SOUTHERN CALIFORNIA

2022 CALIFORNIA RENEWABLES PORTFOLIO STANDARD

Annual Report

NOVEMBER 2022

California Public Utilities Commission

A digital copy of this report can be found at:
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Executive Summary

The California Public Utilities Commission (CPUC) reports to the Legislature each year on the progress of the Renewables Portfolio Standard (RPS) program. (Senate Bill (SB) 1222[1] (Hertzberg, 2016)) This report describes the progress of the State's electricity retail sellers[2] in meeting the RPS program requirements for 2021 and future years.

The report also identifies specific challenges to the RPS program and recommendations for addressing those challenges in a later section of this report. Specifically, the report addresses challenges related to bioenergy, delays in renewable energy project development, and renewables paired with energy storage resources.

A subsequent annual report will address the 2017-2020 compliance period after the California Energy Commission (CEC) verifies retail sellers' renewable energy credits (RECs) and the CPUC finishes its compliance review.

Finally, it's important to note that while this report to the legislature is focused on the RPS program, as directed by statute, the state's integrated resource planning process, where the CPUC requires new electricity resources to meet reliability and increasingly stringent GHG targets to achieve SB 100 goal of 100% renewable energy resources and zero-carbon resources by 2045, will play an increasingly central role in future renewable project development.

California's Electricity Retail Sellers are Generally Meeting Annual RPS Targets[3]

Although RPS compliance determinations are only made for the compliance period as a whole, retail seller performance is also measured against annual targets, though these are non-binding.

- Most of the retail sellers report procuring at or above the 35.75 percent RPS annual target for 2021.[4]
- The large Investor-Owned Utilities (IOUs) have executed enough renewable electricity contracts to exceed the annual 2021 RPS target and are on track to meet the overall 2021-2024 compliance period requirement of 44 percent.
- Two of the three small and multi-jurisdictional utilities (SMJUs) have met or exceeded their 2021 RPS target, however all must procure additional resources to meet the overall 2021-2024 compliance period requirement.
- Nearly all Community Choice Aggregators (CCAs) have executed enough renewable electricity contracts to meet or exceed the annual 2021 RPS target,[5] and most are on track to meet the overall RPS requirements for the 2021-2024 compliance period.

[1] As codified in Public Utilities Code § 913.4. See Appendix C for full text of § 913.4.
[2] See Appendix C for full list of active retail sellers.
[3] The CPUC and California Energy Commission (CEC) are currently reviewing retail sellers' compliance filings to make final determinations for the 2017-2020 compliance period.
[4] Based on preliminary 2021 Annual Compliance Report filings submitted to the CPUC in August 2022.
[5] Based on the most recent Renewable Net Short (RNS) calculations and RPS Compliance Reports. RNS is defined as the amount of additional renewable generation necessary to meet or exceed RPS requirements. The calculations are submitted to the CPUC in the retail sellers' Annual RPS Procurement Plans.

- About half of Electric Service Providers (ESPs) must execute more renewable electricity contracts to meet the annual 2021 RPS target,[6] with similar figures for the overall 2021-2024 compliance period.

2021 RPS Prices For New Contracts Decreased and Portfolios Show Additional Solar Procurement

- The average RPS eligible energy contract price has dropped an average of 10.3 percent per year from 2007 to 2021. The historic downward contract price decline is expected to continue because lower priced solar PV and wind contracts are expected to continue to be a dominant portion of retail sellers' future executed RPS contracts.
- The average RPS contract price decreased from $41/MWh in 2020 to $26/MWh in 2021. The average annual contract price increased in 2020 because there was a more diversified procurement of renewables that featured solar PV, wind, and more expensive technologies such as small hydro, geothermal, and bioenergy. In 2021, the average annual contract price decreased because solar PV and wind, which are lower in price than other resources, made up a larger majority of the procurement of renewables.
- Approximately 80 percent of retail sellers' renewables portfolios were comprised of solar and wind resources in 2021.
- Of the 6,000 MW of renewables in development contracted by CCAs and ESPs, 91 percent are solar PV facilities.[7]

Community Choice Aggregators (CCAs) and Electric Service Providers (ESPs) Must Increase Renewable Procurement to Meet Long-Term RPS Requirements

- The IOUs and SMJUs all report enough planned procurement to meet the 65 percent long-term procurement requirement for the 2021-2024 compliance period.
- Nineteen of the twenty-five CCAs that plan to serve load in the 2021–2024 compliance period and beyond have already executed long-term contracts to procure at or above the 65 percent requirement.[8]
- Six of the eleven ESPs that plan to serve load in the 2021–2024 compliance period and beyond have executed long-term contracts to procure at or above the 65 percent requirement.

[6] Based on the most recent Renewable Net Short (RNS) calculations and RPS Compliance Reports. RNS is defined as the amount of additional renewable generation necessary to meet or exceed RPS requirements. The calculations are submitted to the CPUC in the retail sellers' Annual RPS Procurement Plans.

[7] See Tables 13–16 in Chapter III for a list of projects in development.

[8] SB 350 established the long-term contracting requirements for the RPS program and applies to all retail sellers beginning in Compliance Period 2021–2024. For more information, see Chapter III.

Background

The California Public Utilities Commission (CPUC) reports to the Legislature each November on the progress of California's electricity retail sellers in meeting the RPS requirements. This report complies with Public Utilities Code 913.4 sub-sections:

Progress on RPS procurement activities;

Details on RPS activities and implementation;

Projected ability to meet RPS under cost limitations;

Status of RPS plans, activities, procurement, and transmission;

Barriers and policy recommendations to achieving the RPS; and

Efforts of electrical corporations related to workforce development, training, and diversity.

Legislative History

The California RPS program was established in 2002 by Senate Bill (SB) 1078 (Sher, 2002) with the initial requirement that 20 percent of electricity retail sales must be served by renewable resources by 2017. The program was accelerated in 2006 under SB 107 (Simitian, 2006), which required that the 20 percent mandate be met by 2010. In April 2011, SB 2 (1X) (Simitian, 2011) codified achievement of the 33 percent RPS requirement by 2020. In 2015, Governor Brown signed into law SB 350 (de León, 2015), which mandated a 50 percent RPS by December 31, 2030. SB 350 also includes interim annual RPS targets with three-year compliance periods. In addition, SB 350 requires that 65 percent of RPS procurement must be derived from long-term contracts of 10 or more years. In 2018, SB 100 (de León, 2018) accelerated and increased the RPS to 60 percent by 2030 and established a goal for 100 percent of the State's electricity to come from renewable and carbon-free resources by 2045.

California's RPS Program

California's ambitious RPS program is jointly implemented by the CPUC and the California Energy Commission (CEC). The RPS program requires the State's retail sellers[9] to procure 60 percent of their total electricity retail sales from renewable energy resources by 2030. Increasing the amount of renewables in the State's energy mix provides a range of benefits to Californians, such as reducing greenhouse gas emissions and air pollution, stabilizing electricity rates, and contributing to the reliable operation of the electrical grid. All California electricity retail sellers, or entities engaged in the sale of electricity to end-use customers, are required to comply with the requirements of the RPS program.[10] Entities under the CPUC's jurisdiction serve approximately 75 percent of the total electricity demand in California. The Publicly Owned Utilities (POUs) serve the remaining 25 percent.[11] Of these retail sellers within the CPUC's jurisdiction, the large IOUs served approximately 57 percent of the total electricity load in 2021, while SMJUs served 1 percent, CCAs served 34 percent, and ESPs served the remaining 14 percent.[12]

[9] Also referred to as load serving entities (LSEs): large investor-owned utilities (IOUs), small and multi-jurisdictional utilities (SMJUs), community choice aggregators (CCAs), electric service providers (ESPs), and publicly owned utilities (POUs). See Appendix C for a complete list of active retail sellers that the CPUC regulates.

[10] *See* Chapter IV: Compliance & Enforcement for more details on RPS program requirements.

[11] POUs report their RPS compliance to the CEC and their information is not included in this report.

[12] Retail Sellers' Annual RPS Compliance Reports, August 2022.

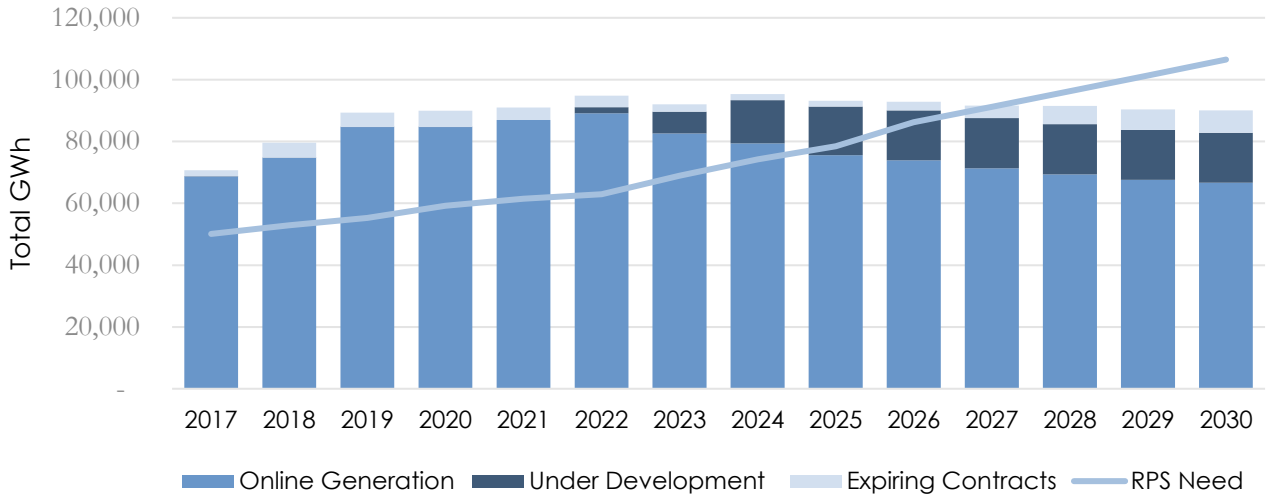
RPS Progress and Status

This chapter uses historical annual data through December 31, 2021, to illustrate the state of the RPS program. The data was obtained from the 2022 Draft RPS Procurement Plans[13] and the 2022 RPS Compliance Reports[14] of all retail sellers, including the large investor-owned utilities (IOUs), small and multi-jurisdictional utilities (SMJUs), community choice aggregators (CCAs), and electric service providers (ESPs). Although this Annual Report provides an update on the retail sellers' progress toward meeting RPS requirements for 2021, which is the first year of the 2021-2024 compliance period, and at times highlights retail sellers' progress toward annual RPS procurement targets and RPS procurement requirements for the entire compliance period, it does not include any reporting of compliance determinations. Final compliance determinations are made after the California Energy Commission (CEC) verifies retail sellers' renewable energy credits (RECs) and the CPUC finishes its compliance review. Greater detail regarding the compliance process is provided in Chapter IV: Compliance and Enforcement.

Current Renewable Portfolios

All electricity retail sellers had an annual target to serve at least 35.75 percent of their electric load with RPS-eligible resources by December 31, 2021. In general, most retail sellers either met or exceeded the 35.75 percent interim RPS target.[15] Additionally, almost all reported meeting their 2017–2020 compliance period requirements of 33 percent.[16] Figure 1 below shows statewide progress towards meeting the 2030 60 percent RPS requirements.[17]

Figure 1: Aggregated Retail Seller Progress Towards 60% RPS (2017-2030)



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[13] Each year, retail sellers are required to submit their RPS Procurement Plans to the CPUC for approval. Draft 2022 RPS Procurement Plans were submitted in July 2022.
[14] Retail sellers are required to submit preliminary RPS Compliance Reports each year on August 1 to demonstrate progress towards meeting their RPS requirements.
[15] Compliance with California's RPS program is determined by multi-year compliance periods.
[16] *See* Chapter IV: Compliance and Enforcement, Annual Compliance Review for more information.
[17] *See* the 2014 Administrative Law Judge Ruling on Renewable Net Short for full definitions of Online Generation, Under Development, and Expiring Contracts: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M091/K331/91331194.PDF

Data Source: All Retail Sellers' 2022 Draft RPS Procurement Plans

The large IOUs serving electric load in California are Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E). PG&E's service territory spans from Santa Barbara to Shasta Counties, SCE's territory spans from Riverside to Mono Counties, and SDG&E serves San Diego County and southern Orange County.[18] The three large IOUs are on track to meet their 60 percent 2030 RPS procurement mandate. The IOUs have procured to either meet or surpass the 2021 annual RPS percentage target of 35.75 percent, as illustrated in Table 1.[19]

Table 1: 2021 Large Investor-Owned Utilities' RPS Procurement Percentages

Pacific Gas and Electric	54%
Southern California Edison	36%
San Diego Gas & Electric	55%

Data Source: IOUs' 2022 Draft RPS Procurement Plans (July 2022)

The three large IOUs are currently forecasted to continue to surpass RPS requirements as they are collectively forecasted to have excess procurement for the next five years.[20] However, this forecast may change with portfolio optimization efforts, particularly as the Voluntary Allocation and Market Offer (VAMO)[21] process is completed, as discussed later in this report. The IOUs may choose to optimize by applying excess renewable electricity procured in prior and future years to meet their RPS requirements in future compliance periods. Alternatively, they may sell the energy and RECs[22] associated with the future excess procurement to other retail sellers, such as CCAs or ESPs, or provide higher than required amounts of renewable energy to their customers.

A variety of market factors have contributed to the IOUs being procured beyond their minimum RPS requirements. These market factors include the initial need to hedge against early program experience with project failure, the continued trend of load departing from IOUs, and the increase in behind-the-meter solar generation.

Figure 2 below uses the most current annual data to illustrate the actual and forecasted progress the IOUs have made toward meeting the 60 percent RPS mandate by 2030. Generation forecasts from projects "Under Development" are risk-adjusted to account for a certain degree of project failure.[23] The "Expiring Contracts" data represent the amount of generation associated with facilities that will no longer have a Power Purchase Agreement (PPA) with one of the IOUs. Although this generation will not be under

[18] For more information on California electric utility service areas, see the CEC's California Energy Maps website: https://cecgis-caenergy.opendata.arcgis.com/documents/electric-utility-service-territories-and-balancing-authorities/explore

[19] Based on their annual Draft 2021 RPS Procurement Plans, as well as Compliance Reports filed with the CPUC in 2021.

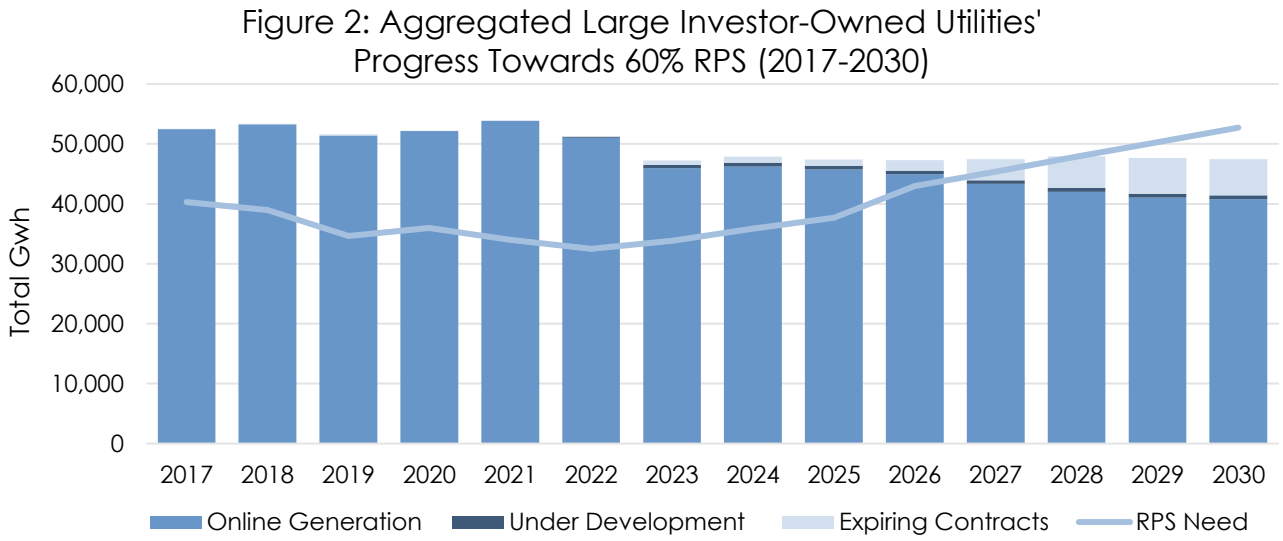
[20] The IOUs' excess procurement is based on the current forecast of bundled electricity load and the amount of RPS resources already under contract.

[21] On May 24, 2021, the Commission issued Decision (D.) 21-05-030 to authorize new Voluntary Allocation, Market Offer, and Request for Information processes for large IOU RPS contracts subject to the Power Charge Indifference Adjustment (PCIA). The Decision adopted a Voluntary Allocation and Market Offer (VAMO) mechanism, which authorizes a process for PG&E, SCE, and SDG&E to allocate a "slice" of their entire PCIA-eligible RPS portfolios to eligible LSEs (such as CCAs, ESPs, and the IOUs themselves) in proportion to their vintaged, forecasted annual load share.

[22] *See* Appendix B: Glossary and Terms for the full definition of a renewable energy credit (REC).

[23] Failure rate assumptions are provided by the IOUs in their renewable net short calculation provided with their Draft Annual RPS Procurement Plans.

contract, there is a possibility that these facilities will re-contract with their current counterparty or another retail seller in the future.



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Data Source: IOUs' 2022 Draft RPS Procurement Plans (July 2022), Renewable Net Short Calculations

The IOUs forecast that they will exceed their RPS requirements by using online generation from existing contracts with a physical deficit beginning in 2028. However, these forecasts may change after the VAMO process is completed, as discussed later in this report. As Figure 2 shows, the IOUs will have a forecasted surplus of renewable generation through 2027 (otherwise known as excess procurement), which may be used to fulfill RPS obligations in subsequent compliance periods or be sold to other retail sellers.[24] Given that the IOUs have significant excess eligible RPS procurement to apply in later years, they did not conduct annual RPS procurement solicitations in 2016, 2017, 2018, 2019, 2020, and 2021. While PG&E and SDG&E will not conduct annual solicitations for renewables in 2022, SCE was granted approval to hold an RPS solicitation in 2022. The three IOUs have requested in their 2022 RPS Plans authorizations to hold solicitations for additional renewables in 2023.[25]

Table 2 includes aggregate data[26] to demonstrate the IOUs' actual procurement and forecasted RPS procurement percentages. The data show that the IOUs expect to exceed their 2022 RPS compliance target and will have procured approximately 60 percent RPS by the end of 2022. The data show that by the end of 2024, the IOUs will still exceed the State mandates. The forecasted RPS percentages of the aggregated large IOUs decreases from 60 percent in 2022 to 56 percent in 2023 and beyond. This large

[24] The calculations for excess procurement rely on a combination of the REC classification and whether the RECs are associated with a short-term or long-term contract. For excess procurement rules for Compliance Periods prior to 2021, see D.12-06-038 and D.17-06-026. For excess procurement rules for Compliance Period 2021–2024 and beyond, see D.17-06-026.
[25] The CPUC must approve solicitations outlined in an IOU's annual RPS Procurement Plan in a Decision.
[26] Each retail seller must file its RPS Procurement Plan and Compliance Report annually. Renewable procurement data is not automatically confidential but may be claimed as such through a formal filing. In the formal confidentiality filing, the retail seller must justify why the information should be treated as confidential by the CPUC. Generally, historical data should be public. For contracts requiring Commission approval, RPS procurement price and contract terms become public 30 days after commercial operation date / energy delivery start date or 18 months from the date of Commission approval, whichever comes first. For contracts that do not require Commission approval, contract price and contract terms shall be public 30 days after the commercial operation date/energy delivery start date or eighteen months after the contract execution date, whichever comes first. See the CPUC's Decision on Confidentiality (D.21-11-029) for more information: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M424/K520/424520189.PDF

amount of forecasted procurement above the RPS requirements is primarily driven by load migration to CCAs in the IOUs' territories but has been mitigated by REC sales.

Table 2: Aggregated Actual and Forecasted Large Investor-Owned Utilities' RPS Percentages for Pacific Gas and Electric, Southern California Edison, and San Diego Gas & Electric

	Compliance Period 2017–2020				Compliance Period 2021–2024			
	33% Requirement				*44% Requirement*			
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
	35%	40%	46%	48%	57%	60%	56%	57%

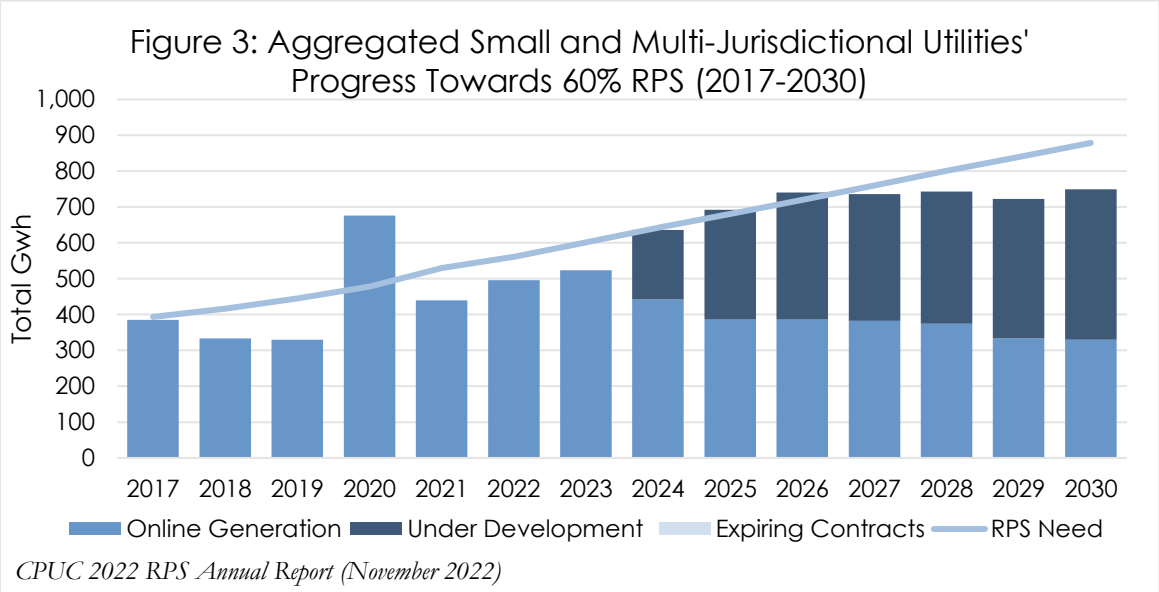
Data Source: IOUs' 2021 Draft RPS Procurement Plans (July 2021), Renewable Net Short Calculations

Small and Multi-Jurisdictional Utilities (SMJUs)

The SMJUs[27] serving electric load in California are Bear Valley Electric Service, Inc. (BVES), Liberty Utilities, LLC[28] (Liberty), and PacifiCorp[29]. BVES provides electricity service to the Big Bear Valley in the San Bernardino Mountains and Liberty serves areas located in and around the Lake Tahoe Basin. PacifiCorp is a multi-jurisdictional utility that provides service in several states and to four Northern California counties: Del Norte, Modoc, Siskiyou, and Shasta.

As illustrated in Figure 3, the aggregate SMJU data indicates that the SMJUs will collectively need to procure additional resources to meet the 2021–2024 Compliance Period requirements as well as future requirements. Figure 3 also shows that the SMJUs in aggregate did not meet the 2021 annual RPS interim target of 35.75 percent. The SMJUs have historically met their requirements towards the end of the compliance period. SMJUs' RPS procurements do not need to meet the Portfolio Balance Requirement rules, and they may procure unlimited unbundled REC contracts which tend to be from existing facilities and have quicker transaction times. For example, Figure 3 shows how SMJUs renewables generation increased significantly in 2020 to meet their requirements for the 2017-2020 compliance period. SMJUs are currently showing a similar need in the next compliance period, as illustrated in Table 3.

[27] SMJUs are also investor-owned utilities but are considered either small or multijurisdictional and have different rules per Public Utilities Code §§ 399.17 and 399.18.
[28] Formerly CalPeco Electric.
[29] d/b/a Pacific Power



Data Source: SMJUs' 2022 Draft RPS Procurement Plans (July 2022), Renewable Net Short Calculations

Table 3 shows aggregate SMJU data for their actual and forecasted RPS procurement percentages.[30]

Table 3: Aggregated Actual and Forecasted Small and Multi-Jurisdictional Utilities' RPS Percentages for Bear Valley Electric Service, Liberty Utilities, and PacifiCorp

	Compliance Period 2017–2020				Compliance Period 2021–2024			
	33% Requirement				*44% Requirement*			
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
	26%	23%	23%	47%	30%	34%	36%	30%

Data Source: SMJUs' 2022 Draft RPS Procurement Plans (July 2022), Renewable Net Short Calculations

Community Choice Aggregators (CCAs)

CCAs are local government entities that are certified by the CPUC to procure electricity on behalf of their communities instead of being served by the IOUs.[31] All but four of the operating CCAs procured at or above the 2021 annual RPS targets, as shown in Table 5.

[30] The CPUC has aggregated RPS procurement data for confidentiality purposes, as reporting individual percentages would disclose market sensitive information.

[31] AB 117 (Migden, 2002) allows local governments to form Joint Powers Authorities to establish community choice energy programs.

The CCAs play an increasingly significant role in meeting the State's renewable energy and CPUC-jurisdictional greenhouse gas reduction goals. In 2021, twenty-two CCAs[32] operated in California and collectively served 34 percent of the total electric load within CPUC's jurisdiction.[33] The percentages of total IOU load that has departed to CCAs and ESPs are: PG&E: 62 percent; SCE: 37 percent; SDG&E: 42 percent.[34] CCAs serve 27 percent of the load across California's three IOU service territories.[35]

Table 4 uses aggregated CCA data to show actual and forecasted RPS procurement percentages in the current and next compliance period.[36]

Table 4: Aggregated Actual and Forecasted Community Choice Aggregators' RPS Percentages

	Compliance Period 2017–2020				Compliance Period 2021–2024			
	33% Requirement				*44% Requirement*			
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
	54%	51%	54%	50%	49%	52%	45%	41%

Data Source: CCAs' 2022 RPS Draft Procurement Plans (July 2022), Renewable Net Short Calculations

Annual RPS Compliance Reports indicate that most CCAs will need to procure additional renewable resources to meet the 60 percent RPS target by 2030.[37] Throughout the 2017-2020 Compliance Period, the CCAs' procurement has been fairly steady and many forecast to exceed RPS targets. However, the aggregate percentage in 2021 dropped 1 percent from 2020, and is forecasted to drop again by 8 percent in 2024, primarily because of expiring contracts and several new CCAs coming online with minimal to no RPS procurement. Figure 4 illustrates the actual and forecasted progress the CCAs have made toward meeting the RPS requirements in aggregate.

[32] In 2014, only Marin Clean Energy and Sonoma Clean Power were serving customers, and Lancaster Choice started serving load in 2015. In 2016, Peninsula Clean Energy and CleanPowerSF began service, and in 2017, Apple Valley, Pico Rivera, Redwood Coast and Silicon Valley started service. Ten additional CCAs launched in 2018, including Clean Power Alliance, East Bay Community Energy, King City Community Power, Central Coast Community Energy, Pioneer Community Energy, Rancho Mirage, San Jacinto Power, San José Clean Energy, Solana Energy Alliance, and Valley Clean Energy Alliance. There were no new CCAs that launched in 2019. In 2020, City of Baldwin Park, City of Pomona, Desert Community Energy and Western Community Energy launched as CCAs. In 2021, Clean Energy Alliance and San Diego Community Power began operating. In 2022, one new CCA began operating: Santa Barbara Clean Energy. However, Solana Energy Alliance, City of Baldwin Park, and Western Community Energy deregistered as CCAs and are no longer serving load.

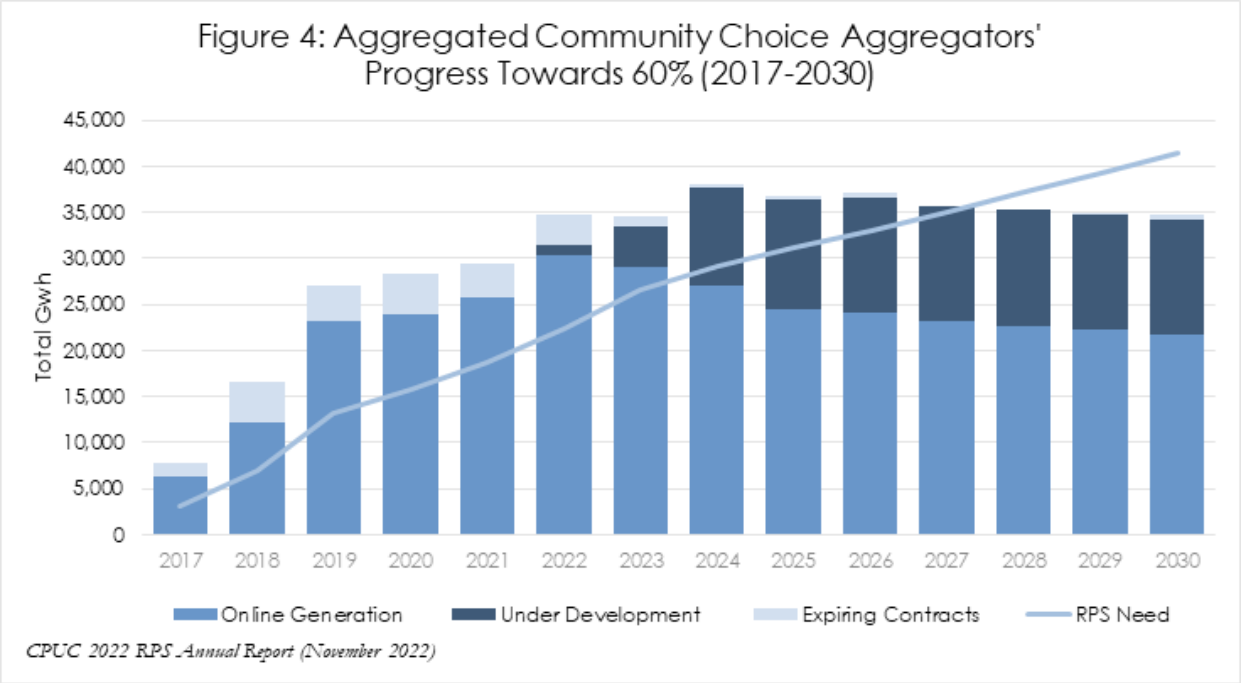
[33] Retail Sellers' Annual RPS Compliance Reports, August 2022.

[34] Calculated from CEC Integrated Energy Policy Report (IEPR) and CEC 2020 Demand Forecast - Mid Demand / Mid AAEE Case

[35] Calculated from CEC Integrated Energy Policy Report (IEPR) and CEC 2020 Demand Forecast - Mid Demand / Mid AAEE Case

[36] The aggregated RPS compliance percentages are adjusted for CCA launch years and include data from all 25 registered CCAs.

[37] *See* Table 5 for a breakdown of RPS position by each individual operating CCA.



Data Source: CCAs' 2022 Draft RPS Procurement Plans (July 2022), Renewable Net Short Calculations

Retail sellers submit annual compliance filings to the CPUC demonstrating their progress toward annual RPS procurement targets. While these forecasts are not determinative of their compliance status, they offer insight into retail sellers' ability to meet RPS requirements. In aggregate, the CCAs are contracted to exceed their forecasted 2022 and 2023 targets. However, one CCA that began serving load in 2022 has not yet procured any RPS energy, as shown in Table 5.

In 2021, the operational CCAs served a total of 52,000 GWh of load[38] and had an average RPS position of 44 percent. The CCAs' generation has increased to keep pace with RPS requirements through 2023, even exceeding the 2023 forecasted target. In 2023, the quantity of projects under development quadruples from the quantity under development in 2022. In 2024, however, online generation begins to decline as 16 of the 25 CCAs forecast a drop in renewable generation and the CCAs rely heavily on projects that remain under development and must come online. Table 5 below shows the actual positions of individual CCAs that were operational in 2021 and their forecasted positions for 2022 and 2023.

[38] Calculated from CEC Integrated Energy Policy Report (IEPR) and CEC 2020 Demand Forecast - Mid Demand / Mid AAEE Case

Table 5: Annual RPS Position of Community Choice Aggregators (%)

First Year Serving Load	CCA	Actuals		Forecast	
		2020	2021	2022	2023
2010	Marin Clean Energy	63%	62%	66%	69%
2014	Sonoma Clean Power	50%	51%	52%	47%
2015	Lancaster Choice Energy	36%	33%	48%	31%
2016	Peninsula Clean Energy	51%	50%	50%	52%
2016	CleanPowerSF	57%	59%	-	-
2017	Apple Valley Choice	35%	40%	32%	34%
2017	Pico Rivera	48%	53%	41%	39%
2017	Redwood Coast Energy Authority	39%	34%	24%	45%
2017	Silicon Valley Clean Energy	52%	51%	-	-
2018	Valley Clean Energy Alliance	44%	13%	19%	41%
2018	Central Coast Community Energy	31%	39%	-	
2018	San Jacinto Power	35%	36%	38%	33%
2018	Rancho Mirage Energy Authority	32%	40%	41%	35%
2018	Clean Power Alliance	60%	47%	-	-
2018	East Bay Community Energy	38%	42%	-	-
2018	Pioneer Community Energy	35%	36%	43%	33%
2018	San José Clean Energy	46%	58%	53%	42%
2018	King City Community Power	152%	40%	32%	35%
2020	City of Pomona	49%	36%	38%	44%
2020	Desert Community Energy	54%	33%	19%	54%
2021	Clean Energy Alliance	n/a	52%	53%	47%
2021	San Diego Community Power	n/a	58%	-	-
2021	Santa Barbara Clean Energy	n/a	89%	64%	22%

Data Source: CCA Draft RPS Procurement Plans (July 2022), CCA RPS Compliance Reports (August 2022). Forecast amounts of "-" indicate redacted information because these CCAs requested confidential treatment of their forecasted RPS position per CPUC D.06-06-066.

Electric Service Providers (ESPs)

ESPs serve customers in the Direct Access (DA) program.[39] ESPs currently serve approximately 14 percent or 25,000 GWh of electricity load within the CPUC's jurisdiction,[40] which is the authorized maximum allowed.[41]

Table 6 provides aggregate actual and forecasted RPS procurement percentages of ESPs. Table 6 indicates that ESPs in aggregate did not meet the 2021 annual RPS interim target of 35.75 percent. Most ESPs will need to procure additional RPS energy to meet the RPS Compliance Period 2021–2024 requirements.

Table 6: Aggregate Actual and Forecasted Electric Service Providers' RPS Percentages

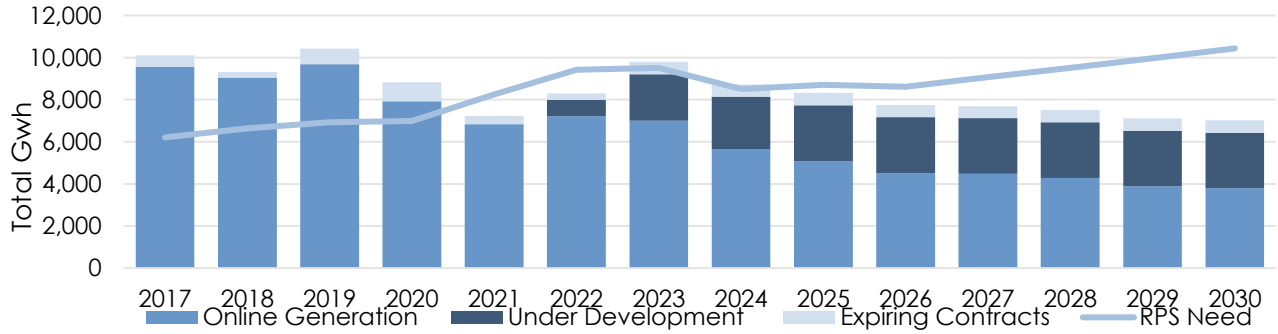
	Compliance Period 2017–2020				Compliance Period 2021–2024			
	33% Requirement				*44% Requirement*			
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
	42%	40%	43%	37%	30%	37%	37%	29%

Data Source: ESPs' 2022 Draft RPS Procurement Plans (July 2021)

Though ESPs are required to file both RPS Compliance Reports and Procurement Plans, some do not provide detailed long-term forecasts on their renewable procurement. The ESPs' forecasted procurement percentages are lower into the future because a substantial amount of the ESPs' RPS procurement are short-term contracts, but long-term contracts are increasing with the 65 percent long-term requirement that started in Compliance Period 2021-2024.

As illustrated in Figure 5, the aggregated ESP data indicates that ESPs will collectively need to procure additional resources to meet the RPS requirements in Compliance Period 2021–2024 and beyond.

Figure 5: Aggregated Electric Service Providers' Progress Towards 60% RPS (2017-2030)



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Data Source: ESPs' 2022 Draft RPS Procurement Plans (July 2022), Renewable Net Short Calculations

[39] Direct Access (DA) service is retail electric service where customers have the choice to purchase electricity from an ESP, instead of from a regulated electric utility. For more information on DA, visit https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-costs/electric-service-provider-list-and-registration-information.

[40] *See* Appendix C for a list of active ESPs.

[41] Senate Bill (SB) 237 (Hertzberg, 2018) authorized an increase in the maximum allowable electric load cap for Direct Access. *See* D.10-03-022, "*Decision Regarding Increased Limits for Direct Access Transactions,*" for more information.

Renewable Technology Mix

Resource diversity can contribute to achieving a balanced and reliable energy generation portfolio.[42] Since the inception of the RPS program in 2002, the renewable technology mix of the State's energy portfolio has become increasingly diversified. A robust mix of renewable technologies will aid in the transition to a carbon-free electricity portfolio by 2045 and is crucial for meeting the State's climate and emissions reduction goals.

Large Investor-Owned Utilities (IOUs)

As shown below in Table 7, the IOUs have procured a diverse mix of renewable energy resources including wind, solar thermal, solar photovoltaic (PV), geothermal, bioenergy, and small hydroelectric facilities to meet the requirements of the RPS program.[43] In 2021, the majority of the IOUs' RPS portfolios were comprised of solar and wind technologies.

Table 7: Portfolio Percentages of 2021 RPS Mix for Large IOUs

	Bioenergy	Geothermal	Small Hydro[44]	Conduit Hydro[45]	Solar PV	Solar Thermal	Wind
PG&E	7%	10%	3%	-	41%	9%	30%
SCE	0.3%	16%	2%	0.1%	41%	1%	39%
SDG&E	2%	-	-	<0.1%	52%	-	47%

Data Source: IOUs' Annual RPS Compliance Reports (August 2022)

Small and Multi-Jurisdictional Utilities (SMJUs)

In 2021, the majority of the SMJUs' RPS portfolios were comprised of wind and solar PV technologies. As Table 8 below shows, in 2021, BVES procured RECs solely from wind resources, whereas Liberty procured primarily from solar PV facilities. PacifiCorp had the most diverse renewable energy portfolio mix with six different technologies in its portfolio,[46] with most of its renewables being wind and solar PV.

[42] *See* Public Utilities Code § 399.11(b) for a list of the benefits the RPS program is intended to provide to California, among which is renewable resource diversity.
[43] The technology category of "Bioenergy" consists of biomass, biogas, biodiesel, landfill gas, and municipal solid waste.
[44] Small Hydro projects are defined as hydroelectric facilities that are under 30 MW in capacity by the CEC's RPS Eligibility Guidebook.
[45] Conduit Hydro facilities use the hydroelectric potential of an existing man-made conduit that is operated to distribute water and must have a facility capacity of 30 MW or less to be considered RPS-eligible.
[46] PacifiCorp's California RPS portfolio refers to the portfolio of resources PacifiCorp uses to meet compliance with California's RPS program and does not refer to all resources in its portfolio.

Table 8: Portfolio Percentages of 2021 RPS Mix for SMJUs						
	Bioenergy	**Geothermal**	**Small Hydro**	**Conduit Hydro**	**Solar PV**	**Wind**
Bear Valley Electric Service	-	-	-	-	-	100%
Liberty Utilities	14%	12%	-	-	74%	-
PacifiCorp	13%	1%	6%	0.1%	25%	55%

Data Source: SMJUs' Annual RPS Compliance Reports (August 2022)

Community Choice Aggregators (CCAs)

In 2021, the majority of the CCAs' RPS portfolios were comprised of wind and solar resources, but many also included significant amounts of bioenergy, geothermal, and small hydroelectric resources. Table 9 illustrates the renewable energy portfolio mixes of the CCAs that operated in California in 2021.

Table 9: Portfolio Percentages 2021 RPS Mix for CCAs						
	Bioenergy	**Geothermal**	**Small Hydro**	**Solar PV**	**Solar Thermal**	**Wind**
Apple Valley Choice Energy	9%	9%	-	12%	-	69%
Central Coast Community Energy	4%	19%	2%	46%	-	29%
Clean Energy Alliance	-	-	9%	40%	-	51%
Clean Power Alliance	3%	7%	1%	36%	-	53%
City of Pomona	31%	18%	-	5%	1%	45%
City of Santa Barbara	-	4%	-	-	-	96%
CleanPowerSF	-	15%	2%	35%	-	49%
Desert Community Energy	-	-	38%	-	-	62%
East Bay Community Energy	-	-	-	81%	-	19%
King City Community Energy	-	-	-	100%	-	-
Lancaster Choice Energy	23%	16%	<.1%	25%	<.1%	36%
Marin Clean Energy	10%	9%	2%	50%	2%	28%

Peninsula Clean Energy	17%	-	1%	42%	-	40%
Pioneer Community Energy	21%	20%	2%	36%	-	21%
Pico Rivera Innovative Municipal Energy	34%	17%	-	22%	1%	26%
Redwood Coast Energy Authority	46%	-	1%	1%	-	52%
Rancho Mirage Energy Authority	20%	23%	-	13%	41%	3%
San Jacinto Power	38%	3%	-	14%	<1%	45%
San José Clean Energy	-	3%	-	60%	-	37%
Silicon Valley Clean Energy	-	35%	-	65%	-	-
Solana Energy Alliance	100%	-	-	-	-	-
Sonoma Clean Power	21%	42%	-	19%	-	17%
Valley Clean Energy Alliance	-	-	-	37%	-	63%

Data Source: CCAs' Annual RPS Compliance Reports (August 2022)

As Table 9 shows, CCAs such as Apple Valley Choice Energy, Central Coast Community Energy, Clean Power Alliance, City of Pomona, CleanPowerSF, Lancaster Choice Energy, Marin Clean Energy, Peninsula Clean Energy, Pioneer Community Energy, Pico Rivera, Redwood Coast Energy Authority, Rancho Mirage Energy Authority, Sonoma Clean Power, and San Jacinto Power have some of the most diverse RPS portfolios.

Electric Service Providers (ESPs)

Table 10 illustrates the renewable energy portfolio mixes of the ESPs that operated in California in 2021.

Table 10: Portfolio Percentages 2021 RPS Mix for ESPs

	Bioenergy	Geothermal	Small Hydro	Solar PV	Solar Thermal	Wind
3 Phases Renewables	10%	5%	2%	79%	-	3%
American PowerNet	-	-	-	-	-	100%
Calpine Energy Solutions	7%	1%	1%	45%	-	46%
Calpine Power America	-	22%	-	61%	-	17%
Commercial Energy of CA	30%	-	1%	69%	-	-
Constellation New Energy	25%	-	-	27%	-	47%
Direct Energy Business	3%	<1%	<1%	54%	-	42%
EDF Industrial Power Services	<1%	7%	<1%	51%	-	41%
Pilot Power Group	-	-	-	8%	-	92%
Shell Energy North America	7%	5%	4%	15%	-	70%
Tiger Natural Gas	100%	-	-	-	-	-
UC Regents	-	-	-	84%	-	16%

Data Source: ESPs' Annual RPS Compliance Reports (August 2022)

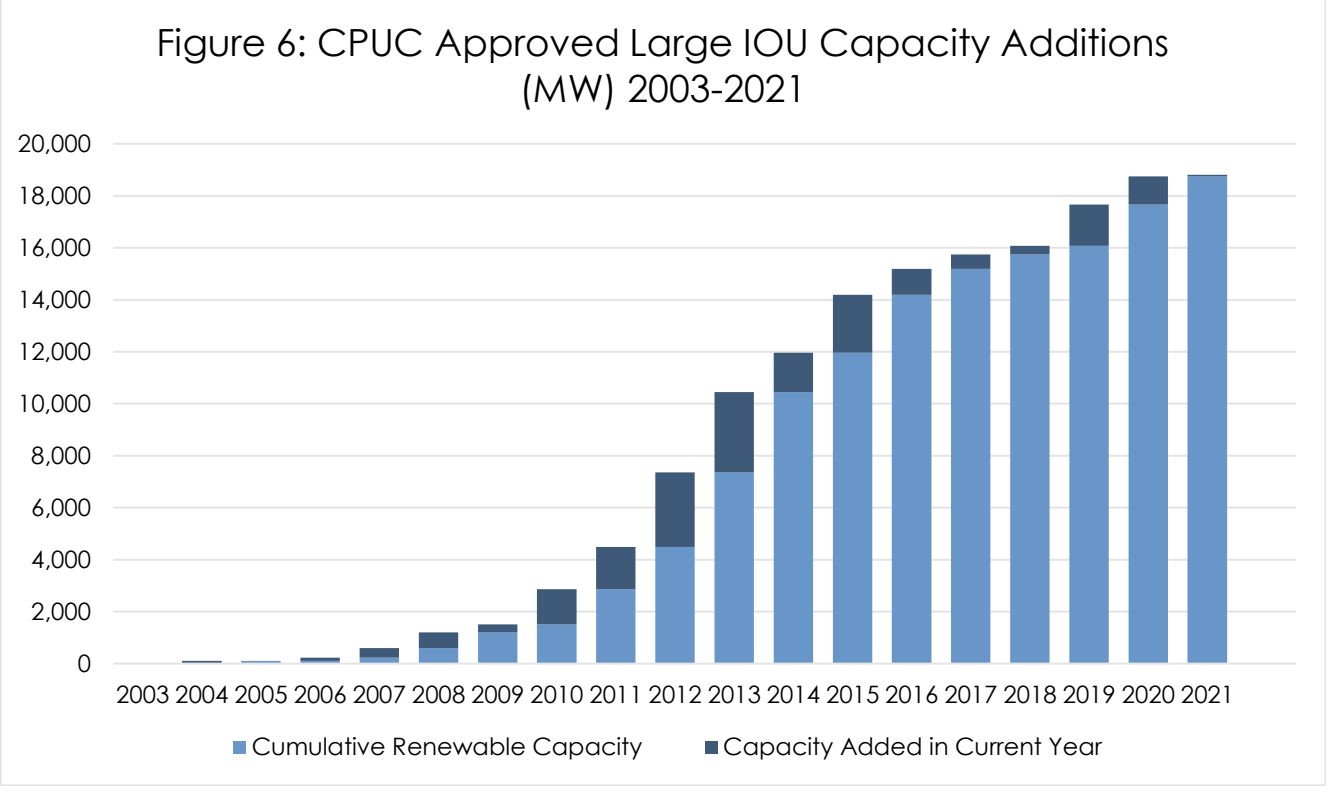
As Table 10 shows, certain ESPs such as 3 Phases Renewables, Calpine Energy Solutions, Direct Energy Business, EDF Industrial Power Services, and Shell Energy North America have diverse RPS portfolios. These portfolios are comprised of a variety of renewable technologies including bioenergy, geothermal, hydroelectric, solar, and wind.

Contracted Renewable Capacity

Since 2003, the three large IOUs have contracted for over 19,000 MW of renewable capacity[47] under the RPS program. The CPUC must approve all new RPS capacity additions proposed by the large IOUs and SMJUs but is not required to approve capacity additions for CCAs and ESPs. Accordingly, the data collected by the CPUC on approved capacity is primarily for the large IOUs.

The approved RPS capacity shown in Figure 6 includes both in-state and out-of-state facilities that have contracted with the IOUs and have come online between 2003 and 2021. Most of the new facilities procured for the RPS program are located in-state. Approximately 250 additional MW of renewables contracted by the IOUs are scheduled to come online in 2022–2024.

[47] Renewable capacity is defined as the maximum power generating capacity of power plants that use renewable energy sources to produce electricity.



Data Source: CPUC RPS Database, September 2022

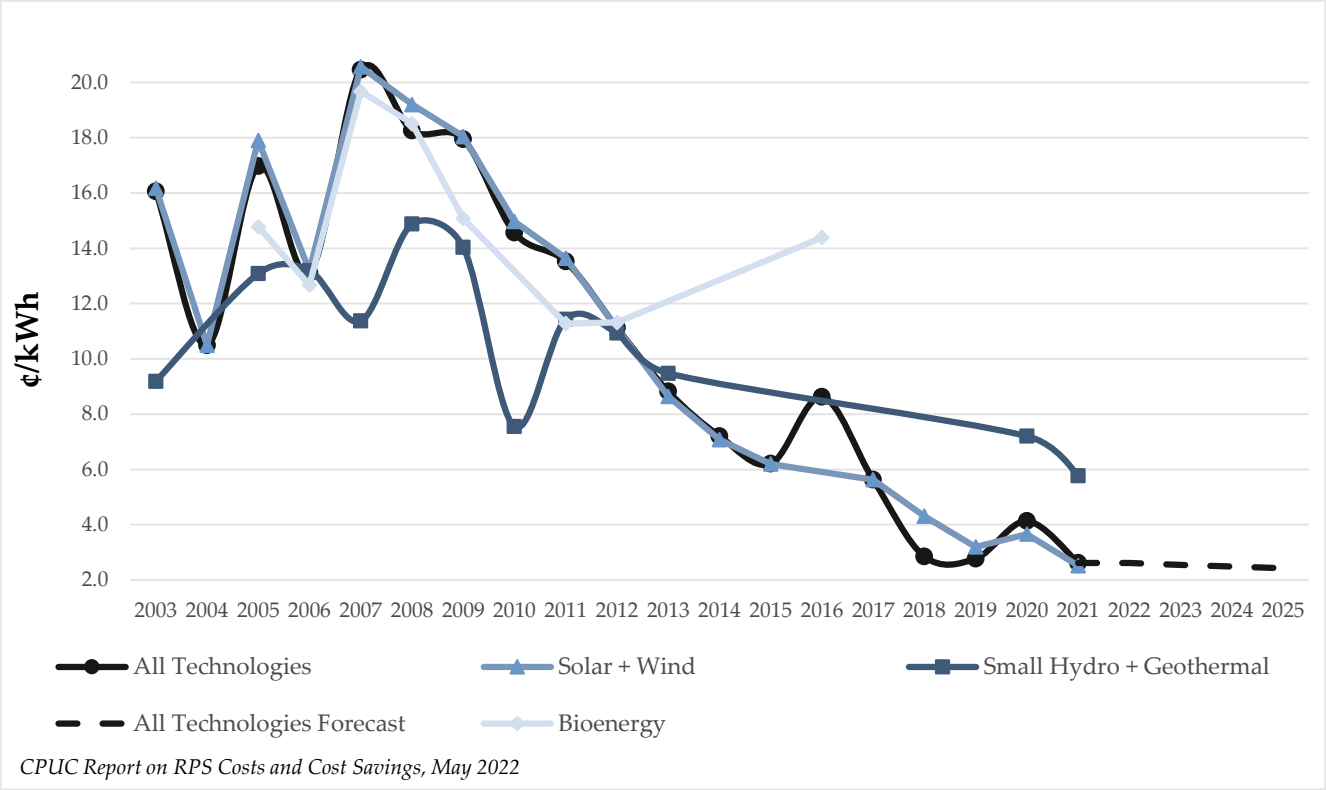
RPS Procurement Costs

To understand the impact that RPS procurement costs will have on ratepayers, the CPUC collects various pricing data to evaluate cost trends and analyzes rate impacts. The IOUs use competitive procurement mechanisms and a Least-Cost Best-Fit evaluation methodology[48] to ensure procurement of renewable resources that provide the most value to their customers. Although the CPUC has not established cost limitations for RPS procurement, it uses the Integrated Resource Planning[49] (IRP) proceeding to identify the most cost-effective portfolio of resources to inform future procurement activities.

The overall contracted commitment in renewables by retail sellers in California has increased over time, which has contributed to the cost competitiveness of technologies, particularly solar and wind. Figure 7 illustrates the average annual contract prices of new contracts executed each year[50] for RPS eligible projects with capacities greater than 3 MW by technology category in cents per kilowatt-hour (¢/kWh) for all load-serving entities.

[48] The Least-Cost Best-Fit methodology is a valuation framework that the IOUs use for the rank ordering and selection of least-cost and best-fit renewable resources to comply with annual RPS obligations on a total cost basis.
[49] For more information on the IRP proceeding (R.20-05-0023), visit https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning.
[50] The average annual contract prices in Figure 7 are an average of the contracts executed that specific year by technology type and are not rolling averages of previous years.

Figure 7: Historical Trend of All Load Serving Entities' RPS Contract Costs by Technology and Year of Execution from 2003-2025 (Real Dollars)



Data Source: CPUC 2021 Annual Report on Costs and Cost Savings for the RPS Program (Padilla Report) [51]

Figure 7 shows that RPS contract prices, in real dollars, decreased on average of 10.3 percent annually between 2007 and 2021 for the "all technologies" group. The overall downward trend in contract prices can be attributed to falling prices for wind and solar technologies, which together make up 86 percent of the large IOUs' collective RPS generating capacity. To remove non-representational trends, contracts with a nameplate capacity of less than 3 MW and those reported as net cost instead of total contract price were not included in Figure 7.[52]

The average price of IOU, CCA, and ESP contracts executed in 2021 was 2.6¢/kWh compared to 4.1¢/kWh in 2020. This decrease in average contract price is due to the different types of renewable technologies that were procured in 2021 versus 2020. The average annual contract price increased in 2020 because there was a more diversified procurement of renewables that featured solar PV, wind, and more expensive technologies such as small hydro, geothermal, and bioenergy. In 2021, the average annual contract price decreased because solar PV and wind, which are lower in price than other resources, made

[51] RPS 2021 Padilla Report to the Legislature on Costs and Savings for the RPS in 2020: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/energy-reports-and-whitepapers/rps-reports-and-data. Values were adjusted for inflation using the U.S. Bureau of Labor Statistics' Producer Price Index (PPI) for the Electric Power Generation, Transmission, and Distribution Industry.

[52] Projects with a capacity of 3 MW or less made up roughly 2% of all of the IOUs' contracted RPS capacity, and removing these figures eliminated non-representative trends from the data. As a result of this size exclusion, feed-in-tariff projects were not considered in the analysis above. In California, feed-in-tariff programs provide projects with a capacity of 3 MW or less capacity a predetermined price ($/MWh) to encourage market transformation for projects at these sizes. Additionally, contracts identified as REC only payments were excluded as these values are not comparable to all in energy, capacity, and REC contract prices.

up a larger majority of the procurement of renewables. For more information on the costs of the RPS program, see the 2021 Annual Report on RPS Costs and Cost Savings (Padilla Report).[53]

[53]https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/Office_of_Governmental_Affairs/Legislation/2020/2020%20Padilla%20Report.pdf

Renewable Procurement and Project Development

This chapter uses the most current procurement and contracting data available as of September 2022 for all retail sellers in order to evaluate the state of new renewable project development. Additionally, Compliance Period 2021-2024 is the first Compliance Period that requires that 65 percent of required RPS procurement that must be procured from contracts of ten or more years, which is discussed at the end of this section.

Contracting and New Projects in Development

Large Investor-Owned Utilities (IOUs)

In 2021, the IOUs collectively executed four BioMAT contracts for a total of 11.3 MW of newly contracted RPS capacity.[54] Table 11 below shows the BioMAT project capacity executed for each IOU. In 2021, only PG&E and SCE executed BioMAT contracts.

Table 11: Large IOUs BioMAT Contracts Executed

	PG&E		SCE		SDG&E		Totals	
	Contracts	MW	Contracts	MW	Contracts	MW	**Contracts**	**MW**
2019	7	12	3	8	-	-	**10**	**20**
2020	2	6	-	-	-	-	**2**	**6**
2021	3	9	1	2.3	-	-	**4**	**11.3**

Data Source: CPUC RPS Database, September 2022

REC SALES

Due to the IOUs' forecasted excess RPS procurement, the CPUC authorized the IOUs to hold REC sales solicitations in 2019, 2020, 2021, and 2022 to sell RPS energy from their portfolios.[55] The IOUs' long RPS position is a result of forecasted excess RPS procurement and customer load departure. REC sales solicitations provide IOUs with the opportunity to optimize their portfolios as well as provide renewable resources for other retail sellers. The IOUs' REC sales also offer a path for smaller or newer retail sellers to procure quantities to meet their RPS compliance needs.

All three of the large IOUs have held REC sales solicitations in 2019, 2020, 2021, and 2022 and have requested CPUC approval of additional REC sales solicitations in 2023. However, because the IOUs will allocate "slices" of their entire Power Charge Indifference Adjustment (PCIA)-eligible RPS portfolios as part of the VAMO process, this multi-year trend in annual REC sales for excess RPS procurement may change when the VAMO process is fully completed, as discussed later in this report.

[54] Per D.12-06-038 and D.17-12-007, the CPUC collects monthly data from the large IOUs on RPS projects, including contract details, project development status, technology type, location, capacity, financing status, construction start date, commercial online date, regulatory status, and interconnection details. Table 11 illustrates data from the large IOUs, but there were also other RPS contracts signed by the SMJUs, CCAs, and ESPs.

[55] *See* D.19-12-042.

In 2021, PG&E, SCE, and SDG&E executed a total of 42 REC sales contracts. Table 12 below shows REC sales solicitation summaries by IOU.

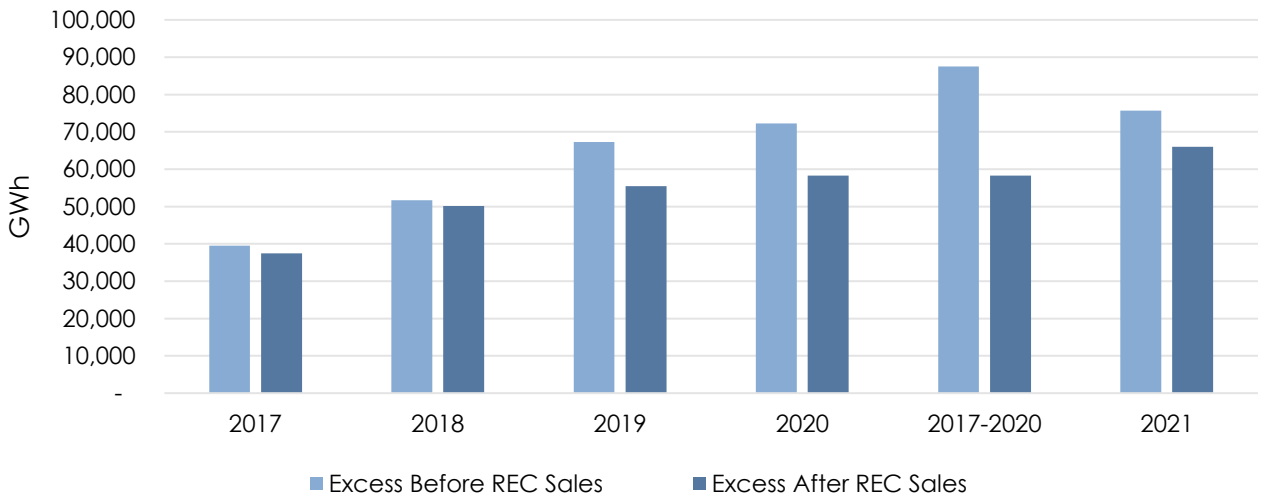
Table 12: Large IOU REC Sales Contracts Approved by the CPUC

	PG&E		SCE		SDG&E		Totals	
	Contracts	GWh	Contracts	GWh	Contracts	GWh	**Contracts**	**GWh**
2019	13	6,389	25	13,347	-	-	**37**	**19,736**
2020	2	500	12	4,742	1	175	**15**	**5,417**
2021	9	2,107	32	7,986	1	159	**42**	**10,252**

Data Source: CPUC RPS Database, September 2022

As Figure 8 below shows, the IOUs' REC sales solicitations over the last four years have resulted in a 37 percent decrease of their aggregate excess procurement bank between 2017–2021. In aggregate, the IOUs have sold nearly 40,000 GWh of RPS energy from their portfolios from 2017 to 2021 and will sell additional RPS energy in 2022 and 2023 from existing executed REC sales contracts.

Figure 8: Aggregated IOU Excess Procurement Bank Before and After REC Sales



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Data Source: IOUs' 2022 Draft Procurement Plans, Renewable Net Short calculations

Small and Multi-Jurisdictional Utilities (SMJUs)

BVES did not execute contracts for any additional RPS resources for 2021, while Liberty executed two new short-term unbundled REC contracts from biomass and wind facilities in 2021. PacifiCorp executed one long-term wind procurement contract in 2021.

Community Choice Aggregators (CCAs)

To date, 14 CCAs have executed long-term contracts with new utility-scale[56] renewable projects that have not yet reached their commercial operation dates. The data in the tables below include projects that will come online in the future and does not represent an exhaustive list of all new CCA projects that have been contracted for and built over the last decade. Table 13 shows the in-state renewable energy projects that are currently under development by CCAs with commercial online dates in 2022 and 2023. Of the contracts listed, about 83% are for new solar PV resources many of which include storage.

Table 13: New California Renewables Projects with CCA Contracts COD 2022–2023

CCA	Technology	Capacity (MW)	County Location	Contract Term (Years)	COD[57]
Central Coast Community Energy	Solar PV	20	Tulare	15	2023
Central Coast Community Energy	Solar PV	100	Riverside	15	2023
Central Coast Community Energy	Wind	33	Riverside	20	2022
Central Coast Community Energy	Geothermal	66	Inyo	17	2022
Central Coast Community Energy	Solar PV	68	Kings	17	2022
Central Coast Community Energy	Solar PV	58	Kern	20	2022
Central Coast Community Energy	Biogas: Digester Gas	68	Kings	15	2022
Central Coast Community Energy	Geothermal	68	Kings	15	2022
Central Coast Community Energy	Solar PV	68	Kings	15	2022
Central Coast Community Energy	Solar PV	68	Kings	15	2022
Central Coast Community Energy	Solar PV	60	Kern	15	2022
Central Coast Community Energy	Solar PV	120	Kern	20	2023
Clean Power Alliance	Geothermal	50	Sonoma and Lake	15	2022
Clean Power Alliance	Solar PV	233	Riverside	15	2022
Clean Power Alliance	Solar PV	65	Kern	15	2023
Clean Power Alliance	Solar PV	56	Los Angeles	15	2023
Clean Power Alliance	Solar PV	123	San Bernardino	15	2023
Clean Power Alliance	Solar PV	94	Riverside	15	2023

[56] Utility-scale projects refer to contract capacities of 20 MW or greater.

Clean Power Alliance	Solar PV	65	San Bernardino	15	2023
Clean Power Alliance	Solar PV	48	San Bernardino	20	2023
CleanPowerSF	Solar PV	20	Stanislaus	20	2023
Desert Community Energy	Multiple Types	50	Tulare	22	2022
East Bay Community Energy	Solar PV	56	Tulare	15	2022
East Bay Community Energy	Solar PV	100	Fresno	20	2023
East Bay Community Energy	Solar PV	100	Kern	15	2023
East Bay Community Energy	Solar PV	50	San Bernadino	15	2023
Marin Clean Energy	Solar PV	110	San Bernadino County	15	2023
Marin Clean Energy	Wind	91	Santa Barbara County	20	2022
Peninsula Clean Energy	Geothermal	26	Imperial	15	2023
Peninsula Clean Energy	Solar PV	102	Kern	15	2022
Pioneer Community Energy	Solar PV	34	Kern	15	2022
Redwood Coast Energy Authority	Solar PV	100	Kern	15	2023
Sonoma Clean Power Authority	Solar PV	70	Stanislaus	20	2023
San Diego Community Power	Solar PV	150	Imperial	20	2023
San Diego Community Power	Solar PV	70	San Diego	20	2023
San Diego Community Power	Solar PV	75	Riverside	15	2023
San Jose Clean Energy	Solar PV	100	Kern	15	2022
San Jose Clean Energy	Solar PV	100	Fresno	20	2022
Silicon Valley Clean Energy	Geothermal	33	Inyo	15	2022
Silicon Valley Clean Energy	Solar PV	93	Kings	17	2022
Silicon Valley Clean Energy	Solar PV	40	Kern	15	2022
Silicon Valley Clean Energy	Solar PV	80	Kern	20	2023
Silicon Valley Clean Energy	Solar PV	100	Kern	15	2023
Silicon Valley Clean Energy	Wind	33	Kern	20	2022
Silicon Valley Clean Energy	Wind	78	Riverside	15	2023
Silicon Valley Clean Energy	Wind	43	Alameda	10	2023
Valley Clean Energy Alliance	Solar PV	165	San Bernardino	20	2023
Valley Clean Energy Alliance	Solar PV	108	Kern	15	2023
Total		**3,708**			

Data Source: CCAs' RPS Draft Procurement Plans (July 2022), CCAs' Annual RPS Compliance Reports (August 2022)

The CCAs also contracted with new renewable projects with commercial online dates further into the future and located outside of California. The table below lists additional in-state renewables contracts with commercial online dates in 2024 – 2025. Of the contracts listed, all are for new solar PV resources many of which include storage.

Table 14: New California Renewables Projects with Community Choice Aggregator Contracts COD 2024-2025					
CCA	**Technology**	**Capacity (MW)**	**County Location**	**Contract Term (Years)**	**COD**
Central Coast Community Energy	Solar PV	70	Kern	12	2024
Central Coast Community Energy	Solar PV	63	Fresno	15	2024
Clean Power Alliance	Solar PV	60	Kern	15	2024
CleanPowerSF	Solar PV	75	Alameda	20+	2025
Desert Community Energy	Solar PV	50	Tulare	20	2024
Marin Clean Energy	Solar PV	100	Kern	15	2025
Peninsula Clean Energy	Solar PV	100	Riverside	15	2024
Pioneer Community Energy	Solar PV	200	Kern	14	2024
Silicon Valley Clean Energy	Solar PV	20	Tulare	15	2024
Silicon Valley Clean Energy	Solar PV	63	Fresno	15	2024
Total		**801**			

Data Source: CCAs' RPS Draft Procurement Plans (July 2022), CCAs' Annual RPS Compliance Reports (August 2022)

Table 15 lists the CCAs' out-of-state contracts for new renewables projects.

Table 15: New Out-of-State Renewables Projects with Community Choice Aggregator Contracts COD 2022–2024					
CCA	**Technology**	**Capacity (MW)**	**County Location**	**Contract Term (Years)**	**COD**
Central Coast Community Energy	Solar PV	150	La Paz, AZ	10	2023
Central Coast Community Energy	Wind	75	Clark, NV	20	2023
Central Coast Community Energy	Solar PV	75	Clark, NV	20	2023
Central Coast Community Energy	Solar PV	75	Clark, NV	20	2022
Pioneer Community Energy	Solar PV	60	Clark, NV	20	2023
Silicon Valley Clean Energy	Solar PV	50	Clark, NV	20	2023
Silicon Valley Clean Energy	Solar PV	50	Clark, NV	20	2023
Silicon Valley Clean Energy	Solar PV	50	Clark, NV	20	2022
Silicon Valley Clean Energy	Solar PV	50	Clark, NV	20	2022
Silicon Valley Clean Energy	Solar PV	50	Clark, NV	20	2022
Silicon Valley Clean Energy	Solar PV	50	Clark, NV	20	2022
Silicon Valley Clean Energy	Solar PV	50	La Paz, AZ	10	2023
Total		**785**			

Data Source: CCAs' RPS Draft Procurement Plans (July 2022), CCAs' Annual RPS Compliance Reports (August 2022)

Several operating CCAs have only entered into contracts with RPS facilities that are already in commercial operation.

Electric Service Providers (ESPs)

While historically the majority of ESPs exclusively contracted with existing renewable energy facilities that have already achieved commercial operation, and preferred to contract for short-term procurement, ranging from one to three-year terms, this is no longer the case. Since 2020, six ESPs have executed long-term contracts with new utility-scale renewable resources to meet the 65% long-term contracting requirement.

Table 16 shows the new long-term contracts executed by ESPs that have not yet reached their commercial operation dates, where 95% of total new procurement is from in-state solar PV resources and the remaining new procurement is from out of state solar PV.

Table 16: New Long-term Renewables Projects with ESP Contracts

ESP	Technology	Capacity (MW)	County Location	Contract Term (Years)	COD
Calpine Energy Solutions	Solar PV	20	Kings	10	2023
Calpine Energy Solutions	Solar PV	80	San Bernadino	10	2023
Calpine Energy Solutions	Solar PV	44	Riverside	10	2023
Calpine Energy Solutions	Solar PV	131	Riverside	10	2022
Constellation NewEnergy	Solar PV	130	Kern	13	2022
Constellation NewEnergy	Solar PV	224	Riverside	15	2023
Constellation NewEnergy	Solar PV	130	Kern	13	2022
Constellation NewEnergy	Solar PV	52	San Bernardino	10.5	2023
Constellation NewEnergy	Solar PV	100	Riverside	10	2023
Calpine PowerAmerica	Solar PV	63	Kings County	10	2022
Calpine PowerAmerica	Solar PV	132	Kern	11	2022
Direct Energy Business	Solar PV	250	Riverside	15	2022
EDF Industrial Power Services	Solar PV	150	Fresno	10	2023
Shell Energy North America	Solar PV	200	Kern	15 years	2022
Shell Energy North America	Solar PV	100	La Paz County (AZ)	10 years	2023
Total		**1,806**			

Data Source: ESPs' Draft RPS Procurement Plans (July 2022) and ESPs' Annual RPS Compliance Reports (August 2022)

Progress in Long-Term Contracting

A key aspect of meeting RPS requirements is meeting the long-term contracting requirement which requires all retail sellers to procure 65 percent of their RPS portfolios through long-term contracts[58] beginning in Compliance Period 2021–2024. Retail sellers were allowed to elect early compliance with the long-term contracting requirements.[59] Retail sellers who elected to comply early with the 65 percent long-term contracting requirement began procuring 65 percent of their RPS requirements from long-term contracts in Compliance Period 2017–2020, instead of Compliance Period 2021–2024. Six retail sellers,

[58] Long-term contracts are defined as contracts with a term of ten or more years.
[59] *See* D.17-06-026 "*Decision Revising Compliance Requirements for the California Renewables Portfolio Standard in Accordance with Senate Bill 350,*" for more information.

including all IOUs, have elected to early-comply.[60] This section uses RPS compliance report data to identify the status and progress of all retail sellers in meeting the long-term contracting requirement. See Chapter IV for the status and progress regarding overall RPS requirements.

The IOUs and SMJUs are well-positioned to meet the 65 percent long-term contracting requirement. Some CCAs and ESPs have forecasted shortfalls in meeting the 65 percent long-term contracting requirement; thus, raising concerns for their potential failure in meeting overall RPS requirements.

Large Investor-Owned Utilities: Each IOU has elected to comply early with the 65 percent long-term requirement and the three large IOUs are forecasted to meet their long-term contracting requirements for Compliance Period 2017–2020 and Compliance Period 2021-2024. Nearly all RPS contracts executed by the three IOUs for the purposes of complying with the RPS program have contract term lengths of 10 or more years.

Small and Multi-Jurisdictional Utilities: The three SMJUs are forecasted to meet their long-term contracting requirements for Compliance Period 2017–2020 and Compliance Period 2021-2024. BVES and PacifiCorp elected to comply early with the 65 percent long-term contracting requirement. Liberty has already executed long-term contracts and nearly all of PacifiCorp's RPS procurement from 2019 through 2030 is derived from long-term contracts. BVES must execute additional long-term contracts to meet its long-term requirement for Compliance Period 2025–2027, as it has one contract fulfilling its long-term obligations that expires at the end of 2023.

Community Choice Aggregators: As reflected in Table 17, all the CCAs are forecasted to meet their long-term procurement requirement in Compliance Period 2017-2020. Out of the 25 CCAs that plan to serve load in Compliance Period 2021–2024, most have met or are close to meeting their long-term requirements, with only two requiring significant procurement. However, the majority of the CCA long-term contracts are currently under development and have not yet reached commercial operation, and final assessments of the 65 percent requirement are based on procured generation.

[60] Retail sellers with early compliance elections include PG&E, SCE, SDG&E, BVES, PacifiCorp, and The Regents of the University of California.

Table 17: Forecast Percentage of CCA 65% Long-Term Contract Requirements Met[61]

CCA Name	Compliance Period 2017–2020	Compliance Period 2021–2024
Apple Valley Choice Energy	100%	95%
Central Coast Community Energy	100%	100%
City of Baldwin Park[62]	100%	100%
City of Palmdale	N/A	16%
City of Pomona	100%	100%
City of Santa Barbara	N/A	88%
Clean Energy Alliance	N/A	64%
Clean Power Alliance	100%	100%
CleanPowerSF	100%	100%
Desert Community Energy	100%	100%
East Bay Community Energy	100%	100%
King City Community Power	100%	100%
Lancaster Choice Energy	100%	100%
Marin Clean Energy	100%	100%
Orange County Power Authority	N/A	0%
Peninsula Clean Energy	100%	100%
Pico Rivera Innovative Municipal Energy	100%	100%
Pioneer Community Energy	100%	100%
Rancho Mirage Energy Authority	100%	100%
Redwood Coast Energy Authority	100%	100%
San Diego Community Power	N/A	91%
San Jacinto Power	100%	100%
San José Clean Energy	100%	100%
Silicon Valley Clean Energy	100%	100%
Solana Energy Alliance [63]	100%	100%
Sonoma Clean Power Authority	100%	100%
Valley Clean Energy	100%	100%
Western Community Energy[64]	100%	0%

Data Source: CCAs' Annual RPS Compliance Reports (August 2022)

[61] The procurement contracts have not been fully reviewed by the CPUC and these are forecasted compliance percentages based on self-reported data.
[62] City of Baldwin Park deregistered as a CCA and is no longer serving load
[63] Solana Energy Alliance deregistered as a CCA and is no longer serving load
[64] Western Community Energy deregistered as a CCA and is no longer serving load

Electric Service Providers: With the long-term contracting requirement increasing from 0.25 percent of retail sales[65] to 65 percent of a retail sellers' procurement quantity requirement, some ESPs need to execute significant amounts of long-term contracts to meet the RPS requirements, as reflected in Table 18.

Three ESPs plan to stop serving load in the 2021-2024 compliance period, while there is one market entrant, Brookfield Renewable Energy Marketing. Of the eleven ESPs that forecast serving load in the 2021–2024 Compliance Period, six ESPs forecast having enough long-term RPS energy procurement, four have procured some long-term RPS energy towards meeting the 65 percent requirement, and the new entrant has yet to report any procurement.

Table 18: Forecasted ESP Percentage of 65% Long-Term Contract Requirements Met[66]

ESP Name	Compliance Period 2017–2020	Compliance Period 2021–2024
3 Phases Renewables	100%	100%
American PowerNet	100%	N/A[67]
Brookfield Renewable Energy Marketing U.S.[68]	N/A	0%
Calpine Energy Solutions	100%	100%
Calpine Power America	100%	100%
Commercial Energy of California	100%	86%
Constellation NewEnergy	100%	98%
Direct Energy Business	100%	100%
EDF Industrial Power Services	100%	100%
Just Energy Solutions	100%	N/A[69]
Pilot Power Group	100%	37%
Shell Energy North America	100%	50%
Tiger Natural Gas	100%	N/A[70]
UC Regents	100%	100%

Data Source: ESPs' Annual RPS Compliance Reports (August 2022)

[65] *See* D.12-06-038 "*Decision Setting Compliance Requirements for the California Renewables Portfolio Standard Program,*" for more information on the long-term contracting requirement under SB 2 (1X) (Simitian, 2011).
[66] The procurement contracts have not been fully reviewed by the CPUC and these are forecasted compliance percentages based on self-reported data.
[67] American PowerNet plans to not serve load in the 2021-2024 compliance period.

[68] Brookfield Renewable Energy Marketing U.S. (BREMUS) is a new ESP that registered with the Commission as an effective May 3, 2022 and is not yet serving load. BREMUS did not have a compliance reporting obligation for 2021 but did file a 2022 draft RPS procurement plan.
[69] Just Energy Solutions plans to not serve load in the 2021-2024 compliance period.

[70] Tiger Natural Gas plans to not serve load in the 2021-2024 compliance period.

Compliance and Enforcement

This chapter provides an overview of the RPS program's compliance and enforcement process. Each August, retail sellers are required to submit annual preliminary RPS Compliance Reports to the CPUC that contain historical and forecasted data on their renewable procurement. The CPUC uses these reports to conduct analysis of retail sellers' progress towards the RPS mandate and identify any compliance risks based on the information provided by retail sellers. The reports are necessary for the CPUC to quantify each retail seller's procurement and facilitates determination of the forecasted compliance status of each retail seller.

Specifically, compliance with the RPS program is measured in eligible RECs[71] and evaluated on a multi-year compliance basis. The CPUC works closely with the CEC to make formal compliance determinations, using the CEC's Verification Report[72] to confirm each retail seller's actual REC claims. The CEC utilizes reports from the Western Renewable Energy Generation Information System (WREGIS)[73] to determine the amount of renewable electricity generated by each RPS-eligible facility. The CEC analyzes the eligibility of the facility, the quantity of RECs created, and ensures each REC claimed by retail sellers is eligible for compliance and not double-counted. The CPUC reviews retail sellers' final RPS Compliance Reports and RPS contracts in conjunction with the CEC's Verification Report to determine compliance. These compliance determinations cannot take place until the CEC completes its verification process and the CPUC thereafter completes its compliance review. Consequently, there have not been any enforcement actions related to the CPUC's compliance review of Compliance Period 2017-2020. Additional details regarding RPS compliance and enforcement are in Appendix B of this report.

[71] A REC is a market-based instrument that represents the property rights to the environmental, social, and other non-power attributes associated with the production of electricity from a renewable source. RECs represent a claim on the renewable attributes of one unit of energy (MWh) generated from a renewable resource. RECs are "created" by a renewable generator and its creation is simultaneous with the production of electricity. When an LSE decides to use RECs for compliance with the State's RPS program, it must be retired and cannot be used again.

[72] *See* https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard-1-0 for the most recent RPS Verification Report issued by the CEC.

[73] The Western Renewable Energy Generation Information System (WREGIS) is an independent renewable energy tracking system for the region covered by the Western Electricity Coordinating Council (WECC). All renewable generation in the WECC must be tracked through WREGIS and used for state RPS programs.

2021 RPS Program Activities

This chapter identifies and discusses key 2021/2022 RPS program activities and accomplishments including implementation of legislation, procurement activities, and interagency planning and coordination. Appendix F includes a detailed list of RPS program activities.

Implementation of SB 100

On September 10, 2018, Governor Brown signed SB 100 (de León, 2018) into law. SB 100 accelerates and increases the RPS requirements to 60 percent by 2030 and establishes a goal that renewable and zero-carbon resources supply 100 percent of electric retail sales to California end-use customers by 2045. In June 2019,[74] the CPUC implemented SB 100 by adopting the new RPS Procurement Quantity Requirements (PQRs) and compliance targets.[75] SB 100's goal of carbon free resources will be examined in the IRP proceeding.[76]

SB 100 also directed the CEC, CPUC, and the California Air Resources Board (CARB) to collaborate on a joint agency report to evaluate the challenges and opportunities in implementing SB 100. The SB 100 Joint Agency Report was issued in March 2021 and included an initial assessment of the additional energy resources and the resource building rates needed to achieve 100 percent clean electricity, along with the associated costs and benefits.[77]

Integrated Resource Planning and RPS Alignment

Since SB 350 was adopted in 2015, the CPUC has been coordinating between the RPS program and the IRP program. The CPUC adopted an IRP framework in 2018 to coordinate and refine long-term planning requirements for CPUC-jurisdictional retail sellers, which includes planning for increasing renewables.[78] Activities in the IRP proceeding are complementary to RPS procurement activities and resource planning for the electric sector.

The CPUC is working to align the IRP and RPS proceedings to further coordinate planning efforts and address the overlap in reporting requirements. In September 2020, the CPUC released a Staff proposal that incorporates RPS Procurement Plans into retail sellers' IRP filings and requires retail sellers to submit IRP off-year filings to meet annual statutorily mandated RPS reporting requirements. The Staff proposal included a streamlined, coordinated schedule to allow the RPS and IRP proceedings to converge on the same timeline, and parties to the RPS proceeding have commented on this Staff proposal. The Staff proposal and party comments are under consideration by the CPUC, and next steps will be provided by subsequent CPUC decision(s) or ruling(s).[79]

[74] *See* D.19-06-023.
[75] As mandated by the amendments to § 399.15(b)(2)(B).
[76] *See* R.16-02-007.
[77] *See* https://www.energy.ca.gov/sb100.
[78] *See* D.18-02-018.
[79] To be issued in R.18-07-003 or R.20-05-003 or subsequent proceedings.

Voluntary Allocation and Market Offer Process for RPS Portfolio Optimization

On May 24, 2021, the Commission issued Decision (D.) 21-05-030 to authorize new Voluntary Allocation, Market Offer, and Request for Information (RFI) processes for large IOU RPS contracts subject to the Power Charge Indifference Adjustment (PCIA). The purpose of these processes is to reduce excess and uneconomic resources in the IOUs' PCIA-eligible RPS portfolios through voluntary and market-based solutions. The Decision adopted a Voluntary Allocation and Market Offer (VAMO) mechanism, which authorizes a process for PG&E, SCE, and SDG&E to allocate a "slice" of their entire PCIA-eligible RPS portfolios to eligible LSEs (such as CCAs, ESPs, and the IOUs themselves) in proportion to their vintaged, forecasted annual load share. The IOUs are required to file a report and conduct a workshop on VAMO's effectiveness after the initial VAMO cycle is complete.

Voluntary Allocations

As the initial step in the VAMO process, some eligible LSEs elected to take Voluntary Allocations of their share, or "slice", of an IOU's PCIA-eligible RPS portfolio. Voluntary Allocations featured standard offer contracts with fixed prices that are based on the applicable year's market price benchmark. Eligible LSEs were permitted to elect a short-term allocation, a long-term allocation, or were permitted to decline all or a portion of their allocation of RPS resources. Although Voluntary Allocations are to be held no more than once in an RPS compliance period, a newly formed LSE may request an initial Voluntary Allocation if its launch does not coincide with a regular VAMO cycle.

Energy Division approved of the IOUs' joint Voluntary Allocation methodology on October 25, 2021, and the Commission issued Resolution E-5216 on June 29, 2022, which approved the IOUs' Voluntary Allocation contract formats. The IOUs completed their initial Voluntary Allocation contracting on July 29, 2022.

While the IOUs elected to receive 100 percent of their respective shares of Voluntary Allocations, the results for the non-IOU LSEs' Voluntary Allocations were mixed across the three large IOU service territories. Statewide, as shown in Table 19, non-IOU LSEs elected to receive 45.7 percent of the total PCIA-eligible RPS resource volumes available for Voluntary Allocation across the three IOU service territories.[80]

Table 19: 2022 Voluntary Allocation Election Percentage of RPS Resources by Non-Investor-Owned Utility Load Serving Entities

Statewide Weighted Total Percentage of Voluntary Allocation Elections	**45.7%**

Data Source: IOU Voluntary Allocation Reports to CPUC Energy Division Staff (August & September 2022)

Table 20 summarizes the quantities of non-IOU LSEs that elected to receive Voluntary Allocations of PCIA-eligible RPS resources in each territory. On September 29, 2022, the Commission issued a proposed

[80] Calculated as the statewide *weighted* total of Non-IOU LSE Voluntary Allocation Elections

decision that seeks to approve LSEs' Voluntary Allocations and also addresses Market Offer issues described below.[81] The Commission can vote on the proposed decision as early as November 3, 2022.

Table 20: Summary of Non-Investor-Owned Utility Load Serving Entities' Participation in Voluntary Allocations of PCIA-Eligible RPS Resources in 2022

IOU Service Territory	Quantity of Eligible LSEs Receiving Voluntary Allocations	Total Quantity of Eligible LSEs in IOU Service Territory
Pacific Gas and Electric	10	22
Southern California Edison	15	26
San Diego Gas & Electric	6	12

Data Source: IOU Voluntary Allocation Reports to CPUC Energy Division Staff (August & September 2022)

Market Offers

As the next step in VAMO, the IOUs will solicit Market Offers for all PCIA-eligible RPS energy remaining after a Voluntary Allocation cycle. Unlike Voluntary Allocations, Market Offer contracts feature fixed prices and are closely based on the existing solicitation processes and contract formats of IOU REC sales solicitations previously approved in the Commission's RPS proceeding. The IOUs may also propose more than one Market Offer in an RPS compliance period. The Commission has approved the IOUs' proposed contract formats via the advice letter process and the aforementioned September 29, 2022, proposed decision seeks to approve the IOUs' proposed Market Offer processes with modifications. The Commission can vote on the proposed decision as early as November 3, 2022.

Requests for Information

D.21-05-030 additionally directed the three IOUs to issue at least two requests for information (RFI) for contract modifications and assignments in 2021 and 2022. The IOUs each included RFIs in their 2021 RPS Procurement Plans and have proposed to issue a second RFI in their draft 2022 RPS Procurement Plans. No contract amendments or assignments have been submitted for CPUC approval.

Additional Mandated RPS Procurement Activities

The IOUs are required to procure renewable energy through mandated programs to meet additional State policy goals. Although SMJUs, CCAs, and ESPs are not required to procure RPS resources through these mandated programs, all customers pay for the bioenergy programs.[82]

Feed-in Tariff Programs

California's Feed-in Tariff (FIT) program is a policy mechanism designed to accelerate investment in small, distributed renewable energy technologies. The goal of the FIT program is to offer long-term contracts and

[81] The proposed decision does not approve the voluntary allocations elected by 3 Phases Renewables, Inc., but instead seeks additional information from them before granting approval.

[82] Per SB 859, all customers are required to support the BioRAM program through a non-bypassable charge as implemented in D.18-12-003; the BioMAT program implemented a similar non-bypassable charge in D.20-08-043 as part of program improvements.

price certainty for financing renewable energy investments to aid in transforming these markets. The RPS program has two FIT programs:

Renewable Market Adjusting Tariff (ReMAT)
Bioenergy Market Adjusting Tariff (BioMAT)

Both programs have capacity procurement mandates established by the Legislature, which are allocated to each IOU based on their proportionate share of statewide electric load served.

RENEWABLE MARKET ADJUSTING TARIFF (REMAT)

ReMAT[83] is a FIT program established by SB 32 (Negrete McLeod, 2009) and SB 2 (1X) (Simitian, 2011), which commenced offering fixed-price standard contracts in 2013. IOU procurement through the ReMAT program is for RPS energy from small facilities (generating up to 3 MW),[84] such as small hydro, solar PV, and wind, to sell renewable electricity to utilities under standard terms and conditions. ReMAT features administratively set prices by product category with a time-of-delivery adjustment. In June 2022, the Commission approved an annual ReMAT pricing update per the methodology adopted in D.20-10-005.

On December 17, 2021, the Commission adopted Decision (D.) 21-12-032, which expanded the eligibility of the program to renewable facilities enhanced with storage, in addition to other modifications such as a process through which program capacity may be reallocated across ReMAT program categories.

Table 21 below provides an overview of the progress that each IOU has made toward their ReMAT capacity mandate from the program's inception in 2013 to present. The ReMAT program has a total of 212 MW of capacity remaining.

Table 21: ReMAT Mandated Allocation by IOU

IOU	Procurement Requirement	MW Contracted	MW Contracted in 2021	MW Remaining
PG&E	218.8	36.08	2.0	116.77
SCE	226	48.88	7.27	74.63
SDG&E	48.8	7.58	0	20.82
Total	**493.6**	**92.54**	**9.27**	**212.22**

[83] The ReMAT program replaced California's original FIT program established by AB 1969 (Yee, 2006) to expand the program and increase eligible project size from a maximum of 1.5 MW to 3 MW.
[84] AB 1979 (Bigelow, 2016) modified the program to increase the maximum project capacity to 4 MWs for conduit hydroelectric facilities, if they deliver no more than 3 MW.

Data Source: CPUC RPS Database, September 2022 and PG&E and SCE's ReMAT Program web pages. (PG&E as of 9/1/2022; SCE as of 2/11/2021)

BIOENERGY MARKET ADJUSTING TARIFF (BIOMAT)

BioMAT is a FIT program established by SB 1122 (Rubio, 2012), which set a 250 MW procurement program requirement for small-scale bioenergy projects.[85] The goal of the BioMAT program is to promote competition for entrants to the bioenergy market using a simplified procurement mechanism. BioMAT procurement is allocated to three discrete bioenergy categories: Biogas, Agriculture, and Sustainable Forest Management. The program was implemented in 2014[86] and uses a standard contract and a market-based mechanism to arrive at the offered program contract price. On October 26, 2022, an Order Instituting Rulemaking (OIR) was issued to implement Assembly Bill (AB) 843 (Aguiar-Curry, 2021) and authorize CCAs to participate in BioMAT.[87]

The table below shows the BioMAT targets and capacity (MW) procured over the life of the program by the three IOUs.

Table 22: BioMAT Mandated Allocation Summary

BioMAT Category	BioMAT MW Allocation	MW Contracted	MW Remaining	Contract Price ($/MWh)
Biogas	110	10	100	127.72
Dairy/Agriculture	90	25.5	64.5	187.72 (Dairy) 183.72 (Other Agriculture)
Sustainable Forest Management	50	13.9	36.1	199.72
Total	**250**	**49.4**	**200.6**	**-**

Data Source: CPUC RPS Database, September 2022

Category 1 (Biogas): Since the start of the BioMAT program, five biogas contracts have been executed across the three IOUs for a total of 10 MW of capacity.[88] All contracts in this category have been executed at the program starting price of $127.72/MWh.

Category 2 (Agriculture): This category consists of Dairy and Other Agriculture sub-categories. There has been a total of 17 Category 2 contract executions in PG&E's and SCE's service territories for a total of 25.5 MW of capacity.

[85] AB 1923 (Wood, 2016) increased eligible project size to 5 MW, and more recently AB 843 (Aguiar-Curry, 2021) expanded the program to CCAs that wish to participate.

[86] *See* D.14-12-081.

[87] AB 843 amended Public Utilities Code Section 399.20 to extend to CCAs within an IOU's service territory the existing renewable feed-in tariff (BioMAT) for qualifying bioenergy electric generation facilities. AB 843 authorizes a CCA to execute contracts for eligible bioenergy projects and submit those contracts for cost recovery pursuant to the BioMAT program, if open capacity exists within the 250 MW BioMAT program limit. AB 843 additionally requires that every kilowatt hour of electricity purchased from a qualifying bioenergy electric generation facility count toward both the CCA's RPS procurement requirements and the BioMAT project procurement requirements of the IOU whose service territory encompasses the CCA.

[88] SDG&E's BioMAT contract with Lakeside Biogas for 3 MW of capacity was terminated in March 2021.

Category 3 (Sustainable Forest Management): In 2021, one Forest contract was executed by PG&E for a total of 3 MW. In total, five active Forest contracts have been executed by PG&E for a total of 13.9 MW of capacity. All contract executions in this category have occurred at a price of $199.72/MWh.

BioMAT Technical Working Group on GHG Emissions

Pursuant to D.20-08-043, in April 2021 the CPUC established a technical working group of stakeholders to develop a project specific lifecycle greenhouse gas emissions reduction model to quantify the net emissions of the BioMAT program project operations. The CPUC solicited participation from technical experts from parties, public agencies, academia, industry, national labs, and research institutions. The working group is utilizing a Lifecycle Assessment (LCA) approach to assessing BioMAT project emissions by analyzing the impacts of these emissions relative to an alternate baseline scenario. The final BioMAT LCA tool is expected to be available for public comment in late 2022.

BIOENERGY RENEWABLE AUCTION MECHANISM (BIORAM)

In 2016, the CPUC implemented Governor Brown's October 2015 Emergency Order Addressing Tree Mortality by establishing the BioRAM program. BioRAM uses the RPS standardized renewable auction mechanism (RAM) contract to streamline the procurement process.[89] Subsequently, Senate Bill 859 (2016)[90] directed additional BioRAM procurement which resulted in the large IOUs requirement to procure 146 MWs of bioenergy from High Hazard Zones (HHZ)[91] fuel. Senate Bill 901 (Dodd, 2018) further amended the BioRAM program to add program flexibility and extend certain biomass contracts by five years. Senate Bill 1109 (Caballero, 2022) further extended certain biomass contracts by another five years.

The table below lists the IOUs' BioRAM contracts.

Table 23: IOU BioRAM Contract Summary

IOU	Facility Name	Location	Capacity (MW)
PG&E	Burney	Shasta County, CA	29
PG&E	Wheelabrator Shasta	Shasta County, CA	34
PG&E	Woodland Biomass	Yolo County, CA	25
SCE	Rio Bravo Fresno	Fresno County, CA	24
SCE	Rio Bravo Rocklin	Placer County, CA	24
SCE	Pacific Ultrapower Chinese Station	Tuolumne County, CA	18
SDG&E	Honey Lake Power Company / Greenleaf	Lassen County, CA	24
Total			**178**

Data Source: CPUC RPS Database, September 2022

The IOUs collect quarterly data from the BioRAM facilities to track the amount of bioenergy that is being produced from HHZ forest fuel. In addition, the IOUs are required to perform an annual audit to verify the

[89] *See* https://www.ca.gov/archive/gov39/wp-content/uploads/2017/09/10.30.15_Tree_Mortality_State_of_Emergency.pdf.
[90] Senate Bill 859 (Committee on Budget and Fiscal Review, 2016) directs the CPUC to extend contracts for biomass facilities and addresses the statewide tree mortality issue by requiring that 60 percent of forest biomass used to create bioenergy is harvested from Tier 1 and Tier 2 high hazard zones. In 2018, Governor Brown signed SB 901 (Dodd, 2018), which modifies the HHZ definition and expands flexibility for certain BioRAM facilities that choose to modify their contracts.
[91] For more information on high hazard zone areas, see CALFIRE's website: https://frap.fire.ca.gov/mapping/maps/.

amount of HHZ fuel that BioRAM facilities utilize on a calendar year basis and measure the verified amount. In 2022, the IOUs completed independent audits on each facility's 2021 HHZ fuel usage.

HHZ fuel usage data for the current IOU-contracted BioRAM facilities is aggregated in Table 24.

Table 24: High Hazard Zone (HHZ) Forest Fuel Usage from BioRAM Contracts

Year	BioRAM HHZ % Requirements	Average % of Total Biomass Fuel from HHZ Fuel	Total HHZ Delivered (BDT)[92]	Total HHZ Usage To-Date (BDT)
2017[93]	50%	54.6%	267,745	267,745
2018	60%	56.5%	671,846	939,591
2019	60% and 80%[94]	84%	1,557,050	2,505,641
2020	60% and 80%	79%	862,147	3,367,788
2021	60% and 80%	82.5%	844,527	4,212,315

Data Source: CPUC Aggregated Data from IOUs as Described in Annual HHZ Fuel Verification Reports

Interagency Program Planning and Coordination

The CPUC coordinates closely with its sister state agencies on an ongoing basis to promote and implement consistent statewide RPS policies that benefit all Californians. The CPUC, for instance, works with the CEC, CARB, California Independent System Operator (CAISO), and CAL FIRE on issues and projects such as: statewide RPS compliance and enforcement, integration of storage, wildfire safety and mitigation, offshore wind development, and transmission planning.

Compliance and Enforcement

The CPUC coordinates closely with the CEC to ensure a consistent policy approach for RPS compliance and enforcement. The CPUC depends on the CEC's compliance verification report to inform its RPS compliance determinations. See Chapter IV for more details on RPS compliance and enforcement.

[92] Bone Dry Tons, which commonly accepted to be a 1:1 equivalent with megawatt-hours (MWh), refers to the measurement of biomass that has a 0 percent moisture content.
[93] The 2017 amount of delivered HHZ fuel has been updated from the 2018 RPS Annual Report to reflect the aggregate HHZ Annual Fuel Verification Reports.
[94] Individual tree mortality BioRAM facility HHZ requirements varied based on the contract.

Bioenergy Issues and Forest Management

The issue of forest health and its impact on wildfire mitigation intersects with the RPS programs of BioMAT and BioRAM. To ensure that these programs effectively address the State's policy goals, CPUC staff work with stakeholders and other state agencies to address program costs and barriers to HHZ woody biomass procurement.

The CPUC participates in regular, ongoing forums that address the State's wildfire mitigation efforts due to high fire threat exacerbated by prolonged drought conditions, bark beetle infestation, and climate change. Specifically, the CPUC is an active participant in the Governor's Wildfire and Forest Resilience Task Force, and RPS staff participate in quarterly meetings with other State agencies that support forest biomass utilization.

Offshore Wind Task Force and Marine Renewable Energy Working Group

The CPUC is a member of the California Offshore Wind Task Force (Task Force) and the Marine Renewable Energy Working Group (MREWG), inter-agency efforts led by the CEC and Ocean Protection Council, respectively. The Task Force seeks to promote regulatory consistency and to improve scientific data that balances emerging technologies and planning for siting marine renewables for the energy needs of all Californians. The MREWG coordinates across state agencies to streamline regulatory processes.

The CPUC's role is to offer insight into the RPS procurement and IRP processes, as well as details of CPUC proceedings that inform procurement need from offshore wind. The CPUC supports offshore wind development with the caveat that additional research and data are needed before moving forward. The CPUC considers offshore wind in its IRP process, where the resource is available for potential selection in the IRP capacity expansion model. The IRP proceeding continues to refine offshore wind data to optimally inform the procurement process.

On August 10, 2022, the CEC adopted a report[95] that evaluates offshore wind capacity in waters off the California coasts and establishes offshore wind planning goals. Preliminary findings in the report set planning goals of 2,000-5,000 megawatts (MW) of offshore wind by 2030 and 25,000 MW by 2045, enough electricity to power 3.75 million homes initially and 25 million homes by mid-century. On March 29, 2021, the Biden-Harris Administration announced a goal to deploy 30 GW of offshore wind by 2030,[96] and on September 15, 2022, the Administration announced a goal to deploy an additional 15 GW of floating offshore wind by 2035.

Lithium Valley Commission

The CPUC participates in the Blue-Ribbon Commission on Lithium Extraction in California, also commonly referred to as the Lithium Valley Commission. Established by the CEC[97] on February 25, 2021, the Lithium Valley Commission is tasked with enabling the state to better understand the opportunities and potential challenges of lithium recovery in California, including actions that will support the further development of geothermal power that have the potential to provide the co-benefit of lithium recovery

[95] *See* CEC's Commission Report: *Offshore Wind Energy Development off the California Coast: Maximum Feasible Capacity and Megawatt Planning Goals for 2030 and 2045*, August 2022

[96] https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/29/fact-sheet-biden-administration-jumpstarts-offshore-wind-energy-projects-to-create-jobs/

[97] Assembly Bill 1657 (Garcia, E., Chapter 271, Statutes of 2020), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200AB1657.

from existing and new geothermal facilities. It is required to submit a report to the Legislature documenting its findings and recommendations by October 1, 2022.[98]

The CPUC's role is to provide insight and recommendations to the Lithium Valley Commission regarding CPUC proceedings related to achieving California's climate and clean energy goals. This includes planning for and developing new transmission to support geothermal development, and state mandates specific to the procurement of baseload renewable resources, with at least 1,000 MW coming from clean, firm resources, such as geothermal, between 2023 and 2036. To that end, a CPUC Commissioner is appointed to the Lithium Valley Commission and this role is currently held by CPUC President Alice Reynolds, who took over from former CPUC Commissioner Martha Guzman Aceves in April 2022.

On September 21, 2022, the Lithium Valley Commission released a draft report[99] with recommendations on the environmental and economic impacts of lithium extraction and further development of geothermal power in the Salton Sea region. This included investments from state transmission planning entities and local utilities to address transmission needs related to geothermal energy delivery over the next 10 years.

Transmission Development Supporting RPS Implementation

SCE's West of Devers 220kV Upgrade Project

The West of Devers Upgrade was approved in D.16-08-017 by the CPUC. After a lengthy California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) review in conjunction with the Bureau of Land Management, construction of this major project is complete, and on May 14, 2021 the project was fully energized. This project will allow deliverability of new renewable resources — more than 7,000 MW of renewable and battery energy storage in the coming years — from desert areas in the eastern part of California to the population centers of the Inland Empire and San Gabriel Valley.

Construction began in October 2017 and after four years the final restoration and monitoring activities were completed in the fall of 2021. The project consisted of removing and replacing conductors and supporting structures (386 lattice steel towers and 83 tubular steel poles) on four separate circuits of 220-kV transmission lines through the existing 48-mile corridor from the Devers substation near Palm Springs to the Vista and San Bernardino substations in Grand Terrace and San Bernardino, respectively — about 200 miles of power lines.

The project triples the capacity of power delivery from 1,600 MW to 4,800 MW, which helps with system reliability in Southern California population centers during peak summer demand. As part of the West of Devers Project, SCE entered into a transaction with Morongo Transmission for it to invest in the project, which allowed SCE to build the project across the Morongo Indian Reservation. The total cost of the project was $740 million, with Morongo Transmission expected to invest $400 million. A conservative

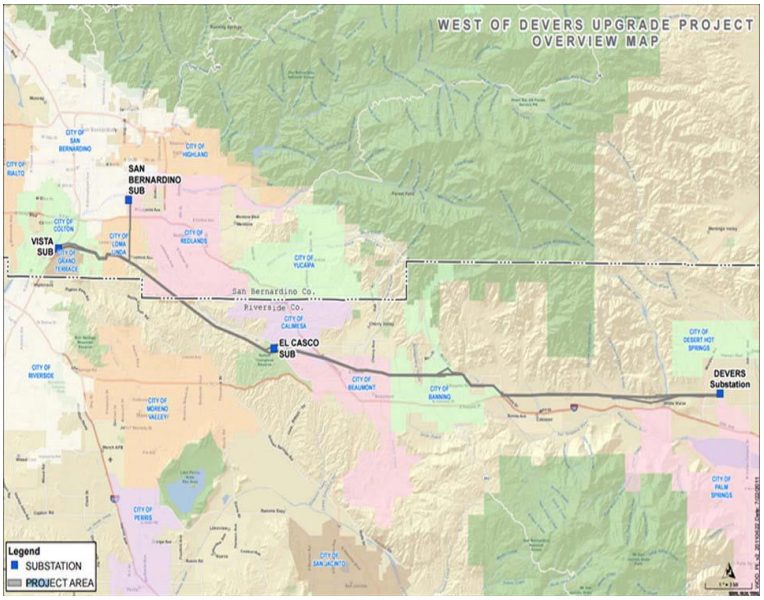
[98] The Lithium Valley Commission released a draft report for public comment on September 29, 2022. The public comment period ends on October 31, 2022.

[99] Paz, Silvia (Chair), Ryan E. Kelley (Vice Chair), Steve Castaneda, Rod Colwell, Roderic Dolega, Miranda Flores, James C. Hanks, Arthur Lopez, Luis Olmedo, Alice Reynolds, Frank Ruiz, Manfred Scott, Tom Soto, Jonathan Weisgall. 2022. Report of the Blue-Ribbon Commission on Lithium Extraction in California. California Energy Commission. Publication Number: CEC-300-2022-009-D

estimate is that the $740 million project will likely cost ratepayers approximately $2.6 billion in the long term.[100]

The project was built in an environmentally beneficial way by rebuilding within a corridor containing existing transmission lines, despite the unique operational challenges of this approach. The project spans several Riverside and San Bernardino communities, including Banning, Beaumont, Calimesa, Colton, Grand Terrace, Loma Linda, Redlands and other unincorporated areas of Riverside and San Bernardino counties. The corridor also passes through the reservation trust land of the Morongo Band of Mission Indians, a key partner with SCE in its bid to obtain environmental permits.

Commercial operation of the line began six months ahead of schedule and the project's success is a testament to the commitment and dedication of all the project team members and multitude of stakeholders.



SCE's Eldorado – Lugo – Mojave Series Capacitor Project

SCE filed an application with the CPUC for a Certificate of Public Convenience and Necessity (CPCN) on April 19, 2019, requesting to construct the Eldorado – Lugo – Mojave ("ELM") 500 kV Series Capacitor Project. The project had previously been approved through the CAISO's 2013-2014 Transmission Planning Process. SCE proposes the ELM Project to deliver electricity from renewable and conventional generation resources outside of California to help meet growing electricity demand in the region, as well as to reduce greenhouse gases.

The ELM Project consists of the following major components: 1) Construct two new 500 kV mid-line series capacitors (the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor) and associated equipment; and 2) Relocate, replace, or modify existing transmission, sub-transmission, and distribution

[100] Estimate prepared by Energy Division Staff

facilities at approximately 12 locations along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines to address 14 potential overhead clearance discrepancies.

The Commission approved the Project on August 27, 2020. Preconstruction compliance review has been completed and Notice to Proceed (NTP) #1 was issued December 14, 2020, NTP #2 was issued April 1, 2021, NTP #3 was issued May 19, 2021, and NTP #4 was issued June 8, 2021. Construction on California non-federal lands began January 2021. Construction is scheduled to continue through 2022.

Delaney Colorado River Transmission (DCRT) Ten West Link Project

The CPUC approved the Ten West Link (TWL) Project in November 2021 to increase access to out-of-state resources and lower costs to California ratepayers, primarily through production cost benefits and increase delivery of renewable generation in the Southwest. The project also provides reliability and policy benefits and congestion relief in addition to the economic benefits.

The proposed project includes installation of a 500-kV transmission line, transmission supporting structures between 72 and 190 feet in height, conductors, overhead ground wire, and a new series compensation system substation. The proposed project consists of a 500-kilovolt (kV) transmission line traversing approximately 114 miles, with a 17-mile segment in California. The portion of the proposed project in California begins at the Colorado River Substation west of the City of Blythe and runs eastward to the Colorado River near the Interstate 10 corridor in western Riverside County, California. The proposed project will increase transmission capacity by 3,200 megawatts and provide interconnection capability for new energy projects located near the proposed project. In November 2021 the Commission issued Decision 21-11-003 granting Delaney Colorado River Transmission (DCRT) a Certificate of Public Convenience and Necessity for the Ten West Link Project. Preconstruction compliance review has been completed and Notice to Proceed (NTP) #1 was issued December 2, 2021, and NTP #2 was issued June 1, 2022. The project is scheduled to be completed in 2025.

RPS Workforce Development and Diversity

This chapter describes RPS workforce development activities of the IOUs, SMJUs, CCAs, and some of the ESPs, consistent with Public Utilities Code 913.4(f).[101] The state requires collection of this information to ensure an adequately trained and available workforce can support California's increasing dependence on advanced renewable energy technologies. The sections below provide data and trends on workforce development related to retail sellers' current RPS workforce, diversity of staff, strategies used to proactively recruit and train their staff to support California's ambitious goals for reliable, clean energy. To provide this overview, the CPUC collected information on workforce development data directly from the IOUs, SMJUs, CCAs and ESPs.

IOU Workforce Development

The IOUs report having a significant focus on offering equal employment opportunities with respect to the recruitment, hiring, and professional development practices associated with the implementation of the RPS program.

Current IOU RPS Workforce

Table 25 and Figure 9 provide an overview of the number of full-time PG&E, SCE, and SDG&E employees who worked on RPS-related issues from 2013–2022. In total, the three IOUs reported a cumulative decrease in total employees working on RPS issues from 307 to 172 in the past year.[102]

Table 25: Total RPS Employees at Large Investor-Owned Utilities

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Totals	236	190	206	161	169	135	302	271	307	172

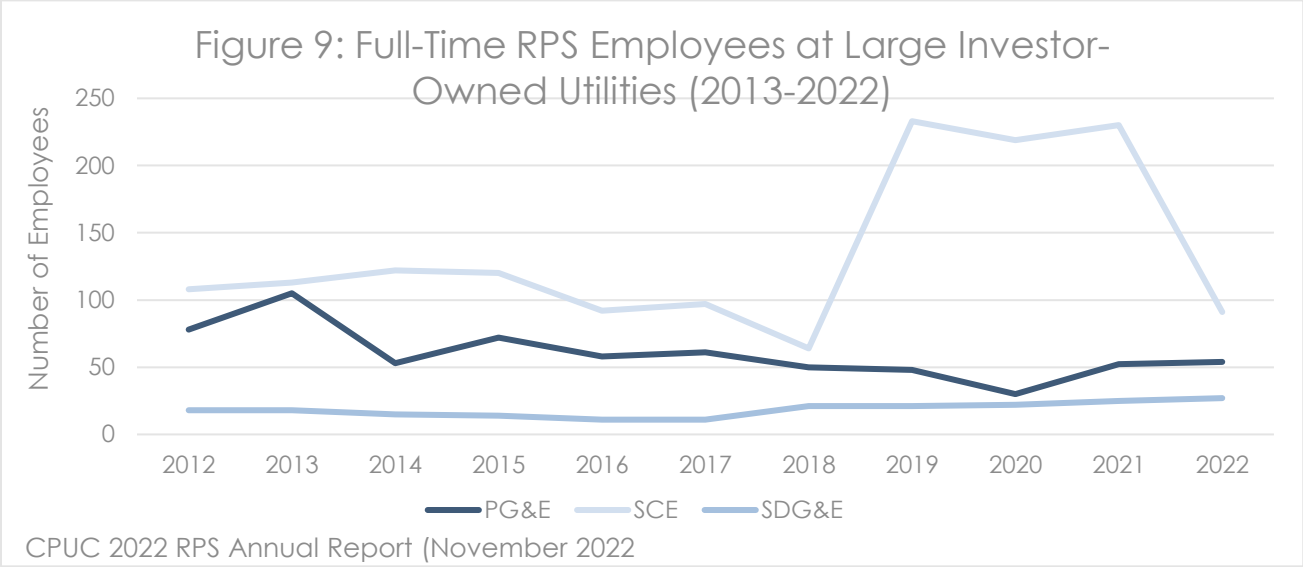
Data Source: PG&E, SCE, SDG&E, August 2022

Figure 9 illustrates how the IOUs' RPS employees have changed over the past eleven years.[103]

[101] Public Utilities Code § 913.4(f) applies to retail sellers and the reporting in this chapter does not reflect the workforce development and diversity efforts of renewables project developers. Only half of the ESPs responded to the data request that this chapter is based on.

[102] SCE changed its methodology for reporting Total RPS staff from last year, and this change accounts for a decrease in statewide IOU RPS staffing by roughly 140 employees. But for SCE's change in methodology, statewide IOU RPS staffing would have remained very consistent.

[103] This time series data is current as of August 2022 and includes employment data from January 2013 through July 2022.



Data Source: PG&E, SCE, SDG&E, August 2022

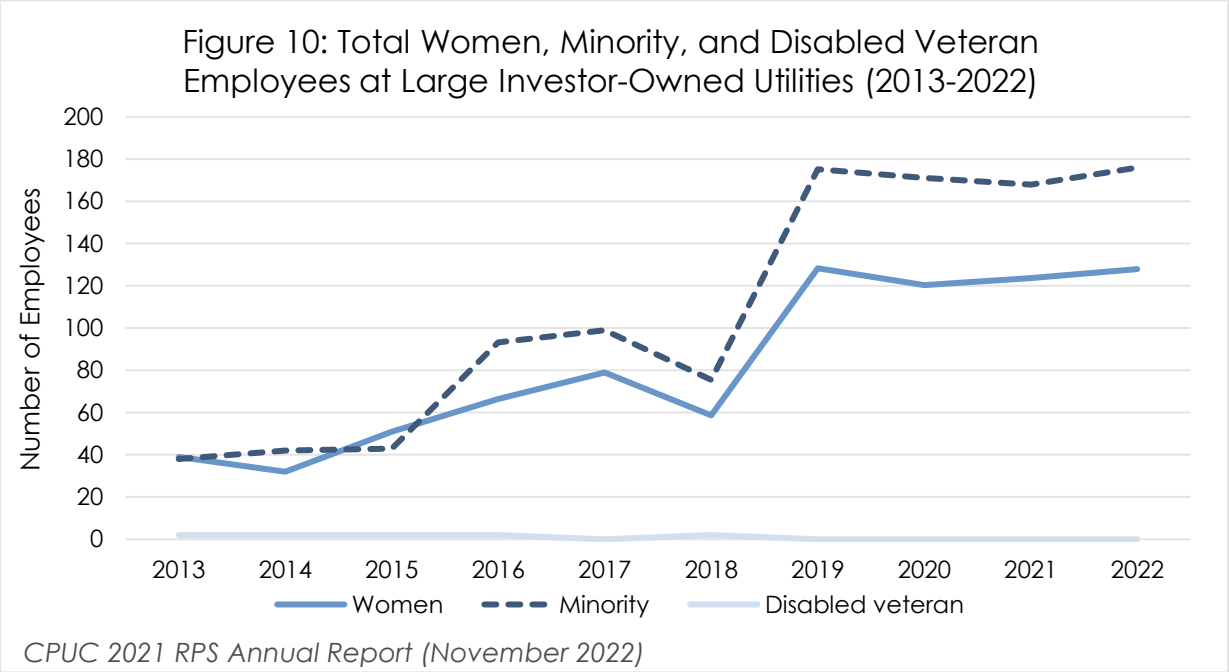
Current IOU RPS Workforce Diversity

Each of the IOUs reported having company-wide diversity goals to build a workforce that reflects the diversity of the State of California. Common diversity efforts across the IOUs include providing equal employment opportunities in all aspects of their employment practices and hiring more women, minorities, and disabled veterans to implement the RPS program. In 2022, all three large IOUs reported working with organizations that focus on professional development for women, minorities, and disabled veterans.[104]

Figure 10 illustrates aggregated data on the number of women, minorities, and disabled veterans who are full-time employees who work on the RPS program at the three large IOUs.[105]

[104] General Order 156 refers to the rules governing the development of programs to increase participation of women, minority, disabled veterans, and LGBT business enterprises in procurement contracts from IOUs as required by Public Utilities Code §§ 8281-8286. The IOUs are compliant with General Order 156 requirements on Supplier Diversity. https://www.cpuc.ca.gov/supplierdiversity/.

[105] The value displayed for the total number of RPS employees is based on the percentage of time employees spend working on RPS issues (a range of 0 to 100 percent). Employees may fall into multiple categories (i.e., both minority female or female disabled veterans) and their time may be distributed between the RPS program and other non-RPS functions.



Data Source: PG&E, SCE, SDG&E, August 2022[106]

PACIFIC GAS AND ELECTRIC COMPANY (PG&E):

Table 26 shows the number of PG&E's RPS employees who are women, minorities, and disabled veterans compared with total PG&E RPS staff. In 2022, PG&E's RPS staff was comprised of 35 percent women and 52 percent minority staff members.

Table 26: Pacific Gas and Electric's Women, Minority, and Veteran RPS Employees from 2013–2022

	RPS Employees (Full-Time)									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Women	39	20	36	13	27	19	20	10	11	19
Minority	38	35	32	28	29	22	24	18	17	28
Veterans[107]	2	2	2	2	2	n/a[108]	n/a	n/a	n/a	n/a
Total RPS Staff	105	53	72	58	61	50	48	30	52	54

[106] The number of minority RPS employees reported in Figure 10 exceeds the total number of RPS employees reported in Table 25 because of the way SCE reported its information. For SCE, the value displayed for the total number of RPS staff is based on the percentage of time employees spend working on RPS issues (a range of 0 to 100 percent). Accordingly, the number of women and minority employees can be greater than the number of total RPS staff, given that an employee can fall under multiple reporting categories and their time dedicated to the RPS program may range from 0 to 100 percent.

[107] In past reporting years, PG&E reported two U.S. military veteran employees working on the RPS Program, but neither reported having a disability.

[108] PG&E stopped tracking disabled veterans as a separate reporting category in 2018.

Data on the ethnic and racial backgrounds of PG&E RPS employees for 2019-2022 is displayed below in Table 27.

Table 27: Pacific Gas and Electric's Ethnic and Racial Background of RPS Employees from 2019–2022

	RPS Employees (Full-Time)			
	2019	2020	2021	2022
American Indian or Alaskan Native	0	0	0	0
Asian	20	14	12	20
Black/African American	1	0	0	1
Hispanic/Latino	4	3	4	6
Native Hawaiian or Pacific Islander	0	0	0	0
Two or more races	2	1	1	1
White	21	12	17	26
Other	0	0	0	0

SOUTHERN CALIFORNIA EDISON (SCE):

Table 28 illustrates the number of SCE's RPS employees who are women, minorities, or disabled veterans. The value displayed for the total number of RPS staff is based on the percentage of time employees spend working on RPS issues (a range of 0 to 100 percent). Accordingly, the number of women and minority employees can be greater than the number of total RPS staff, given that an employee can fall under multiple reporting categories and their time dedicated to the RPS program may range from 0 to 100 percent.

Table 28: Southern California Edison's Women, Minority, and Disabled Veteran RPS Employees from 2013–2022

	RPS Employees									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022[109]
Women	No Data			40	38	27	97	100	102	98
Minority	No Data			54	59	40	138	141	139	135
Total RPS Staff	113	122	120	92	97	64	233	219	230	91

The ethnic and racial backgrounds of SCE's RPS employees are displayed below.

[109] SCE changed it methodology for reporting total staff last year, and this is why SCE's total RPS staff is significantly reduced significantly this year. If SCE applied the same methodology in 2021, its Total RPS Staff figure would have been 92.

Table 29: Southern California Edison's Ethnic and Racial Background of RPS Employees from 2019–2022				
	RPS Employees			
	2019	2020	2021	2022
American Indian or Alaskan Native	0	0	0	0
Asian	76	78	75	69
Black/African American	15	13	14	11
Hispanic/Latino	40	41	40	45
Native Hawaiian or Pacific Islander	2	3	2	1
Two or more races	5	6	8	9
White	91	93	91	79
Other	0	0	0	0

SAN DIEGO GAS & ELECTRIC COMPANY (SDG&E):

Table 30 illustrates the number of SDG&E's RPS employees who are women, minorities, or disabled veterans. In 2022, SDG&E's RPS staff was comprised of 41 percent women and 48 percent minority staff members.

Table 30: San Diego Gas & Electric's Women, Minority, and Disabled Veteran RPS Employees from 2013–2022										
	RPS Employees (Full-Time)									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Women	No Data	12	15	13	14	10	11	10	11	11
Minority	No Data	7	11	11	11	12	11	10	12	13
Disabled Veterans	No Data				2[110]	n/a	0	0	0	0
Total RPS Staff	18	15	14	11	12	21	21	22	25	27

[110] SDG&E reported disabled veterans for the 2018 California RPS Annual Report but excluded these data points in their 2019 workforce development reporting.

The ethnic and racial background of SDG&E's RPS employees is shown below.

Table 31: San Diego Gas & Electric's Ethnic and Racial Background of RPS Employees from 2019–2022

	RPS Employees (Full-Time)			
	2019	2020	2021	2022
American Indian or Alaskan Native	0	0	0	0
Asian	2	1	2	3
Black/African American	3	3	2	2
Hispanic/Latino	5	7	8	7
Native Hawaiian or Pacific Islander	0	0	0	0
Two or more races	1	1	0	1
White	10	10	13	14
Other	0	0	0	0

Recruiting Strategies

Recruiting efforts at each of the IOUs tend to utilize both broad candidate outreach and targeted strategies to recruit diverse candidates. In addition, the utilities also offer programs that can act as training and recruitment of future employees, including long-term efforts within California's school systems.

PG&E

General Outreach

As part of its broad recruiting efforts, PG&E utilizes online job boards to advertise to prospective external candidates.

Diverse Employee Recruitment

PG&E has internal employee work groups that partner with organizations such as the Society of Women Engineers, National Society of Black Engineers, Society of Hispanic Professional Engineers, and targeted university programs to encourage a diverse candidate pool. PG&E is a member of and actively participates the U.S. business leadership network of Disability:IN, a business-to-business national membership organization that focuses on sharing and developing strategies for inclusion of people with disabilities in the workplace. For executive level positions, PG&E partners with external executive search firms that specialize in recruiting women and minorities. PG&E does not have a formal company policy outlining diversity strategies for specific programs such as RPS, but it does implement practices for organizational diversity and inclusion.

University Outreach

PG&E has a "University Programs" team primarily focused on collegiate recruitment from California campuses. The University Programs team targets candidates majoring in engineering and information technology for both internships and regular full-time entry-level training positions. In addition to supporting campus specific activities like the Minorities in Engineer Program at Cal Poly, the team also participates & recruits at diversity job fairs for the National Society of Black Engineers, the Society of Hispanic Professional Engineers, and the Society of Women Engineers.

Special Programs & Workforce Development

PG&E designed and manages an external training program, PowerPathway, which partners with local workforce development community agencies to design and deliver training programs. Participation in these programs improves access to skilled trades job opportunities for those in historically underserved communities. In addition, the programs provide up to three years of career coaching for program graduates. Through its charitable giving process, PG&E also donates to workforce development agencies including Cypress Mandela and Swords to Plowshares.

SCE

Recruitment

SCE's recruitment outreach generally includes the following categories:

Recruitment Marketing, Social Media, Recruitment Tools and Resources
Professional and Community Association Outreach
Military Veteran Outreach
Individuals with Disabilities Outreach
University & Campus Relations
Internal Business Resource Group (BRG) Partnerships

Recruitment Marketing, Social Media, Recruitment Tools and Resources

The career site includes targeted pages focusing on women, individuals with disabilities, military veterans, diversity & inclusion, early career and critical positions like cybersecurity, skilled trades, engineering, and IT.

SCE's career site is also fully mobile and accessible to individuals with disabilities. Visitors on the site and other channels are invited to join the SCE Talent Network that allows active and future job seekers to stay connected and updated on company news, events and job opportunities.

SCE also shares and promotes jobs and content on major social and job sites such as LinkedIn, Glassdoor, and Indeed for maximum visibility. Content developed and shared across SCE's major channels is focused on company initiatives, storytelling and featuring employees across the organization with different backgrounds. To help the job opportunities and content reach particular demographics, they use targeted paid advertisements through LinkedIn, Facebook, Glassdoor, and Instagram.

To assist SCE with meeting federal contractor job posting requirements, they have partnered with Direct Employers to promote their jobs. To help with female recruitment outreach, SCE has been a member of Fairygodboss, the largest career community for women.

SCE uses SmashFly, a talent marketing platform that combines CRM, career site, and programmatic advertising. SmashFly helps with automating our high-volume tasks and allows the company to connect with candidates at any time. SmashFly can also help with measuring the return on their recruitment marketing spending.

The augmented writing platform, Textio, is used by recruiters and hiring leaders to help SCE with writing inclusive and compelling job descriptions.

Professional and Community Association Outreach

SCE employees are active and continue to partner with several professional and community groups. The participation includes attending their career related events, being on-podium (keynote) at their annual conferences and mentoring their more early-career members. Some of the professional and community associations include the following:

Society of Women Engineers (SWE)
Society of Hispanic Professional Engineers (SHPE)
National Society of Black Engineers (NSBE)
Asian American Professional Association (AAPA)
American Association of Blacks in Energy (AABE)
Native American Tribes, specifically the 13 tribes within the SCE service territory
Disability:IN
New Horizons
Trans Can Work
Foundation for Women Warriors
LA LGBT Center
Paradigm for Parity Coalition
Catalyst
Direct Employers
Association of Women in Water, Energy and Environment (AWWEE)

Military Veteran Outreach

SCE states that it is committed to hiring and supporting military veterans. Some of its recruitment outreach and strategies to the veteran communities include the following:

Hosting company information sessions for active military and veterans.
Maintaining a military/veteran page on their career site which includes a military translator tool through Recruit Rooster. The translator tool allows job seekers to identify which careers at SCE are a good match with their military background.
Posting jobs on sites such Getting Hired and Vocational Rehab+ to help the company reach the disabled veteran job seekers.
Leveraging VALOR, SCE's veteran Business Resource Group (BRG) to help the company engage and stay connected with the veteran community.

Individuals with Disabilities (IWD)

SCE is a member of the U.S. business leadership network, Disability:IN. Disability:IN is the leading nonprofit resource for business disability inclusion worldwide. Employees from various parts of the company are active members of this network and attend their annual conference to remain current on how companies can best attract and retain IWD and strengthen their inclusive culture. In addition, SCE employees continue to conduct information sessions at non-profits such as the Salvation Army Rehabilitation facility to provide participants insight to career paths at SCE.

Job sites such as Vocational Rehab+ also help SCE connect with the IWD community.

University & Campus Relations

The company's college recruitment efforts are generally targeted to students pursuing degrees in engineering, accounting, finance, information technology, and cyber security at mostly California based

universities and colleges. The company also developed a leadership development program for MBA graduates from select schools.

In addition, SCE partners with organizations such as TELACU (The East Los Angeles Community Union), GMiS (Great Minds in STEM), and MESA (Mathematics Engineering Science Achievement) to help with attracting a diverse group of early career talent.

The Company promotes all early-career job opportunities at most Historically Black Colleges and Universities (HBCU) through Handshake. Handshake is recognized platform for college students and alumni to find job opportunities. In addition, SCE currently has strategic relationships with two HBCUs, which includes virtual recruiting activities and outreach, such as company information sessions. Over 10 of SCE's target universities are designated as Hispanic Serving Institutions (HSI).

Since 2017, SCE has worked with Cal Poly Pomona's Open University to help prepare students for careers in utility planning. Several instructors for Cal Poly Pomona's Energy Planner Certification are SCE employees.

Lineworker Scholarship Program: In 2021, Edison International developed a four-year, $1-million pilot scholarship program to provide scholarships and additional support totaling up to $25,000 per recipient. The purpose of this scholarship program is to increase Black representation in the lineworker role. Scholarship recipients will eventually enroll in an applicable program at Los Angeles Trade Tech College (LATTC). In 2022, SCE hired four graduates from the first lineworker scholarship cohort.

Company Business Resource Group (BRG) Partnerships

SCE's Talent Acquisition partners with the company BRGs on outreach activities, specifically on job preparation strategies. Some examples include the following:

> Through the Networkers BRG, the Black Male Initiative was formed to partner with community, spiritual and non-profit organizations to help promote SCE job opportunities and career paths to members of their organizations.
> In partnership with the BRG, Latinos Engagement Advancement and Development (LEAD), Talent Acquisition presented to Latino student and community groups on resume writing best practices and interview preparation.
> SCE employees worked with the Native American Alliance BRG and representatives from other companies to host a virtual career expo to the members of the 13 tribes within SCE's service territory. Attendees were able to hear about job opportunities and practical advice about how to best prepare for their next job.

Training

Energy Procurement and Management (EPM) has implemented several continuous improvement initiatives focused on creating employee development and training programs. Internal training opportunities cover topics such as SCE's renewable procurement programs, including large-scale RPS solicitations and small-scale RPS procurement programs (e.g., feed-in tariffs, RAM, etc.). These training sessions range from subject matter-specific to more general overviews using a wide-range of forums comprising of formal cross-training options, webinars, bidders conferences, RPS pro forma technical review sessions (when contracting for such resources), and more informal methods such as brown bag sessions, overview trainings, regulatory updates, lessons learned meetings, and RPS solicitation kick-off meetings (when soliciting for such

resources). In addition, SCE provides training sessions covering the RPS regulatory requirements surrounding the RPS procurement plan and resulting solicitations and required filing methods to be utilized to seek contract approval for employees working on any of the RPS procurement programs. EPM also provides new employee training for those new employees that work on RPS contracts and projects, including technical training, RPS contract formation, RPS contract management, and resource optimization of RPS resources.

SDG&E

General Outreach

SDG&E has a stated commitment to diversity and inclusion. Their recruiting program includes posting job opportunities on various job boards such as Association of Women in Water, Energy and Environmental (AWWEE), Circa, DiversityJob.com, Indeed, NativeHire.org and Pink Jobs, and also utilizes social media outlets such as LinkedIn, Instagram, Facebook and YouTube to provide company information and advertise openings.

Diverse Employee Recruitment

As part of its recruiting program, SDG&E partners with diverse organizations including American Association of Blacks in Energy (AABE), Blacks in Technology, National Association of Women in Construction (NAWIC), San Diego Committee on Employment for People with Disabilities, and Women in Technology International (WITI). SDG&E's recruitment staff also focus on military outreach and work with organizations such Employment Development Department (EDD), Hire GI, and support programs like the San Diego Workforce Partnership's (SDWP) Career Jumpstart.

SDG&E's partnership includes providing funding, attending events and hiring participants, posting job opportunities on their websites, helping them to expand their membership and collaborating with them on events by facilitating workshops and serving as panelists.

University Outreach

Candidates for internship and associate rotation programs are recruited from several schools in California, as well as Historically Black Colleges and Universities across the country, such as Florida Agricultural and Mechanical University (FAMU), Howard University, Prairie View A&M. These schools are chosen due to their academic excellence and focused disciplines, such as offering Electrical Engineer power programs.

SDG&E has structured internship and rotation programs for engineering, accounting & finance, information technology, operations support, and supply management. Each program rotates employees through a series of company departments as development opportunities and exposure to various parts of the organization. Additionally, programs include the following components:

- Mentoring by management and director level leaders
- Work experience, field trips, lunch & learns, and social activities
- Participation by school professors
- University Advisory Board membership by many leaders to influence curriculum
- Program management by leadership, typically directors, to monitor development
- Maintaining relationships with diverse student organizations, such as American Indian Science & Engineering Society (AISES), National Society of Black Engineers (NSBE), Mathematics Engineering

Science Achievement (MESA), Society of Asian Scientists and Engineers (SASE), Society of Women Engineers (SWE), etc.

SMJU Workforce Development

Given the smaller size of the three SMJUs' (BVES, Liberty, PacifiCorp) RPS staff, they have fewer resources dedicated to RPS workforce development compared to the IOUs.

Table 32: Total RPS Employees at Small and Multi-Jurisdictional Utilities from 2017–2022

	2017	2018	2019	2020	2021	2022
BVES	11	13	3	3	3	3
Liberty	9	11	13	12	12	9
PacifiCorp	-	-	-	-	-	-
Totals	20	24	16	15	15	12

Data source: BVES and Liberty August 2022

The table below shows the number of SMJU RPS employees who are women, minority, or disabled veterans.

Table 33: Number of Women, Minority, and Veteran RPS Employees from 2017–2022 Employed at SMJUs

	2017	2018	2019	2020	2021	2022
Women	6	6	4	3	5	5
Minority	4	6	4	2	5	5
Disabled Veterans	0	0	0	0	0	0

Data source: BVES and Liberty August 2022

In 2022, approximately 67 percent of BVES's total RPS staff was comprised of women and minorities. In 2022, approximately 89 percent of Liberty's total RPS staff was comprised of women and minorities.

Bear Valley Electric Service

BVES did not execute any RPS procurement contracts in 2022 and therefore did not execute any RPS contracts with a WMDV-LGBT owned business enterprise. BVES will include opportunity for diverse suppliers to bid in renewing its ten-year contract to meet its RPS obligation.

The ethnic and racial background of BVES' RPS employees is shown in the table below.

Table 34: Bear Valley Electric Service's Ethnic and Racial Background of RPS Employees from 2020–2022

	RPS Employees (Full-Time)		
	2020	2021	2022
American Indian or Alaskan Native	0	0	0
Asian	1	1	1
Black/African American	0	0	0
Hispanic/Latino	0	0	0
Native Hawaiian or Pacific Islander	0	0	0
Two or more races	0	0	0
White	2	2	2
Other	0	0	0

BVES has a supplier diversity program to measure organizational diversity and inclusion. BVES has not engaged in college recruitment efforts or offered scholarships to students within its service territory. The utility does not conduct internal training courses, but RPS employees are encouraged to attend training and workshops elsewhere in the State.

Liberty Utilities

The ethnic and racial backgrounds of Liberty Utilities' RPS employees are shown below.

Table 35: Liberty Utilities' Ethnic and Racial Background of RPS Employees from 2020–2022

	RPS Employees (Full-Time)		
	2020	2021	2022
American Indian or Alaskan Native	0	0	0
Asian	1	2	2
Black/African American	2	1	1
Hispanic/Latino	0	1	1
Native Hawaiian or Pacific Islander	0	0	0
Two or more races	0	0	0
White	9	8	5
Other	0	0	0

Liberty Utilities formed a Diversity and Inclusion Council in early 2019 comprised of representatives from all its regions and intended to set up the framework and activities to enable inclusion across the company. In addition, Liberty Utilities conducted an all-employee Diversity and Inclusion training in 2022.

Of the three SMJUs, Liberty is the only utility to engage in recruitment efforts with local high schools and universities in 2022. Liberty offers seven scholarships to graduating high school students within the service territory and offers one annual community college scholarship.

Liberty executed one RPS procurement contract in 2022. This contract was not with WMDV-LGBT owned business enterprises. Liberty stated that it is an equal opportunity employer and is committed to ensuring an equal and diverse workforce to implement the RPS program.

PacifiCorp

PacifiCorp has policies to support diversity and inclusion, including a diversity, equity and inclusion task force, but these are corporate-wide, and PacifiCorp does not implement workforce development programs related to recruitment, training, and retention of WMDV employees specific to California's RPS program. PacifiCorp currently employs two people to work on RPS issues for all states, with assistance from additional staff in environmental policy, regulation, and legal work on RPS-related matters, but their time is not tracked by issue or state, and PacifiCorp did not provide specific diversity statistics.

CCA Workforce Development

The CPUC requested data from all certified CCAs. The CCAs generally report that they implement workforce development and diversity policies to build a workforce that promotes economic sustainability and inclusion in the renewable energy sector. Common diversity efforts across the CCAs include providing equal employment opportunities in their employment practices, fair compensation, quality training and apprenticeship programs, and the development of locally based jobs.

Table 36 shows the amount of total full-time RPS employees at each CCA in response to the CPUC's data request.[111]

[111] The CCAs have varying interpretations of the data request categories and, therefore, reported RPS employees may not be directly comparable across the CCAs and the IOUs.

Table 36: Total Number of CCA RPS Employees (2019 – 2022)				
	2019	2020	2021	2022
Apple Valley Choice Energy	2	2	0	2
Central Coast Community Energy	4	5	No Data	5
City of Pomona	-	0	0	1
Clean Energy Alliance	0	0	No Data	1
Clean Power Alliance	5	6	7	8
CleanPowerSF	5	11	11	11
Desert Community Energy	-	No Data	No Data	3
East Bay Community Energy	3	2	No Data	2
King City Community Power	3	3	3	No Data
Lancaster Choice Energy	1	1	2	2
Marin Clean Energy	73	72	72	86
Peninsula Clean Energy	4	4	No Data	5
Pico Rivera Innovative Municipal Energy	0	0	0	2
Pioneer Community Energy	No Data	No Data	No Data	3
Rancho Mirage Energy Authority	1	1	1	1
Redwood Coast Energy Authority	7	8	8	10
San Diego Community Power	-	-	6	6
San Jacinto Power	0	0	0	0
San Jose Clean Energy	8	12	No Data	12
Santa Barbara Clean Energy	-	-	-	2
Silicon Valley Clean Energy	2	2	No Data	10
Sonoma Clean Power	6	9	No Data	11
Valley Clean Energy Alliance	0	2	2	2

Data Source: CCAs, August 2022

In 2022, the CCAs reported engaging in business and workforce initiatives located in low-income and disadvantaged communities. Table 37 illustrates aggregated data on the number of women, minorities, and disabled veterans who are full time employees at the CCAs who work on the RPS program.

Table 37: Total Number of Women, Minority, and Disabled Veterans RPS Employees from 2019 – 2022 (Community Choice Aggregators)				
	2019	2020	2021	2022
Women	63	79	65	99
Minority	29	40	37	78
Disabled Veterans	No Data	No Data	No Data	0

Data Source: CCAs, August 2022

ESP Workforce Development

The CPUC requested data from all ESPs that were operational in 2022. The ESPs that responded generally report that they implement workforce development and diversity policies to build a workforce that promotes diversity and inclusion in the renewable energy sector. Common diversity efforts across the ESPs include providing equal employment opportunities in their employment practices and quality training and apprenticeship programs.

Table 38 shows the amount of total full-time RPS employees at each ESP in response to the CPUC's data request.[112]

Table 38: Total Number of ESP RPS Employees (2019 – 2022)

	2019	2020	2021	2022
3 Phases Renewables	8	9	No Data	No Data
Calpine Energy Solutions	No Data	No Data	13	15
Calpine Power America-CA, LLC	No Data	No Data	5	5
Constellation NewEnergy, Inc	No Data	No Data	No Data	26
Direct Energy Business	No Data	No Data	No Data	10
EDF Industrial Power Solutions	No Data	No Data	No Data	No Data
Just Energy Solutions, Inc.	5	6	No Data	5
Pilot Power Group, LLC	0	0	3	3
Shell Energy North America, L.P.	No Data	No Data	No Data	No Data
UC Regents	2	2	2	3

Data Source: ESPs, August 2022

[112] The ESPs have varying interpretations of the data request categories and, therefore, reported RPS employees may not be directly comparable.

RPS Challenges and Policy Recommendations

Public Utilities Code § 913.4 requires the CPUC to identify barriers to achieving the RPS requirements and to propose recommendations to address those barriers. This chapter examines a few RPS program challenges at a high level and describes actions the CPUC is taking to address these issues, as well as offers recommendations for future actions.

The challenges addressed in this chapter include:

Challenge 1: Bioenergy

Challenge 2: Project Delays

Challenge 3: Renewables with Energy Storage

Challenge 1: Bioenergy

ISSUE

Within the RPS program, there are two bioenergy procurement programs - the Bioenergy Renewable Auction Mechanism (BioRAM) and Bioenergy Market Adjusting Tariff (BioMAT). Bioenergy technologies are considered RPS-eligible and will likely play a role in meeting California's SB 100 goals for zero-carbon resources by 2045. Although bioenergy is a comparatively expensive renewable resource, the state looks to bioenergy to play a role in addressing waste reduction and diversion, and reducing wildfire risk. State bioenergy policies have been expanded and the CPUC has implemented numerous revisions to its bioenergy programs, but data show that they have not resulted in significant incremental biomass waste use and challenges remain.

Underutilization of fuel from Biomass High Hazard Zones

The BioRAM program requires the large IOUs to procure 146 MWs of bioenergy from facilities that use High Hazard Zone (HHZ) fuel, as defined by CAL FIRE, to aid in mitigating the risk of wildfires. By sourcing HHZ fuel stock, the BioRAM program is intended to provide a waste disposal solution for dead or dying trees that present increased wildfire risk in HHZs. However, the potential of the BioRAM to aid in mitigating wildfire risk and support sustainable forest management is currently not being met because some facilities opt out of using HHZs fuel stock for up to nine months out of the year. Senate Bill 901 (Dodd, 2018), which was implemented in Commission Resolution E-4977, modified the BioRAM program, in part, to permit BioRAM facilities to opt out of HHZ requirements and/or be paid an alternate price for months when they do not meet the mandated HHZ fuel usage levels.

BioRAM HHZ fuel reports submitted by the IOUs to Energy Division show that in 2021, of the seven contracted BioRAM facilities, two facilities opted out of the HHZ fuel use requirement for one month, one facility opted out of the HHZ fuel use requirement for three months, and another facility opted out of the HHZ fuel use requirement for nine months. Although it is unclear why each facility opted out or did not meet its fuel use requirements, CPUC staff analysis has found that insufficient supply chain capacity, fuel supply costs (including transportation costs), and inconsistent fuel supplies can be barriers to accessing reliable, cost-efficient biomass fuel stock from HHZs.

Further, if it is economically feasible for the facility, it can theoretically opt out of HHZ use for the entire year. Thus, the ability of the BioRAM program to remove biomass waste from HHZs is not being completely utilized and ratepayers are not receiving the full benefits envisioned for the program.

RECOMMENDATION

The CPUC will continue to track the amount of fuel used at bioenergy facilities that is sourced from high fire risk areas, as well as the costs of procuring fuel and electricity, to further understand bioenergy cost-effectiveness and review the efficacy of the BioRAM program. Additionally, the CPUC will explore other incentives and penalties that might increase HHZ fuel use at BioRAM facilities in order to maximize their existing potential to aid in reducing wildfire risk and support sustainable forest management. For example, the CPUC could consider an alternate contract pricing mechanism for those months when a bioenergy facility opts out of using HHZ fuel stock for any contract extensions.

Bioenergy's contribution towards California's various climate goals has not been determined

At the regional SB 100 scoping workshops held across the state, stakeholders asked that the definition of "zero-carbon resource" include electricity from bioenergy to contribute to system reliability and wildfire risk reduction,[1] but various regions in California view bioenergy differently and argue against it because of air quality and land use impacts.[113] In addition, the contributions of bioenergy projects to reducing emissions are not fully quantified and more research on the emissions impacts of bioenergy projects is needed. For example, transportation emissions associated with the sourcing of fuel from HHZs or other areas where sustainable forest management practices are being conducted may outweigh any greenhouse gas (GHG) emissions benefits from bioenergy, thus the environmental benefits of some of these programs is in question.

RECOMMENDATION

The CPUC is facilitating a technical working group to develop a set of public life cycle analysis (LCA) modeling tools to measure net GHG emissions from BioMAT program projects. The working group, which includes bioenergy, life-cycle, and emissions experts from academia and U.S. Department of Energy national labs, is currently evaluating existing public LCA models developed by other state agencies, such as CARB and CEC-funded EPIC projects, in order to apply them to the BioMAT program context. However, modifications to the existing modeling tools are required to enable them to more accurately model net GHG emissions from the various BioMAT technologies.

Once accurate BioMAT LCA tools are developed, follow-on LCA tools could also be developed to quantify the net GHG emissions from the BioRAM program (as well as other energy programs) and analyze its overall environmental performance. The CPUC could then consider whether bioenergy projects procured through its bioenergy procurement programs should require LCA evaluations to ensure net carbon neutrality (or negativity) to ensure that the state's electricity sector is not replacing fossil-fuel carbon emissions with biomass related emissions.

Challenge 2: Project Delays

[113] Based on stakeholder interviews and research compiled in an October 2020 internal Energy Division white paper identifying potential, interest, and challenges to expansion of bioenergy as a forest management tool in California

ISSUE

Renewable energy project development is a long and complicated process with numerous interdependent milestones, such that one setback can cascade into a larger delay or even project failure. Projects have recently been challenged by an unparalleled combination of development and interconnection delays, supply chain challenges, and high market prices.

While cost has been and continues to be the preeminent factor in project viability, the confluence of destabilizing events in recent years, i.e., the COVID-19 pandemic, trade wars, and others discussed below, have underscored the importance of risk management strategies to project success, so that LSEs can meet their RPS requirements.

Market conditions and supply chain issues:

Recent production and shipping bottlenecks have caused significant delays and price fluctuations for both raw materials and major components of RPS projects. As with many other industries, California's clean energy sector relies heavily on China for technology and production capacity. However, power shortages and COVID-19 lockdowns have forced Chinese factories to halt production.

In addition to supply shortages, the clean energy industry has been impacted by shipping constraints as increased global shipping resulted in container shortages and port congestion in the United States. The congestion is exacerbated by significant increases in the size of container ships over the past decade or so, plus COVID-19 related staffing constraints, leading to lengthier unloading times. These factors can result in missing CODs, renegotiating pricing, and even project development failures.

On top of these unprecedented market conditions, federal policies affect projects. One recent example is the Department of Commerce's (Commerce) solar anticircumvention investigation. On March 25, 2022, pursuant to allegations in the petition, the Commerce initiated a circumvention investigation (the initiation memorandum) that could profoundly affect the companies that import or rely on imported crystalline silicon photovoltaic cells (CSPs) in the United States. Following the President's Proclamation, Commerce issued regulations to temporarily permit for up to 24 months duty-free access to solar cells and modules from Cambodia, Malaysia, Thailand, and Vietnam. This does not affect CSPs from China, however, and even those developers not directly affected are becoming increasingly risk averse.

On the other hand, the recent Inflation Reduction Act of 2022 (IRA) contains provisions to promote renewable project development, including stipulations that can reduce risk. For example, the domestic manufacturing incentives could decrease reliance on international trade, mitigating policy and upstream risk.

RECOMMENDATION

While there is no single solution that will resolve the myriad of challenges impacting RPS project development, there are various issue-specific options to consider, as well as overall approaches to reduce project and portfolio risk. Retail sellers should consider:

- Prioritizing project and resource diversity in meeting their RPS requirements;
- Incorporating reasonable planning reserves, to account for delays and potential project failure;
- Tracking project development to monitor project development progress, including any anticipated issues that could delay expected initial deliveries or compromise overall project viability, since early indications of issues allow for the potential to enable corrective procurement actions. In addition,

the Tracking Energy Development (TED) Task Force[114] can assist by identifying barriers and coordinating action to address barriers that may impact energy development throughout the State;
- Adding or modifying contractual terms, such as increased development security requirements, better defined provisions related to missed contract milestones, etc.; and
- Increasing focus on domestic suppliers where possible, which could shorten the supply chain and remove risks stemming from international relations while taking advantage of federal domestic content incentives.

Interconnection and Permitting

Interconnection procedures and project developments are long processes with multiple risk factors that could delay planned commercial operation dates. Developers have experienced growing interconnection queues as CAISO and state authorities deal with processing a surging number of permitting applications. In addition to completing interconnection studies and agreements, physically completing all grid upgrades for RPS projects within the next few years also poses a real challenge, which persists in both the near- and mid-term time horizons.

RECOMMENDATION

Non-IOUs should consider incorporating stricter interconnection status requirements into their RPS procurement processes as eligibility for solicitations or contract executions, such as requiring projects to complete CAISO's Phase II study process, similar to IOUs. Additionally, priority can be given to projects at advanced interconnection stages.

CPUC should continue to work with CAISO and its transmission planning process (TPP) as well as LSEs and developers to continue to monitor project development and delays, and to support CAISO reforms that can streamline the interconnection process. The TED Task Force has been of great value on identifying barriers and coordinating action to address barriers that may impact energy development throughout the state and the CPUC should continue with the effort.

Challenge 3: Renewables with Energy Storage

ISSUE

When the RPS Program was first established in 2002, renewables paired with energy storage was non-existent (with the exception of hydroelectric facilities with impoundments) and energy storage was a nascent, technological novelty; however, today, paired resources have been widely contracted and are beginning to be deployed. As California's electric sector is experiencing the transformation necessary to achieve its ambitious energy and climate goals, this development is seen as desirable from both a grid reliability and GHG policy standpoint. However, the rapid adoption of technologies has raised questions regarding the current accounting and reporting requirements for renewables with electric storage.

[114] The Tracking Energy Development (TED) Task Force is a joint staff effort at the CPUC, California Energy Commission (CEC), California Independent System Operator (CAISO) and Governor's Office of Business and Economic Development (GO-Biz) to track new energy projects under development. The TED Task Force can potentially provide project development support, as appropriate, in particular with issues related to government involvement in energy development. For more info, see https://www.cpuc.ca.gov/news-and-updates/newsroom/summer-2021-reliability/tracking-energy-development

One of the main policy issues that have been raised this year concerns potential updates to REC accounting requirements for roundtrip efficiency losses that occur with renewable facilities paired with energy storage. Specifically, the California Energy Commission (CEC) through their Renewables Portfolio Standard (RPS) Eligibility Guidebook[2] update is considering whether their current REC accounting rules that require energy losses due to storage be deducted need to be changed (or eliminated).

Energy losses occur during the charging and discharging of energy storage systems and as a result, a greater amount of total generation is needed to provide a given amount of usable electricity when generation is paired with storage. The extent of these losses is measured by "roundtrip efficiency," which varies across technologies. For example, compressed air energy storage, with a roundtrip efficiency of 27–54%, has high-efficiency losses, while sodium-sulfur batteries, with a roundtrip efficiency of 85–90%, are much more efficient and have low efficiency losses.

Not accounting for storage losses in paired renewables could result in lower amounts of renewable electricity serving retail loads while still meeting the same RPS requirement because RECs are created at the point of generation regardless of efficiency losses before serving load. It is important to note that roundtrip efficiency losses also occur with stand-alone storage resources which draw electricity from the grid that includes high amounts of renewable electricity, especially during the day when solar is generating.

RECOMMENDATION

The issues will continue to evolve as we gain more experience and knowledge about renewables paired with storage and the impacts of the Inflation Reduction Act[115] of 2022. In this context, revisiting how the benefits of energy storage fit within the RPS program is timely. The CPUC will continue to coordinate with the CEC and stakeholders to consider market, regulatory, and ratepayer impacts.

The CPUC will also continue to work with CEC and CARB in their planning processes and our IRP process to consider the impacts of paired renewables and stand-alone storage on system reliability and GHG reduction forecasts. Additionally, LSEs should consider these impacts in their procurement planning.

[115] Under current statutory and administrative law and guidance, standalone energy storage facilities are not eligible for the investment tax credit (ITC) and are not eligible renewable resources. However, battery storage integrated into an otherwise ITC-eligible wind or solar power electric generation facility may be eligible so long as it satisfies certain requirements. The IRA provides a 30% ITC to standalone storage. As developers would usually seek to operate the project in a way that maximizes financial gain, the IRA might have significant impacts in the configurations that are being planned and developed

Appendices

Appendix A – About the RPS Program

How the RPS Program Works

The RPS program encourages investment in the development of new utility-scale renewable energy facilities to meet the electrical demands of the State of California. RPS is a market-based program where compliance is determined by the quantity of Renewable Energy Credits (REC) procured (1 REC = 1 megawatt hour (MWh)). Eligible renewable generation facilities may be located anywhere within the Western Electricity Coordinating Council (WECC) region.[116] These facilities are permitted to sell RECs to California retail sellers[117] of electricity to meet their RPS obligations, provided the facility meets all RPS eligibility criteria established by the California Energy Commission (CEC).

The CPUC's implementation of the RPS program complements the RPS program administered by the CEC, as well as supports California's climate change policies. The CPUC's compliance process is completed after the CEC verifies RPS-eligible procurement from renewable energy facilities. The CPUC establishes program policy within its RPS rulemaking proceeding and implements legislation through its CPUC decisions to ensure that electricity retailers comply with CPUC rules and State law.[118]

The CPUC's responsibilities in the implementation of the RPS program include:

- Setting policy through a public stakeholder process;
- Reviewing and approving each retail seller's RPS procurement plan;
- Reviewing IOU contracts for RPS-eligible energy; and
- Determining and enforcing compliance with procurement targets.

RPS Procurement Plans

Each year, the CPUC evaluates retail sellers' RPS Procurement Plans to review their long-term RPS forecasts and planning mechanisms. The RPS Procurement Plans provide information regarding current generation under contract, projects under development, and forecasted need for additional RPS procurement.

RPS Compliance Requirements

Progress towards the RPS mandate is measured in several ways, including through the analysis of detailed RPS Procurement Plans and RPS Compliance Reports. These documents forecast the compliance status of each retail seller in achieving the statewide mandate.

Retail sellers are required to submit annual preliminary Compliance Reports to the CPUC that contain historical and forecasted data about their renewable procurement. The CPUC evaluates these reports to ensure progress is being made towards the interim targets.

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[116] The WECC region extends from the Canadian provinces of Alberta and British Columbia to the northern part of Baja California, Mexico, and encompasses the 14 western U.S. states in between.

[117] Retail seller is defined as any entity engaged in the retail sale of electricity to end-use customers located within the State, including electrical corporations (as defined in Public Utilities Code § 218), community choice aggregators, and electric service providers.

[118] The CPUC Rulemaking for the RPS program is currently R.18-07-003.

The CPUC works closely with the CEC to manage the RPS program, including compliance determinations. Compliance evaluations and official determinations by the CPUC can only take place after the CEC verifies a retail seller's annual REC claims.

The CEC receives reports from energy retailers generated by the Western Renewable Energy Generation Information System (WREGIS)[119] describing the amount of renewable electricity generated by every eligible facility. The CEC analyzes WREGIS reports to determine eligibility of the facility, the quantity of RECs created from each RPS-eligible facility, and retail sellers' RPS procurement claim to ensure each REC claimed is eligible for compliance with the RPS and is only counted once.

Once the CEC has verified the number of RPS eligible RECs, a retail seller can use those RECs to meet its RPS compliance obligations, and those RECs are considered retired. The CPUC is then responsible for reviewing how a retail seller's RPS procurement is classified into portfolio content categories (PCCs) and is consistent with the portfolio balance requirement (PBR), the long-term contracting requirement, and the procurement quantity requirement (PQR). These three compliance requirements are explained in further detail in Appendix B below.

RPS Excess Procurement Rules

RECs that are in excess of what is needed to fulfill RPS obligations in one compliance period may be "banked" and used in subsequent compliance periods. SB 2 (1X) (Simitian, 2011) established the ability for a retail seller to carry over procurement from one compliance period to another. The calculations for excess procurement rely on a combination of the PCC classification of the RECs and whether the RECs are associated with short-term or long-term contracts.

Beginning in 2021–2024 compliance period, all excess PCC 1 RECs can be banked, regardless of whether they are associated with short- or long-term contracts; no PCC 2 or PCC 3 RECs can be banked.

[119] The Western Renewable Energy Generation Information System (WREGIS) is an independent renewable energy tracking system for the region covered by the Western Electricity Coordinating Council (WECC).

Appendix B – How RPS Compliance Works

To achieve RPS compliance, retail sellers must meet three requirements:

Procurement Quantity Requirement (PQR);
Portfolio Balance Requirement (PBR); and
Long-Term Contracting Requirement.

As applicable, a retail seller's RPS procurement can contribute to meeting more than one requirement (e.g., all of a retail seller's long-term RPS contracting will eventually contribute to meeting its PQR), but the criteria of all three requirements must be met for a retail seller to be considered compliant with the RPS program, with the exception of SMJUs, which are exempt from the PBR.[120]

Procurement Quantity Requirement (PQR)

The PQR is the statutorily[121] set percentage of RPS-eligible procurement required in a compliance period. The CPUC implemented annual percentage targets in D.19-06-023, pursuant to SB 100.[122] The annual percentage target is multiplied by a retail seller's total retail sales in each year for a given compliance period. Retail sellers must meet the PQR established for each compliance period or they are considered non-compliant with the RPS program and assessed a penalty of $50/REC.

Portfolio Balance Requirement (PBR)

California's RPS program defines all renewable procurement acquired from contracts executed after June 1, 2010, into one of three portfolio content categories (PCCs). The PCC classifications are also instrumental in determining a retail seller's compliance with the RPS program.

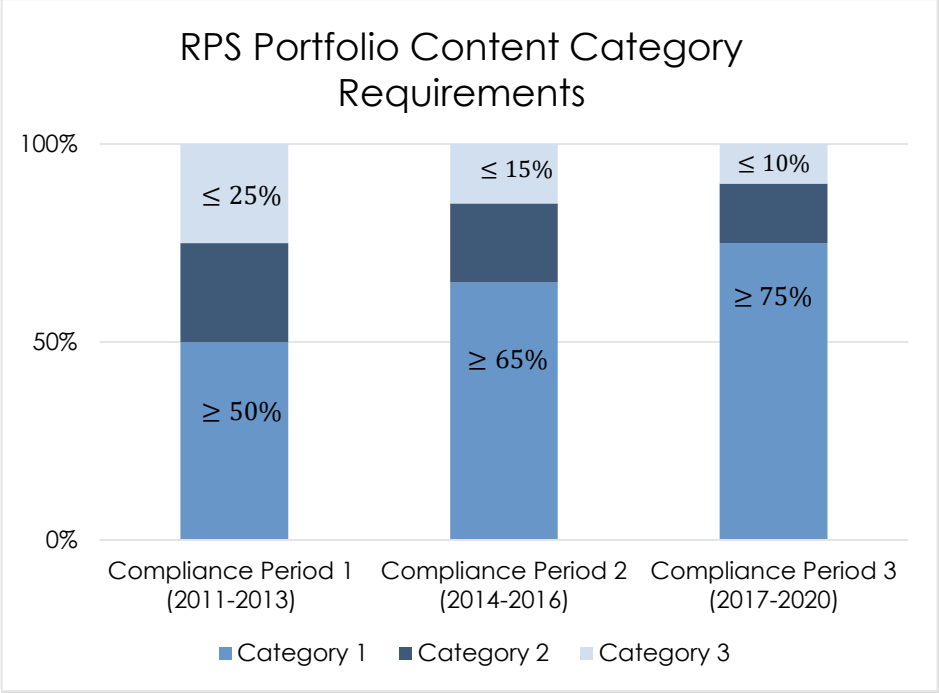
- **Category 1:** Renewable energy credits (RECs) with associated energy from facilities with a first point of interconnection within a California Balancing Authority (CBA), or facilities that schedule electricity into a CBA on an hourly or sub-hourly basis.
- **Category 2:** RECs with incremental electricity, and/or substitute energy, from outside a CBA. Generally, Category 2 RECs are generated from out-of-state renewable facilities and require a Substitute Energy Agreement that details the simultaneous purchase of energy and RECs from an RPS-eligible facility.
- **Category 3:** Unbundled RECs that do not include the physical delivery of the energy attached to the REC. Generally, Category 3 RECs are associated with the sale and purchase of the RECs themselves, not the energy.

The PBR is defined by the minimum and maximum of the three PCCs, which are delineated by type of renewable procurement. Most retail sellers have specified requirements for the balance or mix of procurement from contracts that are executed after June 1, 2010. Specifically, these retail sellers must procure a minimum level of Category 1 RECs, which increases over the initial three multi-year compliance

[120] *See* Appendix A: About the RPS Program for more detail.
[121] Defined by Public Utilities Code § 399.15(b)(2)(B) and were first implemented by the CPUC in 2011. The code has been amended to increase the PQR multiple times, with the most recent amendment being from Senate Bill (SB) 100 in 2018, increasing to 60 percent for all subsequent three-year compliance periods.
[122] *See* D.19-06-023 for more information: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M307/K595/307595168.PDF

periods.[123] There is also a maximum limit on the amount of Category 3 procurement that may be used in each compliance period, which decreases over the same timeframe.

The figure below depicts the PBR limits and how they adjust across compliance periods until 2020, at which point they remain at those limits for each successive compliance period.



All retail sellers except for SMJUs must follow the above specified requirements for the balance or mix of procurement from contracts that are executed after June 1, 2010. The SMJUs are exempt from the portfolio balance requirements and may procure any amount of RPS-eligible energy from any of the categories.[124]

Long-Term Contracting Requirement

All electric retail sellers must procure a specified percentage of their RPS portfolio from long-term contracts, defined as 10 or more years.[125] For the first three compliance periods through 2020, 0.25 percent of a retail seller's total electricity portfolio must come from long-term contracts. SB 350 increased this requirement, implemented in D.17-06-026, to 65 percent of all RPS procurement coming from long-term contracts beginning in the 2021–2024 Compliance Period, or in the 2017-2020 Compliance Period if an electric retail seller elects for early compliance.

CPUC Compliance Determinations

To ensure electricity retail sellers meet their RPS requirements, the CPUC is responsible for establishing enforcement procedures and imposing penalties for non-compliance with the RPS program. In 2017, the

[123] *See* Public Utilities Code § 399.16(c) for additional information. Also, for more details on the RPS Compliance rules, visit https://www.cpuc.ca.gov/General.aspx?id=3856.
[124] Pursuant to Public Utilities Code § 399.17 and 399.18.
[125] *See* Public Utilities Code § 399.13(b) for additional information.

CPUC evaluated RPS-eligible procurement and made final compliance determinations for Compliance Period 2011–2013 and determined that six retail sellers were non-compliant with their RPS procurement obligations.[126]

In 2019, the CPUC made final compliance determinations for Compliance Period 2014–2016 and found that out of 26 retail sellers, 3 were non-compliant with their RPS procurement obligations. Two of the three retail sellers did not meet the long-term contracting requirement and, therefore, could not count their short-term procurement toward their PQR. The third retail seller did not procure enough RECs to meet its requirements.[127]

Enforcement

COMPLIANCE PERIOD 2011–2013

In December 2017, the CPUC issued compliance determination letters to the 20 retail sellers operating in Compliance Period 2011–2013. Six entities failed to comply with either the long-term contracting requirement and/or the PQR. Four retail sellers accepted the Commission's determination and paid their non-compliance penalties. Two retail sellers, Gexa Energy California and Liberty Power Holdings, filed for waivers of their respective RPS penalties under § 399.15 of the Public Utilities Code. In August 2019, the CPUC issued a decision denying the two retail sellers' requests for waiver of their penalties. These two retail sellers were required to pay a cumulative sum of over $2 million.[128] The total penalties collected for Compliance Period 2011–2013 were approximately $4.1 million.[129]

COMPLIANCE PERIOD 2014–2016

In October 2019, the CPUC issued compliance determination letters to the 26 retail sellers operating in Compliance Period 2014–2016. Three entities failed to comply with either the long-term contracting requirement and/or the PQR. One retail seller, Commercial Energy, accepted the compliance determination and timely paid their non-compliance penalty.

One of the non-compliant retail sellers, Agera Energy, filed for Chapter 11 bankruptcy in October 2019 and neither filed a waiver request nor paid the penalties. Consequently, collection of Agera Energy's Compliance Period 2 penalties is contingent on the outcome of Agera Energy's bankruptcy proceedings. In 2020, Agera Energy exited the California market and formally de-registered as an ESP. Gexa Energy California, again, filed for a waiver of their assessed RPS penalties, and the CPUC adjudicated their waiver request resulting in a revised penalty of $352,500. The total penalties collected for Compliance Period 2014–2016 were approximately $510,235.

COMPLIANCE PERIOD 2017–2020

Compliance will be determined after verification of REC claims, which is underway by the CEC.

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[126] The six retail sellers include Commercial Energy of California, Commerce Energy (Just Energy Solutions), Direct Energy Business, Gexa Energy, Liberty Power Holdings, and Tiger Natural Gas.
[127] *See* D.17-06-026 for more information on the RPS long-term contracting rules.
[128] D.19-08-007.
[129] Per Public Utilities Code § 399.15(b)(8), the penalties collected for the RPS program are deposited into the Electric Program Investment Charge (EPIC) fund.

COMPLIANCE PERIOD 2021–2024

LSEs have submitted their 2021 annual compliance reports for the compliance period on August 1, 2022. Compliance determinations for the period will not be made until after the compliance period is complete.

Appendix C – Glossary of Acronyms and Terms

(BioMAT) Bioenergy Market Adjusting Tariff: A feed-in tariff program for bioenergy renewable generators less than 3 MW in size.

(BioRAM) Bioenergy Renewable Auction Mechanism: An RPS program that implements the Governor's October 2015 Emergency Order on Tree Mortality, as well as SB 859 (2016), and mandates utilities to procure bioenergy from forest fuel from High Hazard Zones (HHZ) to mitigate the threat of wildfires.

(CBA) California Balancing Authority: A balancing authority is charged with maintaining the safe and reliable transportation of electricity on the power grid and ensures transparent access to the transmission network and market transactions.

(CCA) Community Choice Aggregator: Local government agencies that purchase and may develop power on behalf of residents, businesses, and municipal facilities within a local or sub-regional area. As of November 1, 2020, there are 29 registered CCAs in California with 23 active CCAs and 6 CCAs set to serve customers in 2021 and 2022.

(ESP) Electric Service Provider: An entity that offers electrical service to commercial and industrial customers within the service territory of an electrical corporation and includes the unregulated affiliates and subsidiaries of an electrical corporation.

(IRP) Integrated Resource Plan: A planning mechanism to consider all the CPUC's electric procurement policies and programs to ensure California has a safe, reliable, and cost-effective electricity supply. The CPUC implements an integrated resource planning process that will ensure that retail sellers meet targets that allow the electricity sector to contribute to California's economy-wide greenhouse gas emissions reductions goals.

(IOU) Investor-Owned Utility: IOUs are privately owned electricity and natural gas providers and are regulated by the California Public Utilities Commission (CPUC). Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric comprise approximately three quarters of the retail electricity supply in California.[130]

(LSE) Load Serving Entity: All entities that serve electricity to customers including IOUs, SMJUs, CCAs, and ESPs.[131]

(PPA) Power Purchase Agreement: The contractual agreement under which the financial and technical aspects of renewable energy generation projects are agreed upon between power sellers and retail sellers.

(**PBR) Portfolio Balance Requirement:** The PBR is one of the requirements that LSEs must meet to achieve RPS Compliance. California's RPS program defines all renewable procurement acquired from contracts executed after June 1, 2010, into one of three portfolio content categories (PCCs): Category 1, Category 2, and Category 3. The PBR establishes minimum and maximum amounts of the three PCCs that must be used for RPS compliance. More detailed explanation of the PBR, PCCs, and RPS compliance is provided in Appendix B.

(PQR) Procurement Quantity Requirement: The PQR is one of the requirements that LSEs must meet to achieve RPS Compliance. The PQR is the statutorily set percentage of RPS-eligible procurement required in a compliance period. It is calculated by multiplying the annual percentage target by a retail sellers' total

[130] For information on the differences between Publicly-Owned Utilities and Investor-Owned Utilities, please visit the California Energy Commission's website: https://www.energy.ca.gov/pou_reporting/background/difference_pou_iou.html.
[131] The CPUC is responsible for compliance and enforcement activities for retail sellers, which excludes Publicly Owned Utilities.

retail sales in each year for a given compliance period. More detailed explanation of the PQR and RPS compliance is provided in Appendix B.

(RA) Resource Adequacy: The ability of a utilities' reliable capacity resources (supply) to meet customers' energy or system loads (demands) at all hours.

(RAM) Renewable Auction Mechanism: An RPS procurement process the IOUs may use to procure RPS generation and to satisfy authorized procurement needs or legislative mandates. RAM streamlines the procurement process for developers, utilities, and regulators by 1) allowing project bidders to set their own price, 2) providing a simple standard contract for each utility, and 3) allowing all contracts to be submitted to the CPUC through an expedited regulatory review process.

(REC) Renewable Energy Credit: A market-based instrument that represents the property rights to the environmental, social and other non-power attributes associated with the production of electricity from a renewable source. RECs play an important role in driving the deployment of renewable energy in California and achieving the goals of Renewables Portfolio Standard (RPS). A REC confers to its holder a claim on the renewable attributes of one unit of energy (MWh) generated from a renewable resource. RECs are "created" by a renewable generator simultaneous to the production of electricity and can subsequently be sold separately from the underlying energy.

(ReMAT) Renewable Market Adjusting Tariff: A feed-in tariff program for small renewable generators up to 3 MW in size.

Retail Sellers: All entities that sell electricity to customers, including IOUs, CCAs and ESPs. A Publicly Owned Utility does not meet the definition of a retail seller and POU compliance with the RPS program is overseen by the CEC.

(SMJU) Small and Multi-Jurisdictional Utilities: Investor-owned utilities that are considered small and multi-jurisdictional subject to different rules per PUC § 399.17 and § 399.18.

Appendix D – California's Active Load Serving Entities

Investor- Owned Utilities (IOUs)

- Pacific Gas and Electric Company (PG&E)
- Southern California Edison (SCE)
- San Diego Gas & Electric (SDG&E)

Small and Multi-Jurisdictional Utilities (SMJUs)

- Bear Valley Electric Service (BVES)
- Liberty Utilities (formerly CalPeco Electric)
- PacifiCorp

Community Choice Aggregators (CCAs)

- Apple Valley Choice Energy (AVCE)
- Central Coast Community Energy (CCCE)
- Clean Energy Alliance (CEA)
- Clean Power Alliance (CPA)
- CleanPowerSF (CPSF)
- Desert Community Energy (DCE)
- East Bay Community Energy (EBCE)
- Energy for Palmdale's Independent Choice (EPIC)
- King City Community Power (KCCP)
- Lancaster Choice Energy (LCE)
- Marin Clean Energy (MCE)
- Orange County Power Authority (OCPA)
- Peninsula Clean Energy (PCE)
- Pico Rivera Innovative Municipal Energy (PRIME)
- Pioneer Community Energy (Pioneer)
- Pomona Choice Energy
- Rancho Mirage Energy Authority (RMEA)
- Redwood Coast Energy Authority (RCEA)
- San Diego Community Power (SDCP)
- San Jacinto Power (SJP)
- San Jose Clean Energy (SJCE)
- Santa Barbara Clean Energy (SBCE)
- Silicon Valley Clean Energy (SVCE)
- Sonoma Clean Power (SCP)
- Valley Clean Energy Alliance (VCEA)

Electric Service Providers (ESPs)

- 3 Phases Renewables
- Brookfield Renewable Energy Marketing U.S., LLC
- Calpine Energy Solutions
- Calpine Power America
- Commercial Energy of CA
- Constellation New Energy
- Direct Energy Business
- EDF Industrial Power Services
- Gexa Energy California, LLC
- Just Energy Solutions, Inc.
- Palmco Power CA
- Pilot Power Group
- Praxair Plainfield, Inc.
- Shell Energy North America
- Tenaska Power Services Co.
- Tiger Natural Gas
- UC Regents
- Yep Energy

Appendix E – Public Utilities Code Section 913.4

In order to evaluate the progress of the State's electrical corporations in complying with the California Renewables Portfolio Standard Program (Article 16—commencing with § 399.11—of Chapter 2.3), the commission shall report to the Legislature no later than November 1 of each year on all of the following:

(a) The progress and status of procurement activities by each retail seller pursuant to the California Renewables Portfolio Standard Program.

(b) For each electrical corporation, an implementation schedule to achieve the renewables portfolio standard procurement requirements, including all substantive actions that have been taken or will be taken to achieve the program procurement requirements.

(c) The projected ability of each electrical corporation to meet the renewables portfolio standard procurement requirements under the cost limitations in subdivisions (c) and (d) of § 399.15 and any recommendations for revisions of those cost limitations.

(d) Any renewable energy procurement plan approved by the commission pursuant to § 399.13, schedule, and status report for all substantive procurement, transmission development, and other activities that the commission has approved to be undertaken by an electrical corporation to achieve the procurement requirements of the renewables portfolio standard.

(e) Any barriers to, and policy recommendations for, achieving the renewables portfolio standard pursuant to the California Renewables Portfolio Standard Program.

(f) The efforts each electrical corporation is taking to recruit and train employees to ensure an adequately trained and available workforce, including the number of new employees hired by the electrical corporation for purposes of implementing the requirements of Article 16 (commencing with § 399.11) of Chapter 2.3, the goals adopted by the electrical corporation for increasing women, minority, and disabled veterans trained or hired for purposes of implementing the requirements of Article 16 (commencing with § 399.11) of Chapter 2.3, and, to the extent information is available, the number of new employees hired and the number of women, minority, and disabled veterans trained or hired by persons or corporations owning or operating eligible renewable energy resources under contract with an electrical corporation. This subdivision does not provide the commission with authority to engage in, regulate, or expand its authority to include, workforce recruitment or training.

Appendix F – Summary of Accomplishments from Jan. 2021 – Oct. 2022

January 2021	▪ CPUC adopted D.21-01-005 approving the 2020 RPS Procurement Plans[132] ▪ CPUC issued disposition letters approving the Joint IOUs ELCC values for RPS procurement
February 2021	▪ PG&E and SCE resumed their ReMAT programs following CPUC approval of Tier 2 Advice Letters with updated ReMAT tariffs and associated standard contracts pursuant to D.20-10-005
March 2021	▪ CPUC issued the Assigned Commissioner and Assigned Administrative Law Judge's Ruling identifying issues and schedule of review for 2021 RPS Procurement Plans[133] ▪ CPUC issued Resolution E-5123 approving PG&E's BioRAM contract with Wheelabrator Shasta Energy
April 2021	▪ CPUC issued the Administrative Law Judge's Ruling seeking updated information regarding the ReMAT program ▪ CPUC issued Resolution E-5135 approving PG&E's BioRAM contract with Woodland Biomass ▪ CPUC approved via a disposition letter PG&E's Winter 2020 REC Sales contracts ▪ CPUC staff established the BioMAT Technical Working Group to develop a project-specific lifecycle analysis tool to quantify net greenhouse gas emissions from BioMAT project operations, pursuant to D.20-08-043
May 2021	▪ CPUC issued the 2021 Padilla Report on Costs and Cost Savings for the RPS Program to the Legislature, pursuant to Public Utilities Code § 913.3 ▪ CPUC adopted D.21-05-030 authorizing a new Voluntary Allocation, Market Offer, and Request for Information process for RPS contracts subject to the PCIA ▪ CPUC Staff held RPS Webinar on 2022 RPS Procurement Plans ▪ CPUC issued a final 2021 RPS Procurement Plans notification of acceptance
June 2021	▪ Prehearing Conference held for Liberty Utilities' Application requesting Commission approval to finance, construct, own and operate the Luning Expansion Project ▪ CPUC staff held several BioMAT Technical Working Group meetings where three technical sub-committees were formed for each technology category and further guidance was established for the development of a greenhouse gas emissions lifecycle analysis tool

[132] https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M361/K203/361203138.PDF
[133] https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M374/K626/374626996.PDF

	▪ CPUC approved RPS sales contracts from SCE's 2021 RPS energy sales RFO to various counterparties via standard disposition letter ▪ CPUC approved RPS sales contracts from PG&E's Winter 2020 Bundled RPS Energy Sale Solicitation to various counterparties via non-standard disposition letter ▪ CPUC adopted updated administratively set fixed avoided-cost rates for 2022 for the Renewable Market Adjusting Tariff (ReMAT) Program pursuant to Commission Decision 20-10-005
July 2021	▪ IOUs, CCAs, and ESPs submitted Draft 2021 RPS Procurement Plans ▪ CPUC issued disposition letters approving the Joint IOUs' updated ELCC values for RPS procurement ▪ CPUC Staff held a RPS Complaince Webinar ▪ CPUC staff held a BioMAT Technical Working Group meeting and identified several existing greenhouse gas life cycle analysis tools that could be potentially adapted for BioMAT use
August 2021	▪ IOUs, CCAs, and ESPs submitted annual RPS Compliance Reports ▪ CPUC staff held a BioMAT Technical Working Group meeting where criteria were developed for the evaluation of existing greenhouse gas life cycle analysis tools
September 2021	▪ CPUC issues Proposed Decision regarding clarifying and improving confidentiality rules for RPS Program ▪ CPUC staff held a BioMAT Technical Working Group meeting to review CPUC staff's progress in the evaluation of existing greenhouse gas life cycle analysis tools
October 2021	▪ CPUC issued letters, pursuant to SB 155, to all retail sellers that are at risk of not meeting their RPS compliance requirements ▪ CPUC approved via disposition letter SCE's 2021 REC Sales contracts ▪ Energy Division approved of the IOUs' joint Voluntary Allocation methodology for the allocation of RPS resources subject to the PCIA as part of the VAMO mechanism
November 2021	▪ CPUC adopted D.21-11-029 clarifying and improving confidentiality rules for the RPS Program ▪ CPUC issued the 2021 Annual RPS Report to the Legislature
December 2021	▪ CPUC adopted D.21-12-032 modifying aspects of the ReMAT Program
January 2022	▪ CPUC adopted D.22-01-004 on the 2021 RPS Procurement Plans[134] ▪ CPUC adopted D.22-01-025 on Gexa enforcement and penalty.[135]

[134] https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M441/K459/441459991.PDF
[135] https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M446/K941/446941917.PDF

	▪ CPUC staff held a BioMAT Technical Working Group meeting to review CPUC staff's progress in the evaluation of existing greenhouse gas life cycle analysis tools
February 2022	▪ CPUC staff held three BioMAT Technical Working Group meetings to seek feedback from working group members on CPUC staff's ongoing evaluations of existing greenhouse gas life cycle analysis tools
March 2022	▪ CPUC staff conducted a follow-up BioMAT Technical Working Group meeting to seek additional feedback from working group members on CPUC staff's ongoing evaluations of existing greenhouse gas life cycle analysis tools
April 2022	▪ CPUC issued the Assigned Commissioner and Assigned Administrative Law Judge's Ruling issued identifying issues and schedule of review for 2021 RPS Procurement Plans[136] ▪ CPUC issued the Assigned Commissioner and Assigned Administrative Law Judge's Ruling Amending the Scope of R.18-07-003 to implement VAMO as adopted in D.21-05-030[137] ▪ CPUC staff held three BioMAT Technical Working Group meetings to seek feedback from working group members on CPUC staff's initial evaluation results of existing greenhouse gas life cycle analysis tools
May 2022	▪ CPUC issued the 2022 Padilla Report on Costs and Cost Savings for the RPS Program to the Legislature, pursuant to Public Utilities Code § 913.3: https://www.cpuc.ca.gov/RPS_Reports_Data/ ▪ CPUC staff held a BioMAT Technical Working Group meeting to present preliminary recommendations for the adoption of several greenhouse gas life cycle analysis tools that could potentially be used to model BioMAT project emissions
June 2022	▪ CPUC adopted D. 22-06-034 establishing rules for portfolio content category classification for voluntary allocations of RPS resources.[138] ▪ CPUC issued Resolution E-5209 adopting 2022 updated administratively set fixed avoided-cost rates for the ReMAT program. ▪ CPUC issued Resolution E-5216 approving Voluntary Allocation contract formats for the allocation of RPS resources subject to the PCIA as part of the VAMO process.
July 2022	▪ IOUs, CCAs, and ESPs submitted Draft 2021 RPS Procurement Plans ▪ CPUC adopted D. 22-07-003 denying two Petitions For Modification concerning the public disclosure of transmission and distribution safety information.[139]

[136] https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M467/K556/467556099.PDF
[137] https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M465/K562/465562463.PDF
[138] https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M488/K540/488540704.PDF
[139] https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M494/K572/494572241.PDF

August 2022	▪ IOUs, CCAs, and ESPs submitted annual RPS Compliance Reports ▪ CPUC issued Resolution E-5220 approving with modification PG&E Advice Letters 6528-E/E-A, and SDG&E Advice Letters 3968-E/E-A and approving SCE Advice Letters 4745-E/E-A as they include the required modifications to their ReMAT tariffs and PPAs to accommodate the eligibility of facilities enhanced with storage consistent with D.21-12-032
September 2022	▪ CPUC issued a proposed decision on September 29, 2022, seeking to approve LSEs' Voluntary Allocations and IOUs' proposed Market Offer process proposals with modifications; the Commission may vote to approve the proposed decision as early as November 3, 2022
October 2022	▪ CPUC staff approved the IOUs' proposed pro-forma Market Offer contracts