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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

Order Instituting Rulemaking to Continue Implementation and Administration, and Consider Further Development, of California Renewables Portfolio Standard Program.	)))))	Rulemaking 15-02-020 (Filed February 26, 2015)

SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) 2015 RENEWABLES PORTFOLIO STANDARD PROCUREMENT PLAN

VOLUME 1

PUBLIC VERSION

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August 4, 2015

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

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Pursuant to the Assigned Commissioner's Revised Ruling Identifying Issues and Schedule of Review for 2015 Renewables Portfolio Standard Procurement Plans, dated May 28, 2015, as modified by Administrative Law Judge Mason's June 30, 2015 Email Ruling Revising Schedule for 2015 RPS Procurement Plans, Southern California Edison Company ("SCE") respectfully submits its 2015 Renewables Portfolio Standard ("RPS") Procurement Plan ("2015 RPS Plan") to the California Public Utilities Commission ("Commission" or "CPUC").[1]

SCE's 2015 RPS Plan consists of a 2015 Written Plan and Appendices thereto.[2] The Appendices include:

- Confidential/Public Appendix A - Redline of 2015 Written Plan
- Confidential/Public Appendix B - Project Development Status Update
- Confidential/Public Appendix C.1 - Physical Renewable Net Short Calculations Based on CPUC Assumptions – 33% Goal

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1 SCE is concurrently filing a Motion for Leave to File its Confidential 2015 Renewables Portfolio Standard Procurement Plan Under Seal.

2 SCE worked with Pacific Gas and Electric Company and San Diego Gas & Electric Company to make the format of the utilities' plans as uniform as possible.

- Confidential/Public Appendix C.2 - Physical Renewable Net Short Calculations Based on SCE Assumptions – 33% Goal
- Confidential Appendix C.3 - Optimized Renewable Net Short Calculations Based on CPUC Assumptions – 33% Goal
- Confidential Appendix C.4 - Optimized Renewable Net Short Calculations Based on SCE Assumptions – 33% Goal
- Confidential/Public Appendix C.5 - Physical Renewable Net Short Calculations Based on CPUC Assumptions – 40% Goal
- Confidential/Public Appendix C.6 - Physical Renewable Net Short Calculations Based on SCE Assumptions – 40% Goal
- Confidential Appendix C.7 - Optimized Renewable Net Short Calculations Based on CPUC Assumptions – 40% Goal
- Confidential Appendix C.8 - Optimized Renewable Net Short Calculations Based on SCE Assumptions – 40% Goal
- Confidential/Public Appendix D - Cost Quantification Table
- Public Appendix E - RECs From Expiring Contracts
- Public Appendix F.1 - 2015 Procurement Protocol
- Public Appendix F.2 - Redline of 2015 Procurement Protocol
- Public Appendix G.1 - 2015 *Pro Forma* Renewable Power Purchase Agreement
- Public Appendix G.2 - Redline of 2015 *Pro Forma* Renewable Power Purchase Agreement
- Public Appendix H.1 - 2015 *Pro Forma* Master Renewable Energy Credit Purchase Agreement
- Public Appendix H.2 – Redline of 2015 *Pro Forma* Master Renewable Energy Credit Purchase Agreement

- Public Appendix I.1 - SCE's Least-Cost Best-Fit Methodology
- Public Appendix I.2 - Redline of SCE's Least-Cost Best-Fit Methodology

Respectfully submitted,

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Dated: August 4, 2015

VERIFICATION

I am a Manager in the Regulatory Affairs Organization of Southern California Edison Company and am authorized to make this verification on its behalf. I have read the foregoing SOUTHERN CALIFORNIA EDISON COMPANY'S (U 338-E) 2015 RENEWABLES PORTFOLIO STANDARD PROCUREMENT PLAN. I am informed and believe that the matters stated in the foregoing pleading are true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this **31st day of July, 2015**, at Rosemead, California.

/s/ Kathleen M. Sloan
By: Kathleen M. Sloan

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SOUTHERN CALIFORNIA EDISON

An *EDISON INTERNATIONAL* Company

(U 338-E)

2015 Written Plan

August 4, 2015

PUBLIC VERSION

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I. EXECUTIVE SUMMARY OF 2015 RPS PLAN

In accordance with the Assigned Commissioner's Revised Ruling Identifying Issues and Schedule of Review for 2015 Renewables Portfolio Standard Procurement Plans, dated May 28, 2015 ("ACR"), Southern California Edison Company's ("SCE") 2015 Renewables Portfolio Standard ("RPS") Procurement Plan ("2015 RPS Plan") details SCE's plan for procuring renewable resources to satisfy the State's RPS goals in a manner that minimizes costs and maximizes value for SCE's customers. This 2015 RPS Plan discusses SCE's renewables portfolio, the process SCE uses for forecasting its renewable procurement need, SCE's forecasted renewable procurement position through 2030, SCE's portfolio optimization strategy and management of its renewables portfolio, lessons learned from SCE's experience with renewable procurement, past and future trends, and additional policy and procurement issues. Additionally, SCE explains its plans for achieving California's RPS targets, focusing on SCE's proposal to conduct a 2015 RPS solicitation. SCE's 2015 RPS Plan includes its 2015 Procurement Protocol, 2015 *Pro Forma* Renewable Power Purchase Agreement, 2015 *Pro Forma* Master Renewable Energy Credit Purchase Agreement, a description of SCE's least-cost best-fit ("LCBF") evaluation methodology, and a summary of the important changes from SCE's 2014 RPS solicitation documents.

Further, this 2015 RPS Plan addresses other issues set forth in the ACR, statute, and other Commission decisions. Specifically, SCE's 2015 RPS Plan includes discussion of the following additional topics:

- Consideration of a higher RPS goal;
- Project development status update;
- Potential compliance delays and risks;

- Quantitative information supporting SCE's renewable procurement need;
- Minimum margin of procurement;
- Consideration of price adjustment mechanisms;
- Economic curtailment;
- Expiring contracts;
- Cost quantification tables;
- Imperial Valley issues;
- Safety considerations;
- Standard Contract Option using the streamlined Renewable Auction Mechanism ("RAM") procurement tool;
- Green Tariff Shared Renewables ("GTSR") program; and
- Other RPS planning considerations and issues.

SCE takes the RPS program's regulatory framework into account in planning for renewable procurement in 2015 and beyond. Senate Bill ("SB") 2 (1x), which took effect on December 10, 2011, made significant changes to the RPS program. Most importantly, in addition to increasing the overall target percentage of procurement from renewable resources from 20% to 33%, SB 2 (1x) departed from the prior structure of annual RPS goals and moved to multi-year compliance periods, with interim procurement targets established for each multi-year compliance period. The California Public Utilities Commission ("Commission" or "CPUC") has issued several decisions implementing SB 2 (1x), including Decision ("D.") 11-12-020 setting

RPS procurement quantity requirements,[1] D.11-12-052 implementing the three portfolio content categories of renewable energy products that may be used to satisfy RPS targets,[2] D.12-06-038 establishing new compliance rules for the RPS program, and D.14-12-023 setting enforcement rules for the RPS program. The Commission has not yet established a cost limitation for RPS-related procurement expenditures for each electrical corporation. SCE's renewable procurement planning may change as a result of the Commission's adoption of a procurement expenditure limitation mechanism, implementation of other RPS program rules, or other changes to the RPS program. Moreover, the enactment of new laws and/or the implementation of other programs may affect SCE's RPS procurement planning. For example, the California Legislature is currently considering bills (SB 350 and Assembly Bill ("AB") 645) that would increase the State's RPS goals.[3]

Through SCE's analysis of its renewable procurement need, as discussed herein, SCE has determined that it has a long-term need for renewable energy. In this 2015 RPS Plan, SCE

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1 As implemented by the Commission in D.11-12-020, the RPS procurement quantity requirements applicable to all retail sellers are as follows: (1) 20% of overall retail sales for the first compliance period from 2011-2013; (2) 21.7% of 2014 retail sales, plus 23.3% of 2015 retail sales, plus 25% of 2016 retail sales for the second compliance period from 2014-2016; (3) 27% of 2017 retail sales, plus 29% of 2018 retail sales, plus 31% of 2019 retail sales, plus 33% of 2020 retail sales for the third compliance period from 2017-2020; and (4) 33% of retail sales in each year thereafter.

2 The first portfolio content category ("Category 1") includes products from renewable generators with a first point of interconnection to the Western Electric Coordinating Council ("WECC") transmission system within the boundaries of a California Balancing Authority Area ("CBA"), or with a first point of interconnection with the electricity distribution system used to serve end users within the boundaries of a CBA, or where the renewable generation is dynamically transferred to a CBA, or scheduled into a CBA on an hourly basis without substituting electricity from another source. The second portfolio content category ("Category 2") includes firmed and shaped products. The third portfolio content category ("Category 3") includes all other renewable electricity products, including unbundled renewable energy credits ("RECs"). Retail sellers are subject to a minimum portfolio content category target (varying by compliance period) for Category 1 products and a maximum portfolio content category target (varying by compliance period) for Category 3 products. The remainder may be satisfied by Category 2 products.

3 As discussed in Section II, the ACR also directs retail sellers to include consideration of a higher RPS goal in their 2015 RPS Procurement Plans.

proposes to conduct a targeted 2015 RPS solicitation that meets SCE's need for renewable resources. Similar to SCE's 2014 solicitation process, SCE proposes a solicitation process that is intended to capitalize on the maturing renewables market and target the most viable proposals that fit SCE's portfolio need and provide the most value to customers. In particular, SCE will continue to require that projects have a Phase II Interconnection Study (or an equivalent or more advanced interconnection status or exemption) and an "application deemed complete" (or equivalent) status within the applicable land use entitlement process in order to submit a proposal. SCE will also solicit Category 1, Category 2, and Category 3 unbundled REC products in order to minimize costs to its customers. Furthermore, SCE will only consider proposals from projects with initial delivery dates to SCE of December 1, 2020 or earlier.

II. CONSIDERATION OF A HIGHER RPS GOAL

The ACR requires that retail sellers' 2015 RPS Procurement Plans consider both the current 33% by 2020 RPS goal and a 40% by 2024 RPS goal when addressing Specific Requirements for 2015 RPS Procurement Plans.[4] This 2015 RPS Plan considers these two different RPS goals throughout. Except where otherwise indicated, SCE's responses are the same for the two different goals.

SCE supports the Governor's 2030 climate vision for California to reduce greenhouse gas ("GHG") emissions while maintaining or enhancing safe, reliable, and affordable electric service. SCE recognizes that moving towards the State's long-term GHG emissions goals will require significant investment in additional renewable energy, energy efficiency, and transportation electrification, as well as other measures such as strategic expansion of distributed generation and development of strategies to integrate renewables. Accordingly, SCE supports a

[4] *See* ACR at 5.

comprehensive framework that advances statewide GHG emissions reductions from a combination of these actions.[5] This comprehensive framework should cost-effectively deliver additional GHG emissions reductions, while also encouraging electric sector support and contributions to GHG emissions reductions in other sectors (e.g., transportation) and providing load-serving entities with the flexibility to optimize their portfolio of GHG emissions reduction opportunities for their customers.

While the procurement of renewable energy through the RPS program is an important part of a comprehensive framework that advances statewide GHG emissions reductions, it is premature for the Commission to adopt any RPS target beyond the current 33% by 2020 goal as part of the 2015 RPS Procurement Plan process. The California Legislature is currently examining whether to increase the statewide RPS goal and the role of additional renewables in the State's GHG emissions reduction efforts. Two active bills in the 2015 legislative session, SB 350 and AB 645, propose raising the current 33% RPS goal to 50% by 2030. Increasing the current RPS goal raises challenges associated with renewable integration that have potentially considerable cost implications which must be carefully considered. There are also significant questions regarding how an RPS program with a higher overall goal should be structured to ensure it is workable and effective. Many of these questions will likely be affected or informed if either proposed bill becomes law. The Commission should defer further consideration of an RPS procurement goal beyond 33% until after the Legislature and the Governor finish their examination of these issues.

Most importantly, a Commission decision implementing a higher RPS goal at this juncture could conflict with future legislation, creating challenges in implementation and

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5 *See, e.g.,* Opening Comments of Southern California Edison Company (U 338-E) on Nine-Point Implementation Plan, Rulemaking ("R.") 13-12-010, at 2-4 (January 12, 2015).

uncertainty regarding which program rules govern which goal. Moreover, any increased RPS goal adopted by the Commission would necessarily apply only to retail sellers, thus resulting in unequal rules for retail sellers and local publicly owned electric utilities that are also subject to the RPS program. In order to ensure fairness, make certain that the State's efforts to support renewables are truly statewide, and avoid efforts that may ultimately be inconsistent with future law, the RPS program should have the same goals and rules for all load-serving entities serving California customers. In addition, as discussed below, changes to the current RPS program rules are needed to implement an achievable and cost-effective RPS program with a higher goal. These changes require legislative action. SCE also notes that all load-serving entities can and should take action to make sure they are well positioned through their renewable procurement to meet the State's goals and anticipate actions needed to meet changing requirements without direct action of the Commission.

For any consideration of a higher RPS goal, SCE offers the following policy considerations. It is important to make these changes in order to create a successful RPS program that will provide all load-serving entities with adequate flexibility to meet increased RPS goals and manage operational issues associated with additional renewable generation on the system, while also minimizing costs for their customers.

Renewable Distributed Generation: The current RPS program rules allow renewable distributed generation ("DG") systems to qualify as RPS-eligible resources and count towards RPS program targets if they meet all RPS eligibility and tracking requirements as set forth by the Commission and the California Energy Commission ("CEC"). While, in concept, RECs from renewable DG could be eligible to count towards RPS goals, administrative and economic hurdles prevent this from being the case in practice. As California potentially moves towards a higher RPS goal, it is important that all renewable generation, including generation from renewable DG, is accounted for in the State's RPS portfolio.

The main hurdles to counting these RECs towards California's RPS goals are the rules put in place by various agencies. For instance, expensive Western Renewable Energy Generation Information System ("WREGIS") metering and tracking requirements are an unnecessary barrier to counting renewable DG towards RPS targets.[6] WREGIS requires revenue-quality meters to be installed in order to create WREGIS certificates.[7] These meters can cost hundreds of dollars for individual customers to install. The costs of installing these expensive meters and going through many administrative processes are much higher than the value of the RECs from most customers' renewable DG systems, which can be less than $10 in a year. These barriers should be removed and clarified, allowing energy from renewable DG to easily count towards the State's RPS goals. This policy change is best handled through legislation, as a regulatory solution would have to be coordinated across many agencies, would take a considerable amount of time and effort, and may not lead to a viable solution.

Banking Short-Term Products: The current RPS program's compliance framework prohibits banking short-term products associated with contracts of less than 10 years in duration.[8] Said differently, if a load-serving entity's retired RECs exceed its RPS procurement quantity

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6 *See, e.g.*, CEC Renewables Portfolio Standard Eligibility Guidebook, Eighth Edition, CEC-300-2015-001-ED8-CMF, at 24-25, 30 (June 2015) ("A facility shall be registered in WREGIS before the Energy Commission will accept an application for certification. . . . A certified facility must remain registered in WREGIS and comply with all WREGIS rules, and all generation must be tracked in WREGIS to be considered RPS-eligible, with the limited exceptions noted in Section III.A.1.a: Creation of Retroactive Renewable Energy Credits in WREGIS.") ("Generation from a certified facility serving onsite load may be claimed for use in the RPS if all eligibility requirements are met and the generation serving onsite load is metered independently from any station service loads using a meter with a verified accuracy rating of 2 percent or higher.").

7 *See* WECC WREGIS Operating Rules, Rules 9.1 and 9.3 (July 15, 2013).

8 *See* Cal. Pub. Util. Code § 399.13(a)(4)(B).

requirement for a compliance period, all RECs from short-term products above the procurement quantity requirement will be deducted from the load-serving entity's bank. The short-term Category 1, 2, and/or 3 RECs that are in excess of the load-serving entity's procurement quantity requirement are not used for RPS compliance and essentially disappear. This rule harms the customers of load-serving entities that wish to go above and beyond current RPS targets. Customers of these load-serving entities lose the value of RECs that cannot be banked, and ultimately pay higher costs for renewables because these load-serving entities cannot fully utilize lower cost products that are typically sold on a short-term basis.

It is not in the best interests of the State, the Commission, or the renewables market as a whole to create a disincentive for load-serving entities to procure renewable energy beyond their RPS goals for a compliance period. Moreover, a megawatt-hour of renewable energy is still energy generated by a clean renewable resource regardless of whether the underlying contract for such resource meets an artificial threshold for the length of contract. As such, a legislative change is needed that would allow load-serving entities to bank excess short-term products. This would allow all load-serving entities to have access to cost-competitive short-term products in order to reduce costs to their customers. It would also eliminate a disincentive for load-serving entities to exceed RPS targets.

RPS Compliance Period Targets: The active 50% RPS bills being considered in the 2015 legislative session each have proposed different compliance period trajectories to 50% RPS by 2030.[9] When considering RPS targets for each compliance period, lawmakers should establish targets with the intention of reducing costs to customers and providing reasonable flexibility to load-serving entities with respect to contracting and compliance timelines. SCE

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9 SB 350 currently proposes a trajectory of 40% by 2024, 45% by 2027, and 50% by 2030. AB 645 currently proposes a trajectory of 38% by 2023, 44% by 2026, and 50% by 2030.

provides the following recommended trajectory in an effort to establish a least-cost and timely path to 50% RPS by 2030: 38% by 2023, 43% by 2026, and 50% by 2030. This trajectory repeats the three-, three-, and four-year compliance periods of the current 33% RPS program.

The trajectories for each compliance period should be established through legislation. Current law states that the RPS program reverts to annual targets after 2020.[10] Moreover, the higher RPS targets included in the ACR are annual targets for 2021, 2022, 2023, and 2024.[11] One of the significant benefits of the 33% RPS program was moving away from annual targets towards multi-year compliance periods. It would be a significant drawback for retail sellers under the Commission's jurisdiction to have to meet RPS targets each year, rather than in multi-year compliance periods. Multi-year compliance periods allow retail sellers to better plan for variability in retail sales and renewable generation, as well as to more effectively account for the risk of project failure. Multi-year compliance periods also reduce costs for customers because retail sellers can carry a lower average bank to account for potential risks and ensure compliance when an RPS target covers several years than when the target only covers one year. Further, as noted above, establishing higher annual RPS goals for retail sellers for 2021 through 2024 through Commission action will create unequal rules between retail sellers and local publicly owned electric utilities since local publicly owned electric utilities would not be subject to any Commission targets.

While this is a simple distinction between increasing the RPS goals through regulatory versus legislative action, establishing a reasonable RPS target trajectory with multi-year compliance periods is very important to achieving higher RPS goals while minimizing costs to

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10 *See* Cal. Pub. Util. Code §§ 399.15(b)(2)(B)-(C).
11 *See* ACR at 5.

customers. For this reason alone, the Commission should wait for legislative action before raising the RPS targets.

Tools to Manage Operational Issues: An increase in California's RPS goal from 33% to 40% or 50% would result in more intermittent resources on the grid and increased deliveries from RPS-eligible resources, likely resulting in an increase in the amount of curtailment of renewable output due to more instances of over-generation. This raises operational concerns regarding the integration of renewable resources. It also affects load-serving entities' ability to comply with the higher RPS targets and the cost of the RPS program to customers.

Currently, customers are paying a premium for curtailed, otherwise RPS-eligible energy that they are unable to count towards RPS targets. For example, in instances when a renewable project is curtailed due to economics (i.e., negative market prices), SCE customers may pay the generator the full price for curtailed energy, but are unable to count that energy toward RPS goals. In other instances, for example when the California Independent System Operator ("CAISO") orders a curtailment due to congestion or over-generation, SCE customers do not pay the generator for curtailed energy, but SCE is similarly unable to count the curtailed energy toward RPS goals. Both scenarios may result in SCE customers paying additional costs for RPS-eligible replacement energy. However, curtailing RPS-eligible energy may still be required to address system issues or avoid paying even higher costs through negative pricing. This issue may be exacerbated as the State's RPS targets increase.

To provide load-serving entities with the tools to address this operational issue, SCE recommends that curtailed energy paid for by a load-serving entity be eligible to count towards RPS targets on or after January 1, 2021. Allowing load-serving entities to count curtailed energy towards the RPS would avoid the scenario in which load-serving entities purchase renewable energy in great excess of their targets in order to account for curtailed energy, resulting in unnecessary cost increases to customers and possibly operational problems with more over-generation on the system. This change to the RPS program would require legislative action.

Equal Rules: The current 33% RPS Program has been inconsistently applied to different types of load-serving entities. For instance, the three large investor-owned utilities ("IOUs") are required to offer feed-in tariffs, such as the Renewable Market Adjusting Tariff ("ReMAT") and the Bioenergy Market Adjusting Tariff ("BioMAT"), and have also been required to conduct additional procurement of renewable resources sized 20 megawatts ("MW") and under through RAM auctions. These programs are not required for other retail sellers. The IOUs' customers pay higher prices in these mandated procurement programs, while customers of non-participating retail sellers are not subject to these same costs. All retail sellers should be required to participate in all programs that contribute to the RPS program. Because many of these procurement programs are required by legislation, it would be appropriate for legislative language to be amended and clarified to promote equal rules, prior to the Commission moving forward with consideration of any RPS procurement target beyond 33%.

III. ASSESSMENT OF RPS PORTFOLIO SUPPLIES AND DEMAND

A. SCE's Renewables Portfolio

For the first compliance period from 2011 through 2013, SCE served 20.7% of its retail sales from RPS-eligible resources.[12] In 2014, SCE served 23.4% of its retail sales from RPS-eligible resources. To date, SCE's RPS-eligible deliveries and executed renewable procurement contracts have resulted from SCE's RPS solicitations, SCE's Renewables Standard Contract program, the AB 1969 feed-in tariffs, RAM auctions, ReMAT, the utility-owned

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12 SCE retired RECs amounting to 20.6% of its retail sales for the first compliance period.

generation and independent power producer ("IPP") portions of SCE's Solar Photovoltaic Program ("SPVP"), qualifying facility ("QF") contracts, utility-owned small hydro projects, and bilateral opportunities.

Between January 2014 and June 2015, SCE executed 21 RAM contracts for approximately 331 MW, 11 ReMAT contracts for approximately 23 MW, 39 SPVP IPP contracts for approximately 63 MW, and two QF standard offer contracts for approximately 18 MW.[13] During this period, SCE also executed eight contracts for approximately 1,556 MW from its 2013 RPS solicitation.

SCE launched its 2014 RPS solicitation on December 8, 2014. In March 2015, SCE shortlisted [redacted] SCE has executed nine contracts from its 2014 RPS solicitation totaling approximately 680 MW. SCE expects to execute additional contracts from its 2014 solicitation.

B. SCE's Forecast of Renewable Procurement Need

SCE determines its expected renewable procurement need by comparing its forecasted RPS targets to its forecasted energy deliveries from contracted projects. The forecasted energy deliveries include SCE's probabilistic risk-adjusted forecast of generation from contracted projects that are not yet online. SCE also considers generation from pre-approved procurement programs (i.e., RAM, ReMAT, and SPVP), among other factors.[14]

Appendices C.1 through C.4 include SCE's forecast of its renewable procurement position and need – i.e., SCE's renewable net short ("RNS") – based on the RPS program's 33%

13 Of these, two of the RAM contracts totaling 38 MW, one of the ReMAT contracts totaling 0.5 MW, and four of the SPVP IPP contracts for 5 MW subsequently terminated. This information is up to date as of June 30, 2015.

14 SCE has not yet included generation from BioMAT since the program has not yet been implemented.

by 2020 target. As provided in the ACR, Appendices C.5 through C.8 include SCE's forecast of its RNS based on the 40% by 2024 target set forth in the ACR. Both sets of forecasts include the RPS targets adopted by the Commission in D.11-12-020 for all years through 2020. The difference between the two sets of forecasts are the targets for 2022 through 2030. In accordance with the current rules of the RPS program, Appendices C.1 through C.4 include a 33% target for all years after 2020. Pursuant to the ACR, Appendices C.5 through C.8 include a 33% target for 2021, a 37% target for 2022 and 2023, and a 40% target for 2024 and all subsequent years.

These Appendices use the standardized reporting template included in the Administrative Law Judge's Ruling on Renewable Net Short, R.11-05-005, dated May 21, 2014 ("RNS Ruling").[15] As required in the Revised Energy Division Staff Methodology for Calculating the Renewable Net Short ("Revised RNS Methodology") attached to the RNS Ruling, Appendices C.1, C.2, C.5, and C.6 include physical RNS calculations. Moreover, Appendices C.3, C.4, C.7, and C.8 include optimized RNS calculations.[16] Appendices C.1, C.3, C.5, and C.7 include physical and optimized RNS calculations using all required assumptions for the Commission's Revised RNS Methodology. Appendices C.2, C.4, C.6, and C.8 include physical and optimized RNS calculations using SCE's assumptions. More information regarding Appendices C.1 through C.8 and responses to the RNS questions set forth in the RNS Ruling are included in Section VII.

All forecasts include projects under contract[17] and assume contracted projects that are currently online will deliver 100% of their expected amount of renewable energy. All forecasts

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[15] SCE's forecasts only extend through 2030; therefore, SCE's forecast RNS information is only included through 2030.

[16] The required information on RECs from expiring contracts is included in Appendix E.

[17] SCE's forecasts include four of the nine recently executed contracts from SCE's 2014 RPS solicitation.

also include generation from pre-approved procurement programs (i.e., RAM, ReMAT, and SPVP) at a 100% success rate before contracts are signed.[18] Additionally, all forecasts incorporate current expected online dates for all projects that are not yet online. As indicated above, SCE is still in the process of completing its 2014 RPS solicitation. SCE will update its RNS to reflect additional 2014 RPS solicitation contracts in subsequent versions of its 2015 RPS Plan.

Furthermore, all forecasts account for potential issues that could delay RPS compliance, project development status, minimum margin of procurement, and other potential risks through the use of SCE's probabilistic risk-adjusted success rates for energy deliveries from contracted projects that are not yet online. These probabilistic risk-adjusted success rates are intended to reflect a number of dynamic factors and are periodically adjusted based on new information. The forecasts include individual project-specific, risk-adjusted success rates for large, near-term projects and a flat 60% success rate for the remaining projects, which is based on these projects' overall weighted average success rate. The overall probabilistic risk-adjusted success rate for energy deliveries from SCE's portfolio of contracts with projects that are not yet online varies from around 80% for the second compliance period to approximately 65% in the third compliance period and approximately 62% thereafter.

The difference between the RNS forecasts using SCE's assumptions, as reflected in Appendices C.2, C.4, C.6, and C.8, and the Commission's assumptions, as reflected in Appendices C.1, C.3, C.5, and C.7, is that SCE uses its most recent bundled retail sales forecast for all years while the Commission's assumptions use SCE's most recent bundled retail sales forecast for 2015 through 2019 and 2025 through 2030, and the standardized planning

[18] After contracts from such programs are signed, they are risk adjusted in the same manner as other projects with executed contracts that are not yet online.

assumptions that were used in the 2014 Long-term Procurement Plan ("LTPP") for 2020 through 2024.[19] SCE uses its own bundled retail sales forecast for renewable procurement planning because it is SCE's best forecast of bundled retail sales.

As shown in Appendices C.1 through C.8, SCE's procurement quantity requirement for the first compliance period was approximately 44.8 billion kilowatt-hours ("kWh") and its RPS-eligible procurement was about 46.4 billion kWh, for a net long position of around 1.6 billion kWh.

Appendices C.1 through C.8 also demonstrate that, using either SCE's or the Commission's assumptions, SCE forecasts a procurement quantity requirement for the second compliance period of approximately [redacted] kWh and RPS-eligible procurement of about 55.5 billion kWh, for a net long position of around [redacted] kWh.

Using SCE's assumptions as set forth in Appendices C.2, C.4, C.6, and C.8, SCE forecasts a procurement quantity requirement of approximately [redacted] kWh and RPS-eligible procurement of about 82.7 billion kWh for the third compliance period, for a net short position of around [redacted] kWh without the use of bank and approximately [redacted] kWh with the use of bank (as shown in Appendices C.4 and C.8).

Using the Commission's assumptions as set forth in Appendices C.1, C.3, C.5, and C.7, SCE forecasts a net short position for the third compliance period of approximately [redacted] kWh without the use of bank and about [redacted] kWh with the use of bank (as shown in Appendices C.3 and C.7).

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19 The Revised RNS Methodology states that retail sellers can use their own forecasts for bundled retail sales for the first five years and should use the LTPP standardized planning assumptions thereafter. *See* RNS Ruling, Attachment A at 25. In Appendices C.1, C.3, C.5, and C.7, SCE uses its own bundled retail sales forecast for 2025 through 2030 because there is no LTPP forecast for those years.

SCE forecasts a net short position for 2021 and beyond under both SCE's assumptions and the Commission's assumptions. Under current 33% RPS program rules, SCE forecasts a net short position of approximately 4.7 billion kWh for 2024 using SCE's assumptions (as shown in Appendices C.2 and C.4), and a net short position of approximately 4.9 billion kWh using the Commission's assumptions (as shown in Appendices C.1 and C.3). Accordingly, SCE does not have a short-term renewable procurement need, but it does anticipate a longer term need for additional RPS-eligible energy in the third compliance period and beyond.

As explained in Section II, it is premature for the Commission to adopt any RPS target beyond the current 33% by 2020 goal as part of the 2015 RPS Procurement Plan process. Considering the 40% by 2024 target as required in the ACR, SCE forecasts a net short position of approximately 10.0 billion kWh for 2024 using SCE's assumptions (as shown in Appendices C.6 and C.8), and a net short position of approximately 10.3 billion kWh using the Commission's assumptions (as shown in Appendices C.5 and C.7).

C. SCE's Plan for Achieving RPS Procurement Goals

Through its 2015-2016 RPS procurement activities, SCE intends to contract for renewable energy that will help achieve the State's RPS goals. SCE's 2015-2016 RPS procurement activities will take into account: (1) the renewable energy procured through SCE's prior RPS solicitations, including the 2014 RPS solicitation, and other procurement mechanisms, (2) probabilistic risk adjustment of expected generation from executed contracts with projects that are not yet online, and (3) future RPS solicitations and other procurement mechanisms that are expected to take place, including any increased renewable targets which are adopted between now and when SCE selects a 2015 RPS solicitation shortlist. Generally, for 2015, SCE will seek resources to augment those already under contract to fulfill its need in the third compliance period and beyond.

SCE plans to launch a 2015 RPS solicitation for long-term Category 1, Category 2, and Category 3 unbundled REC products. SCE will only consider proposals from projects with initial delivery dates to SCE of December 1, 2020 or earlier. This is consistent with SCE's renewable procurement need in the third compliance period and future years. Requiring initial delivery dates to occur by 2020 increases the certainty of those projects meeting SCE's need in the third compliance period and beyond. As in the 2014 RPS solicitation, in order to fill its longer term need, SCE intends to be flexible in its contracting in the 2015 solicitation. For example, SCE may contract with a seller for energy deliveries beginning in 2018 or later but will provide the opportunity for sellers to sell power directly to the market or to a third party until the delivery term begins under the contract with SCE.

All of the procurement in SCE's current renewables portfolio is from contracts executed prior to June 1, 2010 or contracts for Category 1 products. SCE forecasts that it will meet its RPS targets primarily through long-term Category 1 products because they provide the most flexibility for SCE's customers. In addition to long-term Category 1 products, SCE will solicit long-term Category 2 and Category 3 unbundled REC products in the 2015 RPS solicitation in order to minimize costs to its customers and gain information on the market for each portfolio content category. Additionally, as discussed in Section XIX.B, SCE may conduct a Request for Information ("RFI"), another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products to realize potential cost savings for customers and obtain additional information on the market for short-term products.

SCE considers its position in the third compliance period and beyond in light of how long it takes to bring new projects online, SCE's forecasted position, and how many solicitations SCE anticipates being able to complete in order to meet SCE's compliance requirements. SCE then makes a pro rata allocation of SCE's need over the remaining anticipated solicitations. Additionally, SCE generally executes contracts for deliveries in excess of its renewable procurement need to account for the risk of project failure and other relevant risks. This pro rata strategy allows SCE to adjust to changes in the RPS program, including the potential for increased RPS targets, and to respond to changes in load forecasts and/or expected generation from operating and previously contracted renewable resources. If the State's RPS goals were to increase beyond 33% in the future, SCE has several anticipated future solicitations to meet that need.

SCE determines its need for resources with specific deliverability characteristics (such as peaking, dispatchable, baseload, firm, and as-available) through its LCBF analysis. SCE uses its LCBF methodology to compare project profiles, including duration of term, location, technology, online date, viability, deliverability, and price, to estimate the value of each project to SCE's customers and its relative value in comparison to other proposals using both quantitative and qualitative factors. SCE also considers resource diversity with respect to proposals featuring differing technologies, generation profiles, and fuel sources, and performs a qualitative appraisal of the various benefits and drawbacks of projects when considering over-generation and the duck curve. This process ensures that the projects that provide the most value align with SCE's procurement needs. SCE's LCBF approach is described in more detail in Section IX.B and Appendix I.1.

In addition to RPS solicitations, SCE will continue to utilize a variety of other procurement options to help meet the State's RPS targets including the Standard Contract Option using the streamlined RAM procurement tool (discussed in Section XVII),[20] ReMAT, BioMAT, SPVP (until the sunset of that program), local capacity requirements solicitations, QF standard contracts, and bilateral negotiations for competitive renewable energy products.

While SCE does not currently intend to sell bundled renewable energy, unbundled RECs, or other renewable energy products in the 2015 RPS solicitation, SCE may conduct a future solicitation or negotiate bilaterally to sell such products to maximize value to its customers and optimize its portfolio.

D. <u>SCE's Portfolio Optimization Strategy</u>

The objective of SCE's renewables portfolio optimization strategy is to minimize costs to its customers while ensuring that RPS goals are met or exceeded. The first step in SCE's portfolio optimization strategy is developing a forecast of SCE's renewable procurement position and need, i.e., SCE's RNS. This includes a calculation of SCE's net position and SCE's bank. SCE carefully evaluates its renewable procurement need by assessing bundled retail sales, the performance and variability of existing generation, the likelihood new generation will achieve commercial operation, expected online dates, technology mix, expected curtailment, and the impact of pre-approved procurement programs, among other factors. Annual variability of existing resources can either increase or decrease SCE's need and bank from year-to-year. However, over longer periods of time, SCE expects generation levels to be relatively consistent.

If SCE's renewable need assessment results in a short position, SCE will hold an RPS solicitation if other procurement programs and mechanisms will not fill that position. SCE uses

[20] Additionally, SCE launched its last RAM auction, RAM 6, on July 10, 2015.

its LCBF methodology to evaluate renewable procurement opportunities as further described in Section IX.B and Appendix I.1. The primary quantitative metric used for evaluating bundled renewable energy is Net Market Value ("NMV"). SCE also relies on a number of qualitative factors such as resource diversity and transmission area, among other factors, when evaluating proposals.

If SCE's need assessment results in a long position or it would otherwise optimize SCE's renewables portfolio or maximize value to its customers, SCE may use sales of renewable energy products,[21] project deferrals, and solicitation deferrals (as it did by not holding a 2012 RPS solicitation) in order to move its renewable procurement back in line with its forecasted renewable procurement need. Additionally, SCE actively administers its renewable procurement contracts.[22]

When SCE considers whether to engage in sales of renewable energy products, SCE compares the NMV for the sales transaction against the NMV of proposals submitted to SCE in recent solicitations and other offers. If the NMV for long-term renewable procurement is lower than the NMV for the sales transaction, it would be more cost effective for SCE to maintain its existing RPS bank for future compliance periods.[23] Conversely, if the NMV from recent solicitations is higher than the NMV for the sales transaction, SCE has an opportunity to optimize its renewables portfolio and realize value for its customers by selling renewable energy products.

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21 SCE procures renewable energy in compliance with the preferred loading order and when it expects to have a renewable procurement need. SCE does not purchase RPS-eligible energy for the express purpose of selling it at a later date.

22 Contract amendments have the potential to decrease contract prices or provide other benefits to customers.

23 SCE also considers statutory and regulatory restrictions on banking of excess procurement.

In addition to the NMV considerations discussed above, SCE evaluates various potential risks when determining its renewables portfolio optimization strategy, including the risk of not meeting its RPS targets. When SCE has a long position in the near and intermediate term, SCE evaluates whether a sale of renewable energy products is appropriate. This evaluation includes a calculation of SCE's renewable procurement position and RPS bank with a set of adverse assumptions. These assumptions include, but are not limited to, lower performance of existing resources than expected, lower risk-adjusted project success rates for contracted generation that is not yet online, and higher levels of curtailment than expected. SCE assesses its renewable procurement position with such adverse assumptions to ensure that, even in the worst case scenario, SCE would still expect to meet its RPS targets after making the sale. SCE's overall approach appropriately balances the risks and costs of selling renewable energy products with the risks and costs of maintaining an RPS bank.

Finally, SCE continues to analyze the effects of procurement of RPS-eligible resources on other procurement programs in order to consider portfolio impacts. The Commission and the CAISO debated flexibility requirements in the Resource Adequacy ("RA") proceeding to help manage the intermittency created on the grid by certain renewable resources. The CAISO launched a stakeholder process to discuss new obligations for flexible capacity and how flexibility requirements will be allocated to load-serving entities. The adopted proposal for allocating flexibility requirements directly allocates the identified requirements based on the amount of intermittent generation contracted by the load-serving entity. This creates a direct link between RPS procurement and flexibility requirements as the amount of wind and solar resources in the portfolio impacts the magnitude of the flexibility requirement allocated to the load-serving entity. A portfolio-wide optimization strategy will need to assess the composition of SCE's renewables portfolio, as resources such as geothermal and other baseload resources may potentially reduce flexibility requirements.

E. <u>SCE's Management of its Renewables Portfolio</u>

After SCE executes an RPS power purchase agreement ("PPA"), the PPA is managed by the Energy Contracts Contract Management group. Many projects require some form of PPA modification to attain commercial operation. Modifications include, but are not limited to, specific provisions to aid the seller in reducing the overall costs of the project, ability to true-up milestones and timelines outlined in the PPA as interconnection and permitting information is updated, and other miscellaneous changes to allow the project to move forward. Generally, projects require very few PPA modifications after attaining commercial operation.

In evaluating modifications or amendments to a PPA, SCE applies guidance from D.88-10-032. Although D.88-10-032 was enacted as a set of guidelines for the administration of QF contracts, SCE has been using it when administering all forms of PPAs. At a high level, D.88-10-032 gave the IOUs the option to determine whether to enter into an amendment with any counterparty.[24] In the event an amendment is elected, the IOU should negotiate in good faith.[25] D.88-10-032 also provides that in response to requests for contract modifications, an IOU is to seek concessions that are commensurate with the change being sought.[26] The details of D.88-10-032 provide further guidance to the IOUs to restrict modifications to PPAs with viable projects,[27] and reject modifications that would result in creating an essentially new project.[28]

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24 *See* D.88-10-032 at 16.
25 *See id*. at Conclusion of Law 8.
26 *See id.* at 16, Conclusion of Law 13-14.
27 *See id*. at 17, Conclusion of Law 4, Appendix A at 4-5
28 *See id*. at 26, Conclusion of Law 17.

As appropriate, SCE also considers the standards of review for PPA amendments set forth in D.14-11-042, including assessment of SCE's renewable procurement need, NMV, contract price, project viability, consistency with Commission decisions, and required updated information.[29]

SCE seeks approval by the Commission of all PPA modifications either through its annual Energy Resource Recovery Account application or through advice letters or applications, depending on the type of PPA and nature of the amendment, and based on guidance from Commission decisions regarding specific modifications to PPAs.[30]

F. <u>Lessons Learned, Past and Future Trends, and Additional Policy/Procurement Issues</u>

1. <u>Lessons Learned and Past and Future Trends</u>

SCE's overall experience in renewable contracting has enabled SCE to negotiate successfully with a variety of counterparties on a diverse array of projects. SCE is committed to recognizing the unique characteristics of each situation and working towards balanced and mutually acceptable agreements. To this end, SCE continues to refine both its RPS solicitation process and its *pro forma* PPA as a result of lessons learned from SCE's extensive experience in contracting for renewable resources. Over the course of the last several years, SCE has also incorporated or accounted for several trends in its renewable procurement planning and solicitation process. SCE discusses several of its important lessons learned and significant past and future trends below. Additionally, as SCE has noted in past RPS Procurement Plans, more stringent eligibility requirements, such as the requirement that projects have a Phase II

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29 *See* D.14-11-042 at 80-82. The standards of review do not apply to amendments that are minor or non-material. *See id.* at 80.

30 For example, the Commission has indicated specific IOU actions regarding amendments to certain terms in tariff-based agreements.

Interconnection Study (or an equivalent or more advanced interconnection status or exemption) and an "application deemed complete" (or equivalent) status within the applicable land use entitlement process in order to submit a proposal, have resulted in higher viability project proposals. SCE intends to continue these requirements in the 2015 RPS solicitation.

a) Elimination of Pre-Paid Economic Curtailment Bidding

In the 2014 RPS solicitation, SCE required sellers to submit two prices per proposal based on SCE discretionary curtailment orders:

- Price 1: Sellers offer pricing based on SCE having the right to issue unpaid Curtailment Orders[31] for a quantity of curtailed energy equal to 50 hours times the contract capacity in each term year (the "curtailment cap"). Any Curtailment Order resulting in curtailed energy in excess of the curtailment cap would be paid at the contract price.
- Price 2: Sellers offer pricing based on SCE having to pay the contract price for all Curtailment Orders.

While SCE did select some Price 1 option proposals in its 2014 RPS solicitation, the data SCE received on Price 1-type projects indicates that pre-payment for economic curtailment may not provide the best value to SCE's customers. As market dynamics continue to change and an increasing amount of intermittent resources integrate into the grid, SCE continues to assess how best to maximize the value of economic curtailment provisions in existing PPAs. With respect to existing PPAs that allow SCE to curtail without payment up to the curtailment cap, SCE has been using and will continue to use this provision. However, SCE's experience to date suggests

[31] Curtailment Order was defined in Section 3.12(g)(iii) of SCE's 2014 *Pro Forma* Renewable Power Purchase and Sale Agreement.

that the added administrative burden and operational complexity associated with intra-month (and even intra-day) tracking of economically curtailed energy, and the potential need to modify bidding strategies once the curtailment cap is reached, may not justify any perceived benefit of "unpaid" economic curtailments. This is compounded by the likelihood that rational sellers have "priced in" the cost of these curtailments. Therefore, the curtailment cap represents pre-paid economic curtailment, not true unpaid economic curtailment. Also, with respect to the 2014 RPS solicitation, in many instances pre-payment of economic curtailment did not appear to be the best economic decision.

Given the uncertain value pre-payment of economic curtailment represents, SCE will not require sellers to bid the pre-paid economic curtailment option with the curtailment cap in the 2015 RPS solicitation. By doing so, SCE will continue to evaluate how to simplify operational and administrative processes while still retaining the flexibility to manage customer exposure to negative prices both day-ahead and in real-time.

SCE will retain the right to curtail at its discretion, but will pay sellers for curtailments directly resulting from SCE marketing decisions. As in prior years, SCE will not pay for curtailments in response to emergencies, or due to CAISO or transmission provider instructions.

b) <u>Valuation of Transmission Costs for Projects Located Within and Outside the CAISO Control Area</u>

In past RPS solicitations, SCE included the full reimbursable transmission network upgrade costs in the quantitative valuation process for projects directly connected to the CAISO control area. Additionally, SCE included reimbursable transmission network upgrade costs outside the CAISO as a qualitative factor in the LCBF evaluation process for projects not directly connected to the CAISO control area, but where California customers will pay for the costs. SCE took the approach of evaluating the total cost of new build renewable projects from a societal perspective, thereby factoring in 100% of the reimbursable transmission network upgrade costs for any new project located within California or directly connected to the CAISO control area via a CAISO interconnection study. However, other utilities in California have not been factoring in costs from the perspective of all California customers; instead, they have only been valuing reimbursable transmission network upgrade costs relative to their own customers. This could put SCE's customers at a disadvantage because other utilities may be executing renewable contracts for lower contract prices than SCE because the reimbursable transmission network upgrade costs that are not paid by those utilities' customers were not considered in the valuation of the contracts, while SCE was considering costs not paid by its customers in its valuation.

Therefore, for the 2015 RPS solicitation, SCE will only consider reimbursable transmission network upgrade costs for projects directly interconnecting to the CAISO control area in the LCBF evaluation process. In addition, SCE will only consider the share of the reimbursable transmission network upgrade costs that are paid by SCE customers.

c) **<u>Limiting Sellers to Eight Proposals Per Project</u>**

Historically, SCE has not limited the amount of proposals sellers could bid for the same project. As a result, sellers could submit an unlimited amount of proposals in multiple ways. In the 2014 RPS solicitation, some sellers offered the same project in more than 20 variations, which increased the complexity of the complete and conforming verification process and introduced challenges for SCE and the sellers to determine mutual exclusivity. In the 2015 RPS solicitation, SCE will limit the number of proposals submitted on a "per project" basis to eight.

Limiting sellers to eight proposals from the same project provides sellers with adequate opportunity to submit proposals with variables that are specific to those projects and will provide SCE a robust pool of projects and proposals to select. The eight proposals will provide sellers the opportunity to meet the minimum bid requirement of a 10-year term, start dates in each of the term years, different contract capacity bids (project sizes), or other seller-specific pricing variation. At the same time, limiting the proposals to eight per project will decrease complexity for both sellers and SCE during the verification and valuation process.

2. <u>Additional Policy/Procurement Impacts</u>

On February 13, 2013, the Commission issued D.13-02-015, the LTPP Track 1 decision, which authorized SCE to procure between 1,400 and 1,800 MW of electrical capacity in the Western Los Angeles sub-area of the Los Angeles basin local reliability area ("Western LA Basin sub-area") and 215 to 290 MW of electrical capacity in the Moorpark sub-area of the Big Creek/Ventura local reliability area to meet local capacity requirements ("LCR") by 2021 due to the expected retirement of once-through cooling units. D.13-02-015 required SCE to procure minimum amounts of gas-fired generation, Preferred Resources (including renewable resources), and energy storage in the Western LA Basin sub-area. SCE commenced its LCR Request for Offers ("RFO") on September 12, 2013. The LCR RFO was open to all technologies that could meet SCE's LCR needs, including renewable resources.

On March 13, 2014, the Commission issued D.14-03-004, the LTPP Track 4 decision, which authorized SCE to procure an additional 500 to 700 MW of capacity in the Western LA Basin sub-area due to the retirement of the San Onofre Nuclear Generating Station. Combined, D.13-02-015 and D.14-03-004 authorized SCE to procure between 1,900 and 2,500 MW of capacity in the Western LA Basin sub-area. The LTPP Track 4 decision did not address or change the authorized procurement for the Moorpark sub-area.

The LTPP Track 1 and 4 decisions ordered SCE to file separate applications for the approval of all contracts entered into as a result of SCE's LCR RFO for new capacity in the Western LA Basin and Moorpark sub-areas. SCE filed the Western LA Basin Application 14-11-012 on November 21, 2014 to seek Commission approval of 63 contracts executed for a total of 1,882.60 LCR MW.[32] SCE filed the Moorpark Application 14-11-016 on November 26, 2014 to seek Commission approval of 11 contracts executed for a total of 274.16 LCR MW. The Western LA Basin and Moorpark Applications are currently pending Commission approval.

Consistent with these decisions, SCE's 2015 Procurement Protocol solicits projects in the Western LA Basin sub-area to participate in the 2015 RPS solicitation. Additionally, projects located in the Western LA Basin sub-area that are interconnected to SCE's distribution system served by Johanna and Santiago substations may also meet SCE's Preferred Resources Pilot ("PRP") goal.[33]

SCE's 2015 Procurement Protocol also solicits projects that are interconnected at a location that electrically connects to the Goleta substation. Projects in this area are preferential as they may help enhance the reliability in the Santa Barbara area, which has been an ongoing concern for SCE as was highlighted in the LCR RFO.

To the extent SCE receives proposals for projects in these areas that are not selected in SCE's RPS solicitation based on LCBF selection criteria, SCE will consider the value of these

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32 To clarify, the LCR MW are a resource's contribution to the LCR need in August 2021. This may differ from the MW quantity specified in the contract.

33 *See* D.14-03-004. More information on the PRP is available at http://on.sce.com/preferredresources.

proposals using the LCR selection process and criteria.[34] Only projects that provide RA benefits and are able to obtain a CAISO Net Qualifying Capacity assignment will be considered for purposes of meeting SCE's LCR in the Western LA Basin sub-area. SCE may, in SCE's sole discretion, decide to enter into bilateral contracts with some of these projects based on their LCR value. If SCE does enter into any such contracts, it will submit them for Commission approval through a separate application or advice letter, as appropriate.

IV. PROJECT DEVELOPMENT STATUS UPDATE

Appendix B contains a status update on the development of RPS-eligible projects currently under contract, but not yet delivering generation.[35] SCE received some of the information in this status update from its counterparties. The status of these projects impacts SCE's renewable procurement position and procurement decisions. For instance, SCE adjusts its renewable procurement position and need during the development stage of a project once it is determined the project will or will not meet its contractual obligations through its forecast probabilistic risk-adjusted success rates.

V. POTENTIAL COMPLIANCE DELAYS

Five primary factors will challenge achievement of the State's RPS goals: (1) curtailment; (2) the increasing proportion of intermittent resources in SCE's renewables portfolio; (3) permitting, siting, approval, and construction of both renewable generation projects and transmission; (4) a heavily subscribed interconnection queue; and (5) developer performance issues. SCE discusses each of these potential issues that could cause compliance delays below and describes the steps it has taken to mitigate the effects of these challenges.

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34 SCE plans to use a similar approach in future SPVP solicitations or other applicable solicitations.
35 The 2014 RPS solicitation contracts are not included.

As discussed in Section III.B, in forecasting its renewable procurement position and need, SCE accounts for potential issues that could delay RPS compliance, project development status, minimum margin of procurement, and other potential risks through the use of probabilistic risk-adjusted success rates for energy deliveries from contracted projects that are not yet online. SCE considers the factors discussed below in this process.

A. <u>Curtailment</u>

As more renewable generation comes online, congestion at the transmission and distribution levels is increasing and curtailment events are becoming more common. Several of SCE's contracted wind projects in the Tehachapi region in Kern County, California, for example, have been forced to curtail deliveries significantly in order to maintain system reliability in this area. Similarly, many projects in the Antelope and Devers areas have been required to curtail in order to accommodate outages needed for system maintenance and upgrades.

While the upcoming West of Devers ("WOD") upgrade project is necessary in order to provide sufficient transmission capacity to meet the 33% RPS (or potentially higher RPS goals), curtailment during WOD construction is expected. This expectation of curtailment was disclosed to renewable resources seeking to interconnect to WOD-impacted areas before interconnecting them to the system. However, many of these resources elected to interconnect prior to the completion of the WOD upgrade. Delays in the completion of the WOD upgrade project would increase the amount of curtailment as more resources are added. SCE is evaluating different construction sequence alternatives to minimize the curtailment of renewables. The completion of the WOD project will help meet the 33% RPS goal, and will provide additional transmission capacity that could be utilized to accommodate future generation to meet a 40% or 50% RPS goal.

An increase in California's RPS goal from 33% to 40% or 50% would result in more intermittent resources on the grid and increased deliveries from RPS-eligible resources, likely resulting in an increase in the amount of curtailment of renewable output due to more instances of over-generation and possible exacerbation of the problems discussed above.

SCE has been working on multiple fronts to mitigate the risk of curtailment. SCE has continued working to increase the level of coordination with generators during the construction phases of major transmission projects in the Tehachapi, Lugo, and Devers areas, with a particular focus on minimizing the duration of outages that will require curtailments and scheduling work during periods of low production for renewable resources. Further, SCE is developing strategies to utilize economic curtailment rights to enable CAISO to more efficiently achieve generation reductions when and where needed to alleviate congestion in the course of normal operations, and during transmission outages and periods of over-generation. This should help to minimize curtailment, as this practice will enable the CAISO to fold renewable resources more directly into market optimization runs.

SCE has had some success reducing curtailment at the distribution level, in part by completing needed system upgrades, but also by giving SCE switching center operators better tools to monitor real-time production levels during outages. This increased visibility enables operators to take more targeted action when generators exceed pro rata limitations, and to more effectively manage aggregate limits in the event not all resources are generating their full pro rata share. SCE will continue to look for opportunities to mitigate the impacts of curtailment on meeting RPS goals.

B. <u>Increasing Proportion of Intermittent Resources in SCE's Renewables Portfolio</u>

Over the last several years, a number of large wind projects in SCE's renewables portfolio (among others, the Alta Wind and Caithness Shepherds Flat projects totaling nearly 2,400 MW) have achieved commercial operation. While these resources have contributed significantly toward SCE's renewables portfolio, they have also made forecasting SCE's renewable procurement position and need more complex. Wind generation is difficult to predict. Actual production from wind generators varies significantly from hour-to-hour, month-to-month, and year-to-year, thereby exposing SCE to large fluctuations in renewable energy deliveries. Although not as unpredictable as wind generation, solar production also varies over time depending on weather conditions and project performance, among other factors. As wind and solar projects come to represent an ever larger proportion of SCE's renewables portfolio, these effects will be magnified, particularly if California's RPS target increases to 40% or 50%, which would result in more wind and solar projects in SCE's renewables portfolio.

Given the number of intermittent resources expected to achieve commercial operation in the coming years, SCE is preparing to successfully integrate new wind and solar resources. For example, SCE is working on ways to improve forecasting accuracy by collecting actual generation data from new wind and solar resources and analyzing forecasted output versus actual production after-the-fact. SCE is also seeking to maintain a balanced portfolio in order to ensure there is sufficient diversity of renewable resource types to manage intermittency risk going forward.

C. **Permitting, Siting, Approval, and Construction of Renewable Generation Projects and Transmission**

Although the CAISO has identified transmission necessary to meet California's 33% RPS goal,[36] the lack of sufficient transmission infrastructure and the process for permitting and approval of new transmission lines continues to be a challenge to reaching the State's renewable energy targets. Lack of adequate transmission infrastructure and the lengthy process of siting, permitting, and building new transmission continues to impede bringing new renewable resources online.

As stated in the CAISO's 2014-2015 Transmission Plan, "[t]he transition to greater reliance on renewable generation has created significant transmission challenges because renewable resource areas tend to be located in places distant from population centers."[37] Through its transmission planning process, the CAISO utilizes renewable resource portfolios from the Commission and the CEC to identify transmission projects that will support the development of renewable resources in areas where they are most likely to occur. This "least regrets" approach helps to address an element of uncertainty that generation developers may have regarding the approval of transmission projects that are necessary for the delivery of renewable energy. While some transmission projects have already been approved or are progressing through the Commission approval process,[38] challenges still remain regarding the completion of those transmission projects. In SCE's service area, there are several major transmission projects included in the CAISO's 2014-2015 Transmission Plan that SCE is pursuing that will contribute to supporting the State's RPS goals. These projects include the

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36 *See* CAISO's 2014-2015 Transmission Plan at 11 (March 27, 2015) (available at: http://www.caiso.com/Documents/Board-Approved2014-2015TransmissionPlan.pdf).

37 *Id.* at 8.

38 *See id.* at 10-11.

Tehachapi Renewable Transmission Project, West of Devers, Eldorado-Mohave and Eldorado-Moenkopi 500 kV Line Swap, Lugo-Eldorado series cap and terminal equipment upgrade, Lugo-Mohave series capacitors, and the Mesa Loop-in project.[39]

The long and complicated permitting process for renewable generation facilities is also a barrier to meeting RPS goals. Moreover, environmental concerns, legal challenges, and public opposition can impact the timeline for bringing renewable generation projects online.

D. A Heavily Subscribed Interconnection Queue

A heavily subscribed CAISO interconnection queue is also a major barrier to achieving the State's RPS goals. As of June 18, 2015, the CAISO reported more than 100 active renewable projects seeking interconnection to the CAISO controlled grid with a completed Phase II Interconnection Study. These projects represent more than 11,000 MW in the queue.[40]

Over the last several years, the CAISO has initiated and obtained Federal Energy Regulatory Commission ("FERC") approval to improve its generation interconnection process. These improvements include a fundamental change that integrated the formerly separate and distinct generator interconnection and transmission planning processes, now collectively known as the Generator Interconnection and Deliverability Allocation Procedures ("GIDAP").[41] GIDAP integrated the CAISO's generator interconnection and transmission planning processes to allow the CAISO to more efficiently determine transmission upgrades needed to meet California's RPS goals.

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[39] Regarding the Mesa Loop-in project, the CAISO's 2013-2014 Transmission Plan states that "[w]ith the addition of 500kV voltage, a new source from bulk transmission will be established in the LA Basin to bring power from Tehachapi renewables or power transfer from PG&E via WECC Path 26." CAISO's 2013-2014 Transmission Plan at 107 (March 25, 2014) (available at: http://www.caiso.com/Documents/Board-Approved2013-2014TransmissionPlan.pdf).

[40] *See* https://www.caiso.com/Documents/ISOGeneratorInterconnectionQueue.pdf.

[41] *See* FERC Docket No. ER-12-1855-000.

SCE supports GIDAP. It provides a good foundation for improving the queue management process going forward, but a number of near-term challenges remain. The large number of interconnection requests, particularly from renewable generators, presents significant challenges for SCE, the CAISO, and renewable generators. Generators that have completed their studies, but not signed generation interconnection agreements, contribute to the uncertainty around available system capacity. When capacity is reserved for generators that have not signed interconnection agreements, other potentially more viable later-queued generators can appear to trigger upgrades that may not be necessary. Although protocols exist to allow the removal of languishing generators from interconnection queues, these protocols are difficult to implement because they can lead to litigation.

E. Developer Performance Issues

Achieving California's renewable energy goals also depends on the successful performance of renewable developers in meeting contractual obligations, timely completing construction milestones, and achieving commercial operation. Hurdles encountered during these activities require developers to alter their milestone schedules. This can result in delays, lengthy contract amendment negotiations, and contract terminations. For example, several of SCE's contracts have terminated due to developer performance issues (e.g., poor site selection, failure to timely secure the necessary permits, and inability to complete CAISO new resource implementation processes in a timely manner). To the extent that delays, termination events, and under-performance occur, the amount of delivered energy on which SCE can rely to reach the State's goals is reduced.

To proactively address developer performance issues, SCE continues to reach out to and communicate with project developers on a regular basis, discuss options and the status of project development, and provide guidance and direction as appropriate. In response to lessons learned in previous solicitations, SCE has also made several modifications to its solicitation materials. The two most relevant updates to solicitation requirements were implemented in the 2014 RPS solicitation in the form of a Phase II Interconnection Study requirement and the Commission-mandated "application deemed complete" requirement with respect to project permitting. These two requirements have significantly contributed to greater viability in the pool of projects bid into the solicitations. In particular, projects that have achieved this level of development typically have significant dollars invested and secured project-backing, which in most cases has already identified and resolved potential fatal flaws in project location, technology, or environmental factors.

VI. RISK ASSESSMENT

SCE describes risks that may result in compliance delays in Section V. As explained in Section III.B, in forecasting its renewable procurement position and need, SCE accounts for potential issues that could delay RPS compliance, project development status, minimum margin of procurement, and other potential risks through the use of probabilistic risk-adjusted success rates for energy deliveries from contracts that are executed but not yet online. SCE considers these risk factors in this process. Additionally, SCE takes into account historic generation from existing resources, including lower than expected generation, variable generation, and resource availability, among other factors, when forecasting expected generation from its contracted renewable projects. The quantitative analysis provided in Appendices C.1 through C.8 reflects these considerations.

VII. QUANTITATIVE INFORMATION

A. RNS Calculations

As discussed in Section III.B, Appendices C.1 through C.4 include SCE's RNS calculations using the standardized reporting template included in the RNS Ruling under the current 33% RPS program rules. As required by the ACR, SCE has also included RNS calculations under the 40% target set forth in the ACR in Appendices C.5 through C.8. As required by the Commission's Revised RNS Methodology, Appendices C.1, C.2, C.5, and C.6 include physical RNS calculations and Appendices C.3, C.4, C.7, and C.8 include optimized RNS calculations.

Appendices C.2, C.4, C.6, and C.8 include SCE's physical RNS and optimized RNS through 2030, based on the following SCE assumptions:

- SCE's most recent bundled retail sales forecast for 2015 through 2030;
- Contracted projects that are currently online will deliver 100% of their expected amount of renewable energy;
- Probabilistic risk-adjusted success rates for energy deliveries from contracted projects that are not yet online. SCE's forecasts include individual project-specific, risk-adjusted success rates for large, near-term projects and a flat 60% success rate for the remaining projects, which is based on these projects' overall weighted average success rate; and
- 100% success rate for projects originating from pre-approved programs such as RAM, ReMAT, and SCE's SPVP before contracts from such programs are signed.[42]

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[42] After contracts from such programs are signed, they are risk adjusted in the same manner as other projects with executed contracts that are not yet online.

Appendices C.1, C.3, C.5, and C.7 provide SCE's physical and optimized RNS through 2030 using the Commission's Revised RNS Methodology. Appendices C.1, C.3, C.5, and C.7 use the same assumptions as in Appendices C.2, C.4, C.6, and C.8 except that:

- Instead of using SCE's most recent bundled retail sales forecast for all years, it uses SCE's most recent bundled retail sales forecast for 2015 through 2019 and 2025 through 2030 and the standardized planning assumptions that were used in the 2014 LTPP for 2020 through 2024.[43]

At this time, SCE does not propose including a voluntary margin of over-procurement in its renewable procurement planning. SCE will account for additional forecasting risks through the use of forecast RECs above its RPS procurement quantity requirements.

B. Response to RNS Questions

SCE provides the following responses to the RNS questions included in Appendix D to the RNS Ruling.

1. How do current and historical performance of online resources in your RPS portfolio impact future projection of RPS deliveries and your subsequent RNS?

The current and historical performance of online resources in SCE's renewables portfolio is considered when making future projections of RPS-eligible deliveries. Specifically, SCE considers weather and specific resource conditions, including maintenance issues, degradation of output, and contractual issues that have impacted historic performance and may cause the output of a facility to be different than what SCE anticipates for the future. SCE takes these

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43 The Revised RNS Methodology states that retail sellers can use their own forecasts for bundled retail sales for the first five years and should use the LTPP standardized planning assumptions thereafter. *See* RNS Ruling, Attachment A at 25. In Appendices C.1, C.3, C.5, and C.7, SCE used its own bundled retail sales forecast for 2025 through 2030 because there is no LTPP forecast for those years.

considerations into account when it is forecasting its RNS. In particular, if SCE determines any of these conditions will impact a facility's future generation, such generation will be increased or decreased in the forecast for as long as SCE expects the situation to persist. SCE reviews these conditions on a regular basis and updates its generation forecast accordingly.

2. <u>Do you anticipate any future changes to the current bundled retail sales forecast? If so, describe how the anticipated changes impact the RNS.</u>

There are many factors that can impact SCE's bundled retail sales forecast. Those factors include, but are not limited to, demographic and macroeconomic drivers, electricity prices, impact from utilities' energy conservation programs, federal and state codes and standards, the California Solar Initiative Program, future customer adoption of distributed generation, future electric vehicle use, and other electrification load growth. Therefore, SCE expects its bundled retail sales forecast to change over time as SCE incorporates the best available information on the various drivers into its forecast. SCE's overall bundled retail sales forecast may go up or down depending on the net impact of all of these factors. It is not possible for SCE to predict the future changes to its bundled retail sales forecast without completing the forecast process due to the complex nature of the modeling efforts involved. Accordingly, the bundled retail sales forecast that SCE uses at any given point in time is SCE's best prediction of bundled retail sales. As the bundled retail sales forecast goes up or down, it will increase or decrease SCE's projected RNS accordingly.

3. <u>Do you expect curtailment of RPS projects to impact your projected RPS deliveries and subsequent RNS?</u>

Curtailment is factored into SCE's forecasted RPS-eligible deliveries and subsequent RNS in two ways. For operating QF wind projects, curtailed amounts are reflected in historical deliveries, which are then averaged over the prior three years to develop a generation forecast for each resource that includes past curtailment impacts as a proxy for expected future curtailments. Such curtailments are typically attributable to line and equipment outages.

For projects in development in the Tehachapi Wind Resource Area ("TWRA"), SCE includes an estimate of curtailed generation based on analysis submitted in SCE's testimony regarding the Tehachapi Renewable Transmission Project ("TRTP") in its generation forecasts for projects in that location.[44] While potentially conservative, this analysis takes into account expected new interconnections in the TWRA, hourly generation profiles for wind and solar, and expected increases in transmission capacity as TRTP construction progresses. The amount of generation actually curtailed will be a function of real-time load, generation bids for dispatch, actual generation output that differs from cleared bids for dispatch, and the amount of transmission capacity available.

Additionally, to the extent that other projects have been curtailed, or in the event SCE revises its curtailment estimates for resources in Tehachapi or elsewhere in California, those curtailment estimates may be incorporated into forecasts of generation in the future.

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[44] *See* Southern California Edison Company's Testimony in Response to the Assigned Commissioner's Ruling on the Tehachapi Renewable Transmission Project (TRTP), Application 07-06-031 (January 10, 2012); Southern California Edison Company's Supplemental Testimony in Response to the Assigned Commissioner's Ruling on the Tehachapi Renewable Transmission Project (TRTP), Application 07-06-031 (February 1, 2012).

4. Are there any significant changes to the success rate of individual RPS projects that impact the RNS?

SCE reviews the status of contracted projects that are not yet online every quarter to assess the likelihood that each project will be successfully constructed and deliver energy. For the larger contracted projects that terminated in the last year, SCE has gradually dropped their likelihood of success over time such that when the projects eventually terminated, there was not a significant impact to SCE's RNS. Overall, SCE has seen a number of large, near-term projects continue to make strides towards completion, resulting in a collectively higher anticipated success rate for these large, near-term projects than in 2014.

5. As projects in development move towards their commercial operation date, are there any changes to the expected RPS deliveries? If so, how do these changes impact the RNS?

As projects move closer to their commercial operation dates, there may be a number of reasons to change the expected RPS-eligible deliveries, including schedule changes from phased projects, commercial operation date changes, and availability of updated forecasted production information. These factors may either increase or decrease the RNS.

6. What is the appropriate amount of RECs above the procurement quantity requirement ("PQR") to maintain? Please provide a quantitative justification and elaborate on the need for maintaining banked RECs above the PQR.

While SCE intends to maintain a bank, determining the appropriate level of RECs above the PQR is dependent on a number of factors: the level of bundled retail sales, fuel source mix in the renewables portfolio, performance of existing resources, project success rates, delay or acceleration of online dates, performance of new facilities once they are operational, the level of the existing portfolio that is re-contracted, and curtailment, among other factors. Annual variability of these factors can either increase or decrease the bank from year-to-year.

SCE does not target a minimum amount or range of RECs above the PQR for banking. Instead, SCE includes the expected success rate for projects in development and incorporates the above risk factors in its forecast, which creates an adequate margin of procurement.

7. What are your strategies for short-term management (10 years forward) and long-term management (10-20 years forward) of RECs above the PQR? Please discuss any plans to use RECs above the PQR for future RPS compliance and/or to sell RECs above the PQR.

When sufficiently long during short-term periods, SCE has used sales of renewable energy products, project deferrals, and solicitation deferrals in order to adjust its renewable procurement back in line with its forecasted RNS. If SCE forecasted short-term shortfalls, SCE would satisfy the need through additional procurement. For example, SCE could re-contract with existing projects, initiate an RPS solicitation, procure through pre-approved procurement programs, or make short-term purchases. Additionally, SCE diligently manages contracts to ensure all contractual obligations are met. SCE uses these activities for renewables portfolio optimization.

Specifically regarding the sale of RECs, when SCE has a long position in the near term, SCE evaluates whether a sale of renewable energy products is appropriate. This evaluation includes a calculation of SCE's renewable procurement position and RPS bank with a set of adverse assumptions. These assumptions include, but are not limited to, lower performance of existing resources than expected, lower risk-adjusted project success rates for contracted generation that is not yet online, and higher levels of curtailment than expected. SCE assesses its renewable procurement position with such adverse assumptions to ensure that, even in the worst case scenario, SCE would still expect to meet its RPS targets after making the sale. It is not SCE's practice to purchase renewable energy products solely for the purpose of selling them at a later date.

Moreover, when SCE considers whether to engage in sales of renewable energy products, SCE compares the NMV for the sales transaction against the NMV of proposals submitted to SCE in recent solicitations and other offers. If the NMVs for long-term renewable procurement are higher than the NMV for the sales transaction, it would be more cost effective for SCE to maintain its existing RPS bank for future compliance periods. Conversely, if the NMVs from recent solicitations are lower than the NMV for the sales transaction, SCE has an opportunity to optimize its renewables portfolio and realize value for its customer by selling renewable energy products.

At this time, SCE considers holding an excessive amount of bank in the long-term to be an inefficient use of resources. Rather, SCE generally allocates any near-term forecasted RECs above the PQR to years of forecasted shortfall. Additionally, as described in its response to question 6 above, SCE does not target a minimum amount or range of RECs above the PQR for banking. SCE takes into account project specific success rates to determine an adequate margin of procurement.

8. Provide Voluntary Margin of Over-procurement ("VMOP") on both a short-term (10 years forward) and long-term (10-20 years forward) basis. This should include a discussion of all risk factors and quantitative justification for the amount of VMOP.

SCE currently does not use a VMOP methodology on either a short-term or long-term basis. While there are different risks that have different impacts in the short and long-term, SCE believes it appropriately accounts for these risk factors in its forecasted RNS.

9. Please address the cost-effectiveness of different methods for meeting any projected VMOP procurement need, including application of forecast RECs above the PQR.

SCE procures what it believes is needed to meet its RPS targets, allocating any near-term forecasted RECs above the PQR to years of forecasted shortfall. SCE's forecasted need is far enough in the future that SCE believes it can fill that need through additional procurement on a ratable basis. SCE believes it appropriately accounts for risk through the risk factors identified in its response to question 6 above, and currently does not utilize a VMOP.

In the event that SCE implements a VMOP methodology in the future, SCE would use the same methods to procure its projected VMOP procurement need as it uses to procure towards its RPS targets, including procurement of Category 1, Category 2, and Category 3 products. The relative cost-effectiveness of these products depends on market prices for the different portfolio content categories at the time of procurement, expected future prices, and the constraints on the quantities of each product that can be procured. In order to obtain additional data on the cost-effectiveness of these products, SCE is soliciting long-term Category 2 and Category 3 unbundled REC products in its 2015 RPS solicitation in addition to long-term Category 1 products. SCE may also conduct an RFI, another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products to realize potential cost savings for customers and obtain additional information on the market for short-term products.

10. <u>Are there cost-effective opportunities to use banked RECs above the PQR for future RPS compliance in lieu of additional RPS procurement to meet the RNS?</u>

There are a few alternatives for the potential use of banked RECs above the PQR, including applying them in the future compliance periods, engaging in sales for the amount of bank, and a combination of sales of Category 1 products and procurement of other products. As noted above in response to question 7, SCE does not hold an excessive amount of bank for the sole purpose of selling it later. SCE generally allocates any near-term forecasted RECs above the PQR to years of forecasted shortfall. SCE conducts various portfolio optimization strategies also described in its response to question 7 to manage its renewables portfolio.

In particular, SCE compares the long-term procurement cost of RECs, measured by the NMV, to market prices, as well as cost impacts of other portfolio optimization activities. The cost effectiveness of these opportunities must be determined at the time of procurement and/or sales, as market prices and SCE's portfolio change over time. In order to obtain additional data on the cost-effectiveness of all products, SCE is soliciting long-term Category 2 and Category 3 unbundled REC products in its 2015 RPS solicitation in addition to long-term Category 1 products. SCE may also conduct an RFI, another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products to realize potential cost savings for customers and obtain additional information on the market for short-term products.

11. **<u>How does your current RNS fit within the regulatory limitations for portfolio content categories? Are there opportunities to optimize your portfolio by procuring RECs across different portfolio content categories?</u>**

All of the procurement in SCE's current renewables portfolio is from either contracts executed prior to June 1, 2010 or contracts for Category 1 products. Accordingly, SCE's procurement fits within the minimum target for Category 1 products and the maximum target for Category 3 products established by SB 2 (1x) and D.11-12-052.

SCE does see opportunities to optimize its portfolio through procurement across the three portfolio content categories. SCE intends to solicit long-term Category 1, Category 2, and Category 3 unbundled REC products in its 2015 RPS solicitation. SCE may also conduct an RFI, another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products to realize potential cost savings for customers and obtain additional information on the market for short-term products. SCE believes that by providing flexibility in its procurement strategy, SCE can minimize costs to its customers. In addition, as discussed in Section II, eliminating the restriction on banking short-term products would increase SCE's ability to procure additional low cost products for its customers.

VIII. <u>MINIMUM MARGIN OF PROCUREMENT</u>

SCE's renewable procurement efforts will be guided by its forecast of its renewable procurement needs, as described in Section III.B and provided in Appendices C.1 through C.4. In its forecast of its renewable procurement position and need, SCE currently accounts for the risks of project failure and delay associated with contracted projects that are not yet online. To this end, SCE uses individual project-specific, risk-adjusted success rates for large, near-term projects and a flat 60% success rate for the remaining projects, which is based on these projects' overall weighted average success rate. This probabilistic risk adjustment methodology for discounting expected energy deliveries from projects under development is modeled to represent project development success rates as well as any contingency that would make meeting the State's RPS goals less likely (e.g., delays due to transmission, curtailment, material shortages, load growth beyond that which is forecasted, or less than expected output from resources). Additionally, this methodology provides an appropriate minimum margin of procurement "necessary to comply with the renewables portfolio standard to mitigate the risk that renewable projects planned or under contract are delayed or cancelled."[45] SCE will reassess its position on a periodic basis and, as such, expects that success rates may need to be modified in the future to reflect changes to SCE's portfolio.

The Commission should rely on retail sellers to calculate their minimum margins of procurement and should not attempt to impose a one-size-fits-all approach. As many of the projects in SCE's portfolio become operational, SCE will face different risks, including integration of these resources. The risks associated with project failure will be replaced by less significant risks of projects generating below full capacity. Similarly, SCE expects that the portfolio risk picture is not the same for each retail seller. For example, risks may vary depending on whether a portfolio contains a high proportion of contracts that are online (as discussed above) or depending on the various technologies being used (e.g., geothermal technology, which is a baseload resource, versus wind or solar technologies, which are more intermittent as described in Section V.B). For these reasons, each retail seller should continue to have the authority to revise its approach to calculating the minimum margin of procurement

[45] Cal. Pub. Util. Code § 399.13(a)(4)(D).

through the RPS procurement planning process and each retail seller should have the flexibility to calculate this margin based on its unique portfolio make-up and procurement needs.

IX. BID SOLICITATION PROTOCOL, INCLUDING LCBF METHODOLOGIES

A. Bid Solicitation Protocol

SCE includes its proposed 2015 Procurement Protocol as Appendix F.1. The Procurement Protocol includes, among other things:

- SCE's requirements for initial delivery dates and preferred contract term lengths;
- Deliverability characteristics and locational preferences;
- SCE's requirements for LCR and PRP projects;
- Encouragement for Women-Owned, Minority-Owned, Disabled Veteran-Owned, Lesbian-Owned, Gay-Owned, Bisexual-Owned, and/or Transgender-Owned Business Enterprises ("Diverse Business Enterprises") to participate in SCE's RPS solicitation and information on how sellers can help SCE to achieve General Order ("GO") 156 goals;
- Requirements for each proposal submission;
- A description of the type of products SCE is soliciting;
- A schedule of key dates related to the 2015 RPS solicitation;
- SCE's 2015 *Pro Forma* Renewable Power Purchase Agreement ("*Pro Forma*"), attached as Appendix G.1;
- SCE's 2015 *Pro Forma* Master Renewable Energy Credit Purchase Agreement ("REC *Pro Forma*"), attached as Appendix H; and

A discussion of the important changes in the proposed 2015 solicitation documents from SCE's 2014 solicitation documents is included in Section XV.

B. LCBF Methodology

In its LCBF evaluation process, SCE performs a quantitative assessment of each proposal and subsequently ranks them based on each proposal's benefit and cost relationship. The result of the quantitative analysis is a rank order of all complete and conforming proposals' net levelized cost that help define the preliminary shortlist. Following the quantitative analysis, SCE will conduct an assessment of the top proposals' qualitative attributes. These qualitative attributes, including factors such as local reliability, resource diversity, and nominal contract payments, are considered to either eliminate or add projects to the final shortlist based on qualitative attributes, or to determine tie-breakers, if any. Once a project is added to the shortlist, SCE may enter into a PPA with the project. By taking many quantitative and qualitative factors into consideration, SCE ensures that it will select projects best suited for its portfolio in order to meet customer needs and attain the State's RPS goals. Appendix I.1 (the "LCBF Methodology") describes this process, including capacity valuation and the renewable integration cost adder, among other factors.

X. CONSIDERATION OF PRICE ADJUSTMENT MECHANISMS

SCE does not plan to solicit price structures based on indices in its 2015 RPS solicitation. Sellers can still bid escalation factors in their prices. Over the years, fewer and fewer proposals are based on prices tied to an index. In the more than 600 different proposals that SCE has received over the last two RPS solicitations, only one seller offered pricing tied to an index or other adjustment mechanism (other than simply an escalation/de-escalation factor).

Proposals with adjustable pricing based on indices were more common when the renewable industry was starting out. Uncertainties over relatively new technologies made it reasonable to tie pricing to certain commodity indices, inflation rates, or other indices that made sense given the technology. However, the industry is more sophisticated now, supply chains are becoming more stable, and price adjustment mechanisms based on indices are simply not needed. Sellers and SCE want price certainty and do not want to be subjected to extraordinary high (or unsustainably low) pricing due to fluctuations in a commodity or other indices. The ability to bid price adjustments based on indices increases complexity for sellers in the proposal process and for SCE in the evaluation process. By eliminating price adjustment mechanisms based on indices for the 2015 RPS solicitation, SCE is simply removing options that are no longer utilized in the market.

XI. ECONOMIC CURTAILMENT

Although SCE has observed very few instances of negative pricing in the day-ahead market,[46] negative prices have been observed on a more regular basis in the real-time market. SCE identifies several factors contributing to increases in instances of negative prices. Systemic over-generation typically occurs in off-peak hours when baseload and must-take renewable generation is high and demand is low, which can cause negative market price hours at trading hubs. On-peak negative prices tend to be localized, transient, and related to congestion caused by a particular transmission bottleneck.

It is generally difficult to forecast negative prices. SCE continues to manage potential instances of negative pricing, and the associated impact to SCE customers, through several different strategies. As a general practice, SCE schedules variable energy resources, such as solar and wind facilities, into the day-ahead market whenever possible. Because resources that are awarded day-ahead schedules are only exposed to negative prices in real-time for deliveries in excess of their day-ahead awards, this practice helps to limit customer exposure to negative

46 ~ 0.05% of hours in sampled nodes in the day-ahead market – the vast majority of which occur at generally congested interties such as PALO VERDE.

prices. This practice is consistent with least-cost dispatch principles, which govern SCE's approach to marketing its entire portfolio of contracted and utility-owned resources.

Additionally, SCE plans to economically bid resources with economic curtailment rights into the day-ahead and real-time markets. Resources with these curtailment rights will then be curtailed as needed based on CAISO's economic dispatch. In some SCE PPAs, there is a pre-defined amount of pre-paid energy per year that may be economically curtailed, subject to some restrictions, without requiring SCE to pay for the energy that could have been delivered but for the curtailment instruction. As noted above, this amount is commonly referred to as a "curtailment cap." Once the curtailment cap is reached, SCE must pay the contract price for energy that could have been delivered but for the curtailment instruction. In other SCE PPAs, SCE has the right to curtail based on economic factors, but must always pay the contract price for energy that could have been delivered but for the curtailment instruction. These types of curtailment rights are commonly referred to as "take-or-pay." In instances where SCE has either exceeded the curtailment cap or only has "take-or-pay" economic curtailment rights to begin with, if SCE were not to curtail deliveries in excess of any schedules awarded at positive prices, customers would pay the contract price for that excess delivered energy *and* incur the costs associated with negative pricing in such intervals. SCE's economic bids will therefore serve to further limit customer exposure to negative prices both day-ahead and in real-time, even if SCE ultimately pays the contract price for curtailed energy.

As explained in Section III.F.1.a, in the 2014 RPS solicitation, SCE required sellers to submit proposals both with and without a curtailment cap. SCE will not require sellers to bid the pre-paid economic curtailment option with the curtailment cap in the 2015 RPS solicitation. SCE will retain the right to curtail at its discretion, but will pay for curtailments directly resulting from SCE marketing decisions. As in prior years, SCE will not pay for curtailments in response to an emergency, or due to CAISO or transmission provider instructions.

XII. EXPIRING CONTRACTS

For SCE's RPS-eligible contracts expiring in the next ten years, Appendix E includes the name of the facility, technology, contract expiration date, nameplate capacity, expected annual generation, location, contract type, and portfolio content category classification. SCE used the template for reporting on RECs from expiring contracts as provided in the RNS Ruling.

XIII. COST QUANTIFICATION

The spreadsheet attached as Appendix D includes actual expenditures per year for RPS-eligible generation for every year from 2003 through 2014, as well as actual RPS-eligible generation for every year from 2003 through 2014. Appendix D also includes a forecast of future expenditures SCE may incur every year from 2015 through 2030, as well as a forecast of expected generation for every year from 2015 through 2030.[47]

XIV. IMPERIAL VALLEY

In addition to the ORNI 18 project, which has been online and operating since October 2009, SCE executed PPAs with two projects (Mount Signal) located in the Imperial Irrigation District in the 2013 RPS solicitation. Both of those solar projects have executed interconnection agreements, are fully permitted, [redacted]

In SCE's 2014 RPS solicitation, SCE received 382 unique complete and conforming proposals. [redacted]

47 For all forecast years, SCE has assumed a 100% success rate for projects that are not yet online. The 2014 RPS solicitation contracts are not included.

[redacted][48]

XV. IMPORTANT CHANGES FROM 2014 RPS PLAN

SCE's 2015 RPS Plan includes important changes to: (1) SCE's 2015 Procurement Protocol; (2) SCE's 2015 *Pro Forma*; and (3) SCE's LCBF Methodology. Those changes are summarized below. SCE has included redlines of its 2015 Procurement Protocol, 2015 *Pro Forma*, and LCBF Methodology against the final 2014 version of those documents as Appendices F.2, G.2, and I.2, respectively. SCE has also included a redline of its 2015 REC *Pro Forma* against the final 2014 version of that document as Appendix H.2. The changes to the 2015 REC *Pro Forma* were minor.

Additionally, SCE has included a redline of its 2015 Written Plan against the final version of its 2014 Written Plan as Appendix A. SCE has changed its Written Plan in accordance with the ACR, including following the general format set forth in the ACR and adding new sections on consideration of a higher RPS goal and economic curtailment. SCE has also added new sections on the Standard Contract Option using the streamlined RAM procurement tool, the GTSR program, short-term products, and energy storage procurement.

A. Important Changes in 2015 Procurement Protocol

1. Considering Proposals for Long-term Category 2 Products

In the 2014 RPS solicitation, SCE solicited long-term Category 1 and Category 3 unbundled REC products. As provided in SCE's 2015 Procurement Protocol, SCE will also

[48] Draft Resolution E-4726, issued on July 14, 2015, directs SCE to re-evaluate proposals from its 2014 RPS solicitation for projects that were to be interconnected to the Imperial Irrigation District's electrical system considering the differences between the CAISO Tariff and Imperial Irrigation District Open Access Transmission Tariff.

consider proposals for long-term Category 2 products from both new and existing generation facilities in the 2015 RPS solicitation.

SCE intends to include long-term Category 2 products in its 2015 solicitation to provide additional flexibility and contracting opportunities for its customers. Any contracts for Category 2 products ultimately executed by SCE will be within the limits on procurement of Category 2 products.[49]

2. **Requiring 10-Year Term Proposals**

SCE is requiring sellers to provide a minimum of one proposal out of the eight allowable proposals per project as a 10-year delivery term. SCE has a preference for shorter than 20-year delivery terms; thus, in the 2015 RPS solicitation it will require at least one 10-year term proposal per project. Shorter term contracts mean that SCE customers are not locked into long-term contracts for technologies that are rapidly changing and improving. They also represent less risk in terms of long-term rate recovery, and pose less concern in terms of debt equivalents impacts. Moreover, requiring at least one proposal with a 10-year delivery term for each project will provide SCE with additional information about the value differences between different contract terms in order for SCE to make the best decisions for its customers.

3. **Elimination of Pre-Paid Economic Curtailment Bidding**

As discussed in Section III.F.1.a, SCE will not require sellers to bid the pre-paid economic curtailment option with the curtailment cap in the 2015 RPS solicitation. SCE will retain the right to curtail at its discretion under the 2015 *Pro Forma*, but will pay for economic curtailments as detailed in Section XV.B.1. As in prior years, SCE will not pay for curtailments in response to emergencies, or due to CAISO or transmission provider instructions.

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49 *See* Cal. Pub. Util. Code § 399.16(c).

4. <u>Elimination of Price Adjustment Mechanisms Based on Indices</u>

For the 2015 RPS solicitation, SCE will eliminate sellers' option to bid price adjustment mechanisms based on indices as explained in Section X.

5. <u>Targeting Specific Delivery Periods</u>

In past RPS solicitations, SCE did not limit the products that sellers could bid, which resulted in a large number of proposals. For example, in SCE's 2011 RPS solicitation, SCE received over 1,400 proposals. This volume of proposals required substantial time and effort on behalf of SCE and sellers, but did not lead to the execution of any contracts. Based on this experience, SCE used a more targeted solicitation process in 2013 that focused more specifically on SCE's needs. SCE limited the 2013 RPS solicitation to Category 1 products and projects with commercial operation dates of January 1, 2016 or later. With those limitations in place, SCE had a robust proposal pool of over 350 proposals from which to select. In 2014, SCE limited the solicitation to long-term Category 1 and Category 3 unbundled REC products. Additionally, all projects were required to have commercial operation dates of January 1, 2016 or later, have a Phase II Interconnection Study (or an equivalent or more advanced interconnection status or exemption), and have an "application deemed complete" (or equivalent) status within the applicable land use entitlement process. With those requirements in place, SCE had a robust proposal pool of 382 complete and conforming proposals.

In 2015, SCE intends to provide sellers with further direction on the products and the timeframes where SCE has a need. SCE wants to focus the efforts of both SCE and sellers on proposals that are likely to be most valuable to SCE's customers, thus simplifying the solicitation and evaluation process for all parties. To this end, SCE intends to solicit offers with delivery terms commencing on or before December 1, 2020. This time frame will allow projects to satisfy SCE's renewable procurement need in the third compliance period and beyond. Additionally, sellers must propose commercial operation dates that start on the first day of the month to simplify the administrative and settlement processes for these contracts.

6. Inclusion of Standard Contract Option

SCE's 2015 RPS solicitation will include a Standard Contract Option based on the streamlined RAM procurement tool authorized in D.14-11-042. This option is addressed in detail in Section XVII.

7. Limiting Sellers to Eight Proposals Per Project

As explained in Section III.F.1.c, SCE will limit sellers to eight proposals per project in the 2015 RPS solicitation.

8. Elimination of Mutually Inclusive Proposals

In SCE's 2014 RPS solicitation, no mutually inclusive proposals were presented by sellers. In the 2013 RPS solicitation, there was only one mutually inclusive proposal. Mutually inclusive proposals present added complexity, both in terms of the complete and conforming process, as well as trying to capture them properly in SCE's valuation tools. Thus, SCE will not entertain mutually inclusive offers going forward.

9. Changes to Required Non-Disclosure Agreement Process for Sellers

In the 2015 RPS solicitation, SCE will begin to transition RPS solicitation sellers to an evergreen Non-Disclosure Agreement ("NDA") process, which is currently used in other procurement solicitations (All-Source RFOs, LCR RFO, etc.). The evergreen NDA will be between SCE and seller companies who are offering projects into the solicitation; therefore, one NDA could cover multiple projects as well as multiple proposals. This will greatly streamline the solicitation process for both SCE and sellers.

In past years, SCE has required sellers to submit a short-term NDA that only applied to the current solicitation for every proposal and every project. This method produced an inefficient process for both parties. The introduction of an evergreen NDA will simplify administration of, and participation in, the 2015 RPS solicitation, and these NDAs will also be valid for future RPS solicitation proposals between the sellers and SCE.

10. <u>Elimination of Seller's Form of Proposal</u>

For its 2015 RPS solicitation, SCE is eliminating the Seller's Form of Proposal attachment. Instructions to sellers on proposal submittal and required attachments have now been migrated to, and thoroughly explained in, the 2015 Procurement Protocol.

11. <u>Elimination of Multiple Attestations and Replacement with Officer's Certificate</u>

In past RPS solicitations, SCE has required multiple attestations from sellers on a per-proposal basis. In 2015, SCE plans to combine all of the required attestations into one form that an officer of seller's company must sign. This refined document and process will simplify the solicitation process for both sellers and SCE.

12. <u>Elimination of Shortlist Deposit Requirement</u>

SCE has required that all projects selected for the shortlist post a shortlist deposit in the form of cash or letter of credit in past RPS solicitations. For the 2015 RPS solicitation, SCE will eliminate this requirement because SCE does not believe it has added value to the solicitation process. The original intent of the requirement was to financially obligate sellers to the solicitation process in the hopes that only sellers who were as committed as SCE to negotiating and executing a final PPA would post the deposit. However, because securing letters of credit and/or posting cash has become less of an obstacle for project sponsors as the market has matured, this exercise has been deemed superfluous. SCE believes requiring sellers to post development security at the time of PPA execution will add more value to the process as explained in Section XV.B.5.

13. **Requiring Shortlist Exclusivity**

As in 2014, SCE intends to utilize a one-step solicitation process in the 2015 RPS solicitation. SCE intends to develop a shortlist based on the proposed pricing received at the time of proposal submittal and only shortlist those projects with which it is likely to sign PPAs. In restricting the size of its solicitation shortlist to the most competitive projects based on quantitative and qualitative characteristics, SCE will save its customers' and developers' time and money by minimizing the number of negotiated PPAs that fail to reach execution. To promote full realization of these benefits, SCE proposes to add a requirement that sellers execute an exclusivity agreement with respect to shortlisted projects.

The Commission rejected this requirement in D.13-11-024 and D.14-11-042.[50] In D.14-11-042, the Commission found that shortlist exclusivity is an "unnecessary restriction on the market based on the current level of competition."[51] SCE disagrees that the level of competition is relevant to the main reason for requiring exclusivity arrangements after shortlisting: SCE's customers and developers should not have to expend resources on negotiating many PPAs that may not be signed.

Additionally, the 2015 RPS solicitation process will include the Standard Contract Option discussed in Section XVII. Having shortlist exclusivity will help to ensure an expedited process for those PPAs that may potentially be selected for this option. The Standard Contract Option is a mechanism for projects to select SCE's 2015 *Pro Forma* with no further negotiations and will be utilized as a means to expedite PPA execution within SCE, as well as Commission approval

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50 *See* D.13-11-024 at 32-33; D.14-11-042 at 33-35.
51 D.14-11-042 at 35.

via the Tier 2 advice letter process. For Standard Contract Option projects in particular, shortlist exclusivity will be critical to ensuring that once a seller is notified of their shortlist status and accepts their place on the shortlist, both parties will work together to make sure that a PPA is executed in a timely fashion. If a seller is willing to accept SCE's 2015 *Pro Forma* and accepts its place on SCE's shortlist, there should be no reason the seller needs to continue to negotiate with other buyers.

14. Supplier Diversity

SCE continues to encourage Diverse Business Enterprises to participate in its RPS solicitation. Consistent with GO 156, D.15-06-007 recently expanded the definition of minorities to include Lesbian-Owned, Gay-Owned, Bisexual-Owned, and/or Transgender-Owned Business Enterprises.[52] SCE has incorporated these enterprises into its definition of Diverse Business Enterprises. SCE has also included, as an attachment to its 2015 Procurement Protocol, a sample list of potential products and services that may be available through Diverse Business Enterprise subcontractors.

B. Important Changes in 2015 *Pro Forma*

1. Pre-Paid Economic Curtailment: Sections 3.12(g) and 4.01(b)(iii)

As explained in Sections III.F.1.a and XV.A.3, SCE is eliminating the requirement that sellers bid the pre-paid economic curtailment option with the curtailment cap in the 2015 RPS solicitation. SCE is also eliminating the provisions regarding pre-paid curtailment hours and the curtailment cap in the 2015 *Pro Forma.*

The 2015 *Pro Forma* includes SCE's right to curtail a generating facility in response to an instruction from CAISO or the transmission provider, in order to respond to an emergency, or

52 The decision also provided for a five year implementation plan, among other provisions.

if SCE issues a Curtailment Order,[53] which may be given in SCE's sole discretion. Sellers will be paid the contract price for energy that could have been delivered but for a Curtailment Order. As in the 2014 *Pro Forma*, sellers will not be compensated for curtailments due to CAISO or transmission provider instructions or to respond to emergencies. This language gives sellers sufficient certainty of future revenues, while also enabling SCE to respond to CAISO market signals to help alleviate congestion and mitigate customer exposure to negative prices.

2. **<u>Elimination of Startup Period and Initial Synchronization Period: Section 4.01 and Exhibit E</u>**

In the 2015 *Pro Forma*, SCE will eliminate the startup period and initial synchronization periods that are outlined in the PPA. The elimination of these provisions will simplify contract administration and project onboarding for future projects. This change will also provide for cost certainty for SCE customers.

SCE's past practice has been to value each project as proposed by the seller, with dates-certain for the delivery term and a set quantity of energy at a forecasted capacity factor based on the generation profile furnished with the proposal package. All of these factors result in an NMV and estimated notional payments for each project, which are used to determine shortlisting and contract selection. However, prior RPS *pro forma* PPAs have allowed the seller to have a start-up period whereby SCE compensates the seller for energy deliveries prior to the delivery term. These deliveries are dictated by the seller per their schedule and SCE has no influence over the volumes delivered in this initial start-up period.

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[53] Under the 2015 *Pro Forma*, "Curtailment Order" means an order from SCE to Seller to reduce or stop the delivery of electric energy from the Generating Facility to SCE for any reason except as set forth in Sections 3.12(g)(i)-(ii).

SCE proposes to eliminate the start-up period and provide sellers the opportunity to manage the plant testing, commissioning, and initial synchronization prior to the commercial operation date with SCE. Having the seller manage the start-up of the plant prior to the commercial operation date with SCE will allow the sellers to market the attributes of the facility, reduce the onboarding complexity of operations and settlements for SCE and the seller, and eliminate the potential for any disputes related to SCE acting as the scheduling coordinator during these start-up periods.

The elimination of these provisions and the requirement that projects be bound by one online date at one contract capacity will also eliminate additional costs to customers that were not included in the valuation of the project and bring SCE's 2015 *Pro Forma* in line with other SCE *pro forma* PPAs (e.g. New Generation PPAs for gas-fired plants, Energy Storage PPAs, Combined Heat and Power ("CHP") PPAs, etc.).

3. <u>**Financial Consolidation: Section 8.06**</u>

SCE is also incorporating language into the 2015 *Pro Forma* that will obligate sellers to provide SCE with appropriate financial statements in order to include projects in its financial filings to the Securities and Exchange Commission in the event that SCE must consolidate any entity in which it has a controlling financial interest. Under GAAP,[54] a reporting entity (SCE) must consolidate in its financial statements any entity in which it has a controlling financial interest. At this time, SCE has not had an obligation to consolidate sellers of renewable resources under RPS contracts; however, the determination is made on the specific facts and circumstances of the seller's legal structure and the terms its contractual arrangements. Further,

54 "GAAP" means Generally Accepted Accounting Practices. The common set of accounting principles, standards, and procedures that companies use to compile their financial statements. GAAP are a combination of authoritative standards (set by policy boards) and the commonly accepted ways of recording and reporting accounting information.

future changes in accounting rules and interpretations could also trigger financial consolidation by SCE. As a result, SCE required the language in all final versions of negotiated PPAs in the 2014 RPS solicitation and SCE is requiring these provisions in all SCE *pro forma* PPAs going forward.

4. **<u>No Return of Development Security for Failure to Obtain Permits: Section 3.06</u>**

In the 2015 *Pro Forma*, SCE will be entitled to retain 100% of the seller's development security in the event a project is unable to achieve commercial operation due to its inability to obtain material permits for the project. This change effectively removes the concept of a "free walk" related to permitting delays. In the past, sellers have faced zero financial repercussions for failing to successfully bring a project to completion if it was due to the failure to obtain the requisite permits and such failure was not due to any act or failure to act by seller. This provision effectively placed all of the permitting risk on SCE and its customers.

Because the seller is responsible for moving a project successfully through the permitting process, the seller should have the obligation to provide protection in the form of development security to SCE's customers if the project does not attain commercial operation. The requirement for a Phase II Interconnection Study and an "application deemed complete" to participate in the solicitation means that projects proposed in the RPS solicitations have progressed significantly in terms of development. Accordingly, it is fair and reasonable to put the permitting risk on the seller.

This change will also make the 2015 *Pro Forma* consistent with the standard in other SCE *pro forma* PPAs like the New Generation gas-fired, Energy Storage, and CHP PPAs. Moreover, it is the interest of SCE customers that the projects selected in the solicitation go through a vigorous review and valuation process, and that once selected and executed, SCE can rely on these projects to help meet its RPS targets. The proposed 2015 development security provisions are appropriate and represent a fair balance of risk between SCE customers and project developers.

Finally, SCE's Independent Evaluator ("IE") Merrimack Energy Group also recommended this change to SCE's RPS *pro forma* PPA in their IE report to the Commission regarding the 2014 RPS solicitation PPAs. The IE report states, "It is far more typical in renewable energy solicitations of which Merrimack Energy is aware that Sellers who fail to achieve commercial operation due to failure to receive permits take the financial risk in the PPA-by forfeiting all or a portion of the security deposit as liquidated damages. This may help in reducing the 'contract failure' rate, by deterring developers with major project permitting risks from bidding or by requiring them to price the risk into their bids."[55]

5. Development Security Due at PPA Execution: Section 3.06

In the past, SCE's development security provisions required sellers to post the first half of their collateral within 30 calendar days of the contract effective date (i.e., PPA execution) and the second half within 30 calendar days after final Commission approval. The time between the effective date and the first posting allows for a significant period of time in which the seller may default under the PPA without consequence as the seller has not posted any collateral. Such events have occurred during other SCE renewable solicitations. These defaults could affect SCE's ability to comply with RPS targets and may impact SCE customers by requiring SCE to procure higher-priced renewable energy when these situations arise. Therefore, in the 2015 *Pro Forma*, SCE has moved the posting of development security to PPA execution.

[55] SCE Advice 3255-E, Appendix C at 48.

Furthermore, as SCE has eliminated the return of development security for failure to obtain permits as discussed in Section XV.B.4, the only remaining scenario where sellers see a refund of development security is for the failure to obtain Commission approval. In order to avoid a situation where a PPA terminates because the seller failed to obtain permits, but SCE only holds the first half of the development security because the permit failure occurs prior to final Commission approval, SCE will require full posting of development security at PPA execution.

Requiring full posting of development security at PPA execution will reduce risks for SCE's customers. Sellers must either wire cash or provide a letter of credit as development security when they transmit an executed PPA. SCE will not counter-sign until the collateral and partially executed PPA have both been received. This change will also provide greater certainty for SCE that a PPA will not be terminated immediately, avoiding situations where SCE proceeds to onboard the project and begin the process of seeking Commission approval only to have the PPA terminate because the seller does not post development security.

6. Tax Credit Legislation: Section 1.05 and Former Sections 1.04(b), 1.10 and 2.03(a)(ii)

In the 2014 *Pro Forma*, SCE provided for a possible extension of the commercial operation deadline and/or a termination right for sellers in the event federal tax credit legislation was not extended beyond 2016 on terms similar to those available to projects that achieve commercial operation at the time the contract is executed. Those provisions are not included in the 2015 *Pro Forma* because of the anticipated timing of the 2015 RPS solicitation.

In 2014, the Commission concluded that the federal tax credit legislation language should remain in the 2014 *Pro Forma* because it was "still potentially feasible for some projects to qualify for the available tax credits and since there is a history of last-minute changes to these federal tax credit provisions."[56] That timing no longer applies for the 2015 RPS solicitation. In order for projects to qualify for the ITC in its current form, projects must achieve commercial operation by December 31, 2016. Given the anticipated timing of the 2015 RPS solicitation, including the time period needed for Commission approval of any executed PPAs and the time period needed for projects to be built and achieve commercial operation, there is an extremely low likelihood that any project participating in the 2015 solicitation will achieve commercial operation by December 31, 2016.

Currently, however, there is tax legislation at the federal level which contemplates an extension of the ITC at 30% beyond 2016. Additionally, there may be other federal tax incentives specific to the development of renewable projects that neither sellers nor SCE are currently contemplating. To the extent sellers are able to take advantage of any new tax incentives not contemplated at the time of PPA execution, SCE proposes a discount to the contract price related to any unforeseen tax benefits that would be triggered if applicable tax laws were to be extended or enacted. The amount of the discount will be an agreement between the parties, including those sellers who elect the Standard Contract Option. SCE has updated its 2015 *Pro Forma* to include language that implements this discount mechanism. This mechanism is appropriate as SCE customers should be entitled to unforeseen economic benefits received by a project due to a change in tax law. Otherwise, these benefits will be financial windfalls to developers while SCE customers pay a price based on more expensive economics.

[56] D.14-11-042 at 30.

7. <u>Levelized Performance Assurance: Section 1.06</u>

In the 2015 *Pro Forma,* SCE will require performance assurance to be posted in a single amount over the delivery term of the PPA (levelized), as opposed to bell-curve shaped amounts (shaped) as it has in the recent past. Shaped performance assurance postings require sellers to adjust the collateral amount multiple times during the delivery term, which is burdensome for both sellers and SCE, and potentially adds unnecessary costs to the PPA. A single, levelized posting requirement will decrease cost, reduce complexity, and simplify the PPA.

This change responds to the market and is a benefit to both sellers and SCE customers. During negotiations with sellers in the 2014 RPS solicitation, several sellers requested the levelized performance assurance posting requirement. A levelized performance assurance posting requirement results in lower administrative costs for sellers, who do not need to pay a bank annually to amend their letter of credit, as required by the different collateral amounts inherent in the shaped performance assurance curve. The cost to SCE's customers is also lessened due to the reduced volume of letters of credit amendments that must be processed.

The average of the shaped performance assurance posting amounts is the same as the levelized performance assurance posting amount (i.e., 5% of the total project revenues). Thus, over the delivery period the risk profile is the same.

8. <u>Time-of-Delivery Factors: Exhibit I</u>

As the electricity market in California continues to evolve, as load forecasts change, and as resources are added and retired, it is increasingly appropriate and necessary to regularly update time-of-delivery ("TOD") factors. SCE has updated the TOD factors in its 2015 *Pro Forma* to reflect the changes to its forecast of load, resources, and additions and retirements.

9. **Confidentiality Provisions: Section 10.10 and Former Exhibit I**

SCE has revised the confidentiality provisions in the 2015 *Pro Forma* to eliminate Exhibit I, which was a stand-alone NDA applicable to the PPA. Instead, SCE will incorporate the material requirements from Exhibit I into the relevant confidentiality provisions in Section 10.10, as is done in all other SCE *pro forma* PPAs.

10. **Illustrating Contract Capacity in Both Alternating Current and Direct Current for Solar Photovoltaic Projects: Section 1.01(h)**

As penetration levels of variable energy resources like wind and solar increase, the CAISO and transmission providers face greater difficulty regulating voltage on the systems within their jurisdiction. As a result, reactive power requirements have become more critical, and many developers of solar photovoltaic projects in particular have sought to up-size their inverters and/or transformers to account for the likelihood of being called upon to produce VARs, and to account for losses within their collection systems. As there are no specific alternating current ("AC") nameplate capacity restrictions within the 2015 Procurement Protocol or program rules, SCE believes it is reasonable to allow developers to install more AC capacity than they plan to deliver in order to account for reactive power requirements and losses, provided they utilize plant controllers to limit their AC output to their allotted interconnection capacity at the point of delivery. Therefore, SCE is modifying Section 1.01(h) in the 2015 *Pro Forma* to require sellers to provide both the maximum output at the delivery point and the AC nameplate capacity of the generating facility. By requiring sellers to provide this information in the PPA, it provides SCE certainty on the amount of payments sellers receive for energy deliveries, while also affording sellers the ability to economically meet their reactive power obligations under their interconnection agreements.

11. Supplier Diversity: Section 3.17(i)

The 2014 *Pro Forma* already included a requirement to report payments made to Women-Owned, Minority-Owned, and Disabled Veteran-Owned Business Enterprises that supplied goods or services as subcontractors under a contract with SCE. The 2015 *Pro Forma* will include all Diverse Business Enterprises in that reporting requirement.

C. Important Changes in LCBF Methodology

1. Valuation of Transmission Costs for Projects Located Within and Outside the CAISO Control Area

As discussed in Section III.F.1.b, SCE will only consider reimbursable transmission network upgrade costs that are paid by SCE customers in the LCBF evaluation process for the 2015 RPS solicitation. For projects connecting to the CAISO control area, this will be the share of costs that SCE's customers pay for reimbursable transmission network upgrade costs. For projects not connecting to the CAISO control area, it will be zero as none of those costs are paid by SCE's customers. For most of the projects connecting to the CAISO control area, the costs that SCE customers pay is determined based on a utility-specific Transmission Access Charge ("TAC") rate, which is based on a utility's load share. The CAISO publishes these rates every year.[57] SCE will use the latest rates available for SCE at the time of 2015 RPS solicitation evaluation process.

2. Selection of Projects Based on Qualitative Criteria

In the shortlist for the 2014 RPS solicitation, SCE selected resources according to the LCBF principles. When procuring resources for the long-term, SCE uses the LCBF methodology to ensure the portfolio increases the confidence level of meeting SCE's RPS goals.

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[57] CAISO TAC rates are available at: http://www.caiso.com/market/Pages/TransmissionOperations/Default.aspx.

By diversifying SCE's portfolio based on LCBF, SCE considers generation profiles, energy and capacity values, renewable integration costs, locational congestion costs, and transmission costs where applicable.

However, when trying to meet portfolio fit objectives, using only NMV criterion may not help meet all the required objectives for procurement. [redacted] In the 2015 RPS solicitation, SCE will continue to use this approach and will continue to refine the approach based on changes to SCE's portfolio and updated RNS and load forecasts.

3. <u>SCE Experience with Developers as a Qualitative Factor for Shortlisting and Selection</u>

In 2015 RPS solicitation, SCE will add prior experience with renewable developers as a qualitative factor for consideration for both shortlisting and final selection purposes. In the past, SCE has encountered developers who have repeated issues that make for unsuccessful projects. Some examples include sellers executing PPAs and then not posting development security and sellers who attest to having site control only to have SCE discover through negotiations that they in fact do not. These situations have posed problems in the administration of the solicitation. While they are more the exception than the norm, SCE would like the ability to take its experience with developers into account as a qualitative factor in the shortlisting and selection process in these rare, yet problematic situations.

XVI. SAFETY CONSIDERATIONS

SCE is strongly committed to safety in all aspects of its business. Renewable sellers are responsible for the safe construction and operation of their generating facilities and compliance with all applicable laws and safety regulations. SCE has taken several steps to address those issues over which it has the most visibility and control – the delivery of renewable electricity products to SCE in a reliable, safe, and operationally sound manner.

As with past RPS *pro forma* PPAs, SCE's 2015 *Pro Forma* provides that the seller must operate the generating facility in accordance with "Prudent Electrical Practices."[58] The detailed definition of "Prudent Electrical Practices" includes "those practices, methods and acts that would be implemented and followed by prudent operators of electric energy generating facilities in the Western United States, similar to the Generating Facility, during the relevant time period, which practices, methods and acts, in the exercise of prudent and responsible professional judgment in the light of the facts known or that should reasonably have been known at the time the decision was made, could reasonably have been expected to accomplish the desired result consistent with good business practices, reliability and safety. . . ."[59]

Consistent with SCE's focus on safety, SCE's 2015 *Pro Forma* also provides that, prior to commencement of any construction activities on the project site, the seller must provide to SCE a report from an independent engineer certifying that seller has a written plan for the safe

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58 *See* 2015 *Pro Forma* (attached as Appendix G.1) at Section 3.12(a).
59 *See id.* at Exhibit A.

construction and operation of the generating facility in accordance with Prudent Electrical Practices.[60]

SCE also has a safety section in its 2015 Procurement Protocol providing that sellers must possess a written plan for the safe construction and operation of the generating facility as set forth in the 2015 *Pro Forma*.[61]

XVII. STANDARD CONTRACT OPTION

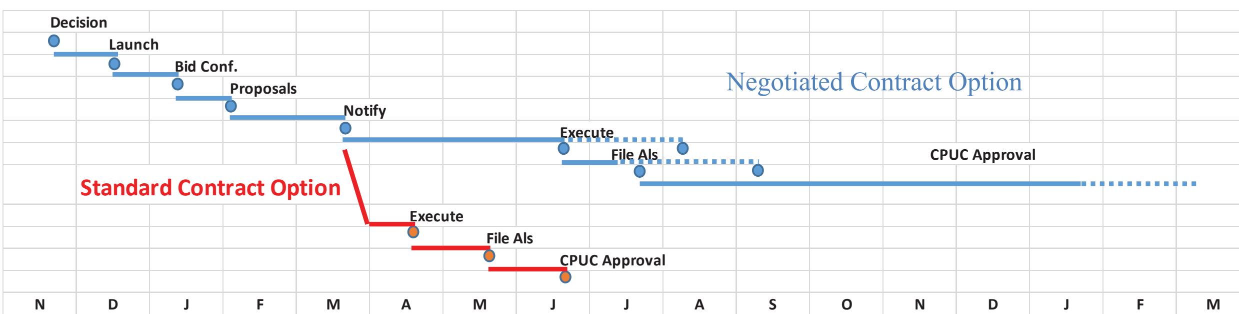
In D.14-11-042, the Commission terminated the RAM program, as authorized in D.10-12-048, after the conclusion of the RAM 6 auction.[62] The Commission also authorized the IOUs to use an optional streamlined RAM procurement tool in future RPS solicitations.[63] The Commission directed the IOUs to include the streamlined procurement tool in their RPS Procurement Plans, at their discretion, starting with the 2015 RPS Procurement Plans.[64]

In its 2015 RPS solicitation, SCE plans to include a "Standard Contract Option" using the RAM procurement tool. Consistent with the Commission's intent to provide the IOUs with flexibility to optimize their portfolios based on their procurement needs while providing a streamlined procurement tool,[65] the Standard Contract Option will allow for rapid development of renewable projects by avoiding the contract negotiation process and expediting the Commission approval process of executed PPAs. Sellers will have the option to participate in the Standard Contract Option by checking a box in the RPS proposal form. The Standard Contract Option will only be available for proposals offering Category 1 products, and will not be available for proposals offering Category 2 or Category 3 unbundled REC products, where

60 *See id.* at Section 3.11(e).
61 *See* 2015 Procurement Protocol (attached as Appendix F.1) at Section 9.03.
62 *See* D.14-11-042 at 91-92, 102-104.
63 *See id.* at 91-92.
64 *See id.* at 92.
65 *See id.*

contract negotiations are likely to be required. Additionally, the Standard Contract Option will only be available to projects with a first point of interconnection to the CAISO, and not to dynamically scheduled projects.[66]

Subject to SCE's selection of the proposal and agreement that a standard contract is appropriate for the proposal, sellers will be offered a standard contract in the form of the 2015 *Pro Forma* with no negotiations. Once executed, the Standard Contract Option PPAs will be submitted to the Commission for approval via a Tier 2 advice letter. This process uses the same approval process as in RAM, which was one factor in SCE successfully procuring 787 MW of renewables over five years in six auctions. The chart below illustrates the shorter timeframe for anticipated Commission approval that will benefit Standard Contract Option projects.[67]



In the sections below, SCE discusses the parameters of the Standard Contract Option and their consistency with D.14-11-042.

A. Procurement Need

In D.14-11-042, the Commission stated that the IOUs should explain in their RPS Procurement Plan filings how any proposed use of the streamlined RAM procurement tool could

66 SCE's 2015 *Pro Forma* is structured with the assumption that the generating facility will have a first point of interconnection with the CAISO. Accordingly, changes to the 2015 *Pro Forma* will be required for dynamically scheduled projects.

67 This chart overlays the actual schedules of the two most recent RPS and RAM procurements to illustrate the time saved by exercising the Standard Contract Option. The timeline illustrated in blue represents RPS, while the timeline in red is RAM.

satisfy an authorized procurement need, "including, for example, system Resource Adequacy needs, local Resource Adequacy needs, RPS needs, reliability needs, LCR needs, GTSR needs, and any need arising from Commission or legislative mandates."[68] In the 2015 RPS solicitation, SCE will primarily use the Standard Procurement Option to satisfy its RPS procurement needs in the third compliance period and beyond. However, it may use the Standard Contract Option to satisfy its Green Rate procurement needs as discussed in Section XVIII. SCE may also use the Standard Contract Option to fulfill other authorized procurement needs in the future.

B. <u>Standard Contract</u>

The Commission required IOUs to seek Commission authorization for a revised standard contract so that the RAM tool can continue to be a more streamlined contracting and approval process.[69] SCE proposes to use the 2015 *Pro Forma* as the standard contract for the Standard Contract Option. The existing RAM standard contract and SCE's RPS *pro forma* PPAs are closely aligned. Changes to the RPS *pro forma* PPA that were approved for use in RPS solicitations were subsequently requested and generally approved for use in the next RAM cycle, and vice versa. Additionally, both the RPS *pro forma* PPA and the RAM standard contract have been drafted in a manner that allows for the simple insertion of project specific information without any other modifications to the terms and conditions. Specifically, project-specific parameters can be inserted into the 2015 *Pro Forma* (e.g., project size, technology, location, and other project specific attributes), and the resulting contract will be the standard contract. Additional non-material ministerial changes to the 2015 *Pro Forma* may also be needed in the standard contracts; for example, to correct typographical errors or section references or delete definitions that are not needed for particular projects.

[68] D.14-11-042 at 92.
[69] *See id.* at 93.

It will be considerably more efficient for SCE, the Commission, the parties, and the market to update one *pro forma* PPA each year, rather than having separate *pro forma* PPAs for Standard Contract Option and non-Standard Contract Option projects. Further, one *pro forma* PPA eliminates market distortions that might come from commercial differences that could skew sellers toward or away from the Standard Contract Option.

C. Project Size Restrictions

The Commission eliminated the RAM project size restrictions for the streamlined RAM procurement tool and authorized the IOUs to establish project size requirements based on their specific procurement needs at the time of the solicitation.[70] SCE does not propose to include any project size restrictions for the Standard Contract Option in the 2015 RPS solicitation. SCE will allow sellers to propose projects of any size, but not less than the minimum of 500 kilowatts for the 2015 solicitation.[71]

While SCE will allow sellers with projects of any size to select the Standard Contract Option, SCE must also agree that the Standard Contract Option is appropriate for the seller's proposed project. For proposals that state a preference for a standard contract, SCE reserves the right to discuss with a seller the need to negotiate certain terms and conditions when appropriate. Although project size is not the only example of a parameter that might trigger such a situation, very large projects do often carry more complicated issues that warrant careful construction of a negotiated PPA. The Standard Contract Option will only be used if both SCE and the seller agree that it is appropriate for the specific project.

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70 *See id.* at 94.

71 If SCE uses the Standard Contract Option for Green Rate procurement, that procurement would be limited to the project size restrictions of the Green Rate program (as well as project category, locational, and eligibility requirements as discussed below).

D. Project Categories

The Commission retained the RAM product category requirement (peaking, non-peaking, baseload), but did not mandate that the IOUs procure a specific amount from each product category.[72] SCE will include the three product categories in its Standard Contract Option. SCE does not intend to set specific targets for each product category. Instead, SCE will consider all the product categories and they will be indicators of SCE's desire to balance the resources in its diverse renewables portfolio. SCE intends to conduct its selection process for both the negotiated track and the Standard Contract Option using LCBF criteria.

E. Restriction on Subdivided Projects

In D.14-11-042, the Commission eliminated the prohibition against subdivided projects participating in RAM, and required the IOUs to define the terms they will use to either include or exclude subdivided projects.[73] SCE sees no need to impose a restriction on subdivided projects in its Standard Contract Option for the 2015 RPS solicitation, particularly given that it is not imposing a size restriction.

F. Locational Restrictions

The Commission removed the requirement that RAM projects be located in the service territories of the IOUs, and permitted the IOUs to procure anywhere within the CAISO control area, including dynamically scheduled resources, to increase the available pool of resources.[74] SCE's Standard Contract Option for the 2015 RPS solicitation will be applicable to projects with a first point of interconnection to the CAISO control area, but will not include dynamically

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72 *See* D.14-11-042 at 95.
73 *See id.* at 96.
74 *See id.* at 97-98.

scheduled resources.[75] Dynamically scheduled resources generally require some changes to SCE's RPS *pro forma* PPA.

G. **Valuation and Selection**

The Commission found it reasonable to require the IOUs to use the same valuation methodologies used in their RPS solicitations for the RAM procurement tool.[76] SCE will use its LCBF evaluation process for valuation and selection of Standard Contract Option projects. In order to be selected, the value of a Standard Contract Option project must be within the range established by the SCE's 2015 RPS solicitation shortlist based on SCE's LCBF methodology as described in Appendix I.1.[77] This approach results in all projects being valued utilizing the same methodology, and lends fairness to the process while increasing competition among sellers.

H. **Interconnection Studies**

In D.14-11-042, the Commission required that projects participating in the RAM procurement tool process have a Phase II Interconnection Study (or the equivalent).[78] Consistent with that decision, SCE will apply the same Phase II Interconnection Study requirement to Standard Contract Option and non-Standard Contract Option projects in its 2015 RPS solicitation.

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[75] If SCE uses the Standard Contract Option for Green Rate procurement, that procurement would be limited by the locational restrictions of the Green Rate program.

[76] *See* D.14-11-042 at 98-99.

[77] If SCE uses the Standard Contract Option for Green Rate procurement, eligibility for the Green Rate program and the Green Rate program environmental justice reservation will be qualitative factors considered in the evaluation process.

[78] *See* D.14-11-042 at 100.

I. <u>Commercial Operation Deadline</u>

For new projects, the Commission imposed a commercial operation deadline requirement for the RAM procurement tool of 36 months with a six month extension for regulatory delays.[79] The Commission also exempted existing projects from going through the RAM viability screens, which include: (1) site control; (2) development experience; (3) commercial technology; and (4) interconnection application.[80] SCE will include the 36 month commercial operation deadline with a six month extension for regulatory delays in its Standard Contract Option for new projects. Moreover, SCE does not intend to apply any separate RAM viability screens to Standard Contract Option projects. However, SCE does believe it is appropriate to apply the same eligibility requirements that apply to all other existing projects participating in the 2015 RPS solicitation to Standard Contract Option projects. In particular, existing projects with interconnection agreements that terminate before the start of the new RPS PPA should be required to demonstrate that they will have a new interconnection agreement in place at the start of the new RPS PPA. Those existing projects with interconnection agreements that continue during the new RPS PPA should be required to demonstrate that they are not making any modifications that would prevent them from delivering under their existing interconnection agreements. Existing projects should not be permitted to circumvent solicitation eligibility requirements by selecting the Standard Contract Option.

J. <u>Commission Approval Process</u>

In D.14-11-042, the Commission permitted the IOUs to seek approval of RAM procurement tool projects through the Tier 2 advice letter process or to request approval of

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[79] *See id.* at 101.
[80] *See id.*

another approval process in their RPS Procurement Plans.[81] As noted above, SCE proposes to seek approval of Standard Contract Option projects through the Tier 2 advice letter process.

XVIII. GREEN TARIFF SHARED RENEWABLES PROGRAM

On September 28, 2013, Governor Brown signed SB 43 into law.[82] SB 43 enacted the GTSR program, a 600 MW statewide program that allows participating utilities' customers – including local governments, businesses, schools, homeowners, municipal customers, and renters – to meet up to 100% of their energy usage with generation from eligible renewable energy resources. As required by SB 43, all of the IOUs filed applications with the Commission requesting approval of GTSR programs consistent with the requirements and intent of the statute.

On January 29, 2015, the Commission adopted D.15-01-051, implementing a GTSR program framework and approving the IOUs' applications with modifications. Among other things, the Commission divided the GTSR program's statewide limitation of 600 MW of customer participation among the IOUs. Specifically, the Commission allocated 269 MW to SCE.[83] SB 43 also provides that 100 MW of the statewide limitation for the GTSR program shall be reserved for facilities that are no larger than 1 MW and that are located in areas previously identified by the California Environmental Protection Agency as "the most impacted and disadvantaged communities."[84] To implement this statutory provision, the Commission established environmental justice reservations for each IOU, including 45 MW for SCE.[85]

The GTSR program structure approved by the Commission consists of two elements: (1) a green tariff option (called the "Green Rate" by SCE) allowing customers to purchase energy

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81 *See id.*
82 SB 43 was codified in California Public Utilities Code Section 2831 *et seq*.
83 *See* D.15-01-051 at Ordering Paragraph 7.
84 Cal. Pub. Util. Code § 2833(d)(1).
85 *See* D.15-01-051 at Ordering Paragraph 7.

with a greater share of renewables, and (2) an enhanced community renewables option (called the "Community Renewables program" by SCE) allowing customers to subscribe to renewable energy from community-based projects.[86]

The Commission authorized RAM as a procurement mechanism for the Green Rate, including the streamlined RAM procurement tool that can be used as part of the IOUs' RPS solicitations.[87] Community Renewables program procurement must occur through ReMAT.[88] The Commission limited initial procurement to new solar facilities sized between 0.5 MW and 20 MW for the Green Rate and new solar facilities sized between 0.5 MW and 3 MW for the Community Renewables program.[89] There are also other eligibility requirements, including that all of SCE's GTSR resources be located within SCE's service territory,[90] and that Community Renewables program resources meet certain community interest requirements.[91]

The GTSR program has not yet been implemented for customers. SCE has filed several advice letters to implement the GTSR program, including Advice 3180-E setting forth SCE's plan for advance procurement for the GTSR program and identifying the eligible census tracts for environmental justice projects in its service territory,[92] Advice 3195-E making the changes to its RAM 6 PPA and RFO instructions needed to accommodate advance GTSR program procurement,[93] Advice 3218-E, which is the IOUs' Joint Procurement Implementation Advice

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86 *See id.* at 3-4.
87 *See id.* at 21-23, Conclusion of Law 7.
88 *See id.* at 61.
89 *See id.* at 36-37, 39, Conclusion of Law 17.
90 *See id.* at 35, Conclusion of Law 14.
91 *See id.* at 67-68, Conclusion of Law 25-26.
92 Advice 3180-E was approved by the Energy Division effective as of February 23, 2015.
93 Advice 3195-E was approved by the Energy Division effective as of April 20, 2015.

Letter, Advice 3219-E, which is SCE's Customer-Side Implementation Advice Letter, and Advice 3220-E, which is SCE's Marketing Implementation Advice Letter.[94]

In accordance with D.15-01-051 and Advice 3195-E, SCE is seeking to procure 50 MW of Green Rate-eligible resources through the RAM 6 auction in order to meet its advanced procurement need. On an annual basis, SCE plans to assess its Green Rate procurement need in each RPS Procurement Plan and set Green Rate procurement targets for each solicitation, if any, based on incremental customer enrollments and the amount of dedicated Green Rate procurement it already has under contract. If a Green Rate procurement need is identified, SCE plans to procure Green Rate-eligible resources through the Standard Contract Option portion of the RPS solicitation. SCE will provide Green Rate-eligible resources the option to select consideration for the Green Rate program, in addition to consideration for the RPS program, as part of the solicitation.[95]

SCE does not anticipate a Green Rate procurement need for the 2015 RPS solicitation. The Green Rate has not launched for customers so there are no incremental customer enrollments. Moreover, the 50 MW SCE is targeting to procure through the RAM 6 auction is expected to fulfill initial customer enrollments. However, SCE launched the RAM 6 auction on July 10, 2015 and does not yet know the outcome of that process. Therefore, it is possible that SCE will identify a Green Rate procurement need for the 2015 RPS solicitation, depending on the results of the RAM 6 auction. SCE has incorporated Green Rate-related modifications into its 2015 Procurement Protocol, 2015 *Pro Forma*, and LCBF Methodology in the event that a

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94 Advice 3218-E, 3219-E, and 3220-E are Tier 3 advice letters that are pending Commission approval.

95 Community Renewables procurement will occur through a Community Renewables Project Development Tariff and a Community Renewables Program Project Development Tariff Rider and Amendment to the standard ReMAT PPA, pending Commission approval of Advice 3218-E.

Green Rate procurement need is identified. SCE will update its solicitation materials before the launch of the 2015 RPS solicitation to identify any Green Rate procurement need.

To be considered for the Green Rate program, Green Rate-eligible projects must agree to participate in the Standard Contract Option, consistent with the Commission's direction in D.15-01-051.[96] SCE's 2015 *Pro Forma* includes an additional representation and warranty only applicable to Green Rate projects, indicating that projects must be eligible for Green-e Energy certification and maintain this eligibility. This is similar to the language included in the standard RAM 6 PPA, except that a new representation and warranty has been included applicable only to Green Rate projects related to Green-e Energy certification.[97] As part of the GTSR program, the Commission directed the IOUs to seek Green-E Energy certification of their GTSR programs.[98]

As with other RPS-eligible projects, Green Rate projects will be selected using the LCBF methodology. Qualitative factors have been added to SCE's LCBF methodology to indicate that Green Rate eligibility, Green Rate environmental justice eligibility, and a developer's affirmative "opt in" to consideration for the Green Rate program will be considered during the selection process when there is a Green Rate procurement need.

In D.15-01-051, the Commission directed the IOUs to include certain additional information in their RPS Procurement Plans, including their progress in GTSR procurement and towards the environmental justice and residential reservations, information on the transfer of capacity between the GTSR and RPS programs and the cost impacts of that transfer and impact on the IOUs' RNS, and certain reporting.[99] As discussed above, the GTSR program has not yet

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96 *See* D.15-01-051 at 21-23, Conclusion of Law 7.

97 The Commission approved the RAM 6 PPA when it approved Advice 3195-E in a disposition letter on June 17, 2015.

98 *See* D.15-01-051 at Ordering Paragraph 20.

99 *See id.* at 32-33, 41, 68-69, 143.

been implemented for customers and SCE has not yet procured any dedicated GTSR projects. Therefore, SCE does have any information to include in this 2015 RPS Plan. SCE will include this information in future RPS Procurement Plans.

XIX. OTHER RPS PLANNING CONSIDERATIONS AND ISSUES

A. Bilateral Transactions

As part of its overall procurement strategy, SCE may engage in bilateral negotiations for renewable energy purchases or sales subject to the Commission's review and approval of completed transactions.

B. Short-Term Products

SCE's 2015 RPS solicitation will be limited to long-term Category 1, Category 2, and Category 3 unbundled REC products. SCE may, however, conduct an RFI, another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products. Such processes will provide SCE with valuable information on the market for short-term renewable products. Moreover, procurement of short-term products could help SCE optimize its portfolio and minimize RPS procurement costs for its customers.

C. Energy Storage Procurement

Public Utilities Code Section 2837 requires the IOUs' RPS Procurement Plans to incorporate any energy storage targets and policies that are adopted by the Commission as a result of its implementation of AB 2514. To implement AB 2514, the Commission adopted D.13-10-040, which implemented an energy storage procurement framework and design. The Commission also directed SCE to procure 580 MW of energy storage by 2020, with projects installed and delivering by 2024.[100]

[100] *See* D.13-10-040 at 15, 26.

SCE is currently conducting its 2014 Energy Storage RFO to help meet the target identified in D.13-10-040. SCE will file contracts resulting from that RFO for Commission approval by December 1, 2015. Additionally, SCE will file its 2016 Energy Storage Procurement Plan on March 1, 2016.

In addition to the Energy Storage RFO, SCE also encourages sellers to submit proposals including energy storage in its RPS solicitations, including the 2015 RPS solicitation.

PUBLIC APPENDIX A

Redline of 2015 Written Plan

SOUTHERN CALIFORNIA EDISON

An *EDISON INTERNATIONAL* Company

(U 338-E)

~~2014~~2015 Written Plan

~~December 8, 2014~~
August 4, 2015

PUBLIC VERSION

~~2014~~2015 Written Plan

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I. EXECUTIVE SUMMARY OF ~~2014~~2015 RPS PLAN

In accordance with the Assigned Commissioner's Revised Ruling Identifying Issues and Schedule of Review for 2015 Renewables Portfolio Standard Procurement Plans, dated May 28, 2015 ("ACR"), Southern California Edison Company's ("SCE") ~~Final 2014~~2015 Renewables Portfolio Standard ("RPS") Procurement Plan ("~~2014~~2015 RPS Plan") details SCE's plan for procuring renewable resources to satisfy the State's RPS goals in a manner that minimizes costs and maximizes value for SCE's customers. This ~~2014~~2015 RPS Plan discusses SCE's renewables portfolio, the process SCE uses for forecasting its renewable procurement need, SCE's forecasted renewable procurement position through 2030, SCE's portfolio optimization strategy and management of its renewables portfolio, lessons learned from SCE's experience with renewable procurement, past and future trends, and additional policy and procurement issues. Additionally, SCE explains its plans for achieving California's RPS targets, focusing on SCE's proposal to conduct a ~~2014~~2015 RPS solicitation. SCE's ~~2014~~2015 RPS Plan includes its ~~2014~~2015 Procurement Protocol, ~~2014~~2015 *Pro Forma* Renewable Power Purchase~~ and Sale~~ Agreement, ~~2014~~2015 *Pro Forma* Master Renewable Energy Credit Purchase Agreement, ~~2014 Form of Seller's Proposal,~~ a description of SCE's least-cost~~,~~ best-fit ("LCBF") evaluation methodology, and a summary of the important changes from SCE's ~~2013~~2014 RPS solicitation documents.

Further, this ~~2014~~2015 RPS Plan addresses other issues set forth in the ~~Assigned Commissioner's Ruling Identifying Issues and Schedule of Review for 2014 Renewables Portfolio Standard Procurement Plans, dated March 26, 2014 ("ACR"), and the Decision Conditionally Accepting 2014 Renewables Portfolio Standard Procurement Plans and an Off-Year Supplement to 2013 Integrated Resource Plan, Decision ("D.") 14-11-042. Specifically, SCE's 2014 RPS Plan includes a project development status update, discussion of potential compliance delays and risks,~~

~~quantitative information supporting SCE's renewable procurement need, an explanation of the minimum margin of procurement, consideration of price adjustment mechanisms, cost quantification and expiring contracts tables, discussion of Imperial Valley issues, a section addressing other RPS planning considerations and issues such as bilateral transactions and integration costs, and discussion of safety considerations.~~ ACR, statute, and other Commission decisions. Specifically, SCE's 2015 RPS Plan includes discussion of the following additional topics:

- Consideration of a higher RPS goal;
- Project development status update;
- Potential compliance delays and risks;
- Quantitative information supporting SCE's renewable procurement need;
- Minimum margin of procurement;
- Consideration of price adjustment mechanisms;
- Economic curtailment;
- Expiring contracts;
- Cost quantification tables;
- Imperial Valley issues;
- Safety considerations;
- Standard Contract Option using the streamlined Renewable Auction Mechanism ("RAM") procurement tool;
- Green Tariff Shared Renewables ("GTSR") program; and
- Other RPS planning considerations and issues.

SCE takes the RPS program's regulatory framework into account in planning for renewable procurement in ~~2014~~2015 and beyond. Senate Bill ("SB") 2 (1x), which took effect on December 10, 2011, made significant changes to the RPS program. Most importantly, in addition to increasing the overall target percentage of procurement from renewable resources from 20% to 33%, SB 2 (1x) departed from the prior structure of annual RPS goals and moved to multi-year compliance periods, with interim procurement targets established for each multi-year compliance period. The California Public Utilities Commission ("Commission" or "CPUC") has issued several decisions implementing SB 2 (1x), including Decision ("D.") 11-12-020 setting RPS procurement quantity requirements,[1] D.11-12-052 implementing the three portfolio content categories of renewable energy products that may be used to satisfy RPS targets,[2] ~~and~~ D.12-06-038 establishing new compliance rules for the RPS program, and D.14-12-023 setting enforcement rules for the RPS program. The Commission has not yet established a cost limitation for RPS-related procurement expenditures for each electrical corporation. SCE's renewable procurement planning may change as a result of the Commission's adoption of a procurement

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1 As implemented by the Commission in D.11-12-020, the RPS procurement quantity requirements applicable to all retail sellers are as follows: (1) 20% of overall retail sales for the first compliance period from 2011-2013; (2) 21.7% of 2014 retail sales, plus 23.3% of 2015 retail sales, plus 25% of 2016 retail sales for the second compliance period from 2014-2016; (3) 27% of 2017 retail sales, plus 29% of 2018 retail sales, plus 31% of 2019 retail sales, plus 33% of 2020 retail sales for the third compliance period from 2017-2020; and (4) 33% of retail sales in each year thereafter.

2 The first portfolio content category ("Category 1") includes products from renewable generators with a first point of interconnection to the Western Electric Coordinating Council ("WECC") transmission system within the boundaries of a California Balancing Authority Area ("CBA"), or with a first point of interconnection with the electricity distribution system used to serve end users within the boundaries of a CBA, or where the renewable generation is dynamically transferred to a CBA, or scheduled into a CBA on an hourly basis without substituting electricity from another source. The second portfolio content category ("Category 2") includes firmed and shaped products. The third portfolio content category ("Category 3") includes all other renewable electricity products, including unbundled renewable energy credits ("RECs"). Retail sellers are subject to a minimum portfolio content category target (varying by compliance period) for Category 1 products and a maximum portfolio content category target (varying by compliance period) for Category 3 products. The remainder may be satisfied by Category 2 products.

expenditure limitation mechanism, implementation of other RPS program rules, or other changes to the RPS program. Moreover, the enactment of ~~other~~new laws and/or the implementation of other programs may affect SCE's RPS procurement planning. For example, the California Legislature is currently considering bills (SB 350 and Assembly Bill ("AB") 645) that would increase the State's RPS goals.[3]

Through SCE's analysis of its renewable procurement need, as discussed herein, SCE has determined that it has a long-term need for renewable energy. In this ~~2014~~2015 RPS Plan, SCE proposes ~~conducting~~to conduct a targeted ~~2014~~2015 RPS solicitation that meets SCE's need for renewable resources. Similar to SCE's ~~2013~~2014 solicitation process, SCE proposes a solicitation process that is intended to capitalize on the maturing renewables market and target the most viable proposals that fit SCE's portfolio need and provide the most value to customers. In particular, SCE will continue to require that projects have a Phase II Interconnection Study ~~for projects~~ (or an equivalent or more advanced interconnection status or exemption) and an "application deemed complete" (or equivalent) status within the applicable land use entitlement process in order to submit a proposal. ~~In addition to soliciting long-term Category 1 products,~~ SCE will also solicit ~~long-term~~Category 1, Category 2, and Category 3 unbundled REC ~~transactions~~products in order to minimize costs to its customers. Furthermore, SCE will only consider proposals from projects with ~~commercial operation dates and~~ initial delivery dates to SCE of ~~January~~December 1, ~~2016~~2020 or ~~later~~earlier.

3 ~~For example, on September 28, 2013, the Legislature enacted SB 43, which requires the investor-owned utilities ("IOUs") to file applications requesting Commission approval of green tariff shared renewables programs. In accordance with SB 43, SCE filed Application ("A.") 14-01-007 seeking approval of proposed Green Rate and Community Renewables programs. This application is currently pending before the Commission. SCE will address the procurement impacts of these programs in future RPS Procurement Plans, as appropriate, once the programs are approved by the~~

II. CONSIDERATION OF A HIGHER RPS GOAL

The ACR requires that retail sellers' 2015 RPS Procurement Plans consider both the current 33% by 2020 RPS goal and a 40% by 2024 RPS goal when addressing Specific Requirements for 2015 RPS Procurement Plans.[4] This 2015 RPS Plan considers these two different RPS goals throughout. Except where otherwise indicated, SCE's responses are the same for the two different goals.

SCE supports the Governor's 2030 climate vision for California to reduce greenhouse gas ("GHG") emissions while maintaining or enhancing safe, reliable, and affordable electric service. SCE recognizes that moving towards the State's long-term GHG emissions goals will require significant investment in additional renewable energy, energy efficiency, and transportation electrification, as well as other measures such as strategic expansion of distributed generation and development of strategies to integrate renewables. Accordingly, SCE supports a comprehensive framework that advances statewide GHG emissions reductions from a combination of these actions.[5] This comprehensive framework should cost-effectively deliver additional GHG emissions reductions, while also encouraging electric sector support and contributions to GHG emissions reductions in other sectors (e.g., transportation) and providing load-serving entities with the flexibility to optimize their portfolio of GHG emissions reduction opportunities for their customers.

While the procurement of renewable energy through the RPS program is an important part of a comprehensive framework that advances statewide GHG emissions reductions, it is premature

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~~Commission~~As discussed in Section II, the ACR also directs retail sellers to include consideration of a higher RPS goal in their 2015 RPS Procurement Plans.

4 *See* ACR at 5.

5 *See, e.g.*, Opening Comments of Southern California Edison Company (U 338-E) on Nine-Point Implementation Plan, Rulemaking ("R.") 13-12-010, at 2-4 (January 12, 2015).

for the Commission to adopt any RPS target beyond the current 33% by 2020 goal as part of the 2015 RPS Procurement Plan process. The California Legislature is currently examining whether to increase the statewide RPS goal and the role of additional renewables in the State's GHG emissions reduction efforts. Two active bills in the 2015 legislative session, SB 350 and AB 645, propose raising the current 33% RPS goal to 50% by 2030. Increasing the current RPS goal raises challenges associated with renewable integration that have potentially considerable cost implications which must be carefully considered. There are also significant questions regarding how an RPS program with a higher overall goal should be structured to ensure it is workable and effective. Many of these questions will likely be affected or informed if either proposed bill becomes law. The Commission should defer further consideration of an RPS procurement goal beyond 33% until after the Legislature and the Governor finish their examination of these issues.

Most importantly, a Commission decision implementing a higher RPS goal at this juncture could conflict with future legislation, creating challenges in implementation and uncertainty regarding which program rules govern which goal. Moreover, any increased RPS goal adopted by the Commission would necessarily apply only to retail sellers, thus resulting in unequal rules for retail sellers and local publicly owned electric utilities that are also subject to the RPS program. In order to ensure fairness, make certain that the State's efforts to support renewables are truly statewide, and avoid efforts that may ultimately be inconsistent with future law, the RPS program should have the same goals and rules for all load-serving entities serving California customers. In addition, as discussed below, changes to the current RPS program rules are needed to implement an achievable and cost-effective RPS program with a higher goal. These changes require legislative action. SCE also notes that all load-serving entities can and should take action to make sure they are well positioned through their renewable procurement to meet the State's goals and anticipate actions needed to meet changing requirements without direct action of the Commission.

For any consideration of a higher RPS goal, SCE offers the following policy considerations. It is important to make these changes in order to create a successful RPS program that will provide all load-serving entities with adequate flexibility to meet increased RPS goals and manage operational issues associated with additional renewable generation on the system, while also minimizing costs for their customers.

Renewable Distributed Generation: The current RPS program rules allow renewable distributed generation ("DG") systems to qualify as RPS-eligible resources and count towards RPS program targets if they meet all RPS eligibility and tracking requirements as set forth by the Commission and the California Energy Commission ("CEC"). While, in concept, RECs from renewable DG could be eligible to count towards RPS goals, administrative and economic hurdles prevent this from being the case in practice. As California potentially moves towards a higher RPS goal, it is important that all renewable generation, including generation from renewable DG, is accounted for in the State's RPS portfolio.

The main hurdles to counting these RECs towards California's RPS goals are the rules put in place by various agencies. For instance, expensive Western Renewable Energy Generation Information System ("WREGIS") metering and tracking requirements are an unnecessary barrier to counting renewable DG towards RPS targets.[6] WREGIS requires revenue-quality meters to be

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6 *See, e.g.*, CEC Renewables Portfolio Standard Eligibility Guidebook, Eighth Edition, CEC-300-2015-001-ED8-CMF, at 24-25, 30 (June 2015) ("A facility shall be registered in WREGIS before the Energy Commission will accept an application for certification. . . . A certified facility must remain registered in WREGIS and comply with all WREGIS rules, and all generation must be tracked in WREGIS to be considered RPS-eligible, with the limited exceptions noted in Section III.A.1.a: Creation of Retroactive Renewable Energy Credits in WREGIS.") ("Generation from a certified facility serving onsite load may be claimed for use in the RPS if all eligibility requirements are met and

installed in order to create WREGIS certificates.[7] These meters can cost hundreds of dollars for individual customers to install. The costs of installing these expensive meters and going through many administrative processes are much higher than the value of the RECs from most customers' renewable DG systems, which can be less than $10 in a year. These barriers should be removed and clarified, allowing energy from renewable DG to easily count towards the State's RPS goals. This policy change is best handled through legislation, as a regulatory solution would have to be coordinated across many agencies, would take a considerable amount of time and effort, and may not lead to a viable solution.

Banking Short-Term Products: The current RPS program's compliance framework prohibits banking short-term products associated with contracts of less than 10 years in duration.[8] Said differently, if a load-serving entity's retired RECs exceed its RPS procurement quantity requirement for a compliance period, all RECs from short-term products above the procurement quantity requirement will be deducted from the load-serving entity's bank. The short-term Category 1, 2, and/or 3 RECs that are in excess of the load-serving entity's procurement quantity requirement are not used for RPS compliance and essentially disappear. This rule harms the customers of load-serving entities that wish to go above and beyond current RPS targets. Customers of these load-serving entities lose the value of RECs that cannot be banked, and ultimately pay higher costs for renewables because these load-serving entities cannot fully utilize lower cost products that are typically sold on a short-term basis.

It is not in the best interests of the State, the Commission, or the renewables market as a whole to create a disincentive for load-serving entities to procure renewable energy beyond their

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the generation serving onsite load is metered independently from any station service loads using a meter with a verified accuracy rating of 2 percent or higher.").

7 *See* WECC WREGIS Operating Rules, Rules 9.1 and 9.3 (July 15, 2013).

RPS goals for a compliance period. Moreover, a megawatt-hour of renewable energy is still energy generated by a clean renewable resource regardless of whether the underlying contract for such resource meets an artificial threshold for the length of contract. As such, a legislative change is needed that would allow load-serving entities to bank excess short-term products. This would allow all load-serving entities to have access to cost-competitive short-term products in order to reduce costs to their customers. It would also eliminate a disincentive for load-serving entities to exceed RPS targets.

RPS Compliance Period Targets: The active 50% RPS bills being considered in the 2015 legislative session each have proposed different compliance period trajectories to 50% RPS by 2030.[9] When considering RPS targets for each compliance period, lawmakers should establish targets with the intention of reducing costs to customers and providing reasonable flexibility to load-serving entities with respect to contracting and compliance timelines. SCE provides the following recommended trajectory in an effort to establish a least-cost and timely path to 50% RPS by 2030: 38% by 2023, 43% by 2026, and 50% by 2030. This trajectory repeats the three-, three-, and four-year compliance periods of the current 33% RPS program.

The trajectories for each compliance period should be established through legislation. Current law states that the RPS program reverts to annual targets after 2020.[10] Moreover, the higher RPS targets included in the ACR are annual targets for 2021, 2022, 2023, and 2024.[11] One of the significant benefits of the 33% RPS program was moving away from annual targets towards multi-year compliance periods. It would be a significant drawback for retail sellers under the

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8 *See* Cal. Pub. Util. Code § 399.13(a)(4)(B).

9 SB 350 currently proposes a trajectory of 40% by 2024, 45% by 2027, and 50% by 2030. AB 645 currently proposes a trajectory of 38% by 2023, 44% by 2026, and 50% by 2030.

10 *See* Cal. Pub. Util. Code §§ 399.15(b)(2)(B)-(C).

11 *See* ACR at 5.

Commission's jurisdiction to have to meet RPS targets each year, rather than in multi-year compliance periods. Multi-year compliance periods allow retail sellers to better plan for variability in retail sales and renewable generation, as well as to more effectively account for the risk of project failure. Multi-year compliance periods also reduce costs for customers because retail sellers can carry a lower average bank to account for potential risks and ensure compliance when an RPS target covers several years than when the target only covers one year. Further, as noted above, establishing higher annual RPS goals for retail sellers for 2021 through 2024 through Commission action will create unequal rules between retail sellers and local publicly owned electric utilities since local publicly owned electric utilities would not be subject to any Commission targets.

While this is a simple distinction between increasing the RPS goals through regulatory versus legislative action, establishing a reasonable RPS target trajectory with multi-year compliance periods is very important to achieving higher RPS goals while minimizing costs to customers. For this reason alone, the Commission should wait for legislative action before raising the RPS targets.

Tools to Manage Operational Issues: An increase in California's RPS goal from 33% to 40% or 50% would result in more intermittent resources on the grid and increased deliveries from RPS-eligible resources, likely resulting in an increase in the amount of curtailment of renewable output due to more instances of over-generation. This raises operational concerns regarding the integration of renewable resources. It also affects load-serving entities' ability to comply with the higher RPS targets and the cost of the RPS program to customers.

Currently, customers are paying a premium for curtailed, otherwise RPS-eligible energy that they are unable to count towards RPS targets. For example, in instances when a renewable project is curtailed due to economics (i.e., negative market prices), SCE customers may pay the generator the full price for curtailed energy, but are unable to count that energy toward RPS goals. In other instances, for example when the California Independent System Operator ("CAISO") orders a curtailment due to congestion or over-generation, SCE customers do not pay the generator for curtailed energy, but SCE is similarly unable to count the curtailed energy toward RPS goals. Both scenarios may result in SCE customers paying additional costs for RPS-eligible replacement energy. However, curtailing RPS-eligible energy may still be required to address system issues or avoid paying even higher costs through negative pricing. This issue may be exacerbated as the State's RPS targets increase.

To provide load-serving entities with the tools to address this operational issue, SCE recommends that curtailed energy paid for by a load-serving entity be eligible to count towards RPS targets on or after January 1, 2021. Allowing load-serving entities to count curtailed energy towards the RPS would avoid the scenario in which load-serving entities purchase renewable energy in great excess of their targets in order to account for curtailed energy, resulting in unnecessary cost increases to customers and possibly operational problems with more over-generation on the system. This change to the RPS program would require legislative action.

Equal Rules: The current 33% RPS Program has been inconsistently applied to different types of load-serving entities. For instance, the three large investor-owned utilities ("IOUs") are required to offer feed-in tariffs, such as the Renewable Market Adjusting Tariff ("ReMAT") and the Bioenergy Market Adjusting Tariff ("BioMAT"), and have also been required to conduct additional procurement of renewable resources sized 20 megawatts ("MW") and under through RAM auctions. These programs are not required for other retail sellers. The IOUs' customers pay higher prices in these mandated procurement programs, while customers of non-participating retail sellers are not subject to these same costs. All retail sellers should be required to participate in all programs that contribute to the RPS program. Because many of these procurement programs are required by legislation, it would be appropriate for legislative language to be amended and clarified to promote equal rules, prior to the Commission moving forward with consideration of any RPS procurement target beyond 33%.

III.~~II.~~ ASSESSMENT OF RPS PORTFOLIO SUPPLIES AND DEMAND

A. SCE's Renewables Portfolio

For the first compliance period from 2011 through 2013, SCE served 20.7% of its retail sales from RPS-eligible resources.~~[4]~~[12] In 2014, SCE served 23.4% of its retail sales from RPS-eligible resources. To date, SCE's RPS-eligible deliveries and executed renewable procurement contracts have resulted from SCE's ~~various large RPS Requests for Proposals ("RFPs")~~RPS solicitations, SCE's Renewables Standard Contract program, the ~~Assembly Bill ("~~AB~~")~~ 1969 feed-in tariffs, ~~the Renewable Auction Mechanism ("RAM") program, the Renewable Market Adjusting Tariff ("Re-MAT")~~RAM auctions, ReMAT, the utility-owned generation and independent power producer ("IPP") portions of SCE's Solar Photovoltaic Program ("SPVP"), qualifying facility ("QF") contracts, utility-owned small hydro projects, and bilateral opportunities.

~~In 2013, SCE's renewable procurement focused on the variety of legislatively- and Commission-adopted renewable procurement programs for smaller-scale renewable resources. Between January 2013~~Between January 2014 and ~~November 2014,~~June 2015, SCE executed ~~37 contracts resulting from its AB 1969 feed-in tariffs totaling 51 megawatts ("MW"), 44~~21 RAM contracts for approximately ~~692~~331 MW, 11 ~~Re-MAT~~ReMAT contracts for approximately ~~18~~23

~~[4]~~[12] SCE retired RECs amounting to 20.6% of its retail sales for the first compliance period.

MW, ~~and 17~~39 SPVP IPP contracts for ~~about 30 MW.[5]~~approximately 63 MW, and two QF standard offer contracts for approximately 18 MW.[13] During this period, SCE also executed eight contracts for approximately 1,556 MW from its 2013 RPS solicitation.

SCE ~~also~~ launched its ~~large-scale 2013 RPS RFP in January 2014. In July 2014, SCE executed 8 power purchase agreements ("PPAs") totaling 1,556 MW resulting from its 2013 RPS RFP.~~2014 RPS solicitation on December 8, 2014. In March 2015, SCE shortlisted [redacted] SCE has executed nine contracts from its 2014 RPS solicitation totaling approximately 680 MW. SCE expects to execute additional contracts from its 2014 solicitation.

B. SCE's Forecast of Renewable Procurement Need

SCE determines its expected renewable procurement need by comparing its forecasted RPS ~~procurement~~ targets to its forecasted energy deliveries from contracted projects. The forecasted energy deliveries include SCE's probabilistic risk-adjusted forecast of generation from contracted projects that are not yet ~~on-line~~online. SCE also considers generation from pre-approved procurement programs (i.e., RAM, ~~Re-MAT~~ReMAT, and SPVP), among other factors.[14]

Appendices C.~~1, C.2, C.3, and~~1 through C.4 include SCE's forecast of its renewable procurement position and need – i.e., SCE's renewable net short ("RNS")~~. –~~ – based on the RPS program's 33% by 2020 target. As provided in the ACR, Appendices C.5 through C.8 include

~~5~~13 Of these, ~~15 of the AB 1969 feed-in tariff contracts totaling 21 MW, seven~~two of the RAM contracts totaling ~~106~~38 MW, one of the ~~Re-MAT~~ReMAT contracts ~~for 1~~totaling 0.5 MW, and ~~one~~four of the SPVP IPP contracts for ~~1~~5 MW subsequently terminated. This information is up to date as of ~~November~~June 30, ~~2014.~~2015.

14 SCE has not yet included generation from BioMAT since the program has not yet been implemented.

SCE’s forecast of its RNS based on the 40% by 2024 target set forth in the ACR. Both sets of forecasts include the RPS targets adopted by the Commission in D.11-12-020 for all years through 2020. The difference between the two sets of forecasts are the targets for 2022 through 2030. In accordance with the current rules of the RPS program, Appendices C.1 through C.4 include a 33% target for all years after 2020. Pursuant to the ACR, Appendices C.5 through C.8 include a 33% target for 2021, a 37% target for 2022 and 2023, and a 40% target for 2024 and all subsequent years.

These Appendices use the standardized reporting template included in the Administrative Law Judge’s Ruling on Renewable Net Short, R.11-05-005, dated May 21, 2014 (“RNS Ruling”).[15] As required in the Revised Energy Division Staff Methodology for Calculating the Renewable Net Short (“Revised RNS Methodology”) attached to the RNS Ruling, Appendices C.~~1~~1, C.2, C.5, and C.~~2~~6 include physical RNS calculations. Moreover, Appendices C.~~3~~3, C.4, C.7, and C.~~4~~8 include optimized RNS calculations.~~[6]~~[16] Appendices C.~~1 and~~1, C.~~3~~3, C.5, and C.7 include physical and optimized RNS calculations using all required assumptions for the Commission’s Revised RNS Methodology. Appendices C.~~2~~2, C.4, C.6, and C.~~4~~8 include physical and optimized RNS calculations using SCE’s assumptions. More information regarding Appendices C.~~1,~~1 through C.~~2, C.3, and C.4~~8 and responses to the RNS questions set forth in the RNS Ruling are included in Section ~~VI~~VII.

~~SCE based its forecasted renewable procurement position and need, using both SCE’s assumptions and the Commission’s assumptions, on the RPS procurement targets adopted by the Commission in D.11-12-020 and other relevant RPS program rules (e.g., rules on banking of~~

[15] SCE’s forecasts only extend through 2030; therefore, SCE’s forecast RNS information is only included through 2030.

~~[6]~~[16] The required information on RECs from expiring contracts is included in Appendix E.

~~excess procurement across compliance periods). Both forecasts include all~~All forecasts include projects under contract[17] and assume contracted projects that are currently ~~on-line~~online will deliver 100% of their expected amount of renewable energy. ~~Both~~All forecasts also include generation from pre-approved procurement programs (i.e., RAM, ~~Re-MAT~~ReMAT, and SPVP) at a 100% success rate before contracts are signed.~~[7]~~[18] Additionally, ~~both~~all forecasts incorporate current expected ~~on-line~~online dates for all projects that are not yet ~~on-line.~~ online. As indicated above, SCE is still in the process of completing its 2014 RPS solicitation. SCE will update its RNS to reflect additional 2014 RPS solicitation contracts in subsequent versions of its 2015 RPS Plan.

Furthermore, ~~both~~all forecasts account for potential issues that could delay RPS compliance, project development status, minimum margin of procurement, and other potential risks through the use of SCE's probabilistic risk-adjusted success rates for energy deliveries from contracted projects that are not yet ~~on-line~~online. These probabilistic risk-adjusted success rates are intended to reflect a number of dynamic factors and are periodically adjusted based on new information. The forecasts include individual project-specific, risk-adjusted success rates for large, near-term projects and a flat ~~50~~60% success rate for the remaining projects, which is based on these projects' overall weighted average success rate. The overall probabilistic risk-adjusted success rate for energy deliveries from SCE's portfolio of contracts with projects that are not yet ~~on-line~~ online varies from around ~~77~~80% for the second compliance period to approximately 65% in the third compliance period and approximately ~~61~~62% thereafter.

The difference between the RNS forecasts using SCE's assumptions, as reflected in Appendices C.~~2 and~~2, C.4, C.6, and C.8, and the Commission's assumptions, as reflected in

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[17] SCE's forecasts include four of the nine recently executed contracts from SCE's 2014 RPS solicitation.

~~[7]~~[18] After contracts from such programs are signed, they are risk adjusted in the same manner as other projects with executed contracts that are not yet ~~on-line~~online.

Appendices C.~~1 and~~1, C.3, C.5, and C.7, is that SCE uses its most recent bundled retail sales forecast for all years while the Commission's assumptions use SCE's most recent bundled retail sales forecast for ~~2014~~2015 through ~~2018~~2019 and 2025 through 2030, and the standardized planning assumptions that were used in the 2014 Long-term Procurement Plan ("LTPP") for ~~2019~~2020 through 2024.[~~8~~19] SCE uses its own bundled retail sales forecast for renewable procurement planning because it is SCE's best forecast of bundled retail sales.

As shown in Appendices C.~~1,~~1 through C.~~2, C.3, and C.4,~~8, SCE's procurement quantity requirement for the first compliance period was approximately 44.8 billion kilowatt-hours ("kWh") and its RPS-eligible procurement was about 46.4 billion kWh, for a net long position of around 1.6 billion kWh.

Appendices C.~~2 and~~1 through C.~~4~~8 also demonstrate that, using either SCE's or the Commission's assumptions, SCE forecasts a procurement quantity requirement for the second compliance period of approximately [redacted] kWh and RPS-eligible procurement of about ~~56.2~~55.5 billion kWh, for a net long position of around [redacted] kWh. ~~In the third compliance period,~~

Using SCE's assumptions as set forth in Appendices C.2, C.4, C.6, and C.8, SCE forecasts a procurement quantity requirement of approximately [redacted] kWh and RPS-eligible procurement of about ~~80.2~~82.7 billion kWh for the third compliance period, for a net short position of around [redacted] kWh without the use of bank and approximately [redacted] kWh with the use of bank (as shown in ~~Appendix~~Appendices C.4 and C.8).

[~~8~~19] The Revised RNS Methodology states that retail sellers can use their own forecasts for bundled retail sales for the first five years and should use the LTPP standardized planning assumptions thereafter. *See* RNS Ruling, Attachment A at 25. In Appendices C.~~1~~1, C.3, C.5, and C.~~3,~~7, SCE uses its own bundled

Using the Commission's assumptions as set forth in Appendices C.1, C.3, C.5, and C.7, SCE forecasts a net short position for the third compliance period of approximately [redacted] kWh without the use of bank and about [redacted] kWh with the use of bank (as shown in Appendices C.3 and C.7).

SCE ~~also~~ forecasts a net short position for 2021 and beyond~~. Using~~ under both SCE's assumptions and the Commission's assumptions. Under current 33% RPS program rules, SCE forecasts a net short position of approximately 4.7 billion kWh for 2024 using SCE's assumptions (as shown in Appendices C.2 and C.4), and a net short position of approximately 4.9 billion kWh using the Commission's assumptions (as ~~set forth~~shown in Appendices C.1 and C.~~3, SCE forecasts a net long position of approximately~~ [redacted] ~~kWh for the second compliance period. In the third compliance period, using the Commission's assumptions, SCE forecasts a net short position of approximately~~ [redacted] ~~kWh without the use of bank and about~~ [redacted] ~~kWh with the use of bank (as shown in Appendix C.3). SCE also forecasts a net short position for 2021 and beyond.~~3). Accordingly, SCE does not have a short-term renewable procurement need, but it does anticipate a longer term need for additional RPS-eligible energy in the third compliance period and beyond.

As explained in Section II, it is premature for the Commission to adopt any RPS target beyond the current 33% by 2020 goal as part of the 2015 RPS Procurement Plan process. Considering the 40% by 2024 target as required in the ACR, SCE forecasts a net short position of approximately 10.0 billion kWh for 2024 using SCE's assumptions (as shown in Appendices C.6 and C.8), and a net short position of approximately 10.3 billion kWh using the Commission's assumptions (as shown in Appendices C.5 and C.7).

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retail sales forecast for 2025 through 2030 because there is no LTPP forecast for those years.

C. SCE's Plan for Achieving RPS Procurement Goals

Through its ~~2014~~2015-2016 RPS procurement activities, SCE intends to contract for renewable energy that will help achieve the State's RPS goals. SCE's ~~2014~~2015-2016 RPS procurement activities will take into account: (1) the renewable energy procured through SCE's prior RPS solicitations, including the 2014 RPS solicitation, and other procurement mechanisms, (2) probabilistic risk adjustment of expected generation from executed contracts with projects that are not yet ~~on-line~~online, and (3) future RPS solicitations and other procurement mechanisms that are expected to take place, including any increased renewable targets which are adopted between now and when SCE selects a 2015 RPS solicitation shortlist. Generally, for ~~2014,~~2015, SCE will seek resources to augment those already under contract to fulfill its need in the third compliance period and beyond.~~[9]~~

SCE plans to launch a ~~2014~~2015 RPS solicitation for long-term Category ~~1 products~~1, Category 2, and ~~long-term~~ Category 3 unbundled ~~RECs~~REC products. SCE will only consider proposals from projects with ~~commercial operation dates and~~ initial delivery dates to SCE of ~~January~~December 1, ~~2016~~2020 or ~~later~~earlier. This is consistent with SCE's renewable procurement need in the third compliance period and future years. ~~It also takes into consideration the possibility that projects may need to reach commercial operation prior to the reduction in the Federal Business Energy Investment Tax Credit ("ITC") from the current 30% to the long-standing 10% of certain qualifying capital costs on December 31, 2016. SCE's customers may benefit from reduced contract payments due to sellers' utilization of the ITC. Moreover, SCE will be able to bank any excess 2016 generation to use~~Requiring initial delivery dates to occur by 2020 increases the certainty of those projects meeting SCE's need in the third compliance period

~~[9] SCE will also utilize banking of excess procurement, as appropriate.~~

and beyond.~~[10]~~ As in the ~~2013~~2014 RPS solicitation, in order to fill its longer term need, SCE intends to be flexible in its contracting in the 2015 solicitation. For example, SCE may contract with a seller for energy deliveries beginning in 2018 or ~~beyond but allow that seller to bring its project on-line earlier to take advantage of the ITC. The seller may choose~~later but will provide the opportunity for sellers to sell power directly to the market or to a third party until the delivery term begins under the contract with SCE.

All of the procurement in SCE's current renewables portfolio is from contracts executed prior to June 1, 2010 or contracts for Category 1 products. SCE forecasts that it will meet its RPS targets primarily through long-term Category 1 products because they provide the most flexibility for SCE's customers. In addition to long-term Category 1 products, SCE will solicit long-term Category 2 and Category 3 unbundled REC products in the 2015 RPS solicitation in order to minimize costs to its customers and gain information on the market for each portfolio content category. Additionally, as discussed in Section XIX.B, SCE may conduct a Request for Information ("RFI"), another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products to realize potential cost savings for customers and obtain additional information on the market for short-term products.

SCE considers its ~~net short~~ position in the third compliance period and beyond in light of how long it takes to bring new projects ~~on-line, how far in the future the short~~online, SCE's forecasted position~~ exists~~, and how many solicitations SCE anticipates being able to complete in order to ~~fill the position~~meet SCE's compliance requirements. SCE then makes a pro~~-~~ rata allocation of SCE's need over the remaining anticipated solicitations. Additionally, SCE generally executes contracts for deliveries in excess of its renewable procurement need to account

~~[10] SCE will account for the restrictions on banking of excess procurement in its need assessment and~~

for the risk of project failure and other relevant risks. This pro rata strategy allows SCE to adjust to changes in the RPS program, including the potential for increased RPS targets, and to respond to changes in load forecasts and/or expected generation from operating and previously contracted renewable resources. If the State's RPS goals were to increase beyond 33% in the future, SCE has several anticipated future solicitations to meet that need.

SCE determines its need for resources with specific deliverability characteristics (such as peaking, dispatchable, baseload, firm, and as-available) through its LCBF analysis. SCE uses its LCBF methodology to compare project profiles, including duration of term, location, technology, ~~on-line~~online date, viability, deliverability, and price, to estimate the value of each project to SCE's customers and its relative value in comparison to other proposals using both quantitative and qualitative factors. SCE also considers resource diversity with respect to proposals featuring differing technologies, generation profiles, and fuel sources, and performs a qualitative appraisal of the various benefits and drawbacks of projects when considering over-generation and the duck curve. This process ensures that the projects that provide the most value align with SCE's procurement needs. SCE's LCBF approach is described in more detail in Section ~~VIII~~IX.B and Appendix I.1.

~~All of the procurement in SCE's current renewables portfolio is from either contracts executed prior to June 1, 2010 or contracts for Category 1 products. SCE forecasts that it will meet its RPS procurement targets primarily through Category 1 products because they provide the most flexibility and certainty for SCE's customers. There are no limitations on procurement of Category 1 products and there are no restrictions on banking long-term Category 1 products. In its 2014 RPS solicitation, SCE intends to solicit long-term Category 1 products and long-term~~

~~selection.~~

~~Category 3 unbundled RECs. SCE may enter into long-term Category 3 unbundled REC transactions to give SCE added flexibility to meet its long-term RPS procurement targets and minimize costs, while staying within the minimum and maximum portfolio content category targets set by SB 2 (1x) as implemented by the Commission.~~

In addition to ~~its~~ RPS ~~solicitation~~solicitations, SCE will continue to utilize a variety of other procurement options to help meet the State's ~~renewable energy~~RPS targets including the ~~RAM program, Re-MAT~~Standard Contract Option using the streamlined RAM procurement tool (discussed in Section XVII),[20] ReMAT, BioMAT, SPVP (until the sunset of that program), local capacity requirements solicitations, QF standard contracts, and bilateral negotiations for competitive renewable energy products.~~[11] In particular, SCE launched its third SPVP solicitation on September 4, 2013 and received approval of 17 PPAs from that solicitation effective May 9, 2014. SCE also began accepting applications for its capacity allocation under the Re-MAT program on October 1, 2013 and has since executed 11 Re-MAT PPAs for a total of approximately 18 MW.[12] Additionally, SCE launched its fifth RAM solicitation on May 29, 2014 and executed 21 PPAs resulting from that solicitation. SCE launched its fourth SPVP solicitation on October 9, 2014.~~

~~In D.14-11-042, the Commission required the IOUs to hold one additional RAM solicitation, RAM 6, to close before June 30, 2015.[13] Starting with the 2015 RPS Procurement Plan filings, the IOUs are authorized to include RAM as a streamlined procurement tool, at their~~

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20 Additionally, SCE launched its last RAM auction, RAM 6, on July 10, 2015.

~~11 Furthermore, the Commission issued a proposed decision on the SB 1122 program on November 18, 2014.~~

~~12 Of these Re-MAT PPAs, one contract for 1 MW subsequently terminated.~~

~~13 *See* D.14-11-042 at 102-104, Ordering Paragraph 31.~~

~~discretion.[14] SCE plans to launch its sixth RAM solicitation in 2015. SCE will address its proposed use of RAM as an optional streamlined procurement tool in future RPS Procurement Plans.~~

~~Finally, while~~While SCE does not currently intend to sell bundled renewable energy, unbundled RECs, or other renewable energy products in the ~~2014~~2015 RPS solicitation, SCE may conduct a future solicitation or negotiate bilaterally to sell such products to maximize value to its customers and optimize its portfolio.

D. SCE's Portfolio Optimization Strategy

The objective of SCE's renewables portfolio optimization strategy is to minimize costs to its customers while ensuring that RPS ~~procurement~~ goals are met or exceeded. The first step in SCE's portfolio optimization strategy is developing a forecast of SCE's renewable procurement position and need, i.e., SCE's RNS. This includes a calculation of SCE's net ~~short or long~~ position and SCE's bank. SCE carefully evaluates its renewable procurement need by assessing bundled retail sales, the performance and variability of existing generation, the likelihood ~~of~~ new generation ~~achieving~~will achieve commercial operation, expected ~~on-line~~online dates, technology mix, expected curtailment, and the impact of pre-approved procurement programs, among other factors. Annual variability of existing resources can either increase or decrease SCE's need and bank from year-to-year. However, over longer periods of time, SCE expects generation levels to be relatively ~~constant~~consistent.

If SCE's renewable need assessment results in a short position, SCE will hold an RPS solicitation if other procurement programs and mechanisms will not fill that position. SCE uses its LCBF methodology to evaluate renewable procurement opportunities as further described in

~~[14] *See id.* at 91-92, Ordering Paragraph 30.~~

Section ~~VIII~~IX.B and Appendix I.1. The primary quantitative metric used for evaluating bundled renewable energy is ~~the renewable premium~~Net Market Value ("NMV"). SCE also relies on a number of qualitative factors such as resource diversity and transmission area, among other factors, when evaluating proposals.

If SCE's need assessment results in a long position or it would otherwise optimize SCE's renewables portfolio or maximize value to its customers, SCE may use sales of renewable energy products,~~[15]~~[21] project deferrals, and solicitation deferrals (as it did by not holding a 2012 RPS solicitation) in order to move its renewable procurement back in line with its forecasted renewable procurement need. Additionally, SCE actively administers its renewable procurement contracts.~~[16]~~[22]

~~As a threshold matter, when~~When SCE considers whether to engage in sales of renewable energy products, SCE compares the ~~REC price or renewable premium~~NMV for the sales transaction against the ~~renewable premiums~~NMV of proposals submitted to SCE in recent solicitations and other offers. If the ~~renewable premiums~~NMV for long-term renewable procurement ~~are higher~~is lower than the ~~REC price or renewable premium~~NMV for the sales transaction, it would be more cost effective for SCE to maintain its existing RPS bank for future

~~15~~21 SCE procures renewable energy in compliance with the preferred loading order and when it expects to have a renewable procurement need. SCE does not purchase RPS-eligible energy for the express purpose of selling it at a later date.

~~16 SCE recently commented on the proposed standards of review for amended RPS contracts. *See* Southern California Edison Company's (U 338-E) Comments on the Administrative Law Judge's Ruling Issuing Staff Proposal to Reform Procurement Review Process at 20-23 (May 7, 2014); Southern California Edison Company's (U 338-E) Reply Comments on the April 2014 RPS Procurement Reform Staff Proposal at 4-6 (May 28, 2014). As provided in those comments, many contract amendments may~~22 Contract amendments have the potential to decrease contract prices or provide other benefits to customers.~~ The current Energy Resource Recovery Account ("ERRA") review process is working effectively for review of such amendments.~~

compliance periods.~~17~~23 Conversely, if the ~~renewable premiums~~NMV from recent solicitations ~~are lower~~is higher than the ~~REC price or renewable premium~~NMV for the sales transaction, SCE has an opportunity to optimize its renewables portfolio and realize value for its ~~customer~~customers by selling renewable energy products.

In addition to the ~~REC price and renewable premium~~NMV considerations discussed above, SCE evaluates various potential risks when determining its renewables portfolio optimization strategy, including the risk of not meeting its RPS targets. When SCE has a long position in the near and intermediate term, SCE evaluates whether a sale of renewable energy products is appropriate. This evaluation includes a calculation of SCE's renewable procurement position and RPS bank with a set of adverse assumptions. These assumptions include, but are not limited to, lower performance of existing resources than expected, lower risk-adjusted project success rates for contracted generation that is not yet ~~on-line~~online, and higher levels of curtailment than expected. SCE assesses its renewable procurement position with such adverse assumptions to ensure that, even in the worst case scenario, SCE would still expect to meet its RPS targets after making the sale. SCE's overall approach appropriately balances the risks and costs of selling renewable energy products with the risks and costs of maintaining an RPS bank.

Finally, SCE ~~has recently initiated an analysis of~~continues to analyze the effects of procurement of RPS-eligible resources on other procurement programs in order to ~~develop a~~consider portfolio ~~wide optimization strategy~~impacts. The Commission and the ~~California Independent System Operator ("CAISO") have been discussing and debating~~CAISO debated flexibility requirements in the Resource Adequacy ("RA") proceeding to help manage the intermittency created on the grid by certain renewable resources. The CAISO ~~has~~ launched a

~~17~~23 SCE also considers statutory and regulatory restrictions on banking of excess procurement.

stakeholder process to discuss new obligations for flexible capacity and how flexibility requirements will be allocated to load-serving entities. The ~~initial straw~~adopted proposal for allocating flexibility requirements ~~would~~ directly ~~allocate~~allocates the identified requirements based on the amount of intermittent generation contracted by the load-serving entity.~~[18]~~ This ~~would create~~creates a direct link between RPS procurement and flexibility requirements as the amount of wind and solar resources in the portfolio ~~would impact~~impacts the magnitude of the flexibility requirement allocated to the load-serving entity. A portfolio -wide optimization strategy will need to assess the composition of SCE's renewables portfolio, as resources such as geothermal ~~would~~and other baseload resources may potentially reduce flexibility requirements.

E. SCE's Management of its Renewables Portfolio

After SCE executes an RPS power purchase agreement ("PPA"), the PPA is ~~then~~ managed by the Energy Contracts Contract Management group. Many projects require some form of PPA modification to attain commercial operation. Modifications include, but are not limited to, specific provisions to aid the seller in reducing the overall costs of the project, ability to true-up milestones and timelines outlined in the PPA as interconnection and permitting information is updated, and other miscellaneous changes to allow the project to move forward. Generally, projects ~~need~~require very few PPA modifications ~~to PPAs~~ after attaining commercial operation.

In evaluating modifications or amendments to a PPA, SCE applies guidance from D.88-10-032. Although D.88-10-032 was enacted as a set of guidelines for the administration of QF contracts, SCE has been using ~~its guidance~~it when administering all forms of PPAs. At a high level, D.88-10-032 gave the IOUs the option to determine ~~if they would choose~~whether to enter

~~[18] *See* CAISO's Flexible Resource Adequacy Criteria and Must-Offer Obligation, Market and Infrastructure Policy Revised Straw Proposal (June 13, 2013) (available at:~~

into an amendment with any counterparty.~~[19]~~[24] In the event an amendment is elected, the IOU should negotiate in good faith.~~[20]~~[25] D.88-10-032 also provides that in response to requests for contract modifications, an IOU is to seek concessions ~~in response to requests for contract modifications which~~that are commensurate with the change being sought.~~[21]~~[26] The details of D.88-10-032 provide further guidance to the IOUs to restrict modifications to PPAs with viable projects,~~[22]~~[27] and reject modifications that would result in creating an essentially new project.~~[23]~~[28]

As appropriate, SCE also considers the standards of review for PPA amendments set forth in D.14-11-042, including assessment of SCE's renewable procurement need, NMV, contract price, project viability, consistency with Commission decisions, and required updated information.[29]

SCE seeks approval by the Commission of all PPA modifications either through its annual ~~ERRA~~Energy Resource Recovery Account application or through advice letters or applications, depending on the type of PPA and nature of the amendment, and based on guidance from Commission decisions regarding specific modifications to PPAs.~~[24]~~[30]

~~http://www.caiso.com/Documents/RevisedStrawProposal-FlexibleResourceAdequacyCriteria-MustOfferObligations.pdf).~~

~~19~~24 *See* D.88-10-032 at 16.

~~20~~25 *See id*. at Conclusion of Law 8.

~~21~~26 *See id.* at 16, ~~Conclusions~~Conclusion of Law 13-14.

~~22~~27 *See id*. at 17, Conclusion of Law 4, Appendix A at 4-5

~~23~~28 *See id*. at 26, Conclusion of Law 17.

29 *See* D.14-11-042 at 80-82. The standards of review do not apply to amendments that are minor or non-material. *See id.* at 80.

~~24~~30 For example, the Commission has indicated specific IOU actions regarding amendments to certain terms in tariff-based agreements.

F. Lessons Learned, Past and Future Trends, and Additional Policy/Procurement ~~Impacts~~Issues

1. Lessons Learned and Past and Future Trends

SCE's overall experience in renewable contracting has ~~allowed it to agree to terms~~enabled SCE to negotiate successfully with a ~~diverse~~ variety of ~~projects and~~ counterparties~~. This success is the result of~~ on a diverse array of projects. SCE is committed to recognizing the unique characteristics of each situation and working ~~toward a~~towards balanced and mutually acceptable ~~agreement~~agreements. To this end, SCE continues to refine both its RPS solicitation process and its *pro forma* PPA as a result of lessons learned from SCE's extensive experience in contracting for renewable resources. Over the course of the last several years, SCE has also incorporated or accounted for several trends in its renewable procurement planning and solicitation process. SCE discusses several of its important lessons learned and significant past and future trends below.

~~a) Targeting Specific Products~~ Additionally, as SCE has noted in past RPS Procurement Plans, more stringent eligibility requirements, such as the requirement that projects have a Phase II Interconnection Study (or an equivalent or more advanced interconnection status or exemption) and an "application deemed complete" (or equivalent) status within the applicable land use entitlement process in order to submit a proposal, have resulted in higher viability project proposals. SCE intends to continue these requirements in the 2015 RPS solicitation.

~~In past RPS solicitations, SCE did not limit the products that sellers could bid, which resulted in a large number of proposals. For example, in SCE's 2011 RPS solicitation, SCE~~

~~received over 1,400 proposals. This required substantial time and effort on behalf of both SCE and the sellers, but did not lead to the execution of any contracts. Based on this experience, SCE used a more targeted solicitation process in 2013 that focused more specifically on SCE's needs. SCE limited the 2013 RPS solicitation to Category 1 products and projects with commercial operation dates of January 1, 2016 or later. With those limitations in place, SCE had a robust proposal pool of over 350 proposals from which to select. By targeting specific products in the 2014 RPS solicitation, SCE is again providing sellers with direction on the products that are needed by SCE and focusing the efforts of SCE and sellers on the proposals likely to be most valuable to SCE's customers, thus simplifying the solicitation and evaluation process for all parties.~~

a) Elimination of Pre-Paid Economic Curtailment Bidding

In the 2014 RPS solicitation, SCE required sellers to submit two prices per proposal based on SCE discretionary curtailment orders:

- Price 1: Sellers offer pricing based on SCE having the right to issue unpaid Curtailment Orders[31] for a quantity of curtailed energy equal to 50 hours times the contract capacity in each term year (the "curtailment cap"). Any Curtailment Order resulting in curtailed energy in excess of the curtailment cap would be paid at the contract price.
- Price 2: Sellers offer pricing based on SCE having to pay the contract price for all Curtailment Orders.

While SCE did select some Price 1 option proposals in its 2014 RPS solicitation, the data SCE received on Price 1-type projects indicates that pre-payment for economic curtailment may

[31] Curtailment Order was defined in Section 3.12(g)(iii) of SCE's 2014 *Pro Forma* Renewable Power Purchase and Sale Agreement.

not provide the best value to SCE's customers. As market dynamics continue to change and an increasing amount of intermittent resources integrate into the grid, SCE continues to assess how best to maximize the value of economic curtailment provisions in existing PPAs. With respect to existing PPAs that allow SCE to curtail without payment up to the curtailment cap, SCE has been using and will continue to use this provision. However, SCE's experience to date suggests that the added administrative burden and operational complexity associated with intra-month (and even intra-day) tracking of economically curtailed energy, and the potential need to modify bidding strategies once the curtailment cap is reached, may not justify any perceived benefit of "unpaid" economic curtailments. This is compounded by the likelihood that rational sellers have "priced in" the cost of these curtailments. Therefore, the curtailment cap represents pre-paid economic curtailment, not true unpaid economic curtailment. Also, with respect to the 2014 RPS solicitation, in many instances pre-payment of economic curtailment did not appear to be the best economic decision.

Given the uncertain value pre-payment of economic curtailment represents, SCE will not require sellers to bid the pre-paid economic curtailment option with the curtailment cap in the 2015 RPS solicitation. By doing so, SCE will continue to evaluate how to simplify operational and administrative processes while still retaining the flexibility to manage customer exposure to negative prices both day-ahead and in real-time.

SCE will retain the right to curtail at its discretion, but will pay sellers for curtailments directly resulting from SCE marketing decisions. As in prior years, SCE will not pay for curtailments in response to emergencies, or due to CAISO or transmission provider instructions.

b) ~~Requiring Phase II Interconnection Studies to Submit a Proposal~~Valuation of Transmission Costs for Projects Located Within and Outside the CAISO Control Area

~~The level of counterparty sophistication in RPS solicitations has increased substantially over the past several years. Counterparties have progressed to more advanced stages in the permitting and interconnection processes, which provides increased certainty that contracted projects will reach commercial operation. There is a growing pool of uncommitted projects with advanced interconnection arrangements.~~

~~In 2013, SCE required that projects have a Phase II Interconnection Study (or an equivalent or more advanced interconnection status or exemption) in order to submit a proposal. The Commission approved this requirement for all IOUs, stating that: "We agree with SCE that requiring projects to have at minimum a Phase II transmission study provides more certainty regarding transmission costs and timing and is a reasonable approach to minimize project failure risk."[25] Requiring a Phase II Interconnection Study (or an equivalent or more advanced interconnection status or exemption) in order to submit a proposal did not result in an uncompetitive 2013 RPS solicitation. In fact, as mentioned above, SCE received over 350 proposals. Moreover, CAISO Queue Cluster 6 applicants will be receiving their Phase II Interconnection Studies in December 2014, further expanding the pool of eligible participants for the 2014 solicitation.~~

~~Accordingly, for the 2014 RPS solicitation, as in the 2013 RPS solicitation, SCE plans to require that projects have a Phase II Interconnection Study (or an equivalent or more advanced interconnection status or exemption) to participate in the solicitation. SCE believes that keeping~~

~~[25] D.13-11-024 at 30.~~

~~this requirement in the 2014 solicitation will result in higher viability projects and more cost certainty, while still offering a robust pool of proposals.~~

In past RPS solicitations, SCE included the full reimbursable transmission network upgrade costs in the quantitative valuation process for projects directly connected to the CAISO control area. Additionally, SCE included reimbursable transmission network upgrade costs outside the CAISO as a qualitative factor in the LCBF evaluation process for projects not directly connected to the CAISO control area, but where California customers will pay for the costs. SCE took the approach of evaluating the total cost of new build renewable projects from a societal perspective, thereby factoring in 100% of the reimbursable transmission network upgrade costs for any new project located within California or directly connected to the CAISO control area via a CAISO interconnection study. However, other utilities in California have not been factoring in costs from the perspective of all California customers; instead, they have only been valuing reimbursable transmission network upgrade costs relative to their own customers. This could put SCE's customers at a disadvantage because other utilities may be executing renewable contracts for lower contract prices than SCE because the reimbursable transmission network upgrade costs that are not paid by those utilities' customers were not considered in the valuation of the contracts, while SCE was considering costs not paid by its customers in its valuation.

Therefore, for the 2015 RPS solicitation, SCE will only consider reimbursable transmission network upgrade costs for projects directly interconnecting to the CAISO control area in the LCBF evaluation process. In addition, SCE will only consider the share of the reimbursable transmission network upgrade costs that are paid by SCE customers.

c) ~~Using a Single Set of Time-of-Delivery Factors~~Limiting Sellers to Eight Proposals Per Project

~~SCE implemented the use of different time-of-delivery ("TOD") factors for Full Capacity Delivery Status ("FCDS") and Energy-Only ("EO") projects in its 2013 RPS solicitation to maintain consistency with other RPS-eligible procurement programs such as RAM, Re-MAT, and SPVP. Having observed the use of two sets of TOD factors, SCE has identified a few issues with the approach and proposes to use a single set of TOD factors in the 2014 solicitation to address these issues.~~

~~A perspective has formed in the market that dual TOD factors provide additional compensation to sellers for delivering capacity benefits in addition to RPS-eligible energy. A typical generation profile from a solar facility results in a higher total payment over an entire contract term year when using FCDS TOD factors rather than EO TOD factors. This, however, is not the case for other technologies such as wind and geothermal. A wind profile, for instance, may result in a lower total payment over a contract term year when using FCDS TOD factors rather than EO TOD factors. This creates an impression of a disincentive for technologies other than solar to switch to FCDS in the middle of a contract term. It also results in the odd outcome of a wind facility actually receiving less revenue despite the fact it is providing additional benefit to SCE in the form of RA benefits.~~

~~However, SCE uses TOD factors solely to shape energy payments according to the value of the energy delivered in each hour vis-a-vis the other hours in the day, not to provide an incentive to achieve FCDS through the use of TOD factors. In other words, if applied to all the hours in a day, FCDS and EO TOD factors always result in an adjustment to the contract price of 1.0. Switching~~

~~to a single set of TOD factors that apply to all projects will ensure that different technologies are being treated consistently with respect to the obtainment of FCDS.~~

~~In addition, and regardless of technology, SCE already differentiates between FCDS and EO project proposals by crediting FCDS proposals with capacity benefits in its LCBF valuation. These capacity benefits are based on the expected quantity of RA benefits over the contract term and SCE's internal forecast of capacity value, as described in Appendix I.1. Assuming the same total payments over a contract term, an FCDS proposal will be more competitive than an EO proposal because it will receive RA benefits in the valuation process. These RA benefits account for any incremental value of FCDS proposals compared to EO proposals. Variation in total contract payments due to two sets of TOD factors does not account for these benefits and creates unnecessary complexity and uncertainty~~

Historically, SCE has not limited the amount of proposals sellers could bid for the same project. As a result, sellers could submit an unlimited amount of proposals in multiple ways. In the 2014 RPS solicitation, some sellers offered the same project in more than 20 variations, which increased the complexity of the complete and conforming verification process and introduced challenges for SCE and the sellers to determine mutual exclusivity. In the 2015 RPS solicitation, SCE will limit the number of proposals submitted on a "per project" basis to eight.

Limiting sellers to eight proposals from the same project provides sellers with adequate opportunity to submit proposals with variables that are specific to those projects and will provide SCE a robust pool of projects and proposals to select. The eight proposals will provide sellers the opportunity to meet the minimum bid requirement of a 10-year term, start dates in each of the term years, different contract capacity bids (project sizes), or other seller-specific pricing variation. At the same time, limiting the proposals to eight per project will decrease complexity for both sellers and SCE ~~with respect to expected contract payments. Changing to a single set of TOD factors eliminates this revenue uncertainty and complexity without impacting any determination on competitiveness. It will also provide additional cost certainty to SCE by preventing switching to different TOD factors during the contract term based on an uncertain date.~~

~~Furthermore, using a single set of TOD factors will not result in FCDS or EO projects receiving lower or higher payments than they otherwise would have under separate FCDS and EO TOD factors. When submitting proposals to an RPS solicitation, sellers submit a pre-TOD contract price and an hourly generation profile. SCE evaluates all proposals and makes selection decisions based on a seller's post-TOD contract price as applied to the hourly generation profile. In other words, for purposes of calculating contract payments, SCE only takes into account the actual payments expected under the agreement, which is not equivalent to the pre-TOD contract price. With a single set of TOD factors, sellers will simply need to set their pre-TOD contract price so that it will result in the seller's desired payments over a contract term. Indeed, for purposes of offering a pre-TOD contract price, the seller would be most interested in the final contract revenues to determine whether they can build a project under such pricing and could update their pre-TOD contract price accordingly. SCE will then evaluate proposals based on the total payment expected to be made over the contract term on a levelized per megawatt-hour ("MWh") basis. Assuming that sellers bid a price that results in the same total payments over the contract term, and assuming that the generation profile is the same, the use of a single set of TOD factors compared to separate TOD factors does not adversely impact sellers, and only simplifies the bidding process.~~during the verification and valuation process.

2. Additional Policy/Procurement Impacts

~~In D.13-02-015, issued on~~On February 13, ~~2013 in the Track 1 LTPP proceeding,~~2013, the Commission issued D.13-02-015, the LTPP Track 1 decision, which authorized SCE to procure between 1,400 and 1,800 MW of electrical capacity in the Western Los Angeles sub-area of the Los Angeles basin local reliability area ("Western LA Basin sub-area") and 215 to 290 MW of electrical capacity in the Moorpark sub-area of the Big Creek/Ventura local reliability area to meet local capacity requirements ("LCR") by 2021 due to the expected retirement of once-through cooling units.~~[26]~~ ~~Pursuant to~~ D.13-02-~~015, SCE is~~015 required SCE to procure minimum amounts of gas-fired generation, ~~preferred resources~~Preferred Resources (including renewable resources), and energy storage in the Western LA Basin sub-area. ~~SCE's final LCR Procurement Plan was submitted to the Energy Division in response to D.13-02-015 on August 30, 2013, and approved by the Energy Division in writing on September 4, 2013. Following Energy Division approval of the LCR Procurement Plan,~~ SCE commenced its LCR Request for Offers ("RFO") on September 12, 2013. The LCR RFO was open to all technologies that could meet SCE's LCR needs, including renewable resources.

~~In~~On March 13, 2014, the Commission issued D.14-03-004, ~~approved on March 13, 2014 in~~ the LTPP Track 4 ~~LTPP proceeding, the Commission~~decision, which authorized SCE to procure an additional 500 to 700 MW of capacity in the Western LA Basin sub-area due to the retirement of the San Onofre Nuclear Generating Station. Combined, D.13-02-015 and D.14-03-004 ~~authorize~~authorized SCE to procure between 1,900 ~~to~~and 2,500 MW of capacity in the Western LA Basin sub-area. The LTPP Track 4 decision did not address or change the authorized procurement for the Moorpark sub-area.

~~SCE executed approximately 2,150 MW of contracts resulting from its LCR RFO. On November 20, 2014, SCE launched a Preferred Resources Pilot ("PRP") RFO soliciting offers from distributed generation eligible renewable resources sized 500 kilowatts ("kW") or greater.[27]~~The LTPP Track 1 and 4 decisions ordered SCE to file separate applications for the approval of all contracts entered into as a result of SCE's LCR RFO for new capacity in the Western LA Basin and Moorpark sub-areas. SCE filed the Western LA Basin Application 14-11-012 on November 21, 2014 to seek Commission approval of 63 contracts executed for a total of 1,882.60 LCR MW.[32] SCE filed the Moorpark Application 14-11-016 on November 26, 2014 to seek Commission approval of 11 contracts executed for a total of 274.16 LCR MW. The Western LA Basin and Moorpark Applications are currently pending Commission approval.

Consistent with these decisions, SCE's ~~2014~~2015 Procurement Protocol solicits projects in the Western LA Basin sub-area to participate in the ~~2014~~2015 RPS solicitation. Additionally, projects located in the Western LA Basin sub-area that are interconnected to SCE's distribution system served by Johanna and Santiago ~~sub-stations~~substations may also meet SCE's ~~PRP~~Preferred Resources Pilot ("PRP") goal.~~[28]~~[33]

SCE's 2015 Procurement Protocol also solicits projects that are interconnected at a location that electrically connects to the Goleta substation. Projects in this area are preferential as they may help enhance the reliability in the Santa Barbara area, which has been an ongoing concern for SCE as was highlighted in the LCR RFO.

~~[26] SCE was also authorized to procure 215 to 290 MW in the Moorpark sub-area of the Big Creek/Ventura local reliability area.~~

~~[27] More information on the PRP RFO is available at https://sceprprfo.accionpower.com/~~[32] To clarify, the LCR MW are a resource's contribution to the LCR need in August 2021. This may differ from the MW quantity specified in the contract.

~~[28]~~[33] *See* D.14-03-004. More information on the PRP is available at http://on.sce.com/preferredresources.

To the extent SCE receives proposals for projects in ~~this area~~these areas that are not selected in SCE's RPS solicitation based on LCBF selection criteria, SCE will consider the value of these proposals using the LCR selection process and criteria.~~[29]~~[34] Only projects that provide RA benefits and are able to obtain a CAISO Net Qualifying Capacity assignment will be considered for purposes of meeting SCE's LCR in the Western LA Basin sub-area. SCE may, in SCE's sole discretion, decide to enter into bilateral contracts with some of these projects based on their LCR value. If SCE does enter into any such contracts, it will submit them for Commission approval through a separate application or advice letter, as appropriate.

IV.~~III.~~ PROJECT DEVELOPMENT STATUS UPDATE

Appendix B contains a ~~written~~ status update on the development of~~ all~~ RPS-eligible projects currently under contract, but not yet delivering generation.[35] SCE received some of the information in this status update from its counterparties. The status of these projects impacts SCE's renewable procurement position and procurement decisions. For instance, SCE adjusts its renewable procurement position and need during the development stage of a project once it is determined the project will or will not meet its contractual obligations through its forecast probabilistic risk-adjusted success rates.

V.~~IV.~~ POTENTIAL COMPLIANCE DELAYS

Five primary factors will challenge achievement of the State's RPS goals: (1) curtailment; (2) the increasing proportion of intermittent resources in SCE's renewables portfolio; (3) permitting, siting, approval, and construction of both renewable generation projects and transmission; (4) a heavily subscribed interconnection queue; and (5) developer performance

~~29~~34 SCE plans to use a similar approach in future SPVP solicitations or other applicable solicitations.

35 The 2014 RPS solicitation contracts are not included.

issues. SCE discusses each of these potential issues that could cause compliance delays below and describes the steps it has taken to mitigate the effects of these challenges.

As discussed in Section ~~II~~III.B, in forecasting its renewable procurement position and need, SCE accounts for potential issues that could delay RPS compliance, project development status, minimum margin of procurement, and other potential risks through the use of probabilistic risk-adjusted success rates for energy deliveries from contracted projects that are not yet ~~on-line~~online. SCE considers the factors discussed below in this process.

A. Curtailment

As more renewable generation comes ~~on-line~~online, congestion at the transmission and distribution levels is increasing and curtailment events are becoming ~~increasingly~~more common. Several of SCE's contracted wind projects in the Tehachapi region in Kern County, California, for example, have been forced to curtail deliveries significantly in order to maintain system reliability in this area. ~~SCE expects that this same issue will occur in the Devers Colorado River area during the construction phases of the West of Devers transmission project. Depending on the extent of these curtailment events, SCE and other load-serving entities could be significantly impacted in meeting their RPS goals. Additionally, the curtailments could affect the ability of owners of operating renewable projects to maintain adequate revenue to service their debt, and may create a chilling effect on future financing of projects under development.~~Similarly, many projects in the Antelope and Devers areas have been required to curtail in order to accommodate outages needed for system maintenance and upgrades.

While the upcoming West of Devers ("WOD") upgrade project is necessary in order to provide sufficient transmission capacity to meet the 33% RPS (or potentially higher RPS goals), curtailment during WOD construction is expected. This expectation of curtailment was disclosed to renewable resources seeking to interconnect to WOD-impacted areas before interconnecting them to the system. However, many of these resources elected to interconnect prior to the completion of the WOD upgrade. Delays in the completion of the WOD upgrade project would increase the amount of curtailment as more resources are added. SCE is evaluating different construction sequence alternatives to minimize the curtailment of renewables. The completion of the WOD project will help meet the 33% RPS goal, and will provide additional transmission capacity that could be utilized to accommodate future generation to meet a 40% or 50% RPS goal.

An increase in California's RPS goal from 33% to 40% or 50% would result in more intermittent resources on the grid and increased deliveries from RPS-eligible resources, likely resulting in an increase in the amount of curtailment of renewable output due to more instances of over-generation and possible exacerbation of the problems discussed above.

SCE has been working on multiple fronts to mitigate the risk of curtailment. SCE has continued working to increase the level of coordination with generators during the construction phases of major transmission projects in the Tehachapi, Lugo, and Devers areas, with a particular focus on minimizing the duration of outages that will require curtailments and scheduling work during periods of low production for renewable resources~~, and recently expanded this coordination effort to include generators in the Lugo area~~. Further, SCE is ~~continuing to work with the CAISO to develop a more dynamic approach to setting generation limitations at the transmission level (e.g., taking into account aggregate area limits as opposed to enforcing individual plant limitations, which can result in over-curtailment if not all generators are operating at their maximum pro rata limits)~~developing strategies to utilize economic curtailment rights to enable CAISO to more efficiently achieve generation reductions when and where needed to alleviate congestion in the course of normal operations, and during transmission outages and periods of over-generation.

This should help to minimize curtailment, as this practice will enable the CAISO to fold renewable resources more directly into market optimization runs.

SCE has ~~already~~ had some success ~~facilitating~~reducing curtailment ~~optimization~~ at the distribution level, ~~primarily by encouraging wind generators with advanced control systems to curtail on behalf of those with more analog technologies in exchange for a negotiated payment amount~~in part by completing needed system upgrades, but also by giving SCE switching center operators better tools to monitor real-time production levels during outages. This increased visibility enables operators to take more targeted action when generators exceed pro rata limitations, and to more effectively manage aggregate limits in the event not all resources are generating their full pro rata share. SCE will continue to look for opportunities to ~~replicate those arrangements in an effort to~~ mitigate the impacts of curtailment on meeting RPS goals.

B. Increasing Proportion of Intermittent Resources in SCE's Renewables Portfolio

Over the last several years, a number of large wind projects in SCE's renewables portfolio (among others, the Alta Wind and Caithness Shepherds Flat projects totaling nearly 2,400 MW) have achieved commercial operation. While these resources have contributed significantly toward SCE's renewables portfolio, they have also made forecasting SCE's renewable procurement position and need more complex. Wind generation is difficult to predict. Actual production from wind generators varies significantly from hour-to-hour, month-to-month, and year-to-year, thereby exposing SCE to large fluctuations in renewable energy deliveries. Although not as unpredictable as wind generation, solar production also varies over time depending on weather conditions and project performance, among other factors. As wind and solar projects come to represent an ever larger proportion of SCE's renewables portfolio, these effects will be magnified, particularly if California's RPS target increases to 40% or 50%, which would result in more wind and solar projects in SCE's renewables portfolio.

Given the number of intermittent resources expected to achieve commercial operation in the coming years, SCE is preparing to successfully integrate new wind and solar resources. For example, SCE is working on ways to improve forecasting accuracy by collecting actual generation data from new wind and solar resources and analyzing forecasted output versus actual production after-the-fact. SCE is also seeking to maintain a balanced portfolio in order to ensure there is sufficient diversity of renewable resource types to manage intermittency risk going forward.

C. Permitting, Siting, Approval, and Construction of Renewable Generation Projects and Transmission

Although the CAISO has identified transmission necessary to meet California's 33% RPS goal,[~~30~~36] the lack of sufficient transmission infrastructure and the process for permitting and approval of new transmission lines continues to be a challenge to reaching the State's renewable energy targets. Lack of adequate transmission infrastructure and the lengthy process of siting, permitting, and building new transmission continues to impede bringing new renewable resources ~~on-line~~online.

As stated in the CAISO's ~~2013-~~2014-2015 Transmission Plan, "[t]he transition to greater reliance on renewable generation has created significant transmission challenges because renewable resource areas tend to be located in places distant from population centers."[~~31~~37] Through its transmission planning process, the CAISO utilizes renewable resource portfolios from

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~~30~~36 *See* CAISO's ~~2012-2013~~2014-2015 Transmission Plan at ~~7~~11 (March ~~20, 2013~~27, 2015) (available at: ~~http://www.caiso.com/Documents/BoardApproved2012-2013TransmissionPlan.pdf~~http://www.caiso.com/Documents/Board-Approved2014-2015TransmissionPlan.pdf).

the Commission and the ~~California Energy Commission~~CEC to identify transmission projects that will support the development of renewable resources in areas where they are most likely to occur. This "least regrets" approach helps to address an element of uncertainty that generation developers may have regarding the approval of transmission projects that are necessary for the delivery of renewable energy. While some transmission projects have already been approved or are progressing through the Commission approval process,~~[32]~~[38] challenges still remain regarding the completion of those transmission projects. In SCE's service area, there are several major transmission projects included in the CAISO's ~~2013-~~2014-2015 Transmission Plan that SCE is pursuing that will contribute to supporting the State's RPS goals. These projects include the ~~Coolwater-Lugo Transmission Project, the~~ Tehachapi Renewable Transmission Project, West of Devers, Eldorado-Mohave and Eldorado-Moenkopi 500 kV Line Swap, Lugo-Eldorado series cap and terminal equipment upgrade, Lugo-Mohave series capacitors, and the Mesa Loop-in project.~~[33]~~[39]

The long and complicated permitting process for renewable generation facilities is also a barrier to meeting RPS goals. ~~As noted in a recent article, in California, "[r]aising money and securing permits have been the two main obstacles that caused some to stumble and sell their projects or leave the project development business altogether."[34]~~ Moreover, environmental

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~~[31] CAISO's 2013-2014 Transmission Plan~~[37] *Id.* at ~~9 (March 25, 2014) (available at: http://www.caiso.com/Documents/Board-Approved2013-2014TransmissionPlan.pdf).~~8.

~~[32]~~[38] *See id.* at 10-11.

~~[33]~~[39] Regarding the Mesa Loop-in project, the CAISO's 2013-2014 Transmission Plan states that "[w]ith the addition of 500kV voltage, a new source from bulk transmission will be established in the LA Basin to bring power from Tehachapi renewables or power transfer from PG&E via WECC Path 26." ~~*Id.*~~CAISO's 2013-2014 Transmission Plan at ~~107.~~107 (March 25, 2014) (available at: http://www.caiso.com/Documents/Board-Approved2013-2014TransmissionPlan.pdf).

~~[34] Forbes, Ucilia Wang, "The Rise of a Giant Solar Plant in California's Central Plain" (October 31, 2013) (available at:~~

concerns, legal challenges, and public opposition can impact the timeline for bringing renewable generation projects ~~on-line~~online.

D. A Heavily Subscribed Interconnection Queue

A heavily subscribed CAISO interconnection queue is also a major barrier to achieving the State's RPS goals. As of ~~September 27, 2013,~~June 18, 2015, the CAISO reported ~~36,000 MW of~~more than 100 active renewable projects seeking interconnection to the CAISO controlled grid ~~of which 23,730 MW were from renewable projects.[35]~~ with a completed Phase II Interconnection Study. These projects represent more than 11,000 MW in the queue.[40]

Over the last several years, the CAISO has initiated and obtained Federal Energy Regulatory Commission ("FERC") approval to improve its generation interconnection process. These improvements include a fundamental change that integrated the formerly separate and distinct generator interconnection and transmission planning processes, now collectively known as the Generator Interconnection and Deliverability Allocation Procedures ("GIDAP").~~[36]~~[41] GIDAP integrated the CAISO's generator interconnection and transmission planning processes to allow the CAISO to more efficiently determine transmission upgrades needed to meet California's RPS goals.

SCE supports GIDAP. It provides a good foundation for improving the queue management process going forward, but a number of near-term challenges remain. The large number of interconnection requests, particularly from renewable generators, presents significant

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~~http://www.forbes.com/sites/uciliawang/2013/10/31/the-rise-of-a-giant-solar-power-plant-in-californias-central-plain/).~~

~~35 Memorandum from Keith Casey, Vice President, Market & Infrastructure Development to the ISO Board of Governors Re: Update on renewables in the generator interconnection queue at 1 (October 31, 2013) (available at: http://www.caiso.com/Documents/UpdateRenewablesGeneratorInterconnectionQueue-Nov2013.pdf).~~

40 *See* https://www.caiso.com/Documents/ISOGeneratorInterconnectionQueue.pdf.

challenges for SCE, the CAISO, and renewable generators. Generators that have completed their studies, but not signed generation interconnection agreements, contribute to the uncertainty around available system capacity. When capacity is reserved for generators that have not signed interconnection agreements, other potentially more viable later-queued generators can appear to trigger upgrades that may not be necessary. Although protocols exist to allow the removal of languishing generators from interconnection queues, these protocols are difficult to implement because they ~~often~~can lead to litigation.

E. Developer Performance Issues

Achieving California's renewable energy goals also depends on the successful performance of renewable developers in meeting contractual obligations, timely completing construction milestones, and achieving commercial operation. Hurdles encountered during these activities require developers to alter their milestone schedules. This can result in delays, lengthy contract amendment negotiations, and contract terminations. For example, several of SCE's contracts have terminated due to developer performance issues (e.g., poor site selection, failure to timely ~~file for~~secure the necessary permits, and inability to complete CAISO new resource implementation processes in a timely manner). To the extent that delays, termination events, and ~~underperformance~~under-performance occur, the amount of delivered energy on which SCE can rely to reach the State's goals is reduced.

To proactively address developer performance issues, SCE continues to reach out to and communicate with project developers on a regular basis, discuss options and the status of project development, and provide guidance and direction as appropriate. In response to lessons learned in previous solicitations, SCE has also made several modifications to its solicitation materials. ~~For~~

~~36~~41 *See* FERC Docket No. ER-12-1855-000.

~~example, SCE required projects to have~~The two most relevant updates to solicitation requirements were implemented in the 2014 RPS solicitation in the form of a Phase II Interconnection Study ~~(or an equivalent or more advanced interconnection status or exemption) in order to submit a proposal in its RPS solicitations, which is likely to result in more viable projects.~~requirement and the Commission-mandated "application deemed complete" requirement with respect to project permitting. These two requirements have significantly contributed to greater viability in the pool of projects bid into the solicitations. In particular, projects that have achieved this level of development typically have significant dollars invested and secured project-backing, which in most cases has already identified and resolved potential fatal flaws in project location, technology, or environmental factors.

~~Additionally, SCE worked with developers to overcome local opposition to renewable projects through active education with city governments regarding the State's goals and the importance of renewable energy in California. In order to explain SCE's various renewable contracting opportunities, SCE also continually educates the renewable development community by participating in industry-wide symposiums (e.g., American Wind Energy Association, National Geothermal Summit, Renewable Energy World Conference & Expo North America), hosting bidders' conferences in connection with renewable procurement solicitations, fielding countless individual inquiries, hosting outreach sessions for diverse business enterprises, and participating in developer forums.~~

VI.~~V.~~ RISK ASSESSMENT

SCE describes risks that may result in compliance delays in Section ~~IV~~V. As explained in Section ~~II~~III.B, in forecasting its renewable procurement position and need, SCE accounts for potential issues that could delay RPS compliance, project development status, minimum margin of procurement, and other potential risks through the use of probabilistic risk-adjusted success rates for energy deliveries from contracts that are executed but not yet ~~on-line~~online. SCE considers these risk factors in this process. Additionally, SCE takes into account historic generation from existing resources, including lower than expected generation, variable generation, and resource availability, among other factors, when forecasting expected generation from its contracted renewable projects. The quantitative analysis provided in Appendices C.~~1,~~1 through C.~~2, C.3, and C.4~~8 reflects these considerations.

VII.~~VI.~~ QUANTITATIVE INFORMATION

A. RNS Calculations

As discussed in Section III.B, Appendices C.~~1, C.2, C.3, and~~1 through C.4 include SCE's RNS calculations using the standardized reporting template included in the RNS Ruling~~.~~ under the current 33% RPS program rules. As required by the ACR, SCE has also included RNS calculations under the 40% target set forth in the ACR in Appendices C.5 through C.8. As required by the Commission's Revised RNS Methodology, Appendices C.~~1~~1, C.2, C.5, and C.~~2~~6 include physical RNS calculations and Appendices C.~~3~~3, C.4, C.7, and C.~~4~~8 include optimized RNS calculations.

Appendices C.~~2~~2, C.4, C.6, and C.~~4~~8 include SCE's physical RNS and optimized RNS through 2030, based on the following SCE assumptions:

- SCE's most recent bundled retail sales forecast for ~~2014~~2015 through 2030;
- Contracted projects that are currently ~~on-line~~online will deliver 100% of their expected amount of renewable energy;
- Probabilistic risk-adjusted success rates for energy deliveries from contracted projects that are not yet ~~on-line~~online. SCE's forecasts include individual project-specific,

risk-adjusted success rates for large, near-term projects and a flat ~~50~~60% success rate for the remaining projects, which is based on these projects' overall weighted average success rate; and

- 100% success rate for projects originating from pre-approved programs such as ~~the~~ RAM~~ program~~, ~~Re-MAT~~ReMAT, and SCE's SPVP before contracts from such programs are signed.[~~37~~42]

Appendices C.~~1~~1, C.3, C.5, and C.~~4~~7 provide SCE's physical and optimized RNS through 2030 using the Commission's Revised RNS Methodology. Appendices C.~~1~~1, C.3, C.5, and C.~~3~~7 use the same assumptions as in Appendices C.~~2~~2, C.4, C.6, and C.~~4~~8 except that:

- Instead of using SCE's most recent bundled retail sales forecast for all years, it uses SCE's most recent bundled retail sales forecast for ~~2014~~2015 through ~~2018~~2019 and 2025 through 2030 and the standardized planning assumptions that were used in the 2014 LTPP for ~~2019~~2020 through 2024.[~~38~~43]

At this time, SCE does not propose including a voluntary margin of over-procurement in its renewable procurement planning. SCE will account for additional forecasting risks through the use of forecast RECs above its ~~banked~~RPS procurement quantity requirements.

B. Response to RNS Questions

SCE provides the following responses to the RNS questions included in Appendix D to the RNS Ruling.

~~37~~42 After contracts from such programs are signed, they are risk adjusted in the same manner as other projects with executed contracts that are not yet ~~on-line~~online.

~~38~~43 The Revised RNS Methodology states that retail sellers can use their own forecasts for bundled retail sales for the first five years and should use the LTPP standardized planning assumptions thereafter. *See* RNS Ruling, Attachment A at 25. In Appendices C.~~1~~1, C.3, C.5, and C.~~3,~~7, SCE used its own bundled retail sales forecast for 2025 through 2030 because there is no LTPP forecast for those years.

1. **How do current and historical performance of ~~on-line~~online resources in your RPS portfolio impact future projection of RPS deliveries and your subsequent RNS?**

The current and historical performance of ~~on-line~~online resources in SCE's renewables portfolio is considered when making future projections of RPS-eligible deliveries. Specifically, SCE considers weather and specific resource conditions, including maintenance issues, degradation of output, and contractual issues that have impacted historic performance and may cause the output of a facility to be different than what SCE anticipates for the future. SCE takes these considerations into account when it is forecasting its RNS. In particular, if SCE determines any of these conditions will impact a facility's future generation, such generation will be increased or decreased in the forecast for as long as SCE expects the situation to persist. SCE reviews these conditions on a regular basis and updates its generation forecast accordingly.

2. **Do you anticipate any future changes to the current bundled retail sales forecast? If so, describe how the anticipated changes impact the RNS.**

There are many factors that can impact SCE's bundled retail sales forecast. Those factors include, but are not limited to, demographic and macroeconomic drivers, electricity prices, impact from utilities' energy conservation programs, federal and state codes and standards, the California Solar Initiative Program, future customer adoption of distributed generation, future electric vehicle use, and other electrification load growth. Therefore, SCE expects its bundled retail sales forecast to change over time as SCE incorporates the best available information on the various drivers into its forecast. SCE's overall bundled retail sales forecast may go up or down depending on the net impact of all of these factors. It is not possible for SCE to predict the future changes to its bundled retail sales forecast without completing the forecast process due to the complex nature of the modeling efforts involved. Accordingly, the bundled retail sales forecast that SCE uses at any given point in time is SCE's best prediction of bundled retail sales. As the bundled retail sales forecast goes up or down, it will increase or decrease SCE's projected RNS accordingly.

3. **Do you expect curtailment of RPS projects to impact your projected RPS deliveries and subsequent RNS?**

Curtailment is factored into SCE's forecasted RPS-eligible deliveries and subsequent RNS in two ways. For operating QF wind projects, curtailed amounts are reflected in historical deliveries, which are then averaged over the prior three years to develop a generation forecast for each resource that includes past curtailment impacts as a proxy for expected future curtailments. Such curtailments are typically attributable to line and equipment outages.

For projects in development in the Tehachapi Wind Resource Area ("TWRA"), SCE includes an estimate of curtailed generation based on analysis submitted in SCE's testimony regarding the Tehachapi Renewable Transmission Project ("TRTP") in its generation forecasts for projects in that location.[~~39~~44] While potentially conservative, this analysis takes into account expected new interconnections in the TWRA, hourly generation profiles for wind and solar, and expected increases in transmission capacity as TRTP construction progresses. The amount of generation actually curtailed will be a function of real-time load, generation bids for dispatch, actual generation output that differs from cleared bids for dispatch, and the amount of transmission capacity available.

Additionally, to the extent that other projects have been curtailed, ~~those curtailments~~or in the event SCE revises its curtailment estimates for resources in Tehachapi or elsewhere in California, those curtailment estimates may be incorporated into forecasts of generation ~~based on~~

[~~39~~44] *See* Southern California Edison Company's Testimony in Response to the Assigned Commissioner's Ruling on the Tehachapi Renewable Transmission Project (TRTP), ~~A.~~Application 07-06-031 (January 10, 2012); Southern California Edison Company's Supplemental Testimony in Response to the Assigned Commissioner's Ruling on the Tehachapi Renewable Transmission Project (TRTP), ~~A.~~Application 07-06-031 (February 1, 2012).

~~available data.~~

in the future.

4. Are there any significant changes to the success rate of individual RPS projects that impact the RNS?

SCE reviews the status of contracted projects that are not yet ~~on-line~~online every quarter to assess the likelihood that each project will be successfully constructed and deliver energy. For the larger contracted projects that terminated in the last year, SCE ~~had~~has gradually dropped their likelihood of success over time~~,~~ such that when the projects eventually terminated, there was not a significant impact to SCE's RNS. Overall, SCE has seen a number of large, near-term projects ~~making great~~continue to make strides towards completion, resulting in a collectively higher anticipated success rate for these large, near-term projects than in ~~2013.~~2014.

5. As projects in development move towards their commercial operation date, are there any changes to the expected RPS deliveries? If so, how do these changes impact the RNS?

As projects move closer to their commercial operation dates, there may be a number of reasons to change the expected RPS-eligible deliveries, including schedule changes from phased projects, commercial operation date changes, and availability of updated forecasted production information. These factors may either increase or decrease the RNS.

6. What is the appropriate amount of RECs above the procurement quantity requirement ("PQR") to maintain? Please provide a quantitative justification and elaborate on the need for maintaining banked RECs above the PQR.

While SCE intends to maintain a bank, determining the appropriate level of RECs above the PQR is dependent on a number of factors: the level of bundled retail sales, fuel source mix in the renewables portfolio, performance of existing resources, project success rates, delay or acceleration of ~~on-line~~online dates, performance of new facilities once they are operational, the level of the existing portfolio that is re-contracted, and curtailment, among other factors. Annual variability of these ~~risk~~ factors can either increase or decrease the bank from year- to-year. ~~However, over longer periods of time, SCE expects generation to be relatively constant.~~

SCE does not target a minimum amount or range of RECs above the PQR for banking. Instead, SCE includes the expected success rate for projects in development and incorporates the above risk factors in its forecast, which creates an adequate margin of procurement.

7. What are your strategies for short-term management (10 years forward) and long-term management (10-20 years forward) of RECs above the PQR? Please discuss any plans to use RECs above the PQR for future RPS compliance and/or to sell RECs above the PQR.

When sufficiently long during short-term periods, SCE has used sales of renewable energy products, project deferrals, and solicitation deferrals in order to adjust its renewable procurement back in line with its forecasted RNS. If SCE forecasted short-term shortfalls, SCE would satisfy the need through additional procurement. For example, SCE could re-contract with existing projects, initiate an RPS solicitation, procure through pre-approved procurement programs, or make short-term purchases. Additionally, SCE diligently manages contracts to ensure all contractual obligations are met. SCE uses these activities for renewables portfolio optimization.

Specifically regarding the sale of RECs, when SCE has a long position in the near term, SCE evaluates whether a sale of renewable energy products is appropriate. This evaluation includes a calculation of SCE's renewable procurement position and RPS bank with a set of adverse assumptions. These assumptions include, but are not limited to, lower performance of existing resources than expected, lower risk-adjusted project success rates for contracted generation that is not yet ~~on-line~~online, and higher levels of curtailment than expected. SCE assesses its renewable procurement position with such adverse assumptions to ensure that, even in the worst case scenario, SCE would still expect to meet its RPS targets after making the sale. It is not SCE's practice to purchase renewable energy products solely for the purpose of selling them at a later date.

Moreover, when SCE considers whether to engage in sales of renewable energy products, SCE compares the ~~REC price or renewable premium~~NMV for the sales transaction against the ~~renewable premiums~~NMV of proposals submitted to SCE in recent solicitations and other offers. If the ~~renewable premiums~~NMVs for long-term renewable procurement are higher than the ~~REC price or renewable premium~~NMV for the sales transaction, it would be more cost effective for SCE to maintain its existing RPS bank for future compliance periods. Conversely, if the ~~renewable premiums~~NMVs from recent solicitations are lower than the ~~REC price or renewable premium~~NMV for the sales transaction, SCE has an opportunity to optimize its renewables portfolio and realize value for its customer by selling renewable energy products.

At this time, SCE considers holding an excessive amount of bank in the long-term to be an inefficient use of resources. Rather, SCE generally allocates any near-term forecasted RECs above the PQR to years of forecasted shortfall. Additionally, as described in its response to question 6 above, SCE does not target a minimum amount or range of RECs above the PQR for banking. SCE takes into account project specific success rates to determine an adequate margin of procurement.

8. Provide Voluntary Margin of Over-procurement ("VMOP") on both a short-term (10 years forward) and long-term (10-20 years forward) basis. This should include a discussion of all risk factors and quantitative justification for the amount of VMOP.

SCE currently does not use a VMOP methodology on either a short-term or long-term basis. While there are different risks that have different impacts in the short and long-term, SCE believes it appropriately accounts for these risk factors in its forecasted RNS. ~~SCE is currently evaluating potential modifications to its RPS procurement strategy, which may include a methodology for determining the amount of VMOP.~~

9. Please address the cost-effectiveness of different methods for meeting any projected VMOP procurement need, including application of forecast RECs above the PQR.

SCE procures what it believes is needed to meet its RPS targets, allocating any near-term forecasted RECs above the PQR to years of forecasted shortfall. SCE's forecasted need is far enough in the future that SCE believes it can fill that need through additional procurement on a ratable basis. SCE believes it appropriately accounts for risk through the risk factors identified in its response to question 6 above, and currently does not utilize a VMOP.

In the event that SCE implements a VMOP methodology in the future, SCE would use the same methods to procure its projected VMOP procurement need as it uses to procure ~~toward~~towards its RPS targets, including procurement of Category 1, Category ~~1~~2, and Category 3 products ~~and long-term Category 3 unbundled RECs~~. The relative cost-effectiveness of these products depends on market prices for the different portfolio content categories at the time of procurement, expected future prices, and the constraints on the quantities of each product that can be procured. In order to obtain additional data on the cost-effectiveness of these products, SCE is soliciting long-term Category 2 and Category 3 unbundled ~~RECs~~REC products in its ~~2014~~2015 RPS solicitation in addition to long-term Category 1 products. SCE may also conduct an RFI, another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products to realize potential cost savings for customers and obtain additional information on the market for short-term products.

10. Are there cost-effective opportunities to use banked RECs above the PQR for future RPS compliance in lieu of additional RPS procurement to meet the RNS?

There are a few alternatives for the potential use of banked RECs above the PQR, including applying them in the future compliance periods, engaging in sales for the amount of bank, and a combination of sales of Category 1 products and procurement of other products. As noted above in response to question 7, SCE does not hold an excessive amount of bank for the sole purpose of selling it later. SCE generally allocates any near-term forecasted RECs above the PQR to years of forecasted shortfall. SCE conducts various portfolio optimization strategies also described in its response to question 7 to manage its renewables portfolio.

In particular, SCE compares the long-term procurement cost of RECs, measured by the ~~renewable premium~~NMV, to market prices, as well as cost impacts of other portfolio optimization activities. The cost effectiveness of these opportunities must be determined at the time of procurement and/or sales, as market prices and SCE's portfolio change over time. In order to ~~gather more~~obtain additional data on ~~market prices of Category 3~~the cost-effectiveness of all products, SCE is soliciting long-term Category 2 and Category 3 unbundled ~~RECs~~REC products in its ~~2014 solicitation.~~

2015 RPS solicitation in addition to long-term Category 1 products. SCE may also conduct an RFI, another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products to realize potential cost savings for customers and obtain additional information on the market for short-term products.

11. How does your current RNS fit within the regulatory limitations for portfolio content categories? Are there opportunities to optimize your portfolio by procuring RECs across different portfolio content categories?

All of the procurement in SCE's current renewables portfolio is from either contracts executed prior to June 1, 2010 or contracts for Category 1 products. Accordingly, SCE's procurement fits within the minimum target for Category 1 products and the maximum target for Category 3 products established by SB 2 (1x) and D.11-12-052.

SCE does see opportunities to optimize its portfolio through procurement across the three portfolio content categories. ~~As described in Section XIII.A.1,~~ SCE intends to solicit ~~both~~ long-term Category ~~1 products~~1, Category 2, and ~~long-term~~ Category 3 unbundled ~~RECs in its 2014 RPS solicitation~~REC products in its 2015 RPS solicitation. SCE may also conduct an RFI, another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products to realize potential cost savings for customers and obtain additional information on the market for short-term products. SCE believes that by providing flexibility in its procurement strategy, SCE can minimize costs to its customers. In addition, ~~at the close of the 2014 RPS solicitation, SCE will have gathered information about the current market and pricing for unbundled, long-term RECs, allowing SCE to refine its portfolio optimization strategy for~~

~~future solicitations~~as discussed in Section II, eliminating the restriction on banking short-term products would increase SCE's ability to procure additional low cost products for its customers.

VIII.~~VII.~~ MINIMUM MARGIN OF PROCUREMENT

SCE's renewable procurement efforts will be guided by its forecast of its renewable procurement needs, as described in Section ~~II~~III.B and provided in Appendices C.~~1, C.2, C.3, and~~1 through C.4. In its forecast of its renewable procurement position and need, SCE currently accounts for the risks of project failure and delay associated with contracted projects that are not yet ~~on-line~~online. To this end, SCE uses individual project-specific, risk-adjusted success rates for large, near-term projects and a flat ~~50~~60% success rate for the remaining projects, which is based on these projects' overall weighted average success rate. This probabilistic risk adjustment methodology for discounting expected energy deliveries from projects under development is modeled to represent project development success rates as well as any contingency that would make meeting the State's RPS goals less likely (e.g., delays due to transmission, curtailment, material shortages, load growth beyond that which is forecasted, or less than expected output from resources). Additionally, this methodology provides an appropriate minimum margin of procurement "necessary to comply with the renewables portfolio standard to mitigate the risk that renewable projects planned or under contract are delayed or cancelled."[~~40~~45] SCE will reassess its position on a periodic basis and, as such, expects that success rates may need to be modified in the future to reflect changes to SCE's portfolio.

The Commission should rely on ~~the IOUs~~retail sellers to calculate ~~the~~their minimum ~~margin~~margins of procurement and should not attempt to impose a one-size-fits-all approach. As many of the projects in SCE's portfolio become operational, SCE will face different risks,

[~~40~~45] Cal. Pub. Util. Code § 399.13(a)(4)(D).

including integration of these resources. The risks associated with project failure will be replaced by less significant risks of projects generating below full capacity. Similarly, SCE expects that the portfolio risk picture is not the same for each ~~IOU~~retail seller. For example, risks may vary depending on whether a portfolio contains a high proportion of contracts that are ~~on-line~~online (as discussed above) or depending on the various technologies being used (e.g., geothermal technology, which is a baseload resource, versus wind or solar technologies, which are more intermittent as described in Section ~~IV~~V.B). For these reasons, each ~~IOU~~retail seller should continue to have the authority to revise its approach to calculating the minimum margin of procurement through the RPS procurement planning process and each ~~IOU~~retail seller should have the flexibility to calculate this margin based on its unique portfolio make-up and procurement needs.

IX.~~VIII.~~ BID SOLICITATION PROTOCOL, INCLUDING LCBF METHODOLOGIES

A. Bid Solicitation Protocol

SCE includes its proposed ~~2014~~2015 Procurement Protocol as Appendix F.1. The Procurement Protocol includes, among other things:

- SCE's requirements for ~~on-line~~initial delivery dates and preferred contract term lengths;
- Deliverability characteristics and locational preferences;
- SCE's requirements for LCR and PRP projects;
- Encouragement for Women-Owned, Minority-Owned, ~~and~~ Disabled Veteran-Owned, Lesbian-Owned, Gay-Owned, Bisexual-Owned, and/or Transgender-Owned Business Enterprises ("~~WMDVBEs")~~Diverse Business Enterprises") to participate in SCE's

RPS solicitation and information on how sellers can help SCE to achieve General Order ("GO") 156 goals;

- Requirements for each proposal submission;
- A description of the type of products SCE is soliciting;
- A schedule of key dates related to the ~~2014 RFP~~2015 RPS solicitation;
- SCE's ~~2014~~2015 *Pro Forma* Renewable Power Purchase~~ and Sale~~ Agreement ("*Pro Forma*"), attached as Appendix G.1;
- SCE's ~~2014~~2015 *Pro Forma* Master Renewable Energy Credit Purchase Agreement ("REC *Pro Forma*"), attached as Appendix H; and
- ~~SCE's 2014 Form of Seller's Proposal, attached as Appendix J.1.~~

A discussion of the important changes in the proposed ~~2014~~2015 solicitation documents from SCE's ~~2013~~2014 solicitation documents is included in Section ~~XIII~~XV.

B. LCBF Methodology

In its LCBF evaluation process, SCE performs a quantitative assessment of each proposal ~~individually~~ and subsequently ranks them based on each proposal's benefit and cost relationship. The result of the quantitative analysis is a ~~merit~~ rank order ~~ranking~~ of all complete and conforming proposals' net levelized cost that help define the preliminary shortlist. Following the quantitative analysis, SCE will conduct an assessment of the top proposals' qualitative attributes. These qualitative attributes, including factors such as local reliability, resource diversity, and ~~contribution to other SCE program goals~~nominal contract payments, are considered to either eliminate ~~non-viable proposals or proposals with other qualitative attributes~~ or add projects ~~with high viability or other qualitative attributes~~ to the final shortlist based on qualitative attributes, or to determine tie-breakers, if any. Once a project is added to the shortlist, SCE may enter into a

PPA with the project. By taking many quantitative and qualitative factors into consideration, SCE ensures that it will select projects best suited for its portfolio in order to meet customer needs and attain the State's RPS goals. Appendix I.1 (the "LCBF Methodology") describes this process~~.~~, including capacity valuation and the renewable integration cost adder, among other factors.

X. ~~IX.~~ CONSIDERATION OF PRICE ADJUSTMENT MECHANISMS

SCE does not plan to solicit ~~a specific type of indexing price structure in its 2014 RPS solicitation. As in SCE's 2013 RPS solicitation, SCE intends to include an option that a seller may submit an indexed pricing bid so long as the seller also includes a fixed contract price. Sellers may propose a price indexed to an Existing Zone Generation Trading Hub,[41] commodities, equipment, cost of financing, etc., and may also consider placing price ceilings and floors on the indexed price.~~ price structures based on indices in its 2015 RPS solicitation. Sellers can still bid escalation factors in their prices. Over the years, fewer and fewer proposals are based on prices tied to an index. In the more than 600 different proposals that SCE has received over the last two RPS solicitations, only one seller offered pricing tied to an index or other adjustment mechanism (other than simply an escalation/de-escalation factor).

~~In the past, SCE has had mixed results using indexed pricing and price adjustment mechanisms. Some of the contracts that include these provisions have been based on changes in specific costs, such as the market price of wind turbines or diesel fuel costs for biomass transportation. Structuring the index and drafting the contract language to accurately reflect fluctuations in a project's costs has, in some cases, proven difficult.~~Proposals with adjustable pricing based on indices were more common when the renewable industry was starting out. Uncertainties over relatively new technologies made it reasonable to tie pricing to certain

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~~[41] As defined in the CAISO Tariff (formerly SP15, NP15, or ZP26).~~

commodity indices, inflation rates, or other indices that made sense given the technology. However, the industry is more sophisticated now, supply chains are becoming more stable, and price adjustment mechanisms based on indices are simply not needed. Sellers and SCE want price certainty and do not want to be subjected to extraordinary high (or unsustainably low) pricing due to fluctuations in a commodity or other indices. The ability to bid price adjustments based on indices increases complexity for sellers in the proposal process and for SCE in the evaluation process. By eliminating price adjustment mechanisms based on indices for the 2015 RPS solicitation, SCE is simply removing options that are no longer utilized in the market.

XI. ECONOMIC CURTAILMENT

Although SCE has observed very few instances of negative pricing in the day-ahead market,[46] negative prices have been observed on a more regular basis in the real-time market. SCE identifies several factors contributing to increases in instances of negative prices. Systemic over-generation typically occurs in off-peak hours when baseload and must-take renewable generation is high and demand is low, which can cause negative market price hours at trading hubs. On-peak negative prices tend to be localized, transient, and related to congestion caused by a particular transmission bottleneck.

It is generally difficult to forecast negative prices. SCE continues to manage potential instances of negative pricing, and the associated impact to SCE customers, through several different strategies. As a general practice, SCE schedules variable energy resources, such as solar and wind facilities, into the day-ahead market whenever possible. Because resources that are awarded day-ahead schedules are only exposed to negative prices in real-time for deliveries in excess of their day-ahead awards, this practice helps to limit customer exposure to negative prices.

This practice is consistent with least-cost dispatch principles, which govern SCE's approach to marketing its entire portfolio of contracted and utility-owned resources.

Additionally, SCE plans to economically bid resources with economic curtailment rights into the day-ahead and real-time markets. Resources with these curtailment rights will then be curtailed as needed based on CAISO's economic dispatch. In some SCE PPAs, there is a pre-defined amount of pre-paid energy per year that may be economically curtailed, subject to some restrictions, without requiring SCE to pay for the energy that could have been delivered but for the curtailment instruction. As noted above, this amount is commonly referred to as a "curtailment cap." Once the curtailment cap is reached, SCE must pay the contract price for energy that could have been delivered but for the curtailment instruction. In other SCE PPAs, SCE has the right to curtail based on economic factors, but must always pay the contract price for energy that could have been delivered but for the curtailment instruction. These types of curtailment rights are commonly referred to as "take-or-pay." In instances where SCE has either exceeded the curtailment cap or only has "take-or-pay" economic curtailment rights to begin with, if SCE were not to curtail deliveries in excess of any schedules awarded at positive prices, customers would pay the contract price for that excess delivered energy *and* incur the costs associated with negative pricing in such intervals. SCE's economic bids will therefore serve to further limit customer exposure to negative prices both day-ahead and in real-time, even if SCE ultimately pays the contract price for curtailed energy.

As explained in Section III.F.1.a, in the 2014 RPS solicitation, SCE required sellers to submit proposals both with and without a curtailment cap. SCE will not require sellers to bid the pre-paid economic curtailment option with the curtailment cap in the 2015 RPS solicitation. SCE

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46 ~ 0.05% of hours in sampled nodes in the day-ahead market – the vast majority of which occur at

will retain the right to curtail at its discretion, but will pay for curtailments directly resulting from SCE marketing decisions. As in prior years, SCE will not pay for curtailments in response to an emergency, or due to CAISO or transmission provider instructions.

XII. EXPIRING CONTRACTS

For SCE's RPS-eligible contracts expiring in the next ten years, Appendix E includes the name of the facility, technology, contract expiration date, nameplate capacity, expected annual generation, location, contract type, and portfolio content category classification. SCE used the template for reporting on RECs from expiring contracts as provided in the RNS Ruling.

XIII.~~X.~~ COST QUANTIFICATION

The spreadsheet attached as Appendix D includes actual expenditures per year for RPS-eligible generation for every year from 2003 through ~~2013,~~2014, as well as actual RPS-eligible generation for every year from 2003 through ~~2013.~~2014. Appendix D also includes a forecast of future expenditures SCE may incur every year from ~~2014~~2015 through 2030, as well as a forecast of expected generation for every year from ~~2014~~2015 through 2030.~~[42]~~[47]

~~XI. EXPIRING CONTRACTS~~

~~For SCE's RPS-eligible contracts expiring in the next ten years, Appendix E includes the name of the facility, technology, contract expiration date, nameplate capacity, expected annual generation, location, and portfolio content category classification. SCE used the template for reporting on RECs from expiring contracts as provided in the RNS Ruling.~~

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generally congested interties such as PALO VERDE.

~~42~~47 For all forecast years, SCE has assumed a 100% success rate for ~~all~~ projects that are not yet ~~on-line~~online. The 2014 RPS solicitation contracts are not included.

XIV.~~XII.~~ IMPERIAL VALLEY

In ~~SCE's 2013 RPS solicitation, SCE received over 350 proposals.~~ [redacted] ~~SCE executed PPAs with two projects located in the IID in its 2013 RPS solicitation.~~ addition to the ORNI 18 project, which has been online and operating since October 2009, SCE executed PPAs with two projects (Mount Signal) located in the Imperial Irrigation District in the 2013 RPS solicitation. Both of those solar projects have executed interconnection agreements, are fully permitted,

[redacted]

~~The Commission should not adopt any remedial measures related to the Imperial Valley. SCE would be particularly concerned with any proposal to automatically shortlist all Imperial Valley proposals or require a solicitation dedicated to Imperial Valley resources. Such special preferences for Imperial Valley resources would limit competition, potentially misallocate resources, and distort the evaluation process, which would ultimately result in higher costs for customers. This is directly contradictory to SCE's intent to minimize costs and maximize value to its customers by optimizing its renewables portfolio.~~

~~Furthermore, there is no evidence that remedial measures are needed. Imperial Valley resources can and do compete on equal footing with renewable resources located in other regions. This is confirmed by the fact that SCE executed PPAs with two projects from the IID in its 2013 RPS solicitation. Proposals from Imperial Valley projects should be treated the same as all other proposals.~~

In SCE's 2014 RPS solicitation, SCE received 382 unique complete and conforming proposals. [redacted][48]

~~XIII.~~ XV. ~~SUMMARY OF~~ IMPORTANT CHANGES ~~BETWEEN THE 2013 AND~~ FROM 2014 RPS ~~PLANS~~ PLAN

SCE's ~~2014~~2015 RPS Plan includes important changes to: (1) SCE's ~~2014~~2015 Procurement Protocol; (2) SCE's ~~2014~~2015 *Pro Forma*~~; (3) SCE's 2014 Form of Seller's Proposal~~; and (~~4~~3) SCE's LCBF Methodology. Those changes are summarized below. ~~In SCE's initial 2014 RPS Plan filed on June 4, 2014, SCE~~SCE has included redlines of its ~~2014~~2015 Procurement Protocol, ~~2014~~2015 *Pro Forma*, and LCBF Methodology~~, and 2014 Form of Seller's Proposal as compared to the versions~~ against the final 2014 version of those documents ~~included in SCE's Final 2013 RPS Procurement Plan filed on December 4, 2013~~ as Appendices F.2, G.2, and I~~.2, and J.2, respectively.[43] Moreover, a redline of SCE's 2014 Written Plan as compared to the version of that document included in SCE's Final 2013 RPS Procurement Plan was included as Appendix A. In SCE's amended 2014 RPS Plan filed on August 20, 2014, SCE included redlines of its 2014 Procurement Protocol, 2014~~ ~~*Pro Forma*~~~~, and LCBF Methodology against the versions of those documents filed on June 4, 2014 as Appendices F.2, G.2, and I.2, respectively, and a redline of its 2014 Form of Seller's Proposal against the version of that document included in~~

[48] Draft Resolution E-4726, issued on July 14, 2015, directs SCE to re-evaluate proposals from its 2014 RPS solicitation for projects that were to be interconnected to the Imperial Irrigation District's electrical system considering the differences between the CAISO Tariff and Imperial Irrigation District Open Access Transmission Tariff.

~~[43] SCE did not include a redline of its 2014 REC~~ ~~*Pro Forma*~~ ~~because that document was not included in SCE's 2013 RPS Procurement Plan. SCE has not modified its 2014 REC~~ ~~*Pro Forma*~~ ~~from the version of that document filed with SCE's initial 2014 RPS Plan on June 4, 2014.~~

~~SCE's Final 2013 RPS Procurement Plan filed on December 4, 2013 as Appendix J.2. Additionally, a redline of SCE's 2014 Written Plan against the version of that document filed on June 4, 2014 was included as Appendix A. In this final 2014 RPS Plan, SCE includes redlines of its 2014 Procurement Protocol, 2014 *Pro Forma*, LCBF Methodology, and 2014 Form of Seller's Proposal against the versions of those documents filed on August 20, 2014 as Appendices F.2, G.2, I.2, and J.2, respectively. Finally,~~.2, respectively. SCE has also included a redline of ~~SCE's 2014 Written Plan~~its 2015 REC *Pro Forma* against the final 2014 version of that document ~~filed on August 20, 2014 is included~~ as Appendix ~~A.~~[44]H.2. The changes to the 2015 REC *Pro Forma* were minor.

Additionally, SCE has included a redline of its 2015 Written Plan against the final version of its 2014 Written Plan as Appendix A. SCE has changed its Written Plan in accordance with the ACR, including following the general format set forth in the ACR and adding new sections on consideration of a higher RPS goal and economic curtailment. SCE has also added new sections on the Standard Contract Option using the streamlined RAM procurement tool, the GTSR program, short-term products, and energy storage procurement.

[44] ~~SCE initially changed its 2014 Written Plan from its 2013 Written Plan in accordance with the requirements of the ACR, including following the general format set forth in the ACR and including updated information. Additionally, SCE made changes to the format of its RNS calculations and included additional RNS-related information in accordance with the RNS Ruling. SCE also reorganized certain sections of its 2014 Written Plan to be more consistent with the organization of the other IOUs' plans. Since the filing of SCE's initial 2014 Written Plan on June 4, 2014, SCE has made additional changes to its 2014 Written Plan to conform it to D.14-11-042, describe the additional changes made to its solicitation materials, and to update other information.~~

A. Important Changes in ~~2014~~2015 Procurement Protocol

1. Considering Proposals for Long-term Category ~~1~~2 Products ~~and Long-term Category 3 Unbundled REC Transactions~~

~~As in the 2013 RPS solicitation, SCE will solicit long-term[45] Category 1 products in the 2014 solicitation. Additionally, as~~In the 2014 RPS solicitation, SCE solicited long-term Category 1 and Category 3 unbundled REC products. As provided in SCE's ~~proposed 2014~~2015 Procurement Protocol, SCE will also consider proposals for long-term Category ~~3 unbundled RECs~~2 products from both new and existing generation facilities~~.[46]~~ in the 2015 RPS solicitation.

SCE intends to include long-term Category ~~3 unbundled REC transactions~~2 products in its ~~2014~~2015 solicitation to provide additional flexibility and contracting opportunities ~~to minimize costs~~ for its customers. ~~In particular, SCE believes that including such a product in its solicitation will provide useful information about the current market and pricing for long-term unbundled RECs. Any contracts for unbundled RECs~~Any contracts for Category 2 products ultimately executed by SCE will be within the limits on procurement of Category ~~3~~2 products.~~[47]~~[49]

~~Limiting the 2014 RPS solicitation to these products will target proposals that are more likely to result in executed contracts, thus focusing the efforts of both SCE and sellers on the most promising project proposals.[48] Accordingly, it will save SCE and sellers time by simplifying the solicitation and evaluation process.~~

~~45 Long-term is defined as a contract term of 10 years or more.~~

~~46 SCE has also included a new 2014 REC *Pro Forma*, which is included as Appendix H.~~

~~47~~49 *See* Cal. Pub. Util. Code § 399.16(c)~~(2)~~.

~~48 The Commission has authorized the IOUs to include varying preferences, including preferences for specific portfolio content categories, in their RPS Procurement Plans. *See* D.12-11-016 at 22-23; D.13-11-024 at 41.~~

2. **Requiring ~~Bidding of Two Curtailment Options~~ 10-Year Term Proposals**

SCE~~'s contractual curtailment provisions continue to evolve as SCE's load projections change, new projects come on-line (both within SCE's portfolio and system-wide), new transmission is built or delayed, and new projects join the interconnection queue. In SCE's initial 2014 RPS Plan filed on June 4, 2014, SCE set forth its plan to allow bidders to propose pricing based on four different curtailment scenarios. As further discussed in Section XIII.B.4, SCE is eliminating the banked curtailment and "pay back" provisions from the 2014 *Pro Forma*. Accordingly, SCE is now requiring bidders to propose pricing based on two curtailment scenarios, both without the banked curtailment and "pay back" provisions.~~

~~Specifically, in order to help determine how sellers value curtailment and the cost of curtailment rights to SCE's customers, SCE's 2014 Procurement Protocol[49] will require sellers proposing Category 1 products to provide two bids based on discretionary curtailment orders pursuant to Section 3.12(g)(iii) of the 2014 *Pro Forma* ("Curtailment Order") as described below:~~

- ~~Option 1: Sellers offer pricing based on SCE having the right to issue unpaid Curtailment Orders for up to 50 hours per year. Any Curtailment Order in excess of the 50 hours multiplied by the applicable contract capacity would be paid at the contract price.~~
- ~~Option 2: Sellers offer pricing based on SCE having to pay the contract price for all Curtailment Orders.~~

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[49] ~~In this amended 2014 RPS Plan, SCE also made changes to its LCBF Methodology to clarify how it will evaluate the two curtailment options.~~

~~SCE will evaluate both bids and select the bid that represents the best value to SCE's customers.~~~~[50]~~

is requiring sellers to provide a minimum of one proposal out of the eight allowable proposals per project as a 10-year delivery term. SCE has a preference for shorter than 20-year delivery terms; thus, in the 2015 RPS solicitation it will require at least one 10-year term proposal per project. Shorter term contracts mean that SCE customers are not locked into long-term contracts for technologies that are rapidly changing and improving. They also represent less risk in terms of long-term rate recovery, and pose less concern in terms of debt equivalents impacts. Moreover, requiring at least one proposal with a 10-year delivery term for each project will provide SCE with additional information about the value differences between different contract terms in order for SCE to make the best decisions for its customers.

3. ~~LCR Requirements and PRP Goal~~Elimination of Pre-Paid Economic Curtailment Bidding

~~SCE's 2014 Procurement Protocol provides details on LCR requirements and SCE's PRP goal. The 2014 Procurement Protocol solicits projects in the Western LA Basin sub-area to participate in the 2014 RPS solicitation. Projects located in the Western LA Basin sub-area that are interconnected to SCE's distribution system served by Johanna and Santiago sub-stations may also qualify for SCE's PRP. Any resulting contract meeting the LCR goal must include the conveyance of RA benefits. For the PRP goal, SCE has a preference for projects that include the conveyance of RA benefits and will also consider EO projects as eligible to participate. In addition, to be considered for the PRP, projects must be in operation on or before December 31, 2017.~~

~~[50] The executed contract between SCE and the seller would be changed from the *pro forma* terms, as~~

As discussed in Section III.F.1.a, SCE will not require sellers to bid the pre-paid economic curtailment option with the curtailment cap in the 2015 RPS solicitation. SCE will retain the right to curtail at its discretion under the 2015 *Pro Forma*, but will pay for economic curtailments as detailed in Section XV.B.1. As in prior years, SCE will not pay for curtailments in response to emergencies, or due to CAISO or transmission provider instructions.

4. ~~Using a One-Step Solicitation Process~~Elimination of Price Adjustment Mechanisms Based on Indices

~~SCE will no longer include a price refresh for most proposals in the 2014 RPS solicitation.[51] Prior to its 2013 RPS solicitation, SCE did not impose deadlines on the conclusion of PPA negotiations with shortlisted projects. This often resulted in negotiations continuing for a year or more and proposed PPA pricing that was offered near the beginning of the solicitation no longer being reflective of market conditions at the time of PPA execution. This left SCE with the possibility of having a completed, negotiated PPA with stale pricing. Due to these concerns, SCE implemented two changes for its 2013 RPS solicitation. First, SCE instituted a price refresh, in which bidders were given the opportunity to refresh their proposed pricing at the conclusion of contract negotiations. No other elements of their proposal or the negotiated contract terms could be changed. Second, SCE implemented a set negotiation period in which negotiations must be completed.~~

~~necessary, with terms appropriate for the option selected.~~

~~51 Because the market for unbundled REC transactions is an emerging market with more uncertainty and the potential for more volatility, SCE may still ask for a price refresh from bidders proposing unbundled REC transactions (but not bidders proposing other transactions) if the proposed pricing for such transactions is no longer consistent with current market conditions.~~

~~In conducting the 2013 RPS solicitation, SCE found that the negotiation period deadline alone was sufficient to address the concerns associated with an extended solicitation. Accordingly, a price refresh process is not necessary for most proposals in the 2014 RPS solicitation. The negotiation deadline obligates the parties to have a negotiated PPA in place in a reasonable amount of time.[52] This shortened negotiation period makes it far less likely that changing market conditions would cause the PPA price to be fundamentally out of line with market conditions at the time the PPA is executed. Given SCE's demonstrated ability to implement a reasonably short solicitation schedule, the price refresh process became an unnecessary step in the solicitation process, adding administrative burden to the solicitation. If experience in future solicitations demonstrates a need for, or additional benefits from, a two-step solicitation process, SCE may re-visit this process. However, based on SCE's experience with the 2013 RPS solicitation, SCE will eliminate the price refresh for most proposals in the 2014 RPS solicitation.[53]~~

For the 2015 RPS solicitation, SCE will eliminate sellers' option to bid price adjustment mechanisms based on indices as explained in Section X.

5. ~~Reducing the Minimum Contract Capacity Eligible to Participate to 500 Kilowatts~~Targeting Specific Delivery Periods

~~SCE is reducing the minimum size threshold for projects to bid into the 2014 RPS solicitation from 1.5 MW to 500 kilowatts. All projects will still need to meet all of the eligibility requirements, including the requirement that projects have a Phase II Interconnection Study (or an~~

~~[52] For the 2013 RPS solicitation, negotiations were limited to 90 days following shortlist notification.~~

~~[53] Eliminating a standard price refresh for most proposals would not preclude sellers from offering lower pricing during PPA negotiations in exchange for a favorable PPA term.~~

~~equivalent or more advanced interconnection status or exemption), to participate in the solicitation.~~

~~In D.13-11-024, the Commission retained its previous minimum size limitation of 1.5 MW despite the eligibility for contracts under the feed-in tariff program increasing from 1.5 MW to 3 MW, stating that "because we continue to envision the RPS Program as a program with broad project eligibility, we adopt no changes to the existing size limitation of 1.5 MW but preferences are permitted above the minimum project size."[54] Allowing projects between 500 kilowatts and 1.5 MW to participate in SCE's RPS solicitation is consistent with this broad project eligibility.~~

In past RPS solicitations, SCE did not limit the products that sellers could bid, which resulted in a large number of proposals. For example, in SCE's 2011 RPS solicitation, SCE received over 1,400 proposals. This volume of proposals required substantial time and effort on behalf of SCE and sellers, but did not lead to the execution of any contracts. Based on this experience, SCE used a more targeted solicitation process in 2013 that focused more specifically on SCE's needs. SCE limited the 2013 RPS solicitation to Category 1 products and projects with commercial operation dates of January 1, 2016 or later. With those limitations in place, SCE had a robust proposal pool of over 350 proposals from which to select. In 2014, SCE limited the solicitation to long-term Category 1 and Category 3 unbundled REC products. Additionally, all projects were required to have commercial operation dates of January 1, 2016 or later, have a Phase II Interconnection Study (or an equivalent or more advanced interconnection status or exemption), and have an "application deemed complete" (or equivalent) status within the

~~[54] D.13-11-024 at 42.~~

applicable land use entitlement process. With those requirements in place, SCE had a robust proposal pool of 382 complete and conforming proposals.

In 2015, SCE intends to provide sellers with further direction on the products and the timeframes where SCE has a need. SCE wants to focus the efforts of both SCE and sellers on proposals that are likely to be most valuable to SCE's customers, thus simplifying the solicitation and evaluation process for all parties. To this end, SCE intends to solicit offers with delivery terms commencing on or before December 1, 2020. This time frame will allow projects to satisfy SCE's renewable procurement need in the third compliance period and beyond. Additionally, sellers must propose commercial operation dates that start on the first day of the month to simplify the administrative and settlement processes for these contracts.

6. ~~Application Deemed Complete Requirement~~Inclusion of Standard Contract Option

~~In D.14-11-042, the Commission required that projects participating in the 2014 RPS solicitations have, at a minimum, achieved the "application deemed complete" (or equivalent) status within the applicable land use entitlement process by the agency designated by the California Environmental Quality Act ("CEQA") or the National Environmental Policy Act ("NEPA") as the lead agency.[55] The requirement does not apply to projects if CEQA or NEPA are not applicable or no lead agency is designated under the law.[56] The requirement may be fulfilled by the developer providing a copy of the letter from the land use permitting agency documenting that the land use permit application for the project has been "deemed complete" to begin the permitting review process.[57]~~

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[55] ~~*See* D.14-11-042 at 49, Conclusions of Law 26-28, Ordering Paragraph 21.~~
[56] ~~*See id.* at 46.~~
[57] ~~*See id.* at 49, Conclusion of Law 28.~~

SCE~~ modified its 2014 Procurement Protocol to include this new requirement as prerequisite to participate in its 2014 RPS solicitation.~~ ~~[58]~~

’s 2015 RPS solicitation will include a Standard Contract Option based on the streamlined RAM procurement tool authorized in D.14-11-042. This option is addressed in detail in Section XVII.

7. ~~Requiring Bidders to Provide Geographic Information System Files~~Limiting Sellers to Eight Proposals Per Project

As explained in Section III.F.1.c, SCE will limit sellers to eight proposals per project in the 2015 RPS solicitation.

8. Elimination of Mutually Inclusive Proposals

In SCE’s 2014 RPS solicitation, no mutually inclusive proposals were presented by sellers. In the 2013 RPS solicitation, there was only one mutually inclusive proposal. Mutually inclusive proposals present added complexity, both in terms of the complete and conforming process, as well as trying to capture them properly in SCE’s valuation tools. Thus, SCE will not entertain mutually inclusive offers going forward.

9. Changes to Required Non-Disclosure Agreement Process for Sellers

In the 2015 RPS solicitation, SCE will begin to transition RPS solicitation sellers to an evergreen Non-Disclosure Agreement (“NDA”) process, which is currently used in other procurement solicitations (All-Source RFOs, LCR RFO, etc.). The evergreen NDA will be between SCE and seller companies who are offering projects into the solicitation; therefore, one

~~[58] SCE also made conforming changes in its 2014 Form of Seller’s Proposal.~~

NDA could cover multiple projects as well as multiple proposals. This will greatly streamline the solicitation process for both SCE and sellers.

In past years, SCE has required sellers to submit a short-term NDA that only applied to the current solicitation for every proposal and every project. This method produced an inefficient process for both parties. The introduction of an evergreen NDA will simplify administration of, and participation in, the 2015 RPS solicitation, and these NDAs will also be valid for future RPS solicitation proposals between the sellers and SCE.

10. Elimination of Seller's Form of Proposal

For its 2015 RPS solicitation, SCE is eliminating the Seller's Form of Proposal attachment. Instructions to sellers on proposal submittal and required attachments have now been migrated to, and thoroughly explained in, the 2015 Procurement Protocol.

11. Elimination of Multiple Attestations and Replacement with Officer's Certificate

In past RPS solicitations, SCE has required multiple attestations from sellers on a per-proposal basis. In 2015, SCE plans to combine all of the required attestations into one form that an officer of seller's company must sign. This refined document and process will simplify the solicitation process for both sellers and SCE.

12. Elimination of Shortlist Deposit Requirement

SCE has required that all projects selected for the shortlist post a shortlist deposit in the form of cash or letter of credit in past RPS solicitations. For the 2015 RPS solicitation, SCE will eliminate this requirement because SCE does not believe it has added value to the solicitation process. The original intent of the requirement was to financially obligate sellers to the solicitation process in the hopes that only sellers who were as committed as SCE to negotiating and executing a final PPA would post the deposit. However, because securing letters of credit and/or posting cash has become less of an obstacle for project sponsors as the market has matured, this exercise has been deemed superfluous. SCE believes requiring sellers to post development security at the time of PPA execution will add more value to the process as explained in Section XV.B.5.

13. Requiring Shortlist Exclusivity

As in 2014, SCE intends to utilize a one-step solicitation process in the 2015 RPS solicitation. SCE intends to develop a shortlist based on the proposed pricing received at the time of proposal submittal and only shortlist those projects with which it is likely to sign PPAs. In restricting the size of its solicitation shortlist to the most competitive projects based on quantitative and qualitative characteristics, SCE will save its customers' and developers' time and money by minimizing the number of negotiated PPAs that fail to reach execution. To promote full realization of these benefits, SCE proposes to add a requirement that sellers execute an exclusivity agreement with respect to shortlisted projects.

The Commission rejected this requirement in D.13-11-024 and D.14-11-042.[50] In D.14-11-042, the Commission found that shortlist exclusivity is an "unnecessary restriction on the market based on the current level of competition."[51] SCE disagrees that the level of competition is relevant to the main reason for requiring exclusivity arrangements after shortlisting: SCE's customers and developers should not have to expend resources on negotiating many PPAs that may not be signed.

Additionally, the 2015 RPS solicitation process will include the Standard Contract Option discussed in Section XVII. Having shortlist exclusivity will help to ensure an expedited process for those PPAs that may potentially be selected for this option. The Standard Contract Option is a

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[50] *See* D.13-11-024 at 32-33; D.14-11-042 at 33-35.

mechanism for projects to select SCE's 2015 *Pro Forma* with no further negotiations and will be utilized as a means to expedite PPA execution within SCE, as well as Commission approval via the Tier 2 advice letter process. For Standard Contract Option projects in particular, shortlist exclusivity will be critical to ensuring that once a seller is notified of their shortlist status and accepts their place on the shortlist, both parties will work together to make sure that a PPA is executed in a timely fashion. If a seller is willing to accept SCE's 2015 *Pro Forma* and accepts its place on SCE's shortlist, there should be no reason the seller needs to continue to negotiate with other buyers.

14. Supplier Diversity

~~In D.14-11-042, the Commission adopted Energy Division's proposal to require the IOUs to provide the Commission with a Geographic Information System ("GIS") file of the project boundaries and associated gen-tie for all projects that currently have an RPS PPA and all future bids submitted in the annual RPS solicitations or RPS procurement programs.~~[59] ~~In order to comply with this requirement, SCE modified its 2014 Procurement Protocol to require that bidders provide SCE with this information.~~[60]SCE continues to encourage Diverse Business Enterprises to participate in its RPS solicitation. Consistent with GO 156, D.15-06-007 recently expanded the definition of minorities to include Lesbian-Owned, Gay-Owned, Bisexual-Owned, and/or Transgender-Owned Business Enterprises.[52] SCE has incorporated these enterprises into its definition of Diverse Business Enterprises. SCE has also included, as an attachment to its 2015 Procurement Protocol, a sample list of potential products and services that may be available through Diverse Business Enterprise subcontractors.

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[51] D.14-11-042 at 35.

~~[59] *See* D.14-11-042 at 66-69, Conclusion of Law 35, Ordering Paragraph 24.~~

B. Important Changes in ~~2014~~2015 *Pro Forma*

1. ~~Availability Guarantee for Wind Projects: Former Section 3.19~~Pre-Paid Economic Curtailment: Sections 3.12(g) and 4.01(b)(iii)

~~In Section 3.19 of the 2013 *Pro Forma*, wind generating facilities were required to meet an annual availability target and provide an availability guarantee for 10 years following the commercial operation date. SCE is eliminating this availability guarantee for wind projects in the 2014 *Pro Forma*.~~

As explained in Sections III.F.1.a and XV.A.3, SCE is eliminating the requirement that sellers bid the pre-paid economic curtailment option with the curtailment cap in the 2015 RPS solicitation. SCE is also eliminating the provisions regarding pre-paid curtailment hours and the curtailment cap in the 2015 *Pro Forma.*

The 2015 *Pro Forma* includes SCE's right to curtail a generating facility in response to an instruction from CAISO or the transmission provider, in order to respond to an emergency, or if SCE issues a Curtailment Order,[53] which may be given in SCE's sole discretion. Sellers will be paid the contract price for energy that could have been delivered but for a Curtailment Order. As in the 2014 *Pro Forma*, sellers will not be compensated for curtailments due to CAISO or transmission provider instructions or to respond to emergencies. This language gives sellers sufficient certainty of future revenues, while also enabling SCE to respond to CAISO market signals to help alleviate congestion and mitigate customer exposure to negative prices.

~~[60] SCE also made conforming changes to its 2014 Form of Seller's Proposal~~[52] The decision also provided for a five year implementation plan, among other provisions.

[53] Under the 2015 *Pro Forma*, "Curtailment Order" means an order from SCE to Seller to reduce or stop the delivery of electric energy from the Generating Facility to SCE for any reason except as set forth in Sections 3.12(g)(i)-(ii).

2. Elimination of ~~the availability guarantee for wind projects aligns the provisions for wind projects with the provisions for solar and baseload projects, which were not subject to the availability guarantee. Moreover, sellers still must meet a minimum energy delivery obligation which ensures SCE receives the value of the energy it contracted for, regardless of technology type. To the extent sellers do not meet that obligation, they owe SCE a product replacement damage amount. This keeps SCE's customers whole and eliminates the need for sellers to attempt to price in the unknown cost of the availability guarantee.~~ **Startup Period and Initial Synchronization Period: Section 4.01 and Exhibit E**

~~**2. TOD Factors: Exhibit J**~~

~~SCE modified the TOD factors in the 2014 *Pro Forma*. In particular, SCE's 2014 *Pro Forma* includes a single set of TOD factors that will apply to all projects consistently, regardless of their deliverability status, technology, or any other characteristics, as opposed to different sets of TOD factors for EO and FCDS projects. As described in Section II.F.1.c, switching to a single set of TOD factors will place all projects on an equal footing for payments while still ensuring value is attributed to any capacity benefits provided. Moreover, this change will simplify the bidding and selection process and provide additional revenue certainty to sellers without affecting their competitiveness.~~

~~SCE based its TOD factors on the expected relative value of energy in each TOD period, which is consistent with how the previous EO TOD factors were calculated. SCE's new TOD factors are derived from SCE's internal forecasts for the future value of energy. These forecasts capture resource and price forecast changes such as updated greenhouse gas emissions prices~~

~~observed through the allowance auctions and secondary allowance markets, as well as more recent forecasts for the price of natural gas.~~

~~In addition to moving to a single set of TOD factors, SCE has revised its TOD period definitions to reflect a peak period later in the day, based on the results of the 2013 Loss of Load Expectation ("LOLE") study. LOLE is the potential amount of generation-related outages that may occur in a time period considering uncertainty in customer loads, resource availability, and other market conditions. The 2013 LOLE study evaluated 2017 operating conditions, and found that incremental renewable generation is impacting the distribution of LOLE across hours of the day. Specifically, increasing solar generation is pushing SCE reliability needs to later hours in the day when output from solar resources ramps down. Based on these study results, SCE revised its optional residential time-of-use ("TOU") rates in its 2013 Rate Design Window application.[61] SCE has revised its TOD factors in the 2014 *Pro Forma* to reflect the new period definitions as established for optional residential TOU rates.~~

In the 2015 *Pro Forma*, SCE will eliminate the startup period and initial synchronization periods that are outlined in the PPA. The elimination of these provisions will simplify contract administration and project onboarding for future projects. This change will also provide for cost certainty for SCE customers.

SCE's past practice has been to value each project as proposed by the seller, with dates-certain for the delivery term and a set quantity of energy at a forecasted capacity factor based on the generation profile furnished with the proposal package. All of these factors result in an NMV and estimated notional payments for each project, which are used to determine shortlisting and contract selection. However, prior RPS *pro forma* PPAs have allowed the seller to have a

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~~[61] *See* A.13-12-015.~~

start-up period whereby SCE compensates the seller for energy deliveries prior to the delivery term. These deliveries are dictated by the seller per their schedule and SCE has no influence over the volumes delivered in this initial start-up period.

SCE proposes to eliminate the start-up period and provide sellers the opportunity to manage the plant testing, commissioning, and initial synchronization prior to the commercial operation date with SCE. Having the seller manage the start-up of the plant prior to the commercial operation date with SCE will allow the sellers to market the attributes of the facility, reduce the onboarding complexity of operations and settlements for SCE and the seller, and eliminate the potential for any disputes related to SCE acting as the scheduling coordinator during these start-up periods.

The elimination of these provisions and the requirement that projects be bound by one online date at one contract capacity will also eliminate additional costs to customers that were not included in the valuation of the project and bring SCE's 2015 *Pro Forma* in line with other SCE *pro forma* PPAs (e.g. New Generation PPAs for gas-fired plants, Energy Storage PPAs, Combined Heat and Power ("CHP") PPAs, etc.).

3. Financial Consolidation: Section 8.06

SCE is also incorporating language into the 2015 *Pro Forma* that will obligate sellers to provide SCE with appropriate financial statements in order to include projects in its financial filings to the Securities and Exchange Commission in the event that SCE must consolidate any entity in which it has a controlling financial interest. Under GAAP,[54] a reporting entity (SCE) must consolidate in its financial statements any entity in which it has a controlling financial

[54] "GAAP" means Generally Accepted Accounting Practices. The common set of accounting principles, standards, and procedures that companies use to compile their financial statements. GAAP are a

interest. At this time, SCE has not had an obligation to consolidate sellers of renewable resources under RPS contracts; however, the determination is made on the specific facts and circumstances of the seller's legal structure and the terms its contractual arrangements. Further, future changes in accounting rules and interpretations could also trigger financial consolidation by SCE. As a result, SCE required the language in all final versions of negotiated PPAs in the 2014 RPS solicitation and SCE is requiring these provisions in all SCE *pro forma* PPAs going forward.

4. No Return of Development Security for Failure to Obtain Permits: Section 3.06

In the 2015 *Pro Forma*, SCE will be entitled to retain 100% of the seller's development security in the event a project is unable to achieve commercial operation due to its inability to obtain material permits for the project. This change effectively removes the concept of a "free walk" related to permitting delays. In the past, sellers have faced zero financial repercussions for failing to successfully bring a project to completion if it was due to the failure to obtain the requisite permits and such failure was not due to any act or failure to act by seller. This provision effectively placed all of the permitting risk on SCE and its customers.

Because the seller is responsible for moving a project successfully through the permitting process, the seller should have the obligation to provide protection in the form of development security to SCE's customers if the project does not attain commercial operation. The requirement for a Phase II Interconnection Study and an "application deemed complete" to participate in the solicitation means that projects proposed in the RPS solicitations have progressed significantly in terms of development. Accordingly, it is fair and reasonable to put the permitting risk on the seller.

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combination of authoritative standards (set by policy boards) and the commonly accepted ways of

This change will also make the 2015 *Pro Forma* consistent with the standard in other SCE *pro forma* PPAs like the New Generation gas-fired, Energy Storage, and CHP PPAs. Moreover, it is the interest of SCE customers that the projects selected in the solicitation go through a vigorous review and valuation process, and that once selected and executed, SCE can rely on these projects to help meet its RPS targets. The proposed 2015 development security provisions are appropriate and represent a fair balance of risk between SCE customers and project developers.

Finally, SCE's Independent Evaluator ("IE") Merrimack Energy Group also recommended this change to SCE's RPS *pro forma* PPA in their IE report to the Commission regarding the 2014 RPS solicitation PPAs. The IE report states, "It is far more typical in renewable energy solicitations of which Merrimack Energy is aware that Sellers who fail to achieve commercial operation due to failure to receive permits take the financial risk in the PPA-by forfeiting all or a portion of the security deposit as liquidated damages. This may help in reducing the 'contract failure' rate, by deterring developers with major project permitting risks from bidding or by requiring them to price the risk into their bids."[55]

5. Development Security Due at PPA Execution: Section 3.06

In the past, SCE's development security provisions required sellers to post the first half of their collateral within 30 calendar days of the contract effective date (i.e., PPA execution) and the second half within 30 calendar days after final Commission approval. The time between the effective date and the first posting allows for a significant period of time in which the seller may default under the PPA without consequence as the seller has not posted any collateral. Such events have occurred during other SCE renewable solicitations. These defaults could affect SCE's ability to comply with RPS targets and may impact SCE customers by requiring SCE to procure

recording and reporting accounting information.

higher-priced renewable energy when these situations arise. Therefore, in the 2015 *Pro Forma*, SCE has moved the posting of development security to PPA execution.

Furthermore, as SCE has eliminated the return of development security for failure to obtain permits as discussed in Section XV.B.4, the only remaining scenario where sellers see a refund of development security is for the failure to obtain Commission approval. In order to avoid a situation where a PPA terminates because the seller failed to obtain permits, but SCE only holds the first half of the development security because the permit failure occurs prior to final Commission approval, SCE will require full posting of development security at PPA execution.

Requiring full posting of development security at PPA execution will reduce risks for SCE's customers. Sellers must either wire cash or provide a letter of credit as development security when they transmit an executed PPA. SCE will not counter-sign until the collateral and partially executed PPA have both been received. This change will also provide greater certainty for SCE that a PPA will not be terminated immediately, avoiding situations where SCE proceeds to onboard the project and begin the process of seeking Commission approval only to have the PPA terminate because the seller does not post development security.

6. Tax Credit Legislation: Section 1.05 and Former Sections 1.04(b), 1.10 and 2.03(a)(ii)

In the 2014 *Pro Forma*, SCE provided for a possible extension of the commercial operation deadline and/or a termination right for sellers in the event federal tax credit legislation was not extended beyond 2016 on terms similar to those available to projects that achieve commercial operation at the time the contract is executed. Those provisions are not included in the 2015 *Pro Forma* because of the anticipated timing of the 2015 RPS solicitation.

[55] SCE Advice 3255-E, Appendix C at 48.

In 2014, the Commission concluded that the federal tax credit legislation language should remain in the 2014 *Pro Forma* because it was "still potentially feasible for some projects to qualify for the available tax credits and since there is a history of last-minute changes to these federal tax credit provisions."[56] That timing no longer applies for the 2015 RPS solicitation. In order for projects to qualify for the ITC in its current form, projects must achieve commercial operation by December 31, 2016. Given the anticipated timing of the 2015 RPS solicitation, including the time period needed for Commission approval of any executed PPAs and the time period needed for projects to be built and achieve commercial operation, there is an extremely low likelihood that any project participating in the 2015 solicitation will achieve commercial operation by December 31, 2016.

Currently, however, there is tax legislation at the federal level which contemplates an extension of the ITC at 30% beyond 2016. Additionally, there may be other federal tax incentives specific to the development of renewable projects that neither sellers nor SCE are currently contemplating. To the extent sellers are able to take advantage of any new tax incentives not contemplated at the time of PPA execution, SCE proposes a discount to the contract price related to any unforeseen tax benefits that would be triggered if applicable tax laws were to be extended or enacted. The amount of the discount will be an agreement between the parties, including those sellers who elect the Standard Contract Option. SCE has updated its 2015 *Pro Forma* to include language that implements this discount mechanism. This mechanism is appropriate as SCE customers should be entitled to unforeseen economic benefits received by a project due to a change in tax law. Otherwise, these benefits will be financial windfalls to developers while SCE customers pay a price based on more expensive economics.

[56] D.14-11-042 at 30.

7. Levelized Performance Assurance: Section 1.06

In the 2015 *Pro Forma,* SCE will require performance assurance to be posted in a single amount over the delivery term of the PPA (levelized), as opposed to bell-curve shaped amounts (shaped) as it has in the recent past. Shaped performance assurance postings require sellers to adjust the collateral amount multiple times during the delivery term, which is burdensome for both sellers and SCE, and potentially adds unnecessary costs to the PPA. A single, levelized posting requirement will decrease cost, reduce complexity, and simplify the PPA.

This change responds to the market and is a benefit to both sellers and SCE customers. During negotiations with sellers in the 2014 RPS solicitation, several sellers requested the levelized performance assurance posting requirement. A levelized performance assurance posting requirement results in lower administrative costs for sellers, who do not need to pay a bank annually to amend their letter of credit, as required by the different collateral amounts inherent in the shaped performance assurance curve. The cost to SCE's customers is also lessened due to the reduced volume of letters of credit amendments that must be processed.

The average of the shaped performance assurance posting amounts is the same as the levelized performance assurance posting amount (i.e., 5% of the total project revenues). Thus, over the delivery period the risk profile is the same.

8. Time-of-Delivery Factors: Exhibit I

As the electricity market in California continues to evolve, as load forecasts change, and as resources are added and retired, it is increasingly appropriate and necessary to regularly update ~~the TOD factors~~time-of-delivery ("TOD") factors. SCE has updated the TOD factors in its 2015 *Pro Forma* to reflect the changes to its forecast of load, resources, and additions and retirements.

~~**3. Curtailment During On-Peak Hours: Section 4.01**~~

~~SCE's 2013 *Pro Forma* provided that SCE could curtail energy deliveries during on-peak periods, pursuant to Section 3.12(g)(iii), but SCE would be obligated to pay sellers for the energy that could have been delivered. Under the payment terms of the 2013 *Pro Forma*, sellers with FCDS projects were paid 2.64 times the contract price for on-peak deliveries. Curtailments during the on-peak hours without payment would have represented, potentially, a significant loss of revenue to sellers. In response, sellers would have likely priced their proposals to offset the loss of revenue for 50 hours of on-peak deliveries, i.e., increased the price. In order to avoid paying a steep premium for hours that may well be used during non-on-peak periods, SCE excluded on-peak hours from the 50 hour curtailment cap.~~

~~As discussed above, SCE is changing its TOD factors for 2014. This includes adjusting the summer on-peak TOD factor to 1.29. By flattening the TOD factors, sellers should be less impacted regardless of whether curtailment occurs during on-peak or off-peak times. Moreover, given that the highest TOD factor in the 2013 *Pro Forma*, other than the summer on-peak factor, was 1.27 (summer mid-peak), the premium SCE's customers pay for 50 hours of unpaid curtailment in 2014 can reasonably be expected to be similar to what they paid in 2013. This is because, while the 2013 *Pro Forma* summer mid-peak hours were subject to 50 hours of unpaid curtailment and would have been factored into a seller's price, the summer on-peak hours were exempt, and would not have been. Therefore, SCE has modified the 2014 *Pro Forma* to allow for curtailment at any time, without payment, up to the curtailment cap.~~

~~**4. Banked Curtailed Energy: Former Sections 1.05(b) and 1.06(b)**~~

~~The 2013 *Pro Forma* provided that SCE could curtail sellers up to 50 hours multiplied by the contract capacity per year without payment. Sellers are paid for energy they could have~~

~~delivered but for SCE Curtailment Orders above that amount.[62] However, the 2013 *Pro Forma* provided that the undelivered curtailed energy for which sellers are paid is "banked" and, at SCE's option, "paid back" to SCE by sellers delivering the banked energy at the end of the contract term.~~

~~This concept creates uncertainty for both SCE and sellers in that neither party knows when the term of the contract will end until the original term is concluded and the total amount of "banked" energy is calculated. Since sellers' prices should reflect the banked energy concept, SCE's customers are paying for an option related to future energy prices that SCE may or may not ultimately exercise. The value to SCE's customers of having the option to obligate sellers to "pay back" the energy is unclear, as is the price that SCE's customers are paying for such option. Moreover, tracking the curtailments over the life of the contract creates added administrative burden. For all these reasons, SCE is removing the banked curtailed energy provisions from its 2014 *Pro Forma*.~~

~~5. Payments and Invoicing: Exhibit E~~

~~SCE will no longer obligate sellers to provide invoices to SCE for payment on deliveries of energy. Instead, SCE has taken on this obligation and will provide payment statements to sellers detailing the calculation of the payment amount. In 2010, SCE began~~

9. Confidentiality Provisions: Section 10.10 and Former Exhibit I

SCE has revised the confidentiality provisions in the 2015 *Pro Forma* to eliminate Exhibit I, which was a stand-alone NDA applicable to the PPA. Instead, SCE will incorporate the material requirements from Exhibit I into the relevant confidentiality provisions in Section 10.10, as is done in all other SCE *pro forma* PPAs.

~~[62] Sellers are not paid for any curtailments pursuant to Sections 3.12(g)(i) or (g)(ii).~~

10. Illustrating Contract Capacity in Both Alternating Current and Direct Current for Solar Photovoltaic Projects: Section 1.01(h)

As penetration levels of variable energy resources like wind and solar increase, the CAISO and transmission providers face greater difficulty regulating voltage on the systems within their jurisdiction. As a result, reactive power requirements have become more critical, and many developers of solar photovoltaic projects in particular have sought to up-size their inverters and/or transformers to account for the likelihood of being called upon to produce VARs, and to account for losses within their collection systems. As there are no specific alternating current ("AC") nameplate capacity restrictions within the 2015 Procurement Protocol or program rules, SCE believes it is reasonable to allow developers to install more AC capacity than they plan to deliver in order to account for reactive power requirements and losses, provided they utilize plant controllers to limit their AC output to their allotted interconnection capacity at the point of delivery. Therefore, SCE is modifying Section 1.01(h) in the 2015 *Pro Forma* to require sellers to provide both the maximum output at the delivery point and the AC nameplate capacity of the generating facility. By requiring sellers to provide ~~invoices for the energy delivered. SCE would then compare sellers' invoices against SCE's data. SCE found that this practice resulted in little to no benefit to either party and has reverted to its previous position of SCE providing sellers with payment statements. This also eases contract administration, as the vast majority of renewable contracts do not include provisions that would require sellers to invoice for payment.~~

~~**6. DC Rating for Solar Facilities**~~

~~**a) Installed DC Rating: Sections 1.01(i), 3.06(g), and 6.01(b)(x)**~~

~~The installed direct current ("DC") rating of a solar photovoltaic ("PV") generating facility is one of the most important factors in determining overall generation. In fact, even without~~

~~increasing contract capacity (which is specified in MW of alternating current (“MW_{AC}”)), expected annual net energy production could be substantially increased by increasing the installed DC rating of the generating facility. If this were permitted, sellers could unilaterally increase their expected annual net energy production at the expense of SCE’s customers, and SCE would be unable to forecast how much energy it had procured under the PPA. While SCE’s 2013 *Pro Forma* did not allow increases to installed DC capacity, in order to further clarify this issue, SCE added a new Section 1.01(i) to its 2014 *Pro Forma* that obligates sellers to specify the installed DC rating of the generating facility. Furthermore, in order to provide a remedy should a seller install excess DC capacity, SCE added an event of default in Section 6.01(b)(x) if the seller installs DC capacity in excess of the installed DC rating and does not remove it within five business days of notice from SCE. This provision is consistent with the event of default in Section 6.01(b)(ix) related to the installation of excess contract capacity (MW_{AC}).~~

~~Additionally, SCE modified Section 3.06(g)(ii) to clarify that the installed DC rating may be decreased by seller and, if so, the expected annual net energy production will be commensurately reduced. While sellers had the ability to decrease the installed DC rating in the previous version of the *Pro Forma*, the new changes remove any uncertainty around the ability to reduce the installed DC rating that may have been introduced by adding the new Section 1.01(i).~~

~~b) Development Security: Section 3.06~~

~~SCE also changed Section 3.06(a) of the 2014 *Pro Forma* to specify that development security for solar PV generating facilities shall be calculated based on installed DC rating, rather than contract capacity (MW_{AC}). When SCE launches its solicitations and evaluates proposals, it does so with the intent of procuring MWh of generation, not MW of capacity, because SCE’s RPS goals are met through purchasing sufficient MWh of RPS-eligible generation. If that energy is~~

~~never delivered to SCE, then the development security is retained as liquidated damages for the costs SCE may incur because the energy will not be delivered. Therefore, it is important that the amount of development security is closely linked to the factors that determine energy deliveries.~~

~~As discussed above, installed DC rating is a primary factor in determining the amount of energy deliveries for solar PV generating facilities, so it is more logical to link development security to installed DC rating instead of contract capacity. Moreover, under the current methodology of tying development security to contract capacity, a seller faces no penalty whatsoever for promising a certain amount of energy deliveries based on a high installed DC rating and then delivering a lesser amount due to a lower installed DC rating than promised. This could have the effect of crowding out other projects from the solicitation that would have otherwise been selected to meet SCE's RPS need, but were not because of an inflated installed DC rating. Thus, in order to more accurately link development security to the damages SCE would suffer from failure to install capacity, and to prevent gaming by developers, calculating development security based on installed DC rating for solar PV generating facilities is reasonable.~~

~~7. Excess Deliveries: Section 1.06(c)~~

~~SCE adjusted the excess deliveries in Section 1.06(c)(i) of the 2014 *Pro Forma* to specify that the seller shall not receive payment during any settlement interval for metered amounts in excess of 100% of contract capacity. Previously, sellers could receive payment for amounts delivered up to 110% of contract capacity. Although there are reasonable technical explanations for why a generating facility may on rare occasions produce output in excess of contract capacity, sellers should not expect SCE's customers to pay for such deviations. Furthermore, developers' financial models and revenue calculators are not designed anticipating production exceeding contract capacity. If a generating facility produces output in excess of contract capacity, the seller~~

~~should not receive a windfall, and SCE's customers should not be exposed to the incremental costs.~~

~~If a seller would like to produce more energy in a settlement interval, they should offer SCE a higher contract capacity. In addition, limiting sellers to payment for 100% of contract capacity discourages over-installation of generating equipment, since the incremental generation would not be paid. Finally, in many cases, the seller's interconnection agreement does not allow production greater than the contract capacity, and sellers should be expected to honor these agreements, meaning this limitation on payment will rarely be triggered.~~

~~SCE also adjusted the excess deliveries provision in Section 1.06(c)(ii) of the 2014 *Pro Forma* so that if metered amounts during any term year exceed 115% of expected annual net energy production, then seller will only receive CAISO revenues and costs as payment for such excess production. SCE's 2013 *Pro Forma* provided that seller would be paid 75% of the contract price for amounts in excess of 115% of expected annual net energy production. Unfortunately, this provision placed an unlimited financial liability on SCE's customers, since the seller would still be paid 75% of the contract price even if energy deliveries far exceeded expectations. Intermittent resources can experience extraordinary resource years and sellers should be appropriately compensated in these rare instances. However, such circumstances should not unduly burden SCE's customers. Therefore, the provision to pay seller CAISO revenues and costs for such excess production is a reasonable compromise because the seller is compensated for the value of energy and customers are indifferent to the costs of excess production since they are a dollar-for-dollar pass-through. Finally, this balanced approach reduces the incentive for sellers to over-install capacity.~~

~~C. Important Changes in 2014 Form of Seller's Proposal~~

~~1. Streamlining the Method by Which Sellers Indicate Exclusive and Inclusive Offers~~

~~For its 2014 RPS solicitation, SCE is making it more clear to sellers how to create mutually exclusive and mutually inclusive offers through the same web-based bidding system utilized in the 2013 RPS solicitation. SCE found that there was confusion regarding this process among some sellers, and SCE has worked to make that process easier to understand.~~

~~2. Considering Proposals for Long-Term Category 3 Unbundled REC Transactions~~

~~As set forth above in Section XIII.A.1, SCE will consider proposals for long-term Category 3 unbundled REC transactions. In addition to changes to the 2014 Procurement Protocol, this will also require some changes to the 2014 Form of Seller's Proposal.~~this information in the PPA, it provides SCE certainty on the amount of payments sellers receive for energy deliveries, while also affording sellers the ability to economically meet their reactive power obligations under their interconnection agreements.

11. Supplier Diversity: Section 3.17(i)

The 2014 *Pro Forma* already included a requirement to report payments made to Women-Owned, Minority-Owned, and Disabled Veteran-Owned Business Enterprises that supplied goods or services as subcontractors under a contract with SCE. The 2015 *Pro Forma* will include all Diverse Business Enterprises in that reporting requirement.

<u>C.</u> ~~D.~~ <u>Important Changes in LCBF Methodology</u>

1. ~~Valuation of Capacity Benefits for IID Projects~~<u>Valuation of Transmission Costs for Projects Located Within and Outside the CAISO Control Area</u>

~~One of the primary components of SCE's LCBF valuation methodology is the capacity benefit. When evaluating the capacity benefits of renewable projects outside of the CAISO, SCE limits the amount of capacity benefits attributable to each project by the expected import capabilities at the intertie where energy is to be delivered. This adjustment is meant to reflect the actual amount of capacity benefits SCE can reasonably expect to realize. If, for example, a project is to deliver renewable energy at an intertie which has no available import capability, meaning the expected Maximum Import Capability ("MIC") does not exceed the amount of existing import commitments at the intertie, SCE would not expect to realize any capacity benefits from such a project. By comparison, if a project is to deliver at an intertie that has enough import capability to accommodate the full amount of expected countable capacity from a given project, SCE would attribute the full amount of capacity benefits in the LCBF valuation.~~

~~Pursuant to the Assigned Commissioner's Ruling Regarding Resource Adequacy Value of RPS Projects in the Imperial Valley Irrigation District Balancing Authority Area, dated June 7, 2011 ("June 7 ACR"), and D.12-11-016,[63] SCE had attributed capacity benefits based on the MIC of 1,400 MW in the IID Balancing Authority Area. At the time the June 7 ACR was issued, the CAISO determined the MIC using historical energy imports during the peak system conditions. This methodology failed to account for any future transmission system upgrades or additions, which in the case of the IID Balancing Authority Area showed minimal available capacity even~~

~~[63] *See* D.12-11-016 at 17-20. D.12-11-016 directed the IOUs to continue to follow the June 7 ACR.~~

~~though the completion of the Sunrise Powerlink was expected to result in 1,400 MW of MIC. To address this concern, the IOUs were required to assume a MIC of no less than 1,400 MW in the IID Balancing Authority Area.~~

~~Since then, the CAISO has established a new process for determining forward-looking estimates of MIC, which takes into account future transmission build-out including the Sunrise Powerlink. The CAISO published the most recently updated advisory estimates of future RA import capability in July 2013.[64] The report currently shows the MIC at each CAISO intertie for a 10-year period starting in 2014, and the MIC in the IID is equal to 1,400 MW starting in 2019.~~

~~Because the CAISO has established a new process for forecasting future RA import capabilities, there is no longer a need for the requirement established in June 7 ACR and D.12-11-016. Instead, SCE will use the CAISO's 10-year forecast of expected actual MIC at each intertie in its LCBF methodology. The Commission approved this change in D.14-11-042.[65]~~

~~XIV. OTHER RPS PLANNING CONSIDERATIONS AND ISSUES~~

~~A. Bilateral Transactions~~

~~As part of its overall procurement strategy, SCE may engage in bilateral negotiations for renewable energy subject to the Commission's review and approval of completed transactions.~~

~~B. Integration Costs~~

~~In D.14-11-042, the Commission approved an interim renewable integration cost adder methodology, and directed SCE and Pacific Gas and Electric Company to update their LCBF methodologies to include an interim integration cost adder for the 2014 RPS solicitations.[66] The~~

~~64 *See* CAISO's Advisory Estimates of Future Resource Adequacy Import Capability (available at: http://www.caiso.com/Documents/AdvisoryEstimates-FutureResourceAdequacyImportCapability_Years2013-2022.pdf).~~

~~65 *See* D.14-11-042 at 19, Conclusions of Law 4-5, Ordering Paragraph 9.~~

~~66 *See id.* at 63-65, Conclusions of Law 30-32, Ordering Paragraph 23.~~

~~Commission also stated that a final renewable integration cost adder methodology will considered in the RPS proceeding and in coordination with the LTPP proceeding and any other relevant proceedings in the future.[67]~~

~~SCE will use an interim renewable integration cost adder in the LCBF evaluation process for its 2014 RPS solicitation. Further details on that renewable integration cost adder are included in Appendix I.1.~~

As discussed in Section III.F.1.b, SCE will only consider reimbursable transmission network upgrade costs that are paid by SCE customers in the LCBF evaluation process for the 2015 RPS solicitation. For projects connecting to the CAISO control area, this will be the share of costs that SCE's customers pay for reimbursable transmission network upgrade costs. For projects not connecting to the CAISO control area, it will be zero as none of those costs are paid by SCE's customers. For most of the projects connecting to the CAISO control area, the costs that SCE customers pay is determined based on a utility-specific Transmission Access Charge ("TAC") rate, which is based on a utility's load share. The CAISO publishes these rates every year.[57] SCE will use the latest rates available for SCE at the time of 2015 RPS solicitation evaluation process.

2. Selection of Projects Based on Qualitative Criteria

In the shortlist for the 2014 RPS solicitation, SCE selected resources according to the LCBF principles. When procuring resources for the long-term, SCE uses the LCBF methodology to ensure the portfolio increases the confidence level of meeting SCE's RPS goals. By diversifying SCE's portfolio based on LCBF, SCE considers generation profiles, energy and

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~~67 *See id.* at 63-64.~~

57 CAISO TAC rates are available at: http://www.caiso.com/market/Pages/TransmissionOperations/Default.aspx.

capacity values, renewable integration costs, locational congestion costs, and transmission costs where applicable.

However, when trying to meet portfolio fit objectives, using only NMV criterion may not help meet all the required objectives for procurement. [redacted] In the 2015 RPS solicitation, SCE will continue to use this approach and will continue to refine the approach based on changes to SCE's portfolio and updated RNS and load forecasts.

3. SCE Experience with Developers as a Qualitative Factor for Shortlisting and Selection

In 2015 RPS solicitation, SCE will add prior experience with renewable developers as a qualitative factor for consideration for both shortlisting and final selection purposes. In the past, SCE has encountered developers who have repeated issues that make for unsuccessful projects. Some examples include sellers executing PPAs and then not posting development security and sellers who attest to having site control only to have SCE discover through negotiations that they in fact do not. These situations have posed problems in the administration of the solicitation. While they are more the exception than the norm, SCE would like the ability to take its experience with developers into account as a qualitative factor in the shortlisting and selection process in these rare, yet problematic situations.

~~XV.~~ XVI. SAFETY CONSIDERATIONS

SCE is strongly committed to safety in all aspects of its business. Renewable sellers are responsible for the safe construction and operation of their generating facilities and compliance with all applicable laws and safety regulations. SCE has taken several steps to address those issues over which it has the most visibility and control – the delivery of renewable electricity products to SCE in a reliable, safe, and operationally sound manner.

As with past ~~*Pro Formas*~~RPS *pro forma* PPAs, SCE's ~~2014~~2015 *Pro Forma* provides that the seller must operate the generating facility in accordance with "Prudent Electrical Practices."[~~68~~58] The detailed definition of "Prudent Electrical Practices" includes "those practices, methods and acts that would be implemented and followed by prudent operators of electric energy generating facilities in the Western United States, similar to the Generating Facility, during the relevant time period, which practices, methods and acts, in the exercise of prudent and responsible professional judgment in the light of the facts known or that should reasonably have been known at the time the decision was made, could reasonably have been expected to accomplish the desired result consistent with good business practices, reliability and safety.~~"~~[~~69~~] . . ."[59]

Consistent with SCE's focus on safety, ~~as in the 2013 *Pro Forma*,~~ SCE's ~~2014~~2015 *Pro Forma* also provides that, prior to commencement of any construction activities on the project site, the seller must provide to SCE a report from an independent engineer certifying that seller has a written plan for the safe construction and operation of the generating facility in accordance with Prudent Electrical Practices.[~~70~~60]

~~68~~58 *See* ~~2014~~2015 *Pro Forma* (attached as Appendix G.1) at Section 3.12(a).

~~69~~59 *See id.* at Exhibit A.

~~70~~60 *See id.* at Section 3.11(e).

SCE also has a safety section in its ~~2014~~2015 Procurement Protocol providing that sellers must possess a written plan for the safe construction and operation of the generating facility as set forth in the ~~2014~~2015 *Pro Forma*.[~~71~~61]

XVII. STANDARD CONTRACT OPTION

In D.14-11-042, the Commission terminated the RAM program, as authorized in D.10-12-048, after the conclusion of the RAM 6 auction.[62] The Commission also authorized the IOUs to use an optional streamlined RAM procurement tool in future RPS solicitations.[63] The Commission directed the IOUs to include the streamlined procurement tool in their RPS Procurement Plans, at their discretion, starting with the 2015 RPS Procurement Plans.[64]

In its 2015 RPS solicitation, SCE plans to include a "Standard Contract Option" using the RAM procurement tool. Consistent with the Commission's intent to provide the IOUs with flexibility to optimize their portfolios based on their procurement needs while providing a streamlined procurement tool,[65] the Standard Contract Option will allow for rapid development of renewable projects by avoiding the contract negotiation process and expediting the Commission approval process of executed PPAs. Sellers will have the option to participate in the Standard Contract Option by checking a box in the RPS proposal form. The Standard Contract Option will only be available for proposals offering Category 1 products, and will not be available for proposals offering Category 2 or Category 3 unbundled REC products, where contract negotiations are likely to be required. Additionally, the Standard Contract Option will only be

~~71~~61 *See* ~~2014~~2015 Procurement Protocol (attached as Appendix F.1) at Section ~~8.03.~~9.03.

62 *See* D.14-11-042 at 91-92, 102-104.

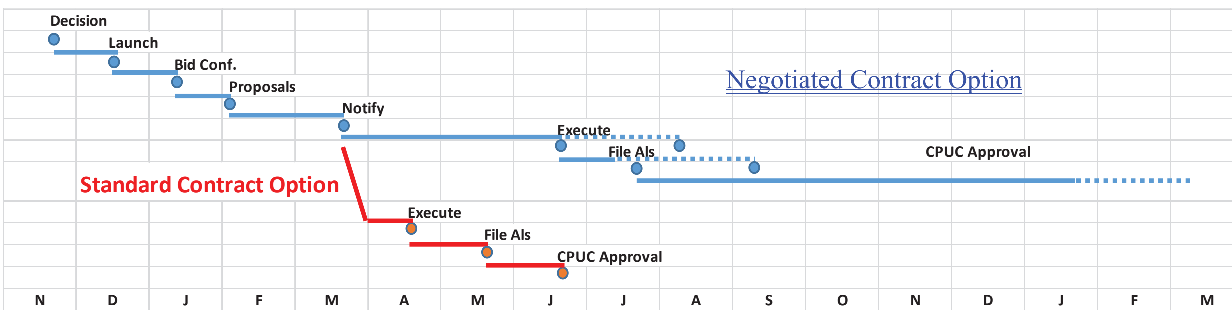
63 *See id.* at 91-92.

64 *See id.* at 92.

65 *See id.*

available to projects with a first point of interconnection to the CAISO, and not to dynamically scheduled projects.[66]

Subject to SCE's selection of the proposal and agreement that a standard contract is appropriate for the proposal, sellers will be offered a standard contract in the form of the 2015 *Pro Forma* with no negotiations. Once executed, the Standard Contract Option PPAs will be submitted to the Commission for approval via a Tier 2 advice letter. This process uses the same approval process as in RAM, which was one factor in SCE successfully procuring 787 MW of renewables over five years in six auctions. The chart below illustrates the shorter timeframe for anticipated Commission approval that will benefit Standard Contract Option projects.[67]



In the sections below, SCE discusses the parameters of the Standard Contract Option and their consistency with D.14-11-042.

A. Procurement Need

In D.14-11-042, the Commission stated that the IOUs should explain in their RPS Procurement Plan filings how any proposed use of the streamlined RAM procurement tool could satisfy an authorized procurement need, "including, for example, system Resource Adequacy

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66 SCE's 2015 *Pro Forma* is structured with the assumption that the generating facility will have a first point of interconnection with the CAISO. Accordingly, changes to the 2015 *Pro Forma* will be required for dynamically scheduled projects.

67 This chart overlays the actual schedules of the two most recent RPS and RAM procurements to illustrate the time saved by exercising the Standard Contract Option. The timeline illustrated in blue represents RPS, while the timeline in red is RAM.

needs, local Resource Adequacy needs, RPS needs, reliability needs, LCR needs, GTSR needs, and any need arising from Commission or legislative mandates."[68] In the 2015 RPS solicitation, SCE will primarily use the Standard Procurement Option to satisfy its RPS procurement needs in the third compliance period and beyond. However, it may use the Standard Contract Option to satisfy its Green Rate procurement needs as discussed in Section XVIII. SCE may also use the Standard Contract Option to fulfill other authorized procurement needs in the future.

B. Standard Contract

The Commission required IOUs to seek Commission authorization for a revised standard contract so that the RAM tool can continue to be a more streamlined contracting and approval process.[69] SCE proposes to use the 2015 *Pro Forma* as the standard contract for the Standard Contract Option. The existing RAM standard contract and SCE's RPS *pro forma* PPAs are closely aligned. Changes to the RPS *pro forma* PPA that were approved for use in RPS solicitations were subsequently requested and generally approved for use in the next RAM cycle, and vice versa. Additionally, both the RPS *pro forma* PPA and the RAM standard contract have been drafted in a manner that allows for the simple insertion of project specific information without any other modifications to the terms and conditions. Specifically, project-specific parameters can be inserted into the 2015 *Pro Forma* (e.g., project size, technology, location, and other project specific attributes), and the resulting contract will be the standard contract. Additional non-material ministerial changes to the 2015 *Pro Forma* may also be needed in the standard contracts; for example, to correct typographical errors or section references or delete definitions that are not needed for particular projects.

68 D.14-11-042 at 92.
69 *See id.* at 93.

It will be considerably more efficient for SCE, the Commission, the parties, and the market to update one *pro forma* PPA each year, rather than having separate *pro forma* PPAs for Standard Contract Option and non-Standard Contract Option projects. Further, one *pro forma* PPA eliminates market distortions that might come from commercial differences that could skew sellers toward or away from the Standard Contract Option.

C. Project Size Restrictions

The Commission eliminated the RAM project size restrictions for the streamlined RAM procurement tool and authorized the IOUs to establish project size requirements based on their specific procurement needs at the time of the solicitation.[70] SCE does not propose to include any project size restrictions for the Standard Contract Option in the 2015 RPS solicitation. SCE will allow sellers to propose projects of any size, but not less than the minimum of 500 kilowatts for the 2015 solicitation.[71]

While SCE will allow sellers with projects of any size to select the Standard Contract Option, SCE must also agree that the Standard Contract Option is appropriate for the seller's proposed project. For proposals that state a preference for a standard contract, SCE reserves the right to discuss with a seller the need to negotiate certain terms and conditions when appropriate. Although project size is not the only example of a parameter that might trigger such a situation, very large projects do often carry more complicated issues that warrant careful construction of a negotiated PPA. The Standard Contract Option will only be used if both SCE and the seller agree that it is appropriate for the specific project.

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70 *See id.* at 94.

71 If SCE uses the Standard Contract Option for Green Rate procurement, that procurement would be limited to the project size restrictions of the Green Rate program (as well as project category, locational, and eligibility requirements as discussed below).

D. Project Categories

The Commission retained the RAM product category requirement (peaking, non-peaking, baseload), but did not mandate that the IOUs procure a specific amount from each product category.[72] SCE will include the three product categories in its Standard Contract Option. SCE does not intend to set specific targets for each product category. Instead, SCE will consider all the product categories and they will be indicators of SCE's desire to balance the resources in its diverse renewables portfolio. SCE intends to conduct its selection process for both the negotiated track and the Standard Contract Option using LCBF criteria.

E. Restriction on Subdivided Projects

In D.14-11-042, the Commission eliminated the prohibition against subdivided projects participating in RAM, and required the IOUs to define the terms they will use to either include or exclude subdivided projects.[73] SCE sees no need to impose a restriction on subdivided projects in its Standard Contract Option for the 2015 RPS solicitation, particularly given that it is not imposing a size restriction.

F. Locational Restrictions

The Commission removed the requirement that RAM projects be located in the service territories of the IOUs, and permitted the IOUs to procure anywhere within the CAISO control area, including dynamically scheduled resources, to increase the available pool of resources.[74] SCE's Standard Contract Option for the 2015 RPS solicitation will be applicable to projects with a first point of interconnection to the CAISO control area, but will not include dynamically

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72 *See* D.14-11-042 at 95.
73 *See id.* at 96.
74 *See id.* at 97-98.

scheduled resources.[75] Dynamically scheduled resources generally require some changes to SCE's RPS *pro forma* PPA.

G. Valuation and Selection

The Commission found it reasonable to require the IOUs to use the same valuation methodologies used in their RPS solicitations for the RAM procurement tool.[76] SCE will use its LCBF evaluation process for valuation and selection of Standard Contract Option projects. In order to be selected, the value of a Standard Contract Option project must be within the range established by the SCE's 2015 RPS solicitation shortlist based on SCE's LCBF methodology as described in Appendix I.1.[77] This approach results in all projects being valued utilizing the same methodology, and lends fairness to the process while increasing competition among sellers.

H. Interconnection Studies

In D.14-11-042, the Commission required that projects participating in the RAM procurement tool process have a Phase II Interconnection Study (or the equivalent).[78] Consistent with that decision, SCE will apply the same Phase II Interconnection Study requirement to Standard Contract Option and non-Standard Contract Option projects in its 2015 RPS solicitation.

I. Commercial Operation Deadline

For new projects, the Commission imposed a commercial operation deadline requirement for the RAM procurement tool of 36 months with a six month extension for regulatory delays.[79] The Commission also exempted existing projects from going through the RAM viability screens,

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75 If SCE uses the Standard Contract Option for Green Rate procurement, that procurement would be limited by the locational restrictions of the Green Rate program.

76 *See* D.14-11-042 at 98-99.

77 If SCE uses the Standard Contract Option for Green Rate procurement, eligibility for the Green Rate program and the Green Rate program environmental justice reservation will be qualitative factors considered in the evaluation process.

78 *See* D.14-11-042 at 100.

which include: (1) site control; (2) development experience; (3) commercial technology; and (4) interconnection application.[80] SCE will include the 36 month commercial operation deadline with a six month extension for regulatory delays in its Standard Contract Option for new projects. Moreover, SCE does not intend to apply any separate RAM viability screens to Standard Contract Option projects. However, SCE does believe it is appropriate to apply the same eligibility requirements that apply to all other existing projects participating in the 2015 RPS solicitation to Standard Contract Option projects. In particular, existing projects with interconnection agreements that terminate before the start of the new RPS PPA should be required to demonstrate that they will have a new interconnection agreement in place at the start of the new RPS PPA. Those existing projects with interconnection agreements that continue during the new RPS PPA should be required to demonstrate that they are not making any modifications that would prevent them from delivering under their existing interconnection agreements. Existing projects should not be permitted to circumvent solicitation eligibility requirements by selecting the Standard Contract Option.

J. Commission Approval Process

In D.14-11-042, the Commission permitted the IOUs to seek approval of RAM procurement tool projects through the Tier 2 advice letter process or to request approval of another approval process in their RPS Procurement Plans.[81] As noted above, SCE proposes to seek approval of Standard Contract Option projects through the Tier 2 advice letter process.

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79 *See id.* at 101.
80 *See id.*
81 *See id.*

XVIII. GREEN TARIFF SHARED RENEWABLES PROGRAM

On September 28, 2013, Governor Brown signed SB 43 into law.[82] SB 43 enacted the GTSR program, a 600 MW statewide program that allows participating utilities' customers – including local governments, businesses, schools, homeowners, municipal customers, and renters – to meet up to 100% of their energy usage with generation from eligible renewable energy resources. As required by SB 43, all of the IOUs filed applications with the Commission requesting approval of GTSR programs consistent with the requirements and intent of the statute.

On January 29, 2015, the Commission adopted D.15-01-051, implementing a GTSR program framework and approving the IOUs' applications with modifications. Among other things, the Commission divided the GTSR program's statewide limitation of 600 MW of customer participation among the IOUs. Specifically, the Commission allocated 269 MW to SCE.[83] SB 43 also provides that 100 MW of the statewide limitation for the GTSR program shall be reserved for facilities that are no larger than 1 MW and that are located in areas previously identified by the California Environmental Protection Agency as "the most impacted and disadvantaged communities."[84] To implement this statutory provision, the Commission established environmental justice reservations for each IOU, including 45 MW for SCE.[85]

The GTSR program structure approved by the Commission consists of two elements: (1) a green tariff option (called the "Green Rate" by SCE) allowing customers to purchase energy with a greater share of renewables, and (2) an enhanced community renewables option (called the

82 SB 43 was codified in California Public Utilities Code Section 2831 *et seq.*
83 *See* D.15-01-051 at Ordering Paragraph 7.
84 Cal. Pub. Util. Code § 2833(d)(1).
85 *See* D.15-01-051 at Ordering Paragraph 7.

"Community Renewables program" by SCE) allowing customers to subscribe to renewable energy from community-based projects.[86]

The Commission authorized RAM as a procurement mechanism for the Green Rate, including the streamlined RAM procurement tool that can be used as part of the IOUs' RPS solicitations.[87] Community Renewables program procurement must occur through ReMAT.[88] The Commission limited initial procurement to new solar facilities sized between 0.5 MW and 20 MW for the Green Rate and new solar facilities sized between 0.5 MW and 3 MW for the Community Renewables program.[89] There are also other eligibility requirements, including that all of SCE's GTSR resources be located within SCE's service territory,[90] and that Community Renewables program resources meet certain community interest requirements.[91]

The GTSR program has not yet been implemented for customers. SCE has filed several advice letters to implement the GTSR program, including Advice 3180-E setting forth SCE's plan for advance procurement for the GTSR program and identifying the eligible census tracts for environmental justice projects in its service territory,[92] Advice 3195-E making the changes to its RAM 6 PPA and RFO instructions needed to accommodate advance GTSR program procurement,[93] Advice 3218-E, which is the IOUs' Joint Procurement Implementation Advice Letter, Advice 3219-E, which is SCE's Customer-Side Implementation Advice Letter, and Advice 3220-E, which is SCE's Marketing Implementation Advice Letter.[94]

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86 *See id.* at 3-4.
87 *See id.* at 21-23, Conclusion of Law 7.
88 *See id.* at 61.
89 *See id.* at 36-37, 39, Conclusion of Law 17.
90 *See id.* at 35, Conclusion of Law 14.
91 *See id.* at 67-68, Conclusion of Law 25-26.
92 Advice 3180-E was approved by the Energy Division effective as of February 23, 2015.
93 Advice 3195-E was approved by the Energy Division effective as of April 20, 2015.
94 Advice 3218-E, 3219-E, and 3220-E are Tier 3 advice letters that are pending Commission approval.

In accordance with D.15-01-051 and Advice 3195-E, SCE is seeking to procure 50 MW of Green Rate-eligible resources through the RAM 6 auction in order to meet its advanced procurement need. On an annual basis, SCE plans to assess its Green Rate procurement need in each RPS Procurement Plan and set Green Rate procurement targets for each solicitation, if any, based on incremental customer enrollments and the amount of dedicated Green Rate procurement it already has under contract. If a Green Rate procurement need is identified, SCE plans to procure Green Rate-eligible resources through the Standard Contract Option portion of the RPS solicitation. SCE will provide Green Rate-eligible resources the option to select consideration for the Green Rate program, in addition to consideration for the RPS program, as part of the solicitation.[95]

SCE does not anticipate a Green Rate procurement need for the 2015 RPS solicitation. The Green Rate has not launched for customers so there are no incremental customer enrollments. Moreover, the 50 MW SCE is targeting to procure through the RAM 6 auction is expected to fulfill initial customer enrollments. However, SCE launched the RAM 6 auction on July 10, 2015 and does not yet know the outcome of that process. Therefore, it is possible that SCE will identify a Green Rate procurement need for the 2015 RPS solicitation, depending on the results of the RAM 6 auction. SCE has incorporated Green Rate-related modifications into its 2015 Procurement Protocol, 2015 *Pro Forma*, and LCBF Methodology in the event that a Green Rate procurement need is identified. SCE will update its solicitation materials before the launch of the 2015 RPS solicitation to identify any Green Rate procurement need.

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95 Community Renewables procurement will occur through a Community Renewables Project Development Tariff and a Community Renewables Program Project Development Tariff Rider and Amendment to the standard ReMAT PPA, pending Commission approval of Advice 3218-E.

To be considered for the Green Rate program, Green Rate-eligible projects must agree to participate in the Standard Contract Option, consistent with the Commission's direction in D.15-01-051.[96] SCE's 2015 *Pro Forma* includes an additional representation and warranty only applicable to Green Rate projects, indicating that projects must be eligible for Green-e Energy certification and maintain this eligibility. This is similar to the language included in the standard RAM 6 PPA, except that a new representation and warranty has been included applicable only to Green Rate projects related to Green-e Energy certification.[97] As part of the GTSR program, the Commission directed the IOUs to seek Green-E Energy certification of their GTSR programs.[98]

As with other RPS-eligible projects, Green Rate projects will be selected using the LCBF methodology. Qualitative factors have been added to SCE's LCBF methodology to indicate that Green Rate eligibility, Green Rate environmental justice eligibility, and a developer's affirmative "opt in" to consideration for the Green Rate program will be considered during the selection process when there is a Green Rate procurement need.

In D.15-01-051, the Commission directed the IOUs to include certain additional information in their RPS Procurement Plans, including their progress in GTSR procurement and towards the environmental justice and residential reservations, information on the transfer of capacity between the GTSR and RPS programs and the cost impacts of that transfer and impact on the IOUs' RNS, and certain reporting.[99] As discussed above, the GTSR program has not yet been implemented for customers and SCE has not yet procured any dedicated GTSR projects.

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96 *See* D.15-01-051 at 21-23, Conclusion of Law 7.

97 The Commission approved the RAM 6 PPA when it approved Advice 3195-E in a disposition letter on June 17, 2015.

98 *See* D.15-01-051 at Ordering Paragraph 20.

99 *See id.* at 32-33, 41, 68-69, 143.

Therefore, SCE does have any information to include in this 2015 RPS Plan. SCE will include this information in future RPS Procurement Plans.

XIX. OTHER RPS PLANNING CONSIDERATIONS AND ISSUES

A. Bilateral Transactions

As part of its overall procurement strategy, SCE may engage in bilateral negotiations for renewable energy purchases or sales subject to the Commission's review and approval of completed transactions.

B. Short-Term Products

SCE's 2015 RPS solicitation will be limited to long-term Category 1, Category 2, and Category 3 unbundled REC products. SCE may, however, conduct an RFI, another solicitation, or bilateral negotiations for short-term Category 1, Category 2, or Category 3 unbundled REC products. Such processes will provide SCE with valuable information on the market for short-term renewable products. Moreover, procurement of short-term products could help SCE optimize its portfolio and minimize RPS procurement costs for its customers.

C. Energy Storage Procurement

Public Utilities Code Section 2837 requires the IOUs' RPS Procurement Plans to incorporate any energy storage targets and policies that are adopted by the Commission as a result of its implementation of AB 2514. To implement AB 2514, the Commission adopted D.13-10-040, which implemented an energy storage procurement framework and design. The Commission also directed SCE to procure 580 MW of energy storage by 2020, with projects installed and delivering by 2024.[100]

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[100] *See* D.13-10-040 at 15, 26.

SCE is currently conducting its 2014 Energy Storage RFO to help meet the target identified in D.13-10-040. SCE will file contracts resulting from that RFO for Commission approval by December 1, 2015. Additionally, SCE will file its 2016 Energy Storage Procurement Plan on March 1, 2016.

In addition to the Energy Storage RFO, SCE also encourages sellers to submit proposals including energy storage in its RPS solicitations, including the 2015 RPS solicitation.

Document comparison by Workshare Compare on Friday, July 31, 2015 3:13:10 PM

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Document 2 ID	file://C:\Users\karlstc\Desktop\01 2015 RPS Procurement Plan - Written Plan (PUBLIC).docx
Description	01 2015 RPS Procurement Plan - Written Plan (PUBLIC)
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Insertion	
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Moved cell	
Split/Merged cell	
Padding cell	

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Moved from	25
Moved to	25
Style change	0
Format changed	0
Total changes	1733

PUBLIC APPENDIX B

Project Development Status Update

Project Status	Project ID	Project Name	Contract Status	Site Control Status	Permit Type	Permit Status	Expected or Actual permitting completion date	Transmission secured?	Financing secured?	Equipment secured?
In Construction	4205	California Water Service Company (PV Station 37)	No approval needed	[redacted]	City Building Permit	Complete	7/1/2014	Yes	[redacted]	[redacted]
In Construction	5218	Desert Stateline	Approved	[redacted]	FLPMA ROW Grant, CWA, Construction	[redacted]	[redacted]	Yes	[redacted]	[redacted]
In Construction	5284	Silver State Solar Power, LLC	Approved	[redacted]	BLM ROD/ROW / AFC	[redacted]	[redacted]	Yes	[redacted]	[redacted]
In Construction	5412	Solar Star California XIX, LLC (AVPV I)	Approved	[redacted]	CUP	Complete	4/23/2012	Yes	[redacted]	[redacted]
In Construction	5413	Solar Star California XX, LLC (AVPV II)	Approved	[redacted]	CUP	Complete	4/23/2012	Yes	[redacted]	[redacted]
In Construction	5415	Solar Star California XIII, LLC (Quinto)	Approved	[redacted]	CUP	[redacted]	[redacted]	Yes	[redacted]	[redacted]
In Construction	5459	Victor Dry Farm Ranch A, LLC	Approved	[redacted]	CUP	Complete	7/7/2012	Yes	[redacted]	[redacted]
In Construction	5460	Victor Dry Farm Ranch B, LLC	Approved	[redacted]	CUP	Complete	7/7/2012	Yes	[redacted]	[redacted]
Pre-Construction	5463	Central Antelope Dry Ranch C, LLC (A&R)	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5468	North Lancaster Ranch, LLC (A&R)	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5469	Sierra Solar Greenworks, LLC (A&R)	Approved	[redacted]	CUP	Complete	6/11/2014	[redacted]	[redacted]	[redacted]
Pre-Construction	5476	American Solar Greenworks, LLC (A&R)	Approved	[redacted]	CUP	Complete	6/11/2014	[redacted]	[redacted]	[redacted]
Pre-Construction	5485	Nicolis, LLC (Weldon Solar)	Approved	[redacted]	CUP	Complete	10/15/2014	Yes	[redacted]	[redacted]
Pre-Construction	5490	Tropico, LLC (Great Lakes)	Approved	[redacted]	CUP	Complete	10/15/2014	Yes	[redacted]	[redacted]
In Construction	5494	McCoy Solar, LLC	Approved	[redacted]	CEQA, BLM	Complete	CEQA (3/11/2014); BLM (6/13/14)	Yes	[redacted]	[redacted]
Pre-Construction	5511	Ecos Energy, LLC (Utah-Mesa Solar)	Approved	[redacted]	Annexing project to City of Porterville, then obtain Building Permit	Complete	12/21/2014	[redacted]	[redacted]	[redacted]
In Construction	5512	Little Rock - Pham Solar PV, LLC	Approved	[redacted]	Building, Grading	Complete	3/30/2015	Yes	[redacted]	[redacted]
In Construction	5514	Neenach Solar 1B South, LLC	Approved	[redacted]	TBD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5625	US Topco Energy, Inc. (Soccer Center)	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5629	SEPV18, LLC	No approval needed	[redacted]	Grading, Building, Road access	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5702	Venable #1 North	Approved	[redacted]	CUP, Construction & Building	Complete	9/30/2014	Yes	[redacted]	[redacted]
Pre-Construction	5703	Venable #2 South	Approved	[redacted]	CUP, Construction & Building	Complete	9/30/2014	Yes	[redacted]	[redacted]
Pre-Construction	5740	Morgan Lancaster I, LLC	No approval needed	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5744	PVNavitator, LLC	Approved	[redacted]	CUP, Construction & Building	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
In Construction	5745	SEPV Palmdale East, LLC	Approved	[redacted]	Building	Complete	12/1/2014	Yes	[redacted]	[redacted]
[redacted]	5746	SunEdison Origination 3, LLC	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5748	Lancaster WAD B, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5756	Citizen Solar B, LLC	Approved	[redacted]	CUP	Complete	12/13/2012	Yes	[redacted]	[redacted]
In Construction	5758	Adelanto Solar, LLC	Approved	[redacted]	CUP	Complete	Q1 2015	Yes	[redacted]	[redacted]
In Construction	5759	67RK 8ME, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5762	Central Antelope Dry Ranch B, LLC	Approved	[redacted]	CUP	Complete	Q2 2016	Yes	[redacted]	[redacted]
Pre-Construction	5772	Maricopa East Solar PV2, LLC	Approved	[redacted]	CUP, Construction & Building	Complete	12/1/2014	Yes	[redacted]	[redacted]
In Construction	5774	NRG Solar Oasis LLC	Approved	[redacted]	CUP (lead agency city of Palmdale; permit through city's Site Plan Review Application)	Complete	7/1/2015	Yes	[redacted]	[redacted]
Pre-Construction	5778	SEPV Mojave West, LLC	Approved	[redacted]	Grading, Building	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5781	Chowchilla Solar	Approved	[redacted]	CUP, Construction & Building	Complete	10/31/2014	Yes	[redacted]	[redacted]
Pre-Construction	5788	Lancaster Solar 1	Approved	[redacted]	CUP	Complete	12/31/2014	[redacted]	[redacted]	[redacted]
Pre-Construction	5789	SunE DB21, LLC	Approved	[redacted]	Building, Electrical	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5790	SunE DB22, LLC	Approved	[redacted]	Building, Electrical	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5791	SunE DB23, LLC	Approved	[redacted]	Building, Electrical	Complete	7/7/2015	Yes	[redacted]	[redacted]
Pre-Construction	5794	SunE Solar XVIII Project 1, LLC	Approved	[redacted]	Building, Electrical	Complete	7/21/2015	Yes	[redacted]	[redacted]
Pre-Construction	5795	DG Solar Lessee II, LLC - SunE - E Philadelphia Ontaric	Approved	[redacted]	Building, Electrical	Complete	5/22/2015	Yes	[redacted]	[redacted]
In Construction	5796	DG Solar Lessee II, LLC - SunE - Pico Rivera	Approved	[redacted]	Building, Electrical	Complete	4/15/2015	Yes	[redacted]	[redacted]
Pre-Construction	5799	Golden Springs Bldg H	Approved	[redacted]	City, AHJ Building	Complete	8/1/2014	Yes	[redacted]	[redacted]
Pre-Construction	5800	Golden Springs Bldg M	Approved	[redacted]	City, AHJ Building	Complete	8/1/2014	Yes	[redacted]	[redacted]
In Construction	5801	Adelanto Solar 2	Approved	[redacted]	CUP	Complete	Q1 2015	Yes	[redacted]	[redacted]
Pre-Construction	5804	Copper Mountain Solar 4, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5805	88FT 8ME LLC (Mount Signal II)	Approved	[redacted]	CUP, IID Encroachment Agreement, Construction & Building	Complete	6/15/2015	Yes	[redacted]	[redacted]
Pre-Construction	5808	93LF 8ME LLC (Mount Signal V)	Approved	[redacted]	CUP, IID Encroachment Agreement, Construction & Building	Complete	6/15/2015	Yes	[redacted]	[redacted]
Pre-Construction	5810	41MB 8ME LLC	Approved	[redacted]	TBD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5811	RE Tranquillity LLC	Approved	[redacted]	CUP	Complete	10/9/2014	Yes	[redacted]	[redacted]
Pre-Construction	5813	Tribal Solar, LLC	Approved	[redacted]	TBD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5816	Panoche Valley Solar, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5822	Longboat Solar, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5823	Algonquin SKIC 10 Solar, LLC	Approved	[redacted]	CUP	Complete	7/1/2015	Yes	[redacted]	[redacted]
Pre-Construction	5826	Portal Ridge Solar B, LLC	Approved	[redacted]	TBD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5827	Rio Bravo Solar I, LLC	Approved	[redacted]	Grading, Building, Road access	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5828	Rio Bravo Solar II, LLC	Approved	[redacted]	Grading, Building, Road access	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5829	Wildwood Solar II, LLC	Approved	[redacted]	Grading, Building, Road access	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5831	San Jacinto Solar 14.5, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5832	San Jacinto Solar 5.5, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5833	Jacumba Solar, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
In Construction	5834	RE Garland A, LLC	Approved	[redacted]	Mat. Permit App.	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Project Status	Project ID	Project Name	Contract Status	Site Control Status	Permit Type	Permit Status	Expected or Actual permitting completion date	Transmission secured?	Financing secured?	Equipment secured?
Pre-Construction	5835	SR Solis Vestal Almond, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5836	SR Solis Vestal Herder, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5837	SR Solis Vestal Fireman, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5838	SR Solis Crown, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5840	Joshua Tree Solar Farm, LLC	Approved	[redacted]	CUP	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5844	SunE- Victorville	Approved	[redacted]	Mat. Permit App.	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5845	SunE- Elm Fontana	Approved	[redacted]	Mat. Permit App.	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5846	SunE- Cherry Fontana	Approved	[redacted]	Mat. Permit App.	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5847	SunE- Fontana	Approved	[redacted]	Mat. Permit App.	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5848	SunE- Jurupa Ontario	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5855	SunE- Santa Ana	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5856	SunE- Cucamonga Ontario West	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5859	Boomer Solar 2	Approved	[redacted]	TBD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5860	Boomer Solar 6	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5861	Boomer Solar 7	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5865	Boomer Solar 12	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5867	Boomer Solar 15	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5869	Boomer Solar 17	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5870	Boomer Solar 18	Approved	[redacted]	TBD	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5871	Boomer Solar 22	Approved	[redacted]	TBD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5872	SunE- Quarry Corona	Approved	[redacted]	TBD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5873	SunE- Mission Pomona	Approved	[redacted]	TBD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5874	Golden Springs Building F	Approved	[redacted]	City, AHJ Building	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5875	Golden Springs Building G	Approved	[redacted]	City, AHJ Building	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5876	Golden Springs Building L	Approved	[redacted]	City, AHJ Building	[redacted]	[redacted]	Yes	[redacted]	[redacted]
Pre-Construction	5877	Freeway Springs	Approved	[redacted]	City, AHJ Building	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	5878	Dulles	Approved	[redacted]	City, AHJ Building	[redacted]	[redacted]	Yes	[redacted]	[redacted]
In Construction	6355	Coram Energy LLC	Approved	[redacted]	TBD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Pre-Construction	6370	Patterson Pass Wind Farm, LLC	Approved	[redacted]	CUP	Complete	12/1/2014	[redacted]	[redacted]	[redacted]

PUBLIC APPENDIX C.1

Physical Renewable Net Short Calculations Based on CPUC Assumptions - 33% Goal

Physical Renewable Net Short Calculations Based on CPUC Assumptions

Variable	Calculation	Item	Deficit from RPS prior to Reporting	2011 Actuals	2012 Actuals	2013 Actuals	2011-2013	2014 Actual	2015 Forecast	2016 Forecast	2014-2016	2017 Forecast	2018 Forecast	2019 Forecast	2020 Forecast	2017-2020	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast	2030 Forecast	2031 Forecast	2032 Forecast	2033 Forecast
		Forecast Year					CP1	1	2	3	CP2	4	5	6	7	CP3	8	9	10	11	12	13	14	15	16	17	18	19	20
		Annual RPS Requirement																											
A		**Bundled Retail Sales Forecast (LTPP)** [1]		**73,777**	**75,597**	**74,480**	**223,854**	**75,829**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**74,595**	**75,662**	[redacted]	**76,194**	**76,660**	**76,980**	**77,205**	**77,360**	**78,467**	**79,931**	**81,431**	**82,645**	**84,128**			
B		RPS Procurement Quantity Requirement (%)		20.0%	20.0%	20.0%		21.7%	23.3%	25.0%		27.0%	29.0%	31.0%	33.0%		33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
C	A*B	**Gross RPS Procurement Quantity Requirement (GWh)**		**14,755**	**15,119**	**14,896**	**44,771**	**16,455**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**23,125**	**24,968**	[redacted]	**25,144**	**25,298**	**25,404**	**25,478**	**25,529**	**25,894**	**26,377**	**26,872**	**27,273**	**27,762**			
D		Voluntary Margin of Over-procurement		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
E	C+D	**Net RPS Procurement Need (GWh)**		**14,755**	**15,119**	**14,896**	**44,771**	**16,455**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**23,125**	**24,968**	[redacted]	**25,144**	**25,298**	**25,404**	**25,478**	**25,529**	**25,894**	**26,377**	**26,872**	**27,273**	**27,762**			
		RPS-Eligible Procurement																											
Fa		**Risk-Adjusted RECs from Online Generation**		**15,654**	**15,821**	**16,525**	**48,000**	**16,988**	**16,805**	**16,846**	**50,639**	**15,940**	**15,560**	**15,561**	**14,717**	**61,778**	**14,075**	**13,987**	**13,980**	**13,881**	**13,827**	**13,609**	**12,282**	**11,446**	**11,279**	**10,009**			
Faa		Forecast Failure Rate for Online Generation (%)		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*			
Fb		**Risk-Adjusted RECs from RPS Facilities in Development**		**-**	**-**	**10**	**10**	**743**	**1,466**	**2,664**	**4,873**	**4,050**	**4,168**	**5,478**	**6,485**	**20,181**	**6,557**	**6,522**	**6,488**	**6,467**	**6,419**	**6,372**	**6,325**	**6,305**	**6,258**	**6,225**			
Fbb		Forecast Failure Rate for RPS Facilities in Development (%)		*N/A*	*N/A*	*0.0%*	*0.0%*	*0.0%*	*12.0%*	*27.2%*	*19.7%*	*32.1%*	*32.1%*	*34.2%*	*37.7%*	*34.7%*	*38.0%*	*38.0%*	*38.0%*	*38.0%*	*38.0%*	*37.9%*	*37.9%*	*37.9%*	*37.9%*	*37.9%*			
Fc		**Pre-Approved Generic RECs**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**43**	**205**	**240**	**248**	**736**	**247**	**247**	**247**	**248**	**247**	**247**	**247**	**248**	**247**	**247**			
Fe		**Executed REC Sales**		**362**	**778**	**473**	**1,614**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**			
F	Fa+Fb+Fc-Fe	**Total RPS Eligible Procurement (GWh)** [2]		**15,291**	**15,043**	**16,062**	**46,396**	**17,731**	**18,271**	**19,510**	**55,512**	**20,033**	**19,933**	**21,279**	**21,450**	**82,695**	**20,880**	**20,756**	**20,715**	**20,596**	**20,494**	**20,229**	**18,854**	**17,999**	**17,785**	**16,482**			
F0		Category 0 RECs [3]		15,239	14,912	15,822	45,973	16,510	15,564	15,178	47,252	13,347	12,223	12,066	11,217	48,853	10,586	10,499	10,496	10,399	10,367	10,181	10,011	9,990	9,828	8,561			
F1		Category 1 RECs [3]		52	131	240	423	1,222	2,706	4,331	8,259	6,643	7,506	8,973	9,985	33,106	10,046	10,010	9,972	9,949	9,880	9,801	8,596	7,761	7,710	7,674			
F2		Category 2 RECs [3]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
F3		Category 3 RECs [3]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Gross RPS Position (Physical Net Short)																											
Ga	F-E	**Annual Gross RPS Position (GWh)**		**536**	**(76)**	**1,166**	**1,625**	**1,277**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**(1,846)**	**(3,518)**	[redacted]	**(4,264)**	**(4,542)**	**(4,689)**	**(4,882)**	**(5,034)**	**(5,665)**	**(7,523)**	**(8,873)**	**(9,488)**	**(11,280)**			
Gb	F/A	Annual Gross RPS Position (%)		20.7%	19.9%	21.6%	20.7%	23.4%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	28.5%	28.3%	[redacted]	27.4%	27.1%	26.9%	26.7%	26.5%	25.8%	23.6%	22.1%	21.5%	19.6%			
		Application of Bank																											
Ha		**Existing Banked RECs above the PQR**		**0**	**536**	**451**	**0**	**1,586**	**2,861**	[redacted]	**1,586**	[redacted]	[redacted]	**4,936**	**4,936**	[redacted]	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**			
Hb		RECs above the PQR added to Bank		536	(85)	1,136	1,586	1,275	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
Hc		Non-bankable RECs above the PQR		-	9	30	39		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
H	Ha+Hb	**Gross Balance of RECs above the PQR**		**536**	**451**	**1,586**	**1,586**	**2,861**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**4,936**	**4,936**	[redacted]	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**			
Ia		Planned Application of RECs above the PQR towards RPS Compliance		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Ib		Planned Sales of RECs above the PQR		0	0	0	-	0	0	0	-	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0			
J	H-Ia-Ib	**Net Balance of RECs above the PQR**		**536**	**451**	**1,586**	**1,586**	**2,861**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**4,936**	**4,936**	[redacted]	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**			
J0		Category 0 RECs [3]		1,164	-	-	1,164	(0)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
J1		Category 1 RECs [3]		52	131	240	423	1,222	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
J2		Category 2 RECs [3]		-	-	-	-		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
		Expiring Contracts																											
K		RECs from Expiring RPS Contracts						2,033	2,252	3,230	7,514	4,032	4,522	5,666	6,546	20,766	7,139	7,453	7,551	7,701	7,700	7,947	9,312	10,182	10,295	10,866			
		Net RPS Position (Optimized Net Short)																											
La	Ga+Ia-Ib-Hc	**Annual Net RPS Position after Bank Optimization (GWh)**		**536**	**(85)**	**1,136**	**1,586**	**1,275**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**(1,846)**	**(3,518)**	[redacted]	**(4,264)**	**(4,542)**	**(4,689)**	**(4,882)**	**(5,034)**	**(5,665)**	**(7,523)**	**(8,873)**	**(9,488)**	**(11,280)**			
Lb	(F+Ia-Ib-Hc)/A	Annual Net RPS Position after Bank Optimization (%)		20.7%	19.9%	21.5%	20.7%	23.4%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	28.5%	28.3%	[redacted]	27.4%	27.1%	26.9%	26.7%	26.5%	25.8%	23.6%	22.1%	21.5%	19.6%			

Note: Fields in grey are potected as Confidential under CPUC Confidentiality Rules

Note: Values are shown in GWhs

Notes:

1 Bundled retail sales forecast for 2015-2019 and 2025-2030 is from SCE's bundled retail sales forecast; bundled retail sales forecast for 2020-2024 is forecast used in 2014 LTPP

2 Includes Blythe Solar II, Mesquite Solar 2, RE Garland, and TKO Power 2014 RPS solicitation contracts; new generation forecast based on individual project specific success rates for large near-term projects and flat average success rate for remaining projects based on these projects' overall weighted average success rate

3 Forecast of deliveries by portfolio content categories is for executed contracts only; does not include program generics

PUBLIC APPENDIX C.2

Physical Renewable Net Short Calculations Based On SCE Assumptions - 33% Goal

Physical Renewable Net Short Calculations Based on SCE Assumptions

Variable	Calculation	Item	Deficit from RPS prior to Reporting	2011 Actuals	2012 Actuals	2013 Actuals	2011-2013	2014 Actual	2015 Forecast	2016 Forecast	2014-2016	2017 Forecast	2018 Forecast	2019 Forecast	2020 Forecast	2017-2020	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast	2030 Forecast	2031 Forecast	2032 Forecast	2033 Forecast
		Forecast Year					CP1	1	2	3	CP2	4	5	6	7	CP3	8	9	10	11	12	13	14	15	16	17	18	19	20
		Annual RPS Requirement																											
A		**SCE Bundled Sales Forecast [1]**		73,777	75,597	74,480	223,854	75,829	[redacted]					74,595	74,687	[redacted]	74,744	75,141	75,743	76,605	77,360	78,467	79,931	81,431	82,645	84,128			
B		RPS Procurement Quantity Requirement (%)		20.0%	20.0%	20.0%		21.7%	23.3%	25.0%		27.0%	29.0%	31.0%	33.0%		33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%	33.0%
C	A*B	**Gross RPS Procurement Quantity Requirement (GWh)**		14,755	15,119	14,896	44,771	16,455	[redacted]					23,125	24,647	[redacted]	24,665	24,796	24,995	25,280	25,529	25,894	26,377	26,872	27,273	27,762			
D		Voluntary Margin of Over-procurement		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
E	C+D	**Net RPS Procurement Need (GWh)**		14,755	15,119	14,896	44,771	16,455	[redacted]					23,125	24,647	[redacted]	24,665	24,796	24,995	25,280	25,529	25,894	26,377	26,872	27,273	27,762			
		RPS-Eligible Procurement																											
Fa		**Risk-Adjusted RECs from Online Generation**		15,654	15,821	16,525	48,000	16,988	16,805	16,846	50,639	15,940	15,560	15,561	14,717	61,778	14,075	13,987	13,980	13,881	13,827	13,609	12,282	11,446	11,279	10,009			
Faa		Forecast Failure Rate for Online Generation (%)		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*			
Fb		**Risk-Adjusted RECs from RPS Facilities in Development**		-	-	10	10	743	1,466	2,664	4,873	4,050	4,168	5,478	6,485	20,181	6,557	6,522	6,488	6,467	6,419	6,372	6,325	6,305	6,258	6,225			
Fbb		Forecast Failure Rate for RPS Facilities in Development (%)		*N/A*	*N/A*	*0.0%*	*0.0%*	*0.0%*	*12.0%*	*27.2%*	*19.7%*	*32.1%*	*32.1%*	*34.2%*	*37.7%*	*34.7%*	*38.0%*	*38.0%*	*38.0%*	*38.0%*	*38.0%*	*37.9%*	*37.9%*	*37.9%*	*37.9%*	*37.9%*			
Fc		**Pre-Approved Generic RECs**		-	-	-	-	-	-	-	-	43	205	240	248	736	247	247	247	248	247	247	247	248	247	247			
Fe		**Executed REC Sales**		362	778	473	1,614	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
F	Fa+Fb+Fc-Fe	**Total RPS Eligible Procurement (GWh) [2]**		15,291	15,043	16,062	46,396	17,731	18,271	19,510	55,512	20,033	19,933	21,279	21,450	82,695	20,880	20,756	20,715	20,596	20,494	20,229	18,854	17,999	17,785	16,482			
F0		Category 0 RECs [3]		15,239	14,912	15,822	45,973	16,510	15,564	15,178	47,252	13,347	12,223	12,066	11,217	48,853	10,586	10,499	10,496	10,399	10,367	10,181	10,011	9,990	9,828	8,561			
F1		Category 1 RECs [3]		52	131	240	423	1,222	2,706	4,331	8,259	6,643	7,506	8,973	9,985	33,106	10,046	10,010	9,972	9,949	9,880	9,801	8,596	7,761	7,710	7,674			
F2		Category 2 RECs [3]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
F3		Category 3 RECs [3]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Gross RPS Position (Physical Net Short)																											
Ga	F-E	**Annual Gross RPS Position (GWh)**		536	(76)	1,166	1,625	1,277	[redacted]					(1,846)	(3,197)	[redacted]	(3,786)	(4,040)	(4,280)	(4,684)	(5,034)	(5,665)	(7,523)	(8,873)	(9,488)	(11,280)			
Gb	F/A	Annual Gross RPS Position (%)		20.7%	19.9%	21.6%	20.7%	23.4%	[redacted]					28.5%	28.7%	[redacted]	27.9%	27.6%	27.3%	26.9%	26.5%	25.8%	23.6%	22.1%	21.5%	19.6%			
		Application of Bank																											
Ha		**Existing Banked RECs above the PQR**		0	536	451	0	1,586	2,861	[redacted]	1,586	[redacted]		4,936	4,936	[redacted]	4,936	4,936	4,936	4,936	4,936	4,936	4,936	4,936	4,936	4,936			
Hb		RECs above the PQR added to Bank		536	(85)	1,136	1,586	1,275	[redacted]					-		[redacted]	-	-	-	-	-	-	-	-	-	-			
Hc		Non-bankable RECs above the PQR		-	9	30	39		[redacted]					-		[redacted]	-	-	-	-	-	-	-	-	-	-			
H	Ha+Hb	**Gross Balance of RECs above the PQR**		536	451	1,586	1,586	2,861	[redacted]					4,936	4,936	[redacted]	4,936	4,936	4,936	4,936	4,936	4,936	4,936	4,936	4,936	4,936			
Ia		Planned Application of RECs above the PQR towards RPS Compliance		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Ib		Planned Sales of RECs above the PQR		0	0	0	-	0	0	0	-	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0			
J	H-Ia-Ib	**Net Balance of RECs above the PQR**		536	451	1,586	1,586	2,861	[redacted]					4,936	4,936	[redacted]	4,936	4,936	4,936	4,936	4,936	4,936	4,936	4,936	4,936	4,936			
J0		Category 0 RECs [3]		1,164	-	-	1,164	(0)	[redacted]					-		[redacted]	-	-	-	-	-	-	-	-	-	-			
J1		Category 1 RECs [3]		52	131	240	423	1,222	[redacted]					-		[redacted]	-	-	-	-	-	-	-	-	-	-			
J2		Category 2 RECs [3]		-	-	-	-		[redacted]					-		[redacted]	-	-	-	-	-	-	-	-	-	-			
		Expiring Contracts																											
K		RECs from Expiring RPS Contracts						2,033	2,252	3,230	7,514	4,032	4,522	5,666	6,546	20,766	7,139	7,453	7,551	7,701	7,700	7,947	9,312	10,182	10,295	10,866			
		Net RPS Position (Optimized Net Short)																											
La	Ga+Ia-Ib-Hc	**Annual Net RPS Position after Bank Optimization (GWh)**		536	(85)	1,136	1,586	1,275	[redacted]					(1,846)	(3,197)	[redacted]	(3,786)	(4,040)	(4,280)	(4,684)	(5,034)	(5,665)	(7,523)	(8,873)	(9,488)	(11,280)			
Lb	(Ga+Ia-Ib-Hc)/A	Annual Net RPS Position after Bank Optimization (%)		20.7%	19.9%	21.5%	20.7%	23.4%	[redacted]					28.5%	28.7%	[redacted]	27.9%	27.6%	27.3%	26.9%	26.5%	25.8%	23.6%	22.1%	21.5%	19.6%			

Note: Fields in grey are potected as Confidential under CPUC Confidentiality Rules

Note: Values are shown in GWhs

Notes:

1 Based on SCE's May 2015 bundled retail sales forecast

2 Includes Blythe Solar II, Mesquite Solar 2, RE Garland, and TKO Power 2014 RPS solicitation contracts; new generation forecast based on individual project specific success rates for large near-term projects and flat average success rate for remaining projects based on these projects' overall weighted average success rate

3 Forecast of deliveries by portfolio content categories is for executed contracts only; does not include program generics

CONFIDENTIAL APPENDIX C.3

Optimized Renewable Net Short Calculations Based On CPUC Assumptions – 33% Goal

(REDACTED)

CONFIDENTIAL APPENDIX C.4

Optimized Renewable Net Short Calculations Based On SCE Assumptions - 33% Goal

(REDACTED)

PUBLIC APPENDIX C.5

Physical Renewable Net Short Calculations Based On CPUC Assumptions - 40% Goal

Physical Renewable Net Short Calculations Based on CPUC Assumptions

Variable	Calculation	Item	Deficit from RPS prior to Reporting	2011 Actuals	2012 Actuals	2013 Actuals	2011-2013	2014 Actual	2015 Forecast	2016 Forecast	2014-2016	2017 Forecast	2018 Forecast	2019 Forecast	2020 Forecast	2017-2020	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast	2030 Forecast	2031 Forecast	2032 Forecast	2033 Forecast
		Forecast Year					CP1	1	2	3	CP2	4	5	6	7	CP3	8	9	10	11	12	13	14	15	16	17	18	19	20
		Annual RPS Requirement																											
A		**Bundled Retail Sales Forecast (LTPP)** [1]		**73,777**	**75,597**	**74,480**	**223,854**	**75,829**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**74,595**	**75,662**	[redacted]	**76,194**	**76,660**	**76,980**	**77,205**	**77,360**	**78,467**	**79,931**	**81,431**	**82,645**	**84,128**			
B		RPS Procurement Quantity Requirement (%)		20.0%	20.0%	20.0%		21.7%	23.3%	25.0%		27.0%	29.0%	31.0%	33.0%		33.0%	37.0%	37.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
C	A*B	**Gross RPS Procurement Quantity Requirement (GWh)**		**14,755**	**15,119**	**14,896**	**44,771**	**16,455**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**23,125**	**24,968**	[redacted]	**25,144**	**28,364**	**28,483**	**30,882**	**30,944**	**31,387**	**31,972**	**32,573**	**33,058**	**33,651**			
D		Voluntary Margin of Over-procurement		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
E	C+D	**Net RPS Procurement Need (GWh)**		**14,755**	**15,119**	**14,896**	**44,771**	**16,455**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**23,125**	**24,968**	[redacted]	**25,144**	**28,364**	**28,483**	**30,882**	**30,944**	**31,387**	**31,972**	**32,573**	**33,058**	**33,651**			
		RPS-Eligible Procurement																											
Fa		**Risk-Adjusted RECs from Online Generation**		**15,654**	**15,821**	**16,525**	**48,000**	**16,988**	**16,805**	**16,846**	**50,639**	**15,940**	**15,560**	**15,561**	**14,717**	**61,778**	**14,075**	**13,987**	**13,980**	**13,881**	**13,827**	**13,609**	**12,282**	**11,446**	**11,279**	**10,009**			
Faa		Forecast Failure Rate for Online Generation (%)		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*			
Fb		**Risk-Adjusted RECs from RPS Facilities in Development**		**-**	**-**	**10**	**10**	**743**	**1,466**	**2,664**	**4,873**	**4,050**	**4,168**	**5,478**	**6,485**	**20,181**	**6,557**	**6,522**	**6,488**	**6,467**	**6,419**	**6,372**	**6,325**	**6,305**	**6,258**	**6,225**			
Fbb		Forecast Failure Rate for RPS Facilities in Development (%)		*N/A*	*N/A*	*0.0%*	*0.0%*	*0.0%*	*12.0%*	*27.2%*	*19.7%*	*32.1%*	*32.1%*	*34.2%*	*37.7%*	*34.7%*	*38.0%*	*38.0%*	*38.0%*	*38.0%*	*38.0%*	*37.9%*	*37.9%*	*37.9%*	*37.9%*	*37.9%*			
Fc		**Pre-Approved Generic RECs**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**43**	**205**	**240**	**248**	**736**	**247**	**247**	**247**	**248**	**247**	**247**	**247**	**248**	**247**	**247**			
Fe		**Executed REC Sales**		**362**	**778**	**473**	**1,614**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**			
F	Fa+Fb+Fc-Fe	**Total RPS Eligible Procurement (GWh)** [2]		**15,291**	**15,043**	**16,062**	**46,396**	**17,731**	**18,271**	**19,510**	**55,512**	**20,033**	**19,933**	**21,279**	**21,450**	**82,695**	**20,880**	**20,756**	**20,715**	**20,596**	**20,494**	**20,229**	**18,854**	**17,999**	**17,785**	**16,482**			
F0		Category 0 RECs [3]		15,239	14,912	15,822	45,973	16,510	15,564	15,178	47,252	13,347	12,223	12,066	11,217	48,853	10,586	10,499	10,496	10,399	10,367	10,181	10,011	9,990	9,828	8,561			
F1		Category 1 RECs [3]		52	131	240	423	1,222	2,706	4,331	8,259	6,643	7,506	8,973	9,985	33,106	10,046	10,010	9,972	9,949	9,880	9,801	8,596	7,761	7,710	7,674			
F2		Category 2 RECs [3]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
F3		Category 3 RECs [3]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Gross RPS Position (Physical Net Short)																											
Ga	F-E	**Annual Gross RPS Position (GWh)**		**536**	**(76)**	**1,166**	**1,625**	**1,277**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**(1,846)**	**(3,518)**	[redacted]	**(4,264)**	**(7,608)**	**(7,768)**	**(10,286)**	**(10,449)**	**(11,158)**	**(13,118)**	**(14,573)**	**(15,273)**	**(17,169)**			
Gb	F/A	Annual Gross RPS Position (%)		20.7%	19.9%	21.6%	20.7%	23.4%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	28.5%	28.3%	[redacted]	27.4%	27.1%	26.9%	26.7%	26.5%	25.8%	23.6%	22.1%	21.5%	19.6%			
		Application of Bank																											
Ha		**Existing Banked RECs above the PQR**		**0**	**536**	**451**	**0**	**1,586**	**2,861**	[redacted]	**1,586**	[redacted]	[redacted]	**4,936**	**4,936**	[redacted]	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**			
Hb		RECs above the PQR added to Bank		536	(85)	1,136	1,586	1,275	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
Hc		Non-bankable RECs above the PQR		-	9	30	39		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
H	Ha+Hb	**Gross Balance of RECs above the PQR**		**536**	**451**	**1,586**	**1,586**	**2,861**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**4,936**	**4,936**	[redacted]	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**			
Ia		Planned Application of RECs above the PQR towards RPS Compliance		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Ib		Planned Sales of RECs above the PQR		0	0	0	-	0	0	0	-	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0			
J	H-Ia-Ib	**Net Balance of RECs above the PQR**		**536**	**451**	**1,586**	**1,586**	**2,861**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**4,936**	**4,936**	[redacted]	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**			
J0		Category 0 RECs [3]		1,164	-	-	1,164	(0)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
J1		Category 1 RECs [3]		52	131	240	423	1,222	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
J2		Category 2 RECs [3]		-	-	-	-		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
		Expiring Contracts																											
K		RECs from Expiring RPS Contracts						2,033	2,252	3,230	7,514	4,032	4,522	5,666	6,546	20,766	7,139	7,453	7,551	7,701	7,700	7,947	9,312	10,182	10,295	10,866			
		Net RPS Position (Optimized Net Short)																											
La	Ga+Ia-Ib-Hc	**Annual Net RPS Position after Bank Optimization (GWh)**		**536**	**(85)**	**1,136**	**1,586**	**1,275**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**(1,846)**	**(3,518)**	[redacted]	**(4,264)**	**(7,608)**	**(7,768)**	**(10,286)**	**(10,449)**	**(11,158)**	**(13,118)**	**(14,573)**	**(15,273)**	**(17,169)**			
Lb	(F+Ia-Ib-Hc)/A	Annual Net RPS Position after Bank Optimization (%)		20.7%	19.9%	21.5%	20.7%	23.4%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	28.5%	28.3%	[redacted]	27.4%	27.1%	26.9%	26.7%	26.5%	25.8%	23.6%	22.1%	21.5%	19.6%			

Note: Fields in grey are potected as Confidential under CPUC Confidentiality Rules

Note: Values are shown in GWhs

Notes:

1 Bundled retail sales forecast for 2015-2019 and 2025-2030 is from SCE's bundled retail sales forecast; bundled retail sales forecast for 2020-2024 is forecast used in 2014 LTPP

2 IIncludes Blythe Solar II, Mesquite Solar 2, RE Garland, and TKO Power 2014 RPS solicitation contracts; new generation forecast based on individual project specific success rates for large near-term projects and flat average success rate for remaining projects based on these projects' overall weighted average success rate

3 Forecast of deliveries by portfolio content categories is for executed contracts only; does not include program generics

PUBLIC APPENDIX C.6

Physical Renewable Net Short Calculations Based On SCE Assumptions - 40% Goal

Physical Renewable Net Short Calculations Based on SCE Assumptions

Variable	Calculation	Item	Deficit from RPS prior to Reporting	2011 Actuals	2012 Actuals	2013 Actuals	2011-2013	2014 Actual	2015 Forecast	2016 Forecast	2014-2016	2017 Forecast	2018 Forecast	2019 Forecast	2020 Forecast	2017-2020	2021 Forecast	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast	2030 Forecast	2031 Forecast	2032 Forecast	2033 Forecast
		Forecast Year					CP1	1	2	3	CP2	4	5	6	7	CP3	8	9	10	11	12	13	14	15	16	17	18	19	20
		Annual RPS Requirement																											
A		**SCE Bundled Sales Forecast [1]**		**73,777**	**75,597**	**74,480**	**223,854**	**75,829**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**74,595**	**74,687**	[redacted]	**74,744**	**75,141**	**75,743**	**76,605**	**77,360**	**78,467**	**79,931**	**81,431**	**82,645**	**84,128**			
B		RPS Procurement Quantity Requirement (%)		20.0%	20.0%	20.0%		21.7%	23.3%	25.0%		27.0%	29.0%	31.0%	33.0%		33.0%	37.0%	37.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
C	A*B	**Gross RPS Procurement Quantity Requirement (GWh)**		**14,755**	**15,119**	**14,896**	**44,771**	**16,455**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**23,125**	**24,647**	[redacted]	**24,665**	**27,802**	**28,025**	**30,642**	**30,944**	**31,387**	**31,972**	**32,573**	**33,058**	**33,651**			
D		Voluntary Margin of Over-procurement		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
E	C+D	**Net RPS Procurement Need (GWh)**		**14,755**	**15,119**	**14,896**	**44,771**	**16,455**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**23,125**	**24,647**	[redacted]	**24,665**	**27,802**	**28,025**	**30,642**	**30,944**	**31,387**	**31,972**	**32,573**	**33,058**	**33,651**			
		RPS-Eligible Procurement																											
Fa		**Risk-Adjusted RECs from Online Generation**		**15,654**	**15,821**	**16,525**	**48,000**	**16,988**	**16,805**	**16,846**	**50,639**	**15,940**	**15,560**	**15,561**	**14,717**	**61,778**	**14,075**	**13,987**	**13,980**	**13,881**	**13,827**	**13,609**	**12,282**	**11,446**	**11,279**	**10,009**			
Faa		Forecast Failure Rate for Online Generation (%)		*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*			
Fb		**Risk-Adjusted RECs from RPS Facilities in Development**		**-**	**-**	**10**	**10**	**743**	**1,466**	**2,664**	**4,873**	**4,050**	**4,168**	**5,478**	**6,485**	**20,181**	**6,557**	**6,522**	**6,488**	**6,467**	**6,419**	**6,372**	**6,325**	**6,305**	**6,258**	**6,225**			
Fbb		Forecast Failure Rate for RPS Facilities in Development (%)		*N/A*	*N/A*	*0.0%*	*0.0%*	*0.0%*	*12.0%*	*27.2%*	*19.7%*	*32.1%*	*32.1%*	*34.2%*	*37.7%*	*34.7%*	*38.0%*	*38.0%*	*38.0%*	*38.0%*	*38.0%*	*37.9%*	*37.9%*	*37.9%*	*37.9%*	*37.9%*			
Fc		**Pre-Approved Generic RECs**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**43**	**205**	**240**	**248**	**736**	**247**	**247**	**247**	**248**	**247**	**247**	**247**	**248**	**247**	**247**			
Fe		**Executed REC Sales**		**362**	**778**	**473**	**1,614**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**			
F	Fa+Fb+Fc-Fe	**Total RPS Eligible Procurement (GWh) [2]**		**15,291**	**15,043**	**16,062**	**46,396**	**17,731**	**18,271**	**19,510**	**55,512**	**20,033**	**19,933**	**21,279**	**21,450**	**82,695**	**20,880**	**20,756**	**20,715**	**20,596**	**20,494**	**20,229**	**18,854**	**17,999**	**17,785**	**16,482**			
F0		Category 0 RECs [3]		15,239	14,912	15,822	45,973	16,510	15,564	15,178	47,252	13,347	12,223	12,066	11,217	48,853	10,586	10,499	10,496	10,399	10,367	10,181	10,011	9,990	9,828	8,561			
F1		Category 1 RECs [3]		52	131	240	423	1,222	2,706	4,331	8,259	6,643	7,506	8,973	9,985	33,106	10,046	10,010	9,972	9,949	9,880	9,801	8,596	7,761	7,710	7,674			
F2		Category 2 RECs [3]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
F3		Category 3 RECs [3]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Gross RPS Position (Physical Net Short)																											
Ga	F-E	**Annual Gross RPS Position (GWh)**		**536**	**(76)**	**1,166**	**1,625**	**1,277**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**(1,846)**	**(3,197)**	[redacted]	**(3,786)**	**(7,046)**	**(7,310)**	**(10,046)**	**(10,449)**	**(11,158)**	**(13,118)**	**(14,573)**	**(15,273)**	**(17,169)**			
Gb	F/A	Annual Gross RPS Position (%)		20.7%	19.9%	21.6%	20.7%	23.4%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	28.5%	28.7%	[redacted]	27.9%	27.6%	27.3%	26.9%	26.5%	25.8%	23.6%	22.1%	21.5%	19.6%			
		Application of Bank																											
Ha		**Existing Banked RECs above the PQR**		**0**	**536**	**451**	**0**	**1,586**	**2,861**	[redacted]	**1,586**	[redacted]	[redacted]	**4,936**	**4,936**	[redacted]	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**			
Hb		RECs above the PQR added to Bank		536	(85)	1,136	1,586	1,275	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
Hc		Non-bankable RECs above the PQR		-	9	30	39		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
H	Ha+Hb	**Gross Balance of RECs above the PQR**		**536**	**451**	**1,586**	**1,586**	**2,861**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**4,936**	**4,936**	[redacted]	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**			
Ia		Planned Application of RECs above the PQR towards RPS Compliance		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Ib		Planned Sales of RECs above the PQR		0	0	0	-	0	0	0	-	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0			
J	H-Ia-Ib	**Net Balance of RECs above the PQR**		**536**	**451**	**1,586**	**1,586**	**2,861**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**4,936**	**4,936**	[redacted]	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**	**4,936**			
J0		Category 0 RECs [3]		1,164	-	-	1,164	(0)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
J1		Category 1 RECs [3]		52	131	240	423	1,222	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
J2		Category 2 RECs [3]		-	-	-	-		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-		[redacted]	-	-	-	-	-	-	-	-	-	-			
		Expiring Contracts																											
K		RECs from Expiring RPS Contracts						2,033	2,252	3,230	7,514	4,032	4,522	5,666	6,546	20,766	7,139	7,453	7,551	7,701	7,700	7,947	9,312	10,182	10,295	10,866			
		Net RPS Position (Optimized Net Short)																											
La	Ga+Ia-Ib-Hc	**Annual Net RPS Position after Bank Optimization (GWh)**		**536**	**(85)**	**1,136**	**1,586**	**1,275**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**(1,846)**	**(3,197)**	[redacted]	**(3,786)**	**(7,046)**	**(7,310)**	**(10,046)**	**(10,449)**	**(11,158)**	**(13,118)**	**(14,573)**	**(15,273)**	**(17,169)**			
Lb	(Ga+Ia-Ib-Hc)/A	Annual Net RPS Position after Bank Optimization (%)		20.7%	19.9%	21.5%	20.7%	23.4%	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	28.5%	28.7%	[redacted]	27.9%	27.6%	27.3%	26.9%	26.5%	25.8%	23.6%	22.1%	21.5%	19.6%			

Note: Fields in grey are potected as Confidential under CPUC Confidentiality Rules

Note: Values are shown in GWhs

Notes:

1. Based on SCE's May 2015 bundled retail sales forecast
2. Includes Blythe Solar II, Mesquite Solar 2, RE Garland, and TKO Power 2014 RPS solicitation contracts; new generation forecast based on individual project specific success rates for large near-term projects and flat average success rate for remaining projects based on these projects' overall weighted average success rate
3. Forecast of deliveries by portfolio content categories is for executed contracts only; does not include program generics

CONFIDENTIAL APPENDIX C.7

Optimized Renewable Net Short Calculations Based On CPUC Assumptions - 40% Goal

(REDACTED)

CONFIDENTIAL APPENDIX C.8

Optimized Renewable Net Short Calculations Based On SCE Assumptions - 40% Goal

(REDACTED)

PUBLIC APPENDIX D

Cost Quantification Table

Joint IOU Assumption Guidelines for Table Input	
Table 1 (Actual Costs, $) Items	**Actual**
Rows 2 – 8, 11 (2003-2014)	Settlements data from 1/1/2003 to 12/31/2014
Row 9	Annualized capital cost plus applicable O&M in each year
Row 10	LCOE multiplied by actual generation in each year
Row 13	Actual bundled retail sales data reported to the CEC through the annual RPS track forms and the CPUC through the semi-annual RPS compliance report
Row 14	Total Cost / Bundled Retail Sales
Table 2 (Forecast Cost, $) Items	**Forecast**
Rows 2 -11 and 16-25	Forecast begins on 1/1/2015 • UOG Small Hydro is annualized capital cost plus 2014 O&M escalated at 5% annually • UOG Solar is LCOE multiplied by actual generation in each year
Rows 13 and 27	IOU's most current bundled retail sales forecast
Rows 14 and 28	Total Cost / Bundled Retail Sales
Table 3 (Actual Generation, MWh) Items	**Actual**
Rows 2 – 11 (2003-2014)	Settlements data from 1/1/2003 to 12/31/2014
Table 4 (Forecast Generation, MWh) Items	**Forecast**
Rows 2 -11 and 16-25	Forecast begins on 1/1/2015 • Caluclated as forecasted generation in each year

Joint IOU Cost Quantification Table 1 (Actual Costs, $)

		Actual RPS-Eligible Procurement and Generation Costs											
1	**Technology Type**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
2	Biogas	$49,239,752	$55,218,581	$58,024,700	$55,842,748	$46,391,310	$45,669,901	$41,319,957	$46,567,994	$45,003,728	$35,156,543	$33,114,888	$33,398,837
3	Biomass	$30,229,214	$30,641,340	$29,266,687	$29,364,748	$31,995,803	$32,870,627	$37,676,121	$39,934,586	$32,647,359	$8,227,073	$0	$0
4	Geothermal	$533,787,287	$568,528,010	$569,145,247	$540,276,590	$564,191,771	$682,923,953	$591,094,390	$601,071,879	$559,894,871	$415,307,356	$433,400,967	$488,851,482
5	Small Hydro	$14,680,635	$13,351,784	$23,129,437	$22,350,522	$11,682,561	$17,217,269	$12,197,656	$19,239,880	$26,057,270	$18,237,083	$10,001,384	$2,467,173
6	Solar PV	$2,303	$1,077	$574	$111	$0	$0	$116,015	$6,014,872	$6,175,717	$10,245,933	$28,978,316	$201,179,165
7	Solar Thermal	$109,767,959	$109,176,941	$102,333,401	$100,464,297	$108,126,446	$118,442,549	$118,633,943	$122,739,976	$124,859,719	$101,611,519	$92,137,545	$111,941,669
8	Wind	$150,501,168	$168,906,414	$164,098,293	$158,644,762	$185,560,185	$211,157,917	$197,306,648	$298,846,815	$443,074,749	$553,158,034	$732,844,641	$733,069,427
9	UOG Small Hydro	$18,919,069	$20,783,330	$22,004,724	$25,476,773	$28,921,419	$29,624,912	$32,852,293	$35,084,449	$46,523,880	$54,403,396	$53,529,737	$52,517,116
10	UOG Solar	$0	$0	$0	$0	$0	$237,324	$1,518,688	$2,587,858	$15,703,577	$34,084,657	$24,802,431	$35,339,130
11	Unbundled RECs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
12	**Total CPUC-Approved RPS-Eligible Procurement and Generation Cost** [Sum of Rows 2 through 11]	**$907,127,388**	**$966,607,475**	**$968,003,063**	**$932,420,551**	**$976,869,495**	**$1,138,144,451**	**$1,032,715,711**	**$1,172,088,308**	**$1,299,940,869**	**$1,230,431,594**	**$1,408,809,909**	**$1,658,763,999**
13	Bundled Retail Sales (kWh)	70,616,552,902	72,964,152,898	74,994,454,104	78,863,139,433	79,505,151,004	80,956,160,306	78,048,183,506	75,141,421,957	73,777,490,034	75,596,657,918	74,480,094,902	75,828,582,966
14	**Incremental Rate Impact**	**1.28 ¢/kWh**	**1.32 ¢/kWh**	**1.29 ¢/kWh**	**1.18 ¢/kWh**	**1.23 ¢/kWh**	**1.41 ¢/kWh**	**1.32 ¢/kWh**	**1.56 ¢/kWh**	**1.76 ¢/kWh**	**1.63 ¢/kWh**	**1.89 ¢/kWh**	**2.19 ¢/kWh**

*The actual cost of UOG Small Hydro in 2013 was $53,529,737, not $53,101,662 as reported in the 2014 RPS Procuremer

Joint IOU Cost Quantification Table 2 (Forecast Costs, $)

		Forecasted Future Expenditures on RPS-Eligible Procurement and Generation Costs							
1	**Executed But Not CPUC-Approved RPS-Eligible Contracts**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
2	Biogas	$0	$0	$0	$0	$0	$0	$0	$0
3	Biomass	$0	$0	$0	$0	$0	$0	$0	$0
4	Geothermal	$0	$0	$0	$0	$0	$0	$0	$0
5	Small Hydro	$0	$0	$0	$0	$0	$0	$0	$0
6	Solar PV	$0	$590,183	$9,033,378	$8,978,494	$8,931,202	$8,943,178	$8,866,048	$8,820,125
7	Solar Thermal	$0	$0	$0	$0	$0	$0	$0	$0
8	Wind	$0	$0	$0	$0	$0	$0	$0	$0
9	UOG Small Hydro	$0	$0	$0	$0	$0	$0	$0	$0
10	UOG Solar	$0	$0	$0	$0	$0	$0	$0	$0
11	Unbundled RECs	$0	$0	$0	$0	$0	$0	$0	$0
12	**Total Executed But Not CPUC-Approved RPS-Eligible Procurement and Generation Cost** [Sum of Rows 2 through 11]	**$0**	**$590,183**	**$9,033,378**	**$8,978,494**	**$8,931,202**	**$8,943,178**	**$8,866,048**	**$8,820,125**
13	Bundled Retail Sales (kWh)	[redacted]				74,595,450,837	74,687,014,572	74,743,547,727	75,140,880,437
14	**Incremental Rate Impact**					**0.01 ¢/kWh**	**0.01 ¢/kWh**	**0.01 ¢/kWh**	**0.01 ¢/kWh**
15	**CPUC-Approved RPS-Eligible Contracts (Incl. RAM/FIT/PV Contracts)**								
16	Biogas	$31,336,773	$32,269,539	$9,672,853	$9,853,616	$9,728,886	$8,722,674	$3,339,187	$2,573,477
17	Biomass	$0	$0	$0	$0	$0	$0	$0	$29,654,125
18	Geothermal	$421,688,292	$401,183,502	$404,215,763	$389,612,477	$344,595,239	$322,162,923	$323,941,555	$328,660,129
19	Small Hydro	$10,822,012	$11,457,598	$11,471,367	$10,664,287	$10,976,371	$6,697,956	$2,854,034	$2,771,386
20	Solar PV	$358,088,675	$610,412,910	$733,024,861	$740,011,465	$875,671,445	$1,018,741,972	$1,030,924,746	$1,036,568,567
21	Solar Thermal	$115,021,551	$135,474,680	$122,233,450	$115,879,420	$102,378,718	$84,039,944	$57,289,036	$54,265,375
22	Wind	$654,234,575	$649,767,770	$640,382,933	$663,817,669	$830,878,621	$819,380,560	$797,085,323	$775,387,847
23	UOG Small Hydro	$24,743,954	$25,291,749	$25,866,935	$26,470,880	$27,105,022	$27,770,871	$28,470,012	$29,204,111
24	UOG Solar	$49,132,021	$49,132,021	$49,132,021	$49,132,021	$49,132,021	$49,132,021	$49,132,021	$49,132,021
25	Unbundled RECs								
26	**Total CPUC-Approved RPS-Eligible Procurement and Generation Cost** [Sum of Rows 16 through 25]	**$1,665,067,853**	**$1,914,989,770**	**$1,996,000,183**	**$2,005,441,835**	**$2,250,466,323**	**$2,336,648,921**	**$2,293,035,913**	**$2,308,217,038**
27	Bundled Retail Sales (kWh)	[redacted]				79,930,869,697.84	81,431,367,348.86	82,645,051,555.61	84,127,662,113.65
28	**Incremental Rate Impact**					**2.82 ¢/kWh**	**2.87 ¢/kWh**	**2.77 ¢/kWh**	**2.74 ¢/kWh**
29	**Total Incremental Rate Impact** [Row 14 + 28; Rounding can cause Row 29 to differ slightl from the sum of Row 14 and 28]					**2.83 ¢/kWh**	**2.88 ¢/kWh**	**2.79 ¢/kWh**	**2.76 ¢/kWh**

Joint IOU Cost Quantification Table 2 (continued) (Forecast Costs, $)

		Forecasted Future Expenditures on RPS-Eligible Procurement and Generation Costs							
1	**Executed But Not CPUC-Approved RPS-Eligible Contracts**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
2	Biogas	$0	$0	$0	$0	$0	$0	$0	$0
3	Biomass	$0	$0	$0	$0	$0	$0	$0	$0
4	Geothermal	$0	$0	$0	$0	$0	$0	$0	$0
5	Small Hydro	$0	$0	$0	$0	$0	$0	$0	$0
6	Solar PV	$8,766,216	$8,727,883	$8,677,262	$8,660,701	$8,603,370	$8,566,626	$8,496,839	$8,452,084
7	Solar Thermal	$0	$0	$0	$0	$0	$0	$0	$0
8	Wind	$0	$0	$0	$0	$0	$0	$0	$0
9	UOG Small Hydro	$0	$0	$0	$0	$0	$0	$0	$0
10	UOG Solar	$0	$0	$0	$0	$0	$0	$0	$0
11	Unbundled RECs	$0	$0	$0	$0	$0	$0	$0	$0
12	**Total Executed But Not CPUC-Approved RPS-Eligible Procurement and Generation Cost** [Sum of Rows 2 through 11]	**$8,766,216**	**$8,727,883**	**$8,677,262**	**$8,660,701**	**$8,603,370**	**$8,566,626**	**$8,496,839**	**$8,452,084**
13	Bundled Retail Sales (kWh)	75,742,906,994	76,605,453,279	77,359,568,430	78,466,508,403	79,930,869,698	81,431,367,349	82,645,051,556	84,127,662,114
14	**Incremental Rate Impact**	**0.01 ¢/kWh**	**0.01 ¢/kWh**	**0.01 ¢/kWh**	**0.01 ¢/kWh**	**0.01 ¢/kWh**	**0.01 ¢/kWh**	**0.01 ¢/kWh**	**0.01 ¢/kWh**
15	**CPUC-Approved RPS-Eligible Contracts (Incl. RAM/FIT/PV Contracts)**								
16	Biogas	$2,536,373	$2,615,362	$2,647,419	$2,656,596	$1,501,945	$433,500	$447,837	$461,426
17	Biomass	$41,582,984	$42,483,543	$43,387,968	$44,529,625	$45,390,342	$46,364,546	$47,138,770	$48,147,077
18	Geothermal	$322,866,095	$318,972,798	$322,426,186	$312,639,015	$202,962,350	$146,584,446	$146,093,216	$55,075,024
19	Small Hydro	$2,624,032	$2,621,496	$2,519,133	$2,521,316	$2,517,926	$2,476,835	$2,386,972	$2,387,479
20	Solar PV	$1,040,429,516	$1,045,474,568	$1,052,691,520	$1,063,528,016	$1,066,289,529	$1,072,637,774	$1,075,752,125	$1,077,665,627
21	Solar Thermal	$54,134,968	$54,078,794	$54,142,728	$54,456,613	$54,288,332	$54,218,842	$54,000,518	$53,994,920
22	Wind	$776,557,023	$778,592,354	$777,730,277	$777,517,751	$778,666,367	$779,489,287	$767,353,219	$755,531,091
23	UOG Small Hydro	$29,974,915	$30,784,258	$31,634,069	$32,526,371	$33,463,287	$34,447,050	$35,480,000	$36,564,598
24	UOG Solar	$49,132,021	$49,132,021	$49,132,021	$49,132,021	$49,132,021	$49,132,021	$49,132,021	$49,132,021
25	Unbundled RECs	$0	$0	$0	$0	$0	$0	$0	$0
26	**Total CPUC-Approved RPS-Eligible Procurement and Generation Cost** [Sum of Rows 16 through 25]	**$2,319,837,927**	**$2,324,755,195**	**$2,336,311,321**	**$2,339,507,324**	**$2,234,212,100**	**$2,185,784,301**	**$2,177,784,679**	**$2,078,959,263**
27	Bundled Retail Sales (kWh)	80,115,177,192	81,663,013,322	83,349,699,990	84,909,277,804	86,494,595,482	88,203,200,170	90,011,538,791	91,940,543,035
28	**Incremental Rate Impact**	**2.90 ¢/kWh**	**2.85 ¢/kWh**	**2.80 ¢/kWh**	**2.76 ¢/kWh**	**2.58 ¢/kWh**	**2.48 ¢/kWh**	**2.42 ¢/kWh**	**2.26 ¢/kWh**
29	**Total Incremental Rate Impact** [Row 14 + 28; Rounding can cause Row 29 to differ slightly from the sum of Row 14 and 28]	**2.91 ¢/kWh**	**2.86 ¢/kWh**	**2.81 ¢/kWh**	**2.77 ¢/kWh**	**2.59 ¢/kWh**	**2.49 ¢/kWh**	**2.43 ¢/kWh**	**2.27 ¢/kWh**

Joint IOU Cost Quantification Table 3 (Actual Generation, kWh)

		Actual RPS-Eligible Procurement and Generation (kWh)											
1	**Technology Type**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
2	Biogas	722,946,872	777,312,732	771,018,454	752,792,686	587,082,098	546,962,524	493,557,888	513,205,916	505,975,841	499,348,085	484,856,973	449,602,910
3	Biomass	365,097,000	373,917,000	351,063,000	353,889,000	365,332,000	363,224,000	417,625,000	437,916,000	351,018,000	114,694,000	0	0
4	Geothermal	7,079,544,959	7,882,153,152	7,823,442,082	7,481,228,810	7,611,424,731	7,739,370,197	7,675,040,864	7,633,511,171	7,178,640,942	6,421,878,833	6,536,991,410	6,745,455,452
5	Small Hydro	236,744,651	246,952,691	325,458,412	348,497,816	196,112,961	182,554,690	138,319,853	220,027,751	301,899,277	193,824,909	111,406,210	28,180,940
6	Solar PV	0	0	0	0	0	0	1,372,324	51,389,213	53,432,781	73,823,619	247,123,128	1,839,819,140
7	Solar Thermal	756,941,166	739,291,464	622,099,854	613,049,994	666,864,846	730,264,176	839,801,580	879,081,877	889,065,595	868,991,935	680,234,418	751,904,813
8	Wind	2,366,582,609	2,313,238,518	2,275,713,067	2,232,844,707	2,374,032,238	2,383,541,034	3,038,798,465	4,142,352,867	5,218,539,121	6,286,303,872	7,511,002,142	7,442,198,003
9	UOG Small Hydro	535,123,742	466,007,745	545,840,580	599,902,056	362,302,038	344,846,249	426,458,028	461,590,000	618,139,310	434,380,326	269,814,338	274,950,708
10	UOG Solar	0	0	0	0	0	438,489	2,798,912	4,846,187	54,532,151	98,598,314	68,910,176	98,184,960
11	Unbundled RECs	0	0	0	0	0	0	0	0	0	0	0	0
12	**Total CPUC-Approved RPS-Eligible Procurement and Generation** [Sum of Rows 2 through 11]	12,062,980,999	12,798,873,302	12,714,635,449	12,382,205,069	12,163,150,912	12,291,201,359	13,033,772,914	14,343,920,982	15,171,243,018	14,991,843,893	15,910,338,795	17,630,296,926

Joint IOU Cost Quantification Table 4 (Forecast Generation, kWh)

		Forecasted Future RPS-Deliveries 2015-2022 (kWh)							
1	**Executed But Not CPUC-Approved RPS-Eligible Contracts**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
2	Biogas	0	0	0	0	0	0	0	0
3	Biomass	0	0	0	0	0	0	0	0
4	Geothermal	0	0	0	0	0	0	0	0
5	Small Hydro	0	0	0	0	0	0	0	0
6	Solar PV	0	5,374,879	67,716,752	67,382,780	67,045,866	66,868,249	66,377,083	66,045,198
7	Solar Thermal	0	0	0	0	0	0	0	0
8	Wind	0	0	0	0	0	0	0	0
9	UOG Small Hydro	0	0	0	0	0	0	0	0
10	UOG Solar	0	0	0	0	0	0	0	0
11	Unbundled RECs	0	0	0	0	0	0	0	0
12	**Total Executed But Not CPUC-Approved RPS-Eligible Deliveries** [Sum of Rows 2 through 11]	0	5,374,879	67,716,752	67,382,780	67,045,866	66,868,249	66,377,083	66,045,198
15	**CPUC-Approved RPS-Eligible Contracts (Incl. RAM/FIT/PV Contracts)**								
16	Biogas	495,962,052	497,438,619	117,310,293	117,310,293	114,228,278	101,088,365	44,644,373	30,036,489
17	Biomass	0	0	0	0	0	0	0	235,274,333
18	Geothermal	6,745,363,013	6,233,041,611	6,058,995,611	5,616,346,243	4,715,157,400	4,265,151,787	4,231,512,308	4,231,512,308
19	Small Hydro	146,229,925	148,765,471	144,883,858	127,881,644	127,184,257	76,952,870	30,136,002	28,980,042
20	Solar PV	3,302,807,751	5,639,235,239	6,664,092,516	6,678,016,430	8,425,106,672	10,428,166,972	10,575,401,883	10,515,618,126
21	Solar Thermal	862,450,234	968,630,805	841,729,968	777,785,904	670,026,204	562,887,618	379,530,144	335,148,840
22	Wind	6,760,066,029	6,470,232,128	6,272,682,066	6,424,035,130	7,847,600,862	7,631,651,034	7,324,411,495	7,070,879,269
23	UOG Small Hydro	667,572,000	667,572,000	667,572,000	667,572,000	667,572,000	667,572,000	667,572,000	667,572,000
24	UOG Solar	136,506,628	136,506,628	136,506,628	136,506,628	136,506,628	136,506,628	136,506,628	136,506,628
25	Unbundled RECs	0	0	0	0	0	0	0	0
26	**Total CPUC-Approved RPS-Eligible Deliveries** [Sum of Rows 16 through 25]	19,116,957,631	20,761,422,502	20,903,772,940	20,545,454,272	22,703,382,300	23,869,977,274	23,389,714,832	23,251,528,035

Joint IOU Cost Quantification Table 4 (continued) (Forecast Generation, kWh)

		Forecasted Future RPS-Deliveries 2023-2030 (kWh)							
1	**Executed But Not CPUC-Approved RPS-Eligible Contracts**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
2	Biogas	0	0	0	0	0	0	0	0
3	Biomass	0	0	0	0	0	0	0	0
4	Geothermal	0	0	0	0	0	0	0	0
5	Small Hydro	0	0	0	0	0	0	0	0
6	Solar PV	65,714,972	65,540,881	65,059,465	64,734,168	64,410,497	64,239,861	63,768,002	63,449,162
7	Solar Thermal	0	0	0	0	0	0	0	0
8	Wind	0	0	0	0	0	0	0	0
9	UOG Small Hydro	0	0	0	0	0	0	0	0
10	UOG Solar	0	0	0	0	0	0	0	0
11	Unbundled RECs	0	0	0	0	0	0	0	0
12	**Total Executed But Not CPUC-Approved RPS-Eligible Deliveries** [Sum of Rows 2 through 11]	65,714,972	65,540,881	65,059,465	64,734,168	64,410,497	64,239,861	63,768,002	63,449,162
15	**CPUC-Approved RPS-Eligible Contracts (Incl. RAM/FIT/PV Contracts)**								
16	Biogas	28,889,525	28,966,768	28,882,625	28,882,625	16,953,759	5,862,925	5,841,648	5,841,648
17	Biomass	354,045,667	355,090,286	354,045,667	354,045,667	354,045,667	355,090,286	354,045,667	354,045,667
18	Geothermal	4,119,046,824	4,018,079,022	4,006,976,308	3,828,026,102	2,522,522,656	1,711,874,546	1,707,122,656	593,870,171
19	Small Hydro	27,362,784	27,391,458	26,234,571	26,115,776	26,115,776	25,615,313	24,547,997	24,547,997
20	Solar PV	10,455,845,336	10,419,156,222	10,337,639,245	10,256,568,156	10,175,998,551	10,140,325,131	10,060,992,359	9,959,411,420
21	Solar Thermal	335,148,840	335,835,834	335,148,840	335,148,840	335,148,840	335,835,834	335,148,840	335,148,840
22	Wind	7,070,879,269	7,079,784,602	7,054,734,351	7,025,917,368	7,025,917,368	7,017,545,346	6,871,031,443	6,776,032,386
23	UOG Small Hydro	667,572,000	667,572,000	667,572,000	667,572,000	667,572,000	667,572,000	667,572,000	667,572,000
24	UOG Solar	136,506,628	136,506,628	136,506,628	136,506,628	136,506,628	136,506,628	136,506,628	136,506,628
25	Unbundled RECs	0	0	0	0	0	0	0	0
26	**Total CPUC-Approved RPS-Eligible Deliveries** [Sum of Rows 16 through 25]	23,195,296,873	23,068,382,820	22,947,740,236	22,658,783,162	21,260,781,245	20,396,228,008	20,162,809,237	18,852,976,756

PUBLIC APPENDIX E

RECS From Expiring Contracts

Contract ID	Name	Contract Type	Nameplate Capacity (MW)	Expected Annual Generation (GWh)	Contract Expiration Date	Technology	Location	Status	PCC Classification
6062	Energy Development & Const. Corp.	SO4	11.655	29.134	7/31/2015	Wind	North Palm Springs, CA	Online	PCC 0
6462	Energy Development & Construction Corp	QF-SOC	11.700	33.822	7/31/2016	Wind	North Palm Springs, CA	Online under 6062	PCC 1
4036	Three Valleys MWD (Miramar)	SO4	0.520	0.977	8/30/2015	Small Hydro	Claremont, CA	Online	PCC 0
6056	Edom Hills Project 1, LLC	SO4	20.000	45.970	9/30/2015	Wind	Palm Springs, CA	Online	PCC 0
6042	Wind Stream Operations, LLC (VG #4)	SO4	6.770	10.878	10/16/2015	Wind	Tehachapi, CA	Online	PCC 0
6052	Yavi Energy [East Winds Proj]	SO4	4.165	3.251	10/31/2015	Wind	Palm Springs, CA	Online	PCC 0
6043	AES Tehachapi Wind, LLC 85-A	SO4	17.000	17.129	11/12/2015	Wind	Tehachapi, CA	Online	PCC 0
6044	AES Tehachapi Wind, LLC 85-B	SO4	22.500	22.633	11/12/2015	Wind	Tehachapi, CA	Online	PCC 0
6058	San Gorgonio Westwinds II, LLC	SO4	10.000	21.358	11/23/2015	Wind	Palm Springs, CA	Online	PCC 0
6094	Section 22 Trust [San Jacinto]	SO4	18.950	36.690	11/30/2015	Wind	Palm Springs, CA	Online	PCC 0
6096	Westwind Trust	SO4	22.500	17.183	11/30/2015	Wind	Palm Springs, CA	Online	PCC 0
6112	Painted Hills Wind Developers	SO4	19.265	32.096	11/30/2015	Wind	Palm Springs, CA	Online	PCC 0
6097	Windland Inc., (Boxcar II)	SO4	8.000	18.878	12/1/2015	Wind	Mojave, CA	Online	PCC 0
6055	Coram Energy, LLC	SO4	3.000	8.484	12/5/2015	Wind	Mojave, CA	Online	PCC 0
3001	Heber Geothermal Company	NEG	52.000	294.496	12/14/2015	Geothermal	Heber, CA	Online	PCC 0
6087	Section 16-29 Trust (Altech III)	SO4	32.874	66.642	12/17/2015	Wind	Palm Springs, CA	Online	PCC 0
6088	Difwind Partners	SO4	15.063	24.222	12/17/2015	Wind	Palm Springs, CA	Online	PCC 0
6031	EUI Management PH Inc.	SO4	25.535	43.587	12/30/2015	Wind	White Water, CA	Online	PCC 0
6091	Cameron Ridge LLC (IV)	SO4	12.760	35.161	12/30/2015	Wind	Mojave, CA	Online	PCC 0
5005	Sunray Energy, Inc.	NEG	43.800	40.187	12/31/2015	Solar	Daggett, CA	Online	PCC 0
6111	Wind Stream Operations LLC (Northwind)	SO4	6.445	7.249	1/23/2016	Wind	Tehachapi, CA	Online	PCC 0
3006	Vulcan/Bn Geothermal Power Co	SO4	34.000	257.655	2/9/2016	Geothermal	Niland, CA	Online	PCC 0
4025	Desert Water Agency	SO4	1.000	2.086	4/10/2016	Small Hydro	Palm Springs, CA	Online	PCC 0
6089	CTV Power Purchase Contract Trust	SO4	14.000	26.515	4/21/2016	Wind	Mojave, CA	Online	PCC 0
5843	FTS Project Owner 1, LLC (Summer North)	QFSC	6.500	16.679	6/29/2016	Solar	Lancaster, CA	Online	PCC 1
4052	Calleguas MWD - Unit 3 (Santa Rosa)	SO4	0.250	0.748	6/30/2016	Small Hydro	Thousand Oaks, CA	Online	PCC 0
6053	Difwind Farms Limited V	SO4	7.900	8.051	10/14/2016	Wind	Palm Springs, CA	Online	PCC 0
4031	Richard Moss	SO4	0.155	0.145	11/6/2016	Small Hydro	Hammil Valley, CA	Online	PCC 0
6037	Tehachapi Power Purchase Contract Trust	SO4	56.000	97.403	12/14/2016	Wind	Mojave, CA	Online	PCC 0
6213	BNY Western Trust Company	SO4	5.930	8.462	12/21/2016	Wind	Palm Springs, CA	Online	PCC 0
6234	Oak Creek Energy Systems Inc.	SO4	27.900	57.401	12/30/2016	Wind	Mojave, CA	Online	PCC 0
1090	L.A. Co. Sanitation Dist	NEG	50.000	374.853	12/31/2016	Biomass	Whittier, CA	Online	PCC 0
5017	Luz Solar Partners Ltd. III	SO4	35.000	64.149	1/25/2017	Solar	Boron, CA	Online	PCC 0
5018	Luz Solar Partners Ltd. IV	SO4	35.000	66.948	1/29/2017	Solar	Boron, CA	Online	PCC 0
4137	American Energy, Inc. (Fullerton Hydro)	SO2	0.400	0.652	1/31/2017	Small Hydro	La Habra, CA	Online	PCC 0
4035	Three Valleys MWD (Fulton Road)	SO4	0.200	0.628	4/1/2017	Small Hydro	Pomona, CA	Online	PCC 0
6012	On Wind Energy, LLC	NEG	2.400	0.000	4/18/2017	Wind	Mojave, CA	Online	PCC 0
3107	Geysers Power Company, LLC	ERR	225.000	1971.000	5/31/2017	Geothermal	Middletown, CA	Online	PCC 0
6105	Terra-Gen 251 Wind, LLC (Monolith X)	SO4	5.310	7.067	6/9/2017	Wind	Tehachapi, CA	Online	PCC 0
4037	Three Valleys MWD (Williams)	SO4	0.350	1.112	6/20/2017	Small Hydro	La Verne, CA	Online	PCC 0
6106	Terra-Gen 251 Wind, LLC (Monolith XI)	SO4	4.990	7.168	6/29/2017	Wind	Tehachapi, CA	Online	PCC 0
6108	Terra-Gen 251 Wind, LLC (Monolith XIII)	SO4	5.670	7.224	6/29/2017	Wind	Tehachapi, CA	Online	PCC 0
3039	Salton Sea Power Generation Co #1	NEG	10.000	63.540	6/30/2017	Geothermal	Calipatria, CA	Online	PCC 0
6107	Terra-Gen 251 Wind, LLC (Monolith XII)	SO4	6.720	9.494	7/8/2017	Wind	Tehachapi, CA	Online	PCC 0
4029	LA CO Flood Control District	SO4	4.975	1.188	10/16/2017	Small Hydro	Azusa, CA	Online	PCC 0
3104	Ormesa Geothermal I	SO4	63.000	385.714	11/29/2017	Geothermal	Holtville, CA	Online	PCC 0
5019	Luz Solar Partners Ltd. V	SO4	35.000	68.172	12/31/2017	Solar	Boron, CA	Online	PCC 0
4026	Desert Water Agency (Snow Creek)	SO4	0.300	0.613	2/1/2018	Small Hydro	Palm Springs, CA	Online	PCC 0
3011	Terra-Gen Dixie Valley, LLC	SO4	67.230	487.230	7/4/2018	Geothermal	Fallon, NV	Online	PCC 0
6092	Ridgetop Energy, LLC (II)	SO4	28.000	79.861	9/11/2018	Wind	Mojave, CA	Online	PCC 0
6090	Alta Mesa Pwr Purch Contract Trust	SO4	27.000	39.660	12/30/2018	Wind	White Water, CA	Online	PCC 0
3004	Del Ranch Company (Niland #2)	NEG	42.000	291.179	12/31/2018	Geothermal	Niland, CA	Online	PCC 0
3009	Elmore Company	SO4	42.000	328.155	12/31/2018	Geothermal	Niland, CA	Online	PCC 0
4051	Montecito Water District	SO4	0.130	0.445	1/16/2019	Small Hydro	Santa Barbara, CA	Online	PCC 0
3025	Salton Sea Power Generation Co #3	SO4	49.800	326.376	2/13/2019	Geothermal	Calipatria, CA	Online	PCC 0
5020	Luz Solar Partners Ltd. VI	SO4	35.000	64.518	2/20/2019	Solar	Boron, CA	Online	PCC 0
5021	Luz Solar Partners Ltd. VII	SO4	35.000	61.769	3/1/2019	Solar	Boron, CA	Online	PCC 0
3030	Coso Energy Developers	SO4	75.000	357.628	3/12/2019	Geothermal	Little Lake, CA	Online	PCC 0
1225	Riverside County Waste Management Dept.	CREST	1.200	6.570	5/31/2019	Biomass	Moreno Valley, CA	Online	PCC 0
6366	Mogul Energy Partnership I, LLC	QFSC	4.000	11.000	6/23/2019	Wind	Tehachapi, CA	Online	PCC 1
6063	Desert Winds I PPC Trust	SO4	48.000	63.502	10/31/2019	Wind	Mojave, CA	Online	PCC 0
6114	Desert Wind III PPC Trust	SO4	40.500	55.117	10/31/2019	Wind	Mojave, CA	Online	PCC 0
4030	Daniel M. Bates	SO4	0.350	0.288	11/21/2019	Small Hydro	California Hot Springs, CA	Online	PCC 0
3026	CE Leathers Company	SO4	42.000	330.752	12/31/2019	Geothermal	Niland, CA	Online	PCC 0
6103	Victory Garden Phase IV Partner - 6103	SO4	6.975	10.162	1/1/2020	Wind	Tehachapi, CA	Online	PCC 0
1221	Ventura Regional Sanitation District	RSC5	1.570	9.198	2/29/2020	Biomass	Santa Paula, CA	Online	PCC 0
4039	Kaweah River Power Authority	SO4	17.000	13.865	3/15/2020	Small Hydro	Lemon Cove, CA	Online	PCC 0
6102	Victory Garden Phase IV Partner - 6102	SO4	6.975	14.020	3/16/2020	Wind	Tehachapi, CA	Online	PCC 0
3028	Salton Sea Power Generation Co #2	SO4	20.000	108.299	4/4/2020	Geothermal	Calipatria, CA	Online	PCC 0
6104	Victory Garden Phase IV Partner - 6104	SO4	6.975	12.582	4/10/2020	Wind	Tehachapi, CA	Online	PCC 0
6095	Dutch Energy	SO4	8.000	15.764	4/12/2020	Wind	Palm Springs, CA	Online	PCC 0
5050	Luz Solar Partners Ltd. VIII	SO2	80.000	173.516	5/29/2020	Solar	Hinkley, CA	Online	PCC 0
6113	Desert Winds II Pwr Purch Trst	SO4	75.000	183.809	8/16/2020	Wind	Mojave, CA	Online	PCC 0
1193	WM Energy Solutions Inc El Sobrante	RSC5	3.187	16.513	10/31/2020	Biomass	Corona, CA	Online	PCC 0
1195	WM Energy Solutions Inc Simi Valley	RSC5	2.153	10.906	10/31/2020	Biomass	Simi Valley, CA	Online	PCC 0
4034	Central Hydroelectric Corp.	SO4	11.950	6.807	12/7/2020	Small Hydro	Lake Isabella, CA	Online	PCC 0
6067	Sky River Partnership (Wilderness III)	SO4	20.925	38.490	2/13/2021	Wind	Tehachapi, CA	Online	PCC 0
1077	L.A. Co. Sanitation Dist Spadra	NEG	8.000	34.120	4/3/2021	Biomass	Walnut, CA	Online	PCC 0
5051	Luz Solar Partners Ltd. IX	SO2	80.000	185.214	4/17/2021	Solar	Hinkley, CA	Online	PCC 0
6066	Sky River Partnership (Wilderness II)	SO4	19.800	35.749	5/30/2021	Wind	Tehachapi, CA	Online	PCC 0
6065	Sky River Partnership (Wilderness I)	SO4	36.775	68.624	7/21/2021	Wind	Tehachapi, CA	Online	PCC 0
6333	Mountain View Power Partners, LLC	ERR	66.600	219.900	9/30/2021	Wind	San Gorgonio Pass, CA	Online	PCC 0
4004	Hi Head Hydro Incorporated	NEG	0.350	1.484	4/30/2022	Small Hydro	Bishop, CA	Online	PCC 0
4208	Lower Tule River Irrigation District	CREST	1.400	0.775	7/31/2022	Small Hydro	Porterville, CA	Online	PCC 1
5510	USDA Forest Service San Dimas Technology	CREST	0.250	0.200	7/31/2022	Solar	San Dimas, CA	Online	PCC 1
1099	Inland Empire Utilities Agency	SO1	0.580	1.374	12/27/2022	Biomass	Chino, CA	Online	PCC 0
3021	Second Imperial Geothermal Co.	NEG	37.000	230.786	7/4/2023	Geothermal	Heber, CA	Online	PCC 0
2804	Orange County Sanitation District	NEG	12.000	0.100	7/26/2023	Cogeneration	Huntington Beach, CA	Online	PCC 0
4152	Calleguas MWD (Springville Hydro)	SO1	1.000	2.436	3/16/2024	Small Hydro	Camarillo, CA	Online	PCC 0
6367	Windland Refresh 1, LLC	RAM20	7.455	18.286	6/30/2024	Wind	Mojave, CA	Online	PCC 1
4150	Water Facilities Authority	SO1	0.224	0.000	8/25/2024	Small Hydro	Upland, CA	Online	PCC 0
4222	Goleta Water District	WATER	0.250	1.200	2/28/2025	Small Hydro	Goleta, CA	Online	PCC 1