



RENEWABLES PORTFOLIO STANDARD Quarterly Report



1st 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) 2014 RPS procurement target is 21.7% of retail sales. On September 4, 2015, SCE, SDG&E, and PG&E (the IOUs) reported that they collectively served 26% of their retail electric load with RPS-eligible generation during 2014, exceeding the 2014 RPS procurement target. Specifically, PG&E served 27% of its 2014 retail sales with RPS-eligible renewable energy, SCE with 23% and SDG&E with 32%.
- The second RPS compliance period (2014 – 2016) procurement target is 25% of retail sales. The IOUs expect to exceed this statutory requirement by procuring 31% of retail sales from RPS-eligible resources by 2016.⁴ The IOUs procured approximately 26% of retail sales in 2014, and anticipate procuring approximately 29% in 2015 and 31% in 2016.
- Since 2003, 12,925 MW of renewable capacity achieved commercial operation under the RPS program. In the first quarter of 2016, 333 MW of renewable capacity reached commercial operation. An additional 2,736 MW of renewable capacity is forecasted to come online in 2016 and another 967 MW in 2017.

Highlights of Recent Events

- On October 30, 2015, Governor Brown issued an Emergency Proclamation to protect public safety and property from falling dead trees and wildfire. The Proclamation directs the Commission to take expedited action to ensure that contracts for new forest bioenergy facilities receiving feedstock from high hazard zones can be executed within six months, including initiation of a targeted Renewable Auction Mechanism (RAM).⁵ In response to the Governor's Emergency Proclamation, the Commission issued Resolution E-4770. The Resolution 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. Additionally, the Resolution allows PG&E and SDG&E to enter into bilateral contracts with these types of facilities.

⁴ All RPS forecasts are subject to verification by the California Energy Commission. The figures presented in this report are preliminary forecasts that are self-reported by the large IOUs. Eligible technologies include: biomass, biodiesel, fuel cells, digester gas, geothermal, landfill gas, municipal solid waste, ocean wave, ocean thermal, tidal current, solar photovoltaic, small hydroelectric, solar thermal, and wind.

⁵ RAM is a procurement program under the CPUC's Renewables Portfolio Standard that uses a reverse auction to select the least-cost, best-fit renewable project.

- In May 2016, the RPS Calculator 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 February 5, 2016, Commissioner Peterman issued a Scoping Memo that updated the procedural scope and schedule for the RPS proceeding (R.15-02-020).⁶ The Scoping Memo sets out a number of tasks for this proceeding. Some of these tasks have been carried over from the old proceeding (R. 11-05-005) and some tasks having been newly developed. Additional information can be found on p. 10 of this report.
- 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))

⁶ The May 22, 2015, Scoping Memo can be found at:

<http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=152045579>

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.

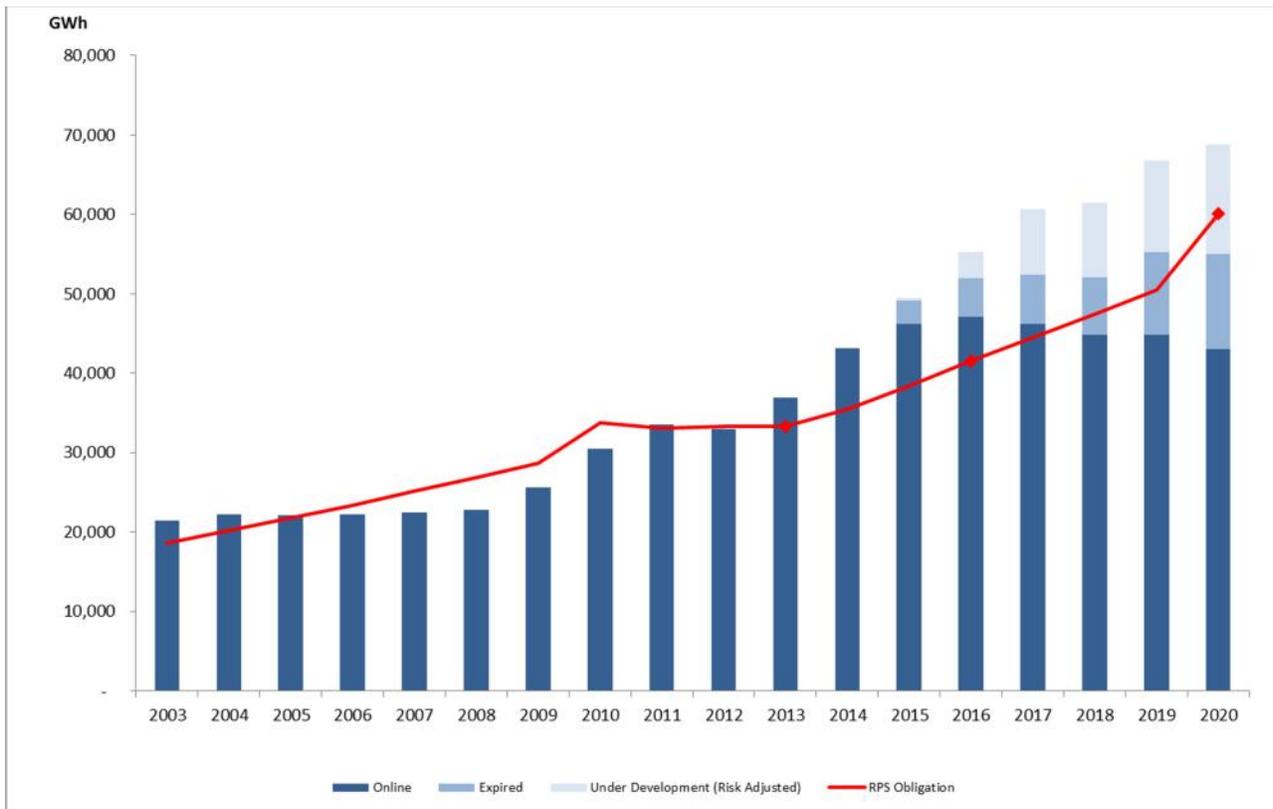
⁷ Values are risk adjusted to account for a certain degree of project failure. Failure rate assumptions are provided by the IOUs in their 2015 RPS Plans. On average, PG&E assumes a 1.3 % failure rate for new projects not yet online, SCE assumes a 34.7% failure rate and SDG&E assumes a 15% failure rate.

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.

Figure 1: IOU progress towards 33% renewables by 2020, actual and forecasted by year ^{11, 12, 13}



¹¹ 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).

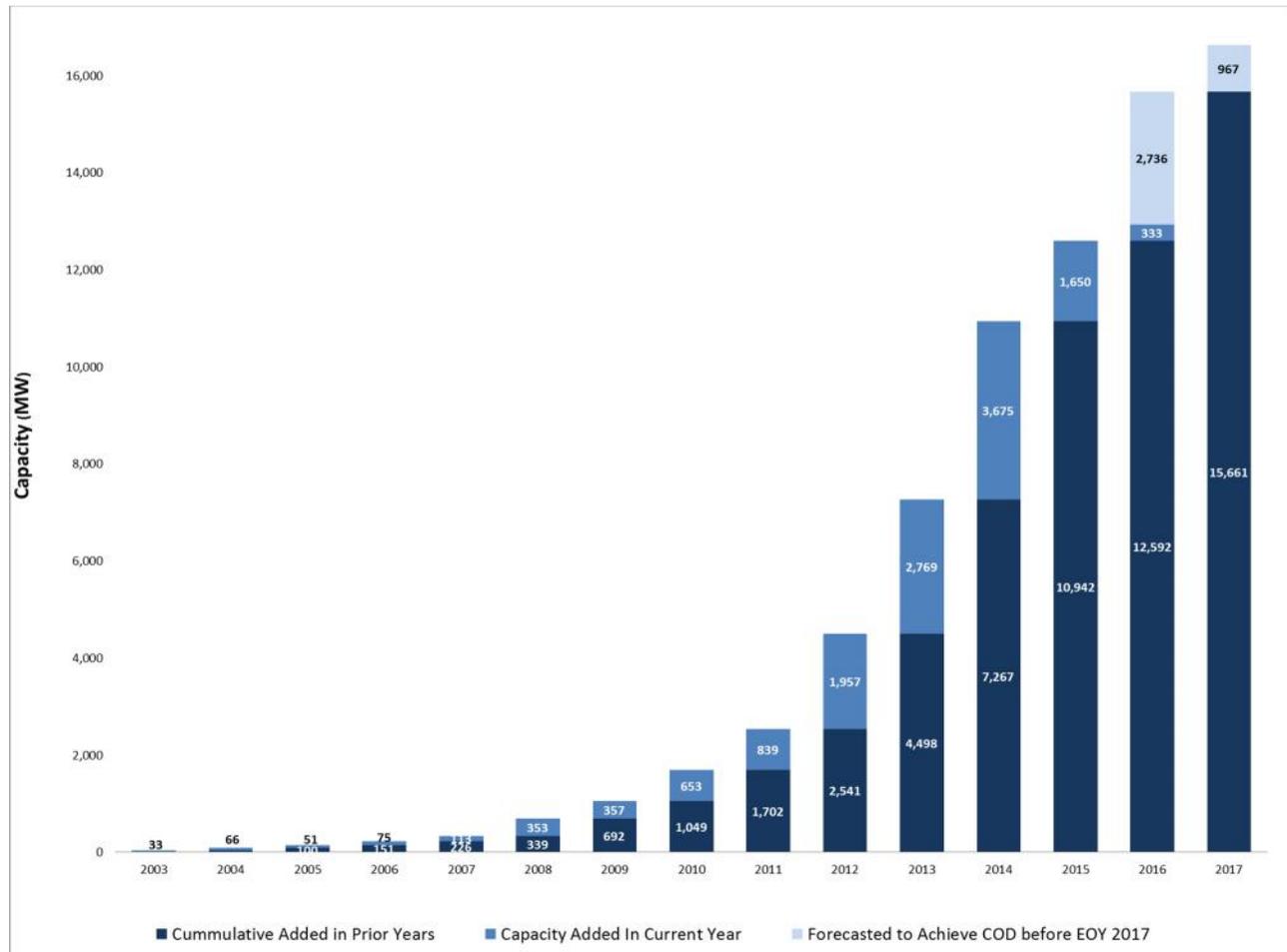
¹² The RPS obligation varies to reflect the targets defined in SB 2 (1X); 20% by December 31, 2013, 25% by December 31, 2016 and 33% by 2020.

¹³ 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, 12,925 MW of renewable capacity achieved commercial operation under the RPS program. In the first quarter of 2016, 333 MW of renewable capacity reached commercial operation. An additional 2,736 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 ¹⁴



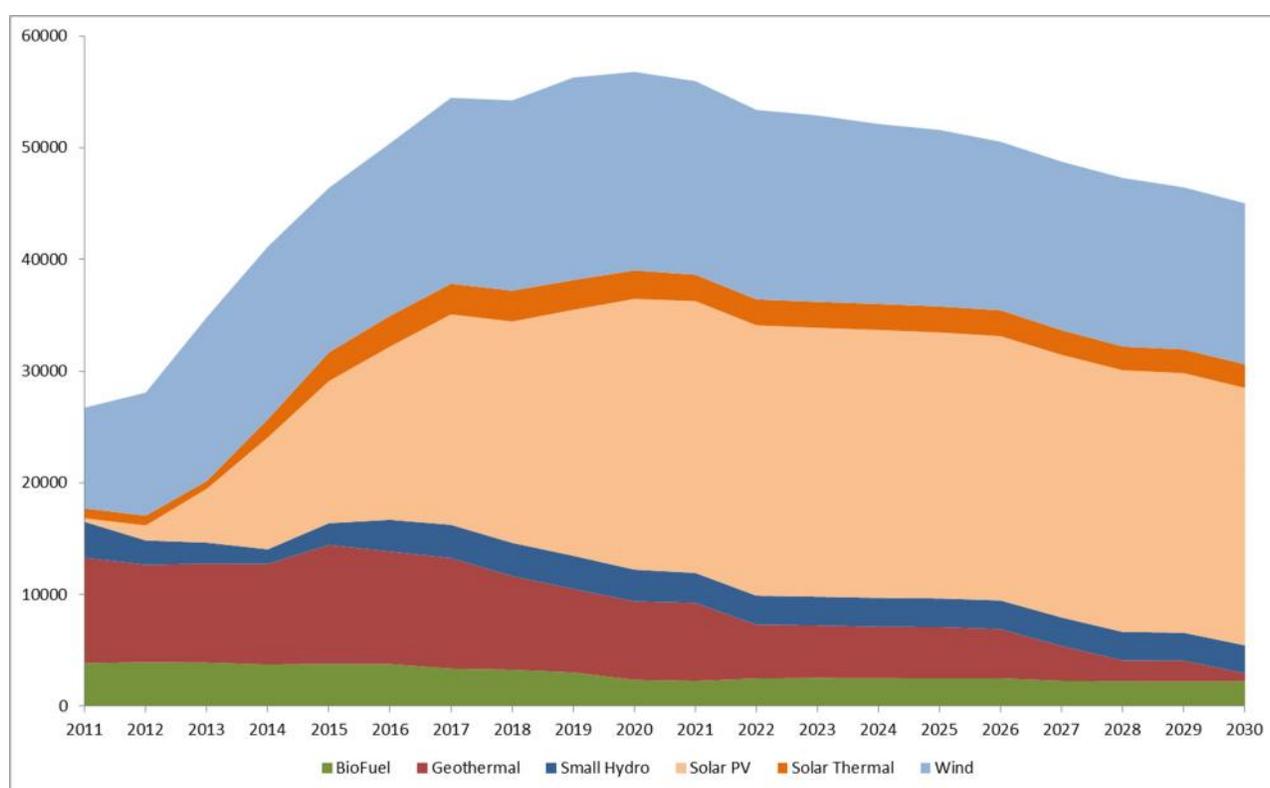
¹⁴ Data Source: IOU submissions to the RPS Contract Database (January 15, 2016)

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 2020.¹⁵ 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 year¹⁶



Biofuel is defined as biomass and biogas technologies.

¹⁵ The actual forecast was updated after the IOUs submitted the Annual 33% Compliance report on September 4, 2015.

¹⁶ 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 429 RPS PPAs for over 22,350 MW of renewable capacity. As Table 1 below shows, the CPUC has approved 5 contracts during the first quarter of 2016, representing 343 MW of RPS capacity.

Table 1: IOU RPS-eligible Advice Letters submitted and/or approved in 2015 ^{17, 18 19}

		PG&E		SCE		SDG&E		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

¹⁷ Data Source: IOU submissions to the RPS Contract Database (October 15, 2015)

¹⁸ “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.

¹⁹ In Q2 PG&E submitted an Advice Letter to modify one of their RPS Contracts, and a separate Advice Letter seeking approval of a REC sale agreement. Both Advice Letters do not have any capacity value (MW) associated with them.

IV. IMPLEMENTATION OF SB 350 (De LEÓN, 2015) AND THE 50% RPS MANDATE

On May 22, 2015, Commissioner Peterman issued a Scoping Memo that outlined a new procedural schedule for the RPS proceeding, Rulemaking (R.)15-02-020.²⁰ The Scoping Memo sets out a number of tasks for this proceeding; some tasks having been carried over from the old proceeding (R. 11-05-005) and some tasks having been newly developed. More recently, on February 5, 2016, Commissioner Peterman issued an amended scoping memo to update the procedural scope and schedule.²¹ Specifically, the Amended Scoping Memo adds tasks needed for the implementation of SB 350 and the Governor's recent Tree Mortality State of Emergency Proclamation (October 30, 2015).

The new or non-recurring issues that are included in the February 5th amended scoping memo are:

- Implementing the changes made to RPS procurement, compliance, and enforcement requirements by SB 350;
- Implementing those aspects of the Governor's Tree Mortality Proclamation that are related to the RPS program;
- Revisiting and possibly revising the RPS feed-in tariff (also known as renewable market adjusting tariff (ReMAT)) program;
- Revising and further developing the functionality of the RPS Calculator;
- Revising and updating the least-cost best-fit (LCBF) methodology for evaluating RPS-eligible procurement, including revisions mandated by SB 2 (1X) (Simitian, Stats. 2011 ch.1), and SB 350;
- Completing work on a final methodology for calculating renewable integration cost adder(s);
- Developing a methodology for determining values for effective load carrying capability (ELCC);
- Coordinating with the new proceeding on integrated resource planning, mandated by SB 350.
- Considering impacts of transformation of Independent System Operation into regional organization; and
- Considering integrating goals and metrics for reducing the emission of greenhouse gases into RPS procurement processes and evaluation.

²⁰ The May 22, 2015, Scoping Memo can be found at:

<http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=152045579>

²¹ The February 5, 2016, Scoping Memo can be found at:

<http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=158193783>

IV. RECENT AND UPCOMING EVENTS

Timing	Deliverable	Notes
January 2016	Public Teleconference for 33% RPS Integration Cost Adder for Wind and Solar	Discussed SCE's Progress Report on Renewable Integration Cost Study for 33% and 40% RPS filed on December 15, 2015.
February 2016	Start of SB1122 BioMAT Program	Pursuant to D.15-09-004, the IOUs started the first program period for SB 1122 BioMAT, the feed-in tariff program for bioenergy projects.
February 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 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 2016	Ruling on SB 350 Implementation	The Commission issued a ruling to request comments on the implementation of SB 350. Specifically, the ruling requested stakeholder feedback on changes to RPS procurement requirements.
May 2016	RPS Portfolios Ruling	Ruling released with RPS portfolios for 2016 long term procurement and transmission planning cycles.
July 2016	LCBF Ruling	Ruling to initiate reform of least cost best fit (LCBF) methodology used by utilities to evaluate and rank RPS bids.