at the UAC's May 2020 discussion of the Utility's FY 2021 budget, the UAC voted unanimously to pursue maximizing the total volume of exchanges of in-state (Bucket 1) renewables for out-of-state (Bucket 3) renewables. In previous discussions prior to the COVID-19 pandemic Commissioners had expressed an interest in having all of these funds go toward local decarbonization, but given the economic impacts of the pandemic recognized the value of devoting some portion of these earnings to help avoid painful cuts to electric utility programs, positions, and capital investments, minimize retail rate increases. Subsequently, at the July 2020 UAC meeting, the Commission voted unanimously to recommend the proposal presented in the current report, to exchange the City's Bucket 1 renewable resources for Bucket 3 renewables to the maximum extent permitted under the state's RPS law, while maintaining carbon neutrality.

Staff and the UAC do not recommend establishing a specific sunset date for the authority for these maximized renewable energy exchanges; however, they recommend that staff be directed to return to Council after two years (in 2022) to review the effects of this policy change and consider whether to extend or modify it. In addition, staff and the UAC recommend re-evaluating the effectiveness of the change to the City's carbon accounting methodology before calendar year 2024—which will be at the time the City considers whether to renew its share of the Western Base Resource hydroelectric project or rebalance its portfolio.

If the City enables the REC exchanges described above, it has an opportunity to reduce electric supply costs by over \$3 million per year and therefore redirect some additional funding to local carbon reduction activities (like building electrification) without significantly impacting utility rates. This action could be undertaken by action of the City Manager under existing Council authority. At the July 2020 meeting, the UAC expressed a clear preference that the revenue from these REC exchanges be allocated to local carbon reduction efforts; however, in view of the budget impacts of the COVID-19 pandemic, the UAC recommended that for Fiscal Years 2021 and 2022 at least one-third of the revenue from the REC exchanges be devoted to local decarbonization, with the majority of the funding being used to ameliorate the pandemic

² The exchange of bundled RECs from the City's in-state, long-term renewable resources (Bucket 1 RECs) for RPS-eligible, unbundled RECs (Bucket 3 RECs), which usually come from out of state sources.

budget impacts on the electric utility, but that local decarbonization be prioritized in future years.

Discussion

Since the start of the coronavirus pandemic, electricity consumption in Palo Alto has fallen about 10% from baseline levels; given this reduction in retail sales volumes and the desire to help the community by holding rates flat, the utility now faces a multi-million-dollar budget gap. As such, there is broad community interest in three different objectives with respect to the electric utility: (a) closing the utility’s revenue gap, (b) holding retail rates flat, and (c) maintaining the City’s commitment to carbon neutral supply resources. Executing exchanges of the City’s in-state/Bucket 1 renewable energy generation for out-of-state/Bucket 3 renewable generation is one potential way for the City to efficiently satisfy all three objectives simultaneously. The focus of the current report is therefore the potential revenue that can be gained through exchanging the City’s in-state renewable resources (“Bucket 1 RECs”) for out-of-state renewables (“Bucket 3 RECs” or “unbundled RECs”) and the impacts that such exchanges would have on the make-up of the City’s electric supply portfolio. Additional background information about the City’s Carbon Neutral Plan, the differences between hourly and annual carbon accounting methodologies, and the qualitative differences between California-based Bucket 1 renewables and out-of-state unbundled RECs (both of which were discussed at length in the March 2020 UAC report and presentation) can be found in Attachment C.

REC Exchange Revenue Potential

The ability to raise new revenue by exchanging in-state for out-of-state renewable generation is based on the fact that, due to legislative constraints on the ability to use out-of-state renewable generation to comply with the state’s RPS requirements, in-state generation carries a large price premium relative to out-of-state generation. Currently, in-state renewable generation is valued at about \$15 per MWh (in addition to the value of the electrical energy itself), while out-of-state renewable generation is valued at only \$2.75 per MWh. Estimates of the revenue potential of the proposed REC exchanges is based on these current REC values, the City’s current load projections (which incorporate a reduction associated with the impact of the COVID-19 pandemic), and the City’s current hydroelectric generation projections. Table 1 below summarizes the estimated net revenue potential associated with this REC exchange proposal over the next five fiscal years.

Table 1: Summary of REC Exchange Revenue Potential, FY 2021-2025 (\$M)

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Sales of Bucket 1 RECs Exceeding Annual Load	\$0.56	\$0.79	\$1.78	\$2.48	\$2.55
Additional Bucket 1 REC Sales	\$3.41	\$2.49	\$1.36	\$0.95	\$0.59
Bucket 3 REC Purchases Cost	(\$0.63)	(\$0.46)	(\$0.25)	(\$0.17)	(\$0.11)
Net Revenue Potential	\$3.34	\$2.82	\$2.89	\$3.25	\$3.03

Note that the figures in the table above assume that the City begins the REC exchanges in September of FY 2021. It is worth noting that the revenue potential estimates are highly sensitive to the generation volumes the City receives from its hydro resources, which of course are highly uncertain. If hydro conditions were above-average for the winter of 2020/2021, the total REC exchange revenue for the next two fiscal years would be expected to increase from \$6.2 million to \$7.7 million, while in below-average hydro conditions the total revenue would fall to \$5.7 million.

Impact of REC Exchanges on Electric Supply Portfolio

Although exchanging in-state RECs for out-of-state RECs would have no real impact on the City's total electricity-related carbon emissions (see Attachment C for more discussion on this topic), the downside of this strategy is that it would have a negative impact on the City's *reported* portfolio make-up and carbon emissions. As noted earlier, the state's RPS law gives preferential treatment to in-state renewable resources over out-of-state resources, and the same is true of how such resources are reported to customers on the annual Power Content Label (PCL). As of calendar year 2020, the California Energy Commission's (CEC's) PCL regulations require that utilities report their out-of-state (Bucket 3) REC purchases as "unspecified sources of power" rather than under the appropriate renewable energy technology. Furthermore, beginning with the 2020 PCL, utilities will be required to report the annual average greenhouse gas emissions intensity of their electric supply. And again, rather than being treated as carbon-free resources like other forms of renewable energy, Bucket 3 RECs will be treated as having an emissions intensity equivalent to generic market power purchases (428 kilograms (kg) of CO₂ per MWh, which is almost 20% greater than the emissions intensity of natural gas generation).

As a result, rather than reporting a supply mix that is over 60% renewable and nearly carbon-free on average³, under the maximized REC exchange strategy the City will have to report a portfolio mix that is less than 40% renewable and is responsible for a moderate amount of carbon emissions. Table 2 displays the Power Content Label, RPS level, and emissions intensity for the City's electric supply portfolio in CY 2021 (the only full calendar year covered by the proposed period of authority for maximizing the REC exchanges).

It will no doubt be a communications challenge to explain to customers that the "unspecified sources of power" on their PCL actually represent out-of-state renewable resources, and that while the PCL indicates that their power supply is responsible for about 100 kg of CO₂ emissions per MWh (which is still well below the statewide average emissions intensity of 240 kg CO₂ per MWh) by the City's accounting it is actually carbon neutral. Still, staff feels that this challenge is worth it for the sake of the several million dollars of additional revenue that this strategy will bring in, which can be used to defray the economic impacts of COVID-19 and to fund additional local carbon reduction.

³ Although the City's baseline portfolio mix is entirely comprised of renewables and hydroelectric resources, the CEC's proposed PCL regulations assign a small emission intensity to all biomass generation such as landfill gas generation, which currently accounts for about 10% of the City's supply mix.

Table 2: Power Content Label, RPS Level, and Emissions Intensity for the City’s Electric Supply Portfolio in CY 2021 (Baseline and Maximized REC Exchanges)

	Existing Portfolio	Maximizing REC Exchanges
Eligible Renewables	60%	31%
Biomass & Biowaste	12%	7%
Geothermal	0%	0%
Small hydroelectric	1%	1%
Solar	37%	18%
Wind	10%	6%
Coal	0%	0%
Large Hydroelectric	40%	46%
Natural Gas	0%	0%
Nuclear	0%	0%
Other	0%	0%
Unspecified Sources of Power	0%	23%
RPS Level (% of sales)	62%	36%
Emissions Intensity (kg CO2/MWh)	6	102

Use of REC Exchange Revenues

In the [August 2019 UAC presentation](#) on this topic, staff presented a list of potential uses of the revenue from the sale of surplus renewable resources. (As referenced in Table 1 outlines, the net revenue from these sales could be up to \$3.06 million per year, on average, over the FY 2021-2025 time period.) That list of potential uses included:

- Rate reduction
- Decarbonization efforts (e.g., building electrification or electric vehicle charging infrastructure or incentives)
- Investments in smart grid infrastructure
- A second transmission line connecting the City’s distribution system to the bulk transmission system

In discussions with the UAC and the community prior to the pandemic, the focus for the use of this new revenue stream was largely on the first two items: rate reduction and local decarbonization. Since the beginning of the pandemic the focus of these discussions, for the near-term, has been on how to avoid deep cuts to the electric utility budget while avoiding rate increases.

Given the current financial environment caused by the pandemic, staff and the UAC recommend that the majority of the proceeds from the recommended REC exchanges over the next two years be devoted to closing the electric utility’s budget gap and avoiding cuts to programs, staffing levels, or capital investments. However, given the City’s ambitious [Sustainability Implementation Plan](#) goals related to Energy and Electric Vehicles, staff and the UAC recommend that even in the near-term at least one-third of the REC exchange revenues be devoted to local decarbonization programs. And after the pandemic’s effects pass, staff and the UAC recommend that the revenue from the REC exchanges be reallocated, with an even stronger focus on local carbon reduction efforts.

Mechanism for Allocation of Funds to Local Decarbonization

Currently the electric utility’s renewable energy purchases are funded from two sources: 1) customer sales revenues, and 2) revenues the electric utility receives as a result of its participation in the State’s Cap and Trade program (see Attachment B for more detail). Table 3 shows the current funding levels from these two sources and how staff and the UAC propose to change funding levels if the REC Exchange proposal is implemented:

Table 3: Funding Sources for FY 2021 / FY 2022 Renewable Energy Budget (\$M)

	FY 2021 Budget without REC Exchanges	FY 2021 Budget with REC Exchanges	FY 2022 Budget without REC Exchanges	FY 2022 Budget with REC Exchanges
Cap and Trade Revenue	\$5.3	\$4.2	\$5.3	\$4.4
Customer Sales Revenue	\$30.7	\$28.4	\$30.7	\$28.8
Total Renewable Energy Budget	\$36.0	\$32.7	\$36.0	\$33.2
REC Exchange Revenue		\$3.3		\$2.8
Cap and Trade Revenue Reserved for Local Decarbonization (33% of REC Surplus Sales and Exchange earnings)		\$1.1		\$0.9
Savings to Electric Utility		\$2.2		\$1.9

The revenues received from the REC Exchanges would go into the Electric Supply Reserve, reducing operating costs. However, staff recommends allocating a portion of the revenues earned from the City’s participation in the state’s Cap and Trade Program (equal to one-third of the REC Exchange revenue) to local decarbonization activities, because Cap and Trade Program revenues are provided to the electric utility explicitly to support carbon reducing activities like local decarbonization. For ease of accounting and fund tracking, staff recommends the creation of a Cap and Trade Program Reserve in the Electric Fund which will hold revenues from the sale of carbon allowances freely allocated by the California Air Resources Board to the City’s electric

utility. See Attachment D for an updated version of the Electric Utility Reserves Management Practices reflecting the creation of this reserve.

The Council's [January 2015 policy](#) on the use of these revenues gives the City Manager authority to allocate these funds among a range of purposes, including local carbon reduction, so no further Council action would be required except to approve specific local decarbonization program budgets through the annual budget process. Ultimately, the ability to make a significant investment in jumpstarting local decarbonization efforts without raising retail rates by one cent—in fact, while actually helping to *lower* retail rates—seems like a proposal that should win broad support.

Policy Alternatives

An alternative compromise approach to the use of the sales revenue from the sales and exchanges of the City's renewable energy supplies would be to allocate a fixed amount toward local decarbonization efforts (e.g., \$1 million per year) and the remainder to operational savings and rate reduction. Additional alternatives to this proposal could include allocating more of the revenue from this proposal to rate reduction or allocating more to local carbon reduction. Other alternatives could include establishing an explicit time limit on the authorization for the REC exchanges.

Next Steps

Immediately upon the approval of the Carbon Neutral Plan amendments, staff will begin to execute transactions to sell the City's in-state renewable resources and purchase out-of-state renewables. In addition, staff will report on the portfolio's total emissions under both an hourly and an annual carbon accounting framework in the annual report to the City Council on the City's Renewable Procurement Plan, Renewable Portfolio Standard Compliance, and Carbon Neutral Electric Supplies (expected in Q4 of 2020).

In addition, in the next couple of years staff plans to carry out a broader and longer-term analysis of potential options for rebalancing the City's electric supply portfolio. This analysis will be presented in the context of deciding whether to renew the City's Western Base Resource hydro contract after the current one expires at the end of 2024. It will also consider options for utilizing the City's share of the California-Oregon Transmission Project, after that resource reverts to the City's control at the end of 2023.

Resource Impact

Staff estimates that exchanging the City's in-state renewable resources ("Bucket 1 RECs") for out-of-state renewables ("Bucket 3 RECs") will generate an average of approximately \$3.1 million in additional revenue per year for the next five fiscal years. In addition, staff estimates that switching to an hourly carbon accounting methodology, using average hourly emissions intensity factors, and using Bucket 3 RECs to neutralize the residual emissions resulting from this change, will result in an increase in supply costs of approximately \$140,000 in an average hydrological year. So overall, staff's and the UAC's proposal is expected to yield \$3.0 million in

new net revenue per year for the next five years on average. (Staff will review and adjust the budget when these additional revenues need to be recognized. Currently these are estimates only and don't need to be recognized, so a budget adjustment isn't needed at this time.) Staff and the UAC recommend allocating at least one-third of these earnings toward local decarbonization efforts for the next two years, and the remainder to rate reduction. Beyond the next two years, staff and the UAC recommend allocating the majority of these earnings to local decarbonization efforts. This approach would yield operational savings that could reduce future rate increases by approximately 0.7%, or 0.12 cents/kWh, while also providing substantial funding for local carbon reduction.

Policy Implications

This report satisfies Initiatives #4 and #5 of the [EIRP Work Plan](#). This report is also in line with the Sustainability and Climate Action Plan goals of continuing to lower the carbon footprint of the community.

Stakeholder Engagement

The changes proposed in this staff report have been the subject of significant discussion with the UAC and the public over the past year. In addition to several discussions on this topic at the UAC during this period, staff has also met with, and incorporated feedback from, several engaged members of the community.

Environmental Review

The City Council's amendment of the City's Carbon Neutral Plan and Electric Utility Reserves Management Practices does not meet the definition of a project under Public Resources Code 21065 and therefore California Environmental Quality Act (CEQA) review is not required.

Attachments:

- Attachment A: Resolution Amending Carbon Neutral Plan
- Attachment B: Cap and Trade Program Synopsis
- Attachment C: Background Information on Carbon Neutral Plan, Carbon Accounting & RECs
- Attachment D: Updated Electric Reserve Management Practices

Resolution No. _____
Resolution of the Council of the City of Palo Alto Amending the Electric Supply
Portfolio Carbon Neutral Plan and the Electric Utility Reserves Management
Practices

RECITALS

A. The City of Palo Alto (the "City") provides electricity to residential and commercial customers located within its jurisdictional boundary.

B. In an effort to combat climate change, in December 2007 the City adopted the Climate Protection Plan, which set aggressive greenhouse gas ("GHG") emission reduction goals to be achieved by the year 2020.

C. Further to its GHG emissions reduction goals, in November 2016 the City adopted a Sustainability and Climate Action Plan ("S/CAP"), and in December 2017 the City adopted a 2018-2020 Sustainability Implementation Plan ("SIP").

D. In order to achieve these aggressive GHG emissions reduction goals, in March 2013, through Resolution No. 9322, the City adopted a Carbon Neutral Plan for the electric supply portfolio, with a goal of achieving carbon neutrality by 2013.

E. In the 2013 Carbon Neutral Plan, the City defined carbon neutrality based on an annual accounting of the City's load and its carbon neutral electric resources: an electric supply portfolio that "will demonstrate annual net zero greenhouse gas (GHG) emissions, measured at the Citygate, in accordance with The Climate Registry's Electric Power Sector protocol for GHG emissions measurement and reporting." At the time this definition of carbon neutrality was adopted, this was the most granular accounting approach feasible (given the lack of hourly grid emissions data) or necessary (given the small amount of solar capacity installed at that point, and the resulting emissions profile of grid electricity).

F. Based on this definition of carbon neutrality, the City has achieved its Carbon Neutral Plan objectives each year starting in 2013, primarily through its long-term contracts for in-state hydroelectric and Renewable Portfolio Standard ("RPS") eligible resources, with some reliance on RPS-eligible unbundled renewable energy certificates ("RECs") for 2013-2015.

G. Due to limitations on the use of unbundled RECs ("Bucket 3 RECs") for compliance with the state's RPS mandate (only 10% of a utility's RPS procurement may consist of Bucket 3 RECs), a significant financial premium currently exists for in-state bundled renewable energy resources ("Bucket 1 RECs").

H. As a result of its pursuit of its Carbon Neutral Plan objectives, the City's electric supply portfolio currently far exceeds the procurement requirements of the state's RPS

Attachment A

mandate, and all of the City's current RPS resources are classified as Bucket 1 RECs.

I. Due to the impacts of the county and state stay-at-home orders put in place since March 2020, in response to the COVID-19 pandemic, the City's electric utility retail sales volumes (and revenues) have declined approximately 10% from baseline levels, which has put a strain on the City's electric utility financial reserves.

J. Through [Resolution 9487](#), adopted in January 2015, the City established a policy on the use of revenue from the sale of allowances freely allocated to the City's electric utility under the state's Cap and Trade Program ("Cap and Trade Revenue Use Policy"). This policy authorizes the City Manager or their designee to use these allowances and allocate the resulting revenue to certain approved types projects or expenditures, in compliance with CARB regulations.

K. Consistent with the City's Cap and Trade Revenue Use Policy, for Fiscal Years 2021 and 2022, an amount equivalent to at least one-third of the revenues earned from the REC Exchanges would be allocated from the City's Cap and Trade Reserve to local decarbonization efforts; thereafter the City would prioritize local decarbonization efforts with these funds.

The Council of the City of Palo Alto does hereby RESOLVE, as follows:

SECTION 1. The Council approves the updated Electric Supply Portfolio Carbon Neutral Plan (attached, with changes shown in redline, as Exhibit A), which modifies the definition of carbon neutrality to use an hourly carbon emissions accounting standard; authorizes the exchange of bundled RECs from the City's long-term renewable resources (Bucket 1 RECs) for RPS-eligible, unbundled RECs (Bucket 3 RECs), to the maximum extent possible, while maintaining compliance with the state's RPS regulations in order to minimize electric supply portfolio costs ("REC Exchanges"); and authorizes the purchase of RPS-eligible, unbundled RECs (Bucket 3 RECs) as needed to neutralize any residual emissions resulting from the difference between emissions calculated under an annual accounting and hourly accounting methodology for calendar years 2020 through 2024.

SECTION 2. The Council approves the creation of a Cap and Trade Program Reserve in the Electric Fund which will hold revenues from the sale of carbon allowances freely allocated to the electric utility under the State's Cap and Trade Program.

SECTION 3. The Council directs staff to return to Council in 2022 to review the authorization to minimize electric supply portfolio costs via REC Exchanges.

SECTION 4. The Council directs staff to return to Council by the end of 2024 with a review of the Carbon Neutral Plan to evaluate the effectiveness of these policy changes and to

Attachment A

modify them if necessary (with a particular focus on reviewing the use of Bucket 3 RECs to neutralize any residual emissions resulting from the switch to an hourly emissions accounting methodology).

and

SECTION 5. The Council finds that the adoption of this resolution updating the City's Electric Supply Portfolio Carbon Neutral Plan is not subject to California Environmental Quality Act (CEQA) review because it is an administrative government activity that will not result in any direct or indirect physical change to the environment (CEQA Guidelines section 15378(b)(5)).

INTRODUCED AND PASSED:

AYES:

NOES:

ABSENT:

ABSTENTIONS:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

APPROVED:

Assistant City Attorney

City Manager

Director of Utilities

Director of Administrative Services

Adopted by City Council on March 4, 2013

Revised by City Council on

City of Palo Alto Utilities Electric Supply Portfolio Carbon Neutral Plan

1. Carbon Neutral Definition

A carbon neutral electric supply portfolio will demonstrate annual net zero greenhouse gas (GHG) emissions, measured at the Citygate¹, ~~in accordance with The Climate Registry's Electric Power Sector protocol for GHG emissions measurement and reporting, by applying the average hourly carbon emissions intensity of the electricity on the CAISO grid to the City's net load for each hour of the year.~~

2. Carbon Neutral Plan Objective

Reduce the City of Palo Alto's overall community GHG emissions by achieving carbon neutrality for the Electric Supply Portfolio starting in calendar year 2013 within an annual rate impact not to exceed 0.15 cents per kilowatt-hour (¢/kWh) primarily through the: 1) engagement of customers to increase energy efficiency; 2) expansion of long-term renewable resource commitments; 3) promotion of local renewable resources; 4) continued reliance on existing hydroelectric resources; and 5) meeting short-term balancing requirements and/or neutralizing residual carbon through the use of short-term purchases of renewable resources and/or renewable energy certificates (RECs).

3. Resource Strategies

a. Energy Efficiency

- i. Continue to pursue energy efficiency strategies as identified in the Council-approved ten-year Energy Efficiency Plan.

b. Long-term Renewable Resources

- i. Continue to pursue the City's Renewable Portfolio Standard (RPS) goal to purchase renewable energy to supply at least ~~33~~60% of retail sales by ~~2015~~2030 while ensuring that the retail rate impact of these purchases does not exceed 0.5 ¢/kWh.
- ii. Continue to pursue local renewable resources through the Palo Alto CLEAN ~~and PV Partners~~ programs.
- iii. Pursue additional ~~RPS-eligible~~ long-term renewable resources (beyond the RPS goals) to achieve a target of 100% carbon-free resources based on average year hydroelectric generation.

¹ Citygate is the location of the City's main meter where the City interconnects to the Pacific Gas and Electric transmission system. Emissions associated with the output of the locally sited fossil gas fired combustions units (COBUG), while not measured at Citygate, will be neutralized.

c. *Short-term Renewable Resources and Renewable Energy Certificates*

- i. Minimize electric supply portfolio costs by exchanging bundled RECs from the City's long-term renewable resources (Bucket 1 RECs) for RPS-eligible, unbundled RECs (Bucket 3 RECs) to the maximum extent possible while maintaining compliance with the state's RPS regulations;
- ~~i. For calendar years 2013-2020 through 2016-2024, procure additional short-term renewables, if the price is comparable to that of an un-bundled REC;~~
- ii. For calendar years 2013 through 2016, procure or RPS-eligible, un-bundled RECs (Bucket 3 RECs) as needed to achieve carbon neutrality based on actual load and resources;
- iii. Neutralize anthropogenic GHG emissions associated with the City's purchase of renewable resources with RPS-eligible unbundled-RECs (Bucket 3 RECs), which may or may not be RPS-eligible.

d. *Banking and Truing Up*

- i. In the event that there are surplus renewables beyond the City's load in a particular year, bank as many RECs as allowable under the TCR-EPS protocol from qualifying renewables from that year to minimize the need for purchasing RECs in subsequent years.
- ii. Neutralize emissions associated with market purchases resulting from deviations between expected and actual load and renewable and hydroelectric generation resources with unbundled RECs, which may or may not be RPS-eligible. For calendar years 2020 through 2024, neutralize residual emissions that result from applying an hourly emissions accounting methodology, rather than a net annual generation methodology, with RPS-eligible unbundled-RECs.

4. Hydroelectric Resources

- a. Continue to preserve and advocate for existing carbon-neutral hydroelectric generation resources that provide approximately 50% of average year resource needs.
- b. Plan for and acquire carbon neutral resources assuming average hydroelectric conditions going forward.
- c. Under adverse hydroelectric conditions, procure RPS-eligible unbundled-RECs, ~~which may or may not be RPS-eligible,~~ to achieve carbon neutrality up to the 0.15 ¢/kWh rate impact limit and seek Council direction if carbon neutrality cannot be achieved within the rate impact limit.
- d. Under favorable hydroelectric conditions, where carbon neutral resources are expected to be surplus to needs, even after allowable banking, then pursue selling short-term renewable energy, or the renewable attributes, associated with one or more carbon-neutral resources in the portfolio.

5. Financial and Rate Payer Impacts

- a. In addition to the RPS annual rate impact limit of 0.5 ¢/kWh, the cost of achieving carbon neutrality shall not exceed 0.15 ¢/kWh ~~based on an average hydro year.~~

- b. Revenues collected from surplus energy sales related to hydroelectric resources under favorable conditions (e.g. wet years), will be maintained within reserves to adjust for the cost of achieving carbon neutrality under adverse hydroelectric years.
- c. To the extent available and allowable, revenues from the auction of cap-and-trade allowances may be used to fund resources acquired to meet the carbon neutrality goals.

6. Reporting and Communication

a. Develop a communication plan for stakeholders to inform them of the City’s efforts towards achieving a carbon neutral electric supply.

~~b. Submit an annual, verified report of the carbon content of the electric supply portfolio to The Climate Registry.~~

~~e.b.~~ Provide customers a report of the electric supply portfolio’s carbon content to supplement the mandated Power Content Label.

~~d.~~ Inform large commercial and/or corporate customers of the City’s carbon neutral portfolio and its relevance to their individual corporate sustainability goals.

~~e.c.~~

~~7. Implementation Plan~~

~~The tasks that need to be completed in the next two years pending Council approval of the Carbon Neutral Plan in February 2013 are listed in the table below.~~

Item	Timeframe
1. Modify electric supply portfolio models and Energy Risk Management Policies, Guidelines and Procedures to account for Carbon Neutral objectives, balancing, banking of renewable attributes, reporting and financial impacts.	By April 2013
2. Modify the Long term Electric Acquisition Plan (LEAP) to include the carbon neutral objective	By June 2013
3. Develop communication plan to inform customers and stakeholders of Carbon Neutral Plan and efforts.	February to April 2013
4. Based on response to the Fall 2012 request for proposals, seek approval of new renewable power purchase agreements to meet the City’s RPS up to approximately 100% of the long term resource needs in average hydro years.	December 2012 to June 2013
5. Determine resource needs for CY 2013 through CY 2016 and develop plan to acquire short term renewable resources.	By June 2013
6. Determine long term renewable purchase volumes for beyond CY 2016 and develop plan to acquire long term renewable resources.	By September 2013
7. Procure RECs as needed to neutralize carbon emissions based on actual load and resources for CY 2013.	By May 2014
8. Along with annual Power Content Label, produce and report to customers the carbon intensity of the electric supply portfolio.	May/June 2014 and annually thereafter
9. Produce and submit Electric Power Sector (EPS) and Local Governments Operation Protocol (LGOP) reports to The Climate	July and October 2014 and annually

Exhibit to ATTACHMENT A

Registry (TCR) for CY 2013.	thereafter
10. Get independent verification of TCR reports and submit audited reports to TCR.	By December 2014 and annually thereafter
11. Redesign the Palo Alto Green program according to Council direction.	By December 2013

California's Cap-and-Trade Program Synopsis

The Global Warming Solutions Act of 2006, also known as Assembly Bill (AB) 32, authorized the California Air Resources Board (CARB) to develop regulations to lower the state's greenhouse gas (GHG) emissions to 1990 levels by 2020. CARB developed a cap-and-trade program as one of the strategies to achieve the 2020 goal. Under the cap-and-trade program, an overall limit on GHG emissions from capped sectors is established and facilities subject to the cap are able to trade permits (allowances) to emit GHGs.

To do this, entities with emissions are required to hold enough allowances (an allowance being equivalent to one metric ton of greenhouse gas, or CO₂e) to cover its emitted output in a given year, also called its 'compliance obligation.' Entities can purchase allowances at quarterly auctions held by CARB. The auction has a floor (or reserve) price, which started at \$10 per allowance in 2012 and has increased every calendar year by 5% plus the rate of inflation as measured by the Consumer Price Index. As of 2020, the Reserve price is at \$16.68 per allowance. Over the last three years, auction prices have settled anywhere between the reserve price (as it did in the May 2020 auction) to \$1.83 more (in the May 2019 auction).

In addition, certain entities and public power agencies, such as Palo Alto, have been distributed free allowances to reduce the rate shock to customers from the purchase of required allowances. The City's Electric utility was required to participate in the cap-and-trade program starting in 2013 but does not own or operate fossil fuel-based electricity generation covered by the cap-and-trade regulations. Therefore, the Electric utility does not incur a compliance obligation annually, but still receives free allowances. (The utility is, however, indirectly exposed to cap-and-trade allowance costs to the extent that it makes purchases of generic market power. The generators of this power must pay for allowances to generate and these costs are then passed on to the buyers of that output.) The quantity of allowances received is scheduled to decrease over time—Palo Alto's allowance allocation was 340,533 in 2013 but is expected to decrease to 110,496 by 2030. As the Electric utility has no compliance obligation, it cannot retain any allowances for future use but must instead sell them at auction.

The Palo Alto Gas utility, on the other hand, does incur a compliance obligation annually based on the amount of gas imported and utilized within the City. The Gas utility has been required to participate in the cap and trade program since 2015, and while it also receives free allowances every year, the quantity received does not fully cover the utility's compliance obligation, and also decreases annually (in 2015 it was based on about 94% of 2011 emissions, but is expected to drop to about 51% of 2011 emissions by 2030). A portion of the allowances it receives can be held towards its compliance obligation, but the remainder must be sold at auction. The share that must be sold increases every year—in 2015, 25% was required to be sold, increasing by 5% annually, reaching 100% in 2030. And any allowances required to make up its compliance obligation must be purchased via auction (the electric utility cannot transfer or sell allowances to the gas utility directly).

Attachment B

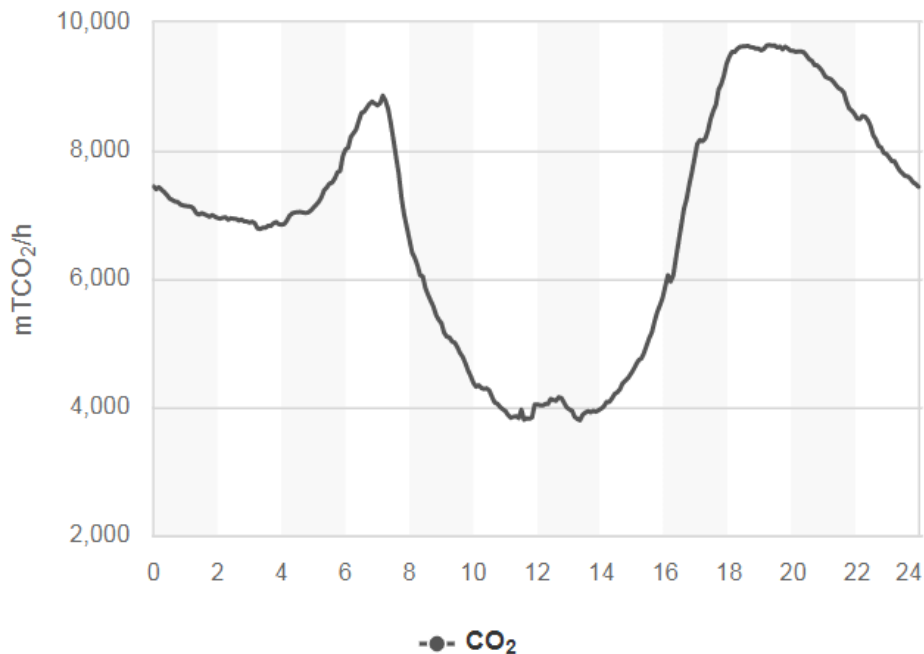
Revenues from the auction sale of allowances in each utility must be used exclusively for the benefit of the ratepayers in that utility. The California Code of Regulations (CCR Title 17, sections 95892 and 95893) details how entities must use those funds, but in general, these can be for 1) the support for, construction of, or purchase of eligible renewable generation resources directly to California (this applies to the electric utility only), 2) the funding of certain energy efficiency rebates, retrofits, and fuel switching programs, 3) funding for programs with demonstrated GHG reductions, 4) non-volumetric return to ratepayers, either on or off bill, and 5) certain administrative, outreach and educational costs related to items 1-4 above. The City Council has also adopted a policy on the use of allowance proceeds ([Resolution 9487](#)), with expressed preference that revenues be used for programs and projects rather than being returned to ratepayers in the form of a bill rebate. Per the current regulations, the utility must either spend or rebate the funds received in any given year within 10 years (for example, funds received in 2020 must be spent by 2030, etc.).

Carbon Neutral Plan Background, Hourly vs. Annual Carbon Accounting Methodologies, In-State vs. Out-of-State Renewable Energy Credits

Carbon Neutral Plan Background

When Council approved the [Carbon Neutral Plan](#) in March 2013 ([Staff Report 3550](#), [Resolution 9322](#)), it defined carbon neutrality as a portfolio that “will demonstrate annual net zero greenhouse gas (GHG) emissions, measured at the Citygate, in accordance with The Climate Registry’s Electric Power Sector protocol for GHG emissions measurement and reporting.” In effect, this means that if the City’s carbon neutral supplies (in megawatt-hours (MWh)) equal or exceed the City’s total load on an annual basis then the electric supply would be deemed to be carbon neutral. At the time, this accounting methodology was considered to be the most accurate accounting methodology that could be achieved—or needed. This was in part because in 2013 there was very little solar generation connected to the California Independent System Operator (CAISO) grid, and therefore the grid’s average emissions factors did not vary in the extreme manner that they do today—for example, as in the emissions rate chart shown in Figure 1 below, for CAISO emissions on February 12, 2020. But, more practically, CAISO did not begin to publish hourly grid emissions factor data until 2018, and therefore a more granular accounting methodology was not feasible at that time.

Figure 1: CAISO Average CO₂ Emissions Rates for February 12, 2020



In addition, the 2013 Carbon Neutral Plan (CN Plan) did not contemplate the type of situation the City finds itself in today, where, on an annual basis, it has an ongoing surplus of carbon neutral supplies (under normal hydro conditions) relative to its load. The original CN Plan addressed the City’s strategies for obtaining carbon neutral supplies equal to its annual load (specifically, it authorized the purchase of unbundled RECs on a short-term basis, with an

ultimate goal of procuring enough long-term renewable supplies to fully satisfy the City's annual load).

Hourly vs. Annual Carbon Accounting

At the February 2020 UAC meeting, there was a consensus opinion that hourly accounting should be used by staff for the evaluation of different supply and demand resources. Staff strongly supports this position too, believing that an hourly accounting framework is the right way to think about long-term procurement decisions. (Doing so in a rigorous way will ultimately require the City to assign a monetary value to carbon emissions—but that topic can be addressed at a later date.) Staff thinks that hourly grid carbon emissions rates are important to incorporate into our internal decision-making and reporting in a variety of ways. There is no immediate cost associated with incorporating hourly accounting into internal decision-making; doing so simply prepares the City for when energy markets and regulations ultimately shift to a more granular carbon accounting paradigm.

Adopting hourly carbon accounting instead of annual accounting for measuring the carbon content of the City's electric supply portfolio, on the other hand, is likely to have a modest financial impact.¹ The reason for the additional cost associated with this approach is that, in holding the City's electric supply portfolio up to a stricter carbon accounting standard, this approach is likely to show, in an average year, that the City's portfolio is responsible for a small amount of "residual" emissions, even though its supplies match its load on an annual basis.²

In order to maintain the carbon neutral status of its electric supply under an hourly accounting framework, the City would have to purchase additional resources in order to neutralize these residual emissions. If the City were to adopt the use of hourly accounting for its portfolio decisions right now, in order to minimize the cost impact associated with adopting an hourly accounting framework, staff recommends authorizing the purchase of out-of-state renewable energy (also called "unbundled, Bucket 3 RECs") on a short-term basis to neutralize these residual emissions. Based on current market prices for unbundled RECs, staff estimates the cost associated with neutralizing these residual emissions to be \$140,000/year.

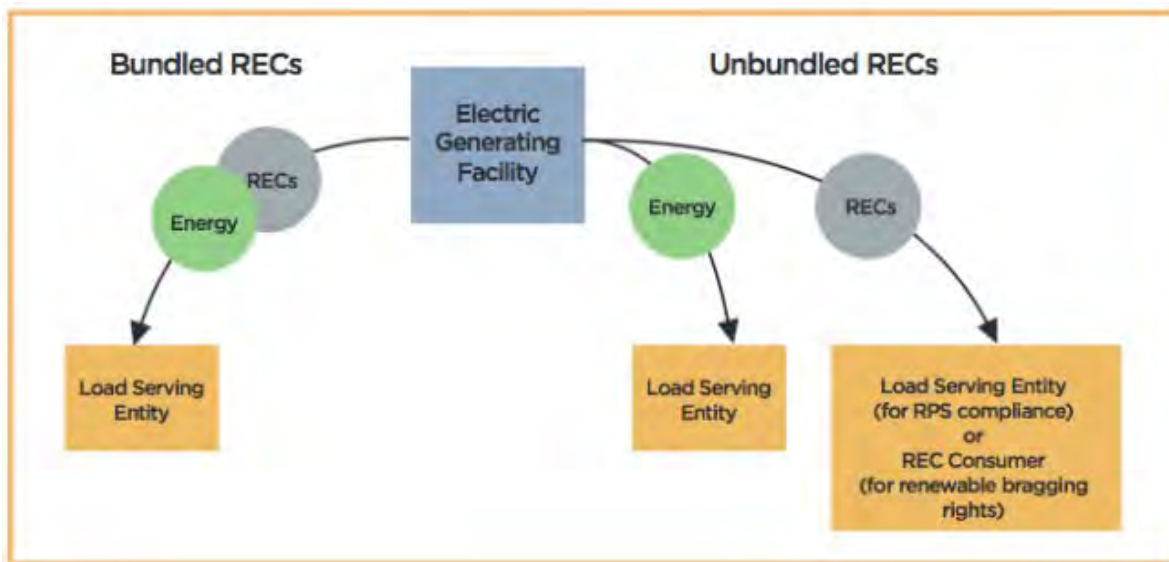
¹ As described in the February 2020 UAC report, the accounting methodology proposed by staff entails an hourly comparison of the City's supplies and load, with each hourly net load/supply value assigned the average hourly carbon emissions intensity of the CAISO grid to convert it to an hourly emissions total that the City's electric portfolio is responsible for. These hourly emissions totals (which can be positive or negative, depending on whether or not the City's load exceeds its carbon neutral supplies for that hour) would then be summed across the hours in a year.

² These "residual emissions" occur because the City has a heavy concentration of solar resources in its supply portfolio. Thus, the periods when the City has a surplus of resources relative to its load tend to be in periods when the grid is relatively clean overall; conversely, the periods when the City typically has supply deficits relative to its load tend to be at times when the grid is dirtier overall. Based on 2018 grid emissions and generation data for the City's resources, staff calculated these residual emissions to be approximately 16,000 MT CO₂ for the year.

In-state, Bundled Renewable Energy (Bucket 1 RECs) vs. Out-of-state, Unbundled Renewable Energy (Bucket 3 RECs)

The fundamental difference between bundled renewables (or “Bucket 1 RECs”) and unbundled (“Bucket 3”) RECs, as the diagram in Figure 1 illustrates, is that with bundled renewables both the energy and the REC (which represents the environmental value of the energy) are sold together to the same entity. With unbundled RECs, the energy and the REC are sold separately to different entities. Practically speaking though, Bucket 1 RECs are almost always produced by in-state renewable generators, while Bucket 3 RECs are produced by out-of-state renewable generators. Also, because of limitations placed on the use of Bucket 3 RECs for compliance purposes in the state’s RPS legislation, and because of strong demand for Bucket 1 resources as Community Choice Aggregators (CCAs) ramp up their energy purchases, Bucket 1 RECs currently carry a significant price premium relative to Bucket 3 RECs, in spite of the fact that these two resources represent equivalent amounts of renewable energy.

Figure 2: Bundled (Bucket 1) vs. Unbundled (Bucket 3) RECs Diagram³



If the community prefers to implement an hourly carbon accounting framework using California-based Bucket 1 renewables in the long-term, staff can optimize the electric portfolio to minimize costs under this policy. However, the City will not have an easily available opportunity to rebalance the electric portfolio until 2024. As a result, implementing hourly accounting using Bucket 1 renewables *right now* has significant downsides. The principal drawback to this approach is its cost impact. Due to the aforementioned price premium for Bucket 1 RECs right now, staff estimates the cost of neutralizing the residual emissions with Bucket 1 RECs to be about \$620,000/year, as shown in Table 1 below, which is \$480,000/year greater than the cost of using Bucket 3 RECs for this purpose. In staff’s view, this represents a significant increase in costs (and therefore a significant reduction in funds that could be allocated either to local

³ Source: Pinkel, D., and Weinrub, A., “What the Heck is a REC?” October 2013.
<http://www.localcleanenergy.org/files/What%20the%20Heck%20is%20a%20REC.pdf>

decarbonization efforts or rate reduction) with little to no additional environmental value to show for it.⁴ In the short-term, utilizing Bucket 1 renewables to neutralize residual emissions will not result in the construction of any new renewables, just additional expenditures. Use of Bucket 3 RECs in the short-term, however, has a minimal rate impact and enables the City to adopt hourly accounting for its electric portfolio in anticipation of long-term portfolio rebalancing.

Table 1: Summary Comparison of Carbon Accounting Methodology Options

	Option 1: Annual Accounting (Sell All Surplus)	Option 2: Hourly Accounting (with Bucket 1 Renewables)	Option 3: Hourly Accounting (with Bucket 3 RECs)
Surplus Sales Revenue (\$M)	\$ 2.24	\$ 2.24	\$ 2.24
Residual Emissions Abatement Cost (\$M)	\$ -	\$ 0.62	\$ 0.14
Net Revenue (\$M)	\$ 2.24	\$ 1.62	\$ 2.10
Rate Impact (%)*	-1.5%	-1.1%	-1.4%
RPS Level (%) (Bucket 1 Only)	45%	50%	45%
Energy Supply Level (% of Annual Load)	100%	105%	100% (+5% unbundled RECs)
PCL Emissions Intensity (lb CO₂/MWh)	9.4	10.4	9.4
Hourly Accounting Emissions Intensity (lb CO₂/MWh)	42.3	-	42.3
*Notes: "Rate Impact" assumes all net revenue is devoted to rate reduction. Revenue and cost values are annual averages over the 2020-2030 time period.			

Furthermore, committing to the use of Bucket 1 renewables in the near-term to neutralize the portfolio's residual emissions under an hourly accounting approach forces the City to incur a relatively large increase in supply costs to address the emissions impact of procurement decisions made long ago—at a time when the varying hourly emissions profiles of different types of resources was not foreseeable. Rather than imposing such a large cost on the City to account for portfolio decisions made years ago, staff recommends taking hourly emissions accounting impacts into account for *future* portfolio decisions, as well as reconsidering the use

⁴ For a full discussion of the environmental merit of Bucket 3 RECs relative to Bucket 1 renewables, please see Attachment B of this [August 2019 UAC report](#). In short though, Bucket 3 RECs represent all of the environmental attributes of the underlying generation, including its emissions profile. And within California there is currently an over-supply of renewable energy at many times of the year, while neighboring states retain a significant reliance on coal and natural gas generators; as a result, out-of-state renewable generation can be more valuable environmentally than in-state renewable generation.

of Bucket 1 renewables for neutralizing the portfolio's residual emissions the next time the City has an opportunity to significantly rebalance its supply portfolio—which should be around 2024, when the City will make a final decision on whether or not to renew its Western Base Resource hydro contract. By that time, market conditions and regulations related to Bucket 1 and Bucket 3 RECs may have changed, and the price premium of Bucket 1 renewables relative to Bucket 3 RECs may be lower than it is today.

In considering the use of Bucket 3 RECs for neutralizing residual emissions, it's important to note that the original Carbon Neutral Plan established a goal of obtaining Bucket 1 renewable supplies equal to the City's load on an annual basis, and it allowed for the use of Bucket 3 RECs to address the reduction in carbon neutral generation that occurs in low hydro years. However, the Plan did not contemplate a scenario where the City has an overall surplus of supplies on an on-going basis (or where grid emissions rates vary significantly over the course of the year). Using Bucket 3 RECs for neutralizing residual emissions remains true to that original Carbon Neutral Plan: the City would still have Bucket 1 renewable supplies equal to its load on an annual basis. This approach simply augments the original Plan by addressing what to do with the City's supplies that exceed its annual load, and how to address the fact that grid emissions now vary dramatically from hour to hour and season to season.

APPENDIX A: ELECTRIC UTILITY RESERVES MANAGEMENT PRACTICES

The following reserves management practices are used when developing the Electric Utility Financial Plan:

Section 1. Definitions

- a) “Financial Planning Period” – The Financial Planning Period is the range of future fiscal years covered by the Financial Plan. For example, if the Financial Plan delivered in conjunction with the FY 2015 budget includes projections for FY 2015 to FY 2019, FY 2015 to FY 2019 would be the Financial Planning Period.
- b) “Fund Balance” – As used in these Reserves Management Practices, Fund Balance refers to the Utility’s Unrestricted Net Assets.
- c) “Net Assets” - The Government Accounting Standards Board defines a Utility’s Net Assets as the difference between its assets and liabilities.
- d) “Unrestricted Net Assets” - The portion of the Utility’s Net Assets not invested in capital assets (net of related debt) or restricted for debt service or other restricted purposes.

Section 2. Supply Fund Reserves

The Electric Supply Fund Balance is reserved for the following purposes:

- a) For existing contracts, as described in Section 4 (Reserve for Commitments)
- b) For operating budgets reappropriated from previous years, as described in Section 5 (Reserve for Reappropriations)
- c) For special projects for the benefit of the Electric Utility ratepayers, as described in Section 6 (Electric Special Projects Reserve)
- d) For year to year balancing of costs associated with the Electric Utility’s hydroelectric resources, as described in Section 7 (Hydroelectric Stabilization Reserve)
- e) For rate stabilization, as described in Section 1.d) (Rate Stabilization Reserves)
- f) For operating contingencies, as described in Section 12 (Operations Reserves)
- g) Any funds not included in the other reserves will be considered Unassigned Reserves and shall be returned to ratepayers or assigned a specific purpose as described in Section 13 (Unassigned Reserves).

Section 3. Distribution Fund Reserves

The Electric Distribution Fund Balance is reserved for the following purposes:

- a) For existing contracts, as described in Section 4 (Reserves for Commitments)
- b) For operating and capital budgets reappropriated from previous years, as described in Section 5 (Reserves for Reappropriations)
- c) As an offset to underground loan receivables, as described in Section 8 (Underground Loan Reserve)
- d) To hold Public Benefit Program funds collected but not yet spent, as described in Section 9 (Public Benefits Reserve)
- e) For cash flow management and contingencies related to the Electric Utility’s Capital Improvement Program (CIP), as described in Section 10 (CIP Reserve)
- f) For rate stabilization, as described in Section 11.d) (Rate Stabilization Reserves)
- g) For operating contingencies, as described in Section 12 (Operations Reserves)

- h) Any funds not included in the other reserves will be considered Unassigned Reserves and shall be returned to ratepayers or assigned a specific purpose as described in Section 14 (Unassigned Reserves).

Section 4. Reserves for Commitments

At the end of each fiscal year the Electric Supply Fund and Electric Distribution Fund Reserves for Commitments will be set to an amount equal to the total remaining spending authority for all contracts in force for the Electric Supply Fund and Electric Distribution Fund, respectively, at that time.

Section 5. Reserves for Reappropriations

At the end of each fiscal year the Electric Supply Fund and Electric Distribution Fund Reserves for Reappropriations will be set to an amount equal to the amount of all remaining capital and non-capital budgets that will be reappropriated to the following fiscal year for each Fund in accordance with Palo Alto Municipal Code Section 2.28.090.

Section 6. Electric Special Projects Reserve

The Electric Special Projects Reserve (ESP Reserve) will be managed in accordance with the policies and timelines set forth in Resolution 9206 (Resolution of the Council of the City of Palo Alto Approving Renaming the Calaveras Reserve to the Electric Special Project Reserve and Adoption of Electric Special Project Reserve Guidelines). These policies and timelines are included from Resolution 9206 as amended to refer to the reserves structure set forth in these Reserves Management Practices:

- a) The purpose of the ESP Reserve is to fund projects that benefit electric ratepayers;
- b) The ESP Reserve funds must be used for projects of significant impact;
- c) Projects proposed for funding must demonstrate a need and value to electric ratepayers. The projects must have verifiable value and must not be speculative, or high-risk in nature;
- d) Projects proposed for funding must be substantial in size, requiring funding of at least \$1 million;
- e) Set a goal to commit funds by the end of FY 2017;
- f) Any uncommitted funds remaining at the end of FY 2022 will be transferred to the Electric Supply Operations Reserve and the ESP Reserve will be closed;

Section 7. Hydroelectric Stabilization Reserve

The Hydroelectric Stabilization Reserve is used to manage the supply cost impacts associated with variations in generation from hydroelectric resources. Staff will manage the Hydroelectric Stabilization Reserve as follows:

- a) Projected Hydro Output: Near the end of each fiscal year, staff will determine the actual and expected hydro output for that fiscal year, compare that to the long-term average annual output level (495,957 MWh as of March 2018), and multiply the difference by the average of the monthly round-the-clock forward market prices for each month of the current fiscal year.
- b) Changes in Reserves. Staff is authorized to transfer the amount described in Sec. 7(a) from the Operations Reserve to the Hydroelectric Stabilization Reserve for

hydro output deviations above long-term average levels, or transfer this amount from the Hydroelectric Stabilization Reserve to the Operations Reserve for hydro output deviations below long-term average levels.

- c) Implementation of HRA. The level of the Hydroelectric Stabilization Reserve *after* the transfers described above shall be the basis for staff’s determination, with Council approval, of whether to implement the Hydro Rate Adjuster (Electric Rate E-HRA) for the following fiscal year.
- d) Reserve Guidelines. Staff will manage the Hydroelectric Stabilization Reserve according to the following guideline levels:

Minimum Level	\$3 million
Target Level	\$19 million
Maximum Level	\$35 million

Section 8. Underground Loan Reserve

At the end of each fiscal year, the Underground Loan Reserve will be adjusted by the principal payments made against outstanding underground loans.

Section 9. Public Benefits Reserve

The Public Benefits Reserve will be increased by the amount of unspent Public Benefits Revenues remaining at the end of each fiscal year. Expenditure of these funds requires action by the City Council.

Section 10. CIP Reserve

The CIP Reserve is used to manage cash flow for capital projects and acts as a reserve for capital contingencies. Staff will manage the CIP Reserve according to the following practices:

- a) The following guideline levels are set forth for the CIP Reserve. These guideline levels are calculated for each fiscal year of the Financial Planning Period and approved by Council resolution.

Minimum Level	20% of the maximum CIP Reserve guideline level
Maximum Level	Average annual (12 month) ¹ CIP budget, for 48 months of budgeted CIP expenses ²

- b) Changes in Reserves: Staff is authorized to transfer funds between the CIP Reserve and the Reserve for Commitments when funds are added to or removed from the Reserve for Commitments as a result of a change in contractual commitments related to CIP projects. Any other additions to or withdrawals from the CIP reserve require Council action.

¹ Each month is calculated based upon 1/12 of the annual budget.

² For example, in the Financial Plan for FY 2021, the 48 month period to use to derive the annual average is FY 2021 through FY 2024. In the FY 2022 Financial Plan, the 48 month period to use to derive the annual average would be FY 2022 through FY 2025 etc.

- c) Minimum Level:
 - i) If, at the end of any fiscal year, the minimum guideline is not met, staff shall present a plan to the City Council to replenish the reserve. The plan shall be delivered by the end of the following fiscal year, and shall, at a minimum, result in the reserve reaching its minimum level by the end of the next fiscal year. For example, if the CIP Reserve is below its minimum level at the end of FY 2017, staff must present a plan by June 30, 2018 to return the reserve to its minimum level by June 30, 2019. In addition, staff may present, and the Council may adopt, an alternative plan that takes longer than one year to replenish the reserve, or that does so in a shorter period of time.
 - d) Maximum Level: If there are funds in this reserve in excess of the maximum level staff must propose in the next Financial Plan to transfer these funds to another reserve or return them to ratepayers in the funds to ratepayers, or designate a specific use of funds for CIP investments that will be made by the end of the next Financial Planning period. Staff may also seek City Council to approve holding funds in this reserve in excess of the maximum level if they are held for a specific future purpose related to the CIP.

Section 11. Rate Stabilization Reserves

Funds may be added to the Electric Supply or Distribution Fund’s Rate Stabilization Reserves by action of the City Council and held to manage the trajectory of future year rate increases. Withdrawal of funds from either Rate Stabilization Reserve requires action by the City Council. If there are funds in either Rate Stabilization Reserve at the end of any fiscal year, any subsequent Electric Utility Financial Plan must result in the withdrawal of all funds from this Reserve by the end of the Financial Planning Period. The Council may approve exceptions to this requirement, when proposed by staff to provide greater rate stabilization to customers.

Section 12. Operations Reserves

The Electric Supply Fund and Electric Distribution Fund Operations Reserves are used to manage normal variations in the costs of providing electric service and as a reserve for contingencies. Any portion of the Electric Utility’s Fund Balance not included in the reserves described elsewhere in these Reserve Management Practices will be included in the appropriate Operations Reserve unless the reserve has reached its maximum level as set forth in Section 12 (e) below. Staff will manage the Operations Reserves according to the following practices:

- a) The following guideline levels are set forth for the Electric Supply Fund Operations Reserve. These guideline levels are calculated for each fiscal year of the Financial Planning Period based on the levels of Operations and Maintenance (O&M) and commodity expense forecasted for that year in the Financial Plan.

Minimum Level	60 days of Supply Fund O&M and commodity expense
Target Level	90 days of Supply Fund O&M and commodity expense
Maximum Level	120 days of Supply Fund O&M and commodity expense

- b) The following guideline levels are set forth for the Electric Distribution Fund Operations Reserve. These guideline levels are calculated for each fiscal year of the Financial

Planning Period based on the levels of O&M expense forecasted for that year in the Financial Plan.

Minimum Level	60 days of Distribution Fund O&M expense
Target Level	90 days of Distribution Fund O&M expense
Maximum Level	120 days of Distribution Fund O&M expense

- c) Minimum Level: If, at the end of any fiscal year, the funds remaining in the Supply Fund or Distribution Fund’s Operations Reserve are lower than the minimum level set forth above, staff shall present a plan to the City Council to replenish the reserve. The plan shall be delivered within six months of the end of the fiscal year, and shall, at a minimum, result in the reserve reaching its minimum level by the end of the following fiscal year. For example, if the Operations Reserve is below its minimum level at the end of FY 2014, staff must present a plan by December 31, 2014 to return the reserve to its minimum level by June 30, 2015. In addition, staff may present an alternative plan that takes longer than one year to replenish the reserve.
- d) Target Level: If, at the end of any fiscal year, either Operations Reserve is higher or lower than the target level, any Financial Plan created for the Electric Utility shall be designed to return both Operations Reserves to their target levels by the end of the forecast period.
- e) Maximum Level: If, at any time, either Operations Reserve reaches its maximum level, no funds may be added to this Reserve. Any further increase in that fund’s Fund Balance shall be automatically included in the Unassigned Reserve described in Section 13, below.

Section 13. Unassigned Reserves

If the Operations Reserve in either the Electric Supply Fund or the Electric Distribution Fund reaches its maximum level, any further additions to that fund’s Fund Balance will be held in the Unassigned Reserve. If there are any funds in either Unassigned Reserve at the end of any fiscal year, the next Financial Plan presented to the City Council must include a plan to assign them to a specific purpose or return them to the Electric Utility ratepayers by the end of the first fiscal year of the next Financial Planning Period. For example, if there were funds in the Unassigned Reserves at the end of FY 2016, and the next Financial Planning Period is FY 2017 through FY 2021, the Financial Plan shall include a plan to return or assign the funds in the Unassigned Reserve by the end of FY 2017. Staff may present an alternative plan that retains these funds or returns them over a longer period of time.

Section 14. Intra-Utility Transfers between Supply and Distribution Funds

Transfers between Electric Distribution Fund Reserves and Electric Supply Fund Reserves are permitted if consistent with the purposes of the two reserves involved in the transfer. Such transfers require action by the City Council.

Section 15. Low Carbon Fuel Standard (LCFS) Reserve

This reserve tracks revenues earned via the sale of Low Carbon Fuel Credits allocated by the California Air Resources Board to the City, as well as expenses incurred, in accordance with California’s Low Carbon Fuel Standard program. At the end of each fiscal year, the LCFS

Reserve will be adjusted by the net of revenues and expenses associated with California's LCFS program.

Section 16. Cap and Trade Program Reserve

This reserve tracks unspent or unallocated revenues from the sale of carbon allowances freely allocated by the California Air Resources Board to the electric utility, under the State's Cap and Trade Program. Funds in this Reserve are managed in accordance with the City's Policy on the Use of Freely Allocated Allowances under the State's Cap and Trade Program (the Policy), adopted by Council Resolution 9487 in January 2015.