



City of Palo Alto

City Council Staff Report

(ID # 8828)

Report Type: Consent Calendar

Meeting Date: 2/12/2018

Council Priority: Environmental Sustainability

Summary Title: Annual Report on Renewable and Carbon Neutral Electricity Supplies

Title: Annual Review of the City's Renewable Procurement Plan, Renewable Portfolio Standard Compliance, and Carbon Neutral Electric Supplies

From: City Manager

Lead Department: Utilities

Background

The City currently has three procurement targets related to renewable and carbon neutral electricity contained in three different plans:

- LEAP Renewable Energy Goal (33% by 2015): The City's first renewable energy goal is contained in LEAP: procuring renewable electricity supplies equal to at least 33% of retail sales starting in 2015, with no more than a 0.5 cents per kilowatt-hour (¢/kWh) impact on rates. This LEAP goal was last updated in April 2012 ([Staff Report 2710](#), [Resolution 9241](#)) to clarify that the 33% goal is a minimum and that renewable energy supplies beyond the 33% level should be pursued as long as the aggregate rate impact of these purchases does not exceed the 0.5 ¢/kWh limit. In 2018, staff plans to update the LEAP renewable energy goal in the new Electric Integrated Resource Plan (EIRP), aligning the City's RPS goal with the state's 50% by 2030 RPS mandate.
- RPS Procurement Plan (33% by 2020): Like all electric utilities in California, Palo Alto is subject to the state's Renewable Portfolio Standard (RPS) mandate of 50% by 2030. In December 2011 the City adopted an RPS Procurement Plan ([Staff Report 2225](#), [Resolutions 9214](#) and [9215](#)) and updated it in November 2013 ([Staff Report 4168](#), [Resolution 9381](#)) in compliance with this law (Section 399.30(a) of California's Public Utilities Code). Staff plans to update the RPS Procurement Plan again in the near future to align with the 50% RPS law (SB 350), as the regulations implementing this law are in the process of being finalized. The RPS Procurement Plan and Enforcement Program complement each other: the Procurement Plan establishes official procurement targets, while the Enforcement Program specifies the reporting and monitoring that is required

of the Utilities General Manager while working to achieve those targets. (This staff report satisfies the reporting requirements of the City's RPS Enforcement Program: that the Utilities General Manager to conduct an annual review of the Electric Utility's compliance with the procurement targets set forth in the City's RPS Procurement Plan.)

The procurement requirements in the City's current RPS Procurement Plan are that the City achieve renewable supplies equal to 33% of retail sales by 2020, which is in line with the state's RPS mandate, but less ambitious than the City's LEAP goals (33% by 2015). The RPS Procurement Plan also contains interim targets for three separate periods (2011-2013, 2014-2016, and 2017-2020), which are not part of the City's LEAP goal. The City adopted the lower, but state-mandated, levels in its official compliance plan to avoid the possibility of being subject to penalties if RPS Procurement Plan targets are not met. In contrast, the City's achievement of its more ambitious LEAP targets is self-directed, and not subject to state enforcement procedures.

- Carbon Neutral Plan (100% Carbon Neutral Electricity by 2013): The Carbon Neutral Plan was adopted in March 2013 ([Staff Report 3550](#), [Resolution 9322](#)), and requires that the City procure a carbon neutral electric supply portfolio starting in calendar year (CY) 2013. In general, this goal is expected to be achieved primarily through purchases made under the City's long-term renewable power purchase agreements (PPAs) and output from its hydroelectric resources. But in dry hydro years when hydroelectric resources are lower than expected, carbon neutrality may be achieved through the purchase of renewable energy certificates (RECs) to offset fossil fuel-based market power purchases.

Discussion

The City continues to meet its objectives under LEAP, the RPS Procurement Plan, and the Carbon Neutral Plan, and expects to achieve an RPS level of greater than 50% in 2017¹ – thirteen years in advance of the state's 2030 deadline. Below is a summary of CPAU's progress toward satisfying its three renewable energy and carbon neutral procurement targets, with additional detail provided in Attachment A.

LEAP Renewable Energy Goals

In 2016, counting the RPS-eligible RECs purchased to satisfy the Carbon Neutral Plan, the City's overall RPS level was 60.2%, or almost twice as large as the LEAP renewable energy goal for 2016. Ignoring RECs and counting only renewable energy acquired through long-term contracts for wind, solar, landfill gas, and small hydro resources, the City's RPS level was 41.0% - which still exceeds the LEAP RPS target for that period.

For CY 2017, staff projects that renewable electricity supplies will equal 58.9% of retail sales.

¹ It generally takes a few months for generation meter data to be finalized and for renewable energy certificates to be generated in recognition of renewable energy generation. Hence the City's official 2017 RPS level may not be known until the spring of 2018.

RPS Procurement Plan Compliance

In accordance with the state’s RPS Program requirements, CPAU’s Procurement Plan develops a renewable electric supply portfolio that balances environmental goals with system reliability while maintaining stable and low retail electric rates. The state RPS program requires retail electricity suppliers like CPAU to procure progressively larger renewable electricity supplies across three separate Compliance Periods. CPAU’s procurement targets, as well as its actual/projected procurement volumes and RPS levels, for the three Compliance Periods are summarized in Table 1 below.

Table 1: RPS Compliance Period Procurement Targets and Actual/Projected Procurement

RPS Compliance Period	Years	Retail Sales (MWh)	Procurement Target (MWh)	Actual/Projected* Procurement (MWh)	% of Retail Sales
1	2011-2013	2,837,773	567,555	607,740	21.4%
2	2014-2016	2,801,056	605,949	826,855	29.5%
3	2017-2020	3,641,948	1,092,306	2,126,407	58.4%
TOTALS		9,280,777	2,265,810	3,561,002	38.4%

*Procurement totals for Compliance Periods 1 and 2 are actuals; procurement totals for Compliance Period 3 are projected.

Carbon Neutral Plan

With the purchase of 175,300 unbundled RPS-eligible RECs in May 2017 to offset the market power purchases made for CY 2016, CPAU achieved its goal, set forth in the Carbon Neutral Plan, of an electric supply portfolio with zero net greenhouse (GHG) emissions for the fourth consecutive year. Along with these RECs, carbon neutrality was achieved in CY 2016 via CPAU’s existing hydro and renewable generation (wind, solar, and landfill gas).

For CY 2017, bountiful hydro conditions resulted in hydroelectric resources supplying roughly 87% of the City’s electric supply needs, with an additional 59% coming from non-hydro renewable energy resources. As a result, the City sold a significant amount of surplus energy.

Policy Implications

This report implements Sections 4 and 5 of the City’s RPS Enforcement Program, which require an annual review of the Electric Utility’s compliance with the CPAU RPS Procurement Plan to ensure that CPAU is making reasonable progress toward meeting the compliance obligations established in the CPAU RPS Procurement Plan.

Environmental Review

The Council’s review of this report does not meet the definition of a “project” pursuant to Public Resources Code Section 21065, thus California Environmental Quality Act review is not required.

Attachments:

- Attachment A: RPS and Carbon Neutral Supply Procurement Details

Attachment A: Renewable and Carbon Neutral Electricity Supply Procurement Details

LEAP Renewable Energy Goals

In 2016, the City received 375,343 MWh of renewable energy through its long-term contracts for wind, solar, landfill gas, and small hydro resources. This volume represents 41.0% of the City's total retail sales for that period. In addition, to satisfy the Carbon Neutral Plan, the City also purchased 175,300 RECs from RPS-eligible wind and biomass resources for 2016. Although the City's procurement of renewable energy from long-term resources alone exceeded the LEAP Renewable Energy Goal of 33%, the language in LEAP does not state that only generation from long-term resources can be counted toward the goal; it merely states that all supplies must be deemed "eligible" under the state's RPS eligibility criteria. Counting the RPS-eligible RECs purchased to satisfy the Carbon Neutral Plan, the City's overall RPS level in 2016 was 60.2%, or almost twice as large as the LEAP renewable energy goal for 2016.

For CY 2017, when three solar resources under long-term PPAs that began operating in 2016 will have been online for a full year, staff projects that renewable electricity supplies will equal 58.9% of retail sales.

Table 1 shows the renewable resources currently under contract, the status of the projects, their annual output in Gigawatt-hours (GWh), and the rate impact of each resource that was calculated at the time it was added to the electric supply portfolio.

Table 1: Summary of Contracted Renewable Electricity Resources

Resource	Delivery Begins	Delivery Ends	Annual Generation (GWh)	Rate Impact (¢/kWh)
Small Hydro	Before 2000	N/A	10.0	0
High Winds	Dec. 2004	Jun. 2028	42.7	0.012
Shiloh I Wind	Jun. 2006	Dec. 2021	55.6	(0.039)
Santa Cruz Landfill Gas (LFG)	Feb. 2006	Feb. 2026	9.0	0.003
Ox Mountain LFG	Apr. 2009	Mar. 2029	42.5	(0.040)
Keller Canyon LFG	Aug. 2009	Jul. 2029	13.8	(0.020)
Johnson Canyon LFG	May 2013	May 2033	9.2	0.057
San Joaquin LFG	Apr. 2014	Apr. 2034	27.5	0.127
Kettleman Solar	Aug. 2015	Aug. 2040	53.5	0.098
Hayworth Solar	Dec. 2015	Dec. 2042	63.7	0.026
Frontier Solar	Jul. 2016	Jul. 2046	52.5	0.011
Elevation Solar C	Dec. 2016	Dec. 2041	100.8	(0.044)
W. Antelope Blue Sky Ranch B	Dec. 2016	Dec. 2041	50.4	(0.002)
Total Operating Resources			531.1	0.189
Wilsona Solar	Jun. 2021	May 2046	75.0	(0.055)
CLEAN Program @ 3 MW Cap	TBD	TBD	5.1	0.027
Total Non-Operating Resources			80.1	(0.028)
Total Committed Resources			611.2	0.161

RPS Procurement Plan Compliance

Annually, the Utilities General Manager reviews CPAU’s RPS Procurement Plan to determine compliance with the state’s RPS Program. Under the state RPS Program, the California Energy Commission (CEC) developed portfolio balancing requirements, which dictate what percentage of renewable procurement must come from resources interconnected to a California Balancing Area (as opposed to an out-of-state transmission grid balancing area). These requirements also determine the eligibility criteria for renewable resource products as determined by their eligible Portfolio Content Categories¹, found in the CEC Enforcement Procedure RPS (CA Code of Regulations, Title 20, Section 3203). The CEC Enforcement Procedures apply to publicly owned utilities (POUs), such as CPAU.

In accordance with the state’s RPS Program requirements, CPAU’s Procurement Plan develops a renewable electric supply portfolio that balances environmental goals with system reliability while maintaining stable and low retail electric rates. The state RPS program requires retail electricity suppliers like CPAU to procure progressively larger renewable electricity supplies across three separate Compliance Periods, as outlined below.

¹ RPS Portfolio Content Categories are defined as follows: Category 1 is energy and RECs delivered to a California Balancing Authority (CBA) without substituting electricity from another source, Category 2 is energy and RECs that cannot be delivered to a CBA without substituting electricity from another source, and Category 3 is unbundled RECs.

1. Compliance Period 1 (2011 – 2013)

For Compliance Period 1 (2011-2013) retail electricity providers were required to procure renewable electricity supplies equaling 20% of total retail sales, which CPAU did. In this period, CPAU supplied 21.4% of the City’s retail electricity sales volumes from renewable energy sources. The procurement results for Compliance Period 1 are displayed in Table 2 below:

Table 2: Compliance Period 1 Procurement Results

Year	Retail Sales (MWh)	Procurement Target (MWh)*	Actual Procurement (MWh)	% of Retail Sales
2011	949,517	189,903	207,974	21.9%
2012	935,021	187,004	200,621	21.5%
2013	953,235	190,647	199,145	20.9%
TOTAL	2,837,773	567,555	607,740	21.4%

* Annual procurement targets are “soft” targets. The RPS Procurement Plan requires that the target be met for the compliance period as a whole, not in each year of the compliance period.

All of the renewable energy procured in Compliance Period 1 came from resources whose contracts were executed before June 1, 2010. The RPS Procurement Plan considers these contracts “grandfathered,” and since all of the renewable energy procurement for Compliance Period 1 was from these types of contracts, there was no need to meet the Portfolio Balancing Requirements included in Section B.4 of the RPS Procurement Plan.

2. Compliance Period 2 (2014 – 2016)

In Compliance Period 2, renewable procurement must equal or exceed the sum of the three annual RPS procurement targets described by the following equations:

$$2014 \text{ RPS Target} = 20\% \times (\text{Retail Sales in 2014})$$

$$2015 \text{ RPS Target} = 20\% \times (\text{Retail Sales in 2015})$$

$$2016 \text{ RPS Target} = 25\% \times (\text{Retail Sales in 2016})$$

As shown in Table 3 below, CPAU easily exceeded this mandated procurement level as well. Renewable electricity procurement equaled 29.5% of retail sales for Compliance Period 2 overall.

Table 3: Compliance Period 2 Procurement Target

Year	Retail Sales (MWh)	Procurement Target (MWh)*	Actual Procurement (MWh)	% of Retail Sales
2014	953,386	190,677	210,250	22.1%
2015	932,922	186,584	241,262	25.9%
2016	914,748	228,687	375,343	41.0%
TOTAL	2,801,056	605,949	826,855	29.5%

* Annual procurement targets are “soft” targets. The RPS Procurement Plan requires that the target be met for the compliance period as a whole, not in each year of the compliance period.

Also in Compliance Period 2, the RPS Portfolio Balancing Requirements will apply to the procurement levels described above. The specific requirements are: (1) CPAU must procure at least 65% of its renewable supplies from Portfolio Content Category 1, and (2) no more than 15% from Portfolio Content Category 3 (unbundled RECs). CPAU easily met the Compliance Period 2 overall procurement requirement and the RPS Portfolio Balancing Requirement, as five new solar projects came online in 2015 and 2016, and all of these projects are considered Portfolio Content Category 1 resources.

3. Compliance Period 3 (2017 – 2020)

For Compliance Period 3, CPAU is subject to “soft” targets to supply at least 27% of its retail sales volume from renewable resources in 2017, with that level increasing by 2% each year until reaching 33% in 2020, as described by the following four equations:

$$2017 \text{ RPS Target} = 27\% \times (\text{Retail Sales in 2017})$$

$$2018 \text{ RPS Target} = 29\% \times (\text{Retail Sales in 2018})$$

$$2019 \text{ RPS Target} = 31\% \times (\text{Retail Sales in 2019})$$

$$2020 \text{ RPS Target} = 33\% \times (\text{Retail Sales in 2020})$$

The overall Compliance Period 3 target is equal to the sum of these four annual soft targets. CPAU is expected to easily comply with the Compliance Period 3 overall procurement requirement, as well as the Portfolio Balancing Requirement that at least 75% of the renewable electricity supplies come from Portfolio Content Category 1 and no more than 10% come from Portfolio Content Category 3. Staff projects that renewable electricity supplies will satisfy 58% of retail sales for Compliance Period 3, and that all of these supplies will come from either Portfolio Content Category 1 or “grandfathered” resources.

Finally, as required by the CEC RPS Enforcement Procedures and Section D of the City’s Procurement Plan, staff reported all of the above information to the California Energy Commission in June 2017.

Carbon Neutral Plan

With the purchase of unbundled RECs in May 2017 to offset the market power purchases made for CY 2016, CPAU achieved its goal, set forth in the Carbon Neutral Plan, of an electric supply portfolio with zero net greenhouse (GHG) emissions for the fourth consecutive year. Along with the purchase of RECs, carbon neutrality was achieved in CY 2016 through existing hydro and renewable generation (wind, solar, and landfill gas). As in CYs 2013 through 2015, the amount of carbon neutral generation from these long-term contracts was slightly lower than expected due to drought conditions limiting hydroelectric output. This resulted in a higher volume of purchases of market power and the offsetting RECs.

For CY 2017, bountiful hydro conditions resulted in hydroelectric resources supplying roughly 87% of the City’s electric supply needs, with an additional 59% coming from non-hydro renewable energy resources. As a result, the City sold a significant amount of surplus energy.

Figure 1 below illustrates the City’s actual and projected purchases of carbon neutral electric supplies that have been made to satisfy its objectives under LEAP, the RPS Procurement Plan, and the Carbon Neutral Plan.

Figure 1: CPAU Carbon Neutral Supply Resources

