

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE
STATE OF CALIFORNIA**

Order Instituting Rulemaking to Continue)	
Implementation and Administration of California)	Rulemaking 11-05-005
Renewables Portfolio Standard Program.)	(Filed May 5, 2011)
)	
_____)	

**SOUTHERN CALIFORNIA EDISON COMPANY’S (U 338-E) 2014
RENEWABLES PORTFOLIO STANDARD PROCUREMENT PLAN**

VOLUME 1

PUBLIC VERSION

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June 4, 2014

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PORTFOLIO STANDARD PROCUREMENT PLAN**

Pursuant to the Assigned Commissioner’s Ruling Identifying Issues and Schedule of Review for 2014 Renewables Portfolio Standard Procurement Plans, dated March 26, 2014,¹ Southern California Edison Company (“SCE”) respectfully submits its 2014 Renewables Portfolio Standard (“RPS”) Procurement Plan (“2014 RPS Plan”) to the California Public Utilities Commission (“Commission” or “CPUC”).²

SCE’s 2014 RPS Plan consists of a 2014 Written Plan and Appendices thereto.³ The Appendices include:

- Confidential/Public Appendix A - Redline of 2014 Written Plan
- Confidential Appendix B - Project Development Status Update
- Confidential/Public Appendix C.1 - Physical Renewable Net Short Calculations Based on CPUC Assumptions

¹ Administrative Law Judge (“ALJ”) DeAngelis extended the date for filing 2014 RPS Procurement Plans to June 4, 2014 by an e-mail ruling dated April 16, 2014. In a subsequent e-mail ruling dated May 29, 2014, ALJ DeAngelis encouraged parties to file on or before June 4, 2014, but gave parties until June 11, 2014 to file their 2014 RPS Procurement Plans if additional time is needed.

² SCE is concurrently filing a Motion for Leave to File its Confidential 2014 Renewables Portfolio Standard Procurement Plan Under Seal.

³ 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
- Confidential Appendix C.3 - Optimized Renewable Net Short Calculations Based on CPUC Assumptions
- Confidential Appendix C.4 - Optimized Renewable Net Short Calculations Based on SCE Assumptions
- Confidential/Public Appendix D - Cost Quantification Table
- Public Appendix E - RECs From Expiring Contracts
- Public Appendix F.1 - 2014 Procurement Protocol
- Public Appendix F.2 - Redline of 2014 Procurement Protocol
- Public Appendix G.1 - 2014 *Pro Forma* Renewable Power Purchase and Sale Agreement
- Public Appendix G.2 - Redline of 2014 *Pro Forma* Renewable Power Purchase and Sale Agreement
- Public Appendix H - 2014 *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
- Public Appendix J.1 - 2014 Form of Seller's Proposal
- Public Appendix J.2 - Redline of 2014 Form of Seller's Proposal

Respectfully submitted,

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Dated: June 4, 2014

VERIFICATION

I am a Manager in the Regulatory Policy and Affairs Department 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) 2014 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 **2nd day of June, 2014**, 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)

2014 Written Plan

June 4, 2014

PUBLIC VERSION

2014 Written Plan
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PUBLIC APPENDIX I.1

SCE'S LEAST-COST BEST-FIT
METHODOLOGY

PUBLIC APPENDIX I.2

REDLINE OF SCE'S LEAST-
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PUBLIC APPENDIX J.1

2014 FORM OF SELLER'S
PROPOSAL

PUBLIC APPENDIX J.2

REDLINE OF 2014 FORM OF
SELLER'S PROPOSAL

I. EXECUTIVE SUMMARY OF 2014 RPS PLAN

Southern California Edison Company's ("SCE") 2014 Renewables Portfolio Standard ("RPS") Procurement Plan ("2014 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 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 RPS solicitation. SCE's 2014 RPS Plan includes its 2014 Procurement Protocol, 2014 *Pro Forma* Renewable Power Purchase and Sale Agreement, 2014 *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 RPS solicitation documents.

Further, this 2014 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"). 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.

SCE takes the RPS program’s regulatory framework into account in planning for renewable procurement in 2014 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. The Commission has not yet established a cost limitation for RPS-related procurement expenditures for each electrical

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 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.

corporation or determined enforcement rules. 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 other laws and/or the implementation of other programs may affect SCE's RPS procurement planning.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 RPS Plan, SCE proposes conducting a targeted 2014 RPS solicitation that meets SCE's need for renewable resources. Similar to SCE's 2013 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 a Phase II Interconnection Study for projects (or an equivalent or better process or exemption) in order to submit a proposal. In addition to soliciting long-term Category 1 products, SCE will solicit long-term Category 3 unbundled REC transactions 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 1, 2016 or later.

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 incorporate the procurement impacts of these programs into its RPS procurement planning once the programs are approved by the Commission.

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 To date, SCE's RPS-eligible deliveries and executed renewable procurement contracts have resulted from SCE's various large RPS Requests for Proposals ("RFPs"), 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"), 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 and April 2014, SCE executed 37 contracts resulting from its AB 1969 feed-in tariffs totaling 51 megawatts ("MW"), 23 RAM contracts for approximately 365 MW, 6 Re-MAT contracts for approximately 8 MW, and 17 SPVP IPP contracts for about 30 MW.⁵

SCE also launched its large-scale 2013 RPS RFP in January 2014. SCE expects to offer power purchase agreements ("PPAs") to sellers from that solicitation in July 2014.⁶

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

⁴ In 2013, SCE served 21.6% of its retail sales from RPS-eligible resources.

⁵ Of these, 12 of the AB 1969 feed-in tariff contracts totaling 16 MW and six of the RAM contracts totaling 86 MW subsequently terminated. This information is up to date as of May 16, 2014.

⁶ SCE's renewable procurement need and other aspects of its renewable procurement planning may change based on the results of the 2013 RPS solicitation.

forecasted energy deliveries include SCE's probabilistic risk-adjusted forecast of generation from contracted projects that are not yet on-line. SCE also considers generation from pre-approved procurement programs (i.e., RAM, Re-MAT, and SPVP), among other factors.

Appendices C.1, C.2, C.3, and C.4 include SCE's forecast of its renewable procurement position and need – i.e., SCE's renewable net short (“RNS”). These Appendices use the standardized reporting template included in the Administrative Law Judge's Ruling on Renewable Net Short, dated May 21, 2014 (“RNS Ruling”). 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 and C.2 include physical RNS calculations. Moreover, Appendices C.3 and C.4 include optimized RNS calculations.⁷ Appendices C.1 and C.3 include physical and optimized RNS calculations using all required assumptions for the Commission's Revised RNS Methodology. Appendices C.2 and C.4 include physical and optimized RNS calculations using SCE's assumptions. More information regarding Appendices C.1, C.2, C.3, and C.4 and responses to the RNS questions set forth in the RNS Ruling are included in Section VI. Furthermore, as discussed in Section VI, SCE may update its optimized and physical RNS calculations and the related RNS discussion in this 2014 RPS Plan in an updated plan, to be submitted on August 20, 2014.

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 excess procurement across compliance periods). Both forecasts include all projects under contract and assume contracted projects that are currently on-line will deliver 100% of their

⁷ The required information on RECs from expiring contracts is included in Appendix E.

expected amount of renewable energy. Both forecasts also include generation from pre-approved procurement programs (i.e., RAM, Re-MAT, and SPVP) at a 100% success rate before contracts are signed.⁸ Additionally, both forecasts incorporate current expected on-line dates for all projects that are not yet on-line.

Furthermore, both 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. 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 on-line varies from around 77% for the second compliance period to approximately 72% in the third compliance period and thereafter.

The difference between the forecasts using SCE's assumptions, as reflected in Appendices C.2 and C.4, and the Commission's assumptions, as reflected in Appendices C.1 and C.3, 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 through 2018 and 2022 through 2030, and the 2010 Long-term Procurement Plan ("LTTP") standardized

⁸ 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.

planning assumptions for 2019 through 2021.⁹ 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, C.2, C.3, and C.4, 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 C.4 demonstrate that, using SCE’s assumptions, SCE forecasts a procurement quantity requirement for the second compliance period of approximately [REDACTED] kWh and RPS-eligible procurement of about 57.7 billion kWh, for a net long position of around [REDACTED] kWh. In the third compliance period, SCE forecasts a procurement quantity requirement of approximately [REDACTED] kWh and RPS-eligible procurement of about 72.4 billion kWh, 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 C.4). SCE also forecasts a net short position for 2021 and beyond.

Using the Commission’s assumptions as set forth 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.

⁹ 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 and C.3, SCE uses its own bundled retail sales forecast for 2022 through 2030 because there is no LTPP forecast for those years.

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.

C. SCE's Plan for Achieving RPS Procurement Goals

Through its 2014 RPS procurement activities, SCE intends to contract for renewable energy that will help achieve the State's RPS goals. SCE's 2014 RPS procurement activities will take into account: (1) the renewable energy procured through SCE's prior RPS solicitations and other procurement mechanisms, (2) probabilistic risk adjustment of expected generation from executed contracts with projects that are not yet on-line, and (3) future RPS solicitations and other procurement mechanisms that are expected to take place. Generally, for 2014, SCE will seek resources to augment those already under contract to fulfill its need in the third compliance period and beyond.¹⁰ SCE plans to launch a 2014 RPS solicitation for long-term Category 1 products and long-term Category 3 unbundled RECs. SCE will only consider proposals from projects with commercial operation dates and initial delivery dates to SCE of January 1, 2016 or later. 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'

¹⁰ SCE will also utilize banking of excess procurement, as appropriate.

utilization of the ITC. Moreover, SCE will be able to bank any excess 2016 generation to use in the third compliance period.¹¹

As in the 2013 RPS solicitation, in order to fill its longer term need, SCE intends to be flexible in its contracting. 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 to sell power directly to the market or to a third party until the term begins under the contract with SCE.

SCE considers its net short position in the third compliance period in light of how long it takes to bring new projects on-line, how far in the future the short position exists, and how many solicitations SCE anticipates being able to complete in order to fill the position. 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.

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 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. 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.B and Appendix I.1.

¹¹ SCE will account for the restrictions on banking of excess procurement in its need assessment and selection.

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 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, SCE will continue to utilize a variety of other procurement options to help meet the State's renewable energy targets including the RAM program, Re-MAT, SPVP, local capacity requirements solicitations, QF standard contracts, and bilateral negotiations for competitive renewable energy products.¹² 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 six Re-MAT PPAs for a total of approximately 8 MW. Additionally, SCE launched its fifth RAM solicitation on May 29, 2014, and expects to launch its fourth SPVP solicitation in 2014.

In SCE's comments in response to the Administrative Law Judge's Ruling Requesting Comments on the Renewable Auction Mechanism, dated December 31, 2013, SCE recommended that the RAM standard contract be a contracting option within the annual RPS

¹² Furthermore, the Commission is expected to issue a proposed decision on a SB 1122 program in the second quarter of 2014.

solicitation.¹³ Under this scenario, a bidder in an RPS solicitation could elect to use the current RPS solicitation contracting process (using a PPA with negotiable terms and conditions and a Tier 3 advice letter approval process), or a bidder could elect to use a non-negotiable PPA that would be approved by the Commission through a Tier 2 advice letter. These options provide more flexibility to the market and allow a bidder to forego the negotiation of specific contract provisions in exchange for quicker approval and more certainty in the approval process. The non-negotiable PPA would be based on the RPS *pro forma* PPA and approved by the Commission as part of SCE's annual RPS procurement plan. To the extent the Commission implements SCE's recommendation in a decision regarding RAM, SCE will update its 2014 RPS Plan to include such a contracting option.

Finally, while SCE does not currently intend to sell bundled renewable energy, unbundled RECs, or other renewable energy products in the 2014 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

¹³ See Comments of Southern California Edison (U 338-E) on Administrative Law Judge's Ruling Requesting Comments on Renewable Auction Mechanism (January 30, 2014); Reply Comments of Southern California Edison (U 338-E) on Administrative Law Judge's Ruling Requesting Comments on Renewable Auction Mechanism (February 14, 2014).

generation achieving commercial operation, expected on-line 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 to be relatively constant.

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 Section VIII.B and Appendix I.1. The primary quantitative metric used for evaluating bundled renewable energy is the renewable premium. 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, SCE may use sales of renewable energy products,¹⁴ 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.¹⁵

¹⁴ 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.

¹⁵ 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 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.

As a threshold matter, when SCE considers whether to engage in sales of renewable energy products, SCE compares the REC price or renewable premium for the sales transaction against the renewable premiums of proposals submitted to SCE in recent solicitations and other offers. If the renewable premiums for long-term renewable procurement are higher than the REC price or renewable premium for the sales transaction, it would be more cost effective for SCE to maintain its existing RPS bank for future compliance periods.¹⁶ Conversely, if the renewable premiums from recent solicitations are lower than the REC price or renewable premium for the sales transaction, SCE has an opportunity to optimize its renewables portfolio and realize value for its customer by selling renewable energy products.

In addition to the REC price and renewable premium 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, 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.

¹⁶ SCE also considers statutory and regulatory restrictions on banking of excess procurement.

Finally, SCE has recently initiated an analysis of the effects of procurement of RPS-eligible resources on other procurement programs in order to develop a portfolio wide optimization strategy. The Commission and the California Independent System Operator (“CAISO”) have been discussing and debating 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 stakeholder process to discuss new obligations for flexible capacity and how flexibility requirements will be allocated to load-serving entities. The initial straw proposal for allocating flexibility requirements would directly allocate the identified requirements based on the amount of intermittent generation contracted by the load-serving entity.¹⁷ This would create a direct link between RPS procurement and flexibility requirements as the amount of wind and solar resources in the portfolio would impact 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 potentially reduce flexibility requirements.

E. SCE’s Management of its Renewables Portfolio

After SCE executes an RPS 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

¹⁷ See CAISO’s Flexible Resource Adequacy Criteria and Must-Offer Obligation, Market and Infrastructure Policy Revised Straw Proposal (June 13, 2013) (available at: <http://www.caiso.com/Documents/RevisedStrawProposal-FlexibleResourceAdequacyCriteria-MustOfferObligations.pdf>).

miscellaneous changes to allow the project to move forward. Generally, projects need very few 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 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 to enter into an amendment with any counterparty.¹⁸ In the event an amendment is elected, the IOU should negotiate in good faith.¹⁹ D.88-10-032 also provides that an IOU is to seek concessions in response to requests for contract modifications which are commensurate with the change being sought.²⁰ The details of D.88-10-032 provide further guidance to the IOUs to restrict modifications to PPAs with viable projects,²¹ and reject modifications that would result in creating an essentially new project.²²

SCE seeks approval by the Commission of all PPA modifications either through its annual ERRA application or through advice letters or applications, depending on the type of PPA and based on guidance from Commission decisions regarding specific modifications to PPAs.²³

¹⁸ See D.88-10-032 at 16.

¹⁹ See *id.* at Conclusion of Law 8.

²⁰ See *id.* at 16, Conclusions of Law 13-14.

²¹ See *id.* at 17, Conclusion of Law 4, Appendix A at 4-5

²² See *id.* at 26, Conclusion of Law 17.

²³ 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

1. Lessons Learned and Past and Future Trends

SCE's overall experience in renewable contracting has allowed it to agree to terms with a diverse variety of projects and counterparties. This success is the result of recognizing the unique characteristics of each situation and working toward a balanced and mutually acceptable agreement. 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

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.

b) Requiring Phase II Interconnection Studies to Submit a Proposal

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 either a Phase II Interconnection Study (or an equivalent or better process 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."²⁴ Requiring a Phase II Interconnection Study (or an equivalent or better process 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 better process or exemption) to participate in the solicitation. SCE believes that keeping this requirement in the

²⁴ D.13-11-024 at 30.

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

c) Using a Single Set of Time-of-Delivery Factors

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 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.

2. Additional Policy/Procurement Impacts

In D.13-02-015, issued on February 13, 2013 in the Track 1 LTPP proceeding, the Commission authorized SCE to procure between 1,400 and 1,800 MW of capacity in the Western Los Angeles sub-area of the Los Angeles basin local reliability area ("Western LA Basin sub-area") to meet local capacity requirements ("LCR") by 2021 due to the expected retirement of once-through cooling units.²⁵ Pursuant to D.13-02-015, SCE is required to procure minimum amounts of gas-fired generation, 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 an LCR solicitation on September 12, 2013, which is open to all technologies that can meet SCE's LCR needs, including renewable resources.

²⁵ SCE was also authorized to procure 215 to 290 MW in the Moorpark sub-area of the Big Creek/Ventura local reliability area.

In D.14-03-004, approved on March 13, 2014 in the Track 4 LTPP proceeding, the Commission authorized SCE to procure an additional 500 to 700 MW of capacity in the Western LA Basin sub-area due to the permanent retirement of the San Onofre Nuclear Generation Station Units 2 and 3. The total procurement authorization in the Western LA Basin sub-area is now 1,900 to 2,500 MW of capacity. Although SCE is permitted to procure the additional capacity through the Track 1 solicitation which has already commenced, SCE anticipates that it will not procure all of the authorized capacity in the Western LA Basin sub-area in the current LCR solicitation, and thus may need to launch another LCR solicitation next year.

SCE's 2014 Procurement Protocol solicits projects in the Western LA Basin sub-area to participate in the 2014 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 may also meet SCE's Preferred Resources Pilot ("PRP") goal.²⁶

To the extent SCE receives proposals for projects in this area 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.²⁷ 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

²⁶ See D.14-03-004. More information on the PRP is available at <http://on.sce.com/preferredresources>.

²⁷ SCE plans to use a similar approach in future RAM and SPVP solicitations.

value.²⁸ If SCE does enter into any such contracts, it will submit them for Commission approval through a separate application or advice letter, as appropriate.

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. 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.

IV. POTENTIAL COMPLIANCE DELAYS

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

²⁸ See D.13-02-015 at Ordering Paragraph 9 ("Southern California Edison Company is authorized to procure bilateral cost-of-service contracts to meet authorize[d] local capacity requirements as specified in this Order, including bilateral contracts consistent with the provisions of Public Utilities Code § 454.6."); see also D.14-03-004 at Ordering Paragraph 3 ("Southern California Edison Company and San Diego Gas & Electric Company are authorized to procure bilateral contracts to meet authorized local capacity requirements as specified in this Order, including bilateral contracts consistent with the provisions of Public Utilities Code Section 454.6.").

adjusted success rates for energy deliveries from contracted projects that are not yet on-line. SCE considers the factors discussed below in this process.

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

Although the CAISO has identified transmission necessary to meet California’s 33% RPS goal,²⁹ the lack of sufficient transmission infrastructure and the prolonged process for permitting and approval of new transmission lines continues to be a significant impediment to reaching the State’s renewable energy targets. In its RPS solicitations, SCE received relatively few proposals from renewable generators that do not require significant transmission upgrades or new transmission development. Based on the market response in SCE’s RPS solicitations and other renewable programs, lack of adequate transmission infrastructure and the lengthy process of siting, permitting, and building new transmission continues to be a real and complicated impediment to bringing new renewable resources on-line.

As stated in the CAISO’s 2013-2014 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.”³⁰ Through its transmission planning process, the CAISO utilizes renewable resource portfolios from the Commission and the California Energy Commission 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

²⁹ See CAISO’s 2012-2013 Transmission Plan at 7 (March 20, 2013) (available at: <http://www.aiso.com/Documents/BoardApproved2012-2013TransmissionPlan.pdf>).

³⁰ CAISO’s 2013-2014 Transmission Plan at 9 (March 25, 2014) (available at: <http://www.aiso.com/Documents/Board-Approved2013-2014TransmissionPlan.pdf>).

delivery of renewable energy. However, while CAISO approval of transmission projects addresses some uncertainty, additional challenges are associated with the completion of transmission projects in SCE's service area that could impact renewable generation development.

While some transmission projects have already been approved or are progressing through the Commission approval process,³¹ 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 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, and the Mesa Loop-in project.³² Lengthy licensing, construction, and permitting issues can impact the completion of these projects by their scheduled operating dates.

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."³³ Moreover, environmental concerns, legal challenges, and public opposition can impact the timeline for bringing renewable generation and transmission projects on-line.

³¹ *See id.* at 10-11.

³² 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.* at 107.

³³ Forbes, Uculia Wang, "The Rise of a Giant Solar Plant in California's Central Plain" (October 31, 2013) (available at: <http://www.forbes.com/sites/uciliawang/2013/10/31/the-rise-of-a-giant-solar-power-plant-in-californias-central-plain/>).

B. 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, the CAISO reported 36,000 MW of active projects seeking interconnection to the CAISO controlled grid of which 23,730 MW were from renewable projects.³⁴

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").³⁵ 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 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

³⁴ 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>).

³⁵ See FERC Docket No. ER-12-1855-000.

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 lead to litigation.

C. 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 necessary permits, and inability to complete CAISO new resource implementation processes in a timely manner). To the extent that delays, termination events, and underperformance 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 example, SCE required projects to have a Phase II Interconnection Study (or an equivalent or better process or exemption) in order to submit a proposal in its RPS solicitations, which is likely to result in more viable projects.

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.

D. Curtailed

As more renewable generation comes on-line, congestion at the transmission and distribution levels is increasing and curtailment events are becoming increasingly 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.

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 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). SCE has already had some success facilitating 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. SCE will continue to look for opportunities to replicate those arrangements in an effort to mitigate the impacts of curtailment on meeting RPS goals.

E. 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.

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.

V. RISK ASSESSMENT

SCE describes risks that may result in compliance delays in Section IV. As explained in Section II.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. 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, C.2, C.3, and C.4 reflects these considerations.

VI. QUANTITATIVE INFORMATION

A. RNS Calculations

Appendices C.1, C.2, C.3, and C.4 include SCE's RNS calculations using the standardized reporting template included in the RNS Ruling. As required by the Commission's

Revised RNS Methodology, Appendices C.1 and C.2 include physical RNS calculations and Appendices C.3 and C.4 include optimized RNS calculations.

Appendices C.2 and C.4 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 through 2030;
- Contracted projects that are currently on-line 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. 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 the RAM program, Re-MAT, and SCE's SPVP before contracts from such programs are signed.³⁶

Appendices C.1 and C.4 provide SCE's physical and optimized RNS through 2030 using the Commission's Revised RNS Methodology. Appendices C.1 and C.3 use the same assumptions as in Appendices C.2 and C.4 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 through 2018 and 2022

³⁶ 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.

through 2030 and the 2010 LTPP standardized planning assumptions for 2019 through 2021.³⁷

SCE had only a short time after the issuance of the RNS Ruling to incorporate the elements of the Revised RNS Methodology into this 2014 RPS Plan. SCE may update its optimized and physical RNS, including its strategy for using forecast RECs above the procurement quantity requirements in an update to this plan, to be submitted on August 20, 2014. Additionally, SCE may update the discussion regarding its RNS, including the response to the RNS questions in Section VI.B.

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 its banked procurement. However, SCE may change this assumption in an update to this plan, to be submitted on August 20, 2014.

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 on-line resources in your RPS portfolio impact future projection of RPS deliveries and your subsequent RNS?

The current and historical performance of on-line 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,

³⁷ 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 and C.3, SCE used its own bundled retail sales forecast for 2022 through 2030 because there is no LTPP forecast for those years.

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.³⁸ 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 may be incorporated into forecasts of generation based on available data.

³⁸ See Southern California Edison Company's Testimony in Response to the Assigned Commissioner's Ruling on the Tehachapi Renewable Transmission Project (TRTP), A.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.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 on-line 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 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 strides towards completion, resulting in a collectively higher anticipated success rate for these large, near-term projects than in 2013.

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 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, 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 for the sales transaction against the renewable premiums of proposals submitted to SCE in recent solicitations and other offers. If the renewable premiums for long-term renewable procurement are higher than the REC price or renewable premium 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 from recent solicitations are lower than the REC price or renewable premium 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 its RPS targets, including procurement of Category 1 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 3 unbundled RECs in its 2014 RPS solicitation in addition to long-term Category 1 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, 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 data on market prices of Category 3 products, SCE is soliciting long-term Category 3 unbundled RECs in its 2014 solicitation.

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 and long-term Category 3 unbundled RECs in its 2014 RPS solicitation. 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.

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.B and provided in Appendices C.1, C.2, C.3, and 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. 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."³⁹ 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 to calculate the minimum margin 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 IOU. For example, risks may vary depending on whether a portfolio contains a high proportion of contracts that are on-line (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.E). For these reasons, each IOU 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 should have the flexibility to calculate this margin based on its unique portfolio make-up and procurement needs.

³⁹ Cal. Pub. Util. Code § 399.13(a)(4)(D).

VIII. BID SOLICITATION PROTOCOL, INCLUDING LCBF METHODOLOGIES

A. Bid Solicitation Protocol

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

- SCE’s requirements for on-line 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 Business Enterprises (“WMDVBES”);
- 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;
- SCE’s 2014 *Pro Forma* Renewable Power Purchase and Sale Agreement (“*Pro Forma*”), attached as Appendix G.1;
- SCE’s 2014 *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 solicitation documents from SCE’s 2013 solicitation documents is included in Section XIII.

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-order ranking of all complete and conforming proposals' net levelized cost that help define the preliminary short list. 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, are considered to either eliminate non-viable proposals or add projects with high viability or other qualitative attributes to the final short list, or to determine tie-breakers, if any. Once a project is added to the short list, 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 describes this process.

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,⁴⁰ commodities, equipment, cost of financing, etc., and may also consider placing price ceilings and floors on the indexed price.

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.

⁴⁰ As defined in the CAISO Tariff (formerly SP15, NP15, or ZP26).

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, as well as actual RPS-eligible generation for every year from 2003 through 2013. Appendix D also includes a forecast of future expenditures SCE may incur every year from 2014 through 2030, as well as a forecast of expected generation for every year from 2014 through 2030.⁴¹

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.

XII. IMPERIAL VALLEY

In SCE's 2013 RPS solicitation, SCE received over 350 proposals. [REDACTED] [REDACTED] located in the Imperial Irrigation District ("IID"). [REDACTED] [REDACTED] SCE is currently in negotiations with projects on its 2013 RPS solicitation short list.

The Commission should not adopt any remedial measures related to the Imperial Valley. SCE would be particularly concerned with any proposal to automatically short list 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

⁴¹ For all forecast years, SCE has assumed a 100% success rate for all projects that are not yet on-line.

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. [REDACTED]

[REDACTED] Proposals from Imperial Valley projects should be treated the same as all other proposals.

XIII. SUMMARY OF IMPORTANT CHANGES BETWEEN THE 2013 AND 2014 RPS PLANS

At the time of filing this 2014 RPS Plan, SCE is in contract negotiations with sellers from the 2013 RPS solicitation. Because the 2013 solicitation is still ongoing, there has been little opportunity for feedback from the development community and there may be additional process improvements and lessons learned that result from the 2013 solicitation. While SCE is implementing changes to its solicitation documents and LCBF methodology for 2014 as described herein, SCE may also make additional proposed modifications to these documents or other aspects of this 2014 RPS Plan in an updated plan, to be submitted on August 20, 2014.⁴² SCE summarizes some important changes in its 2014 solicitation documents and its LCBF methodology below.

Redlines of SCE's 2014 Procurement Protocol, 2014 *Pro Forma*, LCBF Methodology, and 2014 Form of Seller's Proposal as compared to the versions of those documents included in SCE's Final 2013 RPS Procurement Plan filed on December 4, 2013 are included as Appendices

⁴² For example, upon the conclusion of the 2013 RPS solicitation, SCE will review the proposal submittal process (e.g., using a two-step versus a one-step process) to determine whether improvements should be implemented.

F.2, G.2, 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 is included as Appendix A.⁴⁴

A. Important Changes in 2014 Procurement Protocol

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

As in the 2013 RPS solicitation, SCE will solicit long-term⁴⁵ Category 1 products in the 2014 solicitation. Additionally, as provided in SCE's proposed 2014 Procurement Protocol, SCE will consider proposals for long-term Category 3 unbundled RECs from both new and existing generation facilities.⁴⁶

SCE intends to include long-term Category 3 unbundled REC transactions in its 2014 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 ultimately executed by SCE will be within the limits on procurement of Category 3 products.⁴⁷

⁴³ SCE has not included a redline of its 2014 REC *Pro Forma* because that document was not included in SCE's 2013 RPS Procurement Plan.

⁴⁴ SCE has 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 has made changes to the format of its RNS calculations and included additional RNS-related information in accordance with the RNS Ruling. SCE has also reorganized certain sections of its 2014 Written Plan to be more consistent with the organization of the other IOUs' plans.

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 See Cal. Pub. Util. Code § 399.16(c)(2).

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.

2. Allowing Bidding of Various Curtailment Options

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 order to help determine how sellers value curtailment and the cost of curtailment rights to SCE's customers, SCE's 2014 Procurement Protocol will allow sellers proposing Category 1 products to provide four bids based on varying options for discretionary curtailment orders pursuant to Section 3.12(g)(iii) of the 2014 *Pro Forma* ("Curtailment Order") as described below:

- Option 1: Allows sellers to offer SCE 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, but sellers would have to "pay back" the curtailed energy for which they were paid by delivering twice the amount of paid curtailed energy at the end of the contract term for one-half of the contract price. This option is identical to SCE's 2013 *Pro Forma* position.
- Option 2: Allows sellers to offer SCE the right to issue unpaid Curtailment Orders for up to 50 hours per year with no "pay back" provision.

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.

- Option 3: Allows sellers to offer SCE no unpaid Curtailment Orders, but sellers would have to “pay back” the curtailed energy for which they were paid by delivering twice the amount of paid curtailed energy at the end of the contract term for one-half of the contract price.
- Option 4: Allows sellers to offer SCE no unpaid Curtailment Orders with no “pay back” provision.

SCE will evaluate all four bids and select the bid that represents the best value to SCE's customers.⁴⁹

3. LCR Requirements and PRP Goal

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 qualify for SCE's PRP. Any resulting contract meeting the LCR and PRP goal must include the conveyance of RA benefits. In addition, to be considered for the PRP, projects must be in operation by January 2017.

B. Important Changes in 2014 Pro Forma

1. Availability Guarantee for Wind Projects: Former Section 3.19

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

⁴⁹ The executed contract between SCE and the seller would be changed from the *pro forma* terms, as necessary, with terms appropriate for the option selected.

commercial operation date. SCE is eliminating this availability guarantee for wind projects in the 2014 *Pro Forma*.

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.

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.⁵⁰ SCE has revised its TOD factors in the 2014 *Pro Forma* to reflect the new period definitions as established for optional residential TOU rates.

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.

3. Curtailment: 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

⁵⁰ See A.13-12-015.

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. 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 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.

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

In the 2013 *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 2014 *Pro Forma* because the anticipated timing of the 2014 RPS solicitation and the current status of federal tax credit legislation make it unlikely that such provisions will be applicable to the vast majority of projects participating in SCE's 2014 RPS solicitation.

For example, in order for projects to qualify for the ITC in its current form, projects must achieve commercial operation by December 31, 2016. To the extent that SCE selects a project that expects to achieve commercial operation for purposes of the ITC in 2016, any changes to the ITC that occur with respect to 2017 and beyond are irrelevant for the project. Such projects should be developed in order to achieve commercial operation in 2016 to qualify for the ITC in its current form, and they should not benefit from the option to extend the commercial operation deadline or to terminate the PPA if the ITC does not get extended. To the extent that a project does not expect to achieve commercial operation for purposes of the ITC until well after the currently anticipated changes in the ITC, including tax extension-related relief in the PPA would allow the developer to speculate on the future of the ITC with relatively little cost. In such a scenario, projects selected by SCE that assume one or more extensions of the current ITC benefits may have significant viability concerns in the event such ITC extensions never occur.

The tax credit legislation provisions previously included in the 2013 *Pro Forma* are likely to be inapplicable to a substantial number of projects and, therefore, should not be included in the 2014 *Pro Forma*. As with other provisions of the 2014 *Pro Forma*, sellers will

have the opportunity to provide a justification during negotiations regarding unique circumstances that may make certain tax credit legislation provisions appropriate for a particular project during negotiations.

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.

D. Important Changes in LCBF Methodology

1. Valuation of Capacity Benefits for IID Projects

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.12-11-016,⁵¹ SCE has 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 though the completion of the Sunrise Powerlink was expected to result in 1,400

⁵¹ See D.12-11-016 at 17-20. D.12-11-016 directed the IOUs to continue to follow the June 7 ACR.

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 2013.⁵² 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 proposes to use the CAISO's 10-year forecast of expected actual MIC at each intertie in its LCBF methodology.

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

The Commission has mandated a zero integration cost adder since 2004.⁵³ In its decision on the IOUs' 2013 RPS Procurement Plans, the Commission again required the IOUs to use a zero integration cost adder in their RPS solicitation valuation processes.⁵⁴

⁵² See CAISO's Advisory Estimates of Future Resource Adequacy Import Capability (available at: http://www.caiso.com/Documents/AdvisoryEstimates-FutureResourceAdequacyImportCapability_Years2013-2022.pdf).

⁵³ See D.04-07-029 at 12-14.

⁵⁴ See D.13-11-024 at 26-28.

The amount of intermittent renewable resources interconnected to grid has increased substantially since the beginning of the RPS program, and will continue to increase as the State moves toward its 33% RPS goal. Integration costs are real costs associated with intermittent renewable resources, and the Commission should not rely on outdated assumptions and the lack of public analysis as the basis for a zero integration cost adder. The LCBF evaluation process should accurately account for all costs associated with RPS procurement.

The ACR requests comments on a number of questions regarding an integration cost adder.⁵⁵ SCE appreciates the Commission’s acknowledgement that an integration cost adder is an important issue that needs to be addressed and the fact that the ACR has opened a dialogue to do so. SCE looks forward to working with the other parties to move toward the use of a non-zero integration adder.⁵⁶

XV. 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*, SCE’s 2014 *Pro Forma* provides that the seller must operate the generating facility in accordance with “Prudent Electrical Practices.”⁵⁷ The detailed definition of “Prudent Electrical Practices” includes “those practices, methods and acts that

⁵⁵ See ACR at 21-23.

⁵⁶ Additionally, if an integration cost adder is developed through a CAISO process or in a Commission proceeding such as R.13-12-010, R.11-10-023, or R.11-05-005, SCE may seek to amend its 2014 RPS Plan for the purpose of using that integration cost adder. See D.13-11-024 at 28.

⁵⁷ See 2014 *Pro Forma* (attached as Appendix G.1) at Section 3.12(a).

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.”⁵⁸

Consistent with SCE’s focus on safety, as in the 2013 *Pro Forma*, SCE’s 2014 *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.⁵⁹

SCE also has a safety section in its 2014 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 *Pro Forma*.⁶⁰

⁵⁸ *See id.* at Exhibit A.

⁵⁹ *See id.* at Section 3.11(e).

⁶⁰ *See* 2014 Procurement Protocol (attached as Appendix F.1) at Section 8.03.

PUBLIC
APPENDIX A
Redline of
Written Plan



SOUTHERN CALIFORNIA
EDISON

An *EDISON INTERNATIONAL* Company

(U 338-E)

~~2013~~2014 **Written Plan**

~~December 4, 2013~~June 4, 2014

PUBLIC VERSION

20132014 Written Plan

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REDLINE OF ~~2013~~2014 FORM OF
SELLER'S PROPOSAL

I. ~~INTRODUCTION AND OVERVIEW~~ EXECUTIVE SUMMARY OF 20132014 RPS PLAN

Southern California Edison Company's ("SCE's") ~~Final 2013~~ 2014 Renewables Portfolio Standard ("RPS") Procurement Plan ("~~2013~~ 2014 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 ~~2013~~ 2014 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, ~~and~~ 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 ~~2013~~ 2014 RPS solicitation. SCE's ~~2013~~ 2014 RPS Plan includes its ~~2013~~ 2014 Procurement Protocol, ~~2013~~ 2014 *Pro Forma* Renewable Power Purchase and Sale Agreement, ~~and 2013~~ 2014 *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 ~~2011~~ 2013 RPS solicitation documents.[±]

~~Furthermore~~

Further, this ~~2013~~ 2014 RPS Plan ~~includes~~ addresses other ~~required information~~ issues set forth in the Assigned Commissioner's Ruling Identifying Issues and Schedule of Review for ~~2013~~ 2014 Renewables Portfolio Standard Procurement Plans ~~Pursuant to Public Utilities Code~~

[±] ~~SCE included proposed 2012 RPS solicitation documents in its 2012 RPS Procurement Plan filed on May 23, 2012. However, because SCE determined it was unnecessary to hold an RPS solicitation in the 2012 cycle, SCE did not include such solicitation documents in its First Amended 2012 RPS Procurement Plan filed on August 15, 2012 or its Final 2012 RPS Procurement Plan filed on November 29, 2012. Accordingly, SCE's 2013 RPS Plan~~

~~Sections 399.11 et seq. and Requesting Comments on a New Proposal (“ACR”), the Administrative Law Judge’s Ruling Requiring a Supplemental Filing to the 2013 Procurement Plans to Address Safety Considerations (“ALJ Safety Ruling”), and Decision (“D.”) 13-11-024, the Decision Conditionally Accepting 2013 Renewables Portfolio Standard Procurement Plans and Integrated Resource Plan and On-Year Supplement., dated March 26, 2014 (“ACR”).~~

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.

SCE takes the RPS program’s regulatory framework into account in planning for renewable procurement in ~~2013~~2014 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 ~~required~~ 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,²¹ D.11-12-052 implementing the three portfolio content

~~discusses the important changes in SCE’s proposed 2013 RPS solicitation documents from its California Public Utilities Commission (“Commission” or “CPUC”) approved 2011 RPS solicitation documents.~~

²¹ 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

categories of renewable ~~electricity~~energy products that may be used to satisfy RPS targets,³² and D.12-06-038 establishing new compliance rules for the RPS program. The Commission has not yet established a cost limitation for RPS-related procurement expenditures for each electrical corporation⁴ or determined enforcement rules. SCE's renewable procurement planning may change as a result of the Commission's adoption of a ~~cost~~procurement expenditure limitation mechanism~~-or any other-~~ implementation of other RPS program rules~~-, or other changes to the RPS program. Moreover, the enactment of other laws and/or the implementation of other programs may affect SCE's RPS procurement planning.~~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 ~~2013~~2014 RPS Plan, SCE proposes conducting a targeted 2014 RPS solicitation that meets SCE's need for renewable resources. ~~SCE also~~Similar to SCE's 2013 solicitation process, SCE proposes ~~improvements to~~

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.

³² The first portfolio content category ("Category 1") includes products from renewable generators with a first point of interconnection to the Western Electric Coordinating Council 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.

⁴ ~~See Cal. Pub. Util. Code §§ 399.15(e)-(g).~~

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 incorporate the procurement impacts of these programs into its RPS procurement planning once the programs are approved by the Commission.

~~its~~ solicitation process that is intended to capitalize on the maturing renewables market and target the most viable proposals that fit SCE's portfolio need, ~~thus focusing the efforts of both SCE and renewable developers on the most promising project proposals and enabling SCE to procure those renewable resources that will minimize costs and maximize value for its customers.~~ and provide the most value to customers. In particular, SCE will continue to require a Phase II Interconnection Study for projects (or an equivalent or better process or exemption) in order to submit a proposal. In addition to soliciting long-term Category 1 products, SCE will solicit long-term Category 3 unbundled REC transactions 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 1, 2016 or later.

~~In its 2013 RPS solicitation, among other things, SCE proposes to:~~

- ~~• Accept proposals for projects with commercial operation dates of January 1, 2016 or later;~~
- ~~• Limit its procurement to Category 1 products;~~
- ~~• Require that projects have either a Phase II Interconnection Study or an equivalent or better process or exemption, in order to submit a proposal;~~
- ~~• Implement preferences for projects greater than 20 megawatts ("MW") or 3 MW or greater, for projects located in certain areas; and~~
- ~~• Utilize a two-step solicitation process with a defined negotiation period after shortlisting and an opportunity for sellers to refresh their pricing shortly before contract execution.~~

II. ASSESSMENT OF RPS PORTFOLIO SUPPLIES AND DEMAND

A. SCE's Renewables Portfolio

~~In~~ For the first compliance period from 2011 ~~and 2012~~, ~~SCE delivered about 21% and~~ 20 ~~through 2013~~, SCE served 20.7% of its retail sales from RPS-eligible resources.⁴ To date, SCE's RPS-eligible deliveries and executed renewable procurement contracts have resulted from SCE's various large RPS Requests for Proposals ("RFPs"), 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"), the utility-owned generation and independent power producer ("IPP") portions of SCE's Solar Photovoltaic Program ("SPVP"), ~~the Renewable Auction Mechanism ("RAM") program~~, qualifying facility ("QF") contracts, utility-owned small hydro projects, and bilateral ~~negotiations~~ opportunities.

In ~~2012, 2013~~, SCE's renewable procurement focused on the variety of legislatively- and Commission-adopted renewable procurement programs for smaller-scale renewable resources ~~that it administers throughout each year~~. Between ~~July 2011~~ January 2013 and ~~August 2013~~, April 2014, SCE executed ~~183~~ 37 contracts resulting from its AB 1969 feed-in tariffs totaling ~~about 250 MW, seven SPVP IPP contracts for 8.5 MW, and 26~~ 51 megawatts ("MW"), 23 RAM contracts for approximately 365 MW, 6 Re-MAT contracts for approximately 8 MW, and 17 SPVP IPP contracts for about 30 MW.⁵

⁴ In 2013, SCE served 21.6% of its retail sales from RPS-eligible resources.

⁵ Of these, 11 ~~12~~ of the AB 1969 feed-in tariff contracts totaling 16.5 MW, three of the SPVP IPP contracts totaling 3.5 MW, and two ~~16~~ MW and six ~~of the RAM contracts totaling 21~~ 86 MW subsequently terminated. This information is up to date as of May 16, 2014.

SCE also launched its large-scale 2013 RPS RFP in January 2014. SCE expects to offer power purchase agreements (“PPAs”) to sellers from that solicitation in July 2014.⁶

B. SCE’s Forecast of Renewable Procurement Need

SCE determines its expected renewable procurement need by comparing its forecasted RPS procurement ~~quantity requirements~~targets to its forecasted energy deliveries from contracted projects, ~~including its~~. The forecasted energy deliveries include SCE’s probabilistic risk-adjusted forecast of generation from contracted projects that are not yet on-line. SCE also considers ~~pre-approved~~ generation from ~~mandatory~~pre-approved procurement programs (i.e., ~~feed-in tariffs, SPVPRAM, Re-MAT, and RAM) and assumptions regarding re-contracting~~SPVP), among other factors.

Appendices C.1, C.2, C.3, and C.4 include SCE’s forecast of its renewable procurement position and need ~~is included in Appendices C.1, C.2, and C.3. Appendix C.1 includes~~ i.e., SCE’s renewable net short (“RNS”). These Appendices use the standardized reporting template included in the Administrative Law Judge’s Ruling on Renewable Net Short, dated May 21, 2014 (“RNS Ruling”). 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 and C.2 include physical RNS calculations. Moreover, Appendices C.3 and C.4 include optimized RNS calculations.⁷ Appendices C.1 and C.3 include physical and optimized RNS calculations using all required assumptions for the Commission’s ~~renewable net short~~

⁶ SCE’s renewable procurement need and other aspects of its renewable procurement planning may change based on the results of the 2013 RPS solicitation.

⁷ The required information on RECs from expiring contracts is included in Appendix E.

~~methodology.~~⁶ ~~Appendix C.2 includes SCE's assumptions for the renewable net short calculations.~~ Revised RNS Methodology. Appendices C.2 and C.4 include physical and optimized RNS calculations using SCE's assumptions. More information regarding Appendices C.1, C.2, C.3, and C.4 and responses to the RNS questions set forth in the RNS Ruling are also used in Appendix C.3 with different data elements included, including SCE's forecasted procurement from pre-June 1, 2010 contracts and in each of the portfolio content categories. included in Section VI. Furthermore, as discussed in Section VI, SCE may update its optimized and physical RNS calculations and the related RNS discussion in this 2014 RPS Plan in an updated plan, to be submitted on August 20, 2014.

SCE's based its forecasted renewable procurement position and need ~~under,~~ using both SCE's assumptions and the Commission's assumptions ~~are based,~~ on the RPS procurement ~~quantity requirements~~ targets adopted by the Commission in D.11-12-020 and other relevant RPS program rules (e.g., rules on banking of excess procurement across compliance periods). Both forecasts include all projects ~~that have executed contracts in the calculations~~ under contract and assume ~~a 100% success rate for~~ contracted projects that are currently on-line will deliver 100% of their expected amount of renewable energy. Both forecasts also include ~~pre-approved~~ generation from ~~existing mandatory~~ pre-approved procurement programs (i.e., ~~feed-in tariffs,~~ SPVP RAM, Re-MAT, and RAM SPVP) at a 100% success rate before contracts are signed.⁷⁸ Additionally, both forecasts incorporate current expected on-line dates for all projects that are not yet on-line.

⁶ ~~See Administrative Law Judge's Ruling (1) Adopting Renewable Net Short Calculation Methodology (2) Incorporating the Attached Methodology into the Record, and (3) Extending the Date for Filing Updates to 2012 Procurement Plans, Attachment A (August 2, 2012).~~

⁷⁸ After contracts from such programs are signed, they are risk adjusted ~~like~~ in the same manner as other projects with executed contracts that are not yet on-line.

Furthermore, both 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 ~~contracts~~contracted projects that are ~~executed, but~~ not yet on-line. These probabilistic risk-adjusted success rates are intended to reflect a number of dynamic factors and are periodically adjusted based on new information. ~~SCE's~~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 ~~of approximately 50%~~. The overall probabilistic risk-adjusted success rate for energy deliveries from SCE's portfolio of contracts with projects that are not yet on-line varies from around ~~98~~77% for the ~~first~~second compliance period to approximately ~~60~~72% in the ~~second and~~ third compliance ~~periods~~period and thereafter.

The ~~differences~~difference between the forecasts using SCE's assumptions, as reflected in Appendices C.2 and C.4, and the Commission's assumptions ~~are: (1) SCE's assumptions~~, as reflected in Appendices C.~~2~~1 and C.3, ~~use is that~~ SCE's uses its most recent bundled retail sales forecast for all years while the Commission's assumptions, ~~as reflected in Appendix C.1~~, use SCE's most recent bundled retail sales forecast for ~~2013~~2014 through ~~2017~~2018 and 2022 through 2030, and the 2010 Long-term Procurement Plan ("LTPP") standardized planning assumptions for ~~2018~~2019 through ~~2021;~~⁸2021.⁹ ~~and (2) SCE's assumptions, as reflected in Appendices C.2 and C.3, include 100% re-contracting of existing contracts with projects 20 MW and under while the~~

⁸ ~~The Commission's renewable net short methodology~~⁹ The Revised RNS Methodology states that ~~utilities~~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. ~~In Appendix C.1, SCE used~~See RNS Ruling, Attachment A at 25. In Appendices C.1 and C.3, SCE uses its own bundled retail sales forecast for 2022 through 2030 because there is no LTPP forecast for those years.

~~Commission's assumptions, as reflected in Appendix C.1, include no re-contracting assumptions. SCE uses its own bundled retail sales forecast for renewable procurement planning because it is SCE's best forecast of bundled retail sales. Moreover, SCE includes a 100% re-contracting assumption for projects 20 MW and under because the majority of renewable procurement of projects that size is mandatory.~~

As shown in Appendices C.1, C.2, C.3, and C.4, 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 C.3, 4 demonstrate that, using SCE's assumptions, SCE ~~anticipates forecasts~~ a procurement quantity requirement for ~~the first compliance period of~~ ~~XXXXXXXX kilowatt-hours ("kWh") and RPS-eligible procurement of 48.3 billion kWh, for a net long position of about~~ ~~XX XXXX kWh.~~ In the second compliance period, ~~SCE forecasts a procurement quantity requirement of~~ ~~XXXXXXXX of approximately~~ ~~XXX XXXX kWh and RPS-eligible procurement of~~ ~~58.5~~ about 57.7 billion kWh, for a net long position of ~~about~~ around ~~XXXXXX kWh.~~ In the third compliance period, SCE forecasts a procurement quantity requirement of ~~91.7 billion~~ approximately ~~XXXXXXXX kWh and RPS-eligible procurement of~~ ~~74~~ about 72.4 billion kWh, for a net short position of ~~about 17.6 billion~~ around ~~XXXXXXXX kWh without the use of bank and approximately~~ ~~7.3 billion~~ ~~XXXXXXXX kWh with the use of bank~~ (as shown in Appendix C.4). SCE also forecasts a net short position for 2021 and beyond.

Using the Commission's assumptions as set forth in ~~Appendix C.1,~~ Appendices C.1 and C.3, SCE forecasts a net long position of approximately ~~XXXXXXXX kWh for the first compliance period and a net long position of approximately~~ ~~XXXXXX kWh for the second compliance period.~~

In the third compliance period, using the Commission's assumptions, SCE forecasts a net short position of approximately 22.1 billion [REDACTED] kWh without the use of bank and about 13.2 billion [REDACTED] kWh with the use of bank (as shown in Appendix C.3). SCE also forecasts a net short position for 2021 and beyond using the Commission's assumptions.

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.

~~SCE has concerns about the barriers to achieving the State's RPS goals in the long term. Based on SCE's experience in RPS solicitations to date, transmission availability will continue to be an impediment to bringing new renewable resources on-line. Increased procurement activity (i.e., execution of more contracts) will not accelerate the planning, permitting, and construction processes for new transmission and transmission upgrades. While SCE will continue to seek and contract for renewable resources, SCE expects most projects to be limited by the scarcity of transmission. Additionally, the long and complicated process for siting and permitting of renewable generation projects, a heavily subscribed interconnection queue, developer performance issues, curtailment, the increasing proportion of intermittent resources in SCE's renewable portfolio, and lack of flexibility in established regulatory processes related to procurement are all major challenges to meeting California's renewable energy goals. These procurement goals may not be achieved without addressing these significant challenges. SCE addresses the impediments to reaching the State's RPS goals and the steps SCE is taking to mitigate these impediments, to the extent possible, in more detail in Section IV.~~

C. SCE's Plan for Achieving RPS Procurement Goals

Through its ~~2013~~2014 RPS procurement activities, SCE intends to contract for renewable energy that will help achieve the State's RPS goals, ~~taking~~ SCE's 2014 RPS procurement activities will take into account: (1) the renewable energy procured through SCE's prior RPS solicitations and other procurement mechanisms, (2) probabilistic risk adjustment of expected generation from executed contracts with projects that are not yet on-line, ~~as well as~~ and (3) future RPS solicitations and other procurement mechanisms that are expected to take place. Generally, ~~SCE's planned procurement activities for 2013~~ for 2014, SCE will ~~include seeking~~ seek resources to augment those already under contract to fulfill its need in the third compliance period and beyond.⁹¹⁰ SCE plans to launch a ~~2013~~2014 RPS solicitation for long-term Category 1 products and long-term Category 3 unbundled RECs. SCE will only consider proposals from projects with commercial operation dates and initial delivery dates to SCE of January 1, 2016 or later. This is consistent with SCE's renewable procurement need in the third compliance period and ~~beyond,~~ 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 ~~30,~~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 in the third compliance period.¹⁰¹¹

⁹¹⁰ SCE will also utilize banking of excess procurement, as appropriate.

~~¹⁰ SCE's 2013 Procurement Protocol indicates a strong preference for proposals for contract terms of 10 years or longer.~~¹¹ SCE will account for the restrictions on banking of excess procurement in its ~~procurement activities~~ need assessment and selection.

As in the 2013 RPS solicitation, in order to fill its longer term need, SCE intends to be flexible in its contracting. 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 to sell power directly to the market or to a third party until the term begins under the contract with SCE.

SCE considers its net short position in the third compliance period in light of how long it takes to bring new projects on-line, how far in the future the short position exists, and how many solicitations SCE anticipates being able to complete in order to fill the ~~short~~ position. 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. ~~For example, SCE may enter into contracts for two times its renewable procurement need to account for the risk that those contracted projects may not reach commercial operation.~~

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 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. This process ensures that the projects ~~selected~~that provide the most cost-effectively value align with SCE's procurement needs. SCE's LCBF approach is described in more detail in Section ~~IX~~VIII.B and Appendix ~~H~~I.1.

All of the procurement in SCE's current renewables portfolio ~~to-date~~ 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 ~~quantity requirements~~targets primarily through Category 1 products because they provide the most flexibility and certainty for SCE's customers ~~(e.g., there~~There are no limitations on procurement of Category 1 products and there are no restrictions on banking long-term Category 1 products)~~. As explained in further detail in Section XVI.A.2, SCE intends to limit its 2013~~. In its 2014 RPS solicitation to, SCE intends to solicit long-term Category 1 products and long-term Category 3 unbundled RECs. SCE may ~~procure~~enter into long-term Category ~~2 or 3 products, either through future solicitations or bilateral transactions~~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, SCE will continue to utilize a variety of other procurement options to help meet the State's renewable energy targets including the RAM program, ~~SCE's SPVP, the Renewable Market Adjusting Tariff ("Re-MAT") program~~Re-MAT, SPVP, local capacity requirements solicitations, QF standard contracts, and bilateral negotiations for competitive renewable ~~electricity~~energy products~~, and any new procurement processes approved by the Commission.~~¹² In particular, SCE launched ~~its fourth RAM solicitation on May 16, 2013 and~~ its third SPVP solicitation on September 4, 2013, ~~and expects to launch its fifth RAM solicitation in the second quarter of~~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~~2013 and has since executed six Re-MAT PPAs for a total of approximately 8 MW. Additionally, SCE launched its fifth RAM solicitation on May 29, 2014, and expects to launch its fourth SPVP solicitation in 2014.

~~Further, on February 13, 2013, the Commission issued D.13-02-015 in the LTPP proceeding, authorizing SCE to procure between 1,400 and 1,800 MW of 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 in the Moorpark sub-area of the Big Creek/Ventura local reliability area (“Moorpark sub-area”) to meet long-term local capacity requirements (“LCRs”) by 2021. D.13-02-015 requires SCE to procure minimum amounts of gas-fired generation, preferred 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 an LCR solicitation that is open to all technologies that can meet SCE’s LCR needs on September 12, 2013. This LCR solicitation is open to renewable resources.~~

~~Additionally, as noted in Section XI.C, SCE’s 2013 Procurement Protocol encourages projects in the Western LA Basin sub-area and the Moorpark sub-area to participate in SCE’s 2013 RPS solicitation. To the extent SCE receives proposals for projects in those areas that are not selected in SCE’s RPS solicitation based on LCBF selection criteria, SCE will consider the LCR value of these proposals using the LCR solicitation valuation methodology.¹² Only such projects bid assuming the conferment by the California Independent System Operator (“CAISO”) of either Full Capacity Deliverability Status (“FCDS”), Partial Capacity Deliverability Status (“PCDS”), or Interim Deliverability Status (“IDS”) (collectively, “Capacity Deliverability Status”) and a CAISO Net Qualifying Capacity (“NQC”) assignment will be considered for their LCR value.~~

¹² Furthermore, the Commission is expected to issue a proposed decision on a SB 1122 program in the second quarter of 2014.

¹³ ~~SCE plans to use a similar approach in future RAM and SPVP solicitations.~~

~~SCE may 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.~~

In SCE's comments in response to the Administrative Law Judge's Ruling Requesting Comments on the Renewable Auction Mechanism, dated December 31, 2013, SCE recommended that the RAM standard contract be a contracting option within the annual RPS solicitation.¹³ Under this scenario, a bidder in an RPS solicitation could elect to use the current RPS solicitation contracting process (using a PPA with negotiable terms and conditions and a Tier 3 advice letter approval process), or a bidder could elect to use a non-negotiable PPA that would be approved by the Commission through a Tier 2 advice letter. These options provide more flexibility to the market and allow a bidder to forego the negotiation of specific contract provisions in exchange for quicker approval and more certainty in the approval process. The non-negotiable PPA would be based on the RPS *pro forma* PPA and approved by the Commission as part of SCE's annual RPS procurement plan. To the extent the Commission implements SCE's recommendation in a decision regarding RAM, SCE will update its 2014 RPS Plan to include such a contracting option.

Finally, while SCE does not currently intend to sell bundled renewable energy, unbundled RECs, or other renewable ~~electricity~~energy products in the ~~2013~~2014 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.

¹³ See Comments of Southern California Edison (U 338-E) on Administrative Law Judge's Ruling Requesting Comments on Renewable Auction Mechanism (January 30, 2014); Reply Comments of Southern California Edison (U 338-E) on Administrative Law Judge's Ruling Requesting Comments on Renewable Auction Mechanism (February 14, 2014).

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 commercial operation, expected on-line 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 to be relatively constant.

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 Section VIII.B and Appendix I.1. The primary quantitative metric used for evaluating bundled renewable energy is the renewable premium. 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, SCE may use sales of renewable energy products,¹⁴ project deferrals, and solicitation deferrals (as it did by not holding a 2012 RPS

¹⁴ 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.

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.](#)¹⁵

As a threshold matter, when SCE considers whether to engage in sales of renewable energy products, SCE compares the REC price or renewable premium for the sales transaction against the renewable premiums of proposals submitted to SCE in recent solicitations and other offers. If the renewable premiums for long-term renewable procurement are higher than the REC price or renewable premium for the sales transaction, it would be more cost effective for SCE to maintain its existing RPS bank for future compliance periods.¹⁶ Conversely, if the renewable premiums from recent solicitations are lower than the REC price or renewable premium for the sales transaction, SCE has an opportunity to optimize its renewables portfolio and realize value for its customer by selling renewable energy products.

In addition to the REC price and renewable premium [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

¹⁵ 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 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.

¹⁶ SCE also considers statutory and regulatory restrictions on banking of excess procurement.

contracted generation that is not yet on-line, 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 the effects of procurement of RPS-eligible resources on other procurement programs in order to develop a portfolio wide optimization strategy. The Commission and the California Independent System Operator ("CAISO") have been discussing and debating 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 stakeholder process to discuss new obligations for flexible capacity and how flexibility requirements will be allocated to load-serving entities. The initial straw proposal for allocating flexibility requirements would directly allocate the identified requirements based on the amount of intermittent generation contracted by the load-serving entity.¹⁷ This would create a direct link between RPS procurement and flexibility requirements as the amount of wind and solar resources in the portfolio would impact 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 potentially reduce flexibility requirements.

¹⁷ See CAISO's Flexible Resource Adequacy Criteria and Must-Offer Obligation, Market and Infrastructure Policy Revised Straw Proposal (June 13, 2013) (available at: <http://www.caiso.com/Documents/RevisedStrawProposal-FlexibleResourceAdequacyCriteria-MustOfferObligations.pdf>).

E. SCE's Management of its Renewables Portfolio

After SCE executes an RPS 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 very few 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 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 to enter into an amendment with any counterparty.¹⁸ In the event an amendment is elected, the IOU should negotiate in good faith.¹⁹ D.88-10-032 also provides that an IOU is to seek concessions in response to requests for contract modifications which are commensurate with the change being sought.²⁰ The details of D.88-10-032 provide further guidance to the IOUs to restrict modifications to PPAs with viable projects,²¹ and reject modifications that would result in creating an essentially new project.²²

¹⁸ See D.88-10-032 at 16.

¹⁹ See id. at Conclusion of Law 8.

²⁰ See id. at 16, Conclusions of Law 13-14.

²¹ See id. at 17, Conclusion of Law 4, Appendix A at 4-5

²² See id. at 26, Conclusion of Law 17.

SCE seeks approval by the Commission of all PPA modifications either through its annual ERRA application or through advice letters or applications, depending on the type of PPA and based on guidance from Commission decisions regarding specific modifications to PPAs.²³

E. Lessons Learned, Past and Future Trends, and Additional Policy/Procurement Impacts

1. Lessons Learned and Past and Future Trends

SCE's overall experience in renewable contracting has allowed it to agree to terms with a diverse variety of projects and counterparties. This success is the result of recognizing the unique characteristics of each situation and working toward a balanced and mutually acceptable agreement. 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

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

²³ For example, the Commission has indicated specific IOU actions regarding amendments to certain

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.

b) Requiring Phase II Interconnection Studies to Submit a Proposal

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 either a Phase II Interconnection Study (or an equivalent or better process 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."²⁴ Requiring a Phase II Interconnection Study (or an equivalent or better process 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.

terms in tariff-based agreements.

²⁴ D.13-11-024 at 30.

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 better process or exemption) to participate in the solicitation. SCE believes that keeping this requirement in the 2014 solicitation will result in higher viability projects and more cost certainty, while still offering a robust pool of proposals.

c) Using a Single Set of Time-of-Delivery Factors

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 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.

2. Additional Policy/Procurement Impacts

In D.13-02-015, issued on February 13, 2013 in the Track 1 LTPP proceeding, the Commission authorized SCE to procure between 1,400 and 1,800 MW of capacity in the Western Los Angeles sub-area of the Los Angeles basin local reliability area ("Western LA Basin sub-area") to meet local capacity requirements ("LCR") by 2021 due to the expected retirement of once-through cooling units.²⁵ Pursuant to D.13-02-015, SCE is required to procure minimum amounts of gas-fired generation, 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 an LCR solicitation on September 12, 2013, which is open to all technologies that can meet SCE's LCR needs, including renewable resources.

In D.14-03-004, approved on March 13, 2014 in the Track 4 LTPP proceeding, the Commission authorized SCE to procure an additional 500 to 700 MW of capacity in the Western LA Basin sub-area due to the permanent retirement of the San Onofre Nuclear Generation Station Units 2 and 3. The total procurement authorization in the Western LA Basin sub-area is now 1,900 to 2,500 MW of capacity. Although SCE is permitted to procure the additional capacity through the Track 1 solicitation which has already commenced, SCE anticipates that it will not procure all of the authorized capacity in the Western LA Basin sub-area in the current LCR solicitation, and thus may need to launch another LCR solicitation next year.

SCE's 2014 Procurement Protocol solicits projects in the Western LA Basin sub-area to participate in the 2014 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 may also meet SCE's Preferred Resources Pilot ("PRP") goal.²⁶

To the extent SCE receives proposals for projects in this area 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.²⁷ 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

²⁵ SCE was also authorized to procure 215 to 290 MW in the Moorpark sub-area of the Big Creek/Ventura local reliability area.

²⁶ See D.14-03-004. More information on the PRP is available at <http://on.sce.com/preferredresources>.

²⁷ SCE plans to use a similar approach in future RAM and SPVP solicitations.

into bilateral contracts with some of these projects based on their LCR value.²⁸ If SCE does enter into any such contracts, it will submit them for Commission approval through a separate application or advice letter, as appropriate.

III. PROJECT DEVELOPMENT STATUS UPDATE

~~A~~Appendix B contains a written status update on the development of all RPS-eligible projects currently under contract, but not yet delivering generation,~~is attached as Appendix B.~~ ~~Some~~. SCE received some of the information in this status update ~~has been reported to SCE by~~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.

IV. POTENTIAL COMPLIANCE DELAYS

~~Six~~Five primary factors will challenge achievement of the State's RPS goals: (1) permitting, siting, approval, and construction of both transmission and renewable generation projects; (2) a heavily subscribed interconnection queue; (3) developer performance issues; (4) curtailment; and (5) the increasing proportion of intermittent resources in SCE's renewables portfolio; ~~and (6) regulatory inflexibility~~. 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.

²⁸ See D.13-02-015 at Ordering Paragraph 9 ("Southern California Edison Company is authorized to procure bilateral cost-of-service contracts to meet authorize[d] local capacity requirements as specified in this Order, including bilateral contracts consistent with the provisions of Public Utilities Code § 454.6."); see also D.14-03-004 at Ordering Paragraph 3 ("Southern California Edison Company and San Diego Gas & Electric Company are authorized to procure bilateral contracts to meet authorized local capacity requirements as specified in this Order, including bilateral contracts consistent with the provisions of Public Utilities Code Section 454.6.").

As discussed in Section II.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~~contracted projects that are ~~executed but~~ not yet on-line. ~~The~~SCE considers the factors discussed below ~~are considered~~ in this process.

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

Although the CAISO has identified transmission necessary to meet California's 33% RPS goal,¹²²⁹ the lack of sufficient transmission infrastructure and the prolonged process for permitting and approval of new transmission lines continues to be ~~the most~~a significant impediment to reaching the State's renewable energy targets. In its RPS solicitations, SCE ~~has~~ received relatively few proposals from renewable generators that do not require significant transmission upgrades or new transmission development ~~for the renewable energy to be deliverable~~. Based on the market response in SCE's RPS solicitations and other renewable programs, lack of adequate transmission infrastructure and the lengthy process of siting, permitting, and building new transmission continues to be a real and complicated impediment to bringing new renewable resources on-line.

As stated in the CAISO's 2013-2014 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."³⁰ Through its transmission planning process, the CAISO utilizes renewable resource portfolios from the

¹²²⁹ See CAISO's 2012-2013 Transmission Plan at 7 (March 20, 2013) (available at: <http://www.caiso.com/Documents/BoardApproved2012-2013TransmissionPlan.pdf>).

Commission and the California Energy Commission 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. However, while CAISO approval of transmission projects addresses some uncertainty, additional challenges are associated with the completion of transmission projects in SCE’s service area that could impact renewable generation development.

~~The challenges surrounding transmission are only compounded by the increase in the overall RPS goal from 20% to 33%, which represents a 65% increase in procurement of renewable energy without taking into account load growth.¹³ The Commission has stated that “[s]erving 33% of California’s energy needs with renewable sources will require an infrastructure build-out on a scale and timeline perhaps unparalleled anywhere in the world.”¹⁴ Indeed, the Commission noted that the “magnitude of the infrastructure that California will have to plan, permit, procure, develop, and integrate in the next ten years is immense and unprecedented,” including approximately \$115 billion in new infrastructure investment in an uncertain financial environment, including seven major new transmission lines (in addition to the four major new transmission lines needed to reach just 20% renewables).¹⁵~~ While some transmission projects have already been approved or are progressing through the Commission approval process,³¹ 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 Transmission Plan that SCE is pursuing

³⁰ CAISO’s 2013-2014 Transmission Plan at 9 (March 25, 2014) (available at: <http://www.caiso.com/Documents/Board-Approved2013-2014TransmissionPlan.pdf>).

¹³ ~~If load growth is taken into account, this percentage is even higher.~~

¹⁴ ~~Renewables Portfolio Standard Quarterly Report at 3 (October 2008).~~

³¹ See id. at 10-11.

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, and the Mesa Loop-in project.³² Lengthy licensing, construction, and permitting issues can impact the completion of these projects by their scheduled operating dates.

~~Over the past few years, SCE has taken several actions to address the impediment of transmission to achieving California’s renewable energy goals. For example, SCE has attempted to expedite the permitting and construction of renewable transmission facilities by: (1) proactively providing the upfront financing for needed transmission network upgrades, (2) seeking authorization to record costs associated with interconnection and environmental studies for renewable projects, (3) providing leadership to the CAISO’s reform of the Large Generator Interconnection Procedures, and (4) requesting authority to study the feasibility of developing transmission capacity to deliver output from potential renewable resources. Despite these efforts, SCE expects that transmission will continue to be an impediment to achieving the State’s RPS goals.~~

The long and complicated permitting process for renewable generation facilities is also a barrier to meeting RPS goals. ~~The Commission has observed that most RPS project delays “are due to lack of transmission or generation permitting at the county, state, or federal level.”⁴⁶~~ 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.”³³ Moreover, environmental concerns, legal challenges, and public

~~⁴⁵ 33% Renewables Portfolio Standard Implementation Analysis Preliminary Results³² 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.* at 1-4 (June 2009).107.~~

~~⁴⁶ Renewables Portfolio Standard Quarterly Report at 7 (Q4 2009)³³ Forbes, Uclia Wang, “The Rise of a Giant Solar Plant in California’s Central Plain” (October 31, 2013) (available at: <http://www.forbes.com/sites/uciliawang/2013/10/31/the-rise-of-a-giant-solar-power-plant-in-california-central-plain/>).~~

opposition can impact the timeline for bringing renewable generation and transmission projects on-line.

B. 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 ~~May~~September 27, 2013, ~~SCE had more than 25,000 MW of export capacity~~the CAISO reported 36,000 MW of active projects seeking interconnection to ~~SCE's transmission system (under the CAISO Tariff) and distribution system (under SCE's Wholesale Distribution Access Tariff and Rule 21)~~the CAISO controlled grid of which 23,730 MW were from renewable projects.³⁴

Over the last several years, the CAISO has initiated and obtained Federal Energy Regulatory Commission ("FERC") approval ~~for several revisions~~ to improve its generation interconnection process, ~~including~~ 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").³⁵ ~~Under GIDAP, integrated~~ the CAISO's generator interconnection and transmission planning processes ~~were integrated~~ to allow the CAISO to more efficiently determine transmission upgrades needed to meet California's RPS goals.

SCE ~~supported~~supports GIDAP ~~and believes that it.~~ It provides a good foundation for improving the queue management process going forward, but ~~there remain~~ a number of near-term challenges remain. The large number of interconnection requests, particularly from renewable

³⁴ 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>).

³⁵ See FERC Docket No. ER-12-1855-000.

generators, ~~has presented~~presents significant challenges for SCE, the CAISO, and ~~the~~ renewable generators. Generators ~~in this process~~ 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 lead to litigation.

~~In addition, SCE played a leadership role in the stakeholder process that led to reforms of Rule 21, which were approved by the Commission in 2012.⁴⁸ These reforms support the success of renewable distributed generation by addressing policy and technical issues that are essential to timely, predictable, and transparent interconnection to SCE's distribution system. SCE also continues to take a leadership role in the Commission's Distribution Interconnection Rulemaking (R.11-09-011).~~

C. Developer Performance Issues

Achieving California's renewable energy goals ~~is also~~ ~~dependent~~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, ~~which~~. 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, ~~permitting delays~~, failure to timely file for necessary permits, and inability to complete CAISO new resource implementation ~~process~~processes in a timely manner). To the extent that delays,

termination events, and underperformance occur, the amount of delivered energy on which SCE can rely to reach the State's goals is ~~affected~~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 example, SCE ~~has created an option to have SCE act as scheduling coordinator, allowed for delivery points at the point of interconnection with the transmission provider's electric grid, and tailored certain terms and conditions to address market changes in equipment availability and supply.~~ required projects to have a Phase II Interconnection Study (or an equivalent or better process or exemption) in order to submit a proposal in its RPS solicitations, which is likely to result in more viable projects.

Additionally, SCE ~~has~~ 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 ~~RPS~~renewable procurement solicitations ~~and other Commission-approved programs~~, fielding countless individual inquiries, hosting outreach sessions for diverse business enterprises, and participating in developer forums.

~~¹⁸~~ ~~See D.12-09-018.~~

D. Curtailment

As more renewable generation comes on-line, congestion at the transmission and distribution levels is increasing and curtailment events are becoming increasingly common.

~~Under the generator interconnection agreements between the CAISO, the transmission provider, and a project developer, projects may elect to be interconnected as Energy-Only (“EO”), FCDS, or PCDS resources. By selecting FCDS or PCDS, developers must pay their network upgrade costs and share in the cost of any delivery network upgrades. EO resources are not studied to determine what, if any, upgrades to the transmission or distribution system would be required in order to ensure that there is sufficient transmission capacity to deliver all of the project’s energy to market. Developers who select EO pay for their network upgrade costs, but are not obligated to pay any portion of the delivery network upgrades. This increases the risk of congestion for all interconnected projects in the area.~~

~~Despite having to pay for deliverability upgrades, Capacity Deliverability Status resources receive no operating priority or transmission rights beyond what an EO resource would receive. For example, rather than curtail an EO resource first when congestion requires curtailment, the CAISO makes no distinction between an EO and Capacity Deliverability Status resource. Additionally, EO resources receive the benefit of the additional downstream transmission availability, paid for by FCDS or PCDS developers, without sharing any of the downstream transmission upgrade costs.~~

~~EO resources may drive down the market price for energy (even making the price negative, meaning that SCE customers not only have to pay generators for the energy, but actually pay the CAISO to take the energy). Excessively low and negative power prices are intended to achieve reductions in generation when there is more generation than available transmission capacity (or~~

~~load) in a particular area. However, when price signals are not enough to entice generators to decrease their output so as to alleviate congestion on the grid, the CAISO may resort to curtailing renewable generators for reliability purposes. These negative outcomes affect not only the EO resources themselves, but potentially other generators in the region, including Capacity Deliverability Status resources.~~ 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 ~~that~~ [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.

SCE has been working on multiple fronts to mitigate the risk of curtailment. ~~For instance, SCE has aggregated several large wind projects under a "physical scheduling plant" ("PSP"), which enables SCE to manage the projects as a single resource in CAISO markets. This gives plant operators the ability to optimize the output of the individual plants in order to follow dispatch instructions given at the aggregate level. The PSP should decrease the impact of curtailments due to a diversity effect. If the aggregate limit is, for example 500 MW, a given project may generate more than its pro rata limit while another generates less, as long as the aggregate limit of 500 MW is not exceeded. In this example, without the PSP, some generators would have been "limited" even though there might have been sufficient capacity to accommodate their full output. Moreover, the PSP should enable increased scheduling accuracy and operational efficiency.~~ SCE

~~has also been~~ SCE has continued working to increase the level of coordination with generators during the construction phases of major transmission projects in the Tehachapi 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, ~~as in the PSP example above~~). SCE has already had some success facilitating 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. SCE will continue to look for opportunities to replicate those arrangements in an effort to mitigate the impacts of curtailment on meeting RPS goals.

E. 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 ~~2,000~~ 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 ~~is highly intermittent~~ 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. ~~Solar~~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 ~~intermittency~~ effects will be magnified.

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.

F. ~~**Regulatory Inflexibility**~~The investor-owned utilities (“IOUs”) need the ability to make timely changes to their commercial documents to reflect the constant evolution of the renewable energy market. The credit and financing markets can undergo significant changes in the time between the filing and approval of the RPS Procurement Plans that necessitate changes to the IOUs’ solicitation materials. Changes are also driven by new regulatory and legislative developments. It does not benefit any party to require the IOUs to issue solicitations with stale commercial documents that require substantial modifications before they can be executed. To the contrary, such inflexibility tends to increase transaction costs and commercial disputes and results in expensive litigation. SCE recommends that the Commission consider ways to truly streamline the procurement plan approval process so that IOUs can react more quickly to market and regulatory changes and reflect those changes in their solicitation materials. 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.

As such, SCE supported the ACR’s proposal to provide the IOUs with a two-year procurement authorization and cautions the Commission against imposing restrictions and limitations that will lead to micromanagement of the IOUs’ procurement processes with little added benefit. For instance, the Commission should not require that the IOUs follow simultaneous solicitation schedules. The IOUs have different needs and it would benefit both the IOUs’ customers and the market to give the IOUs the flexibility to launch RPS solicitations based on need, rather than an arbitrary and inflexible regulatory schedule.

V. RISK ASSESSMENT

SCE describes risks that may result in compliance delays in Section IV. As explained in Section II.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. 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, C.2, [C.3](#), and [C.34](#) reflects these considerations.

VI. QUANTITATIVE INFORMATION

A. RNS Calculations

~~Appendices C.2 and C.3 provide a quantitative analysis of SCE's renewable procurement need~~[1](#), [C.2](#), [C.3](#), and [C.4](#) include SCE's RNS calculations using the standardized reporting template included in the RNS Ruling. As required by the Commission's Revised RNS Methodology, [Appendices C.1 and C.2](#) include physical RNS calculations and [Appendices C.3 and C.4](#) include optimized RNS calculations.

[Appendices C.2 and C.4](#) 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 ~~2013~~[2014](#) through 2030;

- ~~100% success rate for any project already on-line until the expiration date of the associated contract;~~ Contracted projects that are currently on-line will deliver 100% of their expected amount of renewable energy;
- Probabilistic risk-adjusted success rates for energy deliveries from ~~contracts~~ contracted projects that are ~~executed but~~ not yet on-line. 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 ~~of approximately 50%;~~ and
- 100% success rate for projects originating from ~~mandated~~ pre-approved programs such as ~~SCE's SPVP, feed-in tariffs, and~~ the RAM program, Re-MAT, and SCE's SPVP before contracts from such programs are signed;^{19, 36} and
- ~~100% success in re-contracting with projects 20 MW or under.~~

~~Appendix C.1 provides renewable net short calculations~~ Appendices C.1 and C.4 provide SCE's physical and optimized RNS through 2030 using the Commission's renewable net short methodology. Appendix C.1 uses Revised RNS Methodology. Appendices C.1 and C.3 use the same assumptions as in Appendices C.2 and C.3⁴ 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 ~~2013~~ 2014 through ~~2017~~ 2018 and 2022 through 2030 and the 2010 LTPP standardized planning assumptions for ~~2018~~ 2019 through ~~2021;~~²⁰ 2021.³⁷ and

^{19,36} After contracts from such programs are signed, they are risk adjusted ~~like~~ in the same manner as other projects with executed contracts that are not yet on-line.

²⁰ ~~The Commission's renewable net short methodology~~³⁷ The Revised RNS Methodology states that ~~utilities~~ retail sellers can use their own forecasts for bundled retail sales for the first five years and should

- ~~• Instead of assuming 100% re-contracting of existing contracts with projects 20 MW or under, it includes no re-contracting assumptions.~~

~~VII. 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, which includes a calculation of SCE's renewable net short or long position and SCE's RPS 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 commercial operation, expected on-line dates, technology mix, expected curtailment, the level of the existing portfolio that is re-contracted, and the impact of mandatory 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 to be relatively constant.~~

~~If SCE's renewable need assessment results in a short position, SCE will hold an RPS solicitation and/or procure renewable resources through other procurement programs and mechanisms. SCE uses its LCBF methodology to evaluate renewable procurement opportunities as further described in Section IX.B and Appendix H.1. The primary quantitative metric used for evaluating bundled renewable energy is the renewable premium.~~

~~SCE had only a short time after the issuance of the RNS Ruling to incorporate the elements of the Revised RNS Methodology into this 2014 RPS Plan. SCE may update its optimized and~~

use the LTPP standardized planning assumptions thereafter. ~~In Appendix C.1, See RNS Ruling, Attachment A at 25. In Appendices C.1 and C.3, SCE used its own bundled retail sales forecast for 2022 through 2030 because there is no LTPP forecast for those years.~~

physical RNS, including its strategy for using forecast RECs above the procurement quantity requirements in an update to this plan, to be submitted on August 20, 2014. Additionally, SCE may update the discussion regarding its RNS, including the response to the RNS questions in Section VI.B.

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 its banked procurement. However, SCE may change this assumption in an update to this plan, to be submitted on August 20, 2014.

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 on-line resources in your RPS portfolio impact future projection of RPS deliveries and your subsequent RNS?

The current and historical performance of on-line 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.³⁸ 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 may be incorporated into forecasts of generation based on available data.

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 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 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

³⁸ See Southern California Edison Company’s Testimony in Response to the Assigned Commissioner’s Ruling on the Tehachapi Renewable Transmission Project (TRTP), A.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.07-06-031 (February 1, 2012).

strides towards completion, resulting in a collectively higher anticipated success rate for these large, near-term projects than in 2013.

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 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.

~~If SCE's need assessment results in a long position, SCE may use sales of renewable electricity~~When sufficiently long during short-term periods, SCE has used sales of renewable energy products,²¹ ~~project deferrals, and solicitation deferrals (as it did, by not holding a 2012 RPS solicitation)~~ in order to ~~get~~adjust its renewable procurement back in line with its forecasted ~~renewable procurement need.~~ ~~Additionally, SCE actively administers its renewable procurement~~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 ~~and may terminate such contracts if counterparties do not meet their contractual obligations.~~ SCE uses these activities for renewables portfolio optimization.

~~When SCE considers whether to engage in sales of renewable electricity products, one of the benchmarks used for determining whether the price is reasonable is the renewable premiums of proposals submitted to SCE in recent solicitations. If the renewable premiums for long-term renewable procurement are higher than the sale price, it would be cost-effective for SCE to maintain its existing RPS bank for future compliance periods.²² Conversely, if the renewable premiums from recent solicitations are lower than the sale price, it creates an opportunity for SCE~~

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.~~

~~to optimize its renewables portfolio and realize value for its customer by selling renewable electricity products.~~

~~In addition to the price considerations discussed above, SCE evaluates various potential risks when determining its renewables portfolio optimization strategy, including the risk of non-compliance with RPS targets. When long in the near and intermediate~~Specifically regarding the sale of RECs, when SCE has a long position in the near term, SCE evaluates whether a sale of renewable ~~electricity~~energy products is appropriate. This evaluation includes a calculation of SCE's renewable procurement position and RPS bank with a set of ~~very conservative~~adverse assumptions,~~including. 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, and higher levels of curtailment than expected,~~and lower re-contracting assumptions.~~ SCE assesses its renewable procurement position with such adverse assumptions to ~~make sure~~ensure that, even in the worst case scenario, SCE would still expect to meet its RPS ~~procurement quantity requirements~~targets after making the sale. ~~SCE's overall approach appropriately balances the risks and costs of selling renewable electricity products with the risks and costs of maintaining an RPS bank.~~It is not SCE's practice to purchase renewable energy products solely for the purpose of selling them at a later date.

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

²²—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 proposal for allocating flexibility requirements would directly allocate the identified requirements based on the amount of intermittent generation contracted by the load-serving entity.²³ This would create a direct link between RPS procurement and flexibility requirements as the amount of wind and solar resources in the portfolio would impact the size 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 potentially reduce flexibility requirements, thus creating an indirect integration cost consideration.~~

Moreover, when SCE considers whether to engage in sales of renewable energy products, SCE compares the REC price or renewable premium for the sales transaction against the renewable premiums of proposals submitted to SCE in recent solicitations and other offers. If the renewable premiums for long-term renewable procurement are higher than the REC price or renewable premium 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 from recent solicitations are lower than the REC price or renewable premium 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

²³—~~See CAISO's Flexible Resource Adequacy Criteria and Must Offer Obligation, Market and Infrastructure Policy Revised Straw Proposal (June 13, 2013) (available at:~~

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

http://www.caiso.com/Documents/RevisedStrawProposal_FlexibleResourceAdequacyCriteria_MustOfferObligations.pdf

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 its RPS targets, including procurement of Category 1 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 3 unbundled RECs in its 2014 RPS solicitation in addition to long-term Category 1 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, 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 data on market prices of Category 3 products, SCE is soliciting long-term Category 3 unbundled RECs in its 2014 solicitation.

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 and long-term Category 3 unbundled RECs in its 2014 RPS solicitation. 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.

~~VII.VIII.~~ 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.B and provided in Appendices C.1, C.2, C.3, and C.3.4. 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 ~~by using~~. 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 ~~of approximately 50%~~. 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."²⁴³⁹ 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 to calculate the minimum margin 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

²⁴³⁹ Cal. Pub. Util. Code § 399.13(a)(4)(D).

not the same for each IOU. For example, risks may vary depending on whether a portfolio contains a high proportion of contracts that are on-line (as discussed above) or depending on the various technologies being used (e.g., geothermal technology, which ~~provides~~is a ~~fairly firm~~baseload resource, versus wind or solar technologies, which are more intermittent as described in Section IV.E). For these reasons, each IOU 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 should have the flexibility to calculate this margin based on its unique portfolio make-up and procurement needs.

~~VIII, IX~~ **BID SOLICITATION PROTOCOL, INCLUDING LCBF**

METHODOLOGIES

A. Bid Solicitation Protocol

SCE ~~has included~~includes its proposed ~~2013~~2014 Procurement Protocol as Appendix F.1.

The Procurement Protocol includes, among other things:

- SCE's requirements for on-line 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 Business Enterprises ("WMDVBEs") ~~and projects located in the Western LA Basin sub-area and Moorpark sub-area to participate in the solicitation;~~
- Requirements for each proposal submission;
- A description of the type of ~~product~~products SCE is soliciting;
- A schedule of key dates related to the ~~2013~~2014 RFP;

- SCE’s ~~2013~~2014 *Pro Forma* Renewable Power Purchase and Sale Agreement (“*Pro Forma*”), attached ~~hereto~~ as Appendix G.1;
- SCE’s 2014 *Pro Forma* Master Renewable Energy Credit Purchase Agreement (“REC *Pro Forma*”), attached as Appendix H; and
- SCE’s ~~2013~~2014 Form of Seller’s Proposal, attached ~~hereto~~ as Appendix I.1.

A discussion of the important changes in the proposed ~~2013~~2014 solicitation documents from SCE’s ~~2011~~2013 solicitation documents is included in Section ~~XVI~~XIII.

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-order ranking of all complete and conforming proposals’ net levelized cost that help define the preliminary short list. Following the quantitative analysis, SCE will conduct an ~~in-depth~~ 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, are considered to either eliminate non-viable proposals or add projects with high viability or other qualitative attributes to the final short list, or to determine tie-breakers, if any. Once a project is added to the short list, 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. ~~This process is described in~~ Appendix H.1.I.1 describes this process.

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

SCE does not plan to solicit a specific type of indexing price structure in its ~~2013~~2014 RPS solicitation. As in SCE’s ~~2011~~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,²⁵⁴⁰ commodities, equipment, cost of financing, etc., and may also consider placing price ceilings and floors on the indexed price.

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.

~~XI. LESSONS LEARNED AND ADDITIONAL POLICY/PROCUREMENT IMPACTS~~

~~A. Lessons Learned~~

~~SCE's overall experience in renewable contracting has allowed it to agree to terms with a diverse variety of projects and counterparties. This success is the result of recognizing the unique characteristics of each situation and working toward a balanced and mutually acceptable agreement. To this end, SCE continues to refine both its RPS solicitation process and its *pro forma* agreement as a result of lessons learned during SCE's extensive experience in contracting for renewable resources. SCE discusses several of its significant lessons learned below.~~

~~1. Targeting Specific Products~~

~~In past RPS solicitations, SCE did not limit the products that sellers could bid, which resulted in a large amount 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~~

²⁵⁴⁰ As defined in the CAISO Tariff (formerly SP15, NP15, or ZP26).

~~believes it will be more efficient and beneficial for all parties to use a more targeted solicitation process that focuses more specifically on SCE's needs. As explained in Sections XVI.A.1 and XVI.A.2, SCE intends to limit proposals in its 2013 RPS solicitation to projects with commercial operation dates of January 1, 2016 or later and to only consider proposals for Category 1 products. This will provide sellers with explicit direction on the products that are needed by SCE and focus the efforts of SCE and sellers on the most promising proposals, thus simplifying the solicitation and evaluation process for all parties.~~

~~2. Requiring Phase II Interconnection Studies~~

~~In SCE's experience of evaluating proposals and executing and administering contracts with projects that only have a Phase I Interconnection Study (or the equivalent) or no interconnection studies at all completed at the time of bidding or contract execution, such projects are generally less viable and have unknown transmission upgrade costs compared to those projects that have completed Phase II Interconnection Studies (or the equivalent or better process or exemption). It is more difficult to accurately value proposed projects that have less certainty surrounding their transmission upgrade costs than projects with a Phase II Interconnection Study (or the equivalent or better process or exemption). Moreover, projects without completed Phase II Interconnection Studies (or the equivalent or better process or exemption) are likely to have interconnection point uncertainties and other uncertainties surrounding their development that can jeopardize project viability and potentially lead to higher overall costs to customers in the future.~~

~~Additionally, the renewable energy market is maturing and proposed projects tend to be further along in the development cycle with respect to interconnection, siting, permitting, and other issues. Accordingly, buyers can impose more demanding project viability requirements without compromising the competitiveness of solicitations for renewable resources.~~

~~Based on this lesson learned, SCE proposes to require that projects have either a Phase II Interconnection Study or an equivalent or better process or exemption, in order to submit a proposal in SCE's 2013 RPS solicitation. This proposal is discussed in more detail in Section XVI.A.3.~~

~~3. Simplification of Curtailment Provisions~~

~~SCE's experience in managing renewable procurement agreements has led it to simplify the curtailment provisions in its 2013 *Pro Forma* as explained in Section XVI.B.2. The economic curtailment language included in SCE's 2011 *Pro Forma* was complicated. It has proven difficult for sellers to understand. Indeed, projects with language similar to the 2011 economic curtailment language have achieved commercial operation, and it has been a challenge for SCE and its counterparties to implement the operational complexities of the language. As a result, SCE has simplified the language for 2013 as detailed in Section XVI.B.2. SCE believes these changes will benefit SCE and sellers, and make the contract easy to administer for all parties.~~

~~4. Two-Step Solicitation Process~~

~~The negotiation period in SCE's prior RPS solicitations has been prolonged, sometimes lasting more than a year. In particular, in the 2008 and 2009 solicitations, negotiations took much longer than expected, leading to prices becoming stale because the renewables market was rapidly growing and manufacturing prices of solar photovoltaic ("PV") modules were quickly decreasing. The Commission has recognized these concerns in adopting a one-year time limit on contract negotiations after the RPS solicitation short lists are submitted to the Commission,²⁶ and in considering other procurement reform proposals.²⁷ To help to address these problems, SCE is~~

²⁶ See D.12-11-016 at 33-36.

²⁷ See Second Assigned Commissioner's Ruling Issuing Procurement Reform Proposals and Establishing a Schedule for Comments on Proposals at 10 (October 5, 2012).

~~proposing a two-step solicitation process for its 2013 RPS solicitation as detailed in Section XVI.A.5.~~

~~5. Additional Lessons Learned~~

~~SCE previously made several modifications to its solicitation materials in response to lessons learned from developers in past solicitations, including: (1) assuming responsibility for scheduling the generating facility's output with the CAISO; (2) reducing development security requirements for intermittent resources as compared to baseload facilities; and (3) eliminating the proposal fee.~~

~~B. Past and Future Trends~~

~~Over the course of the last several years, SCE has noticed several trends that it has incorporated into its renewable procurement planning and solicitation process. First, the level of counterparty sophistication has increased substantially. Counterparties have progressed to more advanced stages in the permitting and interconnection processes, which provides increased certainty that contracted projects will reach commercial operation. As explained in Sections XI.A.2 and XVI.A.3, there is a growing pool of uncommitted projects with advanced interconnection arrangements. Accordingly, for its 2013 RPS solicitation, SCE is proposing to enhance the value and viability of project proposals by requiring that project have a Phase II Interconnection Study (or the equivalent or better process or exemption) to participate in the solicitation.~~

~~Second, as explained in Section IV.D, congestion and curtailment have become increasing problems. In particular, because they do not pay for the costs of any delivery network upgrades, EO resources increase the risk of congestion for all interconnected projects and drive down the market price of energy (possibly leading to negative pricing). SCE incorporates the risks of~~

~~congestion and curtailment into its renewable procurement planning in several ways, including considering these risks in forecasting its renewable procurement position and need.~~

~~Finally, over the past few years, SCE has seen declining prices for renewable resources, particularly solar PV resources. Solar PV panel prices have decreased substantially and SCE has seen resulting declines in the bid prices for solar PV resources in its RPS and RAM solicitations. One way that SCE has incorporated this trend into its 2013 RPS Plan is through SCE's proposal to institute a two-step solicitation process for 2013 (as discussed in Section XVI.A.5). A limited contract negotiation period with a price refresh shortly before contracting will ensure that any decrease in market prices is included in sellers' proposed pricing and prevent sellers' bids from becoming stale if the market changes during contract negotiations.~~

~~C. Additional Policy/Procurement Impacts~~

~~In D.13-02-015, issued on February 13, 2013 in the LTPP proceeding, the Commission authorized SCE to procure between 1,400 and 1,800 MW of capacity in the Western LA Basin sub-area and 215 to 290 MW in the Moorpark sub-area to meet LCRs by 2021. SCE is required to procure minimum amounts of gas-fired generation, preferred 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 an LCR solicitation that is open to all technologies that can meet SCE's LCR needs on September 12, 2013. This LCR solicitation is open to renewable resources.~~

~~Additionally, SCE's 2013 Procurement Protocol encourages projects in the Western LA Basin sub-area and the Moorpark sub-area to participate in the 2013 RPS solicitation. To the extent SCE receives proposals for projects in those areas that are not selected in SCE's RPS~~

~~solicitation based on LCBF selection criteria, SCE will consider the LCR value of these proposals using the LCR solicitation valuation methodology.²⁸ Only such projects bid assuming the conferment of Capacity Deliverability Status and a CAISO NQC assignment will be considered for their LCR value. SCE may 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.~~

X.XII. COST QUANTIFICATION

The spreadsheet attached as Appendix D includes actual expenditures per year for RPS-eligible generation for every year from 2003 through ~~2012 and~~2013, as well as actual RPS-eligible generation for every year from 2003 through 2013. Appendix D also includes a forecast of future expenditures SCE may incur every year from ~~2013~~2014 through 2030, as well as ~~actual RPS-eligible~~a forecast of expected generation for every year from ~~2003 through 2012 and a forecast of expected~~generation for every year from 20132014 through 2030.²⁹41

XI.XIII. EXPIRING CONTRACTS

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

²⁸ ~~SCE plans to use a similar approach in future RAM and SPVP solicitations using the LCR solicitation valuation methodology.~~

²⁹41 For all forecast years, SCE has assumed a 100% success rate for all projects that are not yet on-line.

~~XII, XIV.~~ IMPERIAL VALLEY

In SCE's ~~2011~~2013 RPS solicitation, SCE received over ~~1,400 bids for more than 500~~ projects. ~~Of those bids, [REDACTED] were~~350 proposals. [REDACTED]

[REDACTED] located in the Imperial Irrigation District ("IID").

[REDACTED]

[REDACTED]

[REDACTED] ~~SCE ultimately did not execute contracts with any~~ [REDACTED]

[REDACTED] SCE is currently in negotiations with projects on its ~~2011~~2013

RPS solicitation short list.

The Commission should not adopt any remedial measures related to the Imperial Valley. SCE ~~is~~would be particularly concerned ~~about~~with any proposal to automatically short list 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, ~~and~~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. ~~To the extent Imperial Valley resources can interconnect to the Sunrise Powerlink Transmission Project and do not require additional transmission upgrades, they will benefit in the valuation process because they will have zero transmission upgrade costs. Moreover, the Commission has directed the IOUs to assume a Maximum Import Capacity of 1,400 MW for imports from projects~~

~~within the IID to the CAISO in their RPS solicitations.³⁰~~



~~XXXXXXXXXXXX~~ Proposals from Imperial Valley projects should be treated the same as all other proposals.

~~XV.~~ — **OTHER RPS PLANNING CONSIDERATIONS AND ISSUES**

~~A.~~ — **Bilateral Transactions**

~~In D.13-11-024, the Commission removed the restriction on SCE entering into bilateral RPS contracts set forth in D.12-11-016.³¹ Accordingly, SCE is authorized to execute bilateral contracts for products in the RPS program.³² 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**

~~The Commission has mandated a zero integration cost adder since 2004.³³ In its decision on the IOUs’ 2012 RPS Procurement Plans, the Commission again required the IOUs to use a zero integration cost adder in their RPS solicitation valuation processes, reasoning that an integration cost adder must be developed in a public process with public review and comment.³⁴~~

~~The amount of intermittent renewable resources interconnected to grid has increased substantially since the beginning of the RPS program, and will continue to increase as the State moves toward its 33% RPS goal. Integration costs are real costs associated with intermittent renewable resources and the Commission should not rely on outdated assumptions and the lack of~~

³⁰ ~~See D.12-11-016 at 19-20.~~

³¹ ~~See D.13-11-024 at Ordering Paragraph 22.~~

³² ~~See id.~~

³³ ~~See D.04-07-029 at 12-14.~~

³⁴ ~~See D.12-11-016 at 28-29.~~

~~public analysis as the basis for a zero integration cost adder. The LCBF evaluation process should accurately account for all costs associated with RPS procurement.~~

~~Accordingly, if an integration cost adder is developed through a CAISO process or in a Commission proceeding such as R.12-03-014, R.11-10-023, or R.11-05-005, SCE may seek to amend its 2013 RPS Plan for the purpose of using that integration cost adder.³⁵~~

~~C. 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 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.~~

~~SCE's *Pro Forma* already provided that the seller must operate the generating facility in accordance with Prudent Electrical Practices.³⁶ 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."³⁷~~

³⁵ ~~See D.13-11-024 at 28.~~

³⁶ ~~See 2013 *Pro Forma* (attached hereto as Appendix G.1), Section 3.12(a).~~

³⁷ ~~See *id.*, Exhibit A, Section 215.~~

~~Consistent with SCE's focus on safety, SCE has added a provision to its 2013 Pro Forma providing 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.³⁸~~

~~Since the filing of SCE's initial 2013 RPS Plan on June 28, 2013, SCE has also added a safety section to its 2013 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 2013 Pro Forma.³⁹~~

~~XIII, XVI.~~ SUMMARY OF IMPORTANT CHANGES FROM 2012/2011 BETWEEN THE 2013 AND 2014 RPS PLAN PLANS

At the time of filing this 2014 RPS Plan, SCE is in contract negotiations with sellers from the 2013 RPS solicitation. Because the 2013 solicitation is still ongoing, there has been little opportunity for feedback from the development community and there may be additional process improvements and lessons learned that result from the 2013 solicitation. While SCE is implementing changes to its solicitation documents and LCBF methodology for 2014 as described herein, SCE may also make additional proposed modifications to these documents or other aspects of this 2014 RPS Plan in an updated plan, to be submitted on August 20, 2014.⁴² SCE summarizes some important changes in its 2014 solicitation documents and its LCBF methodology below.

³⁸ ~~See id., Section 3.11(e). Additional discussion of this provision is included in Section XVI.B.7.~~

³⁹ ~~See 2013 Procurement Protocol (attached hereto as Appendix F.1), Section 8.03. Additional discussion of this provision is included in Section XVI.A.8.~~

⁴² For example, upon the conclusion of the 2013 RPS solicitation, SCE will review the proposal submittal process (e.g., using a two-step versus a one-step process) to determine whether improvements should be implemented.

~~SCE's 2013 RPS Plan includes important changes to: (1) SCE's 2013 Redlines of SCE's 2014 Procurement Protocol; (2) SCE's 2013, 2014 Pro Forma; and (3) SCE's 2013, LCBF Methodology, and 2014 Form of Seller's Proposal. Those changes are summarized below.⁴⁰ In SCE's initial 2013 RPS Plan filed on June 28, 2013, SCE included redlines of its 2013 Procurement Protocol and 2013 Pro Forma against the 2011 as compared to the versions of those documents included in SCE's Final 2013 RPS Procurement Plan filed on December 4, 2013 are included as Appendices F.2 and G.2 to SCE's initial 2013 RPS Plan. In SCE's amended 2013 RPS Plan filed on August 28, 2013, SCE included redlines of its 2013 Procurement Protocol and 2013 Pro Forma against the initial versions of those documents filed on June 28, 2013 as Appendices F.2 and G.2 to SCE's amended 2013 RPS Plan. SCE also included a redline of its 2013 Form of Seller's Proposal against the 2011 I.2, G.2, 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 is included as Appendix I.2 to SCE's amended 2013 RPS Plan. In this 2013 RPS Plan, SCE includes redlines of its 2013 Procurement Protocol, 2013 Pro Forma, and 2013 Form of Seller's Proposal against the versions of those documents filed on August 28, 2013 as Appendices F.2, G.2, and I.2, respectively. Finally, redlines of SCE's 2013 Written Plan and SCE's Least-Cost Best-Fit Methodology are also included as Appendices A and H.2, respectively.⁴⁴ A.⁴⁴~~

⁴⁰ ~~Because SCE determined it was unnecessary to hold an RPS solicitation in the 2012 cycle, SCE did not include such solicitation documents in its First Amended 2012 RPS Procurement Plan filed on August 15, 2012 or its Final 2012 RPS Procurement Plan filed on November 29, 2012. Accordingly, this Section discusses the important changes in SCE's proposed 2013 RPS solicitation documents from its 2011 RPS solicitation documents.~~

⁴³ ~~SCE has not included a redline of its 2014 REC Pro Forma because that document was not included in SCE's 2013 RPS Procurement Plan.~~

⁴⁴ ~~SCE has changed its 2013 2014 Written Plan from its 2012 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 has modified this 2013 Written Plan from the amended version of its~~

A. Important Changes to SCE's 2013 in 2014 Procurement Protocol

1. ~~SCE Will Only Accept Proposals for Projects With Commercial Operation Dates of January 1, 2016 or Later~~

~~In SCE's 2013 RPS solicitation, SCE will only accept proposals for projects with commercial operation dates of January 1, 2016 or later. Additionally, SCE will require that the project's interconnection study support its proposed commercial operation date or the proposal will not be considered. As discussed in Sections II.B and II.C, this requirement is consistent with SCE's renewable net short position in the third compliance period and future years. It also allows projects that may need to reach commercial operation prior to the reduction in the ITC from 30% to 10% of certain capital costs on December 30, 2016 to participate in the solicitation, which may benefit SCE's customers through lower contract prices for projects that receive ITC benefits.~~

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

~~Because there is no upward limitation on the amount of Category 1 products that may be procured for RPS compliance, Category 1 products provide more certainty and flexibility to SCE~~

~~2013 Written Plan filed on August 28, 2013 in response to D.13-11-024, and to make other minor updates, corrections, and clarifications. SCE's initial 2013 RPS Plan filed on June 28, 2013 included a redline of SCE's 2013 Written Plan against the version of that document in SCE's Final 2012 RPS Procurement Plan filed on November 29, 2012 as Appendix A. SCE's amended 2013 RPS Plan filed on August 28, 2013 included a redline of SCE's 2013 Written Plan against the initial version of that document filed on June 28, 2013 as Appendix A. This 2013 RPS Plan includes a redline of SCE's 2013 Written Plan against the amended version of that document filed on August 28, 2013 as Appendix A. As shown in Appendix H.2, SCE modified its Least Cost Best Fit Methodology from the version filed on June 28 and August 28, 2013 in response to D.13-11-024 and to include additional explanation of its congestion cost adder methodology made changes to the format of its RNS calculations and included additional RNS-related information in accordance with the RNS Ruling. SCE has also reorganized certain sections of its 2014 Written Plan to be more consistent with the organization of the other IOUs' plans.~~

~~than Category 2 or 3 products.⁴² Accordingly, SCE's proposed 2013 Procurement Protocol states that SCE will only consider proposals for Category 1 products.⁴³~~

As in the 2013 RPS solicitation, SCE will solicit long-term⁴⁵ Category 1 products in the 2014 solicitation. Additionally, as provided in SCE's proposed 2014 Procurement Protocol, SCE will consider proposals for long-term Category 3 unbundled RECs from both new and existing generation facilities.⁴⁶

SCE intends to include long-term Category 3 unbundled REC transactions in its 2014 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 ultimately executed by SCE will be within the limits on procurement of Category 3 products.⁴⁷

Limiting the 2014 RPS solicitation to ~~Category 1~~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.

~~Moreover, soliciting for Category 2 or 3 products during this solicitation is incompatible with current market dynamics for these products. It is more likely that there will be cost effective~~

~~⁴² In contrast to Category 1 products, there are declining limits on the procurement of Category 2 and 3 products. See Cal. Pub. Util. Code § 399.16(e).~~

~~⁴³ The Commission has already 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.~~

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 See Cal. Pub. Util. Code § 399.16(c)(2).

~~opportunities for procurement of Category 2 and 3 products closer in time to SCE's need. Category 2 and 3 products are also more likely be procured through short term transactions, and the restriction on banking of excess procurement from transactions with terms less than 10 years makes short term Category 2 and 3 transactions less desirable for SCE's customers. The Commission requirement that IOUs' initial contracts for substitute energy in Category 2 transactions must be at least five years in duration or as long as the RPS contract, whichever is shorter,⁴⁴ also reduces the utility of Category 2 products since substitute energy may not be available on economic terms over such durations.~~

2. Allowing Bidding of Various Curtailment Options

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 order to help determine how sellers value curtailment and the cost of curtailment rights to SCE's customers, SCE's 2014 Procurement Protocol will allow sellers proposing Category 1 products to provide four bids based on varying options for discretionary curtailment orders pursuant to Section 3.12(g)(iii) of the 2014 *Pro Forma* ("Curtailment Order") as described below:

- Option 1: Allows sellers to offer SCE 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, but sellers would have to "pay back" the curtailed energy for which they were paid by delivering

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.

twice the amount of paid curtailed energy at the end of the contract term for one-half of the contract price. This option is identical to SCE's 2013 *Pro Forma* position.

- Option 2: Allows sellers to offer SCE the right to issue unpaid Curtailment Orders for up to 50 hours per year with no "pay back" provision.
- Option 3: Allows sellers to offer SCE no unpaid Curtailment Orders, but sellers would have to "pay back" the curtailed energy for which they were paid by delivering twice the amount of paid curtailed energy at the end of the contract term for one-half of the contract price.
- Option 4: Allows sellers to offer SCE no unpaid Curtailment Orders with no "pay back" provision.

SCE will evaluate all four bids and select the bid that represents the best value to SCE's customers.⁴⁹

3. **SCE Will Require That Projects Have Completed Phase II Interconnection Studies to Participate in its 2013 RPS Solicitation**LCR Requirements and PRP Goal

~~In order to submit a proposal in SCE's 2013 RPS solicitation, SCE will require that projects possess either a Phase II Interconnection Study or an equivalent or better process or exemption. Through this approach, SCE will engage with developers of projects further along in the development cycle. SCE will have more complete information during the evaluation process regarding the project's transmission upgrade costs, and any risks associated with those costs and~~

⁴⁴ ~~See D.11-12-052 at 50-51.~~

⁴⁹ The executed contract between SCE and the seller would be changed from the *pro forma* terms, as necessary, with terms appropriate for the option selected.

~~timing of the interconnection. This will allow SCE to make more accurate decisions about which proposals offer the most value to its customers. Sellers will also have more certainty around the costs and timing of interconnection for their projects, making their proposals more realistic. Similarly, the Commission will have more complete information at an early stage.~~

~~Ensuring that all parties have more complete and accurate information about a project's interconnection status and costs should also mitigate the risk of project failure due to interconnection issues. In SCE's experience, projects that have not yet completed their interconnection studies at the time of bidding or contract execution are generally less viable than projects that have completed such studies. The majority of power purchase agreements that SCE has terminated over the past two years have been due to transmission costs and transmission interconnection timing issues. More certainty around these issues earlier in the process will help to mitigate this problem.~~

~~In D.12-11-016, the Commission recognized the value of having the most current and accurate transmission upgrade cost information at key decision points in the RPS procurement process, requiring that bidders have the minimum of a completed Phase I Interconnection Study (or the equivalent or better) to bid in RPS solicitations.⁴⁵ The Commission declined to adopt SCE's proposal to require a Phase II Interconnection Study (or the equivalent or better) prior to contract execution because of concerns over the timeline required to obtain Phase II Interconnection Studies and the possible incompatibility of that timeline with the 12-month lifespan of the 2012 solicitation short lists.⁴⁶ The Commission stated that it would continue to consider the merits of such a proposal later in the proceeding.⁴⁷~~

⁴⁵ ~~See D.12-11-016 at 41-43.~~

⁴⁶ ~~See id. at 42.~~

⁴⁷ ~~See id.~~

~~SCE is requiring a Phase II Interconnection Study (or the equivalent or better process or exemption) because Phase I Interconnection Studies are preliminary and only serve to cap the obligation of the project developer. A Phase II Interconnection Study (or the equivalent or better process or exemption) includes a much more rigorous estimate of network upgrade costs—which are ultimately paid by utility customers. By requiring a Phase II Interconnection Study (or the equivalent or better process or exemption) for all proposals submitted in its 2013 RPS solicitation, SCE will be able to more accurately evaluate and rank proposals, and will have more accurate information on the cost to customers associated with any network upgrades.~~

~~SCE also believes that a Phase II Interconnection Study (or the equivalent or better process or exemption) requirement will allow it to capitalize on the benefits of a maturing renewable energy market with more competition and proposed projects that tend to be further along in the development cycle. Indeed, there is a significant pool of projects that are sufficiently advanced in the development process that they will have Phase II Interconnection Studies (or the equivalent or better process or exemption) in time to be eligible to participate in SCE's 2013 RPS solicitation. Unlike in 2012, the timelines for Phase II Interconnection Studies and the 2013 RPS solicitations pose no conflicts. As discussed below, SCE estimates the capacity of available, uncommitted projects that meet SCE's proposed Phase II Interconnection Study requirement to be at least 2,000 MW, and possibly as much as 8,000 MW.~~

~~The CAISO's California ISO Controlled Grid Generation Queue—CISO Active report, dated as of May 24, 2013,⁴⁸ when reviewed for projects that do not already have contracts with the~~

⁴⁸—Current report is available at: <http://www.aiso.com/Documents/ISOGeneratorInterconnectionQueue.pdf>.

~~three IOUs,⁴⁹ indicated that there are 22 uncommitted projects (1,281 MW) studied as part of Queue Clusters 3 and 4 that possess a Phase II Interconnection Study and approximately six projects (762 MW) expected to receive a Phase II Interconnection Study once Queue Cluster 5 results are available. In total, there are approximately 28 uncommitted projects totaling 2,043 MW of capacity that possess either a Phase II Interconnection Study (or an Interconnection Agreement) from Queue Clusters 3 and 4, or that possess a Phase I Interconnection Study and are awaiting their Phase II Interconnection Study results, which are expected to be completed during December 2013.~~

~~In addition, the CAISO's California ISO Controlled Grid Generation Queue—CISO Active report, dated as of May 24, 2013, indicated that there may be as many as 53 uncommitted projects (6,229 MW) studied as part of the Transition Queue Cluster, Queue Cluster 1, Queue Cluster 2, SGIP Cluster, and SGIP Transition Cluster that possess either a Phase II Interconnection Study or an Interconnection Facilities Study.~~

~~4. SCE Will Implement a Preference for Projects Greater Than 20 MW or 3 MW or Greater, for Projects Located in Certain Areas~~

~~Consistent with D.13-11-024, projects with a capacity of 1.5 MW or greater will be eligible to participate in SCE's 2013 RPS solicitation.⁵⁰ Additionally, for projects that are located within the service territories of either SCE, Pacific Gas and Electric Company ("PG&E"), or San Diego Gas & Electric Company ("SDG&E"), and directly interconnected to the CAISO or the distribution system of SCE, PG&E, or SDG&E, SCE has a strong preference for projects with a~~

⁴⁹ ~~SCE did not include those projects under contract with an IOU and either awaiting Commission approval or approved by the Commission as indicated in the RPS Project Status Table 2013 May, which was available on the Commission's website at <http://www.cpuc.ca.gov/PUC/energy/Renewables/> as of May 24, 2013.~~

⁵⁰ ~~See D.13-11-024 at 42.~~

~~capacity greater than 20 MW.⁵¹ SCE is stating this preference because projects 20 MW and under that are located in the service territories of SCE, PG&E, and SDG&E are eligible to participate in a variety of other procurement programs for small renewable resources, including SCE's SPVP, the RAM program, and Re-MAT.~~

~~Because they are not eligible for the SPVP, RAM, and Re-MAT programs, SCE has a strong preference for projects with a capacity of 3 MW or greater for projects directly interconnected to a CBA that are located outside the service territories of SCE, PG&E, and SDG&E. Further, given SCE's LCR need~~

~~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 ~~and Moorpark sub-area, SCE has a strong preference for projects of any size located in those areas that meet the minimum project size for SCE's 2013 RPS solicitation.~~~~

~~5. SCE Will Implement a Two-Step Solicitation Process~~

~~SCE intends to implement a change in its RPS solicitation process for 2013. Specifically, as in prior solicitations, sellers will submit their proposals and, after evaluating each proposal, SCE will select the best proposals for inclusion on a short list. SCE and shortlisted sellers will then negotiate contract terms over a set negotiation period, expected to be approximately three months. Should SCE and a seller be unable to complete negotiations in this time frame, the seller's proposal will be dropped from consideration. At the end of the negotiation period, sellers will have an opportunity to refresh their proposed pricing, but no other elements of their proposal or the negotiated contract terms may be changed. SCE will then re-evaluate proposals based on the refreshed pricing and execute those contracts that it determines will provide value to its customers.~~

~~⁵¹ In D.13-11-024, the Commission stated that utilities are permitted to designate preferences that fall above the 1.5~~

~~SCE expects this structure to significantly reduce the amount of time required to negotiate contract terms for both SCE and sellers. SCE has used this solicitation structure in other solicitations, including its all source solicitations. Additionally, this two-step solicitation process will alleviate the problem of pricing terms becoming stale because of the time period between shortlisting, contract execution, and Commission review of the contract, which the Commission has identified as a potential problem.⁵²~~

~~6. Proposals With Energy Storage~~

~~Although SCE has accepted proposals with energy storage in the past, SCE's 2013 Procurement Protocol makes it clear that SCE will consider proposals with energy storage if the storage technology is only capable of being charged 100% by an eligible renewable energy resource and does not result in delivery of non-RPS eligible energy. The seller's product price should include the energy storage component.~~

~~7. Mohave SO₂ Revolving Fund~~

~~As explained in SCE's 2013 Procurement Protocol, proposals associated with the Hopi Tribe and/or the Navajo Nation that qualify under the requirements of D.13-02-004 (the "Mohave SO₂ Decision") may be entitled to use available funds from the SCE administered revolving fund established for such purposes by the Mohave SO₂ Decision (the "Mohave SO₂ Revolving Fund") to meet their development security obligations.~~

~~8. Safety~~

~~Since the filing of SCE's initial 2013 RPS Plan on June 28, 2013, SCE has also added a safety section to its 2013 Procurement Protocol providing that sellers must possess a written plan~~

~~MW minimum project size. See *id.*~~

~~⁵² See Second Assigned Commissioner's Ruling Issuing Procurement Reform Proposals and Establishing a Schedule for Comments on Proposals at 10 (October 5, 2012).~~

~~for the safe construction and operation of the generating facility as set forth in the 2013 Pro Forma.⁵³ 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 qualify for SCE's PRP. Any resulting contract meeting the LCR and PRP goal must include the conveyance of RA benefits. In addition, to be considered for the PRP, projects must be in operation by January 2017.~~

A. Important Changes to SCE's 2013 in 2014 Pro Forma

1. RA Performance Obligation: Section 3.02 Availability Guarantee for Wind Projects: Former Section 3.19

~~SCE's 2013 Pro Forma includes a new provision under which sellers that propose a Capacity Deliverability Status project, and will thus be eligible to receive RA, must pay SCE liquidated damages if the amount of NQC is less than the qualifying capacity. A project's qualifying capacity is calculated using the project's actual deliveries (after the first three years of operation). The net qualifying capacity may be reduced by the CAISO, however, through its calculation of NQC, which depends heavily on available transmission capacity.~~

~~In the valuation of Capacity Deliverability Status projects, SCE allocates benefits to the project for providing RA benefits and reduced congestion risk that are attributable to being a Capacity Deliverability Status resource. If the seller does not provide the amount of RA that was expected, SCE's customers would be paying for a product (i.e., RA benefits and reduced congestion risk) they did not receive. Thus, an RA performance obligation is necessary and has been approved in past SCE pro forma agreements.~~

⁵³ See 2013 Procurement Protocol (attached hereto as Appendix F.1), Section 8.03.

~~SCE's proposed language for the 2013 *Pro Forma* is a slightly different approach than the approved RA performance obligation provision in SCE's RAM *pro forma* agreement. In that agreement, sellers propose a certain amount of guaranteed RA and pay liquidated damages for any shortfall. However, that shortfall can be caused by lower generation which may be attributable, for intermittent technologies in particular, to low fuel supply during the qualifying capacity calculation period. Since SCE is in a better position to manage that variability risk, in the 2013 *Pro Forma*, SCE is only requiring sellers to take the risk of the factors the CAISO takes into account in calculating the NQC.~~

~~Since the filing of SCE's initial 2013 RPS Plan and 2013 *Pro Forma*, SCE has changed the RA performance obligation start date from one that is uncertain (i.e., one that begins once the seller actually starts delivering RA) to a set date (the "RA Guarantee Date").⁵⁴ The RA Guarantee Date is the earlier of the first date on which SCE may use any RA benefits provided by the generating facility in an RA Showing or the date selected by seller, as specified by the seller in its proposal.⁵⁵~~

~~SCE evaluates and selects Capacity Deliverability Status projects based in part on an expected amount of RA benefits from the generating facility. SCE made this change because an uncertain start date for the RA performance obligation could result in situations where a project is selected based on its assumed RA value using an estimated start date for when the project will begin delivering RA, but then is delayed in delivering, or never commences delivering, RA benefits under the contract. In that situation, the project's RA performance obligation would never begin and the project would never have to pay liquidated damages to compensate SCE's customers for the RA value that they did not receive. The change to a specific RA Guarantee Date ensures~~

⁵⁴—SCE also made conforming changes to its 2013 Procurement Protocol. See 2013 Procurement Protocol (attached hereto as Appendix F.1), Section 3.04.

~~that sellers will be obligated to provide the RA benefits they were credited with in the valuation process. In addition, a specific RA Guarantee Date ensures that the other contract terms that change once the RA performance obligation begins (i.e., different time-of-delivery adjustments, curtailment provisions, etc.) match what both parties were expecting when the contract was executed. The seller specifies the RA Guarantee Date when it submits its proposal. Such RA Guarantee Date may not be earlier than, but may be later than, a date estimated in the project's Phase II Interconnection Study, Interconnection Facilities Study, or Interconnection Agreement, at seller's discretion; therefore, the seller can appropriately balance the risks and benefits associated with selecting a particular date.~~

~~SCE has also updated the 2013 *Pro Forma* with respect to the scope of what current RA products (e.g., local and flexible RA benefits) are included within seller's obligation to convey all RA benefits.~~

~~2. Curtailment: Sections 1.09, 3.12, 4.01, and 4.02, and Associated~~

~~Definitions~~

~~The economic curtailment language included in SCE's 2011 *Pro Forma* was detailed and complex and has proven difficult for both buyer and seller to manage. Specifically, it ties SCE's right to curtail, without payment, to prices in the day-ahead market, includes certain rights for the seller and SCE regarding real-time bidding instructions, and seller's payment under the real-time scenarios is dependent on numerous variables such as the instructions that are given, whether the instructions are followed, and market prices. SCE has streamlined the economic curtailment language in its 2013 *Pro Forma* so that it can be more easily managed and administered to the benefit of both parties.~~

⁵⁵~~The RA Guarantee Date may not be earlier than, but may be later than, a date estimated in the project's Phase II~~

~~SCE's proposed 2013 *Pro Forma* curtailment language has been simplified to clearly describe the curtailment rights and obligations of buyer and seller, maintain revenue certainty for the seller in order to facilitate project financing, and also provide more options for managing curtailment events. The proposed language provides for the following: (1) up to a megawatt-hour ("MWh") curtailment cap (i.e., 50 hours for every megawatt of contract capacity), SCE may curtail sellers for any reason, without payment; (2) SCE may curtail in excess of the cap, with payment to the seller for the amount of energy that could have been delivered absent the curtailment; (3) SCE may elect to receive twice the amount of all generated energy curtailed over the cap that SCE pays for but does not receive, at the end of the contract term, subject to a two-year limitation; (4) SCE must pay for energy SCE curtails during on-peak hours; (5) with reasonable documentation, SCE will compensate sellers for lost federal production tax credits associated with the curtailed amount within each year, as applicable; and (6) SCE maintains its ability to curtail due to emergencies, instructions from the CAISO, or instructions from the transmission or sub-transmission provider, as was included in SCE's 2011 *Pro Forma*.~~

~~As evidenced by SCE's experience successfully incorporating this proposed curtailment language into RPS contracts with current sellers in its portfolio, SCE anticipates this revised language will be easier to manage and will not hinder the ability of projects to attain financing. Further, this language has recently been adopted by the Commission in the Re-MAT standard contract.⁵⁶~~

~~Based on comments regarding SCE's initial 2013 RPS Plan, SCE modified Section 3.12(g)(i) of its 2013 *Pro Forma* to clarify that the CAISO issuing a schedule is not a curtailment order pursuant to its curtailment provisions. Additionally, based on D.13-11-024, SCE has~~

~~Interconnection Study, Interconnection Facilities Study, or Interconnection Agreement, at seller's discretion.~~

~~modified its curtailment provisions so that they apply to both EO and Capacity Deliverability Status projects.⁵⁷~~

~~3. New Standard Term and Condition 2: Section 3.01(f)~~

~~As required by D.13-11-024, SCE has added new Standard Term and Condition (“STC”) 2 to its 2013 *Pro Forma* as a modifiable term.⁵⁸ In D.13-11-024, the Commission stated that “[n]othing in this decision is intended to prohibit parties from negotiating any additional contract terms that incorporate some or all of the elements of the prior STC 2, so long as they do not conflict with the new STC.”⁵⁹ Accordingly, SCE has retained the Green Attributes language from the previous STC 2 in its 2013 *Pro Forma*, although the terms are no longer standard terms and conditions. SCE will modify the Green Attributes language in negotiations, as necessary, to avoid any conflicts with the new STC 2.~~

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*.

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

⁵⁶ See D.13-05-034.

⁵⁷ See D.13-11-024 at Ordering Paragraph 13.

⁵⁸ See *id.* at 24-25, Ordering Paragraph 6.

⁵⁹ *Id.* at 24.

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.

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

SCE modified ~~its~~the TOD factors in the ~~2013~~2014 *Pro Forma*. In particular, SCE's 2013~~2014~~ *Pro Forma* includes ~~separate EO and FCDS TOD factors.~~⁶⁰ ~~The TOD factors adjust the payment a generating facility receives based on the hour of the day in which the project delivers its energy. Over an entire year, both sets of TOD factors result in an adjustment factor of 1.0 to the contract price. The only difference between the TOD factors is that payment under the FCDS TODs are higher than EO TODs during the on-peak period, and lower than EO TODs in the off-peak period, creating a "peakier" pattern~~ 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.

~~In order to accurately determine~~SCE based its TOD factors on the expected relative value, ~~given the evolvement of valuation methodologies and changing market conditions, it is necessary to update TOD factors to reflect more recent forecasts for energy and capacity values. As such, SCE has also modified its TOD factors to reflect changing market conditions. SCE's~~ of energy in each TOD period, which is consistent with how the previous EO TOD factors were calculated.

⁶⁰ ~~The Commission approved EO and FCDS TOD factors for PG&E and SDG&E for their 2012 RPS solicitations, and has also approved the use of different TOD factors in other renewable procurement programs such as the Re-MAT. See D.12-11-016 at 39; D.12-05-035, as modified by D.13-01-041, at 58.~~

SCE's new TOD factors are derived from SCE's internal forecasts for the future value of ~~capacity and energy which captures~~. These forecasts capture resource and price forecast changes such as updated greenhouse gas emissions prices observed through the ~~emissions~~ 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.⁵⁰ SCE has revised its TOD factors in the 2014 *Pro Forma* to reflect the new period definitions as established for optional residential TOU rates.

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 ~~underlying forecasts for energy and capacity used in the calculation of the~~ TOD factors.

~~As stated in its initial and amended 2013 RPS Plans, SCE has updated its TOD factors in this 2013 RPS Plan. SCE updated its TOD factors based on updated price forecasts, but did not change the underlying methodology for calculating its TOD factors.~~

⁵⁰ See A.13-12-015.

3. Curtailment: 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. 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 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.

5. **Buyer's Termination Rights: Section 2.04(a)(iii) Tax Credit**

Legislation: Former Sections 1.04(b), 1.10, and 2.03(a)(ii)

~~Consistent with D.12-11-016,⁶⁴ and in order to protect SCE's customers from excessive network upgrade costs, SCE's 2013 *Pro Forma* provides a right for SCE to terminate the contract if the reimbursable network upgrade costs in an interconnection study or interconnection agreement for a project are estimated to exceed a certain amount, with an option for sellers to "buy down" (i.e., pay for) any costs in excess of the reimbursable network upgrade cap specified in the contract, which would then eliminate SCE's termination right.~~

In the 2013 *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 2014 *Pro Forma* because the anticipated timing of the 2014 RPS solicitation and the current status of federal tax credit legislation make it unlikely that such provisions will be applicable to the vast majority of projects participating in SCE's 2014 RPS solicitation.

For example, in order for projects to qualify for the ITC in its current form, projects must

~~⁶⁴ See D.12-11-016 at 32-33.~~

achieve commercial operation by December 31, 2016. To the extent that SCE selects a project that expects to achieve commercial operation for purposes of the ITC in 2016, any changes to the ITC that occur with respect to 2017 and beyond are irrelevant for the project. Such projects should be developed in order to achieve commercial operation in 2016 to qualify for the ITC in its current form, and they should not benefit from the option to extend the commercial operation deadline or to terminate the PPA if the ITC does not get extended. To the extent that a project does not expect to achieve commercial operation for purposes of the ITC until well after the currently anticipated changes in the ITC, including tax extension-related relief in the PPA would allow the developer to speculate on the future of the ITC with relatively little cost. In such a scenario, projects selected by SCE that assume one or more extensions of the current ITC benefits may have significant viability concerns in the event such ITC extensions never occur.

The tax credit legislation provisions previously included in the 2013 *Pro Forma* are likely to be inapplicable to a substantial number of projects and, therefore, should not be included in the 2014 *Pro Forma*. As with other provisions of the 2014 *Pro Forma*, sellers will have the opportunity to provide a justification during negotiations regarding unique circumstances that may make certain tax credit legislation provisions appropriate for a particular project during negotiations.

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. ~~6.~~ **Excess Deliveries: Section 1.06(c)**

~~In its 2013 *Pro Forma*, SCE has modified the excess deliveries provision that was included in its 2011 *Pro Forma*. While the provision included in SCE's 2011 *Pro Forma* provided for a reduced payment (or no payment) for deliveries in excess of threshold amounts, the modified provision sets a specified limit of 110% of the contract capacity, whereby the seller will not be paid for the excess amounts (above 110%) delivered in that hour. Additionally, during any settlement interval during which the seller's deliveries are in excess of 110% of contract capacity and there is a negative Locational Marginal Price ("LMP"), seller shall pay to SCE an amount equal to the negative LMP times such excess MWh.~~

~~The basis of this limitation is to ensure that the seller does not install capacity in excess of the specified~~

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, ~~this language provides that if the seller delivers more than 115% of the expected annual net energy production within a year, then seller is paid 75% of the contract price for all deliveries above this amount for the remainder of that year. This provision gives sellers additional incentive to bid their contract capacity and capacity factors accurately.~~

~~Since sellers have the ability to accurately determine the nameplate capacity of a generating facility and the ability to control the output of that facility, sellers are in a position to ensure reasonably accurate capacity ratings from their system manufacturer. Further, to the extent actual deliveries exceed nameplate capacity, 10% excess generation above the nameplate capacity provides a reasonable cushion. Therefore, absent a scenario where a seller purposefully installs a~~

generation system that is much larger than the capacity specified in the contract, a seller would not be impacted by this cap.

Moreover, it is important to note that this concept existed in SCE's 2011 *Pro Forma*, and replaces the former Exhibit S. Similar to SCE's proposed language above regarding deliveries in excess of 115% of the expected annual net energy production within a year, Exhibit S in the 2011 *Pro Forma* provided for a reduction in pricing based on increases in the capacity factor. The amount of reductions was left open to negotiations, and it proved difficult for SCE and sellers to come to an agreement. Thus, in order to avoid these lengthy negotiations, SCE has included a set excess amount and price reduction in the agreement. This provision has been adopted by the Commission in the RAM *pro forma* agreement.

7. ~~7.~~ **Safety: Section 3.11(e)**

Consistent with SCE's focus on safety, SCE has added a provision to the 2013 *Pro Forma* providing 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. SCE's *Pro Forma* already provided that the seller shall operate the generating facility in accordance with Prudent Electrical Practices. 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."

8. ~~**Dispute Resolution: Section 12.01**~~

~~SCE believes it is in the best interest of all parties to have certainty around contract administration matters as soon as possible. Accordingly, in the 2013 *Pro Forma*, SCE had added language requiring that either party that wants to raise a dispute under the contract must do so within one year of the time the facts giving rise to the dispute occurred, or one year from the time they were reasonably capable of being known. This will help to ensure that any concerns by either party regarding the other party's actions under the contract will be addressed in a timely manner.~~

9. ~~**Costs Associated With Designating SCE as Scheduling Coordinator:
Section 3.13(a)**~~

~~While SCE believes it is most efficient for SCE to be the scheduling coordinator for renewable generators in its portfolio, SCE's customers nevertheless face significant costs associated with SCE acting as scheduling coordinator for these resources, including scheduling coordinator registration charges, equipment costs, software costs, and labor costs. In order to appropriately allocate some of these costs to the generators who are benefiting from these services, SCE has included scheduling coordinator set-up fee language in its 2013 *Pro Forma*. The scheduling coordinator set-up fee will not exceed \$50,000.~~

10. ~~**Insurance: Section 10.11**~~

~~SCE has reviewed the current market insurance provisions and updated its 2013 *Pro Forma* to provide consistent terms. In particular, SCE added a provision to its 2013 *Pro Forma* requiring sellers to carry pollution liability insurance. SCE believes that its customers should be insured against third party claims arising from harm caused by pollution from the generating facility. 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.

B. Important Changes to SCE's 2013 in 2014 Form of Seller's Proposal

~~SCE has significantly simplified and streamlined its 2013 Form of Seller's Proposal from the version of that document utilized in SCE's 2011 RPS solicitation. The important changes to the Form of Seller's Proposal are discussed below.~~

1. ~~SCE Will Move To A Web-Based Bidding System~~Streamlining the Method by Which Sellers Indicate Exclusive and Inclusive Offers

~~For its 2013 RPS solicitation, SCE intends to utilize a web-based bidding system where sellers can provide their proposals by filling out on-line forms and uploading required documents. This new system, which is already in use for both SCE's RAM and SPVP programs, is intended to streamline the bidding process and make it faster and more accurate, in comparison to the 2011 RPS solicitation file-based system, where individual proposals were submitted on flash drives and physically delivered to SCE.~~ 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.

~~In past RPS solicitations, sellers would fill in a Seller's Proposal Template written in Microsoft Excel. Most of that information will now be entered interactively using the new web-based system. Data will be checked as it is inputted by the seller, and the proposal cannot be saved and uploaded unless the proposal is complete and the data is within required norms. This will increase the quality and accuracy of the proposal information that SCE receives. Moreover, under a web-based system, both the Independent Evaluator and SCE can more easily access and process proposals submitted by sellers.~~

~~SCE has successfully utilized a web-based bidding system in its RAM program. With the recent completion of the RAM 4 solicitation, SCE has had a good opportunity to adjust and improve the system. The change from a file-based system to a web-based system for submission of proposals required substantial revisions to the 2013~~

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~~to reflect the new submission requirements necessitated by a web-based system as opposed to the previous file-based system.~~

~~In particular, in an effort to encourage sellers to submit more fully developed and higher quality proposals, SCE is proactively drawing sellers’ attention to acknowledgements, consents, and statements from sellers with regard to experience, site control, safety, confidentiality, and interconnection agreements. In the case of the Non-Disclosure Agreements (“NDAs”) (i.e., the Short-Term NDA covering the bidding period and the Long-Term NDA should the seller be named by SCE to the short list) and the attestation letters (i.e., the Seller’s Acknowledgements Letter, the Consent for Release of Interconnection Related Information, the Team Development Experience Letter, and the Site Control Acknowledgement Letter), SCE is explicitly requiring that these acknowledgements, consents, and attestations be signed by a duly authorized representative by including the following statement: “Seller is duly organized and validly existing under the laws of the jurisdiction of its formation, and the execution and delivery of this letter are within Seller’s powers and have been duly authorized by all necessary action.”~~

C. Important Changes in LCBF Methodology

1. Valuation of Capacity Benefits for IID Projects

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.12-11-016,⁵¹ SCE has 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 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

⁵¹ See D.12-11-016 at 17-20. D.12-11-016 directed the IOUs to continue to follow the June 7 ACR.

import capability in July 2013.⁵² 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 proposes to use the CAISO's 10-year forecast of expected actual MIC at each intertie in its LCBF methodology.

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

The Commission has mandated a zero integration cost adder since 2004.⁵³ In its decision on the IOUs' 2013 RPS Procurement Plans, the Commission again required the IOUs to use a zero integration cost adder in their RPS solicitation valuation processes.⁵⁴

The amount of intermittent renewable resources interconnected to grid has increased substantially since the beginning of the RPS program, and will continue to increase as the State moves toward its 33% RPS goal. Integration costs are real costs associated with intermittent renewable resources, and the Commission should not rely on outdated assumptions and the lack of public analysis as the basis for a zero integration cost adder. The LCBF evaluation process should accurately account for all costs associated with RPS procurement.

⁵² See CAISO's Advisory Estimates of Future Resource Adequacy Import Capability (available at: http://www.caiso.com/Documents/AdvisoryEstimates-FutureResourceAdequacyImportCapability_Years2013-2022.pdf).

⁵³ See D.04-07-029 at 12-14.

⁵⁴ See D.13-11-024 at 26-28.

The ACR requests comments on a number of questions regarding an integration cost adder.⁵⁵ SCE appreciates the Commission’s acknowledgement that an integration cost adder is an important issue that needs to be addressed and the fact that the ACR has opened a dialogue to do so. SCE looks forward to working with the other parties to move toward the use of a non-zero integration adder.⁵⁶

XV. 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*, SCE’s 2014 *Pro Forma* provides that the seller must operate the generating facility in accordance with “Prudent Electrical Practices.”⁵⁷ 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

⁵⁵ See ACR at 21-23.

⁵⁶ Additionally, if an integration cost adder is developed through a CAISO process or in a Commission proceeding such as R.13-12-010, R.11-10-023, or R.11-05-005, SCE may seek to amend its 2014 RPS Plan for the purpose of using that integration cost adder. See D.13-11-024 at 28.

⁵⁷ See 2014 *Pro Forma* (attached as Appendix G.1) at Section 3.12(a).

made, could reasonably have been expected to accomplish the desired result consistent with good business practices, reliability and safety.”⁵⁸

Consistent with SCE’s focus on safety, as in the 2013 *Pro Forma*, SCE’s 2014 *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.⁵⁹

SCE also has a safety section in its 2014 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 *Pro Forma*.⁶⁰

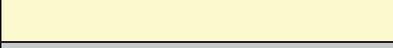
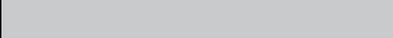
⁵⁸ See *id.* at Exhibit A.

⁵⁹ See *id.* at Section 3.11(e).

⁶⁰ See 2014 Procurement Protocol (attached as Appendix F.1) at Section 8.03.

Document comparison by Workshare Compare on Monday, June 02, 2014
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Split/Merged cell	
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CONFIDENTIAL

APPENDIX B

Project Development

Status Update

PUBLIC
APPENDIX C.1
Physical RNS
CPUC

Physical Renewable Net Short Calculations Based on CPUC Assumptions

Variable	Calculation	Item	Deficit from RPS prior to Reporting Year	2011 Actuals	2012 Actuals	2013 Actuals	2014-2013	2014 Forecast	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							
							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										75,747	77,559	77,887			78,230	80,115	81,663	83,350	84,909	86,495	88,203	90,012	91,941	94,003					
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%	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										21,967	24,043	25,703			25,816	26,438	26,949	27,505	28,020	28,543	29,107	29,704	30,340	31,021					
D		Voluntary Margin of Over-procurement		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
E	C+D	Net RPS Procurement Need (GWh)		14,755	15,119	14,896	44,771										21,967	24,043	25,703			25,816	26,438	26,949	27,505	28,020	28,543	29,107	29,704	30,340	31,021					
RPS-Eligible Procurement																																				
Fa		Risk-Adjusted RECs from Online Generation		15,654	15,821	16,479	47,953	17,153	16,927	15,960	50,041	13,926	12,743	12,659	11,778	51,106	11,100	11,016	11,019	10,918	10,886	10,691	10,479	10,464	10,309	8,919										
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%	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		-	-	56	56	1,279	2,588	3,672	7,439	4,150	4,187	4,744	4,727	17,809	4,091	4,665	4,689	4,623	4,587	4,536	4,511	4,495	4,461	4,436										
Ffb		Forecast Failure Rate for RPS Facilities in Development (%)		N/A	N/A	0.0%	0.0%	11.0%	20.2%	27.5%	22.8%	28.7%	28.6%	28.1%	28.4%	28.4%	28.2%	28.2%	28.2%	28.2%	28.2%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%
Fc		Pre-Approved Generic RECs		-	-	-	-	37	145	182	809	904	907	910	3,529	907	907	907	910	907	907	907	910	907	907	907	907	907	907	907	907	907	907	907	907	907
Ffe		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	18,332	19,512	19,777	57,661	18,885	17,834	18,310	17,415	72,444	16,698	16,588	16,566	16,451	16,380	16,133	15,897	15,869	15,677	14,262										
F0		Category 0 RECs ³		15,239	14,912	15,822	45,973	17,208	17,145	16,084	50,437	14,189	12,971	12,726	11,844	51,730	11,157	11,066	11,063	10,966	10,934	10,732	10,513	10,492	10,329	8,932										
F1		Category 1 RECs ³		52	131	240	423	1,125	2,370	3,548	7,043	3,887	3,989	4,677	4,662	17,184	4,034	4,615	4,596	4,576	4,539	4,495	4,477	4,468	4,441	4,423										
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										(4,133)	(5,733)	(8,287)			(9,117)	(9,850)	(10,383)	(11,054)	(11,640)	(12,410)	(13,210)	(13,835)	(14,663)	(16,759)					
Gb	F/A	Annual Gross RPS Position (%)		20.7%	19.9%	21.6%	20.7%											23.5%	23.6%	22.4%			21.3%	20.7%	20.3%	19.7%	19.3%	18.7%	18.0%	17.6%	17.1%	15.2%				
Application of Bank																																				
Ha		Existing Banked RECs above the PQR		0	536	451	0	1,586			1,586						7,363	7,363	7,363			7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363
Hb		RECs above the PQR added to bank		536	(85)	1,136	1,286										-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hc		Non-bankable RECs above the PQR		-	9	30	39										-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
H	Ha+Hb	Gross Balance of RECs above the PQR		536	451	1,586	1,286										7,363	7,363	7,363			7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	
Ia		Planned Application of RECs above the PQR towards RPS Compliance																																		
Ib		Planned Sales of RECs above the PQR																																		
J	Ia-Ib	Net Balance of RECs above the PQR		536	451	1,586	1,286										7,363	7,363	7,363			7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	
J0		Category 0 RECs ³		1,164	-	-	1,164										-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
J1		Category 1 RECs ³		52	131	240	423										-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
J2		Category 2 RECs ³		-	-	-	-										-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Expiring Contracts																																				
K		RECs from Expiring RPS Contracts						2,020	2,512	3,615	8,147	5,608	6,934	8,127	9,040	29,709	9,684	10,002	10,099	10,258	10,246	10,440	10,650	10,706	10,818	11,312										
Net RPS Position (Optimized Net Short)																																				
La	Ga+Ia-Ib-Ic	Annual Net RPS Position after Bank Optimization (GWh)		536	(85)	1,136	1,586										(4,133)	(5,733)	(8,287)			(9,117)	(9,850)	(10,383)	(11,054)	(11,640)	(12,410)	(13,210)	(13,835)	(14,663)	(16,759)					
Lb	(Ga+Ia-Ib-Ic)/A	Annual Net RPS Position after Bank Optimization (%)		0.7%	-0.1%	1.5%	0.7%										-5.5%	-7.4%	-10.6%			-11.7%	-12.3%	-12.7%	-13.3%	-13.7%	-14.3%	-15.0%	-15.4%	-15.9%	-17.8%					

Note: Fields in grey are protected as Confidential under CPUC Confidentiality Rules

Note: Values are shown in GWhs

Notes:

- 1 Bundled retail sales forecast for 2014-2018 and 2022-2030 is from SCE's bundled retail sales forecast; bundled retail sales forecast for 2019-2021 is from 2010 LTPP
- 2 Includes all contracts executed through 4/30/14; 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 RNS
SCE

Physical Renewable Net Short Calculations Based on SCE Assumptions

Variable	Calculation	Item	Deficit from RPS prior to Reporting Year	2011 Actuals	2012 Actuals	2013 Actuals	2011-2013	2014 Forecast	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				
							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						75,747	76,613	77,673		78,782	80,115	81,663	83,350	84,909	86,495	88,203	90,012	91,941	94,003							
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%	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						21,967	23,750	25,632		25,998	26,438	26,949	27,505	28,020	28,543	29,107	29,704	30,340	31,021							
D		Voluntary Margin of Over-procurement		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
E	C+D	Net RPS Procurement Need (GWh)		14,755	15,119	14,896	44,771						21,967	23,750	25,632		25,998	26,438	26,949	27,505	28,020	28,543	29,107	29,704	30,340	31,021							
RPS-Eligible Procurement																																	
Fa		Risk-Adjusted RECs from Online Generation		15,654	15,821	16,479	47,953	17,153	16,927	15,960	50,041	13,926	12,743	12,659	11,778	51,106	11,100	11,016	11,019	10,918	10,886	10,691	10,479	10,464	10,309	8,919							
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%	0.0%	0.0%	0.0%	0.0%	0.0%	
Fb		Risk-Adjusted RECs from RPS Facilities in Development		-	-	56	56	1,279	2,588	3,672	7,439	4,130	4,187	4,744	4,727	17,809	4,091	4,665	4,689	4,623	4,587	4,536	4,511	4,495	4,461	4,436							
Fbb		Forecast Failure Rate for RPS Facilities in Development (%)		N/A	N/A	0.0%	0.0%	11.0%	20.2%	27.5%	22.8%	28.7%	28.6%	28.1%	28.4%		28.2%	28.2%	28.2%	28.2%	28.2%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	28.1%	
Fc		Pre-Approved Generic RECs		-	-	-	-	37	145	182	809	904	907	910	3,529	907	907	907	910	907	907	907	910	907	907	907							
Ffe		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	18,332	19,512	19,777	57,661	18,885	17,834	18,310	17,415	72,444	16,698	16,588	16,566	16,451	16,380	16,133	15,897	15,869	15,677	14,262							
F0		Category 0 RECs ³		15,239	14,912	15,822	45,973	17,208	17,145	16,084	50,437	14,189	12,971	12,726	11,844	51,730	11,157	11,066	11,063	10,966	10,934	10,732	10,513	10,492	10,329	8,932							
F1		Category 1 RECs ³		52	131	240	423	1,125	2,370	3,548	7,043	3,887	3,989	4,677	4,662	17,184	4,034	4,615	4,596	4,576	4,539	4,495	4,477	4,468	4,441	4,423							
F2		Category 2 RECs ³		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
F3		Category 3 RECs		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Gross RPS Position (Physical Net Short)																																	
Ga	F-E	Annual Gross RPS Position (GWh)		536	(76)	1,166	1,625						(4,133)	(5,440)	(8,217)		(9,300)	(9,850)	(10,383)	(11,054)	(11,640)	(12,410)	(13,210)	(13,835)	(14,663)	(16,759)							
Gb	F/A	Annual Gross RPS Position (%)		20.7%	19.9%	21.6%	20.7%						23.5%	23.9%	22.4%		21.2%	20.7%	20.3%	19.7%	19.3%	18.7%	18.0%	17.6%	17.1%	15.2%							
Application of Bank																																	
Ha		Existing Banked RECs above the PQR		0	536	451	0	1,586			1,586		7,363	7,363	7,363		7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	
Hb		RECs above the PQR added to bank		536	(85)	1,136	1,286						-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hc		Non-bankable RECs above the PQR		-	9	30	39						-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
H	Ha+Hb	Gross Balance of RECs above the PQR		536	451	1,586	1,586						7,363	7,363	7,363		7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363		
Ia		Planned Application of RECs above the PQR towards RPS Compliance																															
Ib		Planned Sales of RECs above the PQR																															
J	H-Ia-Ib	Net Balance of RECs above the PQR		536	451	1,586	1,586						7,363	7,363	7,363		7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363	7,363		
J0		Category 0 RECs ³		1,164	-	-	1,164						-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
J1		Category 1 RECs ³		52	131	240	423						-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
J2		Category 2 RECs ³		-	-	-	-						-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Expiring Contracts																																	
K		RECs from Expiring RPS Contracts						2,020	2,512	3,615	8,147	5,608	6,934	8,127	9,040	29,709	9,684	10,002	10,099	10,258	10,246	10,440	10,650	10,706	10,818	11,312							
Net RPS Position (Optimized Net Short)																																	
La	Ga+Ia-Ib-Ic	Annual Net RPS Position after Bank Optimization (GWh)		536	(85)	1,136	1,586						(4,133)	(5,440)	(8,217)		(9,300)	(9,850)	(10,383)	(11,054)	(11,640)	(12,410)	(13,210)	(13,835)	(14,663)	(16,759)							
Lb	(Ga+Ia-Ib-Ic)/A	Annual Net RPS Position after Bank Optimization (%)		0.7%	-0.1%	1.5%	0.7%						-5.5%	-7.1%	-10.6%		-11.8%	-12.3%	-12.7%	-13.3%	-13.7%	-14.3%	-15.0%	-15.4%	-15.9%	-17.8%							

Note: Fields in grey are protected as Confidential under CPUC Confidentiality Rules

Note: Values are shown in GWhs

Notes:

- Based on SCE's March 2013 bundled retail sales forecast
- Includes all contracts executed through 4/30/14; 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
- Forecast of deliveries by portfolio content categories is for executed contracts only; does not include program generics

CONFIDENTIAL

APPENDIX C.3

Optimized RNS

CPUC

CONFIDENTIAL

APPENDIX C.4

Optimized RNS

SCE

PUBLIC

APPENDIX D

Cost Quantification Table

Joint IOU Assumption Guidelines for Table Input	
Table 1 (Actual Costs, \$) Items	Actual
Rows 2 – 8, 11 (2003-2013)	Settlements data from 1/1/2003 to 12/31/2013
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 1/1/2014 <ul style="list-style-type: none"> • UOG Small Hydro is annualized capital cost plus 2013 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 (2003-2013)	Settlements data from 1/1/2003 to 12/31/2013
Table 4 (Forecast Generation, MWh) Items	Forecast
Rows 2 -11 and 16-25	Forecast begins on 1/1/2014 <ul style="list-style-type: none"> • Calculated 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
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
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	\$ -
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
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
6	Solar PV	\$ 2,303	\$ 1,077	\$ 574	\$ 111	\$ -	\$ -	\$ 116,015	\$ 6,014,872	\$ 6,175,717	\$ 10,245,933	\$ 28,978,316
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
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
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	\$ 53,101,662
10	UOG Solar	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 237,324	\$ 1,518,688	\$ 2,587,858	\$ 15,703,577	\$ 34,084,657	\$ 24,802,431
11	Unbundled RECs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
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	\$1,408,381,834
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
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

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	2014	2015	2016	2017	2018	2019	2020	2021
2	Biogas	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3	Biomass	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
4	Geothermal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	Small Hydro	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6	Solar PV	\$ 149,058	\$ 3,058,462	\$ 7,286,701	\$ 7,319,912	\$ 7,369,317	\$ 7,425,005	\$ 7,517,005	\$ 7,556,289
7	Solar Thermal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
8	Wind	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
9	UOG Small Hydro	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
10	UOG Solar	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
11	Unbundled RECs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
12	Total Executed But Not CPUC-Approved RPS-Eligible Procurement and Generation Cost [Sum of Rows 2 through 11]	\$149,058	\$3,058,462	\$7,286,701	\$7,319,912	\$7,369,317	\$7,425,005	\$7,517,005	\$7,556,289
13	Bundled Retail Sales (kWh)					75,746,651,235	76,612,844,846	77,673,406,160	78,781,955,744
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	\$ 37,242,330.76	\$ 36,022,025.96	\$ 36,104,298.97	\$ 10,106,317.95	\$ 10,230,987.50	\$ 9,995,742.14	\$ 8,933,700.72	\$ 3,436,381.50
17	Biomass	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
18	Geothermal	\$ 512,229,731.19	\$ 492,197,337.27	\$ 456,929,660.86	\$ 374,412,984.23	\$ 300,374,133.22	\$ 238,369,869.75	\$ 209,948,595.05	\$ 209,684,615.62
19	Small Hydro	\$ 12,367,497.55	\$ 12,403,731.10	\$ 12,157,517.81	\$ 11,976,108.95	\$ 10,925,155.61	\$ 11,003,216.46	\$ 6,378,918.91	\$ 2,343,145.53
20	Solar PV	\$ 197,379,096.40	\$ 400,991,154.06	\$ 572,430,653.52	\$ 712,786,503.63	\$ 725,749,131.48	\$ 771,827,896.04	\$ 784,385,001.68	\$ 786,283,287.57
21	Solar Thermal	\$ 160,063,383.09	\$ 159,409,665.75	\$ 151,555,450.80	\$ 135,489,760.81	\$ 127,846,097.16	\$ 109,589,010.19	\$ 88,048,175.29	\$ 57,575,135.80
22	Wind	\$ 741,462,966.43	\$ 689,413,868.49	\$ 674,274,493.52	\$ 663,310,941.66	\$ 685,827,285.34	\$ 850,292,957.81	\$ 836,829,047.93	\$ 813,694,300.26
23	UOG Small Hydro	\$ 58,618,001	\$ 60,846,867	\$ 63,187,176	\$ 65,644,501	\$ 68,224,692	\$ 70,933,892	\$ 73,778,553	\$ 76,765,446
24	UOG Solar	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96
25	Unbundled RECs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
26	Total CPUC-Approved RPS-Eligible Procurement and Generation Cost [Sum of Rows 16 through 25]	\$1,768,495,028	\$1,900,416,671	\$2,015,771,273	\$2,022,839,139	\$1,978,309,503	\$2,111,144,606	\$2,057,434,013	\$1,998,914,333
27	Bundled Retail Sales (kWh)					75,746,651,235	76,612,844,846	77,673,406,160	78,781,955,744
28	Incremental Rate Impact					2.61 ¢/kWh	2.76 ¢/kWh	2.65 ¢/kWh	2.54 ¢/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]					2.62 ¢/kWh	2.77 ¢/kWh	2.66 ¢/kWh	2.55 ¢/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	2022	2023	2024	2025	2026	2027	2028	2029	2030
2	Biogas	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3	Biomass	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
4	Geothermal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
5	Small Hydro	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
6	Solar PV	\$ 7,618,972.97	\$ 7,679,761.23	\$ 7,757,497.11	\$ 7,818,656.17	\$ 7,905,718.62	\$ 7,975,094.95	\$ 8,064,521.51	\$ 8,125,813.76	\$ 8,210,366.17
7	Solar Thermal	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
8	Wind	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
9	UOG Small Hydro	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
10	UOG Solar	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
11	Unbundled RECs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
12	Total Executed But Not CPUC-Approved RPS-Eligible Procurement and Generation Cost [Sum of Rows 2 through 11]	\$7,618,973	\$7,679,761	\$7,757,497	\$7,818,656	\$7,905,719	\$7,975,095	\$8,064,522	\$8,125,814	\$8,210,366
13	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	94,003,335,271
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	0.01 ¢/kWh
15	CPUC-Approved RPS-Eligible Contracts (Incl. RAM/FIT/PV Contracts)									
16	Biogas	\$ 2,608,678.86	\$ 2,557,028.02	\$ 2,627,420.03	\$ 2,663,279.19	\$ 2,677,486.29	\$ 1,523,835.39	\$ 441,680.08	\$ 451,406.52	\$ 458,466.17
17	Biomass	\$ 29,654,124.60	\$ 41,582,983.95	\$ 42,483,542.97	\$ 43,387,968.02	\$ 44,529,625.41	\$ 45,390,341.62	\$ 46,364,546.36	\$ 47,138,770.44	\$ 48,147,076.93
18	Geothermal	\$ 209,972,174.42	\$ 200,170,432.35	\$ 192,373,951.11	\$ 192,756,332.01	\$ 177,962,291.96	\$ 164,889,254.52	\$ 165,200,726.65	\$ 164,643,621.53	\$ 63,350,640.60
19	Small Hydro	\$ 2,258,545.39	\$ 2,111,242.93	\$ 2,044,764.73	\$ 2,002,297.00	\$ 2,011,868.99	\$ 2,008,824.64	\$ 1,966,122.82	\$ 1,878,180.44	\$ 1,878,335.67
20	Solar PV	\$ 791,517,724.97	\$ 795,266,760.24	\$ 799,894,137.92	\$ 806,335,160.47	\$ 814,186,112.52	\$ 818,224,395.35	\$ 823,946,477.10	\$ 827,162,694.17	\$ 827,606,005.22
21	Solar Thermal	\$ 54,265,374.75	\$ 54,134,968.44	\$ 54,078,794.09	\$ 54,142,728.48	\$ 54,456,613.02	\$ 54,288,332.26	\$ 54,218,842.35	\$ 54,000,518.47	\$ 53,994,920.18
22	Wind	\$ 791,659,634.23	\$ 792,907,929.15	\$ 794,502,888.52	\$ 794,022,731.74	\$ 796,067,481.21	\$ 797,323,674.65	\$ 798,134,503.51	\$ 786,227,581.24	\$ 773,909,498.82
23	UOG Small Hydro	\$ 79,901,684	\$ 83,194,734	\$ 86,652,437	\$ 90,283,024	\$ 94,095,141	\$ 98,097,864	\$ 102,300,723	\$ 106,713,725	\$ 111,347,377
24	UOG Solar	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 49,132,020.96	\$ 48,974,198.34	\$ 47,966,802.60
25	Unbundled RECs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
26	Total CPUC-Approved RPS-Eligible Procurement and Generation Cost [Sum of Rows 16 through 25]	\$2,010,969,962	\$2,021,058,100	\$2,023,789,957	\$2,034,725,542	\$2,035,118,642	\$2,030,878,543	\$2,041,705,643	\$2,037,190,696	\$1,928,659,123
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	94,003,335,271
28	Incremental Rate Impact	2.51 ¢/kWh	2.47 ¢/kWh	2.43 ¢/kWh	2.40 ¢/kWh	2.35 ¢/kWh	2.30 ¢/kWh	2.27 ¢/kWh	2.22 ¢/kWh	2.05 ¢/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]	2.52 ¢/kWh	2.48 ¢/kWh	2.44 ¢/kWh	2.41 ¢/kWh	2.36 ¢/kWh	2.31 ¢/kWh	2.28 ¢/kWh	2.22 ¢/kWh	2.06 ¢/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
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
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
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
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
6	Solar PV	0	0	0	0	0	0	1,372,324	51,389,213	53,432,781	73,823,619	247,123,128
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
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
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
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
11	Unbundled RECs	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

Joint IOU Cost Quantification Table 4 (Forecast Generation, kWh)

		Forecasted Future RPS-Deliveries 2013-2020 (kWh)								
1	Executed But Not CPUC-Approved RPS-Eligible Contracts	2014	2015	2016	2017	2018	2019	2020	2021	
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	1,272,826	26,890,012	68,223,200	67,978,529	67,879,800	67,781,564	67,828,390	67,586,564	
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]	1,272,826	26,890,012	68,223,200	67,978,529	67,879,800	67,781,564	67,828,390	67,586,564	
15	CPUC-Approved RPS-Eligible Contracts (Incl. RAM/FIT/PV Contracts)									
16	Biogas	496,180,401	496,180,401	497,657,628	117,528,642	117,528,642	114,446,627	101,307,374	44,862,722	
17	Biomass	0	0	0	0	0	0	0	0	
18	Geothermal	6,967,108,886	7,000,027,854	6,500,818,546	5,209,346,886	3,965,874,853	3,024,823,774	2,578,291,531	2,549,105,774	
19	Small Hydro	143,328,343	148,452,105	145,492,139	139,603,675	122,426,126	121,728,739	71,483,133	24,680,484	
20	Solar PV	1,766,674,880	3,665,852,611	5,353,348,550	6,109,192,024	6,154,593,237	6,487,468,055	6,464,134,541	6,413,260,892	
21	Solar Thermal	1,183,702,958	1,204,159,416	1,158,933,189	1,000,629,084	925,000,692	770,199,300	622,227,671	383,818,920	
22	Wind	7,522,838,549	6,909,047,380	6,602,870,074	6,406,574,935	6,557,927,999	7,977,872,594	7,756,324,499	7,450,349,335	
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]	18,883,912,646	20,227,798,394	21,063,198,754	19,786,953,875	18,647,430,178	19,300,617,717	18,397,847,377	17,670,156,755	

Joint IOU Cost Quantification Table 4 (continued) (Forecast Generation, kWh)

		Forecasted Future RPS-Deliveries 2021-2030 (kWh)								
1	Executed But Not CPUC-Approved RPS-Eligible Contracts	2022	2023	2024	2025	2026	2027	2028	2029	2030
2	Biogas	0	0	0	0	0	0	0	0	0
3	Biomass	0	0	0	0	0	0	0	0	0
4	Geothermal	0	0	0	0	0	0	0	0	0
5	Small Hydro	0	0	0	0	0	0	0	0	0
6	Solar PV	67,489,795	67,393,510	67,441,417	67,202,381	67,107,532	67,013,158	67,062,125	66,825,823	66,732,858
7	Solar Thermal	0	0	0	0	0	0	0	0	0
8	Wind	0	0	0	0	0	0	0	0	0
9	UOG Small Hydro	0	0	0	0	0	0	0	0	0
10	UOG Solar	0	0	0	0	0	0	0	0	0
11	Unbundled RECs	0	0	0	0	0	0	0	0	0
12	Total Executed But Not CPUC-Approved RPS-Eligible Deliveries [Sum of Rows 2 through 11]	67,489,795	67,393,510	67,441,417	67,202,381	67,107,532	67,013,158	67,062,125	66,825,823	66,732,858
15	CPUC-Approved RPS-Eligible Contracts (Incl. RAM/FIT/PV Contracts)									
16	Biogas	30,254,838	29,107,875	29,185,777	29,100,975	29,100,975	17,172,109	6,081,934	6,059,997	6,059,997
17	Biomass	235,274,333	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	2,549,105,774	2,437,710,645	2,332,898,910	2,326,223,774	2,132,288,774	1,934,256,182	1,939,646,723	1,934,256,182	695,372,179
19	Small Hydro	23,524,524	21,907,266	21,252,676	20,660,258	20,660,258	20,660,258	20,145,576	19,092,479	19,092,479
20	Solar PV	6,376,447,673	6,339,830,032	6,317,156,929	6,265,933,531	6,186,871,125	6,151,509,237	6,129,576,321	6,081,483,807	5,995,483,800
21	Solar Thermal	335,148,840	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	7,196,817,109	7,196,817,109	7,200,662,391	7,178,531,485	7,178,531,485	7,178,531,485	7,168,964,488	7,023,645,560	6,924,750,060
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	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	136,068,139	133,269,227
25	Unbundled RECs	0	0	0	0	0	0	0	0	0
26	Total CPUC-Approved RPS-Eligible Deliveries [Sum of Rows 16 through 25]	17,550,651,718	17,518,646,061	17,396,161,430	17,313,723,157	17,040,725,751	16,795,402,405	16,759,419,789	16,557,372,671	15,130,794,250

PUBLIC
APPENDIX E
RECs From Expiring
Contracts

Name	Technology	Contract Expiration Date	Nameplate Capacity (MW)	Expected Annual Generation (GWh)	Location	PCC Classification
Walnut Valley Water District	Small Hydro	10/16/2014	0.13	0.39	Walnut, CA	PCC 0
Calleguas MWD-Unit 2 (East Portal/Chats)	Small Hydro	9/30/2014	1.25	6.34	Thousand Oaks, CA	PCC 0
Sierra Suntower LLC	Solar	7/31/2014	4.22	0.33	Lancaster, CA	PCC 1
FPL Energy Cabazon Wind, LLC	Wind	12/2/2014	40.00	70.07	Cabazon, CA	PCC 0
Wind Stream Operations, LLC (VG #2)	Wind	8/31/2014	6.93	10.08	Tehachapi, CA	PCC 0
Wind Stream Operations LLC (VG#3)	Wind	11/30/2014	6.02	8.12	Tehachapi, CA	PCC 0
Cameron Ridge LLC (III)	Wind	11/16/2014	47.12	133.95	Mojave, CA	PCC 0
Heber Geothermal Company	Geothermal	12/14/2015	52.00	315.96	Heber, CA	PCC 0
Sunray Energy, Inc.	Solar	12/31/2015	43.80	50.81	Daggett, CA	PCC 0
Ridgetop Energy, LLC (I)	Wind	1/30/2015	65.00	132.65	Mojave, CA	PCC 0
EUI Management PH Inc.	Wind	12/30/2015	25.54	45.92	North Palm Springs, CA	PCC 0
Wind Stream Operations, LLC (VG #4)	Wind	10/16/2015	6.77	10.44	Tehachapi, CA	PCC 0
AES Tehachapi Wind, LLC 85-A	Wind	11/12/2015	17.00	18.00	Tehachapi, CA	PCC 0
AES Tehachapi Wind, LLC 85-B	Wind	11/12/2015	22.50	23.85	Tehachapi, CA	PCC 0
Section 20 Trust	Wind	1/9/2015	13.51	40.21	Palm Springs, CA	PCC 0
NAWP Inc. [East Winds Proj]	Wind	1/6/2015	4.17	4.18	Palm Springs, CA	PCC 0
Coram Energy, LLC	Wind	12/5/2015	3.00	9.63	Tehachapi, CA	PCC 0
Edom Hills Project 1, LLC	Wind	3/14/2015	20.00	47.81	Palm Springs, CA	PCC 0
San Gorgonio Westwinds II, LLC	Wind	11/23/2015	10.00	26.15	Palm Springs, CA	PCC 0
Aero Energy, LLC	Wind	5/31/2015	4.50	1.05	Tehachapi, CA	PCC 0
Energy Development & Const. Corp.	Wind	1/31/2015	11.66	32.06	North Palm Springs, CA	PCC 0
Section 16-29 Trust (Altech III)	Wind	12/17/2015	32.87	70.13	Palm Springs, CA	PCC 0
Difwind Partners	Wind	12/17/2015	15.06	25.95	Palm Springs, CA	PCC 0
Cameron Ridge LLC (IV)	Wind	12/30/2015	12.76	35.79	Mojave, CA	PCC 0
Section 22 Trust [San Jacinto]	Wind	11/30/2015	18.95	39.00	Palm Springs, CA	PCC 0
Westwind Trust	Wind	11/30/2015	22.50	20.97	Palm Springs, CA	PCC 0
Windland Inc., (Boxcar II)	Wind	12/26/2015	8.00	19.58	Tehachapi, CA	PCC 0
Painted Hills Wind Developers	Wind	11/30/2015	19.27	33.93	North Palm Springs, CA	PCC 0
L.A. Co. Sanitation Dist	Biomass	12/31/2016	50.00	386.28	Whittier, CA	PCC 0
Vulcan/Bn Geothermal Power Co	Geothermal	2/9/2016	34.00	259.38	Calapatria, CA	PCC 0
Desert Water Agency	Small Hydro	4/10/2016	1.00	4.28	Palm Springs, CA	PCC 0
Richard Moss	Small Hydro	11/6/2016	0.16	0.30	Bishop, CA	PCC 0
Calleguas MWD - Unit 3 (Santa Rosa)	Small Hydro	6/30/2016	0.25	0.68	Thousand Oaks, CA	PCC 0
Tehachapi Power Purchase Contract Trust	Wind	12/14/2016	56.00	98.29	Mojave, CA	PCC 0
Difwind Farms Limited V	Wind	10/14/2016	7.90	9.39	Palm Springs, CA	PCC 0
CTV Power Purchase Contract Trust	Wind	4/21/2016	14.00	27.85	Mojave, CA	PCC 0
Wind Stream Operations LLC (Northwind)	Wind	1/23/2016	6.45	7.37	Tehachapi, CA	PCC 0

Name	Technology	Contract Expiration Date	Nameplate Capacity (MW)	Expected Annual Generation (GWh)	Location	PCC Classification
BNY Western Trust Company	Wind	12/21/2016	5.93	13.27	North Palm Springs, CA	PCC 0
Oak Creek Energy Systems Inc.	Wind	12/30/2016	27.90	60.06	Mojave, CA	PCC 0
Salton Sea Power Generation Co #1	Geothermal	6/30/2017	10.00	64.57	Calipatria, CA	PCC 0
Ormesa Geothermal I	Geothermal	11/29/2017	63.00	407.97	Holtville, CA	PCC 0
Geysers Power Company, LLC	Geothermal	5/31/2017	225.00	1971.00	Middletown, CA	PCC 0
LA CO Flood Control District	Small Hydro	10/16/2017	4.98	8.43	Azusa, CA	PCC 0
Three Valleys MWD (Fulton Road)	Small Hydro	4/1/2017	0.20	0.69	Pomona, CA	PCC 0
Three Valleys MWD (Miramar)	Small Hydro	4/12/2017	0.52	0.49	Claremont, CA	PCC 0
Three Valleys MWD (Williams)	Small Hydro	6/20/2017	0.35	1.20	La Verne, CA	PCC 0
American Energy, Inc. (Fullerton Hydro)	Small Hydro	1/31/2017	0.40	0.82	La Habra, CA	PCC 0
Luz Solar Partners Ltd. III	Solar	1/25/2017	35.00	71.72	Boron, CA	PCC 0
Luz Solar Partners Ltd. IV	Solar	1/29/2017	35.00	72.35	Boron, CA	PCC 0
Luz Solar Partners Ltd. V	Solar	12/31/2017	35.00	74.38	Boron, CA	PCC 0
On Wind Energy, LLC	Wind	4/18/2017	2.40	0.00	Mojave, CA	PCC 0
Terra-Gen 251 Wind, LLC (Monolith X)	Wind	6/9/2017	5.31	7.77	Tehachapi, CA	PCC 0
Terra-Gen 251 Wind, LLC (Monolith XI)	Wind	6/29/2017	4.99	7.42	Tehachapi, CA	PCC 0
Terra-Gen 251 Wind, LLC (Monolith XII)	Wind	7/8/2017	6.72	9.59	Tehachapi, CA	PCC 0
Terra-Gen 251 Wind, LLC (Monolith XIII)	Wind	6/29/2017	5.67	7.33	Tehachapi, CA	PCC 0
Del Ranch Company (Niland #2)	Geothermal	12/31/2018	42.00	302.30	Calipatria, CA	PCC 0
Elmore Company	Geothermal	12/31/2018	42.00	332.48	Niland, CA	PCC 0
Terra-Gen Dixie Valley, LLC	Geothermal	7/4/2018	67.23	482.56	Fallon, NV	PCC 0
Desert Water Agency (Snow Creek)	Small Hydro	2/1/2018	0.30	0.64	Whitewater, CA	PCC 0
Alta Mesa Pwr Purch Contract Trust	Wind	12/30/2018	27.00	54.07	Whitewater, CA	PCC 0
Ridgetop Energy, LLC (II)	Wind	9/11/2018	28.00	78.62	Mojave, CA	PCC 0
Riverside County Waste Management Dept.	Biomass	5/31/2019	1.20	6.57	Moreno valley, CA	PCC 0
Salton Sea Power Generation Co #3	Geothermal	2/13/2019	49.80	345.40	Calipatria, CA	PCC 0
CE Leathers Company	Geothermal	12/31/2019	42.00	329.81	Niland, CA	PCC 0
Coso Energy Developers	Geothermal	3/12/2019	75.00	379.16	Little Lake, CA	PCC 0
Daniel M. Bates	Small Hydro	11/21/2019	0.35	0.87	California Hot Springs, CA	PCC 0
Montecito Water District	Small Hydro	1/16/2019	0.13	0.60	Ventura, CA	PCC 0
Luz Solar Partners Ltd. VI	Solar	2/20/2019	35.00	73.85	Boron, CA	PCC 0
Luz Solar Partners Ltd. VII	Solar	3/1/2019	35.00	71.53	Boron, CA	PCC 0
Desert Winds I PPC Trust	Wind	10/31/2019	48.00	66.74	Mojave, CA	PCC 0
Desert Wind III PPC Trust	Wind	10/31/2019	40.50	58.74	Mojave, CA	PCC 0
Mogul Energy Partnership I, LLC	Wind	6/23/2019	4.00	11.00	Tehachapi, CA	PCC 1
WM Energy Solutions Inc El Sobrante	Biomass	10/31/2020	3.19	16.51	Corona, CA	PCC 0
WM Energy Solutions Inc Simi Valley	Biomass	10/31/2020	2.15	10.91	Simi Valley, CA	PCC 0

Name	Technology	Contract Expiration Date	Nameplate Capacity (MW)	Expected Annual Generation (GWh)	Location	PCC Classification
Ventura Regional Sanitation District	Biomass	2/29/2020	1.57	9.20	Santa Paula, CA	PCC 0
Mammoth Pacific L P II (MP2)	Geothermal	12/6/2020	10.50	85.66	Mammoth Lakes, CA	PCC 0
Salton Sea Power Generation Co #2	Geothermal	4/4/2020	20.00	114.76	Calipatria, CA	PCC 0
Central Hydroelectric Corp.	Small Hydro	12/7/2020	11.95	28.29	Lake Isabella, CA	PCC 0
Kaweah River Power Authority	Small Hydro	3/15/2020	17.00	37.52	Lemon Cove, CA	PCC 0
Monte Vista Water District	Small Hydro	8/4/2020	0.87	0.59	Montclair, CA	PCC 0
Luz Solar Partners Ltd. VIII	Solar	5/29/2020	80.00	191.82	Hinkley, CA	PCC 0
Dutch Energy	Wind	4/12/2020	8.00	16.20	Palm Springs, CA	PCC 0
Victory Garden Phase IV Partner - 6102	Wind	3/16/2020	6.98	15.08	Tehachapi, CA	PCC 0
Victory Garden Phase IV Partner - 6103	Wind	1/1/2020	6.98	11.29	Tehachapi, CA	PCC 0
Victory Garden Phase IV Partner - 6104	Wind	4/10/2020	6.98	13.49	Tehachapi, CA	PCC 0
Desert Winds II Pwr Purch Trst	Wind	8/16/2020	75.00	185.91	Mojave, CA	PCC 0
L.A. Co. Sanitation Dist Spadra	Biomass	4/3/2021	8.00	37.31	Walnut, CA	PCC 0
Luz Solar Partners Ltd. IX	Solar	4/17/2021	80.00	205.92	Hinkley, CA	PCC 0
Sky River Partnership (Wilderness I)	Wind	7/21/2021	36.78	68.75	Tehachapi, CA	PCC 0
Sky River Partnership (Wilderness II)	Wind	5/30/2021	19.80	36.08	Tehachapi, CA	PCC 0
Sky River Partnership (Wilderness III)	Wind	2/13/2021	20.93	37.47	Tehachapi, CA	PCC 0
Mountain View Power Partners, LLC	Wind	9/30/2021	66.60	219.90	North Palm Springs, CA	PCC 0
Inland Empire Utilities Agency	Biomass	12/27/2022	0.58	1.16	Chino, CA	PCC 0
Hi Head Hydro Incorporated	Small Hydro	4/30/2022	0.35	1.65	Mono County, CA	PCC 0
Lower Tule River Irrigation District	Small Hydro	8/31/2022	1.40	0.36	Tipton, CA	PCC 1
USDA Forest Service San Dimas Technology	Solar	7/31/2022	0.25	0.20	San Dimas, CA	PCC 1
Orange County Sanitation District	Cogeneration	7/26/2023	12.00	0.03	Huntington Beach, CA	PCC 0
Second Imperial Geothermal Co.	Geothermal	7/4/2023	37.00	239.33	Heber, CA	PCC 0
Water Facilities Authority	Small Hydro	8/25/2024	0.22	0.00	Upland, CA	PCC 0
Calleguas MWD (Springville Hydro)	Small Hydro	3/16/2024	1.00	2.10	Camarillo, CA	PCC 0