BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans.	)))	Rulemaking 12-03-014 (Filed March 22, 2012)

TRACK 1 PROCUREMENT PLAN OF SOUTHERN CALIFORNIA EDISON COMPANY SUBMITTED TO ENERGY DIVISION PURSUANT TO D. 13-02-015

Dated: **August 30, 2013**

TRACK 1 PROCUREMENT PLAN OF SOUTHERN CALIFORNIA EDISON COMPANY SUBMITTED PURSUANT TO D.13-02-015

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I.

OVERVIEW

A. Local Capacity Requirements (LCR) Procurement Process and Timeline

D.13-02-015 (Decision) orders Southern California Edison Company (SCE) to provide Energy Division staff a Local Capacity Requirements (LCR) procurement plan by July 15, 2013 (LCR Procurement Plan). This plan will explain how SCE will procure all required new LCR resources authorized by the Decision. The LCR Procurement Plan will also specifically describe a plan for integration of new Energy Efficiency (EE), Demand Response (DR), Distributed Generation (DG), Energy Storage (ES), and other resources in order to meet or reduce LCR needs in 2021. Additionally, in this plan, SCE will describe the LCR solicitation process that it will use, including its offer valuation and selection criteria.

SCE will conduct a Request for Offers (RFO) or competitive solicitation that is open to all technologies that can meet the identified LCR needs for new resources on behalf of all customers (New LCR RFO). SCE plans to proceed with the procurement after receiving the Energy Division's approval of its LCR Procurement Plan. The Decision anticipates SCE will file its LCR procurement application(s) by the first quarter (Q1) of 2014. The Decision also authorizes SCE to bilaterally procure cost-of-service (COS) contracts for "brownfield" Gas-Fired Generation (GFG) with owners of retiring once-through-cooling (OTC) generation facilities consistent with the provisions of Public Utilities Code §454.6 and Assembly Bill (AB) 1576.

To meet the California Public Utilities Commission's (Commission or CPUC) expected Q1, 2014 LCR procurement applications timeframe, SCE would have to conduct an accelerated New LCR RFO in late 2013. In order for SCE to launch the New LCR RFO in late 2013, an expedited approval of the LCR Procurement Plan is required. That said, in Chapter III below,

SCE recommends starting the solicitation process within two weeks of the approval of the LCR Procurement Plan, but lengthening the periods of time before bidders must provide initial and final offers in the New LCR RFO. This will provide additional time for sellers to finalize initial bids and start the pre-development work necessary for final offers. This should lead to greater competition and more viable offers.

Chapter III explains the solicitation process, and Chapter IV explains the valuation and selection process. Both Chapters III and IV discuss the integration strategy for each type of LCR resource into the solicitation process. Chapter V discusses SCE's strategy to acquire between 200 and 800 MW of Preferred Resources (i.e. EE, DR, DG and renewable energy)[1] and ES. This strategy discussion addresses the integration of Preferred Resources and ES, and also addresses SCE's proposed pilot program (Pilot) for Preferred Resources and ES.

This document, delivered to Energy Division staff in a timely manner, meets the requirements of the Decision for the LCR Procurement Plan.[2]

B. Summary of the Local LCR Procurement authorized by the Decision

The Decision authorized SCE to procure between 1400 to 1800 Megawatts (MW) of electrical capacity in the Western Los Angeles Basin (LA Basin) sub-area and 215 to 290 MW in the Moorpark sub-area to meet LCR needs by 2021. The Decision required SCE to procure minimum amounts of Preferred Resources, ES, and GFG in the LA Basin sub-area as Figure I-1 below shows:

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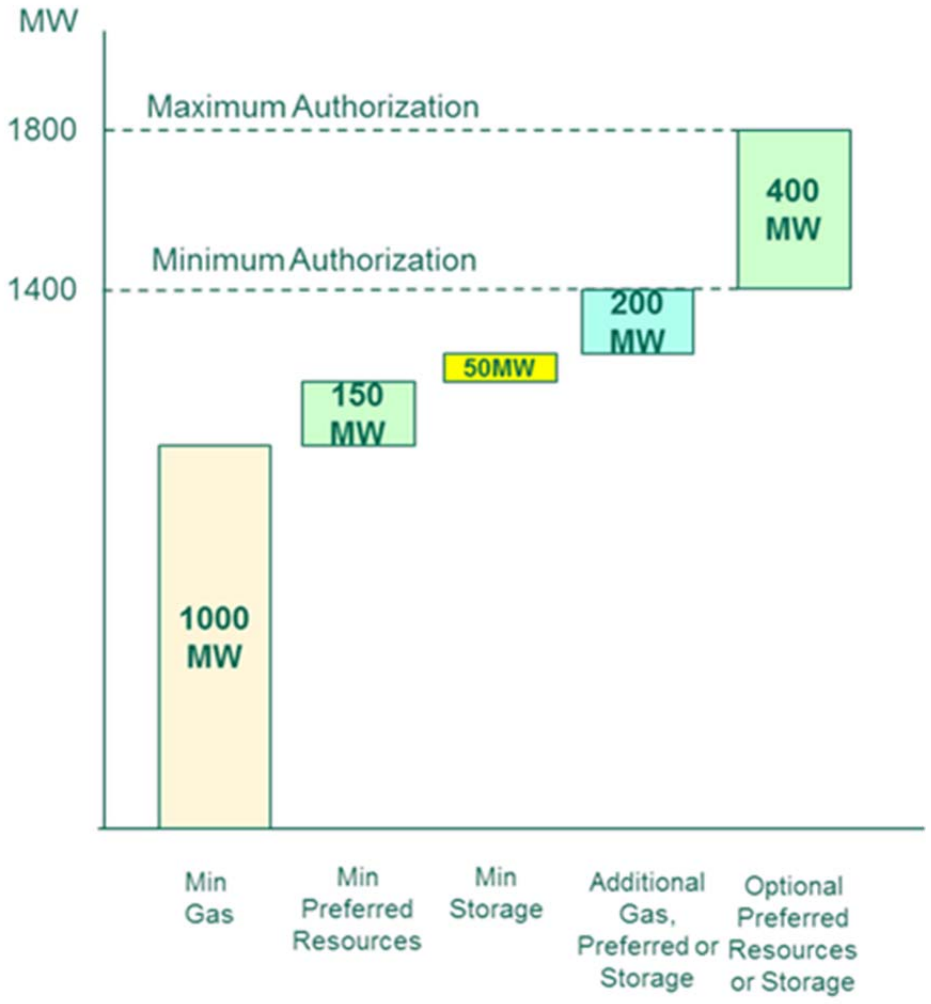
1 SCE uses the term Preferred Resources in the context of the State's Preferred Resource Loading Order, as described in the Energy Action Plan II. ES is a potential enabling technology, but is not a Preferred Resource because it stores power regardless of how that power is produced. As a result, SCE distinguishes the term Preferred Resource from ES in this document.

2 Appendix A contains a roadmap showing how this plan meets the requirements of each ordering paragraph in the Decision.

Figure I-1
Types of Resources
Authorized for Procurement in the LA Basin



Procurement must be consistent with the Loading Order of the Energy Action Plan, which places cost-effective EE and DR resources first in the loading order, followed by renewable and DG resources.

C. Summary Of The LCR Procurement Plan

SCE plans on launching its first New LCR RFO approximately two weeks after the approval of its LCR Procurement Plan by the Energy Division. In order to meet the CPUC's

expectation for a Q1, 2014 LCR procurement application, SCE must launch its New LCR RFO by the third quarter (Q3) of 2013. That said, SCE recommends in Chapter III extending the length of the New LCR RFO such that SCE would file its LCR procurement application in Q3, 2014. Extending the length of the New LCR RFO will provide additional time for sellers to identify projects and start their pre-development work. This should lead to greater competition and more viable offers.

This solicitation will be for both the LA Basin and Moorpark sub-areas and will include all resource types (Preferred Resources, ES, and GFG) that meet or reduce LCR needs. For the 1200 MW procurement in the LA Basin allocated to specific resource types, SCE will consider the offers in three separate categories: (1) Preferred Resources; (2) ES; and (3) GFG. Any offers not selected in these three primary categories for the first 1200 MW of need will be placed into two secondary categories of need for further evaluation as part of the remaining 600 MW of authorized procurement: (1) up to an incremental 200 MW, including Preferred Resources, ES, and conventional GFG, and (2) up to a final 400 MW block, limited to Preferred Resources and ES only. All offers in each of the five categories will be assessed for competitiveness, supplemented in some cases by shadow cost curves[3] to assess whether they are competitively priced within each category. SCE will also continue its efforts to negotiate cost-of-service (COS) bilateral contracts with the current owners of OTC units consistent with the provisions of AB 1576 and the Decision.

If the total of the feasible and competitively priced capacity bid into the New LCR RFO and any cost-effective COS GFG is insufficient to meet SCE's LCR procurement authorization, SCE will procure the remaining authorized resources over time through additional New LCR

[3] The shadow cost curve represents an independent or utility forecast of costs associated with building new generation or developing new EE or DR programs.

RFOs. In addition, SCE may also continue negotiating for bilateral COS contacts for "brownfield" GFG. SCE may also add incremental Preferred Resources or ES through its "Preferred Resource Strategy" which includes SCE's proposed Pilot, as described in Chapter V.B. The "Preferred Resource Strategy" may include expansion and adaptation of existing solicitations, and/or utility-operated programs, and/or utility-operated ES to target Preferred Resources and ES to meet LCR needs as explained in Chapter V.A. SCE will also address any potential viable transmission options that reduce the LCR needs in its LCR procurement application(s).

The Decision requires that an LCR resource must be demonstrably incremental to the assumptions used in the Track 1 California Independent System Operator (CAISO) studies, to ensure that a given resource is not double counted. SCE will consider all the new resources procured through the New LCR RFO as incremental LCR resources. SCE may submit a separate application for any LCR procurement awarded outside of the New LCR RFO and will identify whether such procurement is demonstrably incremental to the CAISO studies. SCE may also seek an advice letter-based approval framework through its initial LCR procurement application for needed LCR procurement that occurs subsequent to SCE's New LCR RFO. SCE will demonstrate in the specific application that the LCR procurement meets the LCR needs defined by the Decision. Similarly, if an advice letter process is approved by the Commission, SCE will demonstrate in its advice letters that the submitted procurement meets the LCR needs defined by the Decision.

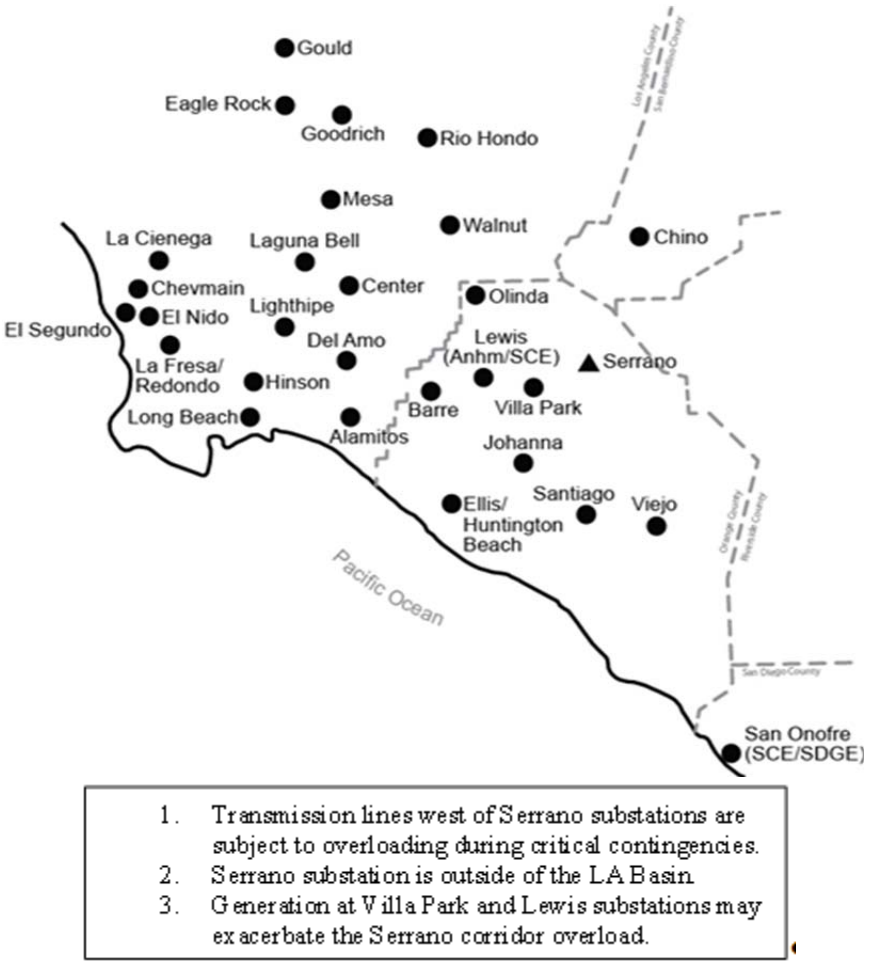
D. Consultation with California Independent System Operator (CAISO)

SCE is proactively consulting with CAISO on a regular basis on matters related to SCE's LCR Procurement Plan. At SCE's request, CAISO provided locational effectiveness factors

(LEFs) for non-generating substations for the identified limiting contingency (loss of Serrano-Villa Park #2 230 kilovolt (kV) line followed by the loss of the Serrano-Lewis 230 kV line leading to thermal overload) in the LA Basin based on CAISO's Track 1 studies. There are numerous other combinations of contingencies in the LA Basin that could overload a significant number of 230 kV lines in this sub-area. The LEFs in Figure I-2 are subject to change. As the system configuration changes, other constraints may also emerge. These constraints may have a different set of LEFs. As such, SCE will use the most up-to-date effectiveness ratings[4] in its selection process based on the most recent study results and will include an updated figure in its application. It is possible that SCE may elect to not contract in certain locations because of the potential for additional constraints not identified in the Track 1 studies. If this event arises, SCE will present additional evidence in its LCR procurement application(s) to demonstrate why the location is not being considered for LCR contract awards.

[4] Ordering Paragraph 4.l

Figure I-2
Indicative Locational Effectiveness Factors
Based on Mitigation of the West of Serrano Substation Constraint



Name	Eff.
Villa Park	.56
Barre	.32
Lewis	.30
Alamitos	.23
Ellis/Huntington Beach	.22
Johanna	.20
Santiago	.17
Lighthipe	.16
Hinson	.16
Long Beach	.16
Del Amo	.16
La Fresa/Redondo	.15
La Cienega	.15
El Segundo	.15
El Nido	.15
Chevmain	.15
Center	.15
Laguna Bell	.13
Mesa	.11
Goodrich	.10
Rio Hondo	.10
Eagle Rock	.08
Walnut	.07
Gould	.07
Olinda	.07
SONGS	.06
Viejo	.02
Chino	–.03

SCE has also been working with the CAISO to better define the attributes that Preferred Resources and ES[5] must have in order to reduce or meet LCR needs with respect to the specific contingencies CAISO modeled in the LA Basin and Moorpark sub-areas. Recently, SCE has asked the CAISO to open a stakeholder dialog on DR attributes as part of the DR Roadmap proceeding. SCE does not anticipate that a clear set of LCR attributes will be defined with

[5] For DR and ES, the important attributes are hours of continuous operation and times when delivery is available.

CAISO prior to the launch of SCE's LCR procurement activity. SCE intends to initiate its LCR procurement activity with LCR attributes developed by SCE. But, SCE will continue engaging with CAISO throughout its LCR procurement process to enhance the identification of the required and/or preferred LCR attributes.

E. Addressing Procurement Challenges

SCE has identified the following challenges concerning procurement of LCR resources:

1. Timing

The relatively long development timeline for new GFG requires that procurement commence as soon as possible to meet the 2021 LCR need. This time constraint is not applicable to most other resource types. For example, the majority of the Preferred Resources and some forms of ES do not require more than a few years of development lead time. In addition, some Preferred Resources, like EE and DR, are unlikely to be commercially feasible now for contract awards issued in 2014 with deliveries beginning in 2021. Current DR programs have focused on developing relatively short-term products that would be implemented over a 3-year time period. The New LCR RFO is seeking products to be available beginning seven and a half years from now in 2021.[6] So, existing providers may not yet have developed products to meet this type of long lead-time need.

Technology is also evolving for many of the Preferred Resource and certain ES types, including solar and battery technologies. Technology improvement directly contributes to the efficiency and cost competitiveness of such resources. SCE will consider acquiring new resources through additional procurement beyond the close of the New LCR RFO if the

[6] SCE will also consider proposals that begin deliveries as early as 2015 in the southern portion of the LA Basin sub-area, in recognition of the increased need that exists as a result of the announced retirement of the San Onofre Nuclear Generating Station Unit Nos. 2 and 3. Additionally, SCE will consider 2015 delivery commencement for proposals interconnecting to the Goleta substation in the Moorpark sub-area due to their ability to significantly enhance service reliability.

competitive results of the New LCR RFO process yield fewer resources than the authorized LCR procurement volume. SCE will encourage deliveries as early as 2015 in South Orange County area and Goleta substation area to enhance service reliability in these areas. SCE will accept offers for deliveries as early as January 2018 for preferred resources, energy storage, and gas-fired generation in other areas. All resources procured through the New LCR RFO must deliver through 2021.

2. Integrating Preferred Resources And ES to Meet LCR Needs

Preferred Resources and ES may meet or reduce SCE's LCR needs. However, utilities are still gaining experience with the ability of these resources to meet LCR need. If the competitive results of the New LCR RFO do not meet all of SCE's LCR procurement authorization, SCE proposes modifying existing utility programs and using a Pilot that it plans to pursue to facilitate Preferred Resources and ES. As part of this Pilot, SCE will work closely with the CAISO to learn from this Pilot how Preferred Resources and ES can be effective in meeting LCR needs. Chapter V.B discusses the Pilot program.

3. Addressing ES Issues

SCE will consider all ES technologies and applications, provided they facilitate meeting or reducing LCR needs. SCE is working collaboratively with CAISO to identify attributes for ES in meeting or reducing LCR needs, given the wide variety of storage resource types. Certain ES technologies are still undergoing significant research and development. Utilities and Independent System Operators (ISOs) are also gaining experience with managing and controlling ES assets through pilot programs. SCE may consider using a phased procurement approach to meet the 2021 LCR need in case insufficient viable and cost-competitive offers for ES are received in the New LCR RFO. SCE proposes to use the most relevant qualifying capacity methodology to derive the applicable Net Qualifying Capacity (NQC) values for different storage applications as described in Appendix C.

4. Retirement of San Onofre Nuclear Generating Station (SONGS)

CAISO's LCR studies assumed both San Onofre Nuclear Generating Station (SONGS) units 2 and 3 to be in operation in 2021. Because of SCE's June 7, 2013 SONGS' retirement notice, SCE may need to pursue incremental solutions to meet local system reliability needs. These solutions potentially will have an impact on 2021 LCR needs. SONGS' retirement will not reduce the needs identified in the Decision, which relate to the impending retirement of coastal GFG relying on OTC technology. Instead, SCE anticipates that meeting southern California reliability needs with SONGS no longer in service will require additional Preferred Resources, ES, and/or GFG.

SCE plans to present the results of its reliability studies to the Commission on August 26, 2013 in Track 4 of the LTPP. SCE intends to take any specific needs identified in these studies into consideration in moving forward with the Track 1 authorized procurement. However, elements of SCE's southern California reliability efforts remain in development. SCE anticipates that part of its response to the announced SONGS retirement will be the aggressive and targeted Pilot discussed in Chapter V.B below. The Pilot will utilize all or a portion of the optional 400 MW of preferred and ES resource authority (i.e. the difference between the 1800 MW maximum authority and the 1400 MW minimum authority) to move forward with Preferred Resource and ES procurement, if the New LCR RFO fails to competitively acquire all of SCE's LCR procurement authorization.

5. Addressing Insufficient Competition for New Gas-Fired Generation (GFG)

The Decision authorizes SCE to procure 1000 to 1200 MW of GFG in the LA Basin sub-area and 215 MW to 290 MW of non-specified technology resources in the Moorpark sub-area. There are various environmental, siting, and local community opposition factors in both areas that affect the potential development of new GFG. An accelerated procurement process to achieve a Q1, 2014 application submittal may contribute to insufficient competition for new GFG projects in the LCR sub-areas. For this reason, in Chapter III below, SCE proposes a more

extended procurement process. The following describes the key barriers to the development of new GFG.

a) Emission Reduction Credits (ERC) Issues

In the LA Basin sub-area, South Coast Air Quality Management District (SCAQMD) regulations pertaining to Particulate Matter 10 (PM10) emissions will limit the options for developing new GFG. As the existing OTC asset owners, AES and NRG effectively control access to PM10 ERCs under current SCAQMD rules. The lack of sufficient ERCs may prevent effective competition for new GFG. Accordingly, SCE may need to partner with SCAQMD, CPUC, CEC, and other stakeholders to pursue rule changes for accessing ERCs. In the Moorpark sub-area, ERCs are also limited.

b) Siting

There are a limited number of suitable sites available in the LA Basin sub-area. These sites will require interconnection to utilities in order to obtain access to natural gas and water, and to deliver power to the grid. Challenges associated with siting are further limiting factors for most of the independent power producers (IPPs) without existing generation site control.

c) Local Community Objections

SCE expects that local communities in both of the LCR sub-areas will challenge repowering of existing sites or developing new sites for GFG. However, fewer barriers exist to repowering an existing site than to "greenfield" development of GFG in the LA Basin sub-area.

F. Relevant Rules and Statutes

Chapter III discusses the relevant rules and statutes affecting the New LCR RFO. There are many existing statutes and rules that concern the procurement of Preferred Resources and ES in California. The incremental procurement of Preferred Resources and ES to meet LCR need in the LA Basin and Moorpark sub-areas may not fully comply with all of the presently applicable

rules. For example, while SCE will purchase competitively priced Preferred Resources and ES to meet LCR need, some EE resources chosen may be above and beyond all cost-effective EE which SCE seeks to acquire through compliance with the law and regulations concerning EE.

Furthermore, the rules surrounding Renewables Portfolio Standard (RPS) procurement could affect SCE's procurement of renewable resources to meet its LCR needs. For instance, SCE may need to account for the RPS cost limitation mechanism, which has not yet been adopted by the Commission, in procuring renewable resources to meet LCR needs. SCE will address any relevant RPS rules in its application or other filing requesting approval of renewable LCR contracts. Additionally, as discussed in Chapter V and SCE's 2013 RPS Procurement Plan filed on June 28, 2013, SCE may enter into bilateral contracts based on the LCR value with projects that were not selected based on least-cost, best-fit criteria in SCE's RPS solicitation. SCE may file an application separate from that of the New LCR RFO procurement application(s) for approval of such contracts, if the timing of the contracts does not coincide with the filing of the procurement application(s). The authorized procurement is multi-year and may need to occur in multiple phases through 2021 if the initial LCR solicitation effort fails to secure all authorized LCR procurement. SCE will adhere to procurement rules applicable on the date of the selection of resources.

This LCR Procurement Plan is intended to comply with all of the statutes and rules cited in Chapter III and with SCE's 2013 RPS Procurement Plan, but may vary from other Preferred Resource and ES procurement rules in order to acquire the least-cost, best-fit resources in the most effective locations to meet LCR needs. In such instances, the Commission's review and approval of proposed contracts for meeting LCR needs should be sufficient, notwithstanding any potential conflict with rules that may otherwise exist. For example, an EE program could be procured to meet LCR needs, even though it would not comport with existing EE cost-effectiveness thresholds. In this example, the EE program would not be considered an EE-eligible resource, but its cost-competitiveness in meeting LCR needs would warrant Commission approval for maintaining local area reliability.

II.

BASIS FOR ESTABLISHING LCR PROCUREMENT NEED

A. Description of the Procurement Areas

There are two separate procurement areas in which SCE will seek new resources in its New LCR RFO: the LA Basin and the Moorpark sub-areas. SCE will only accept offers from resources at substations in LA Basin or Moorpark sub-areas. For the LA Basin, Figure I-2 above shows indicative LEFs for generation (or load reduction) reported by CAISO.[7] In Figure I-2, there is a 0.23 indicative LEF listed for generation near Ellis Substation with which the existing Huntington Beach Generating Station interconnects. This means that 100 MW of additional generation at this location would result in 23 MW of power flowing through the west of Serrano corridor during the identified critical contingency, thus reducing the resulting thermal overload. LEFs are specific to a particular critical contingency and are affected by the distribution of loads and generating facilities within the region in which the substation is located. Generation and demand-side resources that interconnect with the substations shown in Figure I-2 will contribute to meeting (supply side) or reducing (demand side) LCR, based on the indicative LEFs shown.

Figure II-3 below shows the three A-bank substations that comprise the Moorpark sub-area: Moorpark A Station, Santa Clara A Station, and Goleta A Station. The high voltage transmission system in the Moorpark subarea is predominantly radial in nature. (Moorpark A Substation "feeds" the other area substations). The Moorpark-Pardee Lines feed the Moorpark A Station. All substations in the Moorpark area have the same LEFs with respect to the critical contingency which is the loss of the three Moorpark-Pardee lines.[8]

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[7] See CAISO 2011-2012 Transmission Plan, pp. 233-235

[8] CAISO 2011-2012 Transmission Plan, p. 244

Figure II-3
Moorpark Subarea A-Bank Substations

B. The Role that Preferred Resources Can Play in Addressing LCR Needs

Preferred Resources can contribute to meeting LCR need, particularly during certain times of the day and when viewed as a part of a portfolio of resources. The effectiveness of Preferred Resources and ES requires alignment between the times when these resources can be available to reduce or meet LCR needs and when LCR needs occur. For instance, if LCR needs are associated with peak demands and the local capacity area is summer peaking, then distributed solar resources may be valuable. If LCR needs occur only on rare occasions associated with such summer peak periods, then DR programs with a limited number of calls may be valuable. If, however, LCR needs occur at sporadic times throughout the year and are associated with transmission conditions rather than peak loads, then neither distributed solar resources nor DR will be valuable to meet those needs.

C. Baseline Planning Assumptions

SCE will continue to comply with all Commission orders in other dockets regarding procurement of Preferred Resources and ES. For example, with specific regard to RPS-eligible resources, SCE will follow existing procurement authorizations, rules and processes, including

existing valuation methodologies and other metrics used to select RPS-eligible resources. However, in addition to including renewable resources that may be eligible to participate in SCE's New LCR RFO, SCE will also express an interest in bids for RPS-eligible projects located in the LA Basin and Moorpark sub-areas that can provide Full Capacity Deliverability Status in its large-scale RPS solicitation and its small-scale renewable procurement programs. To the extent SCE receives bids for such projects that are not selected under the existing RPS program selection criteria for these renewable procurement programs, SCE will consider the LCR value of the offers in relation to other LCR resource options that may exist. SCE may enter into bilateral agreements with such projects based on their LCR value and seek Commission approval through SCE's LCR procurement application(s). SCE will identify whether any procurement is considered incremental to the CAISO studies.

D. Consideration of Transmission Alternatives

As a part of SCE's ongoing analysis of southern California reliability, SCE is considering the potential need for additional transmission to reduce LA Basin generation requirements. SCE's analysis has determined that an upgrade to Mesa substation can reduce LA Basin generation requirements by a significant amount. SCE plans to provide additional details on its analysis in Track 4 testimony. This LCR Procurement Plan does not defer any procurement directed by the Decision as a result of this transmission project, but the Mesa substation upgrade may limit the need for additional generation procurement[9] in subsequent LTPP tracks.

E. Additional Reliability Considerations in the Moorpark Sub-area

The CAISO's analysis of LCR needs in the Moorpark sub-area focused on the loss of the Moorpark – Pardee number one, two, and three transmission lines. This would result in voltage

[9] Although the Mesa upgrade project reduces LCR needs in the LA Basin, there may be other reasons to add conventional GFG generation. The need for additional conventional GFG procurement to meet flexibility requirements associated with renewable resource integration remains an unresolved issue, and will be addressed in Track 2 of the LTPP.

collapse for the Moorpark sub-area. However, in addition to the loss of the Moorpark-Pardee lines, there is another transmission outage that, without sufficient local generation capacity support, could create a reliability concern in this area. As can be seen from Figure II-3, the Goleta substation area is served radially from Santa Clara substation by two 230 kV lines, Santa Clara-Goleta No. 1 and No.2. The two Santa Clara-Goleta 230 kV lines are co-located on a single tower corridor through rugged mountainous terrain in a wooded area that is subject to natural hazards including soil erosion and wildfires. If an outage occurred on the two Santa Clara-Goleta 230 kV lines, SCE can serve approximately two-thirds of the peak loads served by Goleta substation by being transferred to an adjacent 66 kV system once a proposed upgrade to that system that presently awaiting CPUC approval is completed.[10] However, the time period to restore full service to load served by Goleta substation could be significant. Due to the rugged terrain, loss of the Santa Clara-Goleta lines due to environmental hazards could result in rolling blackouts in this area for an extended period. There is significant value to the local communities in seeking generation sited in this area.

III.

SOLICITATION PROCESS

Although SCE has extensive experience running solicitations for procurement of various power-related products, the New LCR RFO process has a number of challenges that are as unique as the LCR requirements themselves. This Chapter will describe aspects of the proposed solicitation process.

[10] Before completion of the upgrade to the 66 kV system currently awaiting CPUC approval, SCE can only serve one-third of peak load by transferred the load to an adjacent 66 kV system, if an outage occurred on the two Santa Clara-Goleta 230 kV lines.

A. Solicitation Timeline

SCE proposes to close the New LCR RFO in second quarter (Q2), 2014, and file the resulting LCR procurement application(s) in third quarter (Q3), 2014. This schedule will provide time for sellers to identify projects and start the necessary pre-development work, which should lead to greater competition and more viable offers. The proposed timeline is consistent with securing resources to meet the 2021 LCR need. The timeline will also allow SCE, CPUC, CAISO, and other stakeholders to work through the LTPP Track 4 needs assessment to determine what additional resources are required with the retirement of SONGS. If an incremental need is identified and procurement authority is granted in Track 4 prior to the close of the New LCR RFO, SCE would be able to select additional resources through the New LCR RFO above and beyond the current Track 1 authority, assuming cost effective offers are available to select. This has the added benefit of expediting the replacement of necessary resources in the LA Basin sub-area.

SCE proposes the following timeline in Table III-1 for its New LCR RFO:

Table III-1
SCE's Proposed New LCR RFO Timeline

No of Days	LCR RFO Step
T	Energy Division approves LCR Procurement Plan
T+14	Launch New LCR RFO
T+103	Indicative offers Submitted
T+148	Shortlisting, contract negotiations commence
T+260	Negotiation deadline
T+267	Final offers submitted
T+295	SCE notifies successful bidders and contract execution
T+355	SCE files application for approval

If Energy Division advises SCE to file its initial LCR procurement application(s) in Q1, 2014, SCE proposes the following schedule in Table III-2 for its New LCR RFO:

Table III-2
Alternative LCR RFO Timeline

No of Days	LCR RFO Step
T	Energy Division approves LCR Procurement Plan
T+14	Launch New LCR RFO
T+74	Indicative offers submitted
T+104	Shortlisting, contract negotiations commence
T+179	Negotiation deadline
T+186	Final offers submitted
T+200	SCE notifies successful bidders and contract execution
T+245	SCE files application for approval

However, in SCE's view, the schedule in Table III-2 is problematic because it does not provide sufficient time for sellers to identify projects and start the development work which should lead to greater competition and more viable offers.

B. Solicitation Structure

Based on SCE's experience with various solicitation formats, a format similar to SCE All Source RFOs (All Source RFOs) and SCE's 2006 New Gen RFO will operate best for SCE's LCR procurement. This format will entail an initial solicitation of indicative offers, negotiations on contract terms with "short-listed" offers, a final price refresh of "short-listed" offers, and an evaluation and selection process (that may involve further negotiations with a limited subset of bidders).

Historically, SCE has been very successful in its outreach efforts and ensuring potential sellers are aware of a solicitation for conventional, renewable, and CHP resources. However, SCE is looking to procure products in the New LCR RFO that are not typically procured through SCE's standard power procurement efforts, specifically EE, DR, DG, and ES. Therefore, SCE intends to send additional emails announcing the launch of the solicitation to CPUC distribution

lists for proceedings that involve EE, DR, DG, renewables, and ES. SCE will also conduct outreach through associations such as California Energy Efficiency Industry Council, National Association of Energy Service Companies, and Association of Energy Services Professionals. Finally, SCE will post an announcement of the launch of the New LCR RFO on the Proposal Evaluation & Proposal Management Application (PEPMA) website, which has historically been used to notify the market of California's Investor Owed Utilities' (IOU) EE solicitations. The additional outreach should raise awareness of the New LCR RFO and thus increase the number of potential sellers of Preferred Resources and ES. As described below, SCE also intends to emphasize the procurement of Preferred Resources and ES in its bidder's conference.

The CPUC's General Order 156 (G.O. 156) contains "rules governing the development of programs to increase participation of women, minority, and service disabled veteran business enterprises ("WMDVBEs") in procurement of contracts from utilities as required by Public Utilities Code Section 8281-8286." In recognition of G.O. 156, SCE will highlight its continued encouragement for WMDVBEs to participate in RFOs by including information in its New LCR RFO bidder's instructions and at the New LCR RFO bidder's conference. In addition, SCE will hold a workshop to help educate potential WMDVBE bidders on the solicitation documents and process, SCE's supplier diversity development program, and the interconnection study process.

Consistent with SCE's focus on safety, SCE requires that, prior to commencement of any construction activities on project sites, the seller must provide to SCE a report from an independent engineer. The report must certify 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" documents also provide 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."

Steps in the proposed New LCR RFO process, in chronological order, are:

1. Internal preparation
    - Prior to launch, SCE finalizes all documents that will be part of the New LCR RFO (e.g., pro forma contracts, participants' instructions, and submittal templates) and reviews details of the New LCR RFO with both internal and external stakeholders. External stakeholders will include but are not limited to Independent Evaluators (IEs), the Cost Allocation Mechanism (CAM) and Commission staff. Their roles are described further below.
2. Launch RFO
    - SCE will publish a New LCR RFO website (hosted on http://www.sce.com) with all information that bidders need to participate. SCE notifies market participants directly, via an exhaustive email list that SCE maintains, and also various service lists particularly including those for dockets addressing Preferred Resources and ES. SCE also issues a press release that is run in industry publications for both conventional and preferred/alternative resources.
    - After launch, SCE hosts a bidder's conference to walk through the various aspects of the solicitation, discuss the valuation approach, and respond to questions and concerns. Due to the complexity of the New LCR RFO and the variety of products that are being solicited, SCE intends to go into more depth

than normal on the solicitation process, the documents, and the valuation during the bidder's conference. SCE intends to highlight the contracts and offer templates associated with Preferred Resources and ES. SCE will also maintain a running list of frequently asked questions (FAQs) on its New LCR RFO website.

3. Notice of intent submission
    - After reviewing New LCR RFO materials, bidders must submit an official notification of which products they intend to bid on. Having this information as early as possible helps SCE to fine-tune a plan to respond to the workload and address any issues related to offer templates associated with new products that may have not been contemplated.
4. Indicative offers submitted by bidders
    - Using the same data templates as will be used for submitting final offers, bidders submit non-binding indicative offers. First and foremost, the indicative offers provide pricing that SCE will use for short-list notification. An ancillary benefit of this process is that it gets bidders used to filling out submittal templates and alerts SCE to any offer anomalies that need to be worked out.
5. Short-list notification
    - Based on short list criteria and valuation results of the indicative offers, SCE notifies bidders of short-listing status. That status is one of three possibilities:
        - Short listed, and SCE wishes to continue negotiations;

- Short listed, but SCE wishes to pursue negotiations with other bidders first and may re-engage with the bidder at a later time; and
- Not short listed, and SCE does not wish to pursue discussions any further

6. Contract negotiation
    - Once the short list has been identified, SCE and bidders will negotiate terms and conditions of executable contract forms based on SCE's published pro forma contracts.
7. Commercial lockdown
    - At this time "commercial" terms are finalized, (e.g., NQC, location, operational attributes) These are the technical terms that describe a potential offer, and need to be finalized sufficiently early to provide adequate time for proper valuation
8. Negotiation deadline
    - All terms and conditions of contract forms must be finalized and ready for execution in order for bidders to submit final pricing.
9. Final prices submitted
    - Bidders submit final binding prices along with previously negotiated contract forms. These documents represent each bidder's final offer.
10. SCE accepts, rejects, or re-engages bidders
    - SCE chooses to either outright accept/reject offers, or go back to bidders for one final round of negotiations. In the past, SCE has either accepted or rejected offers. However, given the complexity of the New LCR RFO and the

desire to maximize the usage of Preferred Resources and ES, along with the potential challenges of developing GFG, SCE intends to make it clear to sellers that SCE *may* return to bidders after their final offer has been submitted. SCE may ask for an additional modification in contract terms or a reduction in price in order to increase the chances that a potentially attractive offer is selected.

All bidders must be able to either reduce load or otherwise interconnect with SCE's transmission system in the LA Basin at the substations in the most up-to-date version of Figure I-2 above. Therefore, the resources must be reasonably adjacent to these substations. SCE will apply the then-current LEFs as discussed in Chapters I and IV to all offers at those substations in the LA Basin. As also discussed above, generation attached to Goleta Substation will have greater value than at other locations as discussed in Chapter II.

SCE will consider offers for contract terms of any length as required by the Decision. In addition, SCE will request a contract term of up to 20 years as part of its "preferred" contract terms at the launch of the New LCR RFO.SCE will be flexible with online dates to accommodate staggered delivery period commencements and the potential need to secure new resources as early as 2015 as a result of the permanent closure of SONGS.

Given the desire to facilitate competition within the relatively short solicitation timeline, SCE will not have a minimum transmission study requirement for offers in the LCR RFO. Instead, SCE will propose a cap on network upgrades in its Pro Forma documents with the dollar amount for each contract to be determined through the negotiations. If projected network upgrade costs (as identified within the interconnection studies) exceed the cap, SCE will have the

right to terminate the contract. Alternatively, the developer will have the option to "buy down" the network upgrade costs that exceed the cap.

In addition to all of the process items discussed above, SCE will strive to follow a number of overarching process rules:

1. SCE will employ standard use of an IE to ensure that all bidders receive comparable and non-discriminatory treatment.
2. SCE will periodically consult with the CAM Group and the Commission's Energy Division at various stages of the process.

C. Contract Documents

As part of the New LCR RFO launch, SCE will provide "Pro Forma" documents that represent its preferred terms and conditions for new agreements. As outlined in the previous section, SCE will provide these documents to bidders interested in those products, and they will serve as the starting point for negotiations. As a solicitation that will accept offers from almost any technology type, a single form of contract for all types would be too broad and may not adequately cover all requirements. Therefore, SCE has currently developed seven different document types to address the different technologies that may participate in SCE's New LCR RFO. Appendix B contains the draft New LCR RFO documents. SCE anticipates that these drafts will continue to evolve during the New LCR RFO process as potential bidders provide feedback to SCE. SCE is not seeking approval of Pro Forma documents through this plan and will continue working with Energy Division as these Pro Forma documents evolve and change.

The following sections of this Chapter identify and briefly describe the different document types:

1. Energy Efficiency (EE)

SCE has a robust existing retail EE program. In the New LCR RFO, SCE is looking to augment that effort by procuring EE in the LA Basin sub-area to meet LCR needs above the amounts procured pursuant to Commission orders in other EE dockets.

For the New LCR RFO, SCE proposes a Pro Forma EE agreement that captures many aspects of the existing EE programs by including high level terms and conditions common across many EE agreements and existing EE solicitations. This will allow SCE to solicit an EE product across a wide range of EE projects and EE technologies. This pro-forma EE agreement provides a payment structure based on achieving project milestones. It allows SCE inspection rights throughout the term of the contract while incorporating commercial provisions consistent across all of the New LCR RFO documents. If SCE deems any of the EE proposals viable and cost competitive, SCE will endeavor to work with those bidders to negotiate appropriate contract language in the EE agreement.

2. Demand Response (DR)

SCE will solicit offers from DR aggregators in the New LCR RFO. Pro forma contracts are based on SCE's 2012 DR RFO. However, SCE's 2012 DR RFO pro forma contract was amended to include updated commercial positions and bring the agreement closer to at-market terms. The updated pro forma contract will also allow, as best as possible, a side-by-side comparison with the other technologies. The provisions of the planned DR contract include:

- DR aggregator assembles numerous service accounts and provides DR in sufficiently large volume to integrate into the wholesale market;

- SCE pays the aggregator a capacity payment for the maintenance of the DR program and also an energy payment if a "dispatch" occurs;[11]
- SCE's ability to dispatch is limited as per the contract; and
- Both the aggregator and SCE have testing provisions which reset availability throughout the term.

3. Energy Storage (ES)

SCE will seek to procure at least 50 MW of ES through the New LCR RFO and will be open to all ES technologies able to meet the LCR need. SCE has designed a potential ES agreement similar to that of a conventional tolling agreement. SCE would pay a capacity payment to the storage owner. In return, SCE could determine when charge or discharge of the energy storage device for its benefit is optimal. Rather than converting from gas to power, there is a conversion from power stored now to power used at a later time. Similar to the guaranteed heat rate in the GFG tolling agreements, the ES agreement will have a guaranteed energy charge to discharge ratio. To the extent the ratio is greater than what is guaranteed in the agreement, the seller will make an energy true-up payment to SCE. If the ratio is less than the guarantee, SCE will make a payment to the seller.

Although SCE has developed a pro forma ES agreement that is intended to work with projects that will operate in the energy market much like GFG, SCE intends to solicit offers from a broad range of ES technologies, including those that may be installed and operated behind the customer's meter. If SCE receives an offer where the pro forma ES agreement does not work, SCE will work with the counterparty to develop an appropriate form of agreement.

In addition, SCE may separately consider proposals for ES providers to sell their equipment to be owned and operated by SCE if the New LCR RFO does not result in sufficient

[11] Here a "dispatch" means SCE's request for the aggregator to reduce load.

cost competitive ES projects. SCE is seeking to broaden the range of ES offers and wishes to provide the maximum opportunity for ES equipment providers. SCE may make this option available to explore ES equipment provider preferences and not due to any preference of SCE to own and operate the storage equipment.

4. Renewables

Renewable resources will be eligible to participate in the New LCR RFO. Since its first RPS solicitation, SCE has been consistently improving its pro forma contract for renewable resources, most recently in SCE's 2013 RPS Procurement Plan, filed on June 28, 2013. SCE's 2013 RPS Procurement Plan includes a Pro Forma Renewable Power Purchase and Sale Agreement with SCE's preferred terms and conditions. SCE intends to use the contract in the New LCR RFO, although there will be minor modifications to address the requirement to procure resources in order to meet an LCR need.

5. Combined Heat and Power (CHP)

Similar to renewable resources, SCE has been performing ongoing contract administration on a Combined Heat and Power (CHP) Power Purchase Agreement (PPA) for Qualifying Facilities (QFs) for a period of time. This CHP PPA has been consistently used in SCE's annual All Source RFOs.[12] Most recently it was released in the 2012 All Source RFO. For purposes of the New LCR RFO, SCE will rely heavily on this document, with updates to bring it closer to at-market terms and to specify that the CHP capacity must be a new facility as defined in 18 C.F.R. Section 292.205(d), or a repowered or expanded capacity facility. To be clear, SCE is not intending to use the CHP PPA adopted in D.10-12-035, approving the CHP Settlement. The CHP PPA from the CHP Settlement does not contain sufficient contractual provisions to properly incentivize timely construction of new CHP capacity to meet the LCR

[12] The annual All Source RFO has traditionally been for existing facilities, not incremental new capacity so as not to be confused with this New LCR RFO.

need. The draft CHP PPA for the New LCR RFO incorporates many of the terms from SCE's GFG PPA, necessary to ensure timely delivery of the new or expanded resource.

6. Conventional Gas-Fired Generation (GFG)

For new conventional GFG facilities, SCE proposes to use the PPA released in the 2006 New Gen RFO as a starting point. This solicitation was the last time SCE procured incremental new GFG facilities. Fortunately, a number of these agreements have been amended and restated in the past 18 months which has brought them up to date with current provisions, evolving regulatory requirements, changes in markets and tariff structure, legal decisions and other administrative updates. Although the 2006 New Gen projects have only recently achieved commercial operation and begun entry into the market, SCE has dealt with many unforeseen circumstances in terms of administering the agreements (e.g. project financing, interconnection delays, ownership transfers). SCE incorporated those lessons learned in the new pro forma document. However, the 2013 GFG pro forma PPA will reflect the majority of the original provisions.

7. Resource Adequacy (RA)

SCE is also in the process of developing a pro forma Resource Adequacy (RA) PPA. This RA PPA will allow developers to submit offers for RA capacity-only in the New LCR RFO. The RA PPA encourages development of new resources by allowing a developer to sell the RA capacity from a project but to keep or separately sell the energy dispatch rights. The ability of a seller to retain the dispatch rights may reduce operational uncertainty associated a bidder's proposed project. SCE included an RA PPA in the 2006 New Gen RFO, and developers provided offers for the product, although none were ultimately selected. The RA PPA contains many of the same terms as the GFG PPA. But, SCE removed all language related to operation of the facility and added language similar to SCE's standard RA contract.

8. Distributed Generation (DG)

Outside of these specific seven new contract documents mentioned above, SCE spent a fair amount of time attempting to determine if a separate agreement for DG would be useful. SCE is fully aware of DG's role in the Preferred Loading Order, and contemplated if a specific pro forma document would be able to address the different DG products. In the end, SCE concluded that DG was too overarching to lend itself to a single stated document format. At this point, SCE prefers to procure DG by first seeing if a DG offer can be accommodated in one of the seven document formats SCE plans to release. If offers do not lend themselves to any particular agreement, SCE will work with the bidder to develop acceptable terms. This provides sellers flexibility to bid products that are DG, but which SCE might not otherwise have considered.

9. Other Solicitation Documents

Appendix B also includes draft forms of the New LCR RFO bidder's instructions, non-disclosure agreement, notice of intent to bid, and offer sheets. Included in the New LCR RFO bidder's instructions is a requirement that sellers post delivery date security to protect against sellers not honoring the deal and failing to deliver the new LCR product as contemplated in the relevant contract. Although this is a common provision for new renewable and conventional generation resources, SCE is concerned that EE, DR, and some DG bidders may not be accustomed to this requirement. SCE is committed to procuring Preferred Resources as the Decision requires. But, SCE also wants to ensure that counterparties committing to provide LCR resources have some "skin in the game" by requiring financial delivery date security. SCE will seek to balance its objective to facilitate Preferred Resource procurement and ensuring sufficient financial incentive exists in its contracts to promote performance of reliability-based procurement.

10. Role of IE, CAM Group and PRG

a) Independent Evaluator (IE)

D.08-11-008, Ordering Paragraph No. 2, requires an IE for all competitive solicitations that involve affiliate transactions, utility-owned or utility-turnkey offers, and for all solicitations that seek products two years or greater in duration, regardless of who participates. In addition, D.06-07-029 stipulates that an IE is required if an IOU runs a solicitation that seeks to allocate new generation costs in accordance with the CAM outlined in the same decision.

In compliance with these requirements SCE recommended Sedway Consulting, Inc. (Sedway) as the IE for SCE's New LCR RFO. Sedway is currently in SCE's pre-qualified pool of IEs and has prior experience developing and running solicitations in other parts of the country for EE, DR, and DG, as well as renewable and conventional resources. Sedway also has prior experience overseeing the negotiation and evaluation of ES in California. SCE provided Sedway with a whitepaper and presentation on ES technologies and requested that Sedway review appropriate staff and consultant reports developed pursuant to the Storage Rulemaking to ensure Sedway has the latest information on ES. If Sedway believes more information on ES is needed to perform its IE duties in the New LCR RFO, SCE will encourage Sedway to contact industry stakeholders, such as CESA, to gain more familiarity with issues involved in evaluating ES resources. SCE sought and obtained Energy Division approval to use Sedway as the IE for the New LCR RFO.

The IE will ensure that the solicitation process is fair to all qualified bidders, and also that no SCE affiliate has an undue advantage over non-affiliates in the solicitation. The IE will be required to make a determination as to whether SCE's final selection was fair and free from anti-competitive behavior, and was not unfairly influenced by its affiliate relationships. The IE must report its findings to SCE's CAM Group and the Energy Division, and may testify in CPUC proceedings, as required or requested by SCE or the CPUC. Upon completion of the bid process to a solicitation, the IE must also complete the CPUC's Independent Evaluator Report Template,

with updates based on completion of the solicitation itself, for review by the CPUC and SCE's CAM Group.

Any IE selected is expected to make recommendations to SCE for improvements to SCE's solicitation process that the IE may have during the course of the solicitation activity. The IE, however, does not have the authority to mandate SCE to make any changes to its RFO process. SCE, not the IE, will conduct and administer the RFO solicitation and evaluation process. In addition, the IE may not negotiate with any bidder or counterparty on SCE's behalf, serve as a single point of contact between SCE and bidders or counterparties, nor make binding decisions on behalf of SCE.

Considering the complexity of the New LCR RFO, the development of new contracts, and the tie to existing programs, SCE will bring Sedway into SCE's New LCR RFO process early. This will facilitate Sedway's review and input to SCE's development of LCR contracts and programs, with particular emphasis on as EE, DG, and ES. SCE will also make its experts in each of these subjects available for the IE to draw on as a resource. This will ensure that the IE has sufficient resources to draw on to have a full understanding of the regulatory and commercial issues associated with each of the products.

b) Cost Allocation Mechanism (CAM) Group

D.06-07-029 adopted a CAM that allows the benefits and also costs of new generation that meets specific needs to be distributed among all benefitting customers. SCE intends to seek CAM treatment for contracts signed in this New LCR RFO, but may defer to existing program cost allocation methodologies for certain Preferred Resources[13] and a "wires" charge if utility-owned storage is secured. SCE will propose an appropriate cost allocation methodology for these contracts in its application(s) seeking approval of its LCR procurement, including

[13] SCE anticipates that all LCR contracts will receive CAM treatment. However, if SCE believes that the administrative cost for CAM treatment is not justifiable for certain contracts, SCE will identify such contracts in its procurement application and provide justification for a different treatment.

proposing any necessary modifications to the use of the existing CAM process. As has been SCE's practice whenever CAM treatment is concerned, SCE will consult with its CAM Group on a regular basis prior to, during and after the close of its New LCR RFO.

c) Procurement Review Group (PRG)

Since SCE intends to seek CAM treatment for resources procured through the New LCR RFO, SCE will be consulting with its CAM Group. However, if SCE determines that it is not seeking CAM treatment for any reason on one of more of the contracts, SCE will consult its PRG for relevant matters through the course of the New LCR RFO.

11. List of Applicable Rules and Statutes

A listing of rules that effect the administration of SCE's New LCR RFO solicitation is large and varied. What follows below is an attempt to synthesize some of the most pertinent ones.

First and foremost, pursuant to Ordering Paragraph 4, RFOs issued in accordance with D.13-02-015 must meet all previous CPUC requirements (including D.07-12-052) and specifically must:

- Require the resource to meet the CAISO identified reliability constraints;
- Require the resource to be incremental to the assumptions used in CAISO's studies;
- Adjust the costs and benefits by their relative effectiveness factors;
- Require the resource to be eligible to count as local RA;
- Not exclude any resource from bidding due to resource type;
- Not limit the length of any contract;

- Be consistent with the Preferred Loading Order and pursue all cost-effective Preferred Resources;
- Minimize ratepayer costs by procuring the most cost-effective resources consistent with least cost/best fit;
- Be a reasonable method designed to procure generation to meet LCR needs at or within levels authorized;
- Assess Greenhouse Gas (GHG) emissions as part of the cost/benefit analysis;
- Consider, but not require, flexibility;
- Use the most up-to-date effectiveness ratings; and
- Consider and analyze impacts of federal legislation.

As stated above, SCE will utilize Sedway Consulting as its IE and will consult with the CAM Group and Energy Division on a regular basis. Pursuant to the Decision and AB 57, SCE will be seeking approval for contracts signed in the New LCR RFO with a subsequent application.

Per D.02-10-062, notification of the solicitation will be widely distributed. Historically SCE has utilized service lists, an SCE owned comprehensive market email distribution list, SCE's website, and at times various industry publications.

Per D.06-07-029, SCE intends to seek CAM treatment for New LCR RFO-executed contracts, but will retain the flexibility to propose a more limited cost allocation.

12. Cost-of-Service (COS) Contract Considerations

SCE will also pursue bilateral COS contracts for incremental GFG in the LA Basin. As stated previously, there is a lack of competition for new GFG in the current procurement

environment. In practice, there may be only two developers that control the path for most of the new GFG that is required.

If suitable terms can be reached, SCE will submit its COS agreement(s) to the Commission for approval through an application. Ideally, the approval request will occur in the same application as contracts that result from any LCR solicitation. SCE's New LCR RFO will seek to cover any shortfall in GFG that is not met by COS contracts, in addition to SCE's targeting of Preferred Resources and ES.

IV.

VALUATION AND SELECTION PROCESS

A. Least-Cost, Best-Fit

1. Overview

SCE will prepare forecasts for RA capacity, electrical energy, ancillary services, natural gas and GHG compliance market prices (i.e. the market price forecast). These market price forecasts may serve as the price benchmark to determine the cost-effectiveness for LCR resources. Specifically, SCE will calculate the forecasted quantity of RA capacity, electrical energy, and ancillary services that each resource will provide, and multiply these quantities by their respective market price forecasts. The sum of these benefits represent the market value that the resource is forecasted to receive. SCE will then compare the contract costs required to extract this market value, such as capacity payments and fuel costs to generate electrical energy, to determine the cost-effectiveness of the resource. The most cost-effective resources will have the lowest contract costs as compared to their forecasted market value benchmark.

The benchmark for determining cost-effectiveness (i.e. the resource's market value forecast) minus the costs required to receive these benefits, plus any other value that can be attributed to the resource, discounted at 10%, is exactly equal to the calculated Net Present Value (NPV) of the offer, as described in detail below. This NPV, after adjusting the offer's RA MW

and resulting RA value component for relative effectiveness factors (i.e. the RA capacity multiplied by one minus the difference between the maximum locational effectiveness factor and the effectiveness factor for the resource), is the metric that SCE will use in the selection process.

SCE will also develop shadow cost curves for some of the product types submitted into its New LCR RFO where it is feasible to do so. As part of SCE's evaluation process, SCE may use these shadow curves as an additional price benchmark for some of the products being solicited such as EE and DR. The shadow cost curves will represent a forecast of total costs required to develop the respective product. SCE may utilize its own forecasts as well as independent consultant forecasts to develop these shadow cost curves. The shadow cost curves will be included in the final application if they are used during the selection process. Consideration of these additional price benchmarks, namely the shadow cost curves, yields several benefits. First, the shadow cost curves provide a safeguard against an uncompetitive solicitation. For instance, if the shadow cost curves indicate that solicitation offers are priced in excess of a reasonable assessment of the associated cost of the offer, SCE may elect to forgo the procurement. Second, the shadow cost curves enable a mechanism for deferring purchasing contracts to a later time. Finally, the shadow cost curves allow for comparison against alternatives that may not have explicitly bid into the New LCR RFO (e.g. EE and DR).

While an open solicitation conveys the appearance of competition, there are few potential counterparties able to meet siting and environmental permitting obligations within the LA Basin and Moorpark sub-areas. Without some safeguard, SCE might have entered into costly contracts yielding unreasonable returns to the counterparties at customer expense, simply because there is no alternative in the solicitation process. The shadow cost curves can identify potential subsequent alternatives against which submitted offers can be benchmarked. The receipt of offers with prices substantially in excess of shadow curve costs indicates the possibility of uncompetitive prices. SCE may use these results to delay an LCR procurement decision until it can further consult with the CPUC.

To meet the identified LCR need, SCE need not quickly enter into agreements for resources with short development times. Due to progress in technology, uncertainty in load growth, and evolution of demand reduction markets, it may be prudent for SCE to contract at a later time. For example, over the past five years, solar photovoltaic (PV) panel costs have decreased dramatically and technical innovation is extending this trend. Using a forecast of future solar PV installed costs may indicate that deferring procurements to a later date is the better choice for customers and SCE will consider such an option.

The shadow cost curves will also allow SCE to assess all preferred resource options even if they are not bid into the New LCR RFO. As discussed in the LTPP Track 1 testimony, it may not be feasible for EE and DR bidders to participate in a 2013 procurement activity for delivery in 2021. SCE will use the shadow cost curves to assess whether it should reserve capacity for higher loading order resources for procurement at a later date based on the projected future implementation costs.

SCE will continue to engage with Energy Division staff and the IE in finalizing the valuation and selection process before final offers are evaluated. In addition, consistent with other procurement activities, SCE will also consult the CAM Group on its final valuation and selection methodology and seek feedback. SCE is not requesting Energy Division approval of its final valuation and selection process. Instead, the final valuation and selection process applied will be described in detail in SCE's LCR procurement application(s), and will be subject to approval by the Commission. Some of the potential areas of discussion include, but are not limited to:

- Transparency;
- Derivation of shadow curves;
- CAM Group participation;
- Cost competitiveness for storage and preferred resources;
- Potential constraints to ensure that generators with appropriate flexible characteristics are selected; and

- Common framework for evaluating energy and RA value for Preferred Resources, ES, and GFG

B. Evaluation Methodology

1. Overview

SCE's offer evaluation process is generally the same whether the evaluation is conducted within an RFO process or outside an RFO process. In either case, SCE follows Least-Cost, Best-Fit principles. The only difference is that within an RFO process comparisons can be made directly against other offers at the same time. Outside of an RFO comparisons are generally made to other bilateral offers or to the most recent relevant solicitations.

As discussed above, SCE employs an NPV analysis when it evaluates offers submitted through an RFO or bilaterally. This methodology is consistent with evaluations performed by SCE in other solicitations such as SCE's CHP RFOs and All Source RFOs for energy and RA. The quantitative component of the evaluation entails forecasting (1) the value of contract benefits, (2) the value of contract costs, and (3) the net value of both (1) and (2). Once all of the valuation elements are calculated, they are discounted to a present value using an annual discount rate. SCE then subtracts the present value of expected costs from the present value of expected benefits to determine the expected NPV of the offer.

In addition to quantitative benefits, contracts may also have qualitative benefits that are evaluated separately. The elements used in the quantitative valuation are described below.

2. Contract Benefits

a) Energy and Ancillary Service Benefits

For dispatchable resources, SCE utilizes a fundamental production-cost model (ProSym), along with a stochastic price process via a Monte Carlo simulation, to value the energy and ancillary service benefits of a generating unit. Inputs to the fundamental model include unit

characteristics such as capacity, heat rate curve, ramp rate, start fuel and start cost, minimum and maximum run-time, variable operation and maintenance (O&M) cost, GHG cost, congestion and losses, fuel cost, and emission constraints, among others. SCE uses the economic dispatch principle, wherein a unit is dispatched if its forecasted benefits exceed its costs, i.e., if it is "in the money." ProSym compares the forecasted cost of running a unit against energy and ancillary services price forecasts to determine whether a unit is in the money.

SCE creates an expansive lookup library of dispatch results to avoid the need to perform multiple runs for each analysis. Currently, the dispatch library consists of a 625-node grid (25 gas prices and 25 implied market heat rate points), chosen a priori in an attempt to reasonably canvas all possible future market outcomes. SCE then deploys a stochastic Monte Carlo simulation process to generate a large number of gas price and implied market heat rate pairs, using blended power and gas price curves derived from market and fundamental models as the expected case, and by applying a volatility process on top of the blended price forecasts to create a distribution of price outcomes. The volatility process estimates correlation, volatility, mean reversion, stochastic volatility and seasonal parameters. The simulated price pairs are used to look up the forecasted gross energy benefits and costs. SCE defines the expected energy and ancillary service benefits as the average of the simulated cases. This process allows SCE to value both the intrinsic and extrinsic (optionality) value of the resource.

For must-take and baseload resources, SCE calculates the energy benefits of an offer based on the estimated market value of energy and the offer's expected generation delivery profile. Since SCE does not have dispatch rights to these types of resources, ProSym modeling and Monte Carlo simulation is not necessary.

SCE utilizes a blended approach to forecasting power, gas, and GHG allowance prices. SCE's blending combines forward market price and fundamental model prices to bridge SCE's use of forward prices for the valuation of products that deliver in the near-term and SCE's use of fundamental model prices for the valuation of products that deliver over a longer term. Forward power prices are also adjusted for location in the final valuation.

b) Resource Adequacy (RA) Capacity Benefits

RA capacity benefits are derived by first developing a forecast of expected forward RA prices and then applying this forecast to the total RA capacity provided by the contract. SCE typically builds its RA price forecast from data collected from its most recent All Source RFOs and bilateral contracts. The process is similar, but not identical to the way Energy Division staff analyzes executed RA contracts for their annual "Resource Adequacy Reports."

The implementation of the Standard Capacity Product (SCP) tariff by the CAISO has changed the RA market dynamics, especially for local dispatchable resources.[14] The SCP rules require scheduling coordinators for resources on forced outage to replace those resources with like or better resources or face an SCP replacement charge. For example, if an LA Basin dispatchable resource goes on forced outage it must be replaced with a LA Basin dispatchable resource. Conversely if a non-dispatchable resource goes on outage it can be replaced by any resource interconnected to the CAISO grid. The cost of not replacing RA capacity on forced outage is set to equal the backstop CAISO Capacity Procurement Mechanism (CPM) price (currently $5.62/kW-month).[15] In addition, the CAISO has recently implemented a Planned Outage Replacement tariff (POR), which requires LSEs to replace RA resources on planned outage before the beginning of the compliance month or face potential backstop costs based on a minimum 30-day backstop at the CPM price.[16] The replacement rules for the POR, however, are slightly more relaxed and allow system RA to replace local RA. Both of these changes have resulted in cost increases for RA products, which SCE's RA price forecast will seek to account for.

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[14] *See* CAISO Tariff, Section 40.9.4.2.1, and November 5, 2012 (available at: http://www.caiso.com/Documents/CombinedConformedTariff_Nov5_2012.pdf).

[15] *See id.* at Section 43.7.1. As provided in Section 43.7.1 of the CAISO Tariff, the CPM price will increase by 5% to $5.91/kW-month on February 16, 2014.

[16] *See* CAISO Tariff, Section 9.3.1.3.2.5 (from the CAISO's December 20, 2012 filing with FERC in Docket No. ER12-2669-002).

3. Contract Costs

a) Dispatch and Energy Costs

For dispatchable resources, dispatch costs include unit start costs, variable O&M costs (VOM), GHG cost, and fuel costs. Start costs include the fixed cost of starting a unit, and are differentiated by hot and cold starts, depending on how long the unit has been offline. VOM costs are costs which are directly proportional to the output of the unit, measured in $/MWh. GHG cost is the California Cap & Trade compliance cost of obtaining the allowances for a unit emitting GHG. Fuel costs include the variable cost of generating power and the fixed cost of the required fuel amount used to start up a unit. These costs components are accounted for in the ProSym production cost modeling and used to make the economic dispatch decisions.

For must-take and baseload resources, energy costs can include fuel costs (as indicated by a heat rate), VOM, and GHG compliance costs, or simply an all-in energy price in dollars per Megawatt-hour (MWh). Since SCE does not have dispatch rights to these types of resources, ProSym modeling is not necessary to calculate the resource's forecast cost.

b) Capacity Payments

Capacity payments represent the total fixed contract payments SCE is expected to make under the contract for delivery of the energy and capacity benefits.

c) Debt Equivalence

Debt equivalence is the term used by credit rating agencies to describe the fixed financial obligation resulting from long-term purchased power contracts. Pursuant to D.04-12-048, the Commission permitted the utilities to recognize costs associated with the effect debt equivalence has on the utilities' credit quality and cost of borrowing in their valuation process. D.08-11-008 was issued in November 2008, and, authorized the Investor Owned Utilities (IOUs) to continue recognizing the balance sheet impact of debt equivalence when valuing PPAs. Given the

confirmation of the use of debt equivalence for valuation purposes, SCE considers debt equivalence in its valuation process.

d) Transmission Cost

For projects that do not have an existing interconnection to the electric system, or have an existing interconnection but not for a proposed expansion of an existing facility, system transmission upgrade costs are based on a Phase 1 Interconnection Study (as defined in the CAISO Tariff) (or equivalent study), or later study for generator interconnection procedures (GIP) applications. For projects with no interconnection study, but with an offer providing SCE the right to terminate if system transmission upgrade costs exceed a specified amount, system transmission upgrade costs are based on the specified transmission upgrade amount.

e) Greenhouse Gas (GHG) Cost

For any offer passing through all or some of the GHG compliance cost, SCE will assess a GHG cost to the offer based on SCE's forecast of GHG prices and the offer's forecasted amount of GHG emissions.

C. Other Quantitative Considerations

There are other considerations that can alter the benefits and/or costs of an offer. For example, congestion costs, which affect the project's energy benefits, can change from location to location throughout the system. SCE forecasts the cost of congestion that each offer is expected to incur, and correspondingly adjusts the calculated energy benefits. Additionally, if a resource will connect to the distribution system, then distribution loss factors will be applied to the expected generation, affecting the amount of energy benefits, and possibly costs, accrued to the offer, to normalize the offer relative to offers which deliver to the transmission system.

Counterparties may seek to negotiate credit and collateral requirements that are different from SCE's pro forma requirements. In doing so, there is no longer a "level playing field" in

terms of default exposure amounts across the offers. In these cases, SCE will calculate a cost to the offer based on the incremental exposure created by the negotiated terms.

Additionally, if SCE can reasonably calculate estimates of other costs and/or benefits that are directly attributable to an offer, then these estimates will be included in the quantitative valuation, and ultimately, in the offer's NPV. For example, LCR procurement is required to ensure that there is sufficient resources in certain sub-areas of the Big Creek/Ventura and LA Basin local reliability areas. Also, within these specific areas there are locations where additional generation would not only satisfy the LCR needs, but also enhance the reliability of the distribution system. In these instances, the benefits of new generation are twofold: 1) LCR procurement, and 2) distribution system benefits that reduce, eliminate or defer the need for other reliability upgrades. When offers provide this additional benefit of eliminating, reducing or deferring costs that would otherwise be incurred, SCE will estimate and ascribe the resulting avoided cost as a benefit to the offer.

D. Demand Side Management (DSM)

Third party demand side management (DSM) providers may be unwilling to submit binding offers more than several years in advance of their proposed program start date. To preclude the potential purchase of less attractive options before EE and DR become commercially available, SCE may use shadow cost curves to measure their potential effectiveness and compare EE and DR to available solicitation options. If SCE's shadow cost curves indicate that deferring the procurement of DSM programs is the most competitive option for addressing LCR need within SCE's LCR authorization, SCE will likely seek to phase the procurement of DSM resources and other cost-effective resources. However, given the recent closure notice of SONGS, SCE may also seek to accelerate the delivery of Preferred Resources, including DSM resources and ES, by pursuing all competitively priced options through its New LCR RFO and other procurement mechanisms including the Pilot.

Calculating EE and DR NPVs should be relatively straightforward as both will typically equal the present value of RA and energy benefits (i.e. avoided supply costs) minus contract/program costs. This is basically equivalent to the Program Administrator Cost Test NPV calculation. In the case of third-party LCR procurement, DSM costs will be directly specified by the counterparties in their offers. Energy benefits will be based on the validated energy reduction estimates contained in the offer (i.e. avoided energy costs). DSM capacity will be calculated using existing RA counting rules. EE programs will require engineering assessments to determine their expected peak load reduction amounts, in MW. Following current RA counting practice, EE and DR will receive LA Basin and system RA quantities equal to 100% and 115% of their peak load reduction amounts, respectively. Furthermore, since EE and DR programs will likely be spread throughout an entire local area, and area-wide effectiveness ratings have not been provided, SCE will use the highest CAISO-provided LEF ratings for the relevant local area in recognition that DSM resources are the highest priority.[17]

E. Quantitative Benefits Summary

As explained above, SCE calculates the quantitative benefits of offers by subtracting the present value of expected costs from the present value of expected benefits to determine the expected NPV of the offer.

Table IV-3 below summarizes typical costs and benefits for the resources types that SCE will solicit to address the LCR procurement requirements. However, it is possible that a particular offer may contain contract language that will cause SCE to deviate from the summarized valuation for the resource type.

[17] SCE will employ location-specific LEFs if a DSM program is limited to a particular substation.

Table IV-3
Summary of Typical Costs and Benefits For Resource Types Solicited in LCR RFO

	Benefits			Costs					Benefits or Costs
Resource Type	Energy	Ancillary Services / Real Time	RA Capacity	Dispatc	Contract or Revenue Requirements	Debt Equivalence	Transmission	GHG Compliance	Other Considerations
CHP	✓		✓	✓	✓	✓	✓	✓	✓
Dispatchable CHP	✓	✓	✓	✓	✓	✓	✓	✓	✓
Conventional Gas[1]	✓	✓	✓	✓	✓	✓	✓	✓	✓
Renewable	✓		✓	✓	✓	✓	✓		✓
DR	✓		✓	✓	✓	✓			✓
EE	✓		✓		✓	✓			✓
Storage	✓	✓	✓	✓	✓	✓	✓	✓	✓
RA			✓		✓	✓	✓		✓

[1] Both standard tolling and cost-of-service contracts are evaluated similarly.

F. Qualitative Assessment

In addition to the benefits and costs quantified during the evaluation, SCE assesses non-quantifiable characteristics of each offer by conducting an analysis of each project's qualitative attributes. SCE considers qualitative characteristics in determining the short list and final selection. These characteristics may include:

- Permitting and interconnection
  - Environmental & permitting status
  - Electrical interconnection
  - Fuel interconnection & source
  - Water interconnection & source
- Pre-development milestones
  - Project financing status
  - Project development experience
  - Thermal host (CHP Only)

    - FERC & California (CA) qualifying facility standards (CHP Only)
    - Emissions performance standards
- Development milestones
    - Site control
    - Large equipment status
    - Reasonableness of commercial operation date
- Transmission area
- Modifications to pro forma documents
- GHG contributions towards the CHP Settlement Agreement target
- Contributions towards SCE's RPS targets
- Congestion, negative price, and curtailment considerations not captured in the quantitative valuation
- Portfolio fit of energy, capacity, & term
- Offeror concentration
- Technology Concentration
- Dispatchability & curtailability
- Offer price in excess of public or independent data (i.e., in excess of shadow cost curves)
- LCR effectiveness factor of interconnection

G. LCR and Resource Adequacy (RA) Counting

1. RA Counting

The Commission adopted SCE's recommendation to use existing RA counting conventions to determine the amount of capacity each resource/program would count towards meeting or reducing the LCR need. However, SCE will solicit certain types of ES products that do not have specified counting rules in the current RA program.

SCE will establish the amount of RA capacity (including system, local and potentially flexible) attributed to each resource under the guidance of the current NQC counting rules of the CPUC's Qualifying Capacity Methodology Manual (Manual). If a resource's operational capabilities generally fall under a category described in the guide, the rules will be applied directly. For example, dispatchable generation resources receive NQC values based on their available capacity. SCE calculates the wind and solar NQCs values based on the exceedance

approach, all subject to deliverability. The Effective Load Carrying Capacity (ELCC) methodology, when implemented, will replace the exceedance methodology, again subject to deliverability. EE, non-dispatchable DR, and most types of DG are typically considered load adjustments rather than supply-side resources. SCE uses program/technology specific studies to estimate the impact of EE/DG on peak load, resulting in a corresponding load reduction. SCE will consider this load reduction as equivalent to RA capacity for valuation and selection purposes.

SCE will estimate NQC values for those resource types not directly described in the Manual by using a similar, existing category. For instance, SCE can estimate the NQC of a directly connected dispatchable ES resource using dispatchable resources rules (as currently used for hydro pump storage). SCE can estimate the NQC of a behind the meter dispatchable ES resource using DR rules. However, estimating the NQC using the DR rules assumes that the resource satisfactorily completes some form of certification, registration, or actual testing of its performance characteristics, and is available for the minimum established number of hours and days (current rules require resources to be available for events at a minimum of four hours per event and three days in a row in order to count as RA resources). When no reasonable estimate can be made using the existing Manual categories, SCE will consider the resource's contribution to meeting or reducing peak demand requirements in ascribing and proposing a counting convention.

D.13-02-015 required SCE to consult with CAISO to develop LCR attributes for resources authorized in this procurement. In absence of CAISO defined LCR attributes, SCE developed its own LCR attributes to be used in the LCR RFO. SCE and CAISO will continue to work together and CAISO may issue a study on LCR attributes for Preferred Resources before completion of LCR RFO valuation. In the event that results of such study are not ready, SCE in its application will describe how it applied its judgment to select chosen resources to meet the LCR need.

2. LCR Counting and Locational Effectiveness Factors

LCR procurement is designed to address the CAISO identified local area reliability concern. The Decision requires SCE to use existing RA program rules for the counting of capacity. To ensure that LCR procurement addresses the CAISO identified local area reliability concern, SCE will calculate forecasted RA values (a component of the NPV) by adjusting the RA MW quantities by the difference between the CAISO-identified maximum LEF in a sub-area and the assessed effectiveness factor of each offer. For example, assume there is an offer with 100 MW of contract capacity, 60 MW of countable RA capacity, interconnecting at a location with an LEF of 30%, and based on the most up-to-date effectiveness ratings, is in a local area with a maximum LEF of 50%. In this example, the contract payments will be based on 100 MW, LCR counting MW benefits will be based on 60 MW, and the RA value component of the offer's NPV will be calculated assuming 48 MW (60 MW x (1-(50% - 30%)). Adjusting the RA MWs that receive RA value in the NPV calculation by the LEFs will direct procurement towards projects that more effectively address the CAISO-identified reliability concern.

Because LEFs are calculated on a constraint-specific basis, and LEFs can vary significantly depending on the studied constraint, SCE may utilize aggregated or geographically dispersed LEFs for its valuation analysis. SCE will provide sufficient documentation of its utilized LEFs in its LCR procurement application(s).

In addition, SCE will count capacity procured to meet the LCR target based on the calculated August NQC for each resource as defined by existing Local RA program rules. An August NQC is appropriate because the CAISO's LCR studies were based on peak demand conditions.

H. Constraints And The Selection

SCE will perform a least-cost, best-fit selection by parsing net benefits into valuation and selection constraint elements. SCE will then select the set of contracts that satisfies the constraints while providing the most favorable valuation. Chapter IV.B describes the valuation

elements. In this section, we describe the benefits that may influence the selection by a constraint mechanism.

The constraints may be fixed or moving. An example of a fixed constraint is setting a minimum gas-fired capacity procurement target at a pre-specified MW level. A single selection set would then satisfy the minimum. An example of a moving constraint would be to establish a series of selection sets by incrementally increasing the minimum target. SCE would then choose from among the series of selections using informed management discretion. The use of moving constraints allows SCE to consider the value proposition of different procurement targets. SCE anticipates setting both fixed and moving constraints for the LCR RFO selection process to yield a portfolio of resources for Commission review and approval.

Characteristics for which SCE may set constraints include the following.

- Capacity of GFG
- Capacity of ES
- Capacity of Preferred Resources
    - Solar
    - Wind
    - DR
    - EE
- Flexible Capacity Requirements
- Others

In setting constraints, SCE will consider regulatory mandates as well as internal forecasts of need.

V.

PREFERRED RESOURCE STRATEGY

As discussed in Chapters I and II above, the Decision authorizes SCE to procure between 200 MW and 800 MW of Preferred Resources and ES by 2021, consisting of: minimum

requirement of 150 MW of Preferred Resources, minimum requirement of 50 MW of ES, and up to 600 MW of additional Preferred Resources and ES. SCE will aggressively pursue procurement of these resources starting with the New LCR RFO described in Chapters III and IV above. If the New LCR RFO is not successful in acquiring competitively priced preferred and alternative resources to meet the minimum 200 MW of LCR needs (consisting of 150 MW of Preferred Resources and 50 MW of ES), SCE will begin implementation of the potential modifications to existing SCE Preferred Resource programs described in Section V.A below. SCE will also seek to use its LCR procurement authority to implement the Preferred Resource Pilot Program. This program will use a combination of location targeted cost competitive procurement within the minimum procurement levels and additional reliance on the 400 MW of discretionary Preferred Resources and ES procurement, as discussed in Section V.B below.

A. Potential Modifications To Existing SCE Preferred Resource Programs

1. Energy Efficiency (EE)

a) Existing EE Solicitations

If the New LCR RFO does not procure sufficient cost-competitive Preferred Resources to meet LCR need, SCE recommends leveraging one or more existing EE solicitation processes, such as Innovative Designs for Energy Efficiency IDEEA365.[18] The Third Party IDEEA365 program is designed to allow for continuous introduction of innovative ideas and technologies into the EE and DR portfolios by drawing from the skill, experience, and creativity of the EE and DR communities. The IDEEA365 Program creates a mechanism for competitive solicitations offered through the majority of the program cycle for new third party programs that produce cost effective energy savings and demand reduction. An IDEEA365 approach has the flexibility to accommodate the needs of LCR procurement activity that is targeting Preferred Resources.

[18] D.12-11-005, pp. 80-84.

b) Potential Incremental EE Achievable Through SCE Programs

If third party programs do not materialize, Table V-4 below shows SCE's best estimate of incremental EE gross savings that it could achieve from EE based on existing IOU EE program designs. This analysis focuses on capturing cost-effective SCE EE program potential beyond the standard existing building program activities, and forecasts cost-effective EE savings that can be captured incremental to current efforts to meet or exceed CPUC program goals.

SCE estimates that it can provide additional EE by as much as 52 MW in the LA Basin and Moorpark sub-areas.[19] SCE has estimated potential incremental capacity from EE based on existing IOU EE program designs, and uses them as a proxy for saving and cost to compare resources that could be captured from sources incremental to SCE existing programs.

[19] The EE forecast included in SCE's 2012 LTPP reflects the Total Market Gross (TMG) goals adopted in D.08-07-047. The TMG goals include IOU Program EE savings based on Achievable Potential. "Achievable potential takes into account real-world barriers to convincing end-users to adopt efficiency measures, the non-measure costs of delivering programs (for administration, marketing, tracking systems, monitoring and evaluation, etc.), and the capability of programs and administrators to ramp up program activity over time." (Guide for Conducting Energy Efficiency Potential Studies A RESOURCE OF THE NATIONAL ACTION PLAN FOR ENERGY EFFICIENCY, US EPA, November 2007, p. 2-4). SCE's EE portfolio is designed to meet or exceed the goals ordered by the CPUC. Achievable potential does not capture all economic potential available at a point in time, i.e., there are additional cost-effective EE savings that may be achievable by addressing the barriers that limit adoption, expending additional resources to deliver programs, and identifying ways to ramp up programs more rapidly. SCE proposes to pursue these approaches to exceed the level of EE savings as ordered in the current TMG goals.

Table V-4
Incremental EE Gross Savings to Existing EE Program Saving in LA Basin and Moorpark Sub-Areas

Sub-Area	Sector	End Use	Wtd Avg EUL*	$M/MW	2021 EE Savings (MW)**
LA Basin					
	Commercial	HVAC	12.42	1.44	19
	Commercial	Lighting	9.03	1.21	10
	Commercial	Refrigeration	10.92	2.49	3
	Residential	HVAC	13.63	2.15	7
	Residential	Lighting	12.30	2.46	0
	Residential	Refrigeration	10.00	-	4
		Total			45
Moorpark					
	Commercial	HVAC	12.42	1.44	3
	Commercial	Lighting	9.03	1.21	2
	Commercial	Refrigeration	10.92	2.49	1
	Residential	HVAC	13.63	2.15	1
	Residential	Lighting	12.30	2.46	0
	Residential	Refrigeration	10.00	-	1
		Total			7
		Grand Total			52

*End Use Weighted Average Estimated Useful Life (EUL) and costs are derived from SCE 2013-2014 EE Program Compliance Filing (2838E)

**The MW values shown reflect demand savings as defined D.06-06-063 “the average grid level impact for a measure between 2 p.m. and 5 p.m. during the three consecutive weekday period containing the weekday temperature with the hottest temperature of the year.

The savings and costs denoted in the table above represent cost-effective EE savings that are incremental to SCE's existing programs. Estimated costs are based on the average measure cost by end-use for SCE's 2013-2014 portfolio.

2. Demand Response (DR)

If the New LCR RFO does not result in contracts to develop sufficient cost-competitive Preferred Resources, SCE can implement locally targeted marketing of existing SCE programs and issue a competitive RFO for new DR aggregator-managed portfolio (AMP) contracts in the LA Basin and Moorpark sub-areas. SCE's most recent competitive RFO resulted in the approval of five negotiated DR AMP contract agreements and budgets for 2013 through 2014, with a total commitment level of 296 MW of cost-effective third party DR with locational dispatch capabilities. AMP contract offerings similar to those received through the competitive DR RFO can also potentially bid into the New LCR RFO.

As an interim approach, the Commission established that "fast"[20] DR located at the most effective LA Basin locations is considered a resource that can be relied upon post-first contingency. Interruptible programs are dispatched when operating reserves are limited, either immediately prior to or during system emergencies. The CAISO can dispatch for system emergencies, while SCE can also dispatch for local emergencies, resource shortages, and transmission and generation outages. The interruptible programs that SCE can dispatch for these purposes include the Base Interruptible Program (BIP), Agricultural Pumping and Interruptible (API), and Summer Discount Plan (SDP).

BIP customers receive bill credits in exchange for committing to reduce their usage to a contractually-established level. The API program provides a monthly credit to eligible agricultural and pumping customers for allowing SCE to temporarily interrupt service to their

[20] Programs that can respond to dispatch instructions within 30 minutes or less, including notification time to customers.

pumping equipment. SDP is a central air conditioning direct load control program for residential customers.

SCE's existing interruptible programs have the ability to respond within 30 minutes or less and can be locally dispatched at the A-bank substation level. In accordance with D.11-10-003, these DR resources are locally dispatchable and are able to operate for a minimum of four hours per day for three consecutive days.

AMP is a DR resource provided by third-party aggregators that commit to monthly load reductions in return for capacity payments based on performance. In addition, the AMP resources are provided energy payments based on actual electricity demand reductions during events. Consistent with the evolving model for the CAISO's wholesale DR market, AMP contracts are locally dispatchable at the Sub-Load Aggregation Point (SLAP). Most of the existing day-of contracts are capable of responding to transmission and distribution constraints within an hour's notice. New smart grid technologies expected to be available in 2021 will enable AMP resources in the targeted sub-areas to respond at an even shorter response time. AMP contracts are able to operate for a minimum of four hours per day and can be called on consecutive days until the maximum event hours per month are attained.

As Table V-5 shows, SCE estimates that it can provide as much as 668 MW and 144 MW of additional locally dispatchable DR in the LA Basin and Moorpark sub-areas, respectively.

Table V-5
Incremental DR Load Impacts to Existing DR Programs in LA Basin and Moorpark Sub-Areas

2021 Incremental Demand Response Programs (MW)				
LCR Sub-Area	DR Program	Response Time (min.)	Dispatch Level	2021 Load Impacts (MW)
LA Basin	API	5	A-Bank	13
	BIP	15 or 30	A-Bank	266
	SDP-Residential	5	A-Bank	154
	SDP-Commercial	5	A-Bank	32
	AMP	60	SLAP	203
	Total			**668**
Moorpark	API	5	A-Bank	9
	BIP	15 or 30	A-Bank	58
	SDP-Residential	5	A-Bank	29
	SDP-Commercial	5	A-Bank	7
	AMP	60	SLAP	42
	Total			**144**

The statewide cap on emergency DR, which applies to API and BIP, limits the growth of these programs to a certain percentage of the CAISO's all-time coincident peak load. If SCE exceeds its share of the cap, the DR capacity in excess of SCE's cap share will not receive RA value. As a result, SCE will need to closely monitor LA Basin and Moorpark sub-area's API and BIP enrollment relative to its portion of the statewide cap. However, it may still be cost-effective for local reliability purposes to develop emergency DR programs in excess of SCE's share of the cap, recognizing that SCE will not be able to capture and allocate RA benefits for such programs.

3. Distributed Generation (DG)

DG may materialize beyond the existing California Solar Initiative (CSI) and Self Generation Incentive Program (SGIP) Program resources that were assumed in the CAISO's LCR studies. SCE assumes that there will be some continued growth of customer-owned DG systems, after the CSI and SGIP Programs no longer offer incentives, primarily caused by continued customer adoption of solar photovoltaic (PV) systems without incentives. This growth reflects expected further declines in solar PV pricing, but is tempered by the conclusion of CSI

incentives in the next 2 to 3 years, and the expected end of the 30 % Federal Investment Tax Credit after 2016. Nonetheless, these solar PV systems are expected to continue to be attractive to customers even without other incentives due to the existing Net Energy Metering (NEM) tariff provisions. SCE will seek to account for the forecast of growth of DG to the extent that it will be in excess of the DG assumed in the CAISO's LCR studies.

4. Renewables

SCE may identify renewable resources that can meet its LCR need through SCE's existing renewable procurement processes.

a) SCE's Large-Scale RPS Solicitation

The Decision directed SCE to indicate whether it intends to seek Commission reconsideration of the solicitation and bilateral contracting determination in its 2012 RPS Procurement Plan.[21] SCE does not intend to seek reconsideration of its 2012 RPS Procurement Plan because SCE's 2013 RPS Procurement Plan, filed June 28, 2013, is under review by the Commission. In its 2013 RPS Procurement Plan, SCE proposes to hold a targeted solicitation for RPS-eligible resources that can help to fill SCE's long-term renewable procurement need. SCE anticipates it will launch its next large-scale RPS solicitation in Q1, 2014.

In order to help meet its LCR target for Preferred Resources, in its 2013 RPS solicitation, SCE will express an interest in proposals for projects located in the LA Basin and Moorpark sub-areas. To the extent SCE receives proposals for projects in those sub-areas, SCE will consider the LCR value of the proposals in relation to other LCR resource options that may exist.[22] Where possible, SCE may utilize the RPS solicitation to identify projects that meet the LCR. SCE may enter into bilateral agreements with some of these projects based on their LCR attributes. If SCE

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[21] See D.13-02-015, Ordering Paragraph 7.

[22] Only projects bid assuming the conferment by the CAISO of FCDS and a NQC assignment will be considered for their LCR value.

does enter into any such contracts, it will submit them for Commission pre-approval through an appropriate application. Due to timing of these potential contracts, this might not coincide with the filing of SCE's LCR procurement application(s). SCE will demonstrate in the specific application that the LCR procurement meets the LCR needs defined by the Decision.

b) Small-Scale Renewable Procurement Programs

In its Renewable Auction Mechanism (RAM) program and Solar PV Program (SPVP), SCE will encourage participation from renewable resources that may help meet its LCR need. However, one of the challenges with relying on RAM and SPVP to meet LCR needs is that the Commission-adopted valuation criteria for RAM and SPVP prevent SCE from considering valuation criteria other than price, transmission upgrade costs, and RA benefits. Within the existing valuation parameters, SCE cannot select bids out of merit order, even if they might otherwise provide LCR benefits. In addition, SCE's view is that standardized contracting would not provide flexibility for the bidders and is therefore unsuitable for the LCR RFO process.

In its next RAM and SPVP solicitations (RAM 5 and SPVP 4), if SCE receives an offer that may provide LCR benefits, but is not ultimately selected within the valuation parameters of RAM or SPVP, SCE will consider the LCR value of the project in relation to other LCR options. SCE expects to launch its RAM 5 and SPVP 4 solicitations during Q2 and Q3 of 2014. If SCE enters into an agreement with a resource as a result of its LCR value, SCE will seek Commission approval through an appropriate regulatory filing. Due to timing of these potential contracts, this might not coincide with the filing of SCE's LCR procurement application(s).

5. Combined Heat and Power (CHP)

On November 23, 2011, the CHP Settlement went into effect. The CHP Settlement establishes a statewide CHP program, which is intended to transition facilities under contract

pursuant to the Public Utility Regulatory Policy Act of 1978 (PURPA)[23] to a market-based state-administered program, the details of which are governed by the CHP Settlement Term Sheet (Term Sheet). Under the terms set forth in the CHP Settlement and Term Sheet, SCE must procure 1402 MW of CHP by 2020 from existing and new CHP resources. SCE anticipates that most of the contracting to meet its CHP goal will be via competitive solicitations. In addition, pursuant to the CHP Settlement, SCE can also meet this target through execution of standard offer must-take contracts with qualified facilities (QFs) 20 MW and under, as-available PPAs for CHP greater than 20 MW, AB 1613 contracts,[24] and bilaterally negotiated PPAs.

Furthermore, similar to the RPS competitive solicitation discussed above, to the extent SCE receives offers from CHP projects located in the LA Basin or Moorpark sub-areas that are not selected in its CHP competitive solicitation, SCE will consider the LCR value of the offers in relation to other LCR options. If selected due to its LCR value, SCE will seek CHP and LCR approval through a single regulatory filing that due to timing of the CHP solicitation might not coincide with the filing of SCE's LCR procurement application(s).

6. Energy Storage (ES)

ES remains an early-stage technology, with significant uncertainty around the ultimate technologies and applications that will prove cost-effective for ratepayers in California. SCE intends to continue to work with Energy Division to develop and refine plans for deploying ES. Appendix C contains a more detailed discussion of the many different types of storage that SCE may pursue and a plan for procuring any needed ES not acquired through the New LCR RFO.

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[23] Pursuant to PURPA, utilities must execute PPAs with QFs, consisting of either small power producers, 20 MW or less, that use renewable resources, or CHP facilities, within the meaning of PURPA.

[24] Pursuant to Assembly Bill (AB) 1613, D.09-12-042 and per the requirements of PURPA, qualifying cogeneration facilities that are 20 MW or less may execute standard PPAs with SCE.

B. Preferred Resource And ES Pilot Program

One of the major challenges to the use of Preferred Resources and ES to meet reliability needs has been a level of uncertainty whether these resources would be available where and when needed. SCE intends to pursue a Pilot targeted in the high impact area to acquire up to 400MW of competitively priced Preferred Resources and ES to meet reliability needs. The Pilot will provide "real time, real world" experience to reduce uncertainty associated with the application and value of Preferred Resources and ES, and encourage greater participation and use of such technologies. The Pilot will include (1) performance attributes to support reliability needs; (2) metrics, measurement, and evaluation protocols to report the efficacy of a portfolio of various Preferred Resources and ES; and (3) methods for applying lessons learned for improvements. This design will ensure that the Pilot provides tangible results that can inform reliability analysis and resulting procurement and investment decisions for years to come.

SCE has considerable experience developing and managing EE and DR programs, with over 5,490 GWh and 1,017 MW in energy savings during the 2010 – 2012 program cycle, and over 1,300 MW in demand response programs under contract as of April 2013. SCE plans to leverage this experience in connection with its Pilot to identify and pursue competitively priced Preferred Resources and ES, and to capture synergies, such as DR-capable EE (e.g., HVAC with DR capability) and DR-enabled DG (e.g., solar PV with smart inverters/ storage). The Pilot is to be designed to help inform electric system operators, planners, procurement entities, and aggregators, to provide greater certainty about the ability and availability of Preferred Resources and ES to perform where and when needed to meet reliability, deferring otherwise needed transmission and generation. The Pilot will be limited to resources in the vicinity of selected substations most affected by the recent retirement of SONGS.

In order to acquire the most information quickly, the Pilot will start with existing DR from SCE's current programs and contracts. These DR resources will not count toward Track 1 LCR Preferred Resource procurement. As the Pilot will require additional resources, SCE plans

to leverage the procurement opportunity in the Decision which authorized SCE to procure up to 400 MW of Preferred Resources and ES, to be available by 2021. SCE may also be able to utilize any procurement authorization it receives in the LTPP Track 4 proceeding. The Pilot details provided in this plan are informational only. SCE is not seeking approval of the Pilot through this plan.

SCE expects to acquire a portfolio of Preferred Resources and ES that will provide sufficient assurance of "dependable" load reduction or generation when needed for local reliability. SCE's Pilot will be a "living" program allowing measurement, assessment, critique, and continual improvements to the program. The improvements will be used to create a better understanding of the resource attributes and value to increase procurement of Preferred Resources and ES. SCE's Track 4 (SONGS Out) Testimony will also describe the Pilot's use to potentially meet Track 4 resource needs.

Appendix A

Roadmap of Decision Requirements

Table A. 1 - SCE's LCR Procurement Plan Road Map to D.13-02-015 Requirements

D. 13-02-015 Requirement	Location in the LCR Plan	Page#
Ordering Paragraph 4		
• Any Requests for Offers (RFO) issued by Southern California Edison Company pursuant to this Order shall include the following elements:		
a. The resource must meet the identified reliability constraint identified by the California Independent System Operator (ISO);	Section IV. H. Constraints and the Selection	pp. 46-47
b. The resource must be demonstrably incremental to the assumptions used in the California ISO studies, to ensure that a given resource is not double counted;	Section II. C. Baseline Planning Assumptions	pp. 14- 15
c. The consideration of costs and benefits must be adjusted by their relative effectiveness factor at meeting the California ISO identified constraint;	Section IV. G. LCR and RA Counting under sub-section 2. LCR Counting and Effectiveness	pp.45-46
d. A requirement that resources offer the performance characteristics needed to be eligible to count as local Resource Adequacy capacity;	Section IV. G. LCR and RA Counting under sub-section 1. RA Counting	pp. 44-45
e. No provisions specifically or implicitly excluding any resource from the bidding process due to resource type (except as authorized in this Order);	Section III. B. Solicitation Structure	pp.18-24
f. No provision limiting bids to any specific contract length;	Section III. B. Solicitation Structure	p. 23
g. Provisions designed to be consistent with the Loading Order approved by the Commission in the Energy Action Plan and to pursue all cost-effective Preferred Resources in meeting local capacity needs;	Section V. Preferred Resource Strategy	pp. 47-58
h. Provisions designed to minimize costs to	Section IV. Least Cost/Best Fit	pp. 33-35

D. 13-02-015 Requirement	Location in the LCR Plan	Page#
ratepayers by procuring the most cost-effective resources consistent with a least cost/best fit analysis;		
i. A reasonable method designed to procure local capacity requirement amounts at or within the levels authorized or required in this decision, not counting amounts procured through cost-of-service contracts;	Section I. C. Summary of the LCR Plan	p. 3-5
j. An assessment of projected greenhouse gas emissions as part of the cost/benefit analysis;	Section IV. B. 3. Contract Costs under sub-section e) GHG Cost	p. 40
k. A method to consider flexibility of resources without a requirement that only flexibility of resources be considered; and	Section IV.B.2 Contract Benefits	pp. 36-37
l. Use of the most up-to-date effectiveness ratings.	Section IV. G. 2. LCR Counting and Effectiveness	p. 45-46
Ordering Paragraph 5		
• Southern California Edison Company (SCE) shall provide a procurement plan for all required and authorized resources in the Los Angeles Basin and Big Creek/Ventura local areas to Energy Division no later than 150 days after the effective date of this decision. SCE shall show that its proposed procurement plan is consistent with Ordering Paragraph 4. SCE shall not go forward with any public procurement process until Energy Division approves the process in writing, except that SCE may proceed with parts of its procurement plan if so authorized. SCE also shall adhere to previous Commission decisions regarding this proposed procurement process, including consultation with the Procurement Review Group and Independent Evaluators.	Section I. Overview of SCE's LCR procurement Plan	pp. 1-11
Ordering Paragraph 6		
• In its proposed procurement plan to be reviewed by Energy Division, Southern California Edison Company shall show that it has a specific plan to undertake integration of energy efficiency, demand response, energy storage and distributed generation resources in order to meet or reduce local capacity requirement needs through 2021.	Section I. E. 2. Integrating Preferred Resources to meet LCR needs Section V. Preferred Resource Strategy	p. 9 pp. 47-58
Ordering Paragraph 7		
• A list of all Applicable rules and statutes	Section I. E. Relevant Rules and Statues	pp. 11-12

D. 13-02-015 Requirement	Location in the LCR Plan	Page#
impacting the Plan		and, 31-32
• A detailed description of how SCE intends to procure resources, specifying the structure of any RFO or alternative procurement process and related timelines;	Section III. Solicitation Process	pp. 16-33
• A statement as to whether or not SCE intends to seek Commission reconsideration of the solicitation and bilateral contracting determinations in its 2012 RPS procurement plan;	Section V. A. 4.a) SCE's Larges Scale RPS Solicitation	p. 54
• A detailed list of the RPS procurement authorizations and processes that support SCE's plans to acquire RPS-eligible resources to meet LCR needs;	Section V. SCE's Preferred Resource Strategy under A.4.Renewables	pp. 54-55
• A methodology for determining least cost/ best fit that includes evaluating and quantifying performance characteristics that vary among resource type (e.g. time to start, output at various times, variable cost, effectiveness in meeting contingencies, etc.);	Section IV. Valuation and Selection process under A. Least Cost Best Fit and B. Evaluation Methodology sub-sections	pp. 35-43
• What type of price benchmark will be used in determining cost-effectiveness for resources;	Section IV. A. 1. Least Cost Best Fit - Overview	pp. 33-35
• An explanation for each resource type indicating whether modifications will be made to existing programs or if a new approach will be utilized;	Section V. SCE's Preferred Resource Strategy which is then detailed further by resource type in sub-sections 1-6	pp. 47-58
• A methodology for determining peak capacity for resources for which there is not a currently approved methodology for determining Net Qualifying Capacity; and	Section IV. G. 1. RA Counting	pp.44-45
• A methodology for determining other reliability capabilities (e.g. voltage support) for resources for which there is not a currently approved methodology for determining these capabilities.	Section IV. G. LCR and RA Counting under subsection LCR Counting and effectiveness as well in Section IV. H. Constraints and the Selection	pp.46-47

Appendix B

Pro Forma Contracts

The following parts of Appendix B are on a concurrently provided hard disk:

RFO Instructions
Exhibit A.2: RFO Definitions
Exhibit C.1.1: CEC's California Power Plants Database
Exhibit C.1.2: CEC's Energy Facility Status Report
Exhibit C.6: Preferred Area Definition
Exhibit D.2: Non-binding Notice of Intent to Offer
Exhibit D.4: Offer Sheet
Exhibit D.4.1.1: Conventional Gas Fired Power Purchase Agreement
Exhibit D.4.1.2: Conventional Gas Fired Power Purchase Agreement Excel Appendix
Exhibit D.4.2.1: CHP Power Purchase Agreement
Exhibit D.4.2.2: CHP Power Purchase Agreement Excel Appendix
Exhibit D.4.3.1: Demand Response Agreement
Exhibit D.4.3.2: Demand Response Agreement Excel Appendix
Exhibit D.4.4.1: Energy Efficiency Agreement
Exhibit D.4.4.2: Energy Efficiency Agreement Excel Appendix
Exhibit D.4.5.1: Energy Storage Agreement
Exhibit D.4.5.2: Energy Storage Agreement Excel Appendix
Exhibit D.4.6.1: Renewable Power Purchase Agreement
Exhibit D.4.6.2: Renewable Power Purchase Agreement Excel Appendix
Exhibit D.4.7.1: Resource Adequacy Power Purchase Agreement
Exhibit D.4.7.2: Resource Adequacy Power Purchase Agreement Excel Appendix
Exhibit D.4.8.1: Distributed Generation Excel Appendix

Appendix C

Energy Storage Materials

I.

INTERPRETATION OF LCR REQUIREMENTS AS APPLIED TO ES

"Energy Storage" refers to a diverse category of resources. Pub. Util. Code § 2835(a) (enacted through AB 2514)[1] provides a definition of energy storage, subsequently adopted by the Commission in D. 12-08-016 (in the Storage OIR):

(1) "Energy storage system" means commercially available technology that is capable of absorbing energy, storing it for a period of time, and thereafter dispatching the energy. An "energy storage system" may have any of the characteristics in paragraph (2), shall accomplish one of the purposes in paragraph (3), and shall meet at least one of the characteristics in paragraph (4)

(2) An "energy storage system" may have any of the following characteristics:

  (A) Be either centralized or distributed.

  (B) Be either owned by a load-serving entity or local publicly owned electric utility, a customer of a load-serving entity or local publicly owned electric utility, or a third party, or is jointly owned by two or more of the above.

(3) An "energy storage system" shall be cost effective and either reduce emissions of greenhouse gases, reduce demand for peak electrical generation, defer or substitute for an investment in generation, transmission, or distribution assets, or improve the reliable operation of the electrical transmission or distribution grid.

(4) An "energy storage system" shall do one or more of the following:

  (A) Use mechanical, chemical, or thermal processes to store energy that was generated at one time for use at a later time.

  (B) Store thermal energy for direct use for heating or cooling at a later time in a manner that avoids the need to use electricity at that later time.

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[1] Cite AB 2514

(C) Use mechanical, chemical, or thermal processes to store energy generated from renewable resources for use at a later time.

(D) Use mechanical, chemical, or thermal processes to store energy generated from mechanical processes that would otherwise be wasted for delivery at a later time.

This broad definition appropriately recognizes the diversity of technologies and applications that may provide ES. For the purpose of procuring ES resources to meet LCR resources, SCE intends to consider the widest possible spectrum of ES technologies and applications, consistent with the above definition of ES. The various ES technologies and applications will of course have different attributes, which will affect their ability to either meet our reduce SCE's LCR need.

A. Discussion of storage alternatives

As discussed above, energy storage comprises many different technologies and applications. Broadly speaking, energy storage falls into three major categories: (1) transmission-connected storage (including storage co-located with transmission connected generation resources), (2) distribution-connected storage, and (3) behind-the-meter storage.[2]

1. Transmission connected storage

Transmission-connected storage devices are interconnected to the bulk power system operated by the ISO, generally at 220kV or above. These devices have primarily a "generation" or market function: These devices are managed by a utility's energy procurement organization (e.g., the "trade floor") and are bid into the CAISO market and are operated according to CAISO awards and dispatches. Value accrues to the utility (and to the ratepayers) through two means: market revenues earned through CAISO market participation, and capacity value, as determined by the avoided cost of additional RA contracts.

[2] These categories of storage are consistent with those developed in the Storage OIR.

Transmission-interconnected storage may take the form of a standalone resource, a resource integrated with a conventional natural gas resource (e.g., gas turbine inlet air chillers coupled with cold water storage), or a resource integrated with a renewable resource (e.g., a concentrated solar thermal resource coupled with molten salt storage). For the purpose of LCR procurement, we expect offers of transmission-connected storage to consist primarily of standalone storage. Distribution connected storage

Distribution-connected storage devices are interconnected to the distribution system owned and operated by a utility, generally at voltages of 66kV and below. Unlike transmission-connected storage, which functions exclusively as a generation resource, distribution-connected storage may function as a generation resource ("storage as distributed generation"), a distribution reliability resource ("Distribution Reliability Storage"), or a combination of the two ("Dual-use storage"). These three categories are discussed in detail below.

a) "Storage as Distributed Generation"

Like transmission-connected storage, these devices have a "generation" or market function. They are managed by the utility's energy procurement organization and are operated according to CAISO awards and dispatches. Their value to the system derives from CAISO market values as well as capacity value, which may include local capacity value. By definition, these devices are not operated to meet any specific distribution reliability need. Therefore, these devices do not receive any "distribution value" in their valuation. (If such a device does deserve distribution reliability value, it would fall into the "Dual-Use" category below.)

Storage as DG may be a standalone resource, or integrated with a renewable resource.[3]

[3] Theoretically, storage could also be integrated with a conventional generating resource located on the distribution grid.

b) "Distribution reliability storage"

Unlike the previous examples, these devices do not have a market function. These devices are operated exclusively to meet reliability needs of the distribution circuit where they are interconnected. Operation is managed by a utility's distribution operation organization (e.g., the "grid control center.") The device does not participate in the CAISO market; rather the device behaves as a load modifier. Because these devices are managed exclusively for the reliability of the distribution circuit, a device in this category may not necessarily meet or reduce LCR need. However, certain operations of distribution reliability storage (e.g., operating as a regularly scheduled Permanent Load Shift device) may be able to reduce LCR need as a load modifier, similar to demand side resources. (A device in this category would not be able to meet LCR need as a *supply* resource.).

c) "Dual-use Storage"

By definition, "Dual-Use" devices provide a "generation" or market function as well as distribution reliability function. In some hours or under some conditions, these devices behave as a market resource. In some hours, the operation is constrained to meet the operational needs of the distribution circuit. The scope and degree of such constraint may vary dramatically according to the reliability needs of any individual circuit. These storage devices might be eligible for LCR credit, depending on the manner in which the device must be operated to meet the local distribution reliability need. For example, if the device is available to operate without constraint during peak periods, the device might be eligible for credit to meet LCR need. Alternatively, if the distribution reliability need is satisfied through a regularly scheduled "permanent load shift" operational pattern, such a device might reduce LCR need, similar to the way some behind-the-meter programs reduce LCR need.

Dual Use storage is a new concept still at the demonstration stage and will not be ready for commercial deployment in the next year. SCE and other utilities are currently in various stages of demonstrating pilot projects of dual-use storage applications. Before such devices can

be deployed at a commercial scale, commercial readiness must be demonstrated. Given that the current LCR need is not until 2021, SCE expects that the dual-use concept will be available for commercial deployment by that time.

As part of the implementation of pilots and demonstrations of dual-use storage, additional analysis on the opportunities, operations, and economics of dual-use devices must be completed including:

- Analyze distribution substations and circuits for needs that could be resolved with storage devices; identify locations that offer distribution value;
- Define source of distribution value – deferred substation upgrade, deferred circuit upgrade, etc.;
- Define operations of this kind of resource (e.g., peak shaving, etc.);
- Analyze monetary value of distribution function provided by storage;
- Analyze synergies and conflicts between LCR application and distribution reliability application(s); and
- Determine LCR value of the storage devices.

SCE is, and will continue to be, actively involved in moving dual-use storage closer to commercial deployment.

2. Behind-the-meter (BTM) Storage

Customer-owned storage devices may be able to meet or reduce LCR needs if the owners elect to participate in a program that allows control of the device to be shifted to the utility or the CAISO when necessary. BTM storage may potentially provide this service through two types of programs as discussed below: as a retail program under the DR umbrella, or as a wholesale market participant.

With the exception of the existing Permanent Load Shift program in the DR program, all of the potential storage applications described below represent new programs at the "conceptual" stage that will not be ready for implementation within the next few years. These new concepts would require significant technology and regulatory work prior to deployment. Because the LCR need does not take effect until 2021, SCE believes that some or all of the programs described below may be ready for implementation prior to 2021.

a) Storage as a DR resource

Certain BTM storage devices may be able through participation in a demand response program. Currently, there is one DR program for energy storage devices (the PLS thermal ice storage program), but modifications to that program as well as new programs may potentially offer additional opportunities for BTM storage to reduce or meet LCR needs. The following discussion identifies a range of potential DR programs. Many of these would be new programs, and many rely upon technology that is not commercially ready. However, given that the LCR resources need not come online until 2021, it is quite possible that some of these programs may be feasible in time.

(1) Existing PLS program (ice storage)

Storage procured under this program may reduce peak load, and thus may reduce LCR need.

(2) Modified PLS program: expand include residential customers

The existing PLS program could expand to include more customers.

(3) Modified PLS program: additional storage technologies

Many other storage technologies beyond ice storage (e.g., batteries) can provide PLS services. The existing PLS program could be modified and expanded to become technology neutral.

(4) New DR storage program: Dispatchable storage (with notification)

This program would be different from the existing PLS program, which assumes a consistent scheduled operation of the battery. The PLS schedule usually provides a high level of benefit to both the customer and the grid, but at times the PLS schedule may not be optimal for the either. For customers who prefer a different (or more flexible) operation of their battery, a program could be created that allows the customer to operate their battery freely on most days. Then, on critical peak days, customers would be notified in advance to charge and reserve their battery for discharge during specified hour(s). As with the existing air-conditioner cycling program, SCE could create multiple program tiers based on the frequency of calls. This program offers potentially more value to both customers and to the grid than the strictly scheduled PLS program.

(5) New DR Program Freezers.

"Smart" freezers and refrigerators can potentially offer the same benefits as the existing PLS ice storage systems. These appliances would operate to provide extra cooling during off-peak hours to "pre-cool" the freezer and (to a lesser extent) the refrigerator) each night, cooling below the usual temperature set point, to reduce the need for cooling during peak hours the following day. One advantage of this technology is that it should require minimal incremental cost relative to existing appliances, many of which already include sophisticated control systems.

(6) New program: Electric Vehicle (EV) DR program.

In its simplest form, an EV DR program could function similarly to the existing air conditioner cycling program. Users would allow their EV charging to be interrupted during critical needs. (In contrast to an air conditioner cycling program, users would probably want the ability to override the program and forego payment.)

More complex DR programs become possible if vehicle-to-grid (V2G) discharging becomes a reality. With V2G, an EV could participate as a dispatchable storage resource.

b) Storage as a wholesale market participant

As an alternative to BTM storage as DR, BTM storage may be eligible to participate directly in the wholesale markets, operating (in certain hours) according to CAISO awards and dispatches. It would be necessary to develop a new program for BTM ancillary service market participation. Compensation would be based on actual market prices settled with ISO via the scheduling coordinator. Significant coordination with the CAISO would be required realize this concept.

The current Department of Defense (DoD) Pilot Project (using electric vehicle charging stations to provide A/S) should provide useful insights into the design and implementation of BTM A/S participation. It is not yet clear whether the DoD pilot program will represent a model for future BTM A/S participation.

B. Plan For Procuring Additional LCR ES Resources

SCE may procure less than 50 MW of ES in the New LCR RFO if insufficient cost-effective proposals are received, and procure additional ES at a later date to complete the 50MW requirement prior to 2021. In contrast to conventional natural gas resources, some ES resources have a much shorter lead time (of a few years or less) for development.[4] The shorter lead time of ES resources creates an opportunity to delay a portion of procurement to a later date in a "phased procurement" approach. There are two sources of potential benefit to this "phased" approach to storage procurement: the expected declining cost of storage, and new storage applications not yet commercially ready.

[4] See, for example: DSM Use Case Customer Side, R. 10-12-007, Jan 4th, 2013, which can be found at: http://www.cpuc.ca.gov/PUC/energy/electric/storage.htm

First, there is general consensus that storage costs are declining.[5] In theory, offers submitted in the upcoming New LCR RFO for 2021 operation may "price in" the declining cost of storage (i.e., developers, in setting their price, may assume their ultimate costs will be below currently available storage prices). However, delaying procurement until actual storage costs achieve their expected reductions will better ensure that ratepayers are able to take advantage of the lowest possible cost. Additionally, delaying the procurement decision, and thus the determination of the final contract price, reduces the risk that actual costs will change between contracting and construction. Reducing this risk also increases the likelihood that the project will remain feasible and will in fact be constructed.

Second, as discussed above, many storage applications expected to be available by 2021 are not available today. By delaying procurement, SCE will have an opportunity to include a wider variety of storage technologies and applications into the ultimate set of resources selected to comprise the minimum 50 MW. If less than the full 50 MW are procured in the initial solicitation, SCE expects to hold additional competitive solicitations in subsequent years. Additionally, SCE expects to propose new programs for BTM storage, as discussed above.

Finally, SCE may develop utility-owned distribution-connected "dual-use" storage. All distribution assets on SCE's distribution grid are owned and operated by SCE. Consequently, to the extent cost-effective storage may be deployed as "dual-use" distribution assets on SCE's distribution grid, SCE expects to own and operate these resources. There may be opportunities to deploy cost-effective "dual-use" storage that can provide distribution value in addition to LCR value. SCE intends to explore these potential opportunities and propose storage deployments where cost-effective.

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[5] *See*, for example, Comments of the California Energy Storage Alliance Responding to Administrative Law Judge's Ruling Entering Interim Staff Report Into Record and Seeking Comments, Feb, 4, 2013, R. 10-12-00, at Appendix page 1. See also cost assumptions selected by ED staff to be used by the Electric Power Research Institute ("EPRI") in the cost-effective modeling in the Storage OIR.

Storage remains an early-stage technology, with significant uncertainty around the ultimate technologies and applications that will prove cost-effective for ratepayers in California. SCE intends to continue to work with Energy Division to continue to develop and refine plans for deploying energy storage.

Appendix D

Draft LCR Resource Attributes

DRAFT - For Review Purposes Only

Operational and Planning Characteristics Attributes Necessary for Preferred Resources and Energy Storage to Meet LCR Needs

Attribute Class	Description	Program Example	Activation	Duration	Availability	Frequency of Use	Maximum Participation (MW)	Telemetry Requirement	Triggering Mechanism
A	Firm Load Reduction	Energy Efficiency Peak Load Reduction; Permanent Load Shift	N/A	N/A	Dependable capacity during summer peak periods	N/A	None	None	N/A
B	Customer Side Intermittent Generation	Customer Rooftop Solar	N/A	N/A	Dependable capacity during summer peak periods	N/A	30% of peak or 80% of light load at circuit level (see note 1)	None	N/A
C.1	Real Time Demand Reduction	Energy Storage Device; Direct Load Control	Automatic activation (post contingency)	At least 2 hours	Annual availability; storage fully charged upon CAISO request up to 60 times/year	At least 3 times/year	up to 5 % peak area load	4-second or 5-minutes, depending on trigger mechanism	Day ahead request to be available; triggered based on CAISO real time instruction or voltage/frequency relay
C.2	Real Time Demand Reduction	Energy Storage Device; Direct Load Control	Automatic activation (post contingency)	At least 4 hours	Annual availability; storage fully charged upon CAISO request up to 60 times/year	At least 3 times/year	None	4-second or 5-minutes, depending on trigger mechanism	Day ahead request to be available; triggered based on CAISO real time instruction or voltage/frequency relay
D.1	Scheduled Load Reduction (Low Use)	Demand Response (BIP)	<= 30 minutes (pre contingency)	At least 4 hours	Dependable capacity during summer peak periods (see note 2)	At least 3 times/year	Up to 5% of area peak load	None (observed at A-station)	Triggered based on CAISO instruction; A-station or below
D.2	Scheduled Load Reduction (Moderate Use)	Demand Response (SDP)	<= 30 minutes (pre contingency)	At least 4 hours	Dependable capacity during summer peak periods	At least 20 times/year	Up to 15% of area peak load (cumulative with D.1)	None (observed at A station)	Triggered based on CAISO instruction; A-station or below
D.3	Scheduled Load Reduction (High Use)	Demand Response Contract (with dispatchable EMS)	<= 6 hours (pre contingency)	At least 6 hours	Dependable capacity during summer peak periods	At least 60 times/year	Up to 25% of area peak load (cumulative with D.1 & D.2)	None (observed at A station)	Triggered based on CAISO instruction; A-station or below

Note 1: Cumulative; can be waived based on an interconnection study

Note 2: Could be modified to an annual requirement for some/all MW if appropriate