



City of Palo Alto

(ID # 13753)

Utilities Advisory Commission Staff Report

Meeting Date: 12/1/2021

Council Priority: Climate/Sustainability and Climate Action Plan

Title: Informational Report on the Annual Review of the City's Renewable Procurement Plan, Renewable Portfolio Standard Compliance, and Carbon Neutral Electric Supplies for 2020

From: Director of Utilities

Lead Department: Utilities

Executive Summary

Like all electric utilities in California, Palo Alto is subject to the state's Renewable Portfolio Standard (RPS) mandate of 60% by 2030. The City has also adopted a Carbon Neutral Plan, which led to the achievement of a carbon neutral electric supply portfolio starting in 2013 (and which was updated by Council in August 2020). In 2011, in compliance with state RPS regulations, the Council also formally adopted an RPS Procurement Plan and an RPS Enforcement Program that recognize certain elements of the state's RPS law applicable to publicly-owned utilities. The RPS Enforcement Program requires the City Manager, or their designee, the Utilities Director, to conduct an annual review of the Electric Utility's compliance with the procurement targets set forth in the City's RPS Procurement Plan.

This staff report satisfies the reporting requirements of the City's RPS Enforcement Program, while also providing an update on the City's compliance with the Carbon Neutral Plan. The City continues to meet both its RPS and Carbon Neutral Plan objectives—even after selling over 348,000 MWh of renewable energy in 2020.

Background

The City currently has two independent procurement targets related to renewable and carbon neutral electricity:

- RPS Procurement Plan (60% by 2030): The City's official renewable electricity goal is contained in the RPS Procurement Plan that the City was required to adopt under Section 399.30(a) of California's Public Utilities Code. This was adopted in December 2011 ([Staff Report 2225](#), [Resolutions 9214](#) and [9215](#)) and updated in November 2013 ([Staff Report 4168](#), [Resolution 9381](#)), December 2018 ([Staff Report 9761](#), [Resolution 9802](#)), and December 2020 ([Staff Report 11650](#), [Resolution 9929](#)). The last update to the

RPS Procurement Plan brought it into alignment with the state’s 60% RPS requirement (SB 100), which was signed into law in 2018. The RPS Procurement Plan and RPS 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 Director while working to achieve those targets.

The procurement requirement in the current version of the City’s RPS Procurement Plan is that the City acquire renewable electricity supplies equal to 60% of retail sales by 2030, which is in line with the state’s current RPS mandate. The RPS Procurement Plan also contains an escalating set of targets for six interim Compliance Periods (2011-2013, 2014-2016, 2017-2020, 2021-2024, 2025-2027, and 2028-2030), as well as subsequent 3-year compliance periods beginning in 2031.

- Carbon Neutral Plan (100% Carbon Neutral Electricity by 2013): The Carbon Neutral Plan was adopted in March 2013 ([Staff Report 3550](#), [Resolution 9322](#)) and updated in August 2020 ([Staff Report 11556](#), [Resolution 9913](#)), 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. However, when the City Council approved an update to the Carbon Neutral Plan in August 2020, they also approved a new procurement strategy whereby the City does not keep all of the output of its long-term, in-state PPAs, but instead exchanges that output for less expensive out-of-state renewable generation (with the net proceeds used to offset electric utility operational costs and fund local decarbonization programs).

Discussion

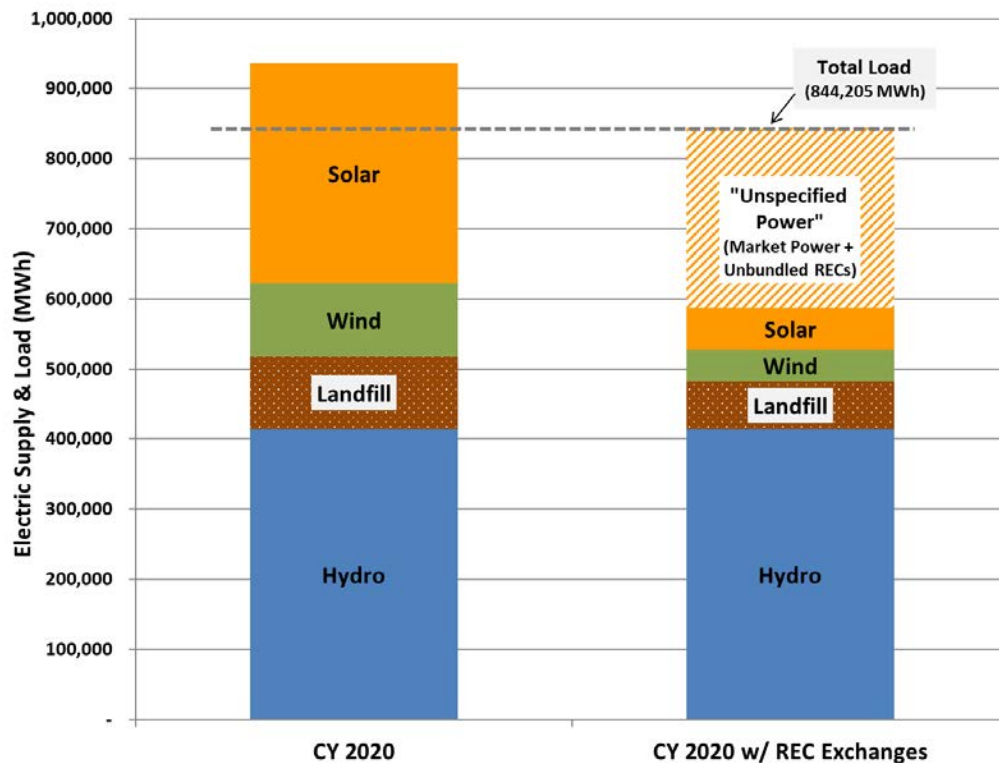
The City continues to meet its objectives under the RPS Procurement Plan and the Carbon Neutral Plan, and achieved an RPS level of 20.8% in 2020. Although this value fell short of the state’s 33% RPS procurement “soft target” for the year, the City remained compliant with state law because the RPS procurement mandate is evaluated over a multi-year horizon (2017-2020 in this case), and the City far exceeded the state’s soft target levels in the earlier years of the four-year compliance period. Below is a summary of CPAU’s progress toward satisfying its renewable energy and carbon neutral procurement targets, with additional detail provided in Attachment A.

RPS Procurement Plan Compliance

In CY 2020, the City initially received 525,242 MWh of renewable energy through its long-term contracts for wind, solar, landfill gas, and small hydro resources (which represents 64.5% of the City’s total retail sales for that period). Additionally, the City received 410,885 MWh of large hydroelectric generation (representing 50.4% of the City’s total retail sales), which is not classified as eligible renewable generation by the state. Based on the Council’s decision in

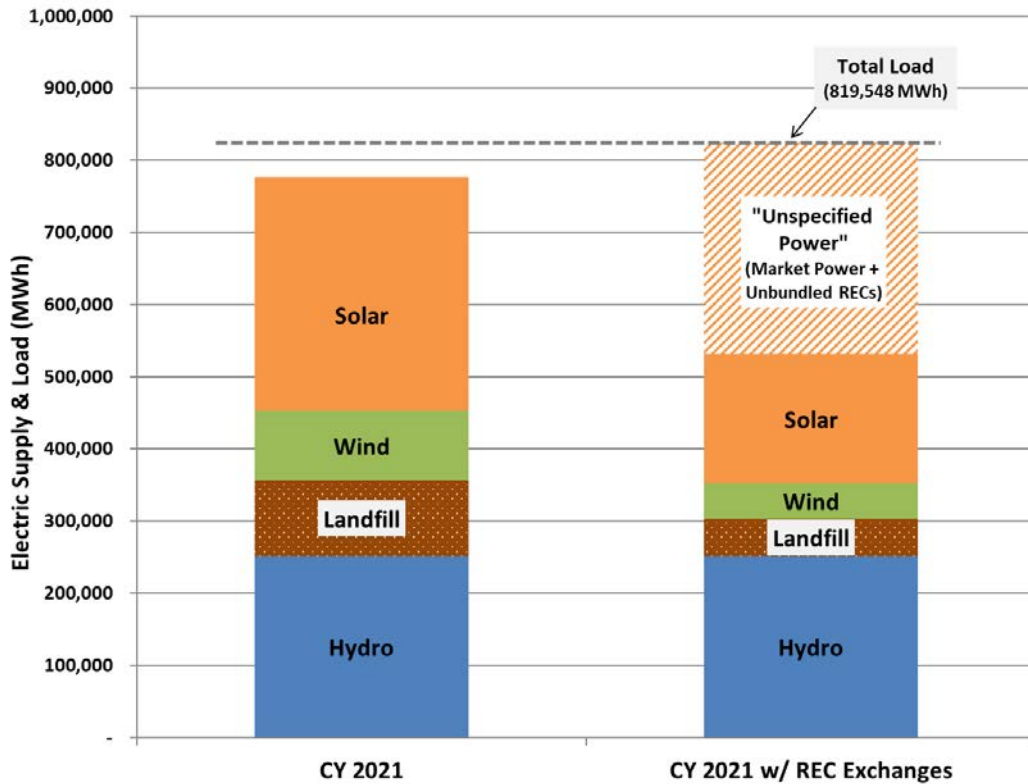
August 2020 to pursue the “REC Exchange Program” ([Staff Report 11556](#), [Resolution 9913](#)) the City sold 348,700 MWh of in-state renewable energy supplies, yielding \$4.04 million in sales revenue, while purchasing 325,186 MWh of out-of-state renewable energy, at a cost of \$1.10 million. Figure 1 below depicts the City’s load and supply resources for CY 2020, before and after the REC Exchanges described above. Accounting for these transactions, the City’s net renewable energy supplies totaled 501,728 MWh, which represents 61.6% of the City’s total retail sales for 2020. However, under the state’s RPS regulations the majority of the out-of-state renewable energy purchases were not able to be applied to the City’s RPS requirement, hence the City’s official RPS level was only 20.8%.

Figure 1: CY 2020 Electric Load and Supply Resources, With and Without REC Exchanges



For CY 2021, staff has contracted to sell about 287,000 MWh of in-state renewable generation, and purchased about 339,000 MWh of out-of-state renewable generation (Figure 2 below depicts the City’s load and supply resources for CY 2021, before and after the REC Exchanges described above. Note that much of the decrease in REC sales volume and revenue, compared to CY 2020, is due to the much lower volume of hydro generation the City expects to receive in 2021 due to the current drought.) Once these transactions are accounted for, they will yield a total of about \$2.25 million in net revenue, and an official RPS level of 35.75% (equal to the state’s RPS soft target for 2021). However, if the additional out-of-state renewable supplies that cannot be applied to the City’s RPS requirements are included, the City’s total renewable electricity supplies are projected to be approximately 75% of retail sales.

Figure 2: CY 2021 Electric Load and Supply Resources, With and Without REC Exchanges



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 a series of separate multi-year Compliance Periods. CPAU’s procurement targets, as well as its actual/projected procurement volumes and RPS levels, for the first three Compliance Periods are summarized in Table 1 below.

Table 1: RPS Compliance Period Procurement Targets and Actual Procurement

RPS Compliance Period	Years	Retail Sales (MWh)	Procurement Target (MWh)	Actual 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	3,487,686	1,043,424	1,619,303	46.4%
TOTALS		9,126,515	2,216,928	3,053,898	33.5%

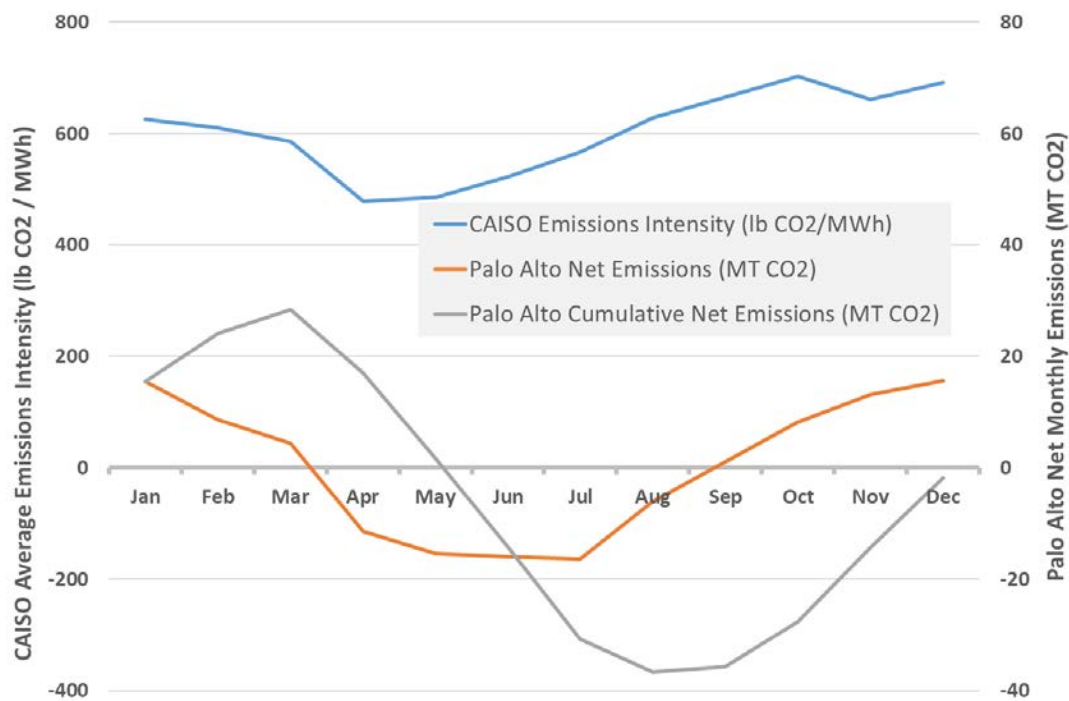
Carbon Neutral Plan

In CY 2020, CPAU achieved its goal, set forth in the Carbon Neutral Plan, of an electric supply portfolio with zero net greenhouse (GHG) emissions for the sixth consecutive year. Carbon neutrality was achieved in CY 2020 through existing hydro and renewable generation (wind,

solar, and landfill gas). As discussed above, due to the Council’s adoption of the REC Exchange Program in August 2020, the City sold 348,700 MWh of in-state renewable energy supplies, yielding \$4.04 million in sales revenue, while purchasing 325,186 MWh of out-of-state renewable energy, at a cost of \$1.10 million. Accounting for these transactions, the City’s net renewable energy supplies totaled 501,728 MWh, which represents 61.6% of the City’s total retail sales for 2020. The remainder of the City’s needs were supplied by large hydroelectric resources.

When the City Council approved an update to the Carbon Neutral Plan in August 2020, the primary change was to adopt an *hourly* carbon accounting methodology as the basis for determining whether the City has met its carbon neutrality objective. Using an annual accounting approach, the City had an overall surplus of 68,407 MWh of carbon neutral generation compared to its load (equal to 8.1% total load), and thus substantially *exceeded* the carbon neutrality standard. Meanwhile, under the hourly carbon accounting approach,¹ the City’s electric supply portfolio also exceeded the carbon neutrality standard, being responsible for a net negative amount of GHG emissions: -25,104 metric tonnes of CO2 equivalent. See Figure 3 below for a depiction of the City’s monthly total net CO2 emissions for 2020, as well as the monthly average emissions intensity for the California electric grid.

Figure 3: CY 2020 Monthly Net Electric Supply Emissions and CAISO Emissions Intensity



¹ The City’s hourly carbon accounting methodology entails calculating the City’s net surplus or deficit carbon neutral supply position relative to its load in every hour of the year. The grid average electricity emissions intensity for each hour is then applied to each of these hourly surpluses or deficits to yield a net emissions contribution (or reduction) that the City’s electric supply portfolio is responsible for in that hour. These hourly emissions totals are then summed across the entire year to yield the City’s annual emissions total for the year.

For CY 2021, significantly below average hydro conditions are expected to result in about 30% of the City's electric supply needs being supplied by hydroelectric resources compared to an annual average of about 55%, with the remainder coming from non-hydro renewable energy resources (including purchases of out-of-state unbundled renewable energy certificates, or RECs).

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 Utilities Advisory Commission'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: 2020 Renewable and Carbon Neutral Electricity Supply Procurement Details

Renewable and Carbon Neutral Electricity Supply Procurement Details

Renewable Energy Procurement Efforts

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	57.3	(0.041)
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	10.4	0.064
San Joaquin LFG	Apr. 2014	Apr. 2034	27.5	0.127
Kettleman Solar	Aug. 2015	Aug. 2040	53.5	0.099
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)
CLEAN Program Projects	Varies	Varies	5.0	0.027
Total Operating Resources			539.0	0.223
Golden Fields Solar III	Jan. 2023	Dec. 2047	75.0	(0.056)
Total Non-Operating Resources			75.0	(0.056)
Total Committed Resources			614.0	0.168

RPS Procurement Plan Compliance

Annually, the Utilities Director 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.

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.

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. 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 RPS Procurement Details

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 RPS Procurement Details

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 applied 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. Despite falling short of the soft target for 2020, CPAU easily exceeded 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.

Table 4: Compliance Period 3 RPS Procurement Details

Year	Retail Sales (MWh)	Procurement Target (MWh)*	Actual/Projected Procurement (MWh)	% of Retail Sales
2017	912,623	246,408	554,206	60.7%
2018	888,033	257,530	574,475	64.7%
2019	861,561	267,084	319,035	37.0%
2020	825,469	272,405	171,587	20.8%
Total	3,487,686	1,043,426	1,619,303	46.4%

* 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.

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 2021.