Application No.:	16-11-
Exhibit No.:	SCE-01
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SOUTHERN CALIFORNIA EDISON®

An *EDISON INTERNATIONAL*® Company

(U 338-E)

TESTIMONY OF SOUTHERN CALIFORNIA EDISON COMPANY IN SUPPORT OF APPLICATION FOR APPROVAL OF THE RESULTS OF ITS SECOND PREFERRED RESOURCES PILOT REQUEST FOR OFFERS.

PUBLIC VERSION

Before the

Public Utilities Commission of the State of California

Rosemead, California
November 4, 2016

SCE-01: Testimony Of Southern California Edison Company In Support Of Application For Approval Of The Results Of Its Second Preferred Resources Pilot Request For Offers.

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I.

INTRODUCTION

In this Application, Southern California Edison (SCE) seeks approval of 19 Purchase and Sale Agreements (PSAs) for 125 Megawatts (MW) of preferred resources[1] that interconnect to the lower voltage level substations and circuits, electrically in-line with either the Johanna A-Bank substation or the Santiago A-Bank substation (J-S Region). SCE procured 60 MW of in-front of the meter (IFOM) energy storage (ES), 55 MW of Demand Response (DR) supported by ES and load reduction, and 10 MW of behind the meter (BTM) solar photovoltaic (PV) paired with ES (Hybrid).[2] SCE procured these resources through its Second Preferred Resource Pilot (PRP) Request for Offers (RFO) (PRP RFO 2). These resources will support important endeavors informing the emerging modern grid, including (1) the PRP, (2) the Electric Program Investment Charge (EPIC) Investment Plan's Integrated Grid Project (IGP), and (3) at least two, and potentially three, proposed demonstration projects in SCE's Distribution Resources Plan (DRP), all of which are in furtherance of the State's important and ambitious energy and environmental policy goals. In addition to these primary purposes, the procurement may also offset 124.9 MW of SCE's *current* residual 169.4 MW Local Capacity Requirements (LCR) procurement requirement (which is contingent on the outcome of a pending California Independent System Operator (CAISO) analysis) with resources sited in the local J-S Region.

The backdrop for the launch of SCE's PRP in the J-S Region in 2013 was the impending retirement of coastal Once-Through-Cooling (OTC) plants and the closure of San Onofre Nuclear Generating Station (SONGS). Combined, these resource retirements represent a total loss of approximately 7,000 MW of generation capacity from resources that have historically been deemed critical to system and local reliability. At the time, there was a concern about electric grid reliability in

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1 Preferred Resources for purposes of this application include energy efficiency, demand response, renewable distributed generation and energy storage.

2 SCE requests Commission approval to recover the costs of these PSAs, depending on the resource technology, in either Generation rates through the Energy Resource Recovery Account (ERRA), distribution rates through the Base Revenue Requirement Balancing Account (BRRBA), or the Public Purpose Programs Charge (PPPC).

Southern California's Western Los Angeles (LA) Basin, which includes the J-S Region. In 2014, the CAISO released analysis showing that the Southwest sub-area of the Western LA Basin, which includes the Johanna and Santiago A-bank substations, is the most effective area to site resources in the Western LA Basin to meet the area's long-term local capacity needs.

Irrespective of whether the retirement of the OTC plants and SONGS continues to present reliability issues, customer electricity demand in the J-S Region is growing. The load growth in the region presents an opportunity for SCE, through its PRP, to (1) demonstrate the ability to site locally preferred resources to offset the growing load in the J-S Region, driven by new commercial and residential developments and business expansion; (2) operationally integrate and manage distributed energy resources (DERs) as they potentially become more than 20% of the resources serving the J-S Region, and (3) facilitate customer choice in meeting their energy needs with cleaner preferred resources by providing additional sourcing avenues through alternative energy service markets.

SCE's principal purpose for launching the PRP RFO 2 was to support the PRP endeavor. An equally motivating objective was to procure preferred resources through the PRP RFO 2 to support other important State-led endeavors that focus on the emerging, modernized grid, including the EPIC Investment Plan's IGP and at least two DRP demonstration projects.

Perhaps most importantly, SCE's procurement of preferred resources for the J-S Region is reasonable and in the best interest of customers because it supports the State's important and ambitious environmental and energy policies, including those embodied in the Assembly Bill (AB) 32's and Senate Bill (SB) 32's Greenhouse Gas (GHG) Cap-and Trade Program, Renewables Portfolio Standard (RPS), SB 327 and SB 350, and the Loading Order. As California moves toward a low-carbon future, the State is increasingly looking to electric utilities to procure clean sources of energy, or preferred resources, to meet energy and reliability needs. The preferred resources SCE procured for the J-S Region through the PRP RFO 2 will support the State's environmental and DER goals and provide valuable information for the future.

In addition to the primary purposes for the procurement described above, the PRP RFO 2 procurement may also contribute 124.9 MW of preferred resources,[3] sited in the effective area of the J-S Region, to help meet a portion of the 550 MW preferred resource procurement requirement[4] established in the Long Term Procurement Plan (LTPP) Track 1 and 4 decisions. SCE currently has a residual obligation to procure 169.4 MW of preferred resources or energy storage.[5] The CAISO will release an updated analysis later this year or early next year indicating whether a need remains for long-term local capacity resources in the Western LA Basin. That analysis may conclude that the electric grid reliability issue has been resolved, or reduced, assuming certain mitigation activities come to fruition.

In sum, the Commission should approve the competitively-sourced PRP RFO 2 procurement and requested cost recovery because obtaining the operational understanding sought through the PRP, the need for EPIC Investment Plan IGP and DRP work, and the furtherance of the state's important and ambitious energy and environmental policy goals is in the best interest of customers. Moreover, the PRP RFO 2 procurement may offset a portion of the current outstanding LCR procurement requirement.

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[3] All of the resources procured in the PRP RFO 2 will contribute towards SCE's LCR Requirement, but, due to specific resource adequacy requirements for LCR procurement, only 124.9 MW of the installed capacity of 125 MW will offset SCE's current outstanding LCR requirement.

[4] Decision (D.) 14-03-004 at p. 100 (SCE "may also procure energy storage as part of [its] preferred resources requirement[] or all source authorization[] . . . .").

[5] In addition to the resources procured in the PRP RFO 2, other procurement already undertaken by SCE will also count towards the outstanding LCR requirement of 169.4 MW. This procurement includes SCE's original LCR RFO, 2014 ES RFO, Aliso Canyon ES RFO, and other Aliso Canyon related procurement.

II.

CIRCUMSTANCES JUSTIFYING THE PRP RFO 2 SOLICITATION AND PROCUREMENT FOR THE J-S REGION

The resources procured through the PRP RFO 2 will support important endeavors informing the grid of the future, including the PRP, EPIC Investment Plan's IGP, and DRP, all of which are in furtherance of the State's important and ambitious energy and environmental policy goals. It will also help SCE satisfy the current residual 169.4 MW LCR procurement requirement (which may be contingent on the outcome of a pending CAISO analysis) with resources sited in the local J-S Region.

A. The Retirement of OTC Plants and SONGS

The backdrop for the launch of SCE's PRP in 2013 was the impending retirement of OTC plants and closure of SONGS. In 2010, the California State Water Resources Control Board (SWRBC) adopted regulations directly affecting the operations of OTC plants to comply with federal environmental policy codified in the Clean Water Act.[6] OTC or "ocean-cooled" gas generation facilities have long been important components of California's electric grid, providing system capacity and local transmission reliability.[7] As a result of the SWRBC regulations, more than 4,900 MW of OTC plants along the coast in SCE's territory are expected to retire by 2021. In addition, in 2013, SCE decided to close SONGS.[8] Combined, these resource retirements represent a total loss of approximately 7,000 MW of generation capacity from resources that have historically been deemed critical to system and local reliability. According to the CAISO Transmission plan, which SCE expects will be updated this fall, "[e]lectric grid reliability in southern California has been challenged by the retirement of the San Onofre Nuclear Generating Station and the expected retirement of power plants using ocean or estuarine water for cooling due to OTC regulations."[9] Thus, at the time, there was a concern Southern California's Western LA Basin could be particularly impacted by the retirement of these resources. It is

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6 *See* 33 U.S.C. § 1326(b).

7 D.13-02-015, p. 6.

8 D.14-03-004, pp. 22-26.

9 *See* CAISO's *2015-2016 Transmission Plan* (March 28, 2016), at p. 96.

possible that the CAISO's updated analysis will conclude that the Western LA Basin need has been mitigated, assuming certain mitigation activities come to fruition.

B. The PRP RFO 2 Resources Will Support the State's Environmental and Energy Policies, as Well as Several Endeavors Informing the Emerging, Modern Grid

Irrespective of whether the retirement of the OTC plants and SONGS have created a present reliability need, a unique opportunity nevertheless exists for SCE to further several endeavors that inform the emerging, modernized grid, including its PRP, EPIC Investment Plan's IGP, and DRP, all of which are in furtherance of the State's important and ambitious environmental and energy policy goals.

1. The PRP RFO 2 Resources Will Support the PRP

The PSAs will contribute to SCE's innovative, multi-year PRP. SCE initiated the PRP in 2013. SCE is conducting that endeavor in the area served by the Johanna and Santiago A-bank substations in Orange County. The Johanna and Santiago A-Bank substation region is part of the Southwest LA Basin sub-area, which is one of the three substation sub-areas in the Western LA Basin.[10]

Overall, the PRP seeks to inform the emerging modern grid by determining if locally-sited preferred resources are able to offset the growing load in the J-S Region. Through the PRP SCE also seeks to demonstrate whether it is possible to acquire and deploy sufficient DERs in a highly localized manner in urban areas, including down to the circuit level. SCE also expects the PRP to provide SCE with important insight into the locational value of DERs with targeted, local, technology neutral, competitive solicitations, as opposed to other sourcing options, such as territory-wide solicitations, programs, and tariffs. SCE also expects the PRP to help SCE develop new or revised processes for

[10] The Western LA Basin is divided into three sub-areas that include 28 A-Bank substations: (1) the Northwest LA Basin, (2) Western Central LA Basin; and (3) the Southwest LA Basin. An A-Bank substation is a substation which connects the transmission system to the sub-transmission system. These stations typically step voltage down to 66 kV or 115 kV. The A-Bank substations within the Western LA Basin are the following: (1) the Northwest LA Basin, includes the Eagle Rock, Gould, Goodrich, El Segundo, Chevmain, El Nido, La Cienega, La Fresa, Redondo, Hinson, Long Beach, Lighthipe and Laguna Bell substations; (2) the Western Central LA Basin, includes the Center, Del Amo, Mesa, Rio Hondo, Walnut and Olinda substations; and (3) the Southwest LA Basin, includes the Alamitos, Barre, Lewis, Villa Park, Ellis, Huntington Beach, Johanna, Santiago and Viejo substations. Arcogen and Harborgen were omitted from the list of substations in the Northwest LA Basin sub-area because they are not load serving substations.

operationally integrating and managing DERs as they potentially become more than 20% of the resources serving the J-S Region. The PRP also facilitates customer choice for meeting their energy needs through cleaner resources by providing additional sourcing avenues through alternative energy service markets.

More specifically, the PRP RFO 2 procurement will support two specific PRP objectives: (1) to determine whether locally-sited preferred resources will allow SCE to effectively manage or offset a forecasted load growth; and (2) if resources can be acquired and deployed down to the circuit level.

For the most part, SCE has acquired preferred resources to meet PRP needs through its LCR RFO[11] and various existing customer programs.[12] SCE has relied on unique, stand-alone solicitations for the J-S Region only when those other mechanisms fail to yield sufficient resources in the J-S Region. For instance, SCE launched the renewable distributed generation (DG) PRP DG RFO through which it obtained Commission approval for 2.166 MW of IFOM renewable DG resources.[13] To date, excluding the contracted resources from PRP RFO 2, SCE has secured approximately 151 MW to offset the total anticipated load growth in the J-S Region over the baseline amount identified during the 2012 LTPP process. Table II-1 below shows the amount of preferred resources by type SCE secured outside the PRP RFO 2.

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[11] On November 21, 2014, SCE filed Application (A.) 14-11-012 for approval of the results of its 2013 LCR RFO for the Western LA Basin. The Commission approved the contracts in D.15-11-041.

[12] Utility Customer Programs include utility managed EE and DR programs, as well as the California Solar Initiative (CSI) (including the Single and Multi-family affordable solar housing (MASH/SASH programs), Self-Generation Incentive Program (SGIP), New Solar Homes Partnership (NSHP), and Net Energy Metering program.

[13] The Commission recently approved that procurement in D.16-09-006.

Table II-1
J-S Region Secured Preferred Resources

Preferred Resource Type	Preferred Resources Acquired for J-S Region as of 9/30/2016[1]
EE[2]	43
DR	17
Permanent Load Shift	26
DG[3]	57
Energy Storage	8
Total	**151**

[1] The MW amounts reflect deployed or contracted values of preferred resources with an expected in-service date by the end of 2020. The amounts are approximate because utility program contributions are validated annually.

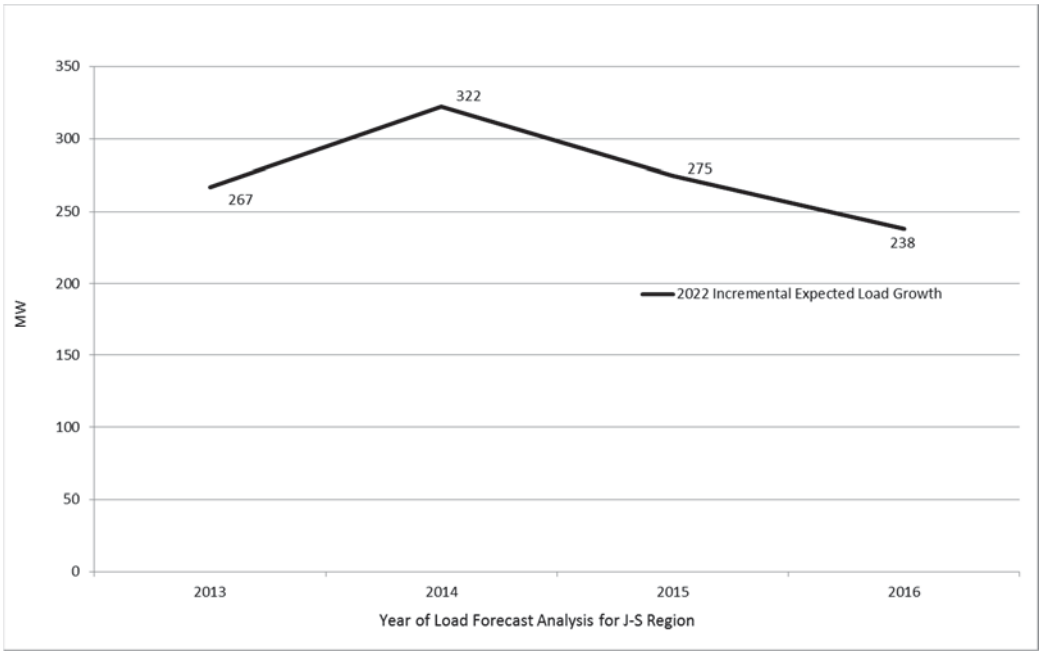
[2] SCE did not solicit EE in the PRP RFO 2 because SCE had already procured 43 MW of EE in the J-S Region through existing demand side management (DSM) programs and the LCR RFO. EE's discrete contribution in terms of measureable metered grid level impact is unknown. SCE's PRP is working to assess and validate EE's grid level contributions, which will inform future acquisition activities in areas with local area needs.

[3] The amount includes 19.4 MW landfill project not under contract with SCE, but interconnected in the Santiago system, which will help serve customers in the J-S Region. SCE is seeking incremental resources in the J-S Region and therefore the DG total does not count renewable DG interconnected in the J-S Region prior to the year 2014.

As stated above, the PRP RFO 2 resources are meant to offset the incremental J-S Region load growth. At the time of the PRP RFO 2 launch, SCE projected that there would be a peak load growth of 275 MW by 2022. Since the PRP's inception, SCE has annually updated the year 2022 forecasted peak load based in part on the previous year's electrical demand, normalizing due to temperature, and expected customer projects. This value has fluctuated since SCE initiated the PRP as seen in Figure II-1, and, given the nature of forecasts, SCE expects it to continue to do so. The 2016 peak load growth forecast is 238 MW, but SCE used the 275 MW forecast to size the PRP RFO 2.[14]

[14] Since the PRP's inception, SCE evaluated the J-S Region load growth annually as part of the portfolio design process. How SCE determined the load growth and how SCE is evaluating the impact of the most recent 2016 load growth value on the preferred resources portfolio is discussed in SCE's Preferred Resources Pilot, Portfolio Design Report, Revision 1, February 5, 2016, which is publicly available at: https://www.sce.com/wps/wcm/connect/4f89b0a8-e1f8-446f-a975-306db38ec353/PRP_PortfolioDesignReport.pdf?MOD=AJPERES. SCE will make the 2016 load growth impact analysis available early in 2017.

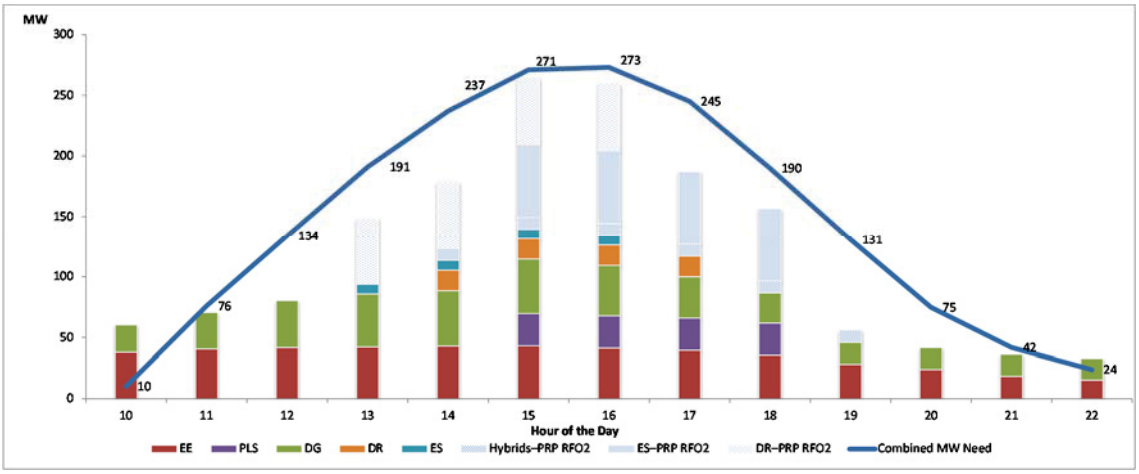
Figure II-1
Annually Updated Expected 2022 Forecasted Incremental J-S Region Load Growth Above the 2013 Starting Baseline Value



Prior to the launch of PRP RFO 2, SCE identified the attributes of the incremental load growth in the J-S Region based on the 2015 distribution forecast for the J-S Region. These attributes include daily peak MW need, daily duration of need, and annual frequency of need. These attributes informed the mostly technology neutral portfolio of preferred resources SCE selected to offset the anticipated load growth. Figure II-2 below illustrates[15] how SCE may be able to use the previously acquired preferred resources and the newly acquired PRP RFO 2 resources to offset the forecasted 2022 peak demand.

[15] SCE made several assumptions about the performance of the preferred resources. For example, besides temperature adjustment, SCE assumes that energy efficiency resources will deliver close to the acquired MW amount. SCE has yet to confirm these assumptions.

Figure II-2
Contribution of Deployed and Acquired PRs Toward 2022 Combined Johanna and Santiago Incremental Peak Load



The illustration above shows how the current portfolio of preferred resources may meet the incremental load and offset the peak.[16]

SCE's J-S Region attributes analysis revealed that load will be above baseline 30 out of 40 days. Therefore SCE's PRP RFO 2 solicited the market for both pure renewable resources and Hybrid resources that can deliver firm capacity and energy for six plus hours and over multiple days.

SCE expects that the developer will bid dispatchable resources procured in the PRP RFO into the CAISO market. When the local distribution level load shape aligns with the system-wide load shape, resources will be dispatched in the CAISO market such that they meet both local and system needs. However, SCE also anticipates that as DERs play an increasing role in serving local loads, as opposed to central power plants serving larger areas, local J-S Region distribution level load shapes may not necessarily align with the system-wide needs CAISO manages. Therefore, SCE added a "Local Resource Constraint Days" (LRCD) delivery requirement for ES. That LRCD requirement, for PRP

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[16] SCE previously acquired 151 MW. The procurement that is the subject of this Application is for 125 MW. Although that brings the total to 275 MW, a gap remains because photovoltaic (PV) devices and energy efficiency (EE) are not capable of 100% delivery. Accordingly, they may contribute only a fraction of their nameplate value to offsetting peak load. As a result, the delivery amount of each resource is based on its expected production depending on weather conditions and the time of day.

RFO 2 purposes, gives SCE at least 15 days annually to instruct storage owners to dispatch their units in accordance with SCE instructions, which will enable SCE to respond to local area needs when those needs do not coincide with system-wide needs.

In sum, the Commission should approve this procurement as reasonable because it will help SCE assess the effectiveness of preferred resources/DERs to address load growth and inform future use of DERs in lieu of conventional generation or distribution system upgrades. Approval of the PRP RFO 2 resources, derived through a fairly conducted solicitation process, is thus in the best interest of customers. The PRP resources, derived through a fairly conducted solicitation process, are cost competitive and in the best interest of customers. If the PRP goals can be achieved, SCE should be able to replicate that experience elsewhere as it builds California's 21st century's modern, digital power grid.

2. The PRP RFO 2 Resources are Anticipated to Support the DRP Field Demonstration Projects and Will Support EPIC Investment Plan's IGP

SCE's RFO instructions identified a B-bank substation and set of circuits as preferred locations, in part, to support the objectives of the DRP and EPIC Investment Plan IGP. Specifically, SCE identified the Johanna Jr. B-bank substation and the Euro, Muirland, Guilder, Elden, London, Hines, Myford, and Magazine circuits in the RFO Instructions and at the in-person bidders' conference.

a) The PRP RFO 2 Resources are Anticipated to Support the DRP Field Demonstration Projects

In SCE's DRP, SCE proposes to use the PRP Region and the associated resources acquired within this region to support the timely commencement and completion of the field demonstration projects provided for in SCE's DRP.[17] SCE anticipates that the demonstration projects will provide valuable information about how SCE should conduct its distribution planning process to facilitate the integration of increasing penetration of DERs.[18] The DRP demonstration projects are aimed at

[17] SCE DRP A.15-07-002, at pp. 99-101.

[18] The Commission is reviewing SCE's DRP and the associated demonstration projects in Rulemaking (R.) 14-08-013. The Commission has not yet approved SCE's proposed Demonstration Projects C, D, and E. Authority for the DRP demonstration projects is being addressed in R.14-08-013 and is not part of this approval application.

improving the ability of DERs to provide customers with choices about how they generate and consume electricity, while providing grid benefits and the appropriate level of operational awareness that SCE requires to reliably operate a 21st century power system.[19]

SCE expects to use several of the resources procured in the PRP RFO 2 to support Demos C, D, and E outlined in SCE's DRP filing.[20] Demo C seeks to demonstrate the locational value of DERs by deferring the need for distribution upgrades and providing other electrical services. The objective of Demo C is to analyze how potential locational benefits can be validated in the field to meet intended grid needs. Demo C will demonstrate the ability of a portfolio of DERs to be integrated into both utility planning and operations and support achievement of state policy objectives. This effort will include studying, analyzing, and confirming whether DERs can function in an integrated manner to meet future local capacity requirements and energy needs. The project, if approved, will also provide information on the cost to meet customer energy needs. The affected circuits for SCE's proposed Demo C are Elden, Hines, Paragon and Keeline within the Irvine B-Bank substation out of the Santiago system. Elden and Hines were originally identified as preferred circuits in the PRP RFO 2 instructions. SCE added the Paragon and Keeline circuits during negotiations because Hines and Paragon and Elden and Keeline are electrically connected to each other and resources in one circuit benefits the other circuits and vice versa. SCE expects to leverage 1.5 MW procured through the PRP RFO 2 to contribute to the objectives of Demo C.

SCE's DRP Demo D will test SCE's ability to manage a grid with a high penetration of DERs.[21] This proposed Demo D will rely upon some existing EPIC Investment Plan IGP activities, which include technology demonstration and deployment funded by SCE's EPIC Investment Plan, as well as targeted

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[19] Assigned Commissioner's Ruling on Guidance for Public Utilities Code Section 769 – Distribution Resource Planning, Attachment – Guidance for Section 769 – Distribution Resource Planning, at p. 5.

[20] SCE DRP A.15-07-002, at p. 100; *also see* Comments of SCE Proposing Demonstration Projects pursuant to the Joint Assigned Commissioner and Administrative Law Judge's Ruling Regarding Track 2 Demonstration Projects, dated May 17, at p. 4.

[21] Assigned Commissioner's Ruling on Guidance for Public Utilities Code Section 769 – Distribution Resource Planning, Attachment, Guidance for Section 769 – Distribution Resource Planning, at p. 7.

J-S Region procurement. The goals of Demo D include providing SCE with data to help SCE better understand (1) how it can incorporate increasing levels of DERs into its distribution planning and (2) the degree to which such penetration may impact the need for traditional grid investments. In addition, higher levels of DER penetration will allow SCE to test its current operational capabilities and those capabilities that are needed to coordinate third-party DERs. The location SCE proposes for Demo D includes two B-Bank substations: Johanna Jr. and Camden, both of which are within the Johanna system. SCE expects resources procured through the PRP RFO 2 to contribute 21 MW to support the objectives of Demo D.

SCE's DRP Demo E seeks to demonstrate how a grouping of loads, generation, and storage could be utilized to demonstrate a microgrid.[22] In its DRP Application, SCE proposes to coordinate the operation of the available resources through a dedicated control system.[23] As proposed by SCE, the project will identify microgrid design requirements to enable opportunities for enhanced reliability and resiliency; demonstrate controls and protocols for safe, minimally disruptive islanding and reconnection; and assess the feasibility of managing utility owned, third-party and customer resources on a microgrid while maintaining power delivery parameters within regulatory requirements. The proposed location for this demonstration project is in Irvine, adjacent to the University of California, which is within the J-S Region. While no specific commitments were made in PRP RFO 2 for the Demo E location, SCE expects to deploy some portion of the 58.5 MW of unassigned PRP RFO 2 preferred resources[24] within this Demo E location.

b) The PRP RFO 2 Resources Will Support the EPIC Investment Plan's IGP

The PRP RFO 2 resources will also provide testing opportunities for the EPIC Investment Plan's IGP. The EPIC Investment Plan's IGP is being undertaken in the Johanna Jr. B-Bank substation, which

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[22] Assigned Commissioner's Ruling on Guidance for Public Utilities Code Section 769 – Distribution Resource Planning, Attachment, Guidance for Section 769 – Distribution Resource Planning, at p. 7.

[23] SCE DRP A.15-07-002 at p. 109.

[24] 58.5 MW of the total contracted 125 MW are behind the meter resources located at customer sites that are yet to be identified.

is part of the J-S Region. The goal of the IGP is to study and determine ways to optimize the operation of the grid with a higher penetration of DERs. More specifically, the IGP is designed to demonstrate a system that can operate multiple DERs (utility, customer and third party owned) to provide grid benefits (e.g., voltage management, power flow management, and enhanced visualization for the system operator) and assess how high-penetration of DERs will influence distribution planning and investments. Because Demo D and IGP leverage each other's activities including location, the resources supporting Demo D will also support the objectives of the IGP.

With regard to funding, EPIC funds will be used for the IGP's deployment of advanced automation, enhanced communication networks, and grid-management systems to support development of a digital, modern power system. But the acquisition of DERs, which are needed to determine how to optimize a higher DER penetration, are not part of the IGP's scope and thus must be acquired separately. SCE is leveraging the PRP RFO 2 resource acquisition to deliver resources for the EPIC Investment Plan IGP and seeks cost recovery for those resources through this Application.

With respect to the EPIC-related activities, it is prudent and reasonable for SCE to procure resources that will serve multiple purposes, as is the case with the resources SCE acquired through the PRP RFO 2, because that kind of efficiency is in customers' best interest.

3. The PRP RFO 2 Resources Will Support the State's Energy and Environmental Policies

Importantly, SCE's procurement of preferred resources and storage for the J-S Region through the PRP RFO 2 is reasonable and in the best interest of customers because the deployment of preferred resources supports the State's important and ambitious environmental and energy policies, including those embodied in the AB 32's GHG Cap-and Trade Program, RPS, SBs 32 and 350, AB 327, and the Loading Order. As California moves toward a low-carbon future, the State is increasingly looking to electric utilities to procure clean sources of energy, or preferred resources, to meet energy and reliability needs. The preferred resources SCE procured to meet expected load growth in the J-S Region through the PRP RFO 2 will help the State meet its environmental and DER goals and provide valuable information for the future by reducing the procurement of GHG emitting resources and enable greater

use of DERs. In addition, the endeavors this procurement will support are expected to provide valuable insight that will inform SCE's distributed planning process and investment in the modern grid to integrate increasing penetration of DERs.

C. PRP RFO 2 Resources Will Help SCE Satisfy its Current Outstanding LCR Procurement Authorization

1. The 2012 LTPP Proceeding

In 2013 and 2014, in two separate tracks of the 2012 LTPP proceeding, Tracks 1 and 4, the Commission addressed long-term local reliability needs in the Western LA Basin as a result of the expected retirement of OTC units in the area and the closure of SONGS.

a) The Track 1 and 4 Decisions

The Commission issued D.13-02-015 in Track 1 authorizing SCE to procure 1,400 to 1,800 MW of resources, of which 200 to 600 MW were required to be preferred resources or energy storage (Track 1 Decision). The Track 1 Decision ordered that LCR "resources must meet the identified reliability constraint identified by the [CAISO]," the "consideration of costs and benefits must be adjusted by their relative effectiveness factor at meeting the [CAISO] identified constraint," and SCE has to use "the most up-to-date effectiveness ratings."[25] CAISO studied three different scenarios that resulted in three different sets of locational effectiveness factors (LEFs) for each of the Western LA Basin sub-areas.[26] The CAISO's final analysis identified the Southwest LA Basin sub-area, which contains the J-S Region, as the most effective place to site resources to mitigate the Western LA Basin's resource deficiency.[27]

The Commission's 2014 Track 4 Decision – D.14-03-004 – updated the resource authorizations from the Track 1 Decision. D.14-03-004 identified a need for and granted SCE authority to procure a total of 1,900 to 2,500 MW of electrical capacity in the Western LA Basin local reliability area to meet

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[25] D.13-02-015 at pp. 131-132, Ordering Paragraph (OP) 4.a, c, and 1.

[26] *See* CAISO, Clarification to the ISO Board-Approved 2013-2014 Transmission Plan: Locational Effectiveness Factor Calculations in the LA Basin Area, at pp. 1-5 (April 23, 2014).

[27] *See* CAISO, Clarification to the ISO Board-Approved 2013-2014 Transmission Plan: Locational Effectiveness Factor Calculations in the LA Basin Area, April 23, 2014, at p. 2.

long-term LCR by 2021. In total, Track 1 and Track 4 required SCE to procure at least 550 MW from preferred resources and 50 MW from energy storage.[28]

b) SCE's LCR RFO

In 2013, in accordance with the Track 1 Decision, SCE launched its LCR RFO.[29] The LCR RFO instructions specified that SCE had a preference for preferred resources sited in the J-S Region and that SCE would permit 2016 project start dates for preferred resources connected to the Johanna and Santiago substations to offset immediate needs at those locations. SCE allowed all resources outside the J-S Region to come online as early as 2018. At the conclusion of the LCR RFO, SCE executed 63 contracts for 1,883 LCR MW[30] of capacity in the Western LA Basin. 430.6 MW of the 1,883 MW were for preferred resources and energy storage. Approximately 80 MW of the preferred resources and energy storage procured through the LCR RFO will be sited in the J-S Region.

In D.15-11-041, the Commission approved 166.96 MW of preferred resources and 263.64 MW of energy storage for a total of 430.6 MW of preferred resources or energy storage procured through SCE's LCR RFO. Although SCE's procurement fell 169.4 MW short of the Track 1 and 4 Decisions' minimum requirement for preferred resources or energy storage, D.15-11-041 found that SCE substantially complied with the procurement directives in the Track 1 and 4 Decisions, and relieved SCE of the requirement to procure additional resources to satisfy the Track 1 and 4 Decision's minimum thresholds.[31]

c) The Applications for Rehearing of D.15-11-041

Various parties filed Applications for Rehearing (AFRs) challenging certain aspects of D.15-11-041, including the decision to satisfy the minimum procurement levels. In D.16-05-053, the Commission denied the AFRs, but modified D.15-11-041 to require SCE to procure the minimum

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28 Track 4 Decision at p. 142, OP 1.b. & 1.c.

29 The Commission issued the Track 4 Decision after SCE launched the LCR RFO. The relevance the Track 4 Decision to SCE's LCR procurement is discussed in subsequent sections below.

30 Because LCR MW are the measure of a resource's contribution to the LCR need in August 2021, the LCR MW figure may differ from the installed capacity specified in the contract.

31 SCE's applied for approval of the LCR contracts in A.14-11-012.

Preferred Resource procurement authorization established in the Track 1 and Track 4 decisions.[32] The Decision directed SCE to procure an additional 169.4 MW of preferred resources or energy storage. It also, however, found reasonable SCE's request to consider updated CAISO LCR studies when procuring additional preferred resources or energy storage and noted that SCE can "file a petition for modification of [the Track 1 and 4 Decisions] if additional procurement is not necessary."[33]

2. The Status of the CAISO's Updated Western LA Basin LCR Analysis and SCE's Procurement Needs

SCE is currently awaiting the results of the CAISO's updated LCR studies. SCE expects an update sometime this fall or early next year. That updated analysis will likely assume that certain mitigation measures will come to fruition and perform as expected.[34] SCE's PRP RFO 2 procurement of 125 MW of preferred resources and energy storage may help hedge the inherent risk that some of the

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[32] The Commission issued two decisions denying the AFRs – D.16-05-050 and D.15-05-053. This testimony only discusses D.16-05-053 because D.15-05-050 is not relevant to the issues raised by SCE's application and supporting testimony.

[33] D.16-05-053 at pp. 4, 18, OP 1(a),(b), (c)) ("We find reasonable SCE's request to consider CAISO updated LCR studies to account for planned transmission upgrades and load forecasts update when procuring the remaining minimum preferred resources or energy storage. To further the Commission's efforts of grid reliability and safety in the Western LA Basin, SCE shall continue to procure to meet, at least, the minimum requirements set forth in D.13-02-015 and D.14-03-004 via any procurement mechanism and reviewing all relevant updated grid reliability information. Should SCE determine that additional procurement is not necessary, it may file a petition to modify D.13-02-015 and D.14-03-004.")

[34] In parallel to the LCR RFO, SCE and the CAISO deployed a portfolio of transmission-focused reliability solutions. For the short term, SCE put an under voltage load shed (UVLS) scheme into service for Orange County, including the J-S Region, for the summer of 2012. In addition, in April 2013, the CAISO notified the Federal Energy Regulatory Commission (FERC) that the Commission granted advice filings for approvals of contracts between AES, SCE, and San Diego Gas & Electric Company (SDG&E) to (1) extend the operation of the AES Huntington Beach Units 3 and 4 that had been scheduled for retirement by 2013, and (2) convert Units 3 and 4 to synchronous condensers to support transmission system voltage. SCE's contract for the converted units expires at the end of 2017. SCE also expects to install additional synchronous condensers at SCE's Santiago Substation and SDG&E's portion of San Onofre Substation in 2017. SCE hopes to complete its "Mesa Loop-in" project by the end of 2020, at which time it expects the project to allow increased power flow and transmission import capability into the Western LA Basin. As of the date of this testimony, SCE is engaged in the licensing process for the project. Finally, SCE, the CAISO, and the CPUC are jointly developing measures to mitigate reliability concerns. Such solutions include SCE investing in transmission projects and a portfolio of resources. The CAISO is currently operating under the assumption that these mitigation measures will come to fruition, but, as a practical matter, projects sometimes do not materialize or are significantly delayed.

mitigation measures and procurement may not materialize by the time the system needs them. SCE will evaluate the CAISO's analysis when it is released. If there is an additional need for long-term local capacity resources in the Western LA Basin, the resources procured through the PRP RFO 2 should go towards satisfying the outstanding minimum Preferred Resource requirement established in the LTPP Track 1 and 4 decisions.[35]

[35] To conform to the LCR RFO requirements, SCE required that all resources in the PRP RFO 2 be preferred and incremental resources located in the Western LA Basin that will be online by 2021 and qualify for resource adequacy either through the interconnection process or by meeting minimum timing requirement (e.g., number of months, days and duration) or modifying the need for resource adequacy.

III.

SOLICITATION PROCESS OVERVIEW

This Chapter describes the following aspects of the solicitation process: (1) the schedule and structure of the solicitation, (2) offeror requirements, (3) outreach efforts and (4) the role of the IE.

A. Overview

SCE launched the PRP RFO 2 on September 24, 2015, after having received SCE executive management approval and having consulted with its Procurement Review Group (PRG) on the RFO design and schedule. Consistent with CPUC Decisions, SCE worked with an Independent Evaluator (IE) throughout the RFO process. The RFO launch involved activating the RFO website,[36] posting key RFO materials and a batch of "Frequently Asked Questions" designed to address anticipated questions from potential offerors and other interested parties, and notifying—via email—nearly 3,000 potential offerors and other interested parties of the RFO launch.

B. Solicitation Schedule

1. RFO Schedule

SCE published the PRP RFO 2 schedule in its PRP RFO 2 instructions. To determine what elements should be included in the PRP RFO 2 schedule, SCE drew on its past RFO experience, including the LCR RFO and the PRP DG RFO. In creating the schedule, SCE carefully considered the timing between each milestone to allow potential offerors sufficient time to review the PRP RFO 2 requirements, locate project sites and/or potential retail electricity customers, and put together RFO-compliant offer packages. The schedule SCE included in its instructions is set forth in Table III-2 below.

[36] The PRP RFO 2 website can be accessed through the following link: https://sceprprfo.accionpower.com.

Table III-2
Initial PRP RFO 2 Schedule

Date	***PRP RFO 2 Event***
Thursday, September 24, 2015	RFO Launch
Friday, October 16, 2015 (10:00 am Pacific Prevailing Time)	In-Person RFO Conference
Monday, November 30, 2015	Pro Forma PSAs Posted
Wednesday, December 9, 2015 (9:00 am Pacific Prevailing Time)	RFO Technical Webinar
Friday, January 22, 2016	Online Offer Forms are Activated
Friday, February 19, 2016 (12:00 pm Pacific Prevailing Time)	Offer Submittal Deadline
Friday, April 8, 2016	Target Date for Shortlist Notification
Friday, July 8, 2016	PSA Negotiation Period Ends
Friday, August 5, 2016	Target Date for Final Selection Notification
Friday, August 12, 2016	Deadline for Awarded Offerors to Execute PSAs
Friday, October 7, 2016	Target Date for CPUC Approval Filing

On March 21, 2016, SCE extended the "Target Date for Shortlist Notification" from April 8, 2016 to April 26, 2016 to allow SCE sufficient time to evaluate the quantity and diversity of RFO offers received. Consequently, SCE correspondingly extended the subsequent milestones in the PRP RFO 2 Schedule, such as "Negotiation Period End" and "SCE's Final Offer Selection Notification" dates.

SCE made a final change to the PRP RFO 2 Schedule on August 21, 2016. The change extended the contract execution date deadline from August 23, 2016 to September 2, 2016 to provide a new pro forma provision that contemplates reduced contract pricing if Congress enacts federal tax legislation providing tax credits to energy storage facilities.

SCE posted all revisions to the RFO schedule, as well as all other public announcements, on the RFO website. The final revised PRP RFO 2 Schedule is as follows:

Table III-3
Final Revised PRP RFO 2 Schedule

Date	*PRP RFO 2 Event*
Thursday, September 24, 2015	RFO Launch
Friday, October 16, 2015 (10:00 am Pacific Prevailing Time)	In-Person Bidders Conference
Monday, November 30, 2015	Pro Forma PSAs Posted
Wednesday, December 9, 2015 (9:00 am Pacific Prevailing Time)	RFO Technical Webinar
Friday, January 22, 2016	Online Offer Forms are Activated
Friday, February 19, 2016 (12:00 pm (noon) Pacific Prevailing Time)	Offer Submittal Deadline
Tuesday, April 26, 2016	Shortlist Notification
Tuesday, July 26, 2016	PSA Negotiation Period Ends
Friday, September 2, 2016	Deadline for Awarded Offerors to Execute PSAs
Thursday, November 3, 2016	Target Date for CPUC Approval Filing

C. Solicitation Structure

1. Internal Preparation

Prior to launch, SCE finalized the PRP RFO 2 website and participants' instructions. SCE finalized other RFO documents after conducting its RFO conference and soliciting feedback from potential participants through the RFO website. The documents released after the launch included the offer workbook templates for all product types, the pro forma PSAs for all products except the Hybrids, term sheet templates for the Hybrids, the non-disclosure agreement and the interconnection consent form. SCE released these documents through the RFO website and notified registered offerors about the new materials. SCE released final templates and documents required for submitting an offer more than

three weeks ahead of the submittal deadline, except for the contracts for Hybrid products. SCE developed the Hybrid contracts later in the solicitation. Because it was a new product, SCE decided to review Hybrid offers, which offerors submitted using the Hybrid term sheet templates, prior to drafting its first Hybrid contract.

Before releasing any documents, SCE reviewed the PRP RFO 2 details and documents with internal stakeholders and the IE. SCE apprised external stakeholders, including the PRG and Commission staff, of the business need for the RFO, the products being sought, an overview of the offer valuation methodology, and the RFO schedule. As with any RFO that SCE administers, SCE considered all internal and external stakeholder input on the formation of the PRP RFO 2.

2. RFO Launch

SCE created a PRP RFO 2 website (hosted on https://sceprprfo.accionpower.com). The website included all of the information that offerors needed to participate in the process. SCE used a comprehensive email list it maintains, as well as various Commission service lists, including those for the DR and distributed generation-related dockets, to directly notify market participants about the PRP RFO 2. SCE also issued a press release to various industry organizations.[37] In addition, industry publications published the release.

After the launch, SCE hosted a bidders' conference to walk through the various aspects of the solicitation process and criteria, discuss SCE's valuation approach, and respond to offerors' questions. During the RFO conference, SCE provided a thorough and detailed overview of the solicitation process, the documents involved, and the valuation process. Given certain RFO changes and developments following the initial bidders' conference, such as the revised RFO Instructions and the publication of certain online RFO offer submittal forms, SCE hosted a second bidders' conference, this time via an online webinar, to review the changes and answer any additional questions from offerors. All materials

[37] Available at: http://newsroom.edison.com/releases/sce-seeks-up-to-100-megawatts-of-new-clean-power-resources.

from both of the conferences were made available on the PRP RFO 2 website. SCE also maintained a list of frequently asked questions (FAQs) on its PRP RFO 2 website.

3. Notice of Intent Submission

After reviewing the PRP RFO 2 materials, offerors submitted notices of non-binding offers. Obtaining this information early in the PRP RFO 2 process helped SCE develop a plan to manage the forecasted workload and address issues related to offer templates associated with new products that were not initially contemplated.

4. Offers Submitted by Offeror

Offerors used the offer templates from the PRP RFO 2 website to submit their offers. This process allowed offerors to input their information directly into the submittal templates. This streamlined process helped SCE efficiently identify if information was missing from an offer and work with the offeror to cure deficiencies. SCE worked diligently with offerors to get completed and conforming offers so that SCE could value the offers and create a shortlist.

With respect to SCE's shortlist, SCE chose to employ a one-step process. In that process, SCE did not subject shortlisted offers to a second round of repricing and selection. Instead, SCE made all shortlisted offers eligible to execute final contracts subject to agreements on any negotiated contract terms of the posted RFO pro forma contracts. SCE chose to conduct the PRP RFO 2 process in this manner after receiving feedback from offerors and stakeholders that the two-step process placed an undue burden on offerors time and resources. For instance, costly personnel and attorney time are particularly burdensome when there is no certainty that SCE will ultimately contract with the offeror.

SCE has administered both one-step and two-step RFOs in its history of conducting energy and capacity solicitations. SCE recognizes that there are pros and cons associated with each RFO process. In its general RFO planning phase, prior to RFO launches, SCE makes this process determination based on a variety of factors, including the products that are being solicited, the "newness" of the pro forma contract, lessons learned from prior like-RFOs, and feedback from offerors and stakeholders.

5. Shortlist/Waitlist Notification

Based on shortlist criteria and valuation results from the offers, SCE notified offerors whether they had been shortlisted or waitlisted.

a) Shortlist/Waitlist Methodology

The intent of the shortlist was to negotiate and execute agreements for all offers selected. SCE designed the waitlist to allow SCE to put a waitlisted project on the shortlist when shortlisted projects dropped out during the negotiation process. The goal was to help SCE seamlessly reach its procurement target. SCE selected which projects to place on the waitlist based on the same selection criteria and valuation results as SCE used to put projects on its shortlist.

b) Shortlist/Waitlist Procurement Target

SCE's target for the PRP RFO 2 was 100 MW of preferred resources delivered through the J-S Region to come online between October 2017 and January 2020. To meet the 100 MW goal, SCE set a 150 MW shortlist target and a 50 MW waitlist. SCE exceeded the 100 MW target because, based on historical experience, some offerors withdraw from RFOs during negotiations and some contracts may terminate after they are executed.

6. Contract Negotiation

Once SCE created the shortlist and waitlist, the offerors on those lists began negotiating terms and conditions based on SCE's published pro forma contracts.

7. Negotiation Deadline

SCE's negotiation deadline was the date by which SCE and the counterparty had to have agreed upon and finalized all terms and conditions so that the contract was ready to be executed. SCE paired the negotiated contract with a shortlisted offeror's originally submitted price to create the final, executable contract.

D. Solicitation Eligibility Requirements and Considerations

SCE required projects to:

(1) be new (not existing or repowered);

(2) utilize proven, commercially available technology;

(3) be at least 250 kW and ERR eligible for renewable DG and solar PV DG with ES projects (except that renewable DG projects and behind the meter solar PV DG with ES projects had a size maximum of 10 MW);

(4) be at least 250 kW (but not larger than 10 MW) for ES;

(5) be at least 1 MW for DR and permanent load shifting projects;

(6) have contract terms no longer than 20 years;

(7) be located in the J-S Region (participating customer accounts or physical resource interconnecting to a circuit or lower voltage substation physically connected to either the Johanna A-Bank Substation or the Santiago A-Bank Substation); and

(8) have a forecasted commercial operation date no earlier than October 1, 2017, but no later than January 1, 2020.

Further, projects were ineligible for PRP RFO 2 if the project was the recipient, past or present, of funding from Self-Generation Incentive Program (SGIP), California Solar Initiative (CSI), or Net Energy Metering (NEM). Using exclusionary criteria is an established procurement practice that is used to maximize value for customers by eliminating double payment for the same resource. However, as permitted by the Commission, customers may enroll in certain DR programs and participate in PRP RFO 2. For instance, a resource with a contract with SCE pursuant to PRP RFO 2 may participate in the Capacity Bidding Program (CBP) day-ahead option, provided that customers with load reduction already nominated for CBP are not also nominated in PRP RFO 2 contract in the same month (and vice versa).

In addition, SCE had the following product-specific requirements:

Table III-4
Product Specific Requirements

Product-Type	Product-Specific Requirement
DR: End-Use Equipment Load Reduction and DR – Behind-the-Meter (BTM) ES	• Must reduce load, up to the full Contract Capacity, within 20 minutes of a dispatch notice; • Delivery months must include at least June through September; • Must be available to reduce load during at least 3 consecutive weekdays, excluding holidays; • Delivery hours must be at least 4 consecutive hours, with at least 2 of these hours within the 13:00:00 to 18:59:59 time period; • No grid supply charging from 11:00:00 to 18:59:59 during "Local Resource Constraint Days."
Permanent Load Shift	• Delivery months must include at least June through September; • Delivery hours must be at least 4 consecutive hours with load reduction occurring from 10:00:00 to 18:59:59, with at least 2 of these hours within the 12:00:00 to 18:59:59 time period, and shifted to other hours; • No grid supply charging from 11:00:00 to 18:59:59 during "Local Resource Constraint Days;" • Where applicable, the project's energy and capacity reductions must meet or exceed the Title 24 and/or Tile 20 energy efficiency requirements set by the CEC.
BTM and IFOM Renewable Distributed Generation	• Projects qualify as Eligible Renewable Resources as defined by the Public Utilities Code (applicable to both BTM and IFOM); • Offerors must have control of the project site and relevant structures by the PSA effective date (applicable to IFOM only); • Offerors must intend to enter the Rule 21 or the WDAT Fast Track Process or provide evidence that their applications have passed or been deemed "complete" (applicable to IFOM only).
IFOM Energy Storage	• Delivery months must include at least June through September; • Delivery hours must be at least 4 consecutive hours with load reduction occurring from 10:00:00 to 18:59:59, and where at least (i) 2 of the 4 hours are consecutive, and (ii) 2 of the 4 hours must be within the 12:00:00 p m. to 6:59:59 p m. time period; • No grid supply charging from 11:00:00 to 18:59:59 during "Local Resource Constraint Days;" • By online date, project required to demonstrate that Full Capacity Deliverability Status ("FCDS") has been acquired; • Offerors must have control of the project site and relevant structures by the PSA effective date; • Offerors must intend to enter the Rule 21 or the WDAT Fast Track Process or provide evidence that their applications have passed or been deemed "complete."
For BTM Hybrid	• Delivery hours must be at least 6 hours with energy delivery for 10:00:00 to 18:59:59; • No grid supply charging from 11:00:00 to 18:59:59 during "Local Resource Constraint Days;" • Shall not export excess energy to the grid, participate in NEM or receive SGIP funds.
For IFOM Hybrid	• Delivery hours must be at least 6 hours with energy delivery for 10:00:00 to 18:59:59; • No grid supply charging from 11:00:00 to 18:59:59 during "Local Resource Constraint Days;" • Offerors must have control of the project site and relevant structures by the PSA effective date; • Offerors must intend to enter the Rule 21 or the WDAT Fast Track Process or provide evidence that their applications have passed or been deemed "complete."

Additionally, SCE indicated a set of project preferences to support meeting the objectives of the DRP and IGP. To support SCE's DRP Demo D and IGP, SCE expressed a preference for projects interconnecting directly to Johanna Jr. 66/12kV or to a circuit electrically in-line with the Johanna Jr. substation. SCE added the Camden 66/12kV substation as a preferred location during the negotiation period because DRP Demo D and IGP will leverage resources at these two substations to meet their objectives. Both Johanna Jr. and Camden B-Bank substations are electrically in-line with the Johanna A-Bank substation.

SCE also indicated a preference for projects interconnecting to eight circuits, unrelated to the substation preferences stated immediately above, to provide energy during specific periods of the day to address peak load, as specified in Table III-5 below:

Table III-5
PRP RFO 2 Preferred Circuits

Circuit	Delivery Hours
Euro	12:00:00 - 14:59:59
Guilder	
London	17:00:00 - 18:59:59
Myford	18:00:00 - 20:59:59
Muirlands	
Elden	
Hines	
Magazine	

SCE stated a preference for experienced project developers and offerors, as well as a preference for developers to submit two mutually exclusive offers for each project: one priced at a 20-year term and the other priced at a 15-year term. For DR projects, SCE indicated a preference for the resource to have the ability to dispatch loads on the circuit level. For projects with solar PV or ES, SCE preferred installation of smart inverters having capabilities outlined under Rule 21.[38] For IFOM projects, SCE

[38] Rule 21, Section Hh; additional details available at https://www.sce.com/NR/sc3/tm2/pdf/Rule21_1.pdf starting on p. 130.

preferred projects to not exceed 5 MW in size. For projects connected to or in-line with the preferred circuits, SCE decreased this preference to 3 MW.

E. Outreach Efforts

Prior to the RFO launch, and following launch but prior to the RFO offer submittal deadline, SCE conducted robust, multi-prong outreach to the broad developer market and potential stakeholders to make sure that potential offerors and other interested parties were made aware of the PRP RFO 2 solicitation. Because SCE solicited numerous types of products, including new types of products such as the solar PV/ES Hybrids, in a targeted area for the PRP RFO 2, SCE's outreach utilized a variety of mediums, including:

- Emailed a distribution list of nearly 3,000 recipients including developers, regulators, and relevant energy/capacity associations
- Hosted a publically accessible website containing relevant posted information plus posted FAQs and an interactive Q&A section
- Issued a press release upon RFO launch
- Hosted an in-person bidders' conference to walk through the various aspects of the solicitation process and criteria, discuss its valuation approach, and respond to offerors' questions; and posted the entire presentation on the RFO website
- Hosted a second bidders' conference, via a webinar, to review changes to the RFO Instructions, to review the newly published online RFO offer submittal forms, and to field any additional offeror questions; and posted the entire presentation with a recording of the conference on the RFO website.

SCE's robust outreach generated strong interest. In total, [redacted], all of which were processed through the RFO's screening processes to confirm offers were complete and conforming as per the eligibility criteria and submittal requirements set forth in the RFO Instructions.

CPUC General Order 156 (GO 156) contains "rules governing the development of programs to increase participation of women, minority and disabled veteran business enterprises (WMDVBE) in

procurement of contracts from utilities as required by Public Utilities Code Sections 8281-8286."[39] In recognition of GO 156, SCE looks for opportunities to build an increased pool of diverse suppliers, including WMDVBE participants in power procurement activities. SCE encouraged WMDVBEs to participate in the PRP RFO 2 by including information specific to WMDVBEs in its RFO instructions, as well as in in the initial PRP RFO 2 RFO conference presentation. In addition, SCE provided direct one-on-one support to help answer RFO process questions and educate potential WMDVBE bidders on the PRP RFO 2 solicitation documents and process, SCE's supplier diversity development program,[40] and the interconnection study process.

F. Role of IE

Pursuant to applicable Commission decisions, SCE engaged and consulted with an IE throughout the PRP RFO 2 process. SCE did not consult its CAM Group for this procurement.

D.08-11-008 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.[41] In addition, D.06-07-029 states 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.[42]

In compliance with these requirements, SCE recommended Sedway Consulting, Inc. (Sedway) to be the IE for SCE's PRP RFO 2. Sedway is currently in SCE's pre-qualified IE pool and has prior experience developing and running solicitations in other parts of the country for EE, DR, ES, and DG, as well as renewable and conventional resources. SCE sought and obtained Energy Division approval to use Sedway as the IE for the PRP RFO 2.

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[39] CPUC GO 156 at p. 1.

[40] Information on SCE's supplier diversity development program can be found on the SCE website at www.sce.com/SD.

[41] D.08-11-008 at pp. 39-40 (OP 2).

[42] D.06-07-029 at p. 28.

As further explained in Section VIII, SCE engaged Sedway throughout the RFO process to ensure that the solicitation process was fair to all offerors, including to observe that no SCE affiliate had an undue advantage over non-affiliates in the solicitation, and to monitor the cost-effectiveness and overall appropriateness of the transactions. From its participation and observations, Sedway reported its findings and conclusions of SCE's PRP RFO 2 process to the Energy Division and other non-market participants during the August 10, 2016 PRG meeting. In its presentation to the PRG, Sedway communicated that it concluded that the RFO process was fairly administered and the evaluation and selection process resulted in the selection of the best offers given SCE's quantitative and qualitative analyses. Further, as part of this Application filing, Sedway completed the CPUC's IE Report Template, which has been provided to the Energy Division. A copy of the IE Report is included as Appendix D.

IV.

SUMMARY OF PARTICIPATION

A. Summary of Solicitation Participation

This Chapter provides an overview of the following steps in the PRP RFO 2; (1) indicative offers submitted by offerors; (2) complete and conforming screening process; (3) shortlist and waitlist notification; (4) contract negotiations; and (5) final binding offers submitted.

1. Indicative Offer Submittal

SCE received a robust set of [redacted], spanning all the technology types SCE solicited. A summary is set forth in Table IV-6 below.

Table IV-6
Summary of Indicative Offers

Product Type	Offerors	Offers
DR - Traditional	[redacted]	
DR - Energy Storage		
DG - BTM		
DG - IFOM		
Energy Storage - IFOM		
Permanent Load Shift		
Hybrid - BTM		
Hybrid - IFOM		
Total Offers		

*From 14 submitted offer workbooks containing multiple offers

2. Complete and Conforming Screening Process

After receiving the offers, SCE began its complete and conforming process, screening the offers to ensure that each met the project requirements and that all information was correctly provided and understood in order for the offers to be evaluated.

Several of the offerors were new to SCE's structured procurement programs and required assistance with filling out the offer templates and providing all required information. SCE also solicited new and complex products (i.e., the BTM and IFOM Hybrids) in addition to its more familiar products

(e.g., energy storage). For these reasons, the complete and conforming process was a lengthy process. Between the offer submittal deadline and the shortlist decision deadline, the SCE team exchanged over 600 messages with offerors over the Accion website to ensure understanding and completeness of the offerors' offer packages. Throughout the complete and conforming screening process, SCE worked with many offerors to revise and correct one or more components to the offer packages in some manner, often to more accurately reflect the intention of the projects/offers and to enable SCE to accurately and fairly evaluate such offers.

Through the complete and conforming screening process, SCE removed a total of [redacted] from the selection pool because they either failed to conform to project requirements or were withdrawn by the offeror. SCE most commonly removed projects that failed to offer the resource types requested by the RFO (e.g. non-renewable sources or EE) or they utilized technologies that were deemed to be unproven, technically infeasible or still in research and development phase. Table IV-7 summarizes the offers that were removed during the complete and conforming screening process.

Table IV-7
Summary of Non-Conforming and Withdrawn Offers

Counterparty	Offer #	# of Offers	Product Type	Removal Reason
[redacted]				
Total Offers Removed				

While in discussion with offerors during the complete and conforming process, there were a few instances in which offerors were provided the opportunity to re-submit specific offers. SCE provided offerors opportunities to cure their bids so that SCE could more accurately evaluate an offer and allow offerors to address technology viability concerns SCE's experts raised. Table IV-8 below summarizes the resubmitted offers.

Table IV-8
Summary of Offers Resubmitted During the Complete and Conforming Screening Process

Counterparty	Offer #	# of Offers	Product Type	Reason for Adding
[redacted]				
Total Offers Added				

V.

OFFER VALUATION METHODOLOGY

A. Overview

In accordance with D.04-12-048, SCE used the Least-Cost, Best Fit (LCBF) methodology for selection of competitive offers in the PRP RFO 2. In valuing the PRP RFO 2 offers, SCE employed a net present value (NPV) analysis. This methodology is consistent with valuations performed by SCE in other energy contract valuation exercises, such as those supporting SCE's LCR RFO, Combined Heat and Power (CHP) RFOs, RPS solicitations, and All-Source RFOs for electrical energy and resource adequacy (RA). The quantitative component of the valuation entails forecasting: (1) the present value of the contract benefits; (2) the present value of the contract costs; and (3) the net value between (1) and (2). SCE evaluated the cost effectiveness of the PRP RFO 2 offers by calculating their expected benefits and costs over the contract delivery period. SCE estimated the monthly cash flow streams of each offer by using offer's operating characteristics and pricing parameters, price forecasts of associated commodity and compliance attributes, and the valuation model for the respective resource type. SCE discounted the cash flow components to present value and calculated NPV of each offer in order to rank them. During the final selection, SCE utilized a number of qualitative factors in addition to quantitative metrics. The rest of the chapter is organized as follows: section B describes SCE's market price outlook methodology. Section C describes SCE's valuation methodology of each quantitative component by resource type followed by SCE's selection methodology in Section D. Section E provides a summary of valuation results and section F discusses the qualitative assessment criteria.

B. Market Price Outlook Methodology

SCE prepared price forecasts for RA capacity, day-ahead (DA) electrical energy, real-time (RT) electrical energy, natural gas, GHG compliance costs, and ancillary services (AS). It is important to note that while the only price forecasts directly employed in the valuation of the PRP RFO 2 offers were DA and RT energy, AS, and RA forecasts, the gas and GHG forecasts are embedded in the energy and AS price forecasts. The inclusion of GHG in the energy price forecast appropriately captures the value

of the PRP RFO 2 offers' emissions-free operations relative to generating units that have emissions production and associated GHG compliance costs.

1. DA Energy, Natural Gas, and GHG Price Forecasts

SCE established the price forecasts of DA energy, natural gas and GHG using forward market traded prices for the short term, and the fundamental prices for the long term. [redacted], with natural gas and GHG outlooks provided by vendors and electrical energy prices constructed by running a security-constrained unit commitment supply and demand dispatch model, which includes assumptions for RPS, EE, DR, thermal retirements, additions of generic resources and energy imports. Specifically, SCE used market quotes as of [redacted], to set the market period and consultant forecasts for natural gas and GHG compliance prices, which were key inputs used in the fundamental model, to develop a forecast of electrical energy prices.

2. Ancillary Service and Real Time Energy Price Forecasts

AS prices were developed using an econometric model that captures energy prices, upward and downward movement in energy prices and electricity demand, and hydroelectric production. AS prices evolve over time in shape and magnitude to capture the increased ramping need due to increased intermittent renewable penetration.

SCE developed the RT energy price forecast by using the DA energy price forecast as the main input. [redacted]

3. RA Price Forecast

SCE used the RA value adopted in D.11-12-018 for the Market Price Benchmark (MPB) methodology used for calculating the Customer Responsibility Surcharge (CRS) for departing customers as a proxy for ascribing RA compliance value to the PRP RFO 2 offers. D.11-12-018 adopted an RA value based on the most current calculation by the CEC of the going-forward cost of a combustion turbine, currently set to $58.27/kW-year.[43] [redacted] The annual prices were then shaped to monthly prices to reflect that RA capacity is most valuable during the peak summer months. The shaping distributed the annual value over the months of the year based on monthly shaping factors from D.10-03-022.

a) REC Price Forecast

[redacted]

C. Valuation Methodology

1. Overview

SCE evaluated the quantitative value of the PRP RFO 2 offers by computing the NPV of each offer by 1) calculating the monthly nominal benefits and costs cash flow streams over the contract delivery period, 2) discounting them to the present value using an annual discount rate of 10%, and 3) subtracting the present value of costs from the present value of benefits to calculate the NPV.

SCE projected the expected benefits of the PRP RFO 2 offers by calculating the market revenue that each resource is expected to generate in the CAISO DA Integrated Forward Market (IFM). For the resources which provide the capability to reduce load, the basis for market revenue calculation was the

[43] "Estimated Cost of New Renewable and Fossil Generation in California" March 2015 California Energy Commission.

[redacted]

expected avoided costs of energy and capacity. SCE's market price projection of commodity and compliance attributes were utilized for the appraisal of expected quantity of each attribute in order to estimate market revenues.

SCE calculated the contract costs using the as-bid contract payments and other projected costs incurred to get the benefits from the proposed offers.

For determining the quantity of RA attributes, SCE used the current net qualifying capacity (NQC) counting rules and the methodology of implementing those rules from the Commission's "Qualifying Capacity Methodology Manual Adopted 2015."[45] SCE used the guidance from D.14-06-050 (Resource Adequacy Program Refinement) for establishing the qualifying capacity of storage resources. SCE also used the guidance from D.09-05-037 for developing the RA capacity savings estimates from Permanent Load Shift (PLS) measures.

For determining the expected quantity of electric energy and AS attributes, SCE used the generation delivery or savings profile provided by the offeror for non-dispatchable resources, and used economic dispatch models for the dispatchable resources that are based on the estimated optimal dispatch of resources given the commodity price forecasts, contract costs and operating constraints.

For BTM resources, the RA quantity was grossed-up for planning reserve margin (PRM) and line losses. The resource adequacy requirement (RAR) rules set capacity procurement targets for load serving entities (LSE's) based on 115% of their forecasted load. The RAR also accounts for transmission and distribution (T&D) losses in delivering electricity from the generator to the customer, based on peak loss factors. [redacted]

SCE calculated renewable integration costs for intermittent renewable resources to reflect the additional system costs required to provide sufficient operational flexibility to the grid. In addition, SCE accounted for renewable energy credit (REC) value benefit from the eligible renewable energy resources that can be counted towards SCE's RPS compliance targets.

[45] http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=9187

Debt equivalents (DE) is the term used by credit rating agencies to describe the fixed financial obligation resulting from long-term contracts. Pursuant to D.04-12-048 and D.08-11-008, the Commission permits the utilities to recognize in their valuation processes the cost associated with the effect DE has on the utilities' credit quality and cost of borrowing. Consistent with these decisions, SCE considers debt equivalents in its valuation process using the 20 percent risk factor authorized by the Commission.

SCE ascribed transmission and distribution network upgrade costs in the valuation of offers, where applicable. These costs represent the T&D network upgrade costs that are reimbursed by SCE. These costs are present in the IFOM offers for projects that either: (1) do not have an existing interconnection to the electric system; or (2) have an existing interconnection, but do not have an approved expansion to an existing facility. The offeror provided SCE with the aggregate network upgrade cap that is based on the most recent interconnection study or on the specified network upgrade amount provided by the seller for projects with no interconnection study.

2. Demand Response

SCE used the same valuation method to value the two types of DR offers it received in the PRP RFO 2: Load-reducing Demand Response (DR-LR) and Energy Storage backed Demand Response (DR-ES).

a) Resource Adequacy Benefits

SCE determined the amount of RA capacity from DR resources according to the methodology set in "Qualifying Capacity Methodology Manual Adopted 2015." SCE estimated the monthly Qualifying Capacity (QC) of DR resources using the average expected load impact over the measurement hours of 1:00 p.m. to 6:00 p.m. Pacific Time (PT) for the months of April through October, and 4:00 p.m. to 9:00 p.m. (PT) for all other months. SCE then grossed-up the RA capacity amount by multiplying the calculated capacity by the PRM of 1.15 and the T&D line loss factor of [redacted]. SCE calculated the RA benefit by multiplying the projected monthly QC by the monthly RA price forecast.

b) Energy Benefits

SCE used its DR economic dispatch model to determine the optimal dispatch of DR offers. The inputs to the model include Monte Carlo simulated hourly DA energy price forecast scenarios, contract energy rate, contract event parameters such as minimum duration per dispatch, maximum duration per dispatch, maximum dispatches per day, maximum dispatch hours per month, maximum dispatch hours per term year and contract delivery terms such as delivery days, operating months, and delivery hours. The model performed the calculation of optimal calls of the DR resource, and energy cost savings due to load reduction for all the energy price scenarios. Then, the model averaged those values to yield the expected monthly values over the contract delivery period. The energy benefits represented by energy cost savings due to load reduction were grossed up by the T&D line loss factor of [redacted].

c) Contract Payment Costs

For DR offers, the contract payment costs included a fixed payment stream of monthly capacity payments, and a variable payment stream of monthly energy payments. The fixed payments streams were calculated as the monthly contract capacity multiplied by the respective monthly capacity rate. The variable payment streams were calculated by multiplying the projected monthly load reductions from SCE's DR economic dispatch model by the contractual energy rate. For DR backed by energy storage, no additional charging costs were considered as the seller is responsible for the electric energy costs associated with charging of each storage unit as per the contract.

3. Permanent Load Shift

a) Resource Adequacy Benefits

SCE determined that the PLS's operational characteristics generally fall under the EE category for the purposes of RA counting methodology. SCE used California EE evaluation protocols from D.09-05-037 for developing RA capacity savings estimates from PLS offers. SCE estimated the amount of RA capacity as the monthly average of expected load reduction between 2 p.m. and 5 p.m. (PT) on peak days, consistent with the peak MW period used for EE resources. SCE grossed-up the RA capacity amount by the PRM of 1.15 and T&D line loss factor of [redacted]. SCE calculated the RA benefits by multiplying the projected monthly RA capacity by the monthly RA price forecast.

b) Energy Benefits

The offeror provided SCE with the expected hourly energy savings profile which represented the expected energy savings that can be counted incrementally above California's "2013 Building Energy Efficiency Title 24 Standards" after installing the PLS measure. SCE calculated the monthly energy benefits by 1) estimating the total monthly time-of-use (TOU) period expected energy savings from the hourly profile over the useful life of the PLS measure, 2) multiplying the expected energy savings by the monthly expected energy price forecast of the respective TOU period and, 3) adding across all the TOU periods. The energy benefits represented by energy cost savings due to load reduction were grossed up by the T&D line loss factor of [redacted].

c) Contract Payment Costs

The offeror provided SCE with the monthly expected capacity savings. SCE calculated the contract payments that represented the quarterly capacity payments by multiplying the sum of the expected capacity savings for each month of the quarter by the contract price.

4. Renewable Distributed Generation

SCE used the same valuation approach for the two types of DG offers that were received in PRP RFO 2: BTM and IFOM, and took into account the variation in the BTM vs IFOM attributes.

a) Resource Adequacy Benefits

SCE determined the amount of RA capacity from renewable DG resources according to the methodology set in "Qualifying Capacity Methodology Manual Adopted 2015." SCE estimated the QC based on the exceedance methodology with an exceedance level of 70%. The hours SCE used for the QC calculations were 1:00 p.m. to 6:00 p.m. (PT) for the months of April through October, and 4:00 p.m. to 9:00 p.m. for all other months. SCE estimated the QC by using the expected hourly generation profile provided by the offeror, based on the typical meteorological year (TMY). For BTM renewable DG resources, SCE grossed-up the RA capacity amount by the PRM of 1.15 and the T&D line loss factor of [redacted]. SCE calculated the RA benefits by multiplying the projected monthly RA capacity by the monthly RA price forecast.

b) Energy Benefits

The monthly energy benefits were calculated by multiplying the expected hourly generation by the respective hourly energy price forecast, and summing over the month. For BTM renewable DG resources, the energy benefits were grossed up by the loss factor of [redacted].

c) Contract Payment Costs

SCE calculated the monthly contract payments by 1) estimating the expected amount of monthly generation, according to the TOD Periods set forth in the RFO, 2) multiplying by the product price weighted by product payment allocation factors and 3) summed over TOD periods. For IFOM renewable DG resources, SCE grossed-up the contract payments by the distribution loss factors (DLF). According to SCE's Wholesale Distribution Access Tariff (WDAT),[46] the meters that are not installed at a high voltage bus or at the point of interconnection are compensated for line losses and transformer losses to the point of interconnection by applying the DLF. The DLF, when multiplied by a distribution level end-use meter measurement, provides an estimate of the load at the CAISO (grid level). The DLFs currently are a credit of 1.12 percent for generating facilities interconnected at distribution voltages of 50 kV or above and a credit of 3.73 percent for generating facilities interconnected at distribution voltages below 50 kV and greater than or equal to 2 kV. SCE used the applicable DLF for each IFOM renewable resource.

d) Renewable Integration Costs

SCE estimated the renewable integration costs associated with wind and solar DG resources based on the Renewable Integration Cost Adders (RICA) methodology, as adopted in D.14-11-042. RICAs were estimated by summing two cost components: variable costs and fixed costs. The variable cost component was calculated as variable capacity rate of $3/MWh for solar and $4/MWh for wind, multiplied by the expected monthly generation. The fixed cost component was calculated based on SCE's forecast of monthly premium of flexible RA, multiplied by SCE's projection of monthly increase

[46] https://www.sce.com/wps/wcm/connect/503d7a4f-4820-468b-b2e4-1617d33e04e1/WholesaleDistributionAccessTariffv3.pdf?MOD=AJPERES

in the flexible RA need associated with one MW of installed capacity of solar and wind, based on 2014 LTPP Trajectory Scenario, scaled by contract capacity. SCE estimated the fixed cost component that represents the cost to procure additional flexible capacity at [redacted] for wind resources.

e) Renewable Energy Credit Benefit

SCE ascribed a REC value benefit to IFOM renewable DG resources to recognize the value provided by these resources in meeting SCE's RPS compliance targets. SCE estimated the monthly REC benefit by multiplying the expected monthly generation by the REC price forecast.

5. Energy Storage

Energy Storage IFOM offers had two variations: RA only (RA-only) and RA with put option (RA-put) in PRP RFO 2. RA-only offers provide only the RA capacity attributes, while RA-put offers provide both RA capacity and energy attributes.

a) Resource Adequacy Benefit

The RA quantity of the RA-only offers was set equal to the monthly contract capacity. The QC for RA-put offers was established based on D.14-06-050, which sets the RA eligibility requirements of storage resources. These requirements include the ability for the storage resource to operate for at least four consecutive hours at maximum power output (PmaxRA), over three consecutive days. SCE set the daily four hours requirement as a prerequisite for storage offers in PRP RFO 2. SCE also set the monthly QC of the RA-put to equal to the contract capacity. SCE calculated the RA benefits by multiplying the projected monthly QC by the monthly RA price forecast.

b) DA Energy, AS, and RT Energy Benefits

The DA energy, AS, RT energy benefits were applicable only to RA-put offers. SCE used its energy storage economic dispatch model to determine the optimal dispatch of the storage offers. The inputs to the model were price forecasts, contract costs, and operating characteristics. The price inputs included DA energy, RT energy and AS price forecasts. The contract cost inputs included VOM costs, mileage charges and storage energy limit (SEL) cost. The VOM cost is associated with energy discharge, mileage charge is associated with regulation services, and SEL cost is associated with storage

device's state of charge (SOC) which is applicable when SOC is above a maximum threshold or below a minimum threshold provided as part of the offer. The contract operating inputs to the model included capacity, operating range, charge and discharge time, and unit efficiency. In addition, inputs included probabilities of AS awards and AS calls in real time market to reasonably set the expectation of the AS operations of the storage resource, based on the historical AS performance of the most flexible resources' in the SCE portfolio in the CAISO market. The objective function of model was set to maximize the DA energy, AS, and RT energy revenue over the contract delivery period while operating within the device's operational constraints. The model provided SCE with the energy delivery profile of the resource, expected energy revenue due to discharging and AS, expected energy cost due to charging and contract energy payment costs. The energy benefits were calculated by subtracting the monthly energy costs of charging the device from the monthly energy revenue earned by discharging the device, summed over the contract delivery period.

c) Contract Payment Cost

The contract payments represented the total fixed contract payments that SCE is required to make for the delivery of capacity attributes. The monthly capacity payments were calculated by multiplying the contract capacity by the contract capacity rate. The RA-put offers included additional variable contract payments that depended upon the operations of the device. The monthly variable payment streams were the direct output of SCE's energy storage economic dispatch model, which captures VOM, Mileage and SEL payments, along with other system and contractual constraints.

d) Put Option Cost

Because some of the IFOM ES offers have dispatch put option embedded in their contract, SCE calculated a put option cost for use in the valuation analysis. SCE uses a Monte Carlo price simulation analysis to derive a distribution of the energy and AS values associated with dispatchable offers. SCE used these results to determine the value of the embedded put option to the seller, which is equal to the cost to the customer. In order to derive the put option value, SCE set the strike price to the [redacted] percentile of the value distribution for each resource. SCE then calculated the conditional expected returns above the [redacted] percentile by averaging the distribution results from the [redacted] percentile.

SCE set the put option cost to the customer using the difference between the conditional expected returns and the strike price, multiplied by [redacted] percent (i.e., 100% - [redacted]% to reflect the probability of the value being realized).

6. Solar PV Distributed Generation Paired with Energy Storage (Hybrid)

For Hybrids, SCE used the same valuation approach as used for valuing renewable DG resources. In place of expected generation profile, SCE used the expected generation profile from Solar PV resource, after storage, which was provided by the offeror. In addition, SCE considered two variations in contract payment costs: TOD period adjustment and payment structure. The offeror provided SCE with the information about whether the offered price would to be adjusted for TOD period-specific product payment allocation factors that SCE considered in the valuation as applicable. SCE's valuation also captured the offeror's pricing structure, including product price ($/MWh), capacity price ($/kW-month) and VOM.

D. Selection Methodology

SCE received offers with delivery terms ranging from one to twenty years, capacity ranging from 0.5 MW to 40 MW, along with varying delivery months and hourly profile. In addition to metrics such as NPV, nominal cost, and product price, SCE developed two normalization metrics to support the selection process:

a. $NPV/contract kW-month: The contract kW-months were calculated as the sum of average monthly kW over the contract delivery period. The contract kW represented the contract capacity for dispatchable resources, and contract capacity adjusted for capacity factor for non-dispatchable resources. SCE developed the $/NPV/contract kW-month metric by dividing the NPV by the contract kW-months.

b. $NPV/PRP2 kW-month: This metric focused on the alignment of each offer's delivery profile and delivery period with PRP RFO 2 objectives. The PRP2 kW-months were calculated by summing the average monthly kWs from the months of June through September in hour ending 16, over the first 10 years of the contract delivery term, or the

contract delivery term, if shorter than 10 years. Finally, the metrics was calculated by normalizing each offer's NPV by the PRP2 kW-months.

The offerors offered several options and constraints for selecting the offers:

a. Mutually inclusive offers - if SCE selects one of these offers, it must take all the other inclusive offers in the package

b. Mutually exclusive basis - if SCE selects one of these offers, it cannot take the other exclusive offers

c. Volume limit basis – SCE could select multiple combination of offers from the package constrained by a volume limit.

SCE developed a selection tool that was based on simple rank ordering approach to facilitate the selection process. The tool consisted of the following features:

a. Enforced mutual inclusivity/exclusivity/volume limit constraints during the portfolio selection exercise in real time, and enabled iteration through several options offered by the offerors

b. Showed the impact of different portfolio selections on the overall portfolio's financial statistics, capacity, and hourly profile. The portfolio financial statistics included total nominal cost, total NPV, marginal $/contract kW-month, and marginal $/PRP2 kW-month. The portfolio capacity showed capacity by preferred location, resource type, and offeror. The portfolio's hourly profile showed the extent of alignment of the selected portfolio with J-S Region need.

c. Enabled a portfolio building process by focusing on one resource type at a time or by all resources together.

d. Presented information on the qualitative attributes of the offers based on the factors discussed in qualitative assessment section in this chapter.

E. Valuation Results

SCE received [redacted] MW of capacity. The earliest start date was October 2017 and the latest end date was January 2040.

SCE's average nominal price outlook for this period was [redacted] MWh for SP15 and [redacted] for Johanna/Santiago electrical energy, and [redacted] for RA. The most capacity offered was for DR backed by ES followed by ES IFOM. Table V-9 below shows the capacity offered by the resource type.

Table V-9
Contract Capacity by Resource Type

Resource Type	Count	Total Capacity
DG-BTM	[redacted]	
DGES-BTM		
DG-IFTM		
DR		
DR-ES		
ES-IFTM		
PLS		
Total		

A summary of contract prices showing the minimum, average and maximum prices by each resource type offered into PRP RFO 2 is provided in Table V-10 below. On average, lowest priced offers were from ES resources while DG resources had highest priced offers as well as largest variance across DG type offers.

Table V-10
Contract Price Summary

Unit	Resource Type	Min	Avg	Max
Product Price in terms of All-in energy price ($/MWh)	DG-BTM	[redacted]		
	DGES-BTM			
	DG-IFTM			
Product Price in terms of Capacity Price ($/kW-month)	DR			
	DR-ES			
	ES-IFTM			
	PLS			

A summary of valuation results showing the minimum, average and maximum of normalized metrics for each resource type offered into PRP RFO 2 is provided in Table V-11 below. Broken down

by resource type, DG offers have the highest level of variation in terms of NPV. ES offers tended to be the most cost effective of the PRP 2 offer types.

Table V-11
Summary of Valuation Results

Resource Type	Min of $NPV/ PRP2 kW-month	Avg of $NPV/ PRP2 kW-month	Max of $NPV/ PRP2 kW-month	Min of $NPV/ Contract kW-month	Avg of $NPV/ Contract kW-month	Max of $NPV/ Contract kW-month
[redacted]						

The results of the NPV analysis for each final offer by resource type is shown in Figure V-3. The majority of offer NPVs were clustered around offers that involved ES technology as well as DR. While [redacted] tended to include the [redacted] offer prices, along with the [redacted] NPV, the NPVs of DR offers were more varied, such that some of the DR type offer prices were on the [redacted] side of the overall distribution of NPVs.

Figure V-3
Normalized NPV Results By Resource Type.

F. Qualitative Assessment

In addition to the benefits and costs quantified during the offer evaluation, SCE assessed non-quantifiable characteristics of each offer by conducting an analysis of each project's qualitative attributes. These qualitative characteristics were then considered in determining the final selection. These characteristics included:

- Technology type
- Project viability
- Circuit location – in line with preferred circuits
- Commercial operation date (COD)
- Contract duration
- Project size
- Technological functionality in line with enhanced future grid operability

- Portfolio fit

For technology type, SCE considered the type of resource or resources being provided. One of SCE's goals for the solicitation was to procure a variety of resources in order to test the capabilities and benefits of each resource while also gaining important learning in the procurement, deployment, integration and operation of these resources.

The project viability of each project was evaluated to ensure that a project surpassed a confidence threshold in its ability to deliver on the promises of its project proposal. Using a variation of the CPUC RPS Project Viability Calculator, SCE's project viability assessment took into account five components related to a project's development team, technology and development milestones. These five components were:

- Development team – Developer experience
    - An assessment of the number of projects the developer had completed with additional credit being given to projects of a similar or greater size and technology type to the project being proposed
- Development team – Operations and Maintenance experience
    - An assessment of the number of projects the entity designated to operate and maintain the project (could be the developer or a sub-contractor) had operated with additional credit being given to projects of a similar or greater size and technology type to the project being proposed
- Technology – Technological feasibility
    - An assessment performed by SCE technical experts to ensure that a sufficient comfort level existed with the technology's ability to perform as indicated at the time of COD
- Technology – Resource sufficiency
    - An assessment by subject matter experts to ensure that the project proposal size and resource needs fit within the constraints of the J-S Region (e.g. demand response market potential; rooftop or land to site PV)

- Development Milestones – Reasonableness of COD
    - An assessment to ensure that the proposed project timeline and COD appear reasonable given the lead times necessary to get projects approved and online (e.g. for ES-IFOM allowing enough time for interconnection study to take place)

SCE scored each of the five components, which, in composite, gave the project an Overall Viability Score. Using a rubric developed by an internal team, the components could be scored "Not Viable," "Lower Viability," "Reasonable Viability" and "Higher Viability." Only the Technical Feasibility and Resource Sufficiency components were able to receive a score of "Not Viable," while the lowest score available to the other components was "Lower Viability." In determining the Overall Project Viability score the following scoring system was used:

Table V-12
Overall Project Viability Scores

Score	Criteria
Higher Viability	At least 4 of the 5 offer components receive a score of "Higher Viability"
Reasonable Viability	Less than 4 of the offer components receive a score of "Higher Viability"
Lower Viability	ANY of the offer components receives a score of "Lower Viability"
Not Viable	ANY of the offer components receives a score of "Not Viable"

Projects that received a "Not Viable" score were removed from Shortlist and Waitlist consideration. For all other projects, the Project Viability Score was used as an additional data point in the shortlist and waitlist selection process.

For Circuit Location, SCE assessed whether projects were sited or planned to target areas interconnecting to the preferred circuits listed in the RFO instructions. Projects sited at these circuits are of particular value to SCE because SCE identified as high need or involved in utility DER-related demonstration projects.

SCE considered COD because SCE wants projects from this solicitation to come online between 2018 and 2022. SCE preferred to not have all of the projects come online towards the end of that time

period because that can create delay in the learning that can take place from the project for future solicitations.

For Project Size, SCE preferred projects under a certain size (3 MW on preferred circuits and 5 MW elsewhere) because larger projects were more likely to require distribution system upgrades, which would have pushed back project CODs to later or outside the in the online date window.

Alignment of technical functionality with enhanced future operability was a preference for different product types to have the capabilities to operate within a more advance future grid operating system. These technical capability included circuit-level dispatching for DR resources and Rule 21 compliant smart inverters for the ES, DG and Hybrid projects.

The final qualitative assessment was related to portfolio fit, or how the selected portfolio of contracts in aggregate would meet the needs of the J-S Region. These portfolio fit factors ended up having the greatest impact on the selections outside of the quantitative results.

- Technology Diversity – the PRP RFO 2 team grouped the various technologies into four buckets based on the underlying technology and the attributes of the delivered product. The attributes considered for each included the timing, frequency and duration of the delivery. SCE sought to achieve an adequate distribution of project types from each of the buckets indicated:

Table V-13
Technology Diversity Buckets

Bucket Name	Technologies Included
DR	Traditional DR, DR-ES and PLS-thermal
DG	IFOM DG and BTM DG
Hybrid	IFOM Hybrid and BTM Hybrid
ES	IFOM ES and PLS-ES

The desire for technological diversity is to help achieve the goals of the PRP. Specifically, it is important to SCE that these new resources be piloted in order to test how the resources

perform and test the utility's capabilities in procuring, deploying and managing them. This will add to the utility's learning so that there is a better understanding of what products are best suited for in the future.

- Seller Concentration – SCE made efforts to involve a variety of offerors in the shortlist selection of projects. Reasons for this included a) limiting the portfolio risk of a single large project or offeror to the PRP RFO 2 portfolio and b) reducing offeror market power during negotiations. In an effort to ensure that a project from each technology bucket made it to the finish line, SCE tried to include multiple counterparties for each bucket to reduce the risk that one failed offeror would eliminate that product type from the portfolio.
- Start Dates/COD Diversity – As mentioned above, SCE wanted to avoid having all of the selected projects coming on in the later part of the PRP RFO 2 solicitation window. Projects with earlier start dates (in 2018 or 2019) would provide SCE a buffer so that if the project were to be delayed it could still come online by 2020 and support the local area needs.
- Capacity Sufficiency – As explained in section 3.A, SCE targeted 150 MW in the shortlist process and another 50 MW on the waitlist, 200 MW in total, with the expectation of having 100 MW delivered online during the PRP RFO 2 window. Due to offer sizing submitted by the offerors, the 150 MW for the shortlist and the 50 MW for the waitlist were not able to be achieved exactly, but SCE shaped the portfolio to not greatly exceed or fall below these targets.

VI.

SHORTLIST AND WAITLIST

A. Shortlist Results

1. Summary of Portfolio Selections

Prior to execution of the selection process, SCE completed a review of the valuation results and confirmed that: (1) the results were internally consistent, (2) the valuation process had been executed consistently, and (3) the process was executed as planned and communicated to SCE management. SCE then executed its selection process considering both the quantitative and qualitative aspects of the selections before finalizing its recommendations.

a) Selection Sets

After the complete and conforming screening process, the PRP team was left with a total of [redacted] with all technology types represented to evaluate. Unlike some procurement programs in the past, SCE chose to shortlist specific offers, rather than entire offeror/product combinations. The rationale for shortlisting specific offers ties into SCE's decision to perform the solicitation as a one-step process (counterparties only submit one price), as opposed to a two-step process (shortlisted projects are asked to re-price toward the end of the negotiation period, with a final offer selection at the end of the negotiation phase).

SCE shortlisted a targeted set of offers in which it intended to actively negotiate and execute a contract for each of the offers assuming that the offeror and SCE were able to reach an agreement. Due to the one-step bidding process, counterparties were required to commit to their originally submitted offer prices and therefore none of the negotiations resulted in a price change.

The selection process included creating a rank order list of the offers based on least-cost, specifically the $NPV/PRP2 kW-month metric. SCE took a snap shot of the top 144 MW, which was the closest set possible, given the submitted offer sizing, to the 150 MW target, to create an initial least-cost that would serve as the baseline in subsequent offer reviews that would consider the qualitative attributes. A summary of the offers in this initial least-cost set are demonstrated in Table VI-14 below:

Table VI-14
Least-Cost Shortlist Summary

	Total MW	Cost ($M)	NPV ($M)	DR (MW)	DG (MW)	Hybrid (MW)	ES (MW)	# Offers	# CPs	18/'19/'20 Online Dates
Least Cost	144	[redacted]								

The initial least-cost set, driven strictly by the quantitative valuation results, led to a portfolio of offers not well-suited to achieve all of the goals of the PRP. In particular, the technology mix skewed heavily towards IFOM ES and no Hybrid-type products. The initial set also resulted in relatively late online dates and a high concentration of MWs from relatively few offerors.

From the least-cost set, SCE made a handful of adjustments to the shortlist based on qualitative considerations to shape the portfolio of contracts to better meet the needs of the PRP. The resulting set of offers ultimately became the final shortlisted selection. A summary of the offers selected in the least-cost best-fit run are demonstrated in Table VI-15 below:

Table VI-15
Least-Cost, Best-Fit Shortlist Summary

	Total MW	Cost ($M)	NPV ($M)	DR (MW)	DG (MW)	Hybrid (MW)	ES (MW)	# Offers	# CPs	18/'19/'20 Online Dates
Least Cost - Best Fit	144	[redacted]								

The adjustments away from the least-cost selection are described as follows, and are further illustrated by referring to Table VI-16 farther below:

[redacted]

[redacted] This change achieved the goals of reducing seller concentration risk, increasing technology diversity, and achieving earlier CODs. [redacted] This selection resulted in a shortlist quantity closer to the 150 MW target [redacted], as well as a more diverse and lower cost portfolio.

The end result was a more balanced technology portfolio, two additional counterparties that were not included in the first set, and a higher percentage of projects scheduled to come online earlier.

Table VI-16
Least-Cost, Best-Fit Shortlist Detail

#	Shortlist Select	Project ID	Company Name	Resource Type	Capacity Aug 2022 [MW]	COD [M/YYYY]	Term [Yrs]	Rank Order Metric [$NPV/ PRP2 kWm]	Contract Pmt Cost [$M]	NPV [$M]	Cap Price [$/kWm]	Energy Price [$/MWh]
[redacted]												

B. Shortlist Offer Summary

As shown in Table VI-17 below, SCE shortlisted Traditional DR, DR-ES, ES-IFOM, DG-BTM and Hybrid-BTM products, representing [redacted] counterparties.

Table VI-17
Shortlisted Offers

#	Company Name	Resource Type	Capacity Aug 2022 [MW]	COD [M/YYYY]	Term [Yrs]	Rank Order Metric [$NPV/ PRP2 kWm]*	Contract Pmt Cost [$M]**
[redacted]							

* The $NPV/PRP2 kW-month is the present value of benefits less the present value of costs, normalized by the expected MWs able to be delivered during the June – September period during each term year, as further described and used in Section V. and Section VI.

** The Nominal Cost is the sum of contract capacity payments and any other energy costs involved over the term of the contract.

C. Waitlist Offer Summary

SCE chose to waitlist an incremental [redacted] in case shortlisted offers were removed during the negotiation process. SCE's selections, consistent with the selections for the shortlist, were based on least cost best fit and the qualitative factors discussed above.

The total waitlist adds up to [redacted] MW because (a) [redacted]

SCE communicated the purpose and meaning of the waitlist to the PRG on April 20, 2016. SCE notified the waitlisted offerors after the PRG consultation. SCE told the waitlisted offerors their offers were on "stand by" should shortlisted offerors not continue with negotiations. SCE encouraged waitlisted offerors to engage in some negotiation with SCE during the RFO negotiation phase, but made it clear that was no guarantee that SCE would execute any contracts associated with waitlisted offers.

Table VI-18
Waitlisted Offers

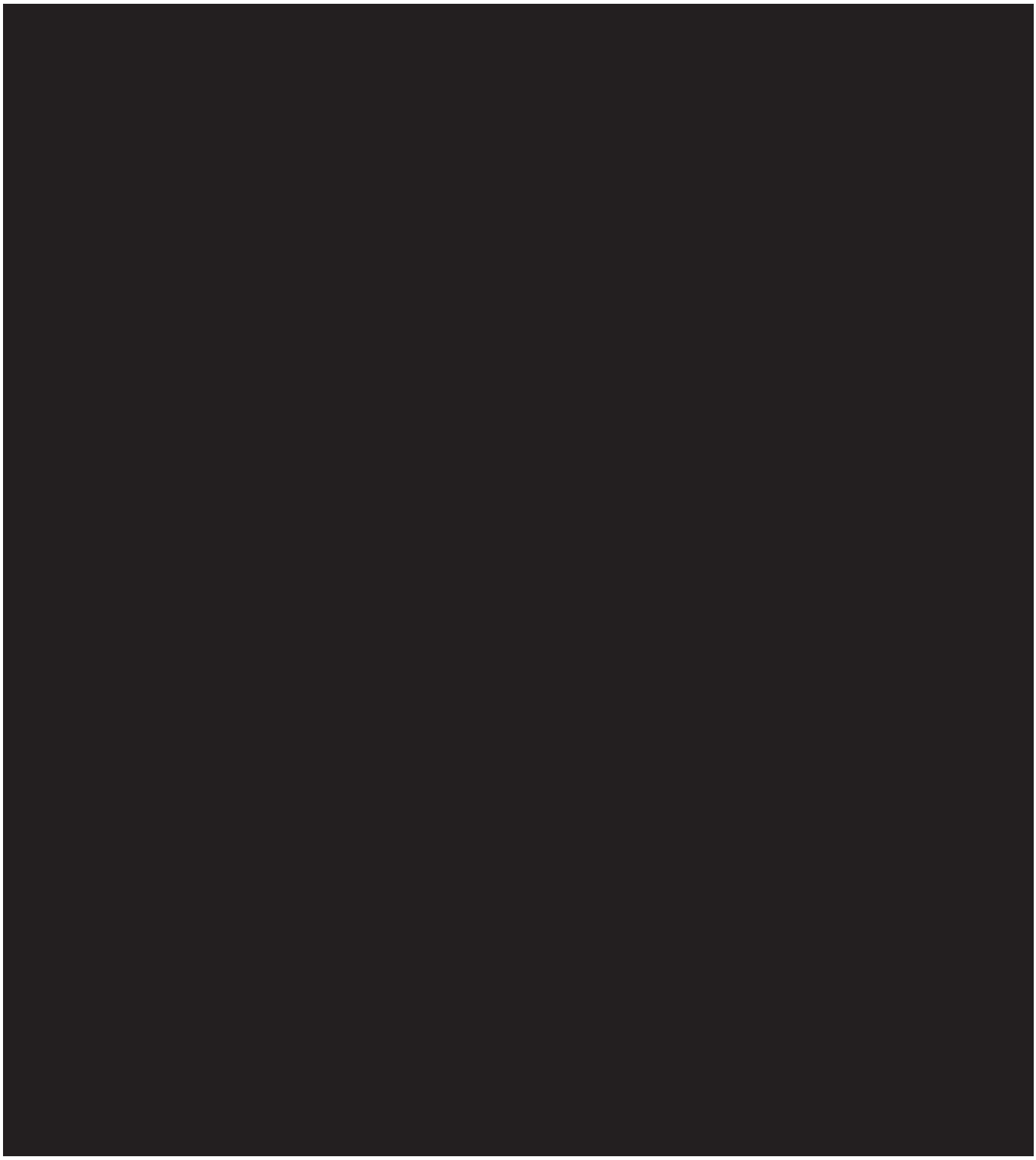
#	Waitlisted Offeror	Resource Type	Group	Capacity Aug 2022 (MW)	COD	Term	$NPV/ PRP2 ($M)	Nom. Cost ($M)	Add'l MW*
[redacted]									

D. Contract Negotiations

SCE notified offerors that they were on the shortlist or waitlist on April 26, 2016. Formal contract negotiations commenced soon after. Per the PRP RFO 2 schedule, SCE originally scheduled the negotiation phase to end on July 26, 2016.

During the negotiation phase, various counterparties withdrew or were removed from the solicitation. Specifically, a total of [redacted] offers did not complete negotiations, as described immediately below.

[redacted]



VII.

SOLICITATION RESULTS

This section summarizes the projects that SCE executed contracts with in the PRP RFO 2. Subsection B.1 through B.7, farther below, refer to the executed contracts listed in Table VII-19 immediately below:

Table VII-19
Executed PRP RFO 2 Contracts

#	Project or Seller	Product	Sponsor	MW	Term	COD	Cap. Price ($/kw-Mo)	Energy Price ($/MWh)	NPV ($M)	Nom. Cost ($M)
1	Cedar Technologies 1	Demand Response (End-Use Load Reduction (LR)/ Energy Storage (ES))	AMS	5	15	Jan'19				
2	Cedar Technologies 2			5		Jan'19				
3	Cedar Technologies 3			10		Jul'19				
4	Cedar Technologies 4			10		Jan'20				
5	Cedar Technologies 5			10		Jan'20				
6	Orange County ES-1	IFOM Energy Storage	Convergent	20	20	Dec'19				
7	Orange County ES-2			9		Dec'19				
8	Orange County ES-3			6		Dec'19				
9	Hecate Energy Johanna 1	IFOM Energy Storage	Hecate	10	10	Jan'20				
10	Hecate Energy Johanna 2			5		Jan'20				
11	Valencia ES	IFOM Energy Storage	NextEra	10	15	Jan'20				
12	OC Distributed ES I	Demand Response (LR/ES)		8.5		Jun'19				
13	OC Distributed ES II*	Demand Response (LR/ES)		1.5		Jun'18				
14	NRG Distrubuted Generation PR LLC	BTM DG-ES Hybrid	NRG	2	15	Apr'19				
15	NRG Distrubuted Generation PR LLC			2		May'19				
16	NRG Distrubuted Generation PR LLC			2		Jun'19				
17	NRG Distrubuted Generation PR LLC			2		Jul'19				
18	NRG Distrubuted Generation PR LLC			2		Aug'19				
19	Swell Energy Fund	Demand Response (ES)	Swell	5	15	Jun'19				
			TOTAL:	**125**	-	-				

A. Safety

Among SCE's standard pro forma provisions, unless otherwise mentioned, all PSAs include safety-related provisions that require the project developers' strict adherence to plan, construct, operate, and maintain the projects following professionally responsible practices that ensure safety throughout the projects' lives. Further, and also a standard pro forma provision, prior to the commencement of any construction activities, the developers are required to provide SCE with a report from an Independent

Engineer (acceptable to both SCE and Seller) certifying that the developers have a written plan for the safe construction and operation of the projects in accordance with Prudent Electrical Practices.

B. Project Overview

1. AMS - Cedar Technologies 1, LLC, Cedar Technologies 2, LLC, Cedar Technologies 3, LLC, Cedar Technologies 4, LLC, and Cedar Technologies 5, LLC (ref. Table VII-19: # 1, 2, 3, 4, 5)

Cedar Tech 1-5 are wholly-owned subsidiaries of Advanced Microgrid Solutions (AMS). Cedar Technologies 1, LLC (Cedar Tech 1) is providing 5 MW of BTM capacity under a Demand Response Energy Storage Agreement (DR ES Agreement). This will be achieved by the installation of ES units and other demand management technologies at [redacted] sites electrically in-line with the Camden 66/12kV Substation or Johanna Jr. 66/12 kV substations. The location will support SCE's DRP field demonstration D and the EPIC Investment Plan IGP. [redacted]

Cedar Technologies 2, LLC (Cedar Tech 2) is providing 5 MW of capacity, Cedar Technologies 3, LLC (Cedar Tech 3) is providing 10 MW of capacity, Cedar Technologies 4, LLC (Cedar Tech 4) is providing 10 MW of capacity, and Cedar Technologies 5, LLC (Cedar Tech 5) is providing 10 MW of capacity all under DR ES Agreements. This will be achieved by the installation of ES units and other demand management technologies at [redacted] sites electrically in-line with the Johanna and Santiago substations. [redacted]

[redacted]

[redacted]Further, the DR ES Agreements contain the safety related provisions identified at the beginning of this section. [redacted]

2. Convergent Energy - Orange County Energy Storage 1 LLC, Orange County Energy Storage 2 LLC, Orange County Energy Storage 3 LLC (ref. Table VII-19: # 6, 7, 8)

The three ES RA Purchase Agreements (OCES Agreements) between the above special purpose entities (respectively, "OCES1", "OCES2", and "OCES3") and SCE will result in the installation and

capacity of a total of 35 MW of new IFOM battery ES systems. The OCES entities are wholly owned by Convergent Energy and Power Inc. [redacted]

The projects will be located at three separate sites. All three projects will interconnect directly to SCE's distribution-level electric grid at separate and existing 12kV circuits in the J-S Region. Important to note, OCES 2 and OCES 3 will be interconnecting to circuits electrically in-line with the 66/12kV Johanna Jr. B-bank substation, a stated interconnection preference in the PRP RFO 2.

[redacted]

The OCES entities are wholly owned by Convergent Energy and Power Inc., an integrated energy storage asset developer [redacted]

[redacted]

Under the OCES Agreements, the OCES entities will sell and deliver exclusively to SCE all of the RA attributes associated with the projects for a term of 20 years. [redacted]

[redacted]

[redacted] Further, the OCES Agreements contain the safety related provisions identified at the beginning of this section.

3. Hecate Energy Johanna, LLC (ref. Table VII-19: # 9, 10)

The two ES RA (HEJF Agreements) between Hecate Energy Johanna, LLC, a special purpose entity, and SCE will result in the installation and capacity of a total of 15 MW of new IFOM battery storage systems. [redacted]

The projects will be located in Santa Ana, CA. Both projects will interconnect directly to SCE's distribution-level electric grid at the existing 12kV bus at the Johanna substation in the PRP region.

[redacted]

HEJF is wholly owned by Hecate Energy, a developer of storage assets, solar power plants, wind power plants, and natural gas-fired power plants. [redacted]

[redacted]

[redacted] Further, the HEJF Agreements contain the safety related provisions identified at the beginning of this section.

4. NextEra - Valencia Energy Storage, LLC (ref. Table VII-19: # 11)

Valencia Energy Storage, LLC (Valencia Energy) is an indirect wholly owned subsidiary of NextEra Energy Resources, LLC (NextEra) and will provide 10 MW of IFOM capacity under an "Energy Storage Resource Adequacy Purchase Agreement" (Valencia Energy Agreement). NextEra has been generating clean energy for more than 25 years and is the largest generator of wind and solar in North America with more than 22,000 MW of wind and solar operating in their portfolio. NextEra's parent company, NextEra Energy, Inc. is a Fortune 200 company with approximately $75 billion in assets.

The Valencia Energy facility will be located at a warehouse in Irvine, California and interconnect on SCE's 12kV Aquarius circuit which feeds the Santiago Substation.

[redacted]

[redacted]

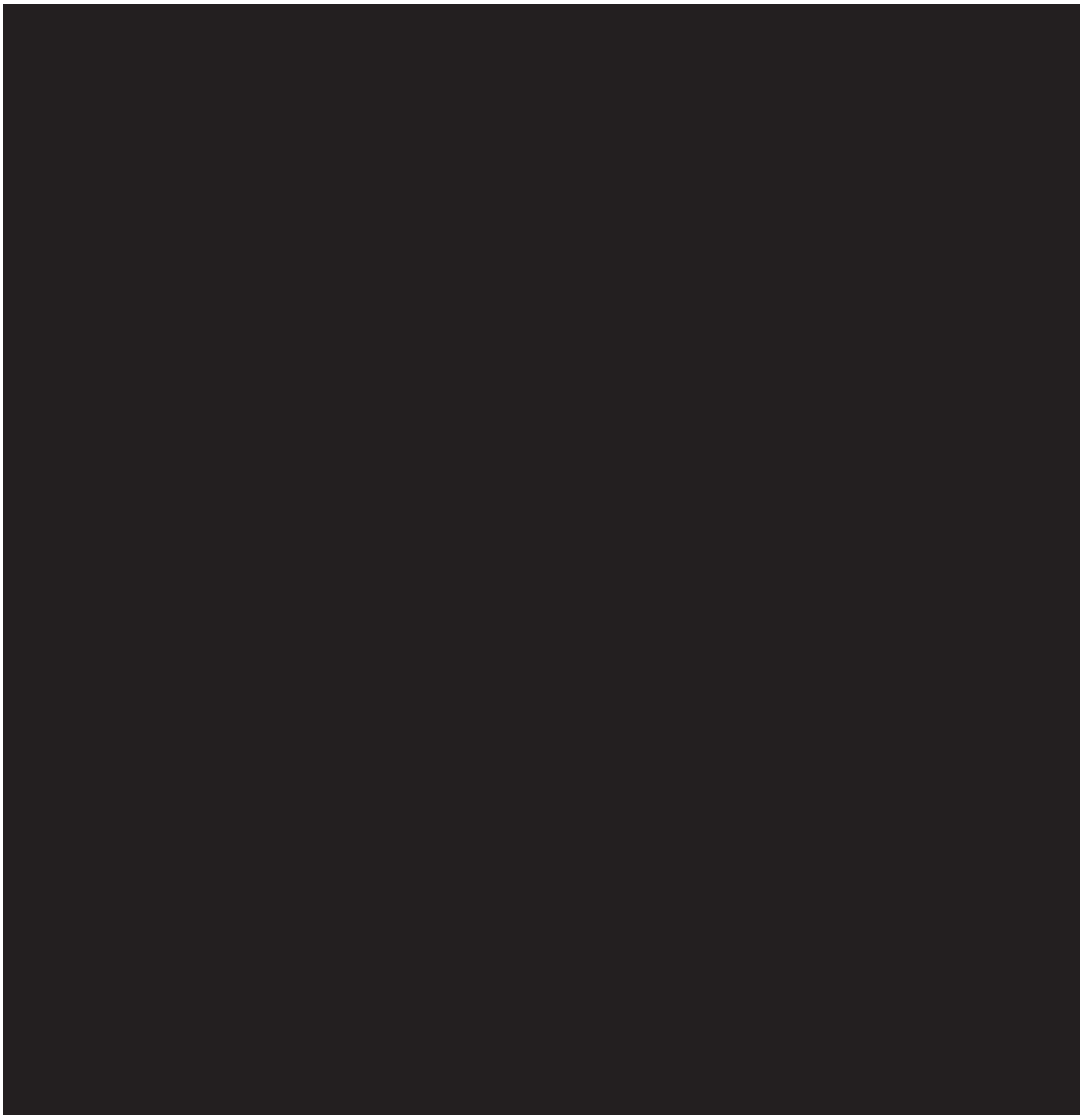
As part of the Valencia Energy Agreement, Valencia Energy assigns to SCE all RA from the project during the delivery period. [redacted]

[redacted] Further, the Valencia Energy Agreement contains the safety related provisions identified at the beginning of this section.

5. NextEra - Orange County Distributed Energy Storage I and Orange County Distributed Energy Storage II (ref. Table VII-19: # 12, 13)

Orange County Distributed Energy Storage I, LLC and Orange County Distributed Energy Storage II, LLC (collectively, the "Projects" or individually the "Project") are indirect wholly owned

subsidiaries of NextEra and, together, will provide 10 MW of BTM capacity under two DR ES Agreements. NextEra has been generating clean energy for more than 25 years and is the largest generator of wind and solar in North America with more than 22,000 MW of wind and solar operating in their portfolio. NextEra's parent company, NextEra Energy, Inc. is a Fortune 200 company with approximately $75 billion in assets.



[redacted]

The Orange County Distributed Energy II project will deliver energy to sites that are electrically interconnected to the Elden or Hines Distribution Substations. Resources in the Elden and Hines circuits may support SCE's DRP field demo project C. The Orange County Distributed Energy I project will deliver energy to sites that are electrically interconnected to either the Joanna or Santiago Substations.

[redacted] Further, the DR ES Agreements contain the safety related provisions identified at the beginning of this section.

6. NRG Distributed Generation PR LLC (ref. Table VII-19: # 14, 15, 16, 17, 18)

NRG Distributed Generation PR LLC (NRG) is providing a total of 10 MW of BTM capacity savings under the five Energy Savings Agreements. Each of the five Energy Savings Agreements have an expected 2 MW of capacity savings. This will be achieved [redacted] to be deployed behind the meters of [redacted] customers electrically in-line with the Johanna and Santiago substations. The Seller is backed by NRG Energy, Inc., a large competitive electricity company that develops, constructs, finances, owns, and operates a wide array of energy system types.

[redacted]

[redacted]

Further, the Energy Savings Agreements contain the safety related provisions identified at the beginning of this section.

7. Swell Energy Fund 2016-1, LLC (ref. Table VII-19: # 19)

[redacted]

Swell Energy is providing 5 MW of BTM capacity under the Demand Response Energy Storage Agreement. [redacted] to be deployed behind the meters of [redacted] customers electrically in-line with the Johanna and Santiago substations. The systems will be composed of advanced batteries and bi-directional inverters [redacted]

[redacted]

[redacted] Further, the Swell Energy Agreements contain the safety related provisions identified at the beginning of this section.

VIII.

CONSISTENCY WITH COMMISSION DECISIONS

A. Consistency with LTPP Track 1 and 4 Decisions

The resource constraints caused by the planned retirement of SONGS and OTC plants that informed the LTPP Track 1 and Track 4 Decisions and the content of those decisions are discussed at length in Section II above. The final decision on the AFRs challenging the Commission's approval of SCE's LCR RFO procurement requires SCE to procure an additional minimum of 169.4 MW of preferred resources or energy storage. The Commission, however, found reasonable SCE's request to consider updated CAISO LCR studies when procuring additional preferred resources or storage and noted that SCE can "file a petition for modification of [the Track 1 and 4 Decisions] if additional procurement is not necessary."[47]

SCE is currently awaiting the results of the CAISO's updated LCR studies. SCE expects an update sometime this fall or early next year. That updated analysis may assume that the mitigation measures discussed above will come to fruition without delay. SCE will evaluate the analysis when it is released. If there is an additional need for long-term local capacity resources in the Western LA Basin, the resources procured through the PRP RFO 2 should go towards satisfying the outstanding minimum Preferred Resource requirement established in the LTPP Track 1 and 4 decisions. As shown in the table below, the 125 MW of installed capacity will contribute 124.9 MW of LCR RA capacity.[48]

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[47] D.16-05-053 at p. 4, 18, OP 1(a),(b), (c) ("We find reasonable SCE's request to consider CAISO updated LCR studies to account for planned transmission upgrades and load forecasts update when procuring the remaining minimum preferred resources or energy storage. To further the Commission's efforts of grid reliability and safety in the Western LA Basin, SCE shall continue to procure to meet, at least, the minimum requirements set forth in D.13-02-015 and D.14-03-004 via any procurement mechanism and reviewing all relevant updated gird reliability information. Should SCE determine that additional procurement is not necessary, it may file a petition to modify D.13-02-015 and D.14-03-004.")

[48] The NRG hybrid resources contribute only 9.9 MW of LCR RA for 10 MW of installed capacity. This is due to the CPUC's RA counting rules and specific generation profiles anticipated for these resources, which do not provide 10 MW of generation during the entire RA window.

Table VIII-20
LCR Eligible Capacity

#	Project or Seller	Product	Contract Capacity	LCR MW
1	Cedar Technologies 1	Demand Response (LR)/(ES)	5	5
2	Cedar Technologies 2		5	5
3	Cedar Technologies 3		10	10
4	Cedar Technologies 4		10	10
5	Cedar Technologies 5		10	10
6	Orange County ES-1	IFOM Energy Storage	20	20
7	Orange County ES-2		9	9
8	Orange County ES-3		6	6
9	Hecate Energy Johanna 1	IFOM Energy Storage	10	10
10	Hecate Energy Johanna 2		5	5
11	Valencia ES	IFOM Energy Storage	10	10
12	OC Distributed ES I	Demand Response (LR/ES)	8.5	8.5
13	OC Distributed ES II*	Demand Response (LR/ES)	1.5	1.5
14	NRG Distrubuted Generation PR LLC	BTM DG-ES Hybrid	2	1.98
15	NRG Distrubuted Generation PR LLC		2	1.98
16	NRG Distrubuted Generation PR LLC		2	1.98
17	NRG Distrubuted Generation PR LLC		2	1.98
18	NRG Distrubuted Generation PR LLC		2	1.98
19	Swell Energy Fund	Demand Response (ES)	5	5
		TOTAL:	**125**	**124.9**

1. Location

The LTPP Track 1 and 4 decisions ordered SCE to procure resources in the Western LA Basin and also included requirements for any RFO issued to satisfy the procurement requirements established in the decisions.[49] The Track 4 decision also ordered that SCE "prioritize any procurement authorized by this decision in the West LA sub-area of the LA Basin local reliability area to the extent possible."[50]

[49] D.13-02-015, OP 1, p. 130; D.14-03-004, OP 1, p. 142.

[50] D.14-03-004, OP 5, p. 145.

The Johanna-Santiago substations are in the Western LA Basin sub-area. All resources selected in the PRP RFO 2 interconnect in-line with the Johanna-Santiago substation, and therefore are compliant with the Track 1 and 4 decisions.

2. Resource Adequacy

The LCR Decisions order SCE to procure "resources [that] offer the performance characteristics needed to be eligible to count as local Resource Adequacy capacity"[51] and further clarify that "[SCE] shall use existing [RA] program rules…to assess the effectiveness of proposed generation solutions for meeting the local capacity requirements need established in this Order."[52] An important qualification for the resources to be eligible for the PRP RFO was the ability to reliably provide energy during the key hours of hour ending (HE) 10 to HE18, with some variance depending on products (e.g., SCE required DR resources to be able to deliver from HE13 to HE18).[53] These hours of energy delivery line up with the summer requirements of the RA program, which require (1) reliable energy delivery (2) during the specific hours of HE14 to HE18. Accordingly, resources selected in the PRP RFO 2 are eligible for CAISO RA capacity and provide LCR eligible MW.

3. Consistency with Loading Order

The LCR decisions instruct that "any additional local capacity" beyond the minimum procurement authorizations specified in the Track 4 decision "may only be procured through preferred resources …consistent with the Loading Order of the Energy Action Plan."[54] The Energy Action Plan II released in 2005 identifies the preferred loading order as EE and DR, followed by renewable resources and DG. Accordingly, the resources SCE selected in the PRP RFO 2 are consistent with the State

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51 13-02-015, OP 4 d, p. 132.

52 13-02-015 OP 3, p. 131.

53 HE is a technical term that is used to describe the hour block of time that precedes the end of the identified hour.

54 D.14-03-004, OP 1(e).

Loading Order in that they include DR and renewable resources at the distribution level. The only exception is that EE was not allowed to participate in the PRP RFO 2.[55]

4. Technology Neutrality and Incrementality

The Track 1 and 4 LCR Decisions require "[a] demonstration of technology neutrality, so that no preferred resource was arbitrarily or unfairly prevented from bidding in SCE's solicitation process."[56] SCE is also instructed to obtain resources incremental to those "already required to be procured."[57] The PRP RFO 2 solicitation was technology neutral, with the exception that contracts for EE were not permitted to participate in the solicitation. Furthermore, SCE required all resources in the PRP RFO 2 to be new. SCE maintained compliance with the Track 1 and 4 Decisions by being technology neutral in its PRP RFO 2 implementation and requiring resources to be new.

5. Cost Effectiveness

The LCR decisions require that the RFOs include "[p]rovisions designed to minimize costs to ratepayers by procuring the most cost-effective resources consistent with a least cost/best fit analysis."[58] SCE used a LCBF methodology consistent with its RPS and LCR solicitations to evaluate the resources selected in the PRP RFO 2. Moreover, the resources selected in the PRP RFO 2 are cost-comparable to the resources selected in the LCR solicitation. Although some of the resources selected from the solicitation were selected out of rank order, the Commission has previously stated that it is reasonable to rely on the best fit aspect of the LCBF analysis to select a balanced portfolio of resources to better meet customer needs.[59]

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55 SCE did not solicit EE in the PRP RFO 2 because SCE had already procured 43 MW of EE in the J-S Region through existing demand side management (DSM) programs and the LCR RFO. EE's discrete contribution in terms of measureable metered grid level impact is unknown. SCE is working to assess and validate EE's grid level contributions, which will inform future acquisition activities in areas with local area needs.

56 D.13-02-015, OP 11, p. 135; D.14-03-004, OP 8(e), p. 145.

57 D. 13-02-015, OP 1(d), p. 131.

58 D 13-02-015, OP 4 (h), p. 132.

59 D.04-12-048 instructed SCE and the other IOUs to "employ the Least-Cost Best-Fit methodology when evaluating PPAs and utility-owned bids in an all-source open RFO, taking into account the qualitative and quantitative attributes associated with each bid." (p. 244)

B. Consistency with ES Decisions

In D.13-10-040, the Commission adopted ES targets for the IOUs, Direct Access (DA) energy service providers, and Community Choice Aggregation (CCA) programs, and expanded flexibility to meet those targets in D.16-01-032. Consistent with D.13-10-040, the resources selected in the PRP RFO 2 include customer (i.e., BTM) and IFOM distribution-connected ES projects that will contribute towards SCE's ES targets, pending Commission approval of the contracts.[60] [redacted] those MW will be eligible to count towards SCE BTM ES targets, following Commission approval of the contracts.[61]

[60] Based on current rules and targets, SCE has already procured the maximum quantity of BTM storage eligible to count towards its targets. If future Commission direction requires additional BTM ES or allows for additional flexibility between ES procurement grid domains, SCE will count the BTM ES resources procured in the PRP RFO 2 towards its ES targets, pending Commission approval.

[61] *See* note 60, *supra*.

Table VIII-21
Energy Storage Targets

#	Project or Seller	Product	ES Grid Domain	Contract Capacity	ES MW
1	Cedar Technologies 1	Demand Response (LR)/(ES)	Customer	5	TBD
2	Cedar Technologies 2		Customer	5	TBD
3	Cedar Technologies 3		Customer	10	TBD
4	Cedar Technologies 4		Customer	10	TBD
5	Cedar Technologies 5		Customer	10	TBD
6	Orange County ES-1	IFOM Energy Storage	Distribution	20	20
7	Orange County ES-2		Distribution	9	9
8	Orange County ES-3		Distribution	6	6
9	Hecate Energy Johanna 1	IFOM Energy Storage	Distribution	10	10
10	Hecate Energy Johanna 2		Distribution	5	5
11	Valencia ES	IFOM Energy Storage	Distribution	10	10
12	OC Distributed ES I	Demand Response (LR/ES)	Customer	8.5	TBD
13	OC Distributed ES II*	Demand Response (LR/ES)	Customer	1.5	TBD
14	NRG Distrubuted Generation PR LLC	BTM DG-ES Hybrid	Customer	2	TBD
15	NRG Distrubuted Generation PR LLC		Customer	2	TBD
16	NRG Distrubuted Generation PR LLC		Customer	2	TBD
17	NRG Distrubuted Generation PR LLC		Customer	2	TBD
18	NRG Distrubuted Generation PR LLC		Customer	2	TBD
19	Swell Energy Fund	Demand Response (ES)	Customer	5	5
			CUSTOMER TOTAL:	**65**	**5+**
			DISTRIBUTION TOTAL:	**60**	**60**

C. Consistency with DR Decisions

In R.13-09-011, the Commission is currently considering appropriate DR targets for SCE. Some of the resources procured in the PRP RFO 2 include DR. SCE's upcoming application for 2018-2022 DR programs, due January 16, 2016, will address overall DR funding, excluding the PRP RFO 2 resources. SCE will include information on the PRP RFO 2 DR resources in its future DR filings as appropriate to help identify appropriate DR targets.

D. Behind the Meter Resource Cost Recovery

SCE is requesting cost recovery of BTM resources through either the Distribution Rate or the Public Purpose Program Charge (PPPC), depending on the type of resource. Both the Distribution Rate and PPPC are collected from all SCE system customers on a non-bypassable basis. Costs of BTM resources should be collected from all system customers on a non-bypassable basis because (1) all system customers benefit from these resources; (2) doing so protects bundled customers from inequitably covering resource costs in the event of load departures in the J-S Region; (3) it promotes a robust DER market all customers may participate in and benefit from; and (4) it promotes the effectiveness of DERs.

1. Eligibility

The BTM resources signed in the PRP RFO 2 are demand side products that rely on retail customer participation. In exchange for their participation, customers may receive benefits and incentives from Sellers. All system customers who are served by the targeted substations (i.e., Johanna or Santiago) are eligible to participate, regardless of whether they are bundled or unbundled SCE customers. Because all system customers are eligible to participate, it is reasonable and fair that the costs of these programs be collected from all system customers.

2. Load Departure

As explained above, customers are eligible to participate in the DSM programs that support the PRP RFO 2 BTM resources regardless of whether they are bundled or unbundled SCE customers. Because resource developers identified costs and magnitude of resource contribution based on the assumption that all customers could participate in DSM programs, it is likely that at this point, for these resources, it would not be possible to restrict participation to a smaller subset of system customers. Therefore, if the Commission were to decide that the costs of these resources should be recovered from bundled customers alone, bundled service customers would subsidize unbundled customer participation in these programs. If a substantial number of customers who enroll in these programs were to depart bundled service, either due to the formation of a CCA in the J-S Region, expansion of DA, or another

reason, the cross-subsidization by bundled service customers of unbundled service customers would increase accordingly.

3. Customer Choice

If the Commission were to decide that the costs of these resources should be recovered from bundled customers alone, as a matter of fairness, it would be reasonable to only allow bundled customers to participate in these types of DSM programs in the future. This would reduce customer choice in two ways. First, it would limit bundled customers' freedom to choose alternative energy providers, such as a DA provider or a CCA program, while still participating in the DSM program. Second, it prevents interested unbundled customers from enrolling in these DSM programs.

4. DER Effectiveness

For location specific DSM resources such as those selected in the PRP RFO 2, there is a limited pool of customers that can be enrolled in DSM programs. If the Commission were to decide that the costs of these resources should be recovered from bundled customers alone, as a matter of fairness, it would be reasonable to allow only bundled customers to participate in these DSM resources in the future. Doing so would reduce the pool of eligible customers and reducing the potential magnitude of DERs that SCE could deploy proportionally to number of unbundled customer in the target area. It could also potentially drive up the difficulty and cost of procuring DERs by creating additional barriers for DER developers.

E. Role of IE and PRG

1. PRG Participation

SCE's PRG was formed on or around September 10, 2002. Participants include representatives from various divisions within the Commission, the Office of Ratepayer Advocates, The Utility Reform Network, California Utility Employees, the Union of Concerned Scientists, Sierra Club, and the California Department of Water Resources.

SCE consulted with its PRG on four occasions during the PRP RFO 2 solicitation process. SCE first consulted with the PRG on August 26, 2015 regarding the objective, process, and launch of the PRP RFO 2. During this consultation, SCE also gave an overview of the LCBF valuation methodology,

which included SCE's typical valuation parameters (contract payments, debt equivalents, energy benefits, etc.) as well as potentially utilized valuation parameters specific to the PRP such as distribution upgrades deferral value and amount of capacity that contributes to solving local reliability needs.

SCE consulted with its PRG a second time, on April 20, 2016 and presented the submitted PRP RFO 2 offers and its recommended shortlist.

At the third PRG consultation on August 10, 2016, SCE provided an overview of the negotiation process and recommended SCE execute the 19 contracts that are the subject of this Application.

A fourth, and final, PRG consultation occurred at the August 24, 2016 quarterly face-to-face PRG meeting at which SCE simply recapped the purpose of the PRP and the 19 final contracts.

2. Engagement of IE

Sedway, spearheaded by Alan Taylor, was the IE for the PRP RFO 2 solicitation. The IE joined and contributed to a number of conference calls pertaining to key RFO milestones, such as RFO document development, eligibility screening, valuation methodology, shortlist selection, negotiated PSA provisions, and final offer selection. In addition, the IE performed an independent quantitative evaluation of the offers. Last, the IE reviewed email traffic, the various iterations of the contracts during negotiations, the final contracts prior to execution, and other documents exchanged by the parties. The IE also participated in all PRG consultations. The IE Report is included as Appendix D. The IE concluded that SCE fairly administered the PRP RFO 2 process and SCE's evaluation/selection process resulted in the selection of the best offers and recognized the benefits of a diverse mix of resources.

IX.

COST RECOVERY AND REVENUE ALLOCATION

SCE proposes to recover the costs of the resources procured in the PRP RFO 2 through three existing rate components: the Generation, Distribution, and Public Purpose Programs (PPP) rate components.

The Generation rate component primarily collects the costs of fuel and purchased power (F&PP), including GHG costs, and utility owned generation-related operations and maintenance and capital investments, incurred on behalf of existing, and forecast bundled service customers.

The Distribution rate component collects, among other things, the costs of distribution-related operations and maintenance, capital investments, and other programs such as the Commission-authorized DR, California Solar Initiative (CSI) and Self-Generation Incentive (SGIP) programs.

The PPP rate component primarily collects the costs of Commission-authorized programs such as energy efficiency (EE), low income EE, EPIC and the California Alternate Rates for Energy (CARE).

Below is SCE's process for making sure only appropriate customers pay the assessed net cost of each of these products.

Table IX-22
PRP RFO 2 Proposed Cost Recovery Methodology

Description of Technology	Cost/Benefit Allocation	Total Contracts	Ratemaking Treatment		Allocation of Revenue
			Initial/Final Balancing Account	Rate Component	
IFOM ES	Bundled Only	8 Contracts	Preferred Resources Pilot Products BA (PRPPBA)/ ERRA	Generation	As a dispatchable resource, any CAISO market revenues received will be netted against the contract costs with the net cost recorded in the PRPPBA and allocated to bundled customers through generation rates
DR-LR-ES or DR-ES (like DR)	All	8 Contracts	PRPPBA/BRRBA	Distribution	As a dispatchable resource, any CAISO market revenues received will be netted against contract costs with the net cost recorded in the PRPPBA and allocated to all customers through distribution rates
BTM DG-ES Hybrid (like EE)	All	5 Contracts	PRPPBA/PPAM	Public Purpose Programs Charge (PPPC)	Nondispatchable, therefore no CAISO market revenue available. Allocated to all customers through the PPPC

A. Cost Recovery

SCE proposes to include in its annual ERRA Forecast proceeding a forecast of the costs of the resources procured through the PRP RFO 2 to be included in rates for the following year. This is consistent with how SCE recovers its forecast of F&PP expenses. As explained in more detail below, the forecast of the costs of the PRP RFO 2 resources that will be included in rates will be trued-up to their assessed recorded costs through the operation of balancing accounts.

As shown in Table IX-22 above, SCE proposes recovering the IFOM ES resource costs through the existing Generation rate component and, as a dispatchable resource, any CAISO market revenues SCE receives will be netted against the contract costs with the net cost recorded in the PRP Products Balancing Account (PRPPBA) and allocated to bundled customers through generation rates.

Like all other existing DR programs that are offered to all customers, including DA and CCA customers, SCE proposes recovering the costs of DR resources procured in the PRP RFO 2 through the

Distribution rate component. Specifically, SCE will include the cost recovery for the DR-LR-ES or DR-ES (like DR) resource costs in the Distribution rate component and, as a dispatchable resource, any CAISO market revenues SCE receives will be netted against the contract costs with the net cost recorded in the PRPPBA and allocated to all customers through distribution rates.

As authorized by the Commission, SCE recovers its EE program costs through the PPPC rate component and proposes to similarly recover the costs of EE resources procured in the PRP RFO 2 through the PPPC rate component. Because the BTM-DG-ES Hybrid operates similarly to EE, SCE will include the BTM DG-ES Hybrid resource costs in PPPC rates. EE resources are nondispatchable, therefore no CAISO market revenue is available.

SCE's rate design proposal for recovery of the PRP RFO 2 resources costs is discussed in the Revenue Allocation and Rate Design Section below.

B. Ratemaking

Rather than recording the PRP resource costs directly in various existing balancing accounts, SCE proposes recording the PRP costs in a single, new balancing account called the PRPPBA. The PRPPBA will include three sub-accounts, one for each of the three rate components that the PRP resources will be recovered through: (1) Generation; (2) Distribution; and (3) PPP. Each month, SCE will record the actual cost of these resources in their respective sub-accounts. The costs of the IFOM ES resources will be recorded in the Generation sub-account. The costs of the DR-LR-ES or DR-ES (like DR) resources will be recorded in the Distribution sub-account. And the costs of the BTM DG-ES Hybrid (like EE) will be recorded in the PPP sub-account.

SCE proposes to transfer the balance of the Generation sub-account component of the PRPPBA to the existing ERRA balancing account each month. In the ERRA balancing account, the cost of the Generation PRP-related costs and all other F&PP costs will be balanced with the recorded ERRA balancing account-related revenue, including revenue for the generation-related PRP contracts each month. Any balance recorded in the ERRA, either over- or under-collected, is included in the Generation rates in the following year.

Similarly, SCE proposes to transfer the balance recorded in the Distribution sub-account component of the PRPPBA to the existing Distribution sub-account of the BRRBA each month. In the BRRBA, the cost of the Distribution PRP-related costs and all other distribution costs will be balanced with the recorded Distribution revenue, including revenue for the distribution-related PRP contracts each month. Any balance recorded in the BRRBA, either over- or under-collected, is included in the Distribution rate component in the following year.

SCE proposes to transfer the balance recorded in the PPP sub-account component of the PRPPBA to the existing Public Purpose Programs Adjustment Mechanism (PPPAM) each month. In the PPPAM, the cost of the PPP-PRP-related costs and all other PPP costs will be balanced with the recorded PPP revenue, including revenue for the energy efficiency-related PRP contracts each month. Any balance recorded in the PPPAM, either over- or under-collected, is included in the PPP rate component in the following year.

C. Review of PRP RFO 2 Costs

In the annual ERRA Review proceedings, SCE will include for Commission audit and review all of the entries recorded in the PRPPBA to ensure that such entries are compliant with the PRP RFO 2 decision reached in this proceeding.

D. Revenue Allocation and Rate Design

This section describes the proposed allocation of the costs associated with the PRP RFO 2 contracts to the individual rate groups. As discussed above, the costs of the PRP RFO 2 resources will be recorded in the appropriate PRPPBA sub-account, and then transferred to the ERRA balancing account, the Distribution sub-account of BRRBA, and PPPAM, respectively. The balance in these accounts will be allocated to the individual rate groups consistent with the functional revenue allocators adopted in SCE's General Rate Case (GRC) Phase 2 proceedings. Table IX-23 illustrates the capped revenue allocators adopted in SCE's 2015 GRC Phase 2 (D.16-03-030), which will be used for revenue allocation until updated factors are adopted in its 2018 GRC Phase 2 proceeding or related proceedings involving generation, DR, or EE allocations.

Table IX-23
Functional Revenue Allocators

	Uncapped	Capped	Uncapped	Capped					
	Distribution		Generation		APS & Interruptible Surcharge[1]	CSI/SGIP[2]	PPP[3]	NDC/PUCRF[4]	NSGC[5]
Total Domestic	52.4%	52.1%	43.9%	43.4%	38.8%	36.4%	41.1%	34.7%	40.6%
GS-1	6.7%	7.3%	7.2%	8.2%	6.5%	8.2%	7.5%	6.6%	7.3%
TC-1	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
GS-2	17.1%	17.0%	17.5%	17.3%	17.7%	19.6%	17.9%	17.0%	17.8%
TOU-GS-3	7.7%	7.7%	8.1%	8.0%	9.5%	10.1%	9.2%	9.7%	9.6%
Total LSMP	31.6%	32.1%	32.9%	33.6%	33.7%	37.9%	34.7%	33.3%	34.8%
TOU-8-Sec	6.8%	6.7%	7.6%	7.5%	9.2%	9.2%	8.5%	9.6%	8.7%
TOU-8-Pri	4.4%	4.3%	4.7%	4.7%	6.2%	5.5%	5.1%	6.4%	5.2%
TOU-8-Sub	1.2%	1.2%	5.7%	5.6%	7.2%	4.1%	3.8%	7.1%	4.8%
Total Large Power	12.4%	12.2%	18.0%	17.9%	22.6%	18.9%	17.4%	23.2%	18.8%
TOU-PA-2	2.0%	1.9%	2.5%	2.5%	2.3%	2.4%	2.2%	2.5%	1.8%
TOU-PA-3	1.1%	1.1%	1.5%	1.4%	1.4%	1.3%	1.2%	1.7%	1.1%
Total Ag.&Pumping	3.1%	3.0%	4.1%	3.9%	3.6%	3.7%	3.4%	4.2%	2.8%
Total Street Lighting	0.1%	0.2%	0.5%	0.5%	0.5%	0.5%	1.0%	0.9%	0.5%
STANDBY/SEC	0.0%	0.0%	0.1%	0.1%	0.1%	0.3%	0.2%	0.3%	0.2%
STANDBY/PRI	0.2%	0.2%	0.2%	0.2%	0.2%	0.9%	0.8%	0.9%	0.7%
STANDBY/SUB	0.1%	0.1%	0.4%	0.4%	0.4%	1.5%	1.4%	2.5%	1.5%
Total Standby	0.4%	0.4%	0.6%	0.7%	0.7%	2.6%	2.4%	3.7%	2.5%
Total System	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

[1] APS (Automatic Powershift) and interruptible surcharge are allocated based on the marginal cost of generation revenue requirement for all retail sales

[2] CSI (California Solar Initiative) and SGIP (Self-Generation Incentive Program) are allocated based on each group's proportion of system revenues, excluding CARE and FERA customers, and streetlight facilities

[3] PPP (Public Purpose Program) revenues are allocated to rate groups on a proportion of system revenues, with DA customers imputed as bundled customers

[4] NDC (Nuclear Decommissioning Charge) and PUCRF (PUC Reimbursement Fee) are allocated to all retail customers on an equal ¢/kWh basis

[5] NSGC (New System Generation Charge) is allocated to all retail customers based on the 12-CP allocators
DCARE surcharge is allocated on an equal ¢/kWh basis, excluding the DCARE and streetlight customers
DWRBC (Department of Water Resources Bond Charge) is allocated on an equal ¢/kWh basis, excluding the DCARE customers

1. Generation Rate Component

IFOM ES resource costs recovered through the Generation rate component will be allocated to bundled customers based on the capped generation functional allocators shown in Table IX-23 above. These revenues will be collected through a cents-per-kWh energy charge in addition to a dollar-per-kW demand charge for customers on demand metered rates, and through a cents-per-kWh energy charge for all other customers.

2. Distribution Rate Component

DR and BTM ES resource costs recovered through the Distribution rate component will be allocated based on the allocators approved in SCE's GRC Phase 2 proceedings. The methodology adopted in SCE's 2015 GRC Phase 2 (D.16-03-030), allocates the DR revenue requirement to all retail customers such that 50 percent of the DR revenue requirements are allocated by each rate group's proportional share of system revenues, with generation revenues for DA customers imputed as bundled, and the remaining 50 percent of the DR revenue requirements allocated on the basis of capped distribution marginal cost revenues. These revenues will be collected through a dollar-per-kW demand charge for customers on demand metered rates, and through a cents-per-kWh energy charge for all other customers.

3. Public Purpose Programs Rate Component

BTM DG-ES Hybrid (EE like) resource costs recovered through the PPP rate component will be allocated based on the allocators approved in SCE's GRC Phase 2 proceeding. The methodology adopted in SCE's 2015 GRC Phase 2 (D.16-03-030), allocates the PPP revenue requirement based on each rate group's percentage share of system revenues for bundled service and DA customers, with generation revenues for DA customers imputed as if they were bundled service customers. These revenues will be collected through a cents-per-kWh energy charge for all customers.

Appendix A

Witness Qualifications and

Confidentiality Declarations

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF GUS FLORES

Q. Please state your name and business address for the record.

A. My name is Gus Flores, and my business address is 2244 Walnut Grove Avenue, Rosemead, California 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company.

A. I currently hold the title of Principal Manager, Origination in the Energy Procurement and Management organization. My responsibilities include running competitive solicitations for conventional and renewable power products, combined heat and power, energy storage, transmission, emissions products, and resource adequacy. I also oversee negotiations of bilateral contracts as well as master agreements that establish trading relationships between SCE and our counterparties.

Q. Briefly describe your educational and professional background.

A. I received a Bachelor of Science degree in Mathematics/Economics from the University of California, Los Angeles and a Master of Business Administration degree from the University of Southern California. I joined SCE in 2002 and have held several staff and management roles including senior energy trader, originator, and Principal Manager of the Power, Gas, and Emissions trading groups. Prior to joining SCE I was employed by Constellation NewEnergy between 1998 and 2002 where I held various positions focusing on developing and pricing products to offer retail customers in the newly deregulated California market.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor *Exhibit SCE-01: Testimony Of Southern California Edison Company In Support Of Application For Approval Of The Results Of Its Second Preferred Resources Pilot Request For Offers* as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.

DECLARATION OF GUS FLORES REGARDING THE CONFIDENTIALITY OF CERTAIN DATA

I, Gus Flores, declare and state:

1. I am a Principal Manager in Southern California Edison Company's (SCE's) Power Origination Department and the sponsor of Chapters III, IV, VI, and VII of the Testimony and appendices thereto (SCE-1) that SCE offers in support of its Application for Approval of the results of SCE's Second Preferred Resources Pilot (PRP) Request for Offers (RFO) (PRP RFO 2) (the Application). I make this declaration in accordance with Commission Decisions (D.) 06-06-066 and D.08-04-023, issued in Rulemaking 05-06-040. I have personal knowledge of the facts and representations herein and, if called upon to testify, could and would do so, except for those facts expressly stated to be based upon information and belief, and as to those matters, I believe them to be true.

2. In accordance with Decision (D.)91-05-007, D.06-06-066, which adopted the investor-owned utilities' proposed Matrix (the IOU Matrix), D.08-04-023, issued in Rulemaking 05-06-040, D.11-07-028, General Order (GO) 96-B, GO 66-C,[1] and California Public Utilities Code Section 454.5(g),[2] which protects the confidentiality of market sensitive information, SCE requests confidential treatment of the redacted information in the Chapters of SCE-1 that I have sponsored and the confidential version of the Appendices in support of the Application, which includes the redacted version of the independent evaluator's (IE's) report.

---

[1] Section 2.2(b) of the Commission's GO 66-C requires the Commission to protect confidential information that would place a utility at an "unfair business disadvantage" if publicly disclosed. It categorizes as information that is "not open to public inspection," those "[r]eports, records, and information requested or required by the Commission which, if revealed, would place the regulated company at an unfair business disadvantage."

[2] Section 454.5(g) provides: "The commission shall adopt appropriate procedures to ensure the confidentiality of any market sensitive information submitted in an electrical corporation's proposed procurement plan or resulting from or related to its approved procurement plan, including, but not limited to, proposed or executed power purchase agreements, data request responses, or consultant reports, or any combination, provided that the Office of Ratepayer Advocates and other consumer groups that are nonmarket participants shall be provided access to this information under confidentiality procedures authorized by the commission."

3. Listed in the below chart are the data in SCE-1for which SCE seeks confidential treatment, the justification for that treatment as identified in the IOU Matrix appended to D.06-06-066, and the period of confidentiality for the data identified.

Data	Page	Justification	Period of Confidentiality
Competitive Bidding Information Offer Valuation	SCE-1, Chapter III: p. 27:22-23. Chapter IV: pp. 30 at Table IV-6, p. 31:8, p. 32 at Table IV-7, p. 33 at Table IV-8. Chapter VI: p. 53:1-12, p.54 at Table VI-14 and VI-15, p. 54: 11-55:13, p. 56 at Table VI-16, p. 56:3, p. 57 at Table VI-17, p. 57:2, p. 58:1-4, p. 59 at Table VI-18, p. 59:6-60:24. Chapter VII: p. 61 at Table VII-19, p. 62:10, 12-13, 18, 19-20, 21-27, p. 62:1-22, p. 64:2-3, 8-11, 13-18, 20-27, p. 65:1-6, 11, 14-17, 19-27, p. 66:1-12, 24-27, p. 67:1-10, 12-22, p. 86:6-27, p. 69: 1-3, 8-13, 18-19, 23-26, p. 70:1-7, 11-14, 16-26, p. 71:1-12.	VIII. A. Bid information: Total number of projects by megawatts bid by resource type. B. Specific qualitative analysis involved in scoring and evaluation of participating bids.	Public after final contracts submitted for CPUC approval. Information other than evaluation guidelines confidential for three years after winning bidders selected.
PSA Terms	SCE-1, Chapter VIII	VII.B Contracts and power purchase agreements between utilities and non-affiliated third parties	Contract summaries public, including counterparty, resource type, location, capacity, expected deliveries, delivery point, length

		(except RPS)	of contract and online date. Other terms confidential for three years from the date contract states deliveries to begin; or until one year following expiration, whichever comes first.
PSAs	Confidential Appendix B	VII.B Contracts and power purchase agreements between utilities and non-affiliated third parties (except RPS)	Contract summaries public, including counterparty, resource type, location, capacity, expected deliveries, delivery point, length of contract and online date. Other terms confidential for three years from the date contract states deliveries to begin; or until one year following expiration, whichever comes first.
Redlined Pro Formas	Confidential Appendix C	VII.B Contracts and power purchase agreements between utilities and non-affiliated third parties (except RPS)	Contract summaries public, including counterparty, resource type, location, capacity, expected deliveries, delivery point, length of contract and online date. Other terms confidential for three years from the date contract states deliveries to begin; or until one year following expiration, whichever comes first.
Confidential Attachment B	Appendix D	VIII.B Specific qualitative	Information other than evaluation guidelines

to the Independent Evaluator Report		analysis involved in scoring and evaluation of participating bids.	confidential for three years after winning bidders selected.

4. I am informed and believe and thereon allege that the data in the table above cannot be aggregated, redacted, summarized, masked or otherwise protected in a manner that would allow partial disclosure of the data while still protecting confidential information.

5. I am informed and believe and thereon allege that the data in the table above has never been made publicly available.

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

Executed on November 3, 2016 at Rosemead, California.

/s/ Gus Flores

Gus Flores

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF CAROLINE McANDREWS

Q. Please state your name and business address for the record.

A. My name is Caroline McAndrews, and my business address is 8631 Rush Street.

Q. Briefly describe your present responsibilities at the Southern California Edison Company.

A. I am the Director of the Preferred Resources Pilot, responsible for leading the team in the determination of the capabilities for the integrated use of preferred resources to offset electricity demand growth in the southern region of SCE territory.

Q. Briefly describe your educational and professional background.

A. I am presently the Director of the Preferred Resources Pilot, leading a team in accomplishing the pilot objectives stated herein. I joined SCE in 1996, holding various positions within the company focused on engineering, regulatory affairs and licensing, performance improvement, oversight/quality assurance, power plant operations and training. Prior to joining SCE, I provided consulting services and worked at a northern California utility. I have a California Professional Engineering License and have a Bachelor of Science degree in Nuclear Engineering.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor *Exhibit SCE-01: Testimony Of Southern California Edison Company In Support Of Application For Approval Of The Results Of Its Second Preferred Resources Pilot Request For Offers* as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF RANBIR SEKHON

Q. Please state your name and business address for the record.

A. My name is Ranbir Sekhon, and my business address is 2244 Walnut Grove Avenue, Rosemead, California 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company.

A. I am Director of the Portfolio Planning & Analysis department of Southern California Edison's (SCE's) Energy Procurement & Management organization.

Q. Briefly describe your educational and professional background.

A. I graduated from Queen Mary College, University of London in May of 1998 with a Bachelor's of Science Degree in Mathematics and Computing with First Class Honors. Prior to joining SCE I worked briefly for ABN Amro in their corporate finance department and for nine years as a Management Consultant for PA Consulting Group. During my time with PA I reached the rank of Principal Consultant and was responsible for managing teams of consultants on various consulting projects. Six of my nine years with PA was spent working with global energy sector clients on engagements ranging from Energy Transaction and Risk Management (ETRM) systems implementation to Business Process and Quantitative Model development. I joined SCE as Manager of Portfolio Planning & Management in August 2007 and have held various roles responsible for monthly risk and resource adequacy reporting to CPUC ,analytical model development, managing all valuation processes related to renewable, alternative and conventional procurement and developing analytical models to support SCEs hedging program. I have previously testified before the commission.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor portions of *Exhibit SCE-01: Testimony Of Southern California Edison Company In Support Of Application For Approval Of*

The Results Of Its Second Preferred Resources Pilot Request For Offers as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.

DECLARATION OF RANBIR SEKHON REGARDING THE CONFIDENTIALITY OF CERTAIN DATA

I, Ranbir Sekhon, declare and state:

1. I am the Director of Portfolio Planning and Analysis for Southern California Edison Company (SCE) and the sponsor of Sections A through G of Chapter V of the Testimony and appendices thereto (SCE-1) SCE offers in support of its Application for Approval of the results of SCE's Second Preferred Resources Pilot (PRP) Request for Offers (RFO) (PRP RFO 2) (the Application). I make this declaration in accordance with Commission Decisions (D.) 06-06-066 and D.08-04-023, issued in Rulemaking 05-06-040. I have personal knowledge of the facts and representations herein and, if called upon to testify, could and would do so, except for those facts expressly stated to be based upon information and belief, and as to those matters, I believe them to be true.

2. In accordance with Decision (D.)91-05-007, D.06-06-066, which adopted the investor-owned utilities' proposed Matrix (the IOU Matrix), D.08-04-023, issued in Rulemaking 05-06-040, D.11-07-028, General Order (GO) 96-B, GO 66-C,[1] and California Public Utilities Code Section 454.5(g),[2] which protects the confidentiality of market sensitive information, SCE requests confidential treatment of the redacted information in the Chapters of SCE-1 that I have sponsored and the confidential version of the Appendices in support of the Application, which includes the redacted version of the independent evaluator's (IE's) report.

---

[1] Section 2.2(b) of the Commission's GO 66-C requires the Commission to protect confidential information that would place a utility at an "unfair business disadvantage" if publicly disclosed. It categorizes as information that is "not open to public inspection," those "[r]eports, records, and information requested or required by the Commission which, if revealed, would place the regulated company at an unfair business disadvantage."

[2] Section 454.5(g) provides: "The commission shall adopt appropriate procedures to ensure the confidentiality of any market sensitive information submitted in an electrical corporation's proposed procurement plan or resulting from or related to its approved procurement plan, including, but not limited to, proposed or executed power purchase agreements, data request responses, or consultant reports, or any combination, provided that the Office of Ratepayer Advocates and other consumer groups that are nonmarket participants shall be provided access to this information under confidentiality procedures authorized by the commission."

3. Listed in the below chart are the data in SCE-1for which SCE seeks confidential treatment, the justification for that treatment as identified in the IOU Matrix appended to D.06-06-066, and the period of confidentiality for the data identified.

Data	Page	Justification	Period of Confidentiality
Offer Valuation Methodology	SCE-1, Chapter V: p. 35:5-11, 15, p. 35:24-25, p. 36:6-7, 11-15, p. 37:20-21, p. 38:25, p. 39:10 and 26, p. 40: 9 and 25, p. 41: 4, p. 42:3, p. 43:25 and 27, p. 44: 2, p. 45:26, p. 46:1-2 and Tables V-9 and V-10, p. 47 at Table V-11 and lines 5-6, p. 48 at Figure V-3.	VIII.B Specific qualitative analysis involved in scoring and evaluation of participating bids.	Information other than evaluation guidelines confidential for three years after winning bidders selected.

4. I am informed and believe and thereon allege that the data in the table above cannot be aggregated, redacted, summarized, masked or otherwise protected in a manner that would allow partial disclosure of the data while still protecting confidential information.

5. I am informed and believe and thereon allege that the data in the table above has never been made publicly available.

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

Executed on November 3, 2016 at Rosemead, California.

/s/ Ranbir Sekhon

Ranbir Sekhon

SOUTHERN CALIFORNIA EDISON COMPANY
QUALIFICATIONS AND PREPARED TESTIMONY
OF DOUGLAS SNOW

Q. Please state your name and business address for the record.

A. My name is Douglas A. Snow, and my business address is 8631 Rush Street, Rosemead, California 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company (SCE).

A. I am the Director of CPUC Revenue Requirements and Tariffs in SCE's State Regulatory Operations Department. As such, I am responsible for the recovery of SCE's authorized revenue requirements and oversee the operation of various balancing and memorandum accounts, including the recovery of the balances in those accounts, and I am responsible for managing the implementation of SCE's tariffs and advice letters.

Q. Briefly describe your educational and professional background.

A. I graduated from Texas A&M University in May of 1982 with a Bachelor of Science Degree in Industrial Engineering. In June of 1982, I went to work for Southwestern Public Service Company (SPS) in west Texas. While there, I was a supervisory engineer, responsible for revenue requirement calculations and rate design for both retail and resale customers. I filed testimony on behalf of SPS before the Texas Public Utility Commission and the Federal Energy Regulatory Commission. In November of 1993, I began to work for SCE as a financial analyst in the FERC Pricing section in the RP&A Department. While working in the FERC section, I was responsible for the rate design for SCE's requirements sales for resale, Wheeling Access Charges, and wholesale Distribution Access Charges. In March 1998, I became a supervisor in the Revenue Requirements division of RP&A, responsible for supervising a group of analysts that oversee the forecasting and recording entries associated with all CPUC regulatory mechanisms. In December 2001, I was promoted to the position of manager in the Revenue Requirements division of RP&A. In August 2006, I was promoted to Manager of CPUC Revenue Requirements, and in March 2013, I became the Director of CPUC Revenue Requirements and Tariffs taking on the additional responsibilities for managing SCE's tariffs, and advice letters. I have previously testified before the California Public Utilities Commission.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor *Exhibit SCE-01: Testimony Of Southern California Edison Company In Support Of Application For Approval Of The Results Of Its Second Preferred Resources Pilot Request For Offers* as identified in the Table of Contents thereto.

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does.

Confidential Appendix B

Purchase and Sale Agreements

(REDACTED IN ITS ENTIRETY)

Confidential Appendix C

Purchase and Sale Agreement Redlines From Pro Forma

(REDACTED IN ITS ENTIRETY)

Appendix D

Independent Evaluator Report

Sedway Consulting, Inc.

INDEPENDENT EVALUATION REPORT FOR SOUTHERN CALIFORNIA EDISON'S 2015 PREFERRED RESOURCES PILOT REQUEST FOR OFFERS #2

Submitted by:

Alan S. Taylor
Sedway Consulting, Inc.
Boulder, Colorado

October 27, 2016

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Introduction and Background

On September 24, 2015, Southern California Edison (SCE) launched its second Preferred Resources Pilot Request for Offers (PRP RFO 2) for capacity and energy to satisfy forecasted increasing load requirements in a specific local sub-area of the Western Los Angeles (LA) Basin of the utility's southern California electricity market area. Specifically, SCE wanted to explore whether it could address load growth in the area of the Johanna and Santiago A-bank substations with preferred resources rather than conventional generation or the installation of additional transmission or distribution infrastructure. SCE undertook this pilot on its own volition; there was no specific directive or order from the California Public Utilities Commission (CPUC) to do so.

Through its 2015 PRP RFO 2, SCE sought to procure 100 MW of Johanna/Santiago resources from the following eligible types:

- Traditional Demand Response (DR)
- Behind-the-meter (BTM) DR Energy Storage
- Permanent Load Shift
- In-front-of-the-meter (IFOM) Renewable Distributed Generation
- BTM Renewable Distributed Generation
- IFOM Energy Storage
- IFOM Hybrid Solar Photovoltaic (PV)/Energy Storage
- BTM Hybrid Solar PV/Energy Storage.

The CPUC has issued several decisions that require California's investor-owned utilities to retain an Independent Evaluator (IE) in resource solicitations.[1] In August 2015, in compliance with these CPUC decisions, SCE retained Sedway Consulting, Inc. (Sedway Consulting) as the IE to monitor SCE's 2015 PRP RFO 2, provide an independent evaluation of SCE's process and the offers it may receive, and help the CPUC and SCE's Procurement Review Group (PRG) by providing them with information and assessments to ensure that the solicitation was conducted fairly and that the best combination of offered products were acquired. This IE report provides an assessment of SCE's PRP RFO 2 solicitation from the initial phase of the solicitation (i.e., development of the PRP RFO 2 documents and SCE's internal RFO project plan) through the selection and execution of final contracts.

The remainder of this report follows the template that was issued by the CPUC as part of R.06-02-013 (Attachment A: CPUC Independent Evaluator Template [Long Form]) to organize and structure IE reports regarding solicitations for long-term power supplies

[1] D.04-12-048 (Findings of Fact 94-95, Ordering Paragraph 28) and D.06-05-039 (Finding of Fact 20, Conclusion of Law 3, Ordering Paragraph 8).

undertaken by California utilities. That template includes eight question/topic areas that are depicted in boxes in this report.

A. Role of the Independent Evaluator

1. Describe key IE roles.

2. Describe IE oversight activities and reporting/consultation with CPUC, PRG, and others.

3. Any other relevant information not asked above but that may serve to make future RFOs more transparent to parties.

Sedway Consulting reviewed SCE's PRP RFO 2 document, outreach efforts, evaluation processes, modeling methodologies, communications with bidders, negotiations with bidders, and evaluation results. Specifically, members of the IE team:

- reviewed and made suggested improvements to the PRP RFO 2 materials prior to their issuance,
- reviewed SCE's outreach activities,
- attended SCE's Bidders' Conference on October 16, 2015,
- participated in calls that SCE had with prospective bidders to answer questions about the RFO's products and requirements,
- reviewed SCE's evaluation methodologies,
- commented on evaluation methods and processes,
- procured copies of all offers submitted by bidders to SCE's solicitation web-platform for Sedway Consulting's own independent evaluation,
- discussed offer clarification requirements with SCE,
- participated in the decisions to disqualify offers that failed to comply with the PRP RFO 2 requirements,
- performed an independent evaluation of all qualified offers,
- compared Sedway Consulting's evaluation results with SCE's results and discussed any important differences,
- participated in discussions regarding offer shortlisting/selection,
- joined in many of SCE's PRP RFO 2 planning and evaluation meetings,
- participated in executive-level energy procurement Risk Management Committee (epRMC) meetings in which offer disqualification, shortlisting, and selection decisions were made,

- participated in debriefing calls and/or meetings with bidders whose projects were not shortlisted or selected,
- monitored email communications with all bidders,
- participated in clarification calls with shortlisted bidders to ensure that they were properly filling out revised bid spreadsheets for final offer submission,
- monitored negotiation calls with shortlisted bidders,
- participated in semi-weekly internal to discuss negotiation progress and ensure consistency of positions, and
- participated in all PRG meetings in which the PRP RFO 2 offers, evaluation, and selection results were discussed.

Sedway Consulting was provided access to all necessary materials and meetings and was able to parallel SCE's offer screening and valuation process with its own evaluation of the offers, as documented in this IE report. In the PRG meetings/calls, the IE was available to confirm and supplement SCE's statements regarding offer rankings and negotiation updates, affirm the fairness of the process' design and administration, and answer PRG member questions as necessary. Sedway Consulting's activities are described in more detail in relevant sections of this report and in this report's Confidential Appendix B.

Sedway Consulting has no recommendations regarding ways to make SCE's solicitation process more transparent, believing that the IOU struck an appropriate balance in providing the bidding community sufficient evaluation process information without divulging too much information that could introduce the potential for bidders to game the process.

B. Was the IOU's methodology for bid evaluation and selection designed fairly?

1. Identify the principles you used to evaluate the IOU's bid evaluation methodology, including (at a minimum):
   a. The IOU bid evaluation should be based on those criteria specified in the bid documents. In cases where bid evaluation goes beyond the criteria specified in the bid documents, the IE should note the criteria and comment on the evaluation process. The IOU bid documents should clearly define the type and characteristics of products desired.
   b. The methodology should identify how qualitative and quantitative measures were considered and were consistent with an overall metric.

c. As applicable, there should be no differences in the evaluation method for different technologies that cannot be explained in a technology-neutral manner.

d. Was the bid evaluation methodology consistent with CPUC direction?

2. Describe the IOU Least Cost Best Fit (LCBF) methodology (or include the IOU's own description.)

Description of SCE's LCBF Evaluation Process

SCE designed its PRP RFO 2 evaluation process to involve a combination of quantitative and qualitative assessments that could be consistently applied to the offers it might receive. The quantitative analysis focused on net market value – namely, the value of a resource's energy, ancillary services, and capacity benefits (based on SCE's forecast of future power prices) minus fixed and variable offer-related costs. Fundamentally, this was the same across all resource types. Although different models were used to evaluate the different products, the models performed the same basic cost-benefit process. The following provides a summary of the evaluation process for similarly characterized product types.

1. **Dispatchable BTM Resources.** Traditional DR and BTM DR-ES bidders were required to provide monthly projected capacity reductions, associated $/kW-month pricing for such reductions, energy rates/prices for the MWhs of savings associated with a DR event, and any constraints that would apply to their offer (e.g., maximum number of DR events that could be called per day, per month, per year). From a dispatchability standpoint, essentially these offers were call options with strike prices that were equal to the proposed $/kWh energy rate. Thus, SCE compared the energy rate of each offer to its forecast of market energy prices to determine what hours the resource would be dispatched, subject to the offer's constraints. The monthly proposed capacity was valued based on forward capacity prices (adjusted/ increased for beneficial reductions in distribution system losses as well as an additional 115% multiplier to account for reserve margin benefits). The energy benefits were based on the market energy prices during the hours of dispatch (adjusted/increased for beneficial reductions in distribution system losses). Each DR offer's capacity and energy benefits were netted with the proposed capacity payments and debt equivalence costs to arrive at a net market value.

2. **IFOM Energy Storage (ES) Resources.** Bidders of IFOM ES resources were allowed to propose offers for one of two types of contracts: RA-plus-put-option or RA-only. These contracts had emerged out of SCE's 2013 LCR RFO (in which

Sedway Consulting was also the IE) when the utility realized that its standard tolling contracts presented capital lease and debt equivalence accounting difficulties.

a. For the RA-only contract, the Seller had full control and responsibility for bidding/scheduling the ES resource's energy and ancillary services capabilities into the CAISO markets for the entire term of the contract (except for a limited number Local Resource Constrained Days each year that SCE could designate on short notice in light of concerns for local grid conditions and take actions to ensure that the resource was dispatched). In all cases though, the Seller would retain all CAISO market revenues and bear all costs associated with the operation of its facility. The Seller was simply selling the RA capacity to SCE, and as such, the RA product evaluation was very straight-forward. The evaluation entailed the simple calculation of the proposed capacity payments plus debt equivalence costs minus the capacity benefits that were based on the forward capacity price curve.

b. For the RA-plus-put-option contract, the Seller would have full control and responsibility for bidding/scheduling the ES resource's energy and ancillary services capabilities into the CAISO markets, while having an annual put option where the Seller could "put" the dispatch/scheduling rights to SCE for a pre-set $/kW-month increment to the contract's capacity price (i.e., the put option's annual strike price – which would be established by SCE at contract execution).[2] Given that SCE would receive all revenues and bear all costs associated with its scheduling of the operation of the facility during years that the dispatch rights were put to it, SCE used its ES evaluation model to forecast such costs and benefits. SCE's model co-optimized the off-peak/on-peak energy arbitrage and ancillary service benefits of an ES resource, while accounting for the proposed variable O&M costs for discharged energy, other cycling and regulation-related charges, and round-trip efficiency impacts (i.e., charging-discharging energy losses) on such energy and ancillary services benefits. SCE also estimated the cost of the put option and netted that with the energy and ancillary services benefits, thereby recognizing the potential for the Seller to retain the facility's dispatch rights and retain the energy and ancillary services benefits for themselves. Capacity benefits were calculated using the forward prices for capacity and the ES

[2] The Seller's election would occur annually for each calendar year of the contract and would need to be made no later than December 31st of the year that was two years preceding the calendar year at issue. The fact that SCE may or may not have the resource's dispatch rights was determined by SCE to reduce the debt equivalency of these contracts to acceptable levels, while contracts where SCE retained full control of the resource's dispatch rights would not.

resource's calculated RA capacity. All benefits were netted with the proposed contract capacity payments, debt equivalence costs, and transmission costs that were based on each offer's transmission cost cap.

3. **Non-Dispatchable (IFOM and BTM) Renewable Distributed Generation Resources.** IFOM renewable bidders provided a typical year of hourly projected generation that SCE valued by using forward energy prices to develop energy benefits and forward capacity prices to value the implied/calculated RA benefits associated with the generation profile. If the renewable resource was behind-the-meter, the profile represented the expected customer load reduction, and the offer received distribution loss and reserve margin benefits and multipliers in the calculation of its energy and capacity benefits. If time-of-delivery (TOD) factors were designated by the bidder in the offer form, contract $/MWh pricing was translated into monthly and annual payments based on such factors; otherwise, contract payments were a simple product of the contract $/MWh pricing and the expected generation. The renewable resource's benefits were netted with these contract payments and debt equivalence costs.

4. **Permanent Load Shift (PLS) Resources.** Bidders of PLS offers provided non-dispatchable load modification profiles that SCE valued by using forward energy prices to develop energy benefits and forward capacity prices to value the monthly Expected Capacity Savings associated with the profile and projected over the life of the contract. Because PLS resources were behind-the-meter, the profile represented the expected customer load reduction, and the offer received distribution loss and reserve margin benefits and multipliers in the calculation of its energy and capacity benefits. Each PLS offer's capacity and energy benefits were netted with the proposed quarterly capacity payments and debt equivalence costs to arrive at a net market value.

5. **IFOM and BTM Hybrid Solar PV/ES Resources.** These resources were new products in SCE's procurement process and thus SCE had to be flexible in its approach to evaluating these resources. Ultimately, the evaluation was performed much like the renewable resource process, in that a bidder provided a non-dispatchable hourly profile of expected generation/load reductions. SCE (and Sedway Consulting) valued these hourly profiles by using forward energy prices to develop energy benefits and forward capacity prices to value the implicit capacity savings associated with the profile. For BTM offers, the profile represented the expected customer load reduction, and the offer received distribution loss and reserve margin benefits and multipliers in the calculation of its energy and capacity benefits. Contract payments were a simple product of the contract $/MWh pricing and the expected generation. The hybrid resource's benefits were netted with these contract payments and associated debt equivalence costs.

In Sedway Consulting's analysis, the same forward energy prices, capacity prices, and, if applicable, ancillary services prices were used consistently in the evaluation of all product types.

Sedway Consulting's and SCE's qualitative analysis included assessments of a counterparty's qualifications and project viability. A full description of SCE's LCBF evaluation process is provided in Appendix A and is excerpted directly from the third and final version of SCE's PRP RFO 2 Participant Instructions that was issued on January 22, 2016. Prior to the receipt of indicative offers, Sedway Consulting reviewed SCE's evaluation materials/presentations, participated in planning meetings with SCE's evaluation personnel to learn how SCE's evaluation process would be performed, and confirmed that the evaluation methodology would match that which was described in the PRP RFO 2 document. Sedway Consulting concluded that SCE's bid evaluation and selection processes were designed fairly across all resource types and bidders.

SCE followed the evaluation and selection methodology described in its PRP RFO 2 document – a document that clearly defined the types and characteristics of products desired while at the same time recognizing that the hybrid solar PV/ES resources were new innovative product types that would require flexibility in the evaluation process.

Assessment of Fairness of Evaluation Process Design

Sedway Consulting concluded that SCE's evaluation design was rigorous and fair. In evaluating the fairness of SCE's process, Sedway Consulting employed the following principles:

1. Did the evaluation design inappropriately favor one technology or product type over another?

2. Was the design inappropriately biased in favor of one type of bidder versus another?

3. Were the selection criteria flexible enough or structured in a way to facilitate SCE acquiring sufficient capacity to meet its long-term procurement plan goals?

4. Were all components of an offer's quantified metric calculated consistently across all offers so as to avoid introducing discontinuities that might distort the results and lead to incorrect project selection?

With some minor exceptions described in Confidential Appendix B (and which did not, in any case, influence the selection outcome), Sedway Consulting found no differences in the evaluation methodology for different technologies or product types that could not be explained in a technology-neutral manner.

To the best of Sedway Consulting's understanding, SCE's bid evaluation methodologies were consistent with CPUC direction. In most respects, they were similar to the methodologies employed in SCE's 2013 LCR RFO, 2014 Energy Storage RFO, recent annual All Source RFOs for addressing near-term capacity needs, and the utility's recent annual RPS solicitations (all of which have been reviewed by the CPUC in the IOU's Application or Advice Letters at the conclusion of those solicitations). SCE's methodologies were designed to facilitate a broad comparison of resources that could include traditional DR, BTM DR-ES, IFOM ES, IFOM and BTM renewable distributed generation, and IFOM and BTM hybrid solar PV/ES resources.

3. Using the principles in #1, evaluate the strengths and weaknesses of the IOU's LCBF methodology:
   a. How did the IOU methodology compare to other methodologies used in other solicitations, to the extent that the IE can make such comparisons?
   b. Did the methodology have a bias against any technology, operating characteristic, location, etc.?
   c. Discuss the role of "portfolio fit" in LCBF in this solicitation's methodology.
   d. Discuss any issues of transmission-related cost (or benefit) impacts and estimates. What procedures did the utility have in place for acquiring all appropriate transmission information, subject to constraints imposed by [the Federal Energy Regulatory Commission] FERC's Standards of Conduct?
   e. How were the evaluation criteria weighted, and was the weighting appropriate?
   f. What future LCBF improvements would you recommend?

Strengths and Weaknesses of SCE's LCBF Methodology

Sedway Consulting believes that SCE's LCBF methodology was fair and rigorous. It was consistent with evaluation approaches that Sedway Consulting has seen applied in other utilities' solicitations. Although the fine details may differ from solicitation to solicitation, most utilities employ a combination of quantitative and qualitative assessments similar to those developed by SCE for its PRP RFO 2 evaluation process. Quantitative assessments usually involve market/utility simulation (e.g., production cost) models, option models, or (for non-dispatchable resources) mapping of expected generation/load reductions to forward energy price forecasts (and, if applicable,

accreditable capacity to forward capacity prices) to determine the economic costs and benefits of different resources. The qualitative assessments performed by other utilities have focused on the same issues as SCE analyzed. SCE addressed portfolio fit issues in the selection process through ensuring that a sufficient amount of capacity or load savings would commence in the time-frame of the PRP2 needs and with an eye toward resources that could target critical subcircuits that were identified in the Participant Instructions. Further details regarding portfolio fit are discussed in Confidential Appendix B.

IFOM bidders were required to develop transmission cost estimates and translate these into transmission cost caps in their offers. These transmission cost caps represented the limit for reimbursable network upgrade costs that a counterparty might encounter in the interconnection process. If the final study's network upgrade costs ended up higher than the cap, SCE had the right to terminate the contract. Thus, bidders did not want to set this cap too low. However, the cap represented the potential maximum liability for grid customers; thus, SCE (and Sedway Consulting) used the cap to calculate transmission cost adders in the evaluation of IFOM offers.

In SCE's design of its evaluation process, there was no specific weighting of evaluation criteria. Both Sedway Consulting and SCE believed that any predetermined weighting might result in incorrect assessments of the overall benefits or risks of proposed resources. Thus, it was recognized that both Sedway Consulting and SCE would perform their separate quantitative evaluations of offers, develop rankings based on such results, and supplement that quantitative view with an assessment of the qualitative aspects of each offer in the selection process.

Sedway Consulting concluded that SCE's evaluation and selection processes were designed to treat all technologies and types of bidders fairly, employing a consistent methodology that did not favor or disadvantage any offer product, technology, or bidder – while obviously recognizing justifiable offer-specific differences (e.g., IFOM versus BTM differences in accounting for distribution line losses).

4. Describe how the IOU sought brownfield/repowering development opportunities.

5. Did the IOU consider contract viability?

6. Any other information relevant to bid evaluation and selection not requested above but important in evaluation of the IOU's methodology.

SCE's PRP RFO 2 was focused on procuring preferred resources in a very specific residential and commercial area of Orange County. Because of the predominantly residential/suburban nature of the area and because conventional generation was not an eligible resource, brownfield or repowering opportunities were not relevant to this solicitation.

Pro forma contracts for all but the hybrid resources[3] were posted on the RFO website on November 30, 2015, a few months before the offer submission deadline. Most of the provisions of these pro forma contracts came from executed agreements in previous solicitations that SCE had conducted and had proven to be reasonable and viable documents for securing the types of resources that SCE sought in its PRP RFO 2. Bidders of all product types except the hybrids were required to review the pro forma contract that was applicable to their offer(s) and submit a term sheet that noted and described what revisions they desired to make to the contract. The proposed revisions in each bidder's term sheet – and the financial, risk, and legal impacts that such revisions may have on the viability of the contract – were considered in the selection process.

Regarding hybrid resources, for which there was no initial pro forma, Sedway Consulting believes SCE also used a fair process in contract negotiations and the development of final agreements that did not unfairly favor or disadvantage any counterparty or hybrid resources over other resource types.

Again, Sedway Consulting believes that SCE's methodology for bid evaluation and selection was designed fairly and without bias for or against any technology or counterparty. Moreover, there was no important information that factored into the evaluation and selection process that was not identified in the Participant Instructions.

C. Was the LCBF evaluation process fairly administered?

1. Identify the principles you used to assess the fairness of the LCBF evaluation process, including the following (at a minimum):

   a. What qualitative and quantitative factors were used to evaluate bids?

   b. If applicable, were affiliate bids treated the same as non-affiliate bids?

[3] Because it was hard to predict how the hybrid offers would be structured and SCE wanted to provide bidders with the flexibility to propose innovative arrangements, no specific pro forma contract was developed for this resource type. Instead, hybrid bidders were encouraged to review the renewable distributed generation pro forma contract as a potential starting point.

c. Were bidder questions answered fairly and consistently and the answers made available to all?

d. Did the utility ask for "clarifications" from bidders, and what was the effect, if any, of these clarifications?

e. Were economic evaluations consistent across bids?

f. Was there a reasonable justification for any fixed parameters that enter into the methodology (e.g. RMR values, GHG metrics, etc.)?

Sedway Consulting believes that SCE conducted a fair evaluation process. This assessment is based on an application of many of the principles described earlier in this report – namely, that no product, bidder, or technology was inappropriately favored, all bidders were provided consistent information, and evaluation techniques were applied consistently across and within all resource types.

Concurrent with the issuance of the PRP RFO 2 Participant Instructions, SCE established a website process for fielding questions from potential bidders. By posting responses on this website, SCE was able to ensure that bidders' questions were answered fairly and consistently and that the answers were made available to all. After the receipt of the offers, the initial stage of SCE's process entailed screening all offers for compliance with and responsiveness to the PRP RFO 2 Participant Instructions. SCE and Sedway Consulting conferred and compared notes regarding each offer's PRP RFO 2 compliance and sufficiency and clarity of information. SCE emailed bidders if their offers required clarification or supplemental information to become compliant. In most cases, bidders provided sufficient additional information to warrant further consideration of their offers and allow for reasonable assessments of the quantitative and qualitative aspects of their projects. In a few instances, as described in Confidential Appendix B, the screening and clarification process resulted in the ultimate disqualification of several offers.

One SCE affiliate bid into this solicitation but was not selected for the short list because its cost-benefit valuation results were ranked too low. There were no utility ownership offers contemplated in SCE's PRP RFO 2. Sedway Consulting reviewed all offers, performed an independent evaluation, and ensured that there was no bias (for or against) any of the offers.

The following were the primary quantitative factors assessed in the evaluation of offers in each of the broad product categories (which span both IFOM and BTM resource types, where applicable):

- **DR:**[4] delivery period, expected monthly capacity, capacity pricing, energy price/rate, and constraints on DR calls.

- **ES:** For RA-plus-put-option contracts: delivery period, expected charging and discharging capacity, storage quantity, guaranteed efficiency factor (a min-max range, outside of which a counterparty would experience penalties or bonuses), capacity pricing, variable O&M pricing, regulation mileage charges, deep cycling charges, ancillary services capabilities, and expected transmission network upgrade costs.

  For RA-only contracts: delivery period, expected capacity, capacity pricing, and expected transmission network upgrade costs.

- **Renewables:** delivery period, hourly profile of expected generation or load reduction, and $/MWh contract price.

- **PLS:** delivery period, hourly profile of expected load reduction, expected monthly capacity savings, and capacity pricing.

As described earlier, all of these factors were modeled by SCE and Sedway Consulting to derive an estimate of an offer's net benefits (or net market value). The qualitative analysis included assessments of a bidder's qualifications and project viability. The quantitative and qualitative factors are discussed in more detail in Appendix A.

The evaluation included many fixed parameters (e.g., electricity market prices, capacity valuation metrics, discount rates) that were consistently applied across all offers to ensure that the evaluation was performed fairly and with a common framework of market assumptions. As noted earlier, BTM resources were also recognized as providing additional capacity and energy benefits associated with their impacts on distribution losses and, in the case of capacity benefits, reserve margin implications.

Overall, Sedway Consulting believes that SCE did a very good job of administering an RFO that was complicated and involved coordinating a significant number of internal SCE departments. That said, some complications surfaced during the administration of the RFO, and the following discussion provides an overview of how the RFO proceeded from launch to final contract execution and the various challenges that arose along the way. Many of the "course corrections" were fairly minor or could be expected to occur

[4] Both traditional DR and BTM DR-ES.

in such a complex undertaking; others were more significant and difficult to anticipate. The following discussion takes more or less a chronological perspective, with digressions into specific subject areas.

Offer Submission

SCE had structured the PRP RFO 2 to involve the use of the Accion Group's web-platform for all offer submissions and communications with SCE. All bidders were required to register on and use the web-platform to upload their offers. There were benefits associated with this process, but drawbacks as well. As an example of the former, the web-platform automatically renamed and numbered each offer spreadsheet – providing a trackable unique code for each offer and a filename that described what offer type had been uploaded. However, this renaming and numbering wiped out whatever filename the bidder had originally assigned to the file. In some cases, the bidder's cover letter or proposal materials alluded to specific offer filenames in describing mutually-inclusive package transactions or mutually-exclusive constraints. Because those filenames had been overwritten, it was sometimes difficult to ascertain the transaction structure that the bidder had intended.

On February 19, 2016 (the offer submission deadline), over 2,000 offers from 28 counterparties were received. It was an enormous response, flooded the web-platform with far more traffic than had been anticipated, and slowed down and complicated the bid submission process for a number of bidders. Ultimately, as described in Confidential Appendix B, it was determined that most of these 2,000+ offers were duplicates that had been created by an offer cloning process, erroneous submissions, or slightly older versions of offer spreadsheets that were meant to be superseded by later versions. In future RFOs, it would be good for SCE to explore ways to limit the amount of clutter that bidders can produce during the bid submission process via a web-platform process.

Through late February and March, SCE and Sedway Consulting worked to narrow the list of offers to those spreadsheets that were meant to be submitted as unique offers. SCE and Sedway Consulting held frequent change control and update calls to discuss deficiencies in offers and requests to bidders to clarify, correct, or supplement their submitted information. Once all of the bidders' submissions were understood, SCE and Sedway Consulting were able to appropriately incorporate the bid information in the evaluation models.

One-Step Evaluation Process and Negotiation Implications

In many of its previous RFOs, SCE has employed a two-step process, whereby bidders submit an initial set of indicative offers that are evaluated, and a short list of counterparties is developed from the results of that indicative offer evaluation, with no guarantees that a contract will result from a bidder's continued participation. To ensure

sufficient continued competitive pressure, the short list may be fairly large. Negotiations proceed with the shortlisted bidders with the goal of developing an agreement with final terms and conditions, after which the shortlisted bidders are allowed to reprice with a final offer. A final offer evaluation is then conducted to determine which counterparties and contracts are selected for execution. Unfortunately, this can mean a significant amount of internal SCE and external counterparty efforts going into negotiating a contract that, in the end, is not selected.

Because of feedback from the bidding community and efforts to minimize internal costs, SCE decided to adopt a *one-step* evaluation process for the PRP RFO 2, where there would be no price refresh at the end of the negotiation process. Thus, the offers submitted on February 19th were the final offers. The bidders who were shortlisted were told that they could expect to achieve an executed agreement if they could come to agreeable contract terms with SCE and hold their offer price.

Despite the benefits of a reduced, more-focused negotiation workload, there were some negative aspects to this process – especially considering the novelty of some of the products that SCE was seeking. First, it put considerable pressure on the evaluation team to understand and properly assess the costs and benefits of all of the offers. In the two-step process, the evaluation team has been able to make a broader cut with the initial short list and perform continued due diligence on all of the proposed transactions on the short list with new information that invariably comes out of the negotiation process. This improved understanding of the shortlisted offers helps inform the final offer evaluation. Second, a two-step process may speed up the negotiation phase because bidders are in a better position to accept SCE's negotiation requests and include the impact in their repriced offers. In the PRP RFO 2, some shortlisted bidders had not understood that this was a one-step process and, on the one hand, were delighted that their odds of securing a final contract were higher than they had anticipated, yet on the other hand, were concerned that the lack of a repricing opportunity boxed them in. They had been expecting a chance to reprice in the final offer. Indeed, some of the PRP2 negotiations were probably more protracted because bidders were stuck with prices that were not consistent with certain terms and conditions that SCE required during the negotiation phase. Facing this situation, some bidders ultimately opted to withdraw their offers.

Sedway Consulting recommends that, in future RFOs, SCE pursue a one-step process in solicitations for standard products but reconsider the possibility of using a two-step process in RFOs where the utility is seeking newer, more innovative products.

ITC Benefit Sharing

The negotiation phase was supposed to be wrapped up with a pens-down deadline of July 26, 2016. Most of the shortlisted bidders reached agreement with SCE by that deadline; some of the others decided to withdraw their offers. In any case, for those with

finalized agreements, although SCE had made it clear that it would have to submit these documents through an internal management review process, all parties anticipated that the negotiations were over as of the end of July. However, during SCE's management review of the contracts, a question was raised about whether those counterparties with energy storage technologies in their projects might be in a position to reap substantial benefits if federal tax legislation were to be enacted that provided advantageous investment tax credits (ITC) to energy storage developers. SCE's negotiation team was therefore instructed to return to the PRP2 counterparties and seek price reductions if ITC legislation was enacted. Although the counterparties were frustrated at the re-opening of negotiations and this course of events resulted in a delay to the RFO schedule, all ultimately agreed to a fair sharing of the ITC benefits should such federal tax legislation be enacted. The agreed-upon provisions were folded into the final agreements and SCE moved toward contract execution in early September.

2. Describe the IE methodology used to evaluate administration of IOU LCBF process.

Prior to the receipt of offers, Sedway Consulting incorporated SCE's latest market assumptions into Sedway Consulting's proprietary bid evaluation models: the Energy Storage Evaluation Model, the Demand Response Evaluation Model, and the Renewable Bid Evaluation Model. This allowed Sedway Consulting to perform an entirely independent and parallel evaluation of all solicited resource types, using its own models to determine each offer's expected energy benefits without any further input from SCE. For the most part, procedures for calculating capacity and energy benefits were anchored prior to bid opening so that both SCE's and Sedway Consulting's evaluation teams were following consistent methodologies and Sedway Consulting's independent results could be used to cross-check SCE's results. In practice, as described more fully in Confidential Appendix B, there were a few areas where SCE subsequently refined its evaluation assumptions and methodologies after the offers had been received. Sedway Consulting continued to use the original set of assumptions throughout its independent evaluation and verified that the final selection of offers for the short list and negotiation process were supported under either set of assumptions.

Sedway Consulting requested that SCE provide as much information as possible to the IE prior to the receipt of offers. This, in essence, allowed Sedway Consulting to lock down and archive the basic evaluation parameters for the process. Such information included local market forecasts for electricity prices; energy, ancillary services, and capacity valuation assumptions; cost of capital components; and discount rate assumptions. These assumptions were incorporated into Sedway Consulting's own evaluation models and

formed the basis for independently assessing the benefits and costs of proposed resources that were bid into SCE's solicitation.

Energy Storage Bid Evaluation Model

Sedway Consulting's Energy Storage Bid Evaluation Model (ESBEM) is a spreadsheet-based evaluation tool that uses the following information for each IFOM ES offer:

- Contract type: RA-plus-put-option or RA-only
- Contract capacity
- Inverter capacity
- Storage quantity
- Guaranteed efficiency factors – minimum and maximum
- Delivery commencement and expiration dates
- Capacity pricing
- Variable O&M pricing
- Deep cycling charges
- Regulation mileage charges.

For the RA-only contract type, the ESBEM simply calculated an offer's contract payments as the product of the offer's contract capacity and capacity pricing. Debt equivalence costs were calculated for these contract capacity payments using a methodology consistent with that adopted by Standard & Poors credit rating agency. Transmission costs were based on an offer's transmission cost cap and a fixed charge rate. Capacity benefits were determined by multiplying the contract capacity by the forward capacity prices. The net present value of the contract payments, associated debt equivalence costs, and transmission costs were subtracted from the net present value of the capacity benefits to yield an offer's net benefits.

For the RA-plus-put-option contract type, the ESBEM supplemented the above net benefits calculation with a determination of the expected benefits that SCE might realize during years of the contract term that the Seller chose to put the dispatch rights to SCE. The ESBEM was calibrated with SCE's forward energy, A/S, and capacity price curves. Subject to a contract term probability multiplier (to adjust for the probability that SCE may or may not have the dispatch rights in any particular year), the ESBEM used the hourly energy prices and offer pricing and operational characteristics to determine the best charging and discharging schedule to maximize the benefits of energy arbitrage between off-peak and on-peak prices. In each hour, the ESBEM also targeted the most profitable A/S market for the resource to be bid into. The model calculated each offer's resulting energy and A/S benefits, and these were added to the RA-only net benefits described above.

In both cases (RA-only and RA-plus-put-option), Sedway Consulting's model discounted these net benefits and converted them into a levelized $/kW-month value by dividing them by the present value of the kW-months of capacity associated with the offer. This levelized net benefit is similar to SCE's $/kW-month net benefit metric except that SCE does not levelize the total dollar net costs but instead divides them by the sum of the of the PRP2 kW-months of capacity associated with each offer. This yields a metric that is smaller (i.e., closer to zero, whether it is positive or negative) and, if positive, appropriately reflects the benefits of deferred deliveries. Sedway Consulting's metric sets the timing issue aside (for consideration later in a portfolio fit context) and allows for an easier side-by-side comparison of the components (i.e., capacity price, energy benefits, transmission adders, etc.) of all offers' net costs.

Demand Response Bid Evaluation Model

Sedway Consulting's Demand Response Evaluation Model (DRBEM) is a spreadsheet-based evaluation tool that uses the following information for each traditional DR, BTM DR-ES or dispatchable hybrid offer:

- Delivery commencement and expiration dates
- Monthly contract capacity
- Monthly capacity price
- Dispatch constraints.

The DRBEM was calibrated with SCE's forward energy and capacity price curves. The model calculated each offer's expected energy benefits from the difference between the hourly energy market prices and the offer's energy rate during DR events, after finding the optimal hours for such DR events, subject to the offer's dispatch constraints. Monthly contract capacity values were multiplied by the forward capacity prices to determine capacity benefits. The energy and capacity benefits were adjusted upward to account for the line loss savings of a BTM load reducing resource; additionally, the capacity benefits were further increased to account for reserve margin effects. The annual contract payments were based on the product of the offer's monthly capacity prices and monthly contract capacity. The net present value of the contract payments and debt equivalence costs were subtracted from the net present value of the energy and capacity benefits to yield net benefits. These net benefits were discounted and converted into a levelized $/kW-month value by dividing them by the present value of the kW-months of capacity associated with the offer.

Renewable Distributed Generation Bid Evaluation Model

Sedway Consulting's Renewable Bid Evaluation Model (RBEM) is a spreadsheet-based evaluation tool that uses the following information for each renewable distributed generation, PLS, or non-dispatchable hybrid offer:

- 8760-hour expected generation or load savings profile
- Commencement and expiration dates for power deliveries
- Energy pricing (for renewable and hybrid offers)
- Expected capacity savings (for PLS offers)
- Capacity pricing (for PLS offers).

The RBEM was calibrated with SCE's forward energy and capacity price curves. The model calculated each offer's expected annual energy benefits as the product of the 8760-hour profile and SCE's hourly energy prices. Monthly RA capacity values were calculated from the 8760-hour profile and multiplied by the forward capacity prices to determine capacity benefits. For BTM renewable resources, the energy and capacity benefits were adjusted upward to account for the line loss savings of a BTM load reducing resource; additionally, the capacity benefits were further increased to account for reserve margin effects. For renewable and hybrid offers, the contract payments were based on the 8760-profile, the bidder's energy pricing, and the contractual time-of-delivery (TOD) factors, if applicable. For PLS offers, the contract payments were calculated as the product of the expected capacity savings and the capacity pricing. The net present value of the contract payments and debt equivalence costs were subtracted from the net present value of the energy and capacity benefits to yield net benefits. These net benefits were discounted and converted into a levelized $/kW-month value by dividing them by the present value of the kW-months of capacity associated with the offer.

Evaluation Approaches

Sedway Consulting considered the qualitative aspects of offers by first ranking all offers on their net benefit metric (as calculated in Sedway Consulting's models) and then reviewing the qualitative aspects of to determine if any:

1) upper-ranked offers had negative qualitative issues that suggested that they should not be selected, or

2) lower-ranked offers had positive qualitative issues that suggested that they may warrant selection.

Details concerning the qualitative issues that affected whether counterparties were included or excluded from the short list are discussed in Confidential Appendix B.

During the shortlisting process, Sedway Consulting focused on the top end of the quantitative ranking, and also on offers that were lower but on the cusp of being included or excluded from the selection. Sedway Consulting reviewed SCE's results, compared rankings, and found that the two rankings supported virtually the same selection of counterparties and offers for shortlisting. As noted above, Sedway Consulting's levelized evaluation metric sets the contract commencement timing issue aside and results in a different ranking than SCE's metric. Although in a different order, both rankings supported the same final selection of offers. Sedway Consulting found SCE's shortlisting/selection process to be rigorous and fair.

Sedway Consulting participated in two in-person evaluation and selection meetings at SCE's headquarters (and several other teleconference discussions), compared SCE's optimization results with the offer rankings from Sedway Consulting's modeling efforts, and made suggestions about quantitative and qualitative issues that might improve the optimization results. As described more fully in Confidential Appendix B, Sedway Consulting concurred with the final set of selected PRP2 contracts.

Sedway Consulting concluded that SCE administered its offer evaluation and selection processes fairly and procured the best resources/contracts for addressing its PRP2 needs. In its assessment, Sedway Consulting employed the same general principles as were described in the design fairness discussion; in addition, the fact that Sedway Consulting performed a fully separate, independent evaluation allowed it to develop its own ranking and confirm that SCE was fairly and appropriately evaluating all offers and employing an appropriate and fair selection process.

3. How did the IOU identify non-conforming bids? Did the utility identify the terms that deviated from the utility RFO for each bid, and was a quantitative and qualitative assessment of the cost or value of those deviations performed? Were non-conforming bids treated fairly and consistently? Were there pre-established, consistently applied criteria to determine what issues of conformance would result in rejection and which were subject to negotiation?

As noted above, SCE and Sedway Consulting conferred about non-conforming bids. In instances where the non-conformance could be addressed and corrected, the bidder was notified and given an opportunity to rectify the non-conformance. As described in Confidential Appendix B, a number of offers were ultimately disqualified. In some cases, they were part of a multiple set of offers from a bidder where other compliant options for the bidder's proposed resource remained under consideration.

No quantitative or qualitative assessments of the cost or value of the PRP RFO 2 compliance deviations were performed. Also, there were no criteria that were pre-established prior to the receipt of offers to dictate whether some of the PRP RFO 2 conformance requirements were negotiable. Ultimately, the issues that resulted in the small number of offer disqualifications were fairly clear-cut, intractable, and difficult if not impossible to negotiate away.

Sedway Consulting concurred with SCE's disqualification decisions and believes that all non-conforming bids were treated fairly and consistently.

4. For those parts of the process conducted by the utility, how were the parameters and inputs used and were they reasonable? What quality controls were in place?

5. For those parts of the process outsourced to either the IE or a third party, what information/data did the utility communicate to that party and what controls did the utility exercise over the quality or specifics of the outsourced analysis?

6. Did the utility follow its transmission analysis procedures and include in its evaluation and selection process all appropriate transmission information that it could reasonably develop or acquire, subject to the constraints imposed by FERC's Standards of Conduct?

7. Beyond any quantitative analysis, describe all additional criteria or analysis used in creating its short list (e.g., did the IOU take into consideration supplier concentration risk?).

As noted above, Sedway Consulting performed an independent, parallel evaluation and reviewed but did not rely on any offer assessment done by SCE. That said, Sedway Consulting relied on SCE's forecasts of expected future market conditions and how those conditions might affect the energy value of a proposed resource. However, that information was locked down prior to the receipt of offers. Sedway Consulting also reviewed the market information for reasonableness. This is all consistent with Sedway Consulting's handling of forecasts/price curves in all other SCE RFOs in which Sedway Consulting has been the IE.

No parts of SCE's process were outsourced to Sedway Consulting. SCE did outsource its web-platform management process to the Accion Group and some of its need for legal support during the negotiation stage to the law firm of Ellen Berman Energy Law. Sedway Consulting was included in virtually all negotiation calls with counterparties, as well as many internal negotiation preparation discussions, and was therefore in a position

to monitor the consistency of negotiation positions – whether SCE's own attorneys were on the call or SCE's outside counsel.

SCE followed its transmission cost process – using the transmission cost cap that was provided by counterparties in their applicable offer submissions. Sedway Consulting performed its independent evaluation and was able to confirm that appropriate transmission costs were used for each bid.

SCE took seller concentration risk into consideration in determining its short list. As is discussed more in the Confidential Appendix B, SCE (with input from Sedway Consulting) reviewed the final evaluation ranking and made selection decisions with an eye toward spreading its risks over a suitable number of counterparties.

8. Results analysis

    a. Describe the IE, PRG [or CAM], Energy Division and IOU discussion regarding the LCBF evaluation process. Please note any areas of disagreement between the IE and the IOU, if applicable.

        i. Discuss any problems and solutions.

        ii. Identify specific bids if appropriate.

        iii. Did the IOU make reasonable and justifiable decisions to exclude, shortlist and/or execute contracts with projects? If the IE conducted a separate bid ranking and selection process and it differed from the IOU's outcome, include all relevant information here.

        iv. What actions were taken by the IOU to rectify any deficiencies associated with rejected bids?

    b. Was the overall evaluation fairly administered?

    c. Based on the IE's prior experience, how does this solicitation compare to other solicitations (to the extent the IE can describe these solicitations subject to confidentiality agreements)?

        i. If applicable, how did this solicitation compare to others by the same IOU?

        ii. How did the process and the results compare to that of other IOUs

in different jurisdictions?

9. Any other information relevant to the fair administration of the LCBF evaluation not asked above but important to the IOU's methodology.

PRG/CAM discussions are confidential. However, there were no lasting areas of disagreement between SCE and Sedway Consulting in the shortlisting, negotiation, or contract execution processes. As described in Confidential Appendix B, in virtually all instances where Sedway Consulting expressed concerns about any of the analysis or results, SCE revised its proposed actions to address Sedway Consulting's concerns. As discussed in more detail in Confidential Appendix B, Sedway Consulting chose to adopt different evaluation approaches or assumptions than those that were used by SCE. However, the different approaches led to the same basic selection decisions, thereby underscoring the appropriateness of the selection of the final executed contracts.

Sedway Consulting believes that SCE's evaluation process complied with appropriate LCBF criteria and was fairly designed and administered such that all counterparties and product types were treated consistently and fairly and had equal opportunity to make it onto SCE's short list, and of those who were shortlisted, to make it through the negotiation process to final executed contracts. The evaluation methodologies for the PRP2 resources were similar to those which were employed by SCE in its 2013 LCR RFO, 2014 ES RFO, and recent RPS solicitations (in many of which Sedway Consulting also was the Independent Evaluator).

For all of the standard products (e.g., renewable resources), SCE's solicitation process was quite similar to what Sedway Consulting has seen in other utility solicitations around the country. Of course, California is on the leading edge of IFOM ES, BTM DR-ES, and hybrid solar PV/ES procurement, so there are no direct points of comparison for SCE's undertaking in these areas.

D. How did the IOU conduct outreach to bidders, and was the solicitation robust?

1. Describe the IOU outreach to potential bidders (e.g. sufficient publicity, emails to expected interested firms).

2. Identify principles used to determine adequate robustness of solicitation (e.g.

number of offers submitted, number of MWhs associated with submitted offers).

3. Did the IOU do adequate outreach? If not, explain in what ways it was deficient.
4. Was solicitation adequately robust?
5. Did the IOU seek feedback about the bidding/bid evaluation process from bidders after the solicitation was complete?
6. Did the bids received meet the needs the solicitation was intending to fill?
7. Any other information relevant to outreach to bidders and robust solicitation not asked above but important to the IOU's process.

Sedway Consulting believes that SCE pursued reasonable and adequate procedures for notifying potential interested parties. Specifically, on the PRP RFO 2 launch date of September 24, 2015, SCE issued a press release and emailed over 3,400 industry contacts (compiled from previous power supply solicitations, regulatory service lists, etc.) that the PRP RFO 2 had been released and invited them to participate. SCE also notified all PRG members of the PRP RFO 2's launch.

SCE's launch email directed all interested parties to the Accion Group's SCE PRP2 web-platform, which provided a means for interested parties to download the PRP RFO 2 document and related materials, ask questions, and read posted responses.

Several weeks later, on October 16, 2015, SCE held a bidders' conference (an in-person meeting where interested parties could attend or call in) where the utility provided an overview of the PRP RFO 2 solicitation. The conference provided interested parties an opportunity to learn more about the solicitation, hear presentations, and ask questions. A member of the Sedway Consulting team attended the conference. On December 9, 2015, SCE conducted a technical webinar/workshop to delve into more detail for the offer submission process and associated materials. Sedway Consulting participated in that webinar.

Sedway Consulting concluded that SCE did a good job of publicizing the 2015 PRP RFO 2 solicitation, and that the solicitation was quite robust, as evidenced by the substantial response that it received from the bidding community. The solicitation response was strong, with hundreds of offers received from 28 counterparties, representing many times SCE's PRP2 capacity needs.

As SCE's PRP RFO 2 solicitation just wrapped up with the execution of final contracts in early September, 2016, the IOU is just now in the process of seeking feedback from

bidders about the bidding/bid evaluation process. On October 24, 2016, SCE launched requests to all of the shortlisted and waitlisted counterparties. Sedway Consulting encouraged SCE to expand that request to all bidders, and SCE followed up with a broader request to all parties who had registered on the PRP RFO 2 website. As of the issuance of this report, Sedway Consulting has not seen the results of these requests.

With the contracts submitted as the subject of this Application, SCE's targeted PRP2 capacity need of 100 MW has been fulfilled.

E. Discussion of project-specific negotiations

1. Identify the methodology the IE used to evaluate negotiations.
2. Using the above principles, evaluate the project-specific negotiations. Highlight any issues of interest/concern including unique terms and conditions.
3. Was similar information/options made available to other bidders when appropriate, (i.e. if a bidder was told to get its price down to $X, was the same information made available to others?)
4. Any other information relevant to negotiations not asked above but important to understanding the IOU's process.

Sedway Consulting team members closely monitored project-specific negotiations, primarily by teleconference. Hundreds of such meetings or calls were monitored by Sedway Consulting, supplemented by the review of thousands of email or web-platform messaging communications and uploading of redlined contracts between SCE and shortlisted counterparties. If during a negotiation session an SCE contract manager took a position that seemed inconsistent with what Sedway Consulting had been hearing in other similar negotiations, Sedway Consulting would call the contract manager after the negotiating session to discuss the issue and let the contract manager know of the policies or positions that were being adopted in the other negotiations.

In addition, there were semi-weekly internal meetings/calls where contract managers could discuss the status of their negotiations, compare notes, ask questions, report problems, raise issues for resolution, and stay apprised of revisions to the pro forma agreement. Sedway Consulting participated in virtually all of these semi-weekly calls throughout the RFO and found them to be quite valuable. SCE did a commendable job in

facilitating consistency across its negotiations with a wide variety of counterparties and product types.

Negotiations were concluded with virtually all shortlisted counterparties. Those who did not make it to a mutually-agreeable contract (and the reasons why) are described in this report's Confidential Appendix B, where additional confidential negotiation issues are addressed.

Overall, Sedway Consulting affirms that SCE provided consistent information throughout the outreach and negotiation process. Also, based on its extensive monitoring of negotiations and its comparisons of final agreements against the pro forma(s), Sedway Consulting affirms that SCE applied consistent "pressure" on all shortlisted bidders to conform as closely as possible to SCE's pro forma contract positions. Sedway Consulting believes that SCE conducted all negotiations in a fair and appropriate manner. Again, details of the negotiation process are addressed in the Confidential Appendix B to this report.

F. Affiliate Bids and UOG Ownership Proposals (if applicable)

1. Describe the design and implementation of any Code of Conduct used by the IOU to prevent sharing of sensitive information between staff working with developers who submitted UOG bids and staff who created the bid evaluation criteria and select winning bids, including any violation(s) of that code.

2. Describe other safeguards and methodologies implemented by the IOU, including those stipulated in Commission decisions D.04-12-048 and D.07-12-052 for head-to-head competition between utility ownership and independent ownership bids, to ensure that affiliate and UOG bids were analyzed and considered on as comparable a basis as possible to other bids, that any negotiations with such bids' proponents were conducted as comparably as possible to negotiations with other proponents, and that the utility's final selections in such cases did not favor an affiliate or UOG bid.

3. Describe compliance with the safeguards.

4. If a utility selected a bid from an affiliate or a bid that would result in utility asset ownerships, explain and analyze whether the IOU's selection of such bid(s) was appropriate.

As noted earlier, there was one affiliate bid. Sedway Consulting was included on all communications with this bidder. As it did with offers from all counterparties, Sedway Consulting performed an independent evaluation of the affiliate's offer and concluded – as did SCE – that its net benefits were too low to warrant selection for the short list.

There were no Utility-Owned Generation (UOG) bids or selected contracts where SCE would acquire ultimate ownership in any facilities. Therefore, there was no need for SCE to establish a Code of Conduct to control the flow of information within the evaluation team.

G. Code of Conduct

1. Describe the design and implementation of the required Code of Conduct used by the IOU to prevent sharing of sensitive information between staff working with developers who submitted UOG bids and staff who create the bid evaluation criteria and select winning bids.

2. Describe any violation(s) of that code.

3. Alternatively, provide an explanation of why this requirement is not applicable to this RFO.

As noted above, there were no UOG or ultimate-SCE-ownership bids submitted. All offers were for facilities or services that would be under direct ownership of the counterparty. Therefore, SCE's evaluation team was free to share information internally to ensure a rigorous and complete evaluation of all offers.

H. Does the contract merit CPUC approval? Is the contract reasonably priced and needed and does it reflect a functioning market?

1. Provide discussion and observations for each category:
    a. Contract Price, including cost adders (transmission, credit, etc.)

b. Portfolio Fit

c. Project Viability

   i. Technology
   ii. Bidder Experience (financing, construction, operation)
   iii. Credit and collateral
   iv. Permitting, site control and other site-related matters
   v. Fuel status
   vi. Transmission upgrades

d. Any other relevant factors

2. Do you agree with the IOU that the contract merits CPUC approval? Explain.

3. Based on the complete bid process should some component be changed to ensure future RFOs are fairer or provide a more efficient, lower cost result?

4. Any other relevant information.

On or about September 8, 2016, SCE executed 19 contracts for its PRP2 need. These contracts were signed with the following counterparties[5] and entailed the following types of resources:

1. **Cedar Technologies, LLC: 40 MW of BTM DR-ES** expected dispatchable capacity savings through five contracts, all associated with a combination of equipment-based and battery-supported load reductions at commercial customers. The expected start of these contracts' delivery periods varies from January 1, 2019 to January 1, 2020.

2. **Hecate Energy Johanna LLC: 15 MW of ES** expected capacity through two RA-only contracts for battery facilities in Santa Ana, California. The expected initial delivery date is January 1, 2020 for both contracts.

3. **Orange County Distributed Energy Storage, LLC: 10 MW of BTM DR ES** expected dispatchable capacity savings through two contracts associated with distributed behind-the-meter battery storage facilities at commercial customer sites where the battery's output must not exceed the customer's demand. The expected start of these contracts' delivery periods is June 1, 2018 and June 1, 2019.

[5] Note that in some instances the counterparty names have been simplified in that they do not include the Roman numeral designations associated with multiple contracts or projects.

4. **Orange County Energy Storage, LLC: 35 MW of ES** expected capacity through three RA-only contracts for battery facilities in Santa Ana and/or Irvine, California. The expected initial delivery date is December 1, 2019 for all three contracts.

5. **NRG Distributed Generation PR LLC: 10 MW of BTM Hybrid Solar PV/ES** expected capacity savings through five contracts that will deliver savings through the installation of rooftop solar PV panels and battery systems at commercial customer sites where the customer's demand must exceed the instantaneous combined output of the panels and batteries. The expected start of these contracts' delivery periods varies from April 1, 2019 to August 1, 2019.

6. **Swell Energy Fund 2016-1, LLC: 5 MW of BTM DR ES** expected capacity savings associated with distributed behind-the-meter battery storage facilities at residential customer sites where the battery's output must not exceed the customer's demand. The delivery period for this contract is expected to start June 1, 2019.

7. **Valencia Energy Storage, LLC: 10 MW of ES** expected capacity under an RA-plus-put-option contract for a battery facility in Irvine, California. The expected initial delivery date is January 1, 2020.

Together, these contracts are expected to provide total of 125 MW toward SCE's PRP2 needs, exceeding the RFO's target of 100 MW but recognizing that SCE needed a margin or buffer to accommodate potential project shortfalls or failures during the development phase.

Sedway Consulting concludes that all of the above contracts merit CPUC approval because the contracts' economics and their general terms and conditions represent the best resources available from a competitive solicitation. Sedway Consulting's parallel evaluation yielded results that confirmed the appropriateness of the selection of these contracts. Pricing information, project viability issues, and other confidential terms and conditions of the contracts are discussed in the Confidential Appendix B to this IE report.

Sedway Consulting does not view any major RFO component as needing to be changed to ensure that future solicitations are fairer or provide more efficient, lower cost results. Sedway Consulting believes that SCE has conducted a fair and rigorous solicitation for resources/contracts that will help it meet its PRP2 capacity needs and concurs with SCE's request for the CPUC's approval of the above contracts.

Sedway Consulting, Inc.

INDEPENDENT EVALUATION REPORT FOR SOUTHERN CALIFORNIA EDISON'S 2015 PREFERRED RESOURCES PILOT REQUEST FOR OFFERS #2

APPENDIX A
SCE PRP2 RFO Evaluation Process

Appendix A
SCE PRP2 RFO Evaluation Process
(Excerpted from Article 5 of SCE's 1/22/16 PRP2 RFO Participant Instructions – Version 3)

ARTICLE FIVE. OFFER SCREENING AND VALUATION

5.01 Screening of Offers.

In order to be considered for selection in this RFO, the Offer must:

(1) Meet the eligibility criteria set forth in Article Two and Attachments A1 through A5, as applicable, of these RFO Instructions

(2) Adhere to the RFO Schedule and other submittal requirements set forth in Article Four of these RFO Instructions, and

(3) Adhere to, input and upload all information as required by or instructed per the online Offer Form.

SCE will screen Offers on a "pass-fail" basis against these criteria and requirements.

5.02 Deliverability/Resource Adequacy Valuation.

With respect to any Product that requires interconnection to SCE's distribution grid:

(1) SCE will perform a deliverability/resource adequacy valuation.

(2) If an Offeror intends to Offer a project that will obtain interconnection rights via the Fast Track Process through either Rule 21 or WDAT, such project will be considered as energy-only for valuation purposes.

(3) Please note that the respective pro forma PSAs will require Offerors to seek deliverability allocation, including participating in the CAISO's Distributed Generation Deliverability Assignment Process, in order to be qualified to receive Resource Adequacy Benefits and Capacity Attributes.

Offerors that have applied for interconnection through the cluster study process and have requested Full Capacity Deliverability Status[1] ("FCDS") will receive capacity benefit consideration in the Offer valuation.[2]

[1] As such term is defined in the CAISO Tariff and/or Transmission Provider's Wholesale Distribution Access Tariff.

[2] Information on CAISO's Queue Cluster Study and CAISO's Distributed Generation Deliverability Assignment Processes is available on SCE's website at http://www.sce.com/AboutSCE/Regulatory/openaccess/default htm.

For clarity, energy-only Offers submitted pursuant to this PRP RFO 2 will not receive any RA benefit in SCE's evaluation.

5.03 Evaluation of Offers.

(1) Initial Screen.

After the Offer Submittal Deadline, SCE begins an initial review of all Offers received for completeness and conformity. This review includes an initial screen for required submission criteria such as a conforming delivery point, minimum project size, and the submission of completed submittal package elements. Sellers lacking any of these items are allowed a reasonable cure period to remedy any deficiencies. SCE works directly with Sellers to resolve any issues and ensure the data is ready for evaluation.

(2) Least-Cost, Best-Fit

SCE has forecasts for RA capacity, electrical energy, ancillary services, natural gas and GHG compliance market prices (i.e. the market price forecast). 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, 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.

SCE's calculation of cost-effectiveness is the resource's discounted forecast of contract benefits minus the costs required to receive these benefits, plus any other value that can be attributed to the contract (i.e. the Offer's Net Present Value (NPV)). The Offer's NPV per kW-month of PRP Capacity is the metric that SCE will use in the selection process.

(3) Evaluation Methodology.

As discussed above, SCE employs an NPV analysis when it evaluates Offers. 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.

- Contract Benefits
    - Energy and Ancillary Service Benefits

      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.

      For dispatchable resources, SCE forecasts the operations of the resource based on the Offer's operating costs (e.g. storage efficiency, VOM, energy rate, etc.), operating parameters (e.g. available hours, charge rates, etc.) and market service offered (e.g. energy and/or ancillary services). 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." 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 forecasted gross energy benefits and costs are calculated for each of the simulated price pairs. 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 DSM offers, energy benefits will be based on the validated energy reduction estimates contained in the Offer (i.e. avoided energy costs).

      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.

- 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 and RA RFOs and bilateral contracts.

- Contract Costs

  - Energy Costs

    For dispatchable resources, energy costs can include variable costs for DR dispatch events, costs incurred while charging energy storage devices, or other contractual costs associated with the production of energy.

    For must-take and baseload resources, energy costs can include increased loads for permanent load shifting, or simply an all-in energy price in dollars per Megawatt-hour (MWh).

  - 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.

  - 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 allows Investor Owned Utilities ("IOUs") 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 IOUs to continue recognizing the balance sheet impact of debt equivalence when valuing power purchase agreements. Given the confirmation of the use of debt equivalence for valuation purposes, SCE considers debt equivalence in its valuation process.

- 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.

- Renewable Integration Cost

  For intermittent (i.e. solar and wind) resources, SCE calculates a renewable integration cost adder as prescribed in its RPS procurement authorization.

- 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, may be ascribed to energy-only offers, or Offers located in areas where nodal price differentiation is forecasted to occur.

  - DSM Offers act as load reducers, and may therefore receive adjustments to their energy and RA quantity benefits to reflect both avoided T&D losses and RA reserve margin requirements.

  - Additionally, if SCE can reasonably calculate estimates of other costs and/or benefits that are directly attributable to an Offer, such as transmission or distribution deferral benefits, then these estimates will be included in the quantitative valuation, and ultimately, in the Offer's NPV.

- 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
- Development milestones
  - Site control
  - Large equipment status
  - Reasonableness of commercial operation date
- Transmission area
- Modifications to pro forma documents
- Contributions towards SCE's RPS targets
- Congestion, negative price, and curtailment considerations not captured in the quantitative valuation
- Portfolio fit of energy, capacity, deliverability, and contract term
- Offeror concentration
- Technology concentration
- Dispatchability & curtailability
- Offer price in excess of public or independent data
- Debt equivalents

- Resource Adequacy (RA) Counting
    - RA Counting

      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, 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 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.

      DSM RA capacity will be calculated using existing RA counting rules. Following current RA counting practice, DSM will receive LA Basin and system RA quantities equal to 100% and 115% of their peak load reduction amounts, respectively.

- Constraints and 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. 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 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.

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

Sedway Consulting, Inc.

INDEPENDENT EVALUATION REPORT FOR SOUTHERN CALIFORNIA EDISON'S 2015 PREFERRED RESOURCES PILOT REQUEST FOR OFFERS #2

CONFIDENTIAL APPENDIX B
REDACTED IN ITS ENTIRETY