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Decision 16-09-004 September 15, 2016

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of Southern California Edison Company (U338E) for Approval of Contracts Resulting From Its 2014 Energy Storage Request for Offers (ES RFO).	Application 15-12-003 (Filed December 1, 2015)
And Related Matter.	Application 15-12-004

DECISION APPROVING ENERGY STORAGE AGREEMENTS AND PROVIDING GUIDANCE ON CALCULATING ABOVE-MARKET COSTS FOR STORAGE

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DECISION APPROVING ENERGY STORAGE AGREEMENTS AND PROVIDING GUIDANCE ON CALCULATING ABOVE-MARKET COSTS FOR STORAGE

Summary

This decision approves four energy storage agreements for Pacific Gas and Electric Company (PG&E) and three energy storage agreements for Southern California Edison Company. Two purchase and sale agreements for Pacific Gas and Electric Company are not approved. The decision determines that Southern California Edison Company has met its 2014 energy storage targets with approval of these contracts, but that Pacific Gas and Electric Company has not yet met its 2014 targets. The decisions that resolve Application 16-03-001, et al. and Application 16-04-024 will conclusively address whether PG&E has met its 2014 storage target. With the exception of certain clarifications to the costs associated with charging storage resources, the Joint Investor Owned Utility Protocol is adopted for purposes of incorporating energy storage into Power Charge Indifference Adjustment rates. These proceedings are closed.

1. Background

On December 16, 2010, the Commission opened Rulemaking (R.) 10-12-007 to implement the provisions of Assembly Bill (AB) 2514 (Stats. 2010, Ch. 469). AB 2514 directed the Commission to determine appropriate targets, if any, for each Load-Serving Entity as defined by Pub. Util. Code § 380(j) to procure viable and cost-effective energy storage systems and set dates for any targets deemed appropriate to be achieved.

In response to this state mandate, the Commission adopted Decision (D.) 13-10-040, its "Decision Adopting Energy Storage Procurement Framework and Design Program." The energy storage framework and procurement

applications for the 2014 biennial period were subsequently approved in D.14-10-045.[1]

In compliance with Ordering Paragraph 6 of D.14-10-045, on December 1, 2015, Southern California Edison Company (SCE) and Pacific Gas and Electric Company (PG&E) filed applications seeking approval of the results of their 2014 Energy Storage Request for Offers. SCE seeks approval for three contracts for a total of 16.3 megawatts (MW) of distribution-connected storage.

PG&E seeks approval for four energy storage agreements whose function is generation/market participation and two purchase and sale agreements whose purpose is distribution deferral for a total of 72 MW.[2] Although PG&E's shortlisted bidders included resources in all three grid domains (transmission, distribution, and behind the meter), the contracted resources connect only at the transmission and distribution level.[3]

In addition to their 2014 energy storage results, the investor-owned utilities also filed a joint proposal (Joint IOU Protocol) for the establishment of a Power Charge Indifference Adjustment (PCIA) methodology to recover above-market costs associated with departing load for market/"bundled" energy

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[1] Decision Approving San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company's Storage Procurement Framework and Program Applications for the 2014 Biennial Procurement Period.

[2] PG&E originally proposed five energy storage agreements and two purchase and sale agreements for a total of 75 MW. In its opening brief, PG&E notified the Commission that it had terminated one of the contracts it had submitted for approval. With that change, PG&E is now seeking approval of four energy storage agreements and two purchase and sale agreements for a total of 72 MW.

[3] PG&E subsequently filed a second application (A.16-04-024) for approval of additional resources stemming from the 2014 Request for Offers that is being handled separately from the instant applications.

storage services. The Joint Proposal would apply to PG&E, SCE, and San Diego Gas & Electric Company (SDG&E).[4]

Protests were filed against both applications on January 15, 2016, by the Office of Ratepayer Advocates (ORA); Marin Clean Energy, Sonoma Clean Power, and the City of Lancaster (jointly CCA Parties); the Alliance for Retail Energy Markets and Direct Access Customer Coalition (jointly AReM/DACC); and Shell Energy North America (US), L.P. (Shell). Responses to the applications were filed in both proceedings by the California Energy Storage Alliance, and in PG&E's application by Golden Hills Energy Storage, LLC (Golden Hills). SCE and PG&E filed replies to protests on January 25, 2016. A prehearing conference (PHC) was held on March 10, 2016. The assigned Commissioner and Administrative Law Judge (ALJ) issued a scoping memo on March 25, 2016.

The scoping memo set May 2, 2016 for comments surrounding the classification of energy storage contracts by type (which governs cost allocation), and the establishment of a market price benchmark for energy storage in the Joint IOU Protocol proposal for a PCIA methodology. Comments were filed jointly by PG&E, SCE, and SDG&E; jointly by CCA Parties, AReM/DACC, and Shell (jointly CCA/DA parties); The Utility Reform Netowrk (TURN); and County of Los Angeles. Energy Division led a workshop on these topics on May 9, 2016.[5]

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[4] SDG&E did not submit a separate application for approval of its storage contracts, as it is seeking approval of energy storage contracts as part of Application (A.) 16-03-014 (Application of San Diego Gas & Electric Company for Approval of Energy Storage and Energy Efficiency Contracts Arising from the Track IV Local Capacity Requirement All Source Request for Offers).

[5] Materials presented at the workshop, as well as the audio recording of the workshop are available at: http://www.cpuc.ca.gov/General.aspx?id=3462. On May 19, 2016, the ALJ took official notice of these materials consistent with Rule 13.9.

ORA was the only party to serve testimony on April 25, 2016, and only as it relates to the PG&E contracts. PG&E served rebuttal testimony on May 16, 2016. No hearings were held. Testimony was identified on May 19, 2016 and received into evidence on May 23, 2016 via e-mail communication with the parties. Opening Briefs were filed on May 25, 2016 by PG&E, SCE, SDG&E, ORA, TURN, AReM/DACC, jointly by CCA Parties and County of Los Angeles, and Shell Energy North America (US) L.P. (Shell). Reply Briefs were filed on June 8, 2016 by PG&E, SCE, SDG&E, ORA, TURN, AReM/DACC, jointly by CCA Parties and County of Los Angeles, and Shell.

2. Issues Before the Commission

There were three issues set forth in the scoping memo: the reasonableness of the proposed contracts, the classification of the energy storage contracts by function (which governs cost recovery for above-market costs), and the establishment of a market price benchmark for energy storage in the Joint IOU Protocol proposal for a PCIA methodology.

The reasonableness of the contracts themselves includes topics such as:

1. Were the solicitations conducted in a fair and competitive manner?
2. In selecting winners, did SCE and PG&E apply the evaluation methodologies approved in D.14-10-045 correctly?
3. Were any deviations from pro forma contracts approved in D.14-10-045 warranted?
4. Are the prices, terms, and conditions resulting from the solicitations reasonable?
5. Do the contracts promote safe and reliable operation and maintenance of the energy storage systems?
6. Should the contracts be approved?

The issue of contract reasonableness was addressed only by PG&E, SCE, and ORA in briefs. ORA took issue with the reasonableness of the two PG&E purchase and sale agreements.

Although the scoping memo defined two additional issues, no non-utility party addressed whether PG&E or SCE had correctly classified their contracts by function, which governs cost recovery of above-market costs, in briefs. Instead, parties focused solely on the PCIA methodology and whether it accurately captures purportedly unique attributes of storage resources that are acquired for the generation/market function.

We will address each of the three issues established in the scoping memo in turn.[6]

3. Are the Proposed Contracts Reasonable?

3.1. SCE Energy Storage Agreements

SCE received 404 offers for a total offered project capacity of 2,892 MW. SCE sought two types of energy storage products: (1) facilities able to provide Resource Adequacy (RA) benefits, while retaining all other operational benefits that are not associated with RA; and (2) facilities that provided resource adequacy benefits and had a "put" option to provide all other energy and ancillary service attributes from the facility at the seller's election on a yearly basis. (Exhibit SCE-1 at 6.) SCE's proposed agreements are for a total of 16.3 MW for three Resource Adequacy Only contracts. Under these contracts, SCE will not control the dispatch rights under the Stanton Energy Contract and does not

[6] The scoping memo identified one additional issue, whether a California Environmental Quality Act (CEQA) review is required for PG&E's purchase and sale agreements. This issue was raised by ORA in its protest but was not argued or briefed by any party.

receive any energy or ancillary service benefits. However, under the Resource Adequacy Only agreement, the resource must bid into the California Independent System Operator (CAISO) market as a resource adequacy resource pursuant to the CAISO tariff. (Exhibit SCE-1 at 33.)

SCE selected one offer from Stanton Energy Reliability Center, LLC (Stanton Energy), a wholly-owned subsidiary of W Power, LLC, a California certified woman-and-minority owned business enterprise. The contract is for 1.3 MW of General Electric sourced lithium-ion battery storage capable of providing its Contract Capacity for a 4-hour period. The delivery period is expected to begin on June 1, 2020, and end on May 31, 2030. The project is located in Stanton, California, and the interconnection point will be at the Barre substation. The project is part of the Distribution Grid Domain.

SCE also selected one offer from Western Grid Development, LLC (Western Grid) for 15 MW of EOS Energy Storage sourced battery storage, which resulted in two contracts – one for 10 MW and one for 5 MW – capable of providing its Contract Capacity for a 4-hour period. The projects are located in Santa Paula, California and the interconnection point will be at the SCE Wakefield Substation. The Western Grid offer included two projects in a single offer that involved the same location, online date, and technology; "the only difference between the projects is size and the interconnections, which were split between two separate circuits (but still feeding up to the same substation) because neither circuit, at current capacity, could handle the entire 15 MW project." (Exhibit SCE-1 at 31.) The delivery period is expected to begin on January 1, 2020, and end on December 31, 2034. The project is part of the Distribution Grid Domain.

SCE sought and obtained Energy Division approval to use Sedway Consulting as the Independent Evaluator for its energy storage request for offers. Sedway Consulting concludes that these three contracts merit Commission approval "because the contracts' economics and their general terms and conditions represented the best resources available from a competitive solicitation." (Exhibit SCE-1 at C-26.)

No party takes issue with these proposed Energy Storage Agreements. Our review demonstrates they provide positive contributions to the utility portfolio on a net market value basis, and we approve them.

3.2. PG&E Agreements

PG&E sought two types of energy storage services: (1) market bundled storage and; (2) distribution reliability storage. To procure market bundled storage, PG&E pursued Energy Storage Agreements with energy storage system sellers who will operate the system at PG&E's direction to store and discharge energy to the market. To procure distribution reliability storage, PG&E pursued Purchase and Sale Agreements with energy storage developers to design, develop, and construct storage facilities and transfer the project to PG&E after the developer meets the closing conditions. PG&E received over 200 offers consisting of more than 700 variations from more than 50 separate participants, which totaled over 5,000 MW of energy storage capability (including offer variations). PG&E's proposed agreements are for four Energy Storage Agreements totaling 70 MW, and two Purchase and Sale Agreements totaling 2 MW.

PG&E's evaluation began with Net Market Value, then looked at Portfolio Adjusted Value as the primary metric for assessing cost-effectiveness.[7] Where projects had similar Portfolio Adjusted Values, PG&E chose offers that would lead to a diverse set of final agreements representing multiple technologies, sizes, configurations, online dates, and terms.

3.2.1. Energy Storage Agreements

The energy storage agreements provide that the projects will accept charging energy provided by PG&E, store energy in the facility, and deliver the energy at an electrical delivery point in accordance with PG&E's schedule and the operational limitations in the agreement. PG&E is entitled to all of the energy discharged by the facility, ancillary services, capacity attributes, and any other products or services associated with the energy storage that may be defined by the CAISO or governmental authority (Exhibit PGE-1: 3-1). The seller is also responsible for ensuring that the project qualifies as Resource Adequacy capacity.

PG&E selected one offer from Amber Kinetics, Inc., a 20 MW transmission-connected, stand-alone flywheel energy storage resource with a discharge duration of four hours. It will be located in Fresno, California, and the delivery point will be the New Kearney Substation. The expected initial delivery date is May 1, 2020, with a term of 20 years.

[7] The Portfolio Adjusted Value illustrates an offer's value to PG&E's specific resource needs and assets, and is derived by adjusting the Net Market Value by criteria such as the Offer's location, transmission network upgrade cost, benefit of deferred or avoided transmission and distribution investment cost, and effects on other generation in PG&E's portfolio (Exhibit PGE-1: 4-4).

Hecate Energy Molino LLC, a subsidiary of Hecate Energy LLC, is a 10 MW transmission-connected, stand-alone lithium ion battery energy storage resource with a discharge duration of four hours located in the city of Sebastopol, California. The interconnection point will be at the Molino Substation. The expected initial delivery date is May 1, 2020, with a term of ten years.

PG&E selected a Golden Hills Energy Storage, LLC,[8] project located in the city of Livermore, with the delivery point being the Tesla 115 kilovolt substation. The project is a 30 MW transmission-connected, stand-alone lithium-ion battery energy storage resource with a 30 minute discharge. The expected initial delivery date is January 1, 2019 with a term of ten years.

Henrietta D Energy Storage LLC, a project wholly-owned by Convergent Energy and Power LLC, is a 10 MW distribution-connected, stand-alone zinc-air battery energy storage resource with a discharge duration of four hours. It will be located in the city of Lemoore in Kings County, and the delivery point will be the Henrietta Substation. The expected initial delivery date is May 1, 2020, with a term of 20 years.

PG&E selected Merrimack Energy to serve as Independent Evaluator for its Energy Storage Request for Offers. The role of the Independent Evaluator is "to ensure that the solicitation process is undertaken in a fair, consistent, unbiased, and objective manner and that the best resources are selected and acquired for the benefit of customers consistent with the solicitation

[8] Golden Hills Energy Storage, LLC is a subsidiary of NextEra Energy Resources Acquisitions, LLC, which is a subsidiary of NextEra Energy Resources, which itself is a wholly-owned subsidiary of NextEra Energy, Inc.

requirements." (Exhibit PGE-1 at C-16.) The Independent Evaluator recommends approval for all four PG&E energy storage agreements.

No party takes issue with the proposed PG&E Energy Storage Agreements, our review demonstrates they provide positive contributions to the utility portfolio on a portfolio adjusted value basis, and we approve them, except with respect to the definition of CPUC Approval as described in Section 5.4.

3.2.2. Purchase and Sale Agreements

PG&E's purchase and sale agreements are structured to have third-party developers develop and construct energy storage facilities to PG&E's specifications and bring them to commercial operation, at which point PG&E will take ownership of the projects. These agreements have a contractual cost between PG&E and the developer, as well as PG&E project oversight and integration costs. The projects are designed to provide distribution reliability by enabling PG&E to lower the load on a specific distribution feeder at times when the associated transformer could otherwise be expected to be overloaded (Exhibit PGE-1: 1-2). The more traditional approach to maintaining distribution reliability at these sites would have been to upgrade the capacity of the transformers. Instead, these projects would use a battery to charge from the grid and discharge into the utility's distribution system to defer the cost of the transformer upgrade.

PG&E selected two purchase and sale agreements, each to be developed by Hecate Energy LLC. Each project will be for a 1 MW lithium ion energy storage resource with discharge durations of two hours. One of the projects will be located in Fresno, California, and interconnect with a distribution feeder from the Old Kearney substation. The other project will be located in Redwood Valley, in Mendocino County, California, and interconnect with a distribution

feeder from the Mendocino substation. The expected initial delivery date for both projects is May 1, 2018. Both projects will be distribution-connected projects.

With regard to the purchase and sale agreements, the Independent Evaluator reports that these projects should have a reasonable prospect for success, and recommends Commission approval for the purchase and sale agreements. The Independent Evaluator adds that including the purchase and sale agreement projects to the portfolio added a configuration with significant diversity features — mainly the unique application of energy storage to defer substation upgrades — and relatively early start-date. The Independent Evaluator goes on to say that the unique application of energy storage to defer substation upgrades provided an opportunity to accelerate learning about deferring costly substation upgrades with storage investments. We note that the Independent Evaluator report did not include Final Valuation Results for the purchase and sale agreements like it did for the energy storage agreements.

ORA recommends that the Commission not approve the purchase and sale agreements because they are not cost-effective, were not competitive compared to other offers, and fail to ensure reliable service in their distribution deferral function.[9]

As described in Exhibit PG&E-1: 3-13, PG&E indicates that the guaranteed commercial operation date of these two contracts is May 1, 2018, to defer by ten years the need to invest in additional transformers at Mendocino and Old Kearney substations. However, information included in Exhibit ORA-2C

[9] The specific timing of the distribution investment was provided under seal.

demonstrates that the transformers at these two locations may become overloaded prior to the commercial operation date of the purchase and sale agreements.

PG&E's primary arguments in favor of the purchase and sale agreements are that they introduce additional diversity into PG&E's storage portfolio and provide a low cost means to gain experience utilizing storage as a distribution deferral method. PG&E concedes that on the basis of cost alone, these projects would likely not be selected, but argues that the Independent Evaluator agreed with the diversity benefits that these projects bring to the storage portfolio.

While we agree that there is value in adding diversity to the portfolio and gaining experience with using storage to support distribution deferral, given that the proposed purchase and sale agreements are not cost-effective, and also fail to guarantee the necessary capacity to meet forecasted overloads at the Old Kearney and Mendocino substations based on their online dates, we find that these agreements should not be approved. We remind PG&E that it is always free to pursue projects it believes are cost-effective within its normal distribution planning and acquisition framework and support the reasonableness of those costs through ex-post reasonableness review as needed.

The scoping memo identified one additional issue, whether a CEQA review is required for PG&E's purchase and sale agreements. This issue was raised by ORA in its protest but was not argued or briefed by any party. Because we find that the purchase and sale agreements should not be approved, this issue need not be decided.

3.3. Have SCE and PG&E Met Their 2014 Storage Procurement Obligations?

Consistent with D.14-10-045, SCE's 2014 storage target was 16.3 MW, after taking into account the expected energy storage from its Local Capacity Requirements Request for Offers (RFO) Application 14-11-012. With the approval of 16.3 MWs of contracts SCE has met its 2014 storage target.

PG&E's 2014 storage target was 50 MW connected at the transmission level and 24 MW connected at the distribution level after credits for other purchases, resulting in a total target of 74 MW.[10] (PGE-1: 1-4 line 28.) All of the procured MWs fall within the domain shifting guidelines adopted in D.13-10-040. However, with the withdrawal of a 3 MW offer, and the denial of the two purchase and sale agreements totaling 2 MWs, the four energy storage agreements that we approve today total 70 MW, so we must conclude that PG&E has not yet met its storage target from the 2014 request for offers process.

We note that Application (A.) 16-04-024[11] seeks approval of a 4 MW contract in the behind-the-meter domain which, if approved, would allow PG&E to meet its target. Although D.13-10-040 did not allow shifting of procurement targets into or out of the customer-side domain, D.16-01-032 eased that restriction and allowed customer-side storage not funded through the Self-Generation Incentive Program to count towards some transmission and distribution level procurement targets. (*See* generally D.16-01-032 at 31-32, Conclusions of Law 21-23, and Ordering Paragraph 1.) PG&E has not sought deferral of its

[10] PG&E also has a 6.5 MW target for behind-the-meter storage, which has been satisfied by installations supported through the Self-Generation Incentive Program.

[11] Second Application of Pacific Gas and Electric Company for Approval of Agreements Resulting from Its 2014-2015 Energy Storage Solicitation and Related Cost Recovery (U39E).

target as allowed under D.13-10-040 or D.16-01-032, and such deferral may not be necessary, depending on the outcome of A.16-04-024. A.16-03-001,[12] et al. is the proceeding for the utilities that will establish the storage procurement framework for the 2016 storage solicitation. Therefore, the decisions that resolve A.16-03-001 et al. and A.16-04-024 will conclusively address whether PG&E has met its 2014 storage target.

4. Are the Contracts Correctly Classified?

At the PHC, Shell and AReM/DACC both suggested that the utilities might have misclassified the function of the storage contracts and so this topic was made part of the scope of the proceeding. The classification of the contracts by function is important as that function governs cost recovery and how and from whom any above-market costs are recoverable.

AReM/DACC points out that D.14-10-045 (at 47) placed the burden of proof on the utilities to demonstrate that a specific proposed energy storage contract warrants PCIA treatment. AReM/DACC seem to argue that this means that the utilities must demonstrate that each contract results in above-market costs for us to approve PCIA treatment. However, our review of D.14-10-045 does not lead us to this conclusion. We interpret this passage of D.14-10-045 to mean that the utilities must demonstrate that they have correctly classified contracts by function for us to approve the contract being incorporated into the PCIA methodology. D.14-10-045 specified the cost recovery approach for each function, and specified that above-market costs associated with storage contracts

[12] Application of Pacific Gas and Electric Company (U39E) for Authorization to Procure Energy Storage Systems During the 2016-2017 Biennial Procurement Period Pursuant to Decision 13-10-040.

serving the Generation/Market function would be recovered from departing customers via the PCIA. Despite this subject being specifically identified as an issue in the Scoping Memo, no parties disputed in testimony or briefs that PG&E or SCE correctly characterized their energy storage agreements as serving the Generation/Market function, and we approve the proposed classifications by function.

5. Does the Joint IOU Protocol Accurately Capture the Unique Attributes of Storage Resources?

5.1. What is the Joint IOU Protocol?

D.14-10-045 authorized use of the PCIA to recover the above-market costs of energy storage resources that operate in the wholesale markets, and directed PG&E, SCE, and SDG&E to propose a "Joint IOU Protocol" for determining the above-market costs of storage to bundled service. Fundamentally, the Joint IOU Protocol describes how storage resources will be integrated into the existing PCIA calculation method. Although SDG&E did not submit a separate application for approval of its 2014 storage contracts, as it is seeking approval of energy storage contracts as part of its Track IV Local Capacity Requirement All Source RFO, SDG&E has been made a party to this proceeding so that the PCIA methodology approved by this decision applies to the procurement of bundled storage by all of the IOUs. The utilities recommend that no adjustment to the PCIA method is necessary to incorporate storage procurement contracts, and that the storage contracts should be treated the same as other resources.

The current PCIA calculation method was adopted in D.11-12-018 and Resolution E-4475 to calculate vintaged PCIA rates on an annual basis in each utility's respective Energy Resource Recovery Account forecast application. Under the existing PCIA calculation method, an Indifference Amount is

calculated for each vintage year that represents the difference between the forecasted costs associated with the utility's resource portfolio as it existed that year (*i.e.*, "vintage") and the "market value" of that portfolio based on a market price benchmark calculation approved by the Commission. The resulting Indifference Amount represents the above-market costs associated with the vintage portfolio. These above-market costs become stranded when customers depart bundled utility service unless departing customers pay their fair share of those above-market costs. The Indifference Amount is allocated to all customers who received procurement service from the utility during the vintage year, including customers who departed after the vintage year, and recovered through the PCIA and ongoing Competition Transition Charge (CTC).[13]

The storage procurement contract costs the utilities propose to include in the Indifference Amount are the purchase costs (*i.e.*, fixed capacity costs, variable operation and maintenance (O&M) expenses, and any other costs included in the contract) and the costs associated with charging the resource. The utilities argue that costs associated with charging the resource are analogous to fuel costs and represent the costs of charging the storage resource from the electric grid, and are added to the total portfolio costs in the year the resource commitment is made. These total storage costs are included in the total portfolio costs, which are then benchmarked against a market value to determine the portion of the costs that are above-market.

As proposed, the market value contains both energy and capacity value. The capacity value is calculated by multiplying the portfolio net qualifying

[13] The CTC includes pre-2004 Qualifying Facility contracts and irrigation district contracts that are not included in the PCIA.

capacity (NQC), which includes the NQC of the storage resource, by the capacity value for each vintage year in the same manner as generation resources, and thus the capacity value of storage is reflected in the capacity adder component of the Market Price Benchmark. The capacity adder was updated in D.11-12-018.

The energy value is calculated by multiplying the forecast portfolio generation, which includes the storage resource megawatt-hours (MWh) discharged to market, by the energy component of the Market Price Benchmark for each vintage year. The formula for determining the energy value was adopted in D.06-07-030, modified by D.07-01-025, and updated by D.11-12-018.

The difference between the costs associated with the storage resource and the market value (energy and capacity) of the resource will contribute to the determination of the total portfolio above-market costs represented in the Indifference Amount.

5.2. What Alternatives Were Presented?

The joint May 2, 2016, comments the CCA/DA Parties propose including a storage adder in the Market Price Benchmark Calculation. These parties argue that a storage adder is analogous to the 'Green Adder' currently in the PCIA calculation, and that that a storage adder is necessary to capture the unique attributes and nascent market value of storage assets. It appears that in all other respects that they would support the Joint IOU Protocol, although this is never explicitly stated.

To implement their recommendation, the CCA/DA Parties first recommend developing a storage benchmark price. As proposed, the storage benchmark price would be calculated by aggregating the recent utility storage costs in the year the resources become operational (or are forecast to become operational) for PG&E, SCE, and SDG&E and then dividing that sum by the

aggregate capacity of those resources. This storage benchmark price in $/MW would then be used as a factor in the storage adder calculation for all three utilities. The storage adder is the installed storage capacity for a given utility for that vintage year, multiplied by the storage benchmark price, divided by the forecast MWh for the total utility resource portfolio for that vintage year for that utility. The resulting storage adder (in $/MWh) becomes part of the Market Price Benchmark, and serves to reduce the Indifference Amount that would ultimately be allocated to departing load customers for that utility.

TURN offers two suggestions that it believes could improve the Joint IOU Protocol: (1) the use of production cost modeling to estimate above-market costs, and (2) using on-peak discharge and off-peak charging prices to estimate above-market costs. TURN acknowledges that these approaches reduce transparency, introduce additional forecasting uncertainty, and may require additional work to implement.

5.3. The Joint IOU Protocol Should be Clarified

The utilities argue that the existing PCIA "equitably shares contractual costs and estimated market benefits with all customers that the energy storage resource was intended to serve." (SCE Opening Brief at 7.) PG&E states "the fact is that for a storage resource, just as is the case for a conventional generation resource, the value the resource provides to the bundled portfolio is its capacity value, plus the value of its outputs into the CAISO markets. The current PCIA methodology provides a reasoned method for estimating this value, and so should be applied to storage resources as well as conventional generation resources."(PG&E Opening Brief at 16.)

The utilities and TURN oppose the addition of a storage adder into the Market Price Benchmark. TURN states that the "CCA/DA Proposal ignores the

potential for storage assets, in actual operation, to generate cash flows that do not equal the costs of such assets. If such cash flows are negative – that is, the costs of contracting and operating storage assets exceed the benefits earned from storage assets – the CCA/DA Proposal would effectively allocate all such negative cash flows to bundled customers, violating the 'bundled customer indifference' principle that is the basis for computing the PCIA." (TURN Opening Brief at 2.) PG&E argues that the attempt to equate the CCA/DA parties' proposed storage adder to the renewable adder is without merit.

> Inclusion of the green adder for renewable resources is consistent with the fact a renewable resources adds a specific value to the bundled customer portfolio. Renewable resources have an associated Renewable Energy Credit (REC) associated with their energy production. To the extent that a REC associated with a renewable resource in an IOU's bundled portfolio is not needed for compliance with an IOU's renewable portfolio standard (RPS) requirements, then conceptually that REC can bring additional value to bundled customers by being sold into the REC market. Thus, the renewable resource provides additional value to the bundled portfolio, above and beyond the resource's capacity value and its energy value (PG&E Opening Brief at 25).

Further, PG&E argues that because RPS requirements are set on a percentage basis, when a customer departs an IOU's portfolio, the IOU has less need to procure renewables than it did before the departure, and may even have RECs that can be sold on the market. In the case of storage, however, the IOU targets are a fixed number of MWs, so the bundled portfolio does not become longer on storage when a customer departs (PG&E Reply Brief at 10).

The CCA/DA parties assert that storage provides additional value beyond RA and energy value, and that a storage adder is necessary to ensure that these unique attributes of storage are properly reflected. Shell points out that for PCIA

purposes the utilities argue that storage only provides resource adequacy and energy value, but in support of their contracts the utilities identify other values like flexibility, ancillary services, market volatility mitigation, and market transformation. (Shell Reply Brief at 3.) Finally, the CCA parties argue that the Commission should re-evaluate the Market Price Benchmark calculation in 2019 to determine whether adjustments are needed as additional clarity and guidance on market rules are developed. (CCA Parties Opening Brief at 10.)

PG&E and SCE counter that the PCIA already appropriately reflects (or does not reflect) these possible value streams as they represent system level or reliability benefits that do not uniquely accrue to bundled customers, but rather to the grid as a whole. PG&E notes that ancillary services benefits are not explicitly estimated for any portfolio resources, and argues that ancillary services benefits should not be included for storage resources unless they are included for other resources as well. (PG&E Reply Brief at 13.) In Exhibit PGE-1: 7-AtchA-21 and Exhibit SCE-1: D-18, the utilities responded to requests to incorporate system-level benefits through a storage adder, arguing that a storage adder would provide double credit for storage system benefits. SCE elaborates in its brief that because the energy and capacity values would be captured in both the storage specific adder and also be reflected in the existing Market Price Benchmark, adoption of a storage adder would be duplicative. (SCE Opening Brief at 11.) SCE supports the re-evaluation of PCIA in the future to consider any additional revenue streams that may be identified for energy storage resources, but proposes that any re-evaluation be delayed until 2020 or 2021 so that potential changes can be informed by actual energy storage operations. (SCE Reply Brief at 14.)

SDG&E believes that TURN's proposed refinements are not necessary and could result in individual resource type PCIAs, rather than a portfolio PCIA as currently designed. SDG&E states that it already uses production cost modeling of its full portfolio, including storage resources, to calculate the Indifference Amount, noting that 40 MW of pumped storage have been included in its portfolio and modeled consistent with the Joint IOU Protocol since 2012 without any issue.

We conclude that the CCA/DA parties have not demonstrated that a storage adder should be included in the Market Price Benchmark at this time. As stated by TURN, the CCA/DA parties' proposed methodology for calculating the storage adder creates the potential for storage assets to generate cash flows that do not equal to the costs of such assets, which would violate the "customer indifference" principle by allocating any negative cash flows to bundled customers. We also find that the additional values of energy storage proposed by the CCA/DA Parties do not uniquely accrue to bundled customers, and as such should not be included in the PCIA calculation. However, we are mindful that storage assets may be able to generate additional value in the near future as greater clarity and guidance on market rules are developed, particularly around multi-use applications. Therefore, we intend to re-evaluate the PCIA no earlier than 2020, and as part of the successor to the energy storage R.15-03-011, in order to consider any additional revenue streams that may be identified for storage resources.

Although we do not find evidence to support a storage adder at this time, upon review of the costs that are proposed to be included in the Indifference Amount calculation, we are concerned that when costs associated with charging power are included there is the possibility of this charging cost being reflected

twice - once as a storage cost, and second as a cost for the generation. This double counting of costs could occur when the utility uses another one of its contracts or utility owned generation resources to deliver all of the charging energy to the storage resource. Under that scenario, the utility would have already procured the power to charge the storage resource through a generation contract whose costs are reflected in the Indifference Amount calculation. The utility would not incur any incremental cost associated with the charging power for the storage resource because it was already procured as a generation resource. To reflect the charging costs as a storage cost would result in a double counting of this generation cost, effectively increasing the Indifference Amount beyond the actual costs incurred. If the storage resource is responsible for procurement of the charging power, then these costs would presumably be reflected in the contract price between the storage facility and the utility. For these reasons, we conclude that the Joint IOU Protocol should be clarified to ensure the costs associated with charging the storage resource are included only once in the Indifference Amount calculation and reflect only the purchase costs (*i.e.*, fixed capacity costs, variable O&M expenses, and any other costs included in the contract) unless the charging power costs have not already been reflected in utility generation costs. We direct Energy Division staff to meet with PG&E, SCE, and SDG&E within 60 days of the issuance of this decision to discuss and clarify how to incorporate storage charging costs in their annual Energy Resource Recovery Account filings to ensure these costs are not double-counted.

5.4. Admonishment to PG&E

At the PHC, PG&E stated that as part of its contracts, it included a term which allows it to terminate the contract if it does not receive "CPUC Approval." CPUC Approval is contractually defined as part of its pro forma definitions as: a

final and non-appealable order of the CPUC, without conditions or modifications unacceptable to the Parties, or either of them, which contains the following terms: (a) approval of this Agreement in its entirety, including all related payments to be made by Buyer and Buyer's proposed cost recovery treatment, subject only to CPUC review of the Buyer's administration of the Agreement; (b) a finding that the procurement under this Agreement counts as proposed by Buyer toward the energy storage target established by D.13-10-040.

PG&E's pro forma terms attempt to constrain the Commission's ability to evaluate the appropriateness of proposed cost recovery terms, by threatening to not pursue cost-effective storage contracts, in opposition to state policy. Unlike PG&E's agreements, SCE's contractual language does not tie the outcome on the underlying calculation or mechanics of any proposed cost recovery or cost allocation mechanism to SCE's willingness to move forward with the contract.

PG&E's agreement includes a term that the Seller has no stake in (*i.e.*, cost recovery), but which results in PG&E's ability to terminate the agreement based solely on Commission action. We do not approve this constraining term within the contracts and caution PG&E that in the future it should refrain from establishing contract terms designed to limit the Commission's exercise of its regulatory authority. In comments on the Proposed Decision, PG&E states its intent to use the "CPUC Approval" term in its Renewable Portfolio Standard Power Purchase Agreement in future storage Requests for Offers. This term does not include language constraining the Commission's ability to select an appropriate cost recovery methodology and is an acceptable replacement term.

6. Safety Considerations

In the applications, the utilities described their efforts to ensure that the proposed contracts operate in a safe and reliable manner. For example, PG&E

required offering parties to provide information about the safety history and practices of the entities that would construct, operate, own or maintain the projects. Shortlisted participants were required to submit safety plans that would demonstrate responsible safety management during all phases of the project lifecycle (Exhibit PGE-1: 4-8). SCE addressed safety in its January 25, 2016, Reply to Protests. Like PG&E, the Request for Offers requires the offering party to develop a written plan for the safe construction and operation of the energy storage facility, consistent with the requirements of the pro forma contract (Exhibit SCE-2: F-23). SCE's pro forma energy storage agreements also require the Seller to provide to SCE, prior to commencement of any construction activities on the Site, a report from an independent engineer (acceptable to both SCE and the Seller) certifying that the Seller has a written plan for the safe construction and operation of the Project in accordance with Prudent Electrical Practices, which are specifically defined. We find that PG&E and SCE have addressed potential safety concerns in a proactive and responsible manner and that there are no obvious safety concerns that remain to be addressed.

7. Outstanding Procedural Matters

The parties have proposed that the following exhibits be admitted under seal because they contain market-sensitive data: Exhibits SCE-1C; PGE-1C vol. 1; PGE-1C vol. 2; PGE-1C vol. 3; PGE-1C vol. 4; PGE-2C; ORA-1C; and ORA-2C. Good cause being shown, these exhibits are admitted under seal for durations consistent with the timing specified in Exhibit SCE-1: A-3 through A-5 and A-10 to A-11 and Exhibit PGE-1: D-13 through D-18.

The following parties were granted party status but did not actively participate in the proceeding, and thus their party status is rescinded consistent

with the admonition in the Scoping Ruling at 8, and they will be moved to information only status: Green Power Institute, Golden Hills Energy Storage, LLC, Energy Nuevo Storage Farm, LLC.

The Commission affirms all rulings made by the assigned Commissioner and assigned Administrative Law Judge. All motions not previously ruled on are denied as moot.

8. Categorization and Need for Hearing

In the assigned Commissioner and ALJ's Scoping Ruling, the Commission affirmed that these Applications were ratesettting, and determined that hearings may be necessary. No hearings were held; however, because no final determination was made to change the hearing determination, the *ex parte* rules as set forth in Rules 8.1, 8.2, 8.3, and 8.5 and §1701.3(c) continue to apply until this order becomes final.

9. Comments on Proposed Decision

The proposed decision of the ALJ in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on August 9, 2016 by PG&E, SCE, SDG&E, ORA, CCA Parties (including County of Los Angeles), Shell, and CESA and reply comments were filed on August 15, 2016 by PG&E, SCE, SDG&E, ORA, TURN, CCA Parties (including County of Los Angeles), and AReM/DACC. Minor modifications have been made throughout the decision to clarify intent.

10. Assignment of Proceeding

Carla J. Peterman is the assigned Commissioner and Michelle Cooke is the assigned ALJ in this proceeding.

Findings of Fact

1. SCE's proposed Energy Storage Agreements provide positive contributions to the utility portfolio on a net market value basis.

2. PG&E's proposed Energy Storage Agreements provide positive contributions to the utility portfolio on a portfolio adjusted value basis.

3. PG&E's proposed purchase and sale agreements are not cost-effective.

4. Based on forecasts presented in this proceeding, the transformers at the Mendocino and Old Kearney substations may become overloaded prior to the commercial operation date of the proposed PG&E purchase and sale agreements.

5. As established by D.14-10-045, SCE's 2014 storage target is 16.3 MW.

6. As established by D.14-10-045, PG&E's 2014 storage target for the Transmission and Distribution Domains is 74 MW.

7. Whether a CEQA review is required for PG&E's purchase and sale agreements was not argued or briefed by any party.

8. Ancillary services benefits are not reflected for any resources in the PCIA methodology.

9. Incorporating system level or reliability benefits that support the grid as a whole, and do not uniquely accrue to bundled customers, into the PCIA methodology, would result in double counting of this benefit.

10. Storage assets may be able to generate additional value in the near future as greater clarity and guidance on market rules are developed.

11. Including the charging costs for energy storage in the Indifference Amount may result in double counting of this cost if the charging power costs have already been reflected in the utility portfolio.

12. PG&E's agreements include a term that the Seller has no stake in (*i.e.,* cost recovery), but which results in PG&E's ability to terminate the agreement based solely on Commission adoption of an alternative cost recovery methodology.

13. PG&E and SCE have addressed potential safety concerns in a proactive and responsible manner and there are no obvious safety concerns that remain to be addressed.

14. Green Power Institute, Golden Hills Energy Storage, LLC, Energy Nuevo Storage Farm, LLC did not actively participate in these proceedings.

Conclusions of Law

1. SCE's proposed Energy Storage Agreements should be approved.

2. PG&E's proposed Energy Storage Agreements should be approved.

3. PG&E's proposed purchase and sale agreements should not be approved.

4. Because we do not approve the PG&E purchase and sale agreements, the issue whether a CEQA review is required for PG&E's purchase and sale agreements need not be decided.

5. SCE has met its 2014 Energy Storage Procurement target established in D.13-10-040 and D.14-10-045.

6. PG&E has not yet met its 2014 Energy Storage Procurement target established in D.13-10-040 and D.14-10-045.

7. The Joint IOU Protocol should be clarified to ensure the costs related to charging the storage resource are included only once in the Indifference Amount.

8. As clarified, the Joint IOU Protocol is a reasonable method for incorporating the costs and value of energy storage contracts serving the Generation/Market function in calculating PCIA rates for ten years, for PG&E, SCE, and SDG&E.

9. Energy Division staff should meet with PG&E, SCE, and SDG&E within 60 days of the issuance of this decision to discuss and clarify how to incorporate storage charging costs in their annual Energy Resource Recovery Account filings to ensure these costs are not double-counted.

10. No earlier than 2020, the Commission will re-evaluate the PCIA as part of the successor to energy storage R.15-03-011 in order to consider any additional revenue streams that may be identified for storage resources.

11. PG&E should eliminate the requirement for approval of its cost recovery proposal as part of its definition of CPUC Approval.

12. In future storage Requests for Offers, PG&E may use the "CPUC Approval" term used in its Renewable Portfolio Standard Power Purchase Agreements.

13. Exhibits SCE-1C; PGE-1C vol. 1; PGE-1C vol. 2; PGE-1C vol. 3; PGE-1C vol. 4; PGE-2C; ORA-1C; and ORA-2C should be admitted under seal for durations consistent with the timing specified in Exhibit SCE-1: A-3 through A-5 and A-10 to A-11 and Exhibit PGE-1: D-13 through D-18.

14. Because Green Power Institute, Golden Hills Energy Storage, LLC, and Energy Nuevo Storage Farm, LLC did not actively participate in these proceedings, consistent with the Scoping Ruling they do not maintain their party status and should be shifted to information only status.

15. Hearings were not needed in these proceedings.

O R D E R

IT IS ORDERED that:

1. The proposed energy storage contracts between Southern California Edison Company and counterparties Stanton Energy Reliability Center, LLC and

Western Grid Development, LLC are approved to serve the Generation/Market function.

2. The proposed energy storage contracts between Pacific Gas and Electric Company and counterparties Amber Kinetics, Inc., Hecate Energy Molino LLC, Golden Hills Energy Storage, LLC, and Henrietta D Energy Storage LLC are approved, except with respect to the definition of "CPUC Approval," to serve the Generation/Market function.

3. Within 21 days of the effective date of this decision, Pacific Gas and Electric Company must file notification of its acceptance of the modification of the definition of "CPUC Approval" to conform to discussion herein.

4. The proposed energy storage contracts between Pacific Gas and Electric Company and counterparty Hecate Energy LLC for Old Kearney and Mendocino are not approved.

5. The Joint Investor-Owned Utility Protocol is clarified to ensure the costs associated with charging the storage resource are included only once in the Indifference Amount calculation and reflect only the energy storage purchase costs (*i.e.*, fixed capacity costs, variable operation and maintenance expenses, and any other costs included in the contract) unless the charging power costs have not already been reflected in utility generation costs.

6. The Joint Investor-Owned Utility Protocol is adopted, as clarified in Ordering Paragraph 5, for purposes of incorporating the costs and value of energy storage contracts serving the Generation/Market function in calculating the Power Cost Indifference Adjustment for ten years, for Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company.

7. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company must meet with Energy Division staff within 60 days of the issuance of this decision to discuss and clarify how to incorporate storage charging costs in their annual Energy Resource Recovery Account filings to ensure these costs are not double-counted.

8. Southern California Edison Company's Application 15-12-003 is approved except that Power Cost Indifference Adjustment treatment of any above market costs is limited to ten years.

9. Pacific Gas and Electric Company's Application 15-12-004 is approved except that the request for approval of the Hecate Energy (Old Kearney) and Hecate Energy (Mendocino) contracts is denied, no finding is made as to whether additional contracts stemming from the 2014 Request for Offers will be considered, a finding that PG&E has not yet met its 2014 storage target is made, and the Power Cost Indifference Adjustment treatment of any above-market costs is limited to ten years.

10. Exhibits SCE-1C; PGE-1C vol. 1; PGE-1C vol. 2; PGE-1C vol. 3; PGE-1C vol. 4; PGE-2C; ORA-1C; and ORA-2C are admitted under seal for durations consistent with the timing specified in SCE-1: A-3 through A-5 and A-10 to A-11 and PGE-1: D-13 through D-18. During this time frame, the specified information may not be publicly disclosed except on further Commission order or Administrative Law Judge ruling. If Pacific Gas and Electric Company or Southern California Edison Company believes that it is necessary for this information to remain under seal for longer than specified in SCE-1: A-3 through A-5 and A-10 to A-11 and PGE-1: D-13 through D-18, either utility may file a motion showing good cause for extending this order by no later than 30 days before the expiration of this order.

11. Green Power Institute, Golden Hills Energy Storage, LLC, and Energy Nuevo Storage Farm, LLC are converted from party status to information only status.

12. The determination that hearings were needed is changed as hearings were not held in this matter.

13. Applications 15-12-003 and 15-12-004 are closed.

This order is effective today.

Dated September 15, 2016, at San Francisco, California.

MICHAEL PICKER
President
MICHEL PETER FLORIO
CATHERINE J.K. SANDOVAL
LIANE M. RANDOLPH
Commissioners

Commissioner Carla J. Peterman, being necessarily absent, did not participate.