



RENEWABLES PORTFOLIO STANDARD Quarterly Report



2nd Quarter 2016



I. ABOUT THE RPS AND THIS REPORT

California is aggressively bringing renewable generation online to meet its Renewables Portfolio Standard (RPS), one of the most ambitious renewable energy standards in the country.

California's RPS¹ requires retail sellers, investor-owned utilities (IOUs), electric service providers (ESPs) and community choice aggregators (CCAs) regulated by the California Public Utilities Commission (CPUC) to procure 33% of their annual retail sales from eligible renewable sources by 2020. Retail sellers must achieve intermediate RPS targets of 20% from 2011-2013 and 25% from 2014-2016. The CPUC and the California Energy Commission (CEC) are jointly responsible for implementing California's 33% RPS program. Senate Bill 350 (De León, 2015) revises the current RPS target to obtain 50% of total retail electricity sales from renewable resources by December 31, 2030, with interim targets of 40% by December 31, 2024, and 45% by December 31, 2027.

While the RPS program is the primary vehicle for new utility-scale renewable energy development in California, there are other programs that stimulate development of customer-side renewable generation. The California Solar Initiative (CSI) and Self-Generation Incentive Program (SGIP) provide incentives for customers to install renewable distributed generation technologies that directly serve their on-site load.² Electricity generated from power systems installed under CSI and SGIP may contribute to meeting RPS targets provided they meet eligibility requirements established by the CEC.³ In addition, electricity generated by these facilities indirectly contributes to the RPS by reducing demand when serving customer load.

Every quarter the CPUC issues an update on the RPS program as directed by the 2006 Budget Act Supplemental Report Item 8660-001-0462. The report focuses on California's three large IOUs, which provide approximately 68% of the state's electric retail sales: Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E).

¹ Codified in Public Utilities Code §§ 399.11 – 399.32, California's 20% RPS by 2020 was established in 2002 under Senate Bill (SB) 1078 (Sher) and modified in 2006 under SB 107 (Simitian). SB 2 of the First Extraordinary Session (SB 2 (1X)) (Simitian) (Stats. 2011, ch.1) expanded the mandate to a 33% RPS by 2020. SB 350 (De León) increased the mandate to 50% by 2030.

² More information on the CSI and SGIP can be found on the CPUC's website: <http://www.cpuc.ca.gov/PUC/energy/DistGen/>.

³ In the case of renewable customer generation, the system-owner owns the renewable energy credits (RECs), but could sell the RECs to retail sellers to contribute to their RPS targets.

II. EXECUTIVE SUMMARY

Status of RPS Procurement

- The Senate Bill (SB) 2 (1X) 2015 RPS procurement target is 23.3% of retail sales. On September 4, 2015 the large IOUs forecasted that they collectively served 28.8% of their retail electric load with RPS-eligible generation during 2015, exceeding the 2015 RPS procurement target.
- The second RPS compliance period (2014 – 2016) procurement target is approximately 23.3% of retail sales.⁴ The IOUs procured approximately 26% of retail sales in 2014, and anticipate procuring approximately 29% in 2015 and 31% in 2016.
- Since 2003, the RPS program has resulted in 13,545 MW of renewable capacity achieving commercial operation. In the second quarter of 2016, 955 MW of renewable capacity reached commercial operation. An additional 2,114 MW of renewable capacity is forecasted to come online in 2016 and an additional 967 MW in 2017.

Highlights of Recent Events

- On April 15, 2016, the Commission issued a ruling to request comments on the implementation of SB 350. Specifically, the ruling requested stakeholder feedback on changes to the RPS procurement requirements (see below). The Commission will be issuing additional rulings that address the remaining RPS-related elements of SB 350 that need to be implemented.

New compliance periods for years after 2020 (Section 399.15(b)(1))

Changes to the procurement quantity requirements for the new compliance periods (Section 399.15(b)(2))

New requirements for RPS-eligible short- and long-term contracts and/or using utility-owned generation (UOG) or other ownership agreements for compliance periods after 2020 (Section 399.13(b))

Changes to excess procurement rules for all compliance periods beginning January 1, 2021 (Section 399.13(a)(4)(B))

Changes to the rules governing excess procurement related to early compliance with the new requirements for long term contracts (Section 399.13(a)(4)(B)(iii))

⁴During the second compliance period (2014-2016) the RPS obligation increases each year. In 2014 the Large IOUs must procure at least 21.7% of their retail sales from RPS eligible resources. The RPS procurement percentage increases to 23.3% in 2015 and 25.0% in 2016. Consequently, the average procurement percentage over second compliance period is approximately 23.3%.

- In May 2016, the RPS Calculator⁵ was used to generate RPS portfolios for use in the next cycle of long term electrical infrastructure planning processes at the Commission (2016 Long Term Procurement Plan) and at the California Independent System Operator (2016-17 Transmission Planning Process). These portfolios will represent the first produced by the overhauled RPS Calculator (version 6.3) first introduced in draft form in October 2014. The new RPS portfolios will reflect updated assumptions about renewable resource costs and potential and a dynamic, portfolio-dependent valuation algorithm based on the net marginal energy and capacity contributions of prospective resources.
- On May 17, 2016, the Commission issued a ruling that identified issues and sets a schedule for the Commission’s review of the 2016 Renewables Portfolio Standard Procurement Plans and related documents for electric corporations, electric service providers, and community choice aggregators. After the Commission considers these proposed procurement plans, the Commission will issue a decision on these plans, consistent with the direction set forth in § 399.13(c).⁶
- On June 6, 2016, the Commission issued a ruling to granted in part the Joint Motion of Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company for Extension of Time to File ELCC Proposal for RPS Procurement. Specifically, the ruling extends the time for filing and serving the actual effective load carrying capability values required for the investor-owned utilities until December 15, 2016. The ELCC values will be used to determine the marginal capacity contribution of projects that bid into utilities’ RPS solicitation process. The marginal capacity contribution is one of the types of values that are weighed against resources’ all-in costs in utilities’ least-cost and best-fit (LCBF) bid ranking methodologies.

⁵ The RPS Calculator is a spreadsheet-based model used in generation and transmission planning processes to develop plausible portfolios of renewable energy resources that satisfy the RPS target in future years.

⁶ § 399.13(c) states that “the commission shall review and accept, modify, or reject each electrical corporation’s renewable energy resource procurement plan prior to the commencement of renewable energy procurement pursuant to this article by an electrical corporation. The commission shall assess adherence to the approved renewable energy resource procurement plans in determining compliance with the obligations of this article.”

III. PROGRESS TOWARDS A 33% RPS BY 2020

California is aggressively procuring renewable generation to ensure that 33% of retail sales are met with renewable energy resources by 2020. Figure 1 below shows progress toward meeting that mandate, on a risk adjusted basis.⁷ The IOUs reported meeting the 20% requirement for 2011-13 in their RPS Procurement Progress Reports.^{8,9,10} These reports forecast that the IOUs are on track to meet the RPS requirement of 25% renewables by 2016 and are well-positioned to meet the 33% requirement by 2020.

Figure 2 on the next page forecasts a surplus of renewable generation for 2014-16 and a deficit for 2017-20. It is important to note that the IOUs have the option to apply excess procurement in 2011-13 and 2014-16 RPS procurement toward meeting RPS obligations in 2017-20 or beyond.

Given that the CPUC is in the process of implementing the new RPS compliance period procurement targets, this report only presents the status of the large IOUs progress in achieving 33% RPS in 2020.¹¹

⁷ Values are risk adjusted to account for a certain degree of project failure. Failure rate assumptions are provided by the IOUs in their 2015 RPS Plans.

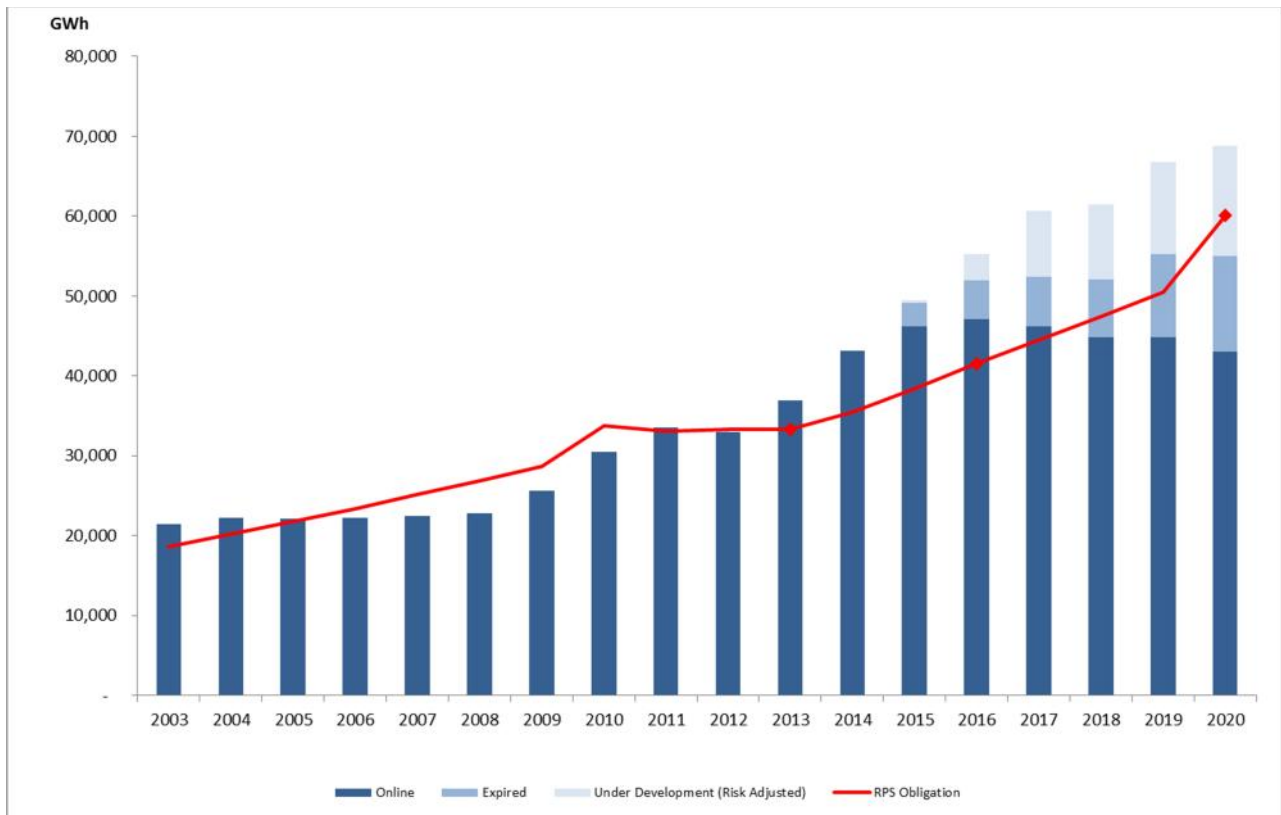
⁸ The California Energy Commission (CEC) is responsible for verifying RPS procurement claims for each compliance period.

⁹ Retail sellers are required to submit Final Verified RPS Compliance Reports to the CPUC after the CEC has completed its' verification analysis. The CPUC uses the CEC's verification analysis to make a final determination of retail sellers' RPS compliance positions. The CEC anticipates that they will complete their verification analysis for the first compliance period (2011-2013) in Q1 2016.

¹⁰ Retail sellers are required to submit Procurement Progress Reports on August 1, each year to demonstrate progress towards the RPS procurement requirements. The results of RPS Procurement Progress Report submissions are preliminary until the CEC completes its' verification analysis.

¹¹ SB 350 (DeLeon, 2015) adds three new compliance periods to the RPS program, i.e., 2021-2024, 2025-2027 and 2028-2030. Additionally, SB 350 increases the required RPS procurement percentage from 33% in 2020 to 50% in 2030. These new rules for the RPS program will be implemented in the RPS proceeding, i.e., Rulemaking (R.)15-02-020, in 2016.

Figure 1: IOU progress towards 33% renewables by 2020, actual and forecasted by year ^{12, 13, 14}



¹² Data Source: 2003-2010 data sourced from the Final 20% RPS Closing Report (January 2014); 2011-2020 data sourced from the Final 2015 RPS Procurement Plans (January 2016).

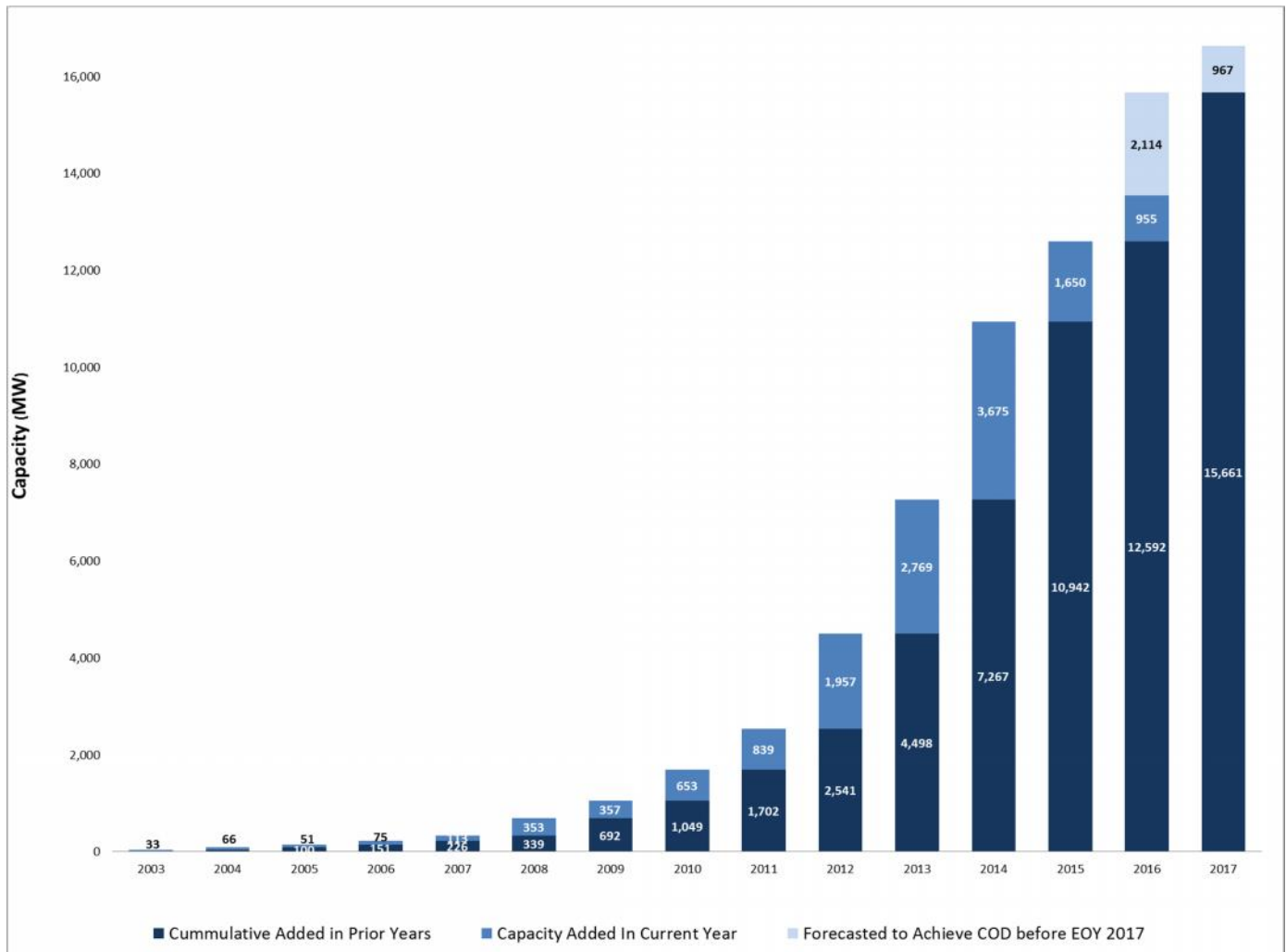
¹³ The RPS obligation varies to reflect the targets defined in SB 2 (1X); 20% by December 31, 2013, 25% by December 31, 2016 and 33% by 2020.

¹⁴ The “Expired” field in this chart represents the amount of generation associated with facilities that no longer have a PPA with one of the Large IOUs. Although this generation is not under contract there is a high likelihood that one of the Large IOUs will re-contract with these facilities.

CPUC APPROVED RENEWABLE CAPACITY ADDED IN 2015

Since 2003, the RPS program has resulted in 13,545 MW of renewable capacity achieving commercial operation. In the second quarter of 2016, 955 MW of renewable capacity reached commercial operation. An additional 2,114 MW of renewable capacity is forecasted to come online in 2016 and an additional 967 MW in 2017.

Figure 2: RPS capacity installed since 2003 by year ¹⁵



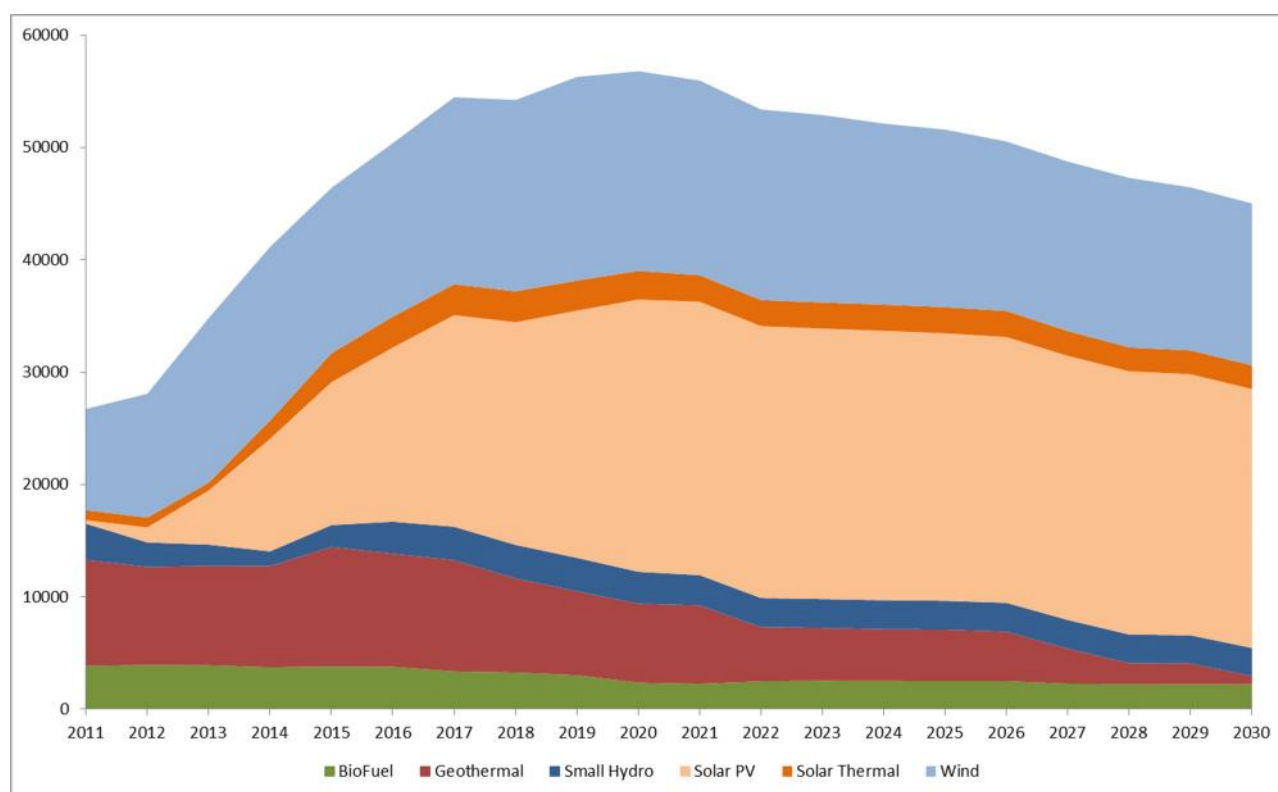
¹⁵ Data Source: IOU submissions to the RPS Contract Database (January 15, 2016)

RPS RENEWABLE RESOURCE MIX

The mix of technologies bidding into and receiving power purchase agreements (PPAs) through RPS solicitations has shifted over the life of the RPS program. In 2014, wind contributed 37% and solar PV contributed 24%, supplying the majority of California's renewable generation. The generation mix in 2020 is expected to reflect a considerable increase in generation from new solar PV.

Solar PV and solar thermal generating facilities are forecasted to contribute 59% and 6%, respectively, of the state's total renewable generation by 2020.¹⁶ As we move towards 2030, solar PV is still the dominant technology providing an estimated 56% of RPS procurement, followed by wind at 35%. The figure below displays California's actual and forecasted mix of renewable generation under contract by technology type through 2030.

Figure 3: Renewable resource mix, actual and forecasted by year¹⁷



Note: Biofuel is defined as biomass and biogas technologies.

¹⁶ The actual forecast was updated after the IOUs submitted the Annual 33% Compliance report on September 4, 2015.

¹⁷ Data Source: IOUs' Annual 33% Compliance Reports (September, 2015). Figure 3 only depicts existing IOU renewable contracts. It does not account for facilities that may be online and may receive new contracts after their current contracts expire.

RPS CONTRACTING ACTIVITIES IN 2016

Since 2002, the CPUC has approved more than 435 RPS PPAs for over 23,150 MW of renewable capacity. As Table 1 below shows, the CPUC has approved 9 contracts during the second quarter of 2016, representing 797 MW of RPS capacity.

Table 1: IOU RPS-eligible Advice Letters submitted and/or approved in 2015 ^{18,19,20}

		PGE		SCE		SDGE		Total	
		Number of Contracts	MW	Number of Contracts	MW	Number of Contracts	MW	Number of Contracts	MW
Q1	Submitted	2	0	3	129.8	1	20	5	149.8
	Pending	1	0	10	1,370	1	20	10	1,370
	Approved	1	0	3	343	0	0	5	343
Q2	Submitted	0	0	0	0	0	0	0	0
	Pending	0	0	3	573	0	0	3	573
	Approved	1	0	7	797	1	20	9	797

¹⁸ Data Source: IOU submissions to the RPS Contract Database (October 15, 2015)

¹⁹ In Q2 PG&E, SCE and SDG&E each submitted an Advice Letter to modify specific components of their Renewable Auction Mechanism (RAM) Program for the sixth RAM Solicitation. Since these Advice Letters are related to contract modification, they do not have any capacity value associated with them.

²⁰ “Submitted” refers to the number of RPS contracts that were filed to the CPUC in a given quarter. “Pending” refers to how many advice letters were awaiting approval at the end of a given quarter.

IV. SUMMARY OF SCE 2015 RPS LARGE-SCALE REQUEST FOR OFFER

On January 29, 2016, SCE issued its 2015 large scale RPS Request for Offer (RFO). SCE received a large number of proposals from renewable energy developers through the 2015 RPS solicitation. Below are some statistics from SCE's large scale RPS RFO:

- All proposals were for Category 1 RPS products.²¹
- A total of 290 offers representing 95 unique projects totaling over 8,100 MW were received in the 2015 RPS RFO. For comparison, 218 offers from 83 unique projects totaling nearly 6,600 MW were received in SCE's 2014 RPS solicitation.
- Solar PV accounts for over 72% of the unique projects offered and 69% of total capacity.

Technology	Approximate Capacity (MW) Offered
Solar PV	5,600
Wind	1,900
Biomass	300
Geothermal	300
Landfill Gas	24
Small Hydro	2.6

- The weighted average bid price SCE's 2015 RFP was \$51.63 and included offers for more than 89,000 GWh/yr. For comparison, the weighted average bid price for the 2014 solicitation was \$79.49, including offers for more than 117,000 GWh/yr.

PG&E and SDG&E did not have a large scale RPS RFOs in 2015.

²¹ Pursuant to D.11-12-052

IV. RECENT AND UPCOMING EVENTS

Timing	Deliverable	Notes
February 15, 2016	Amended Scoping Memo for RPS proceeding (R.15-02-020)	Amends scope of RPS proceeding to include implementation of SB 350 and the Governor's Emergency Proclamation (October 30, 2015) as it relates to BioMAT for high hazard zones.
March 18, 2016	Resolution E-4770: The Commission's Response to Governor's Emergency Proclamation	Resolution E-4770 orders PG&E, SCE, and SDG&E to hold a solicitation for contracts with facilities that can use biofuel from high hazard zones using the RAM procurement process.
April 15, 2016	Ruling on SB 350 Implementation	The Commission issued a ruling to requests comments on the implementation of SB 350. Specifically, the ruling requested stakeholder feedback on changes to RPS procurement requirements.
May 11, 2016	RPS Portfolios Ruling	Ruling releasing RPS portfolios for 2016 long term procurement and transmission planning cycles.
June 22, 2016	LCBF Ruling	Ruling to initiate reform of least cost best fit (LCBF) methodology used by utilities to evaluate and rank RPS bids.