

Decision **PROPOSED DECISION OF COMMISSIONER PETERMAN**  
**Mailed on 12/15/2015**

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

Order Instituting Rulemaking to consider policy and implementation refinements to the Energy Storage Procurement Framework and Design Program (D.13-10-040, D.14-10-045) and related Action Plan of the California Energy Storage Roadmap.

Rulemaking 15-03-011  
(Filed March 26, 2015)

**DECISION ON TRACK 1 ISSUES**

**Table of Contents**

<u>Title</u>	<u>Page</u>
DECISION ON TRACK 1 ISSUES .....	1
1. Background .....	3
2. Scoping Memo Issues .....	6
2.1. Procurement Best Practices - What changes, if any, should be made to the energy storage specific request for offer (RFO) process in advance of the second biennial RFOs? .....	7
2.2. Refinement of the CEP - What refinements are necessary? .....	16
2.3. Flexibility of Energy Storage Targets Between Grid Domains .....	25
2.4. Eligibility (Phase 1) .....	33
2.5. Energy Storage Target Tracking for CCAs and ESPs.....	36
2.6. Cost Recovery/PCIA .....	45
2.7. Safety Standards .....	49
3. Categorization and Need for Hearing .....	56
4. Comments on Proposed Decision .....	56
5. Assignment of Proceeding.....	59
ORDER .....	65

**DECISION ON TRACK 1 ISSUES****Summary**

This decision addresses certain energy storage policy and program issues that must be resolved prior to commencement of the investor-owned utilities' (IOU)<sup>1</sup> 2016 energy storage procurement solicitations. Consistent with the Assigned Commissioner's and Administrative Law Judge's Scoping Memo and Ruling issued on June 15, 2015, this decision:

- 1) Approves the investor-owned utilities' request for additional flexibility of energy storage targets between grid domains. We allow the IOUs to satisfy some of their transmission and distribution domain targets through customer-connected projects, up to a "ceiling" of 200% of the existing customer domain targets.
- 2) Denies the requests for modifications to the Request for Offer process to require additional specificity regarding operational need or location.
- 3) Clarifies that DC-based storage used as part of a DC microgrid is an eligible storage product for purposes of meeting the storage targets established in Decision (D.) 13-10-040 and the requirements of Assembly Bill (AB) 2514 (Skinner, 2010),<sup>2</sup> but finds that Hydrogen-based power-to-gas option (P2G) is ineligible to meet the storage targets established in D.13-10-040 and the requirements of AB 2514 when injected into the natural gas pipeline.
- 4) Finds that credit for SGIP-funded energy storage projects should be split evenly between an unbundled customer's IOU and the Community Choice

---

<sup>1</sup> The IOU's are Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas and Electric Company (SDG&E).

<sup>2</sup> Statutes 2010, ch 469.

- Aggregation/Energy Service Provider for purposes of meeting the storage targets.
- 5) Finds that voluntary energy storage deployments should count towards the storage target established for that customer's Load Serving Entity.
  - 6) Extends the authorization of the Power Charge Indifference Adjustment mechanism to recover potential above-market costs associated with departing load for market/"bundled" energy storage services procured via the 2016 solicitation.
  - 7) Defers the resolution of the request for extension of the Power Charge Indifference Adjustment mechanism for market/"bundled" energy storage contracts beyond 10 years to applications for approval of contracts resulting from the 2014 storage solicitation process.
  - 8) Defers the resolution of the requests to change the Power Charge Indifference Adjustment mechanism to the applications for approval of contracts resulting from the 2014 storage solicitation process.

This proceeding remains open to consider Track 2 issues.

## **1. Background**

On March 26, 2015, the California Public Utilities Commission (Commission or CPUC) opened Rulemaking (R.) 14-03-011 to address ongoing implementation of Assembly Bill (AB) 2514<sup>3</sup> and to continue to refine policies and program details as required or recommended by Decisions (D.) 13-10-040 and D.14-10-045, which established the Energy Storage Procurement Framework and Design Program and approved the utilities' applications and framework for the 2014 biennial procurement period. The Commission also proposed the consideration of recommendations included in the California Energy Storage

---

<sup>3</sup> Statutes 2010, Ch. 469.

Roadmap, an interagency guidance document that was jointly developed by the California Independent System Operator (CAISO), the California Energy Commission, and the Commission. This rulemaking is the successor to R.10-12-007.

In D.13-10-040,<sup>4</sup> the Commission adopted a total energy storage procurement target of 1,325 megawatts (MW), allocated to each of the investor-owned utilities (IOUs) in four biennial solicitations through 2020 (non- IOU load serving entities have targets based on 1% of annual peak load by 2020). That decision provided a basis for cost/benefit analysis in several use cases, adopted caps for procurement of storage in various grid domains (Transmission, Distribution and Customer), and allowed for some flexibility across the transmission and distribution grid domains, but not into and out of the customer grid domain. In addition, the decision allowed each IOU to utilize its proprietary protocols for assessing and selecting winning energy storage bids but required the IOUs to develop a consistent evaluation protocol (CEP) for reporting/benchmarking and facilitating a consistent comparison across utilities, bids, and use-cases. D.13-10-040 also directed that a comprehensive evaluation of the Energy Storage Framework and Design Program be conducted no later than 2016 and once every three years thereafter.

In D.14-10-045, the Commission evaluated and approved the IOUs' energy storage procurement plans for the 2014 biennial period, with some modifications. In addition, D.14-10-045 approved eligible energy storage technologies and approved the Power Charge Indifference Adjustment (PCIA) mechanism to

---

<sup>4</sup> This accounting of D.13-10-040 and D.14-10-045 is meant to be illustrative and not exhaustive. Please see each respective decision for a complete list of policies and programs adopted.

allow recovery of potential above-market costs associated with departing load for market/"bundled" energy storage projects but denied a request for an extension of the PCIA mechanism for market/"bundled" energy storage contracts beyond 10 years. Finally, the Commission approved the proposed IOUs' CEPs, with modifications, and directed that these evaluation protocols be used in the December 2014 solicitation requirements and bid materials.

In December 2014, the CAISO, the Commission and the California Energy Commission (CEC), in cooperation with interested parties, published "Advancing and Maximizing the Value of Energy Storage Technology: A California Roadmap" (Storage Roadmap) to address ongoing challenges associated with continued expansion of energy storage in California. The Storage Roadmap identified needed actions, set priorities and defined the responsibilities of each organization to address the challenges. Several of the items identified in the Storage Roadmap will be considered in this proceeding.

Following the Prehearing Conference held on May 20, 2015, the Assigned Commissioner and Administrative Law Judges issued a Scoping Memo and Ruling on June 6, 2015 (Scoping Memo and Ruling). The Scoping Memo and Ruling determined that the proceeding would be divided into two tracks. The first track will consider only those issues that must be expeditiously resolved prior to commencement of the IOUs' 2016 energy storage procurement solicitations and the required January 1, 2016 Tier 2 Advice Letter compliance filings of Electric Service Providers (ESP) and Community Choice Aggregators (CCA). Track 2 will consider additional issues for the continued development and refinement of the Energy Storage Procurement Framework and Design Program.

Opening comments on the Track 1 issues were filed on July 8, 2015.<sup>5</sup> Reply Comments were filed on August 3, 2015.<sup>6</sup> On July 28, 2015, the Commission's Energy Division conducted a workshop on issues related to Energy Storage Procurement Best Practices, the consistent evaluation protocol, and an Evaluation Plan for the Energy Storage Procurement Framework and Design Program. On August 19, 2015, staff of the Commission's Energy Division and Safety and Enforcement Division conducted a workshop on issues related to Energy Storage Technology Eligibility and Safety. On September 18, 2015 ALJ Halligan issued an e-mail ruling requesting comment on the combined workshop report prepared by staff. Opening and Reply Comments on the workshop report were filed on October 2, 2015 and October 9, 2015, respectively.

## **2. Scoping Memo Issues**

The Scoping Memo and Ruling determined that this Rulemaking will continue to adhere to the following guiding principles, set forth in D.14-10-045:

1. The optimization of the grid, including peak reduction, contribution to reliability needs, or deferment of transmission and distribution upgrade investments;
2. The integration of renewable energy; and
3. The reduction of greenhouse gas emissions to 80 percent below 1990 levels by 2050.

---

<sup>5</sup> Opening Comments were filed by: PG&E; SCE; SDG&E; jointly by the Direct Access Customer Coalition (DACC) and Alliance for Retail Energy Markets (AREM); the Environmental Defense Fund (EDF); the Office of Ratepayer Advocates (ORA); the California Independent System Operator (CAISO); the California Energy Storage Alliance (CESA); SolarCity; the Clean Coalition; jointly by Marin Clean Energy and the City of Lancaster; the Sierra Club; Shell Energy North America (US) L.P.; NRG Energy; the Green Power Initiative (GPI); and Robert Bosch, LLC.

<sup>6</sup> Reply Comments were filed by: PG&E; SCE; SDG&E; ORA; the Sierra Club; EDF; DACC/AREM; The Clean Coalition; SolarCity; GPI; CESA; jointly by MCA and the City of Lancaster; the Utility Reform Network (TURN); and the Center for Sustainable Energy (CSE).

The Scoping Memo and Ruling solicited comments on the following Track 1 issues for consideration in this decision:

1. Procurement Best Practices;
2. Refinement of the Consistent Evaluation Protocol;
3. Flexibility of Energy Procurement Targets Between Grid Domains;
4. Eligibility (Phase 1);
5. Safety Standards;
6. Energy Storage Target Tracking for Community Choice Aggregators (CCAs) and Electric Service Providers (ESPs);
7. Cost Recovery; and
8. Coordination Across Agencies

**2.1. Procurement Best Practices - What changes, if any, should be made to the energy storage specific request for offer (RFO) process in advance of the second biennial RFOs?**

D.14-10-045 approved the IOUs' February 28, 2014, Energy Storage Framework and Design Program Applications for the 2014-2016 Biennial Procurement Period, with certain modifications, including the 2014 Energy Storage RFO processes, evaluation methods, and cost recovery mechanisms. The Scoping Memo and Ruling directed parties to identify current best practices and challenges associated with the energy-storage specific RFO processes. In this decision, we consider whether any changes should be made to the energy-storage solicitation processes in advance of the second biennial RFOs.

The IOUs report that although they are still in the midst of administering their first storage-specific solicitations, the RFO results demonstrate that there is substantial interest in energy storage development in California, as reflected by



the robust number and types of offers received.<sup>7</sup> They note that many outstanding issues related to the energy storage solicitation process exist, including the fact that many storage projects are not development ready and do not have site control, permits, or equipment selected.<sup>8</sup> The IOUs also explain that there is a fair amount of uncertainty regarding how storage will integrate and operate as part of the bulk electric system and in the CAISO markets. For example, SCE suggests that at this time the market rules for bidding energy storage into the CAISO market through the CAISO's Non-Generating Resource (NGR) model are not robust enough to provide predictability in how storage resources will be dispatched.<sup>9</sup>

Although they cite a variety of challenges associated with the storage RFOs, the IOUs generally do not recommend revising the RFO processes. In particular, the IOUs recommend that we refrain from adopting additional restrictions or specific requirements for the RFO process.<sup>10</sup> The IOUs recommend that we provide additional flexibility to procure resources across grid domains and additional time and flexibility to negotiate contracts,<sup>11</sup> but maintain that having the flexibility to negotiate contracts tailored to different technologies and projects will allow broader participation and more cost-effective procurement of storage resources. They recommend retaining the flexibility to individually adjust the RFO requirements and information as necessary for the most efficient

---

<sup>7</sup> PG&E Opening Comments on September 18, 2015 Workshop Report at 2; SCE Opening Comments at 2.

<sup>8</sup> SCE Opening Comments at 2.

<sup>9</sup> SCE Opening Comments at 3.

<sup>10</sup> *Id.*, at 5.

<sup>11</sup> SDG&E Opening Comments at 8; SCE Opening Comments at 5.

and cost effective RFO, including, for example, the authority to require a Phase I Interconnection Study of a project, or equivalent interconnection study, by final offer submittal, if not by the time of initial offer in their respective 2016 energy storage RFOs. The IOUs state that this requirement provides useful information regarding interconnection feasibility, potential interconnection limitations on charge and discharge capabilities and upgrade related costs. PG&E notes that while it did not require interconnection studies at the time of offer submittal in its 2014 energy storage RFO, it should retain the flexibility to do so in future RFOs if necessary. Similarly, SCE explained that it initially required a Phase 1 interconnection study to be completed by the time the indicative offer was made, but feedback at SCE's bidder's conference caused it to relax its interconnection requirements to also include CAISO Queue Cluster 8 applications instead. However, SCE states that it became difficult to evaluate the bids without the information provided by a Phase 1 interconnection study.<sup>12</sup>

The IOUs do not support a requirement for a multitude of pro-forma agreements or contracts, explaining that this would require substantial effort and is unlikely to eliminate the need for individualized negotiations to complete project agreements. PG&E notes that while it provided a version of its Energy Storage Agreement along with its 2014 energy storage RFO, it does not have a one-size-fits-all contract that it can provide, given the wide range of possible storage projects and uses, and it should not be required to provide one.<sup>13</sup> PG&E

---

<sup>12</sup> September 18, 2015 Workshop Report at 4.

<sup>13</sup> PG&E Reply Comments at 3.

also requests authority to submit future proposed energy storage contracts through a Tier 3 Advice Letter instead of the current application process.<sup>14</sup>

Several energy storage developers and consumer groups, including, but not limited to, the Green Power Institute (GPI) and Environmental Defense Fund (EDF), commented that they would like to see greater specificity of need and more flexibility of eligibility requirements in the RFOs, such as relaxed interconnection requirements and no RFO requirements for bidders to aggregate their sites, or identify them ahead of time for evaluation. An ideal RFO design, as suggested by Stem, would specify system need and the requirements to meet that need, without over-specifying performance characteristics.

Certain parties also requested greater transparency in the RFO process, for example, requiring the utilities to issue a Request for Information (ROI) prior to issuing an RFO, and/or requiring utilities to release pro forma contracts and related forms for feedback from stakeholders and/or requiring utilities to offer clear guidelines on timelines.

CESA and ORA recommended that the procurement process should value multiple-use applications provided by storage and consider greenhouse gas (GHG) emissions costs, if applicable, as well as the ability of storage systems to reduce GHG emissions in their evaluations of storage bids.<sup>15</sup> ORA supports SolarCity's recommendation that IOUs conduct an ROI process prior to issuing an RFO if time permits, to ensure that the RFO process is informed by robust and up-to-date information. However, ORA also agrees that where IOUs are unable

---

<sup>14</sup> PG&E Opening Comments at 2.

<sup>15</sup> CESA Opening Comments at 8-10.

to identify specific use cases or locations, and where time does not permit, the IOUs should not be required to take these actions.

CESA maintains that the existing procurement framework takes too much time to implement and the Commission should consider streamlining the process.<sup>16</sup> PG&E disagrees, and instead suggests that the current framework does not provide sufficient time for the negotiations necessary to result in a viable contract. PG&E suggests that the next energy storage RFO could be issued sooner than December 1, 2016, to allow more time for negotiations.<sup>17</sup>

CSE recommends that, beginning with the 2016 biennial RFO, customer side storage projects should be limited to systems that include contractual agreements, such as SCE's recent Local Capacity Requirements (LCR) procurements and SDG&E's Distributed Energy Resources (DER) integration pilot program.

TURN does not find any basis for significant near-term changes to the IOUs storage procurement practices. TURN specifically expressed concern with the recommendation of AES Southland (AES)<sup>18</sup> that, as summarized in the workshop report, "[t]he IOUs should consider new value streams, like fast ramping, that storage can provide."<sup>19</sup> TURN is concerned that ascribing

---

<sup>16</sup> CESA Opening Comments at 3.

<sup>17</sup> PG&E Opening Comments at 2.

<sup>18</sup> AES Southland, a subsidiary of AES Corporation, is a CESA member and presented on the RFO Process Panel at the Energy Division staff's July 28, 2015, Energy Storage Workshop.

<sup>19</sup> Draft Workshop Report at 8.

additional value to as-yet-unpriced services may unduly favor procurement of storage over other resources that could also provide fast ramping capability.<sup>20</sup>

SCE also notes that the bidding structure of the CAISO's NGR model is not currently dynamic enough to allow multiple configuration capabilities or modeling of end-use limitations. According to SCE, storage resources should, but do not yet, have an ability to tie their bids to the state of charge of the storage device. SCE also notes that for valuation purposes, it is important to know how the resource's operating limitations will be managed by the CAISO. SCE notes that the CAISO is currently evaluating revisions to the NGR model in its open Energy Storage and Distributed Energy Resources Stakeholder Initiative (ESDER).<sup>21</sup>

GPI and EDF request that the Commission require more sharing of energy storage solicitation data such as prices, capacity and technical capabilities of winning and losing bids to "strengthen the RFO process."<sup>22</sup>

ORA and CESA argue that IOUs should value the dual use/ multiple use applications in their evaluation of storage offers. Multiple use applications are defined in the Storage Roadmap as those that provide multiple services to different entities or jurisdictions.<sup>23</sup> They suggest that some multi-use frameworks are operational now and/or will be soon.

CSE, a Program Administrator for the Self-Generation Incentive Program (SGIP), requests that we limit the eligibility of customer-side storage projects to

---

<sup>20</sup> TURN October 2, 2015, Comments at 2.

<sup>21</sup> SCE Opening Comments at 4.

<sup>22</sup> EDF Reply Comments at 4.

<sup>23</sup> Energy Storage Roadmap, at 14.

meet the IOU's procurement targets to those projects that include "contractual agreements." It is not clear what CSE considers a "contractual agreement," however; as the Commission determined in D.13-10-040, customer-side storage targets may be fulfilled through existing proceedings, including the distributed generation/California Solar Initiative Rulemaking and alternative-fueled vehicle rulemaking.<sup>24</sup>

### **Discussion**

In D.13-10-040, we set the 1,325 megawatt target without identifying specific needs on the electric grid and allowed the IOUs RFO design flexibility. Requiring the IOUs to identify specific use-case, system attributes, standardized interconnection requirements or contract forms in the RFOs at this time would eliminate some of this flexibility and appears unnecessary. To the extent the IOU can identify specific system need, locations or use-cases sought, the IOUs may consider doing so, but we will not require it. For the same reason, we also will not dictate the interconnection requirements associated with the RFOs. Site control is important, but does not provide the same level of cost and project viability information as an interconnection study.

Further, we also decline to require the IOUs to explicitly value all possible revenue streams for multi-use applications. While we expect the IOUs to value multiple revenue streams where the storage provider can demonstrate that such value exists, is quantifiable, and does not result in double-counting of revenue or conflicting use cases, we will not require the IOUs to independently forecast potential future revenue streams, where the value is uncertain or unquantifiable.

---

<sup>24</sup> D.13-10-040, at 58.

Therefore, we see no need to prescribe any changes to the RFO process and eligibility requirement framework at this time. We note that both PG&E and SDG&E provided a fair amount of specificity in their RFOs without Commission direction. We also decline to require the IOUs to share energy storage solicitation data such as prices, capacity and technical capabilities of winning and losing bids to “strengthen the RFO process” as recommended by GPI and EDF. Maintaining the confidentiality of bid information is critical in preventing market-sensitive information from disclosure and protecting the integrity of the market.

Rather than require specific additional information or prescribe specific system needs or use-cases in this decision, we prefer to provide broad guidance to the IOUs on incorporating lessons learned from the joint IOU experience. We encourage the IOUs to coordinate their energy storage RFO processes, to the extent possible, with directions provided in the Distributed Resource Plan Rulemaking<sup>25</sup> and Integrated Distributed Energy Resource Rulemaking<sup>26</sup> for purposes of identifying optimal locations for the deployment of distributed resources.

We decline to approve PG&E’s request to revise the solicitation cycle for the upcoming biennial solicitations. Given the resource constraints faced by the Commission as well as many of the interested parties, any attempt at expediting the procurement schedule further is likely to result in a less thorough process. Moreover, of the three IOUs, only PG&E is following an energy storage only

---

<sup>25</sup> R.14-08-013.

<sup>26</sup> R.14-10-003.

RFO process to satisfy all of its 2014 storage targets. Because SDG&E is currently in the process of soliciting energy storage resources via their All-Source RFO,<sup>27</sup> any change to the energy storage RFO schedule could jeopardize SDG&E's 2016 procurement schedule, and may result in confusion. We also expect that the IOUs and storage developers will gain valuable experience from the first solicitation such that subsequent solicitation processes may require less time. In addition, we note that SDG&E has asked for an extension until March 2016 to file the results of its All Source RFO.

We also decline to approve PG&E's request to submit energy storage contracts through Tier 3 Advice Letters instead of applications. General Order 6B, Section 5.1, *Matters Appropriate to Advice Letters*, states that "the advice letter process provides a quick and simplified review of the types of utility requests that are expected neither to be controversial nor to raise important policy questions." We fully expect to continue to refine our energy storage processes and policies through the recently filed applications<sup>28</sup> as well as through each successive procurement cycle and the resulting applications; therefore, we find that the application process, which provides greater due process protections for all parties as well as greater opportunities for public involvement, remains the appropriate venue to review and consider RFO results.

In comments on the PD, CESA and Stem object to the PD's conclusion that IOUs do not need to forecast "all possible revenue streams" in evaluating proposals in response to ED RFOs when such values are uncertain or

---

<sup>27</sup> On November 25, 2015, the Commission's Executive Director granted SDG&E's request to file their 2014 storage contracts by March 30, 2016, to align with the timing of its All Source RFO.

<sup>28</sup> A.15-12-003 (SCE), and A.15-12-004 (PG&E).



unquantifiable. We disagree and will not require the IOUs to estimate revenues related to new market mechanisms related to “multi-use applications and “flexible resource adequacy capacity”<sup>29</sup> where the value is uncertain or unquantifiable. We agree with the comments of Stem, however, that to the extent the storage provider can sufficiently identify and quantify additional revenue streams that do not result in double-counting of revenue or conflicting use cases, the IOUs should consider those revenue streams in their evaluation of bids.

## **2.2. Refinement of the CEP - What refinements are necessary?**

In D.13-10-040, we permitted the IOUs to propose their own methodologies to evaluate the costs and benefits of energy storage bids. D.13-10-040 also required the IOUs to jointly develop a CEP along with Energy Division to be used for benchmarking and general reporting purposes. In this rulemaking we asked parties to comment on potential refinements to the CEP to ensure that it conforms to the Commission’s adopted energy storage guiding principles of grid optimization, integration of renewable energy, and reduction of greenhouse gases.

The IOUs commented that the CEP will be applied for the first time to the IOUs ongoing 2014 storage solicitation and it would be premature to create refinements to the CEP.<sup>30</sup> They suggest that after the utilities and the Energy

---

<sup>29</sup> CESA January 4, 2016, Opening Comments at 4-5.

<sup>30</sup> SCE Comments at 6.

Division are able to utilize and better understand the CEP, the Commission will have more insight as to whether refinements are necessary.<sup>31</sup>

SCE notes that the CEP currently measures many services that support the grid including levelized capacity, energy, and ancillary services benefits. With respect to renewable integration, the CEP tracks renewable-related “end-uses” such as “intermittent resource integration,” and it measures related grid value such as ancillary services value. With respect to GHG reduction, SCE stated that the CEP’s “levelized energy value” metric includes GHG value, which results in a higher energy value if the offers reduce GHG emissions and a lower energy value if the offers increase GHG emissions.<sup>32</sup>

PG&E notes that the California Energy Commission, through its EPIC program,<sup>33</sup> is in the process of developing a public model for optimizing energy storage system by location, size and type.<sup>34</sup> According to PG&E, the EPIC model should be available in the 2015-2016 timeframe.

Other parties propose modifying the CEP. The Sierra Club, the Clean Coalition and EDF maintain that the CEP “does not adequately incorporate the environmental and grid benefits that storage resources can provide.” The Sierra Club, along with EDF and the Clean Coalition also suggest that we require the IOUs to modify the CEP to “include the full range of costs and benefits to ratepayers, including all quantifiable transmission and distribution benefits.”<sup>35</sup>

---

<sup>31</sup> SDGE Comments at 10; PG&E Reply Comments, at 4.

<sup>32</sup> SCE Opening Comments at 6.

<sup>33</sup> California Energy Commission EPIC Proposal PON-13-302 Funding Initiative S8.1.

<sup>34</sup> PG&E Opening Comments at 2.

<sup>35</sup> Clean Coalition Opening Comments at 4.

The Clean Coalition suggests that the CEP should be specifically refined to include, (1) transmission upgrade deferral or avoidance value, (2) avoided transmission access charges, (3) avoided line losses and congestion costs, and (4) voltage support.<sup>36</sup> EDF also suggests that we require the IOUs to employ a “ranking” process to consider environmental and grid impacts, that groups bids into categories depending on whether they: “1)...facilitate meeting GHG emissions targets, 2) are likely to be neither helpful or harmful regarding GHG emissions, or 3) whether a technology will increase emissions.”<sup>37</sup> ORA, along with the Sierra Club, CESA, EDF and the Clean Coalition, all suggest that the CEP quantify GHG emissions reductions. ORA states that this will enable the Commission to “better evaluate the cost-effectiveness of incorporating energy storage into California’s GHG emission reduction policy.”<sup>38</sup>

CESA suggests that the CEP should explicitly include the benefits that energy storage provides, even if market pricings mechanisms are still being developed. It suggests that there is need to understand the application of the CEP for distribution grid reliability-targeted energy storage projects, such as for distribution deferral or power quality and supports additional values to account for ramping capability, “dual-use” cases, and the “optionality” value of storage.<sup>39</sup> CESA and ORA recommended that the procurement process should value multiple-use applications provided by storage and consider GHG emissions costs, if applicable, as well as the ability of storage systems to reduce GHG

---

<sup>36</sup> Clean Coalition Comments, at 5.

<sup>37</sup> October 2, 2105 Comments of EDF on Workshop Report at 6.

<sup>38</sup> ORA Reply Comments at 5.

<sup>39</sup> CESA Opening Comments, at 10.

emissions in their evaluation of storage bids. ORA specifically suggests including a GHG emission reduction adder that nets emission costs with expected emission reduction attributed to the particular storage project in the CEP.

CESA also suggests that the CEP be revised to consider the value of an energy storage resource's ability to "ramp." According to CESA, the ramping capability of energy storage leverages the much larger dynamic range offered by most fossil fuel technologies. The current CEP does not include a value because a market product has not yet been fully implemented, but CESA suggests that we should establish a method for valuing ramping as a placeholder to include in the CEP and for the utilities to include in their proprietary evaluation protocol until there is a market mechanism in place to sufficiently monetize the ramping attribute of energy storage.<sup>40</sup> CESA recommends that the Commission require the IOUs to include the potential value of utilizing the energy storage resource in the CAISO's wholesale markets when the storage assets are not being used for distribution grid reliability, even though cost allocation and cost recovery rules for such dual use cases have yet to be established. Finally, CESA recommends that the Commission require the IOUs to include consideration of the "optionality" value associated with energy storage resources.<sup>41</sup> According to CESA, the optionality value can potentially be quantified using real-options or other option theory evaluations.

ORA suggests that the CEP should be a flexible tool to evaluate energy storage as new rules and regulations modify the value of energy storage. ORA

---

<sup>40</sup> CESA Opening Comments at 9.

<sup>41</sup> *Id.*

also suggests that the CEP should clearly define its qualitative and quantitative requirements to ensure consistency. For instance, ORA suggests that the CEP should state what information any network upgrade costs attributed to storage resources are derived from (*e.g.*, estimates or interconnection studies) and whether the levelized debt equivalence cost includes mitigation actions taken by an IOU. ORA does not recommend revising the CEP to specifically value storage's ramping and dual-use abilities at this time, suggesting that it may be premature to assign any particular value to those characteristics.<sup>42</sup>

TURN recommends that the Commission continue to utilize the existing CEP as a benchmarking and reporting tool, and refrain from modifying it until the utilities and stakeholders have more experience with it. TURN notes that the CEP already includes several key values such as GHG costs and location values. TURN maintains that quantification of too many storage project attributes will lead to an overly complex process that could present modeling challenges. In particular, TURN explains that modeling the impact of storage on GHG emissions is complex and requires consideration of factors affecting the entire Western Electricity Coordinating Council (WECC) region to produce best estimates. Because incremental GHGs do not always match price, which is the basis for dispatch, the impact of storage on GHG emissions may not be intuitive. For instance, the use of storage on a sunny spring day may not provide a consistent level of GHG reductions for reasons that are logical and consistent with production cost modeling and CAISO energy markets. TURN cautions

---

<sup>42</sup> ORA Reply Comments at 7.

against requiring changes to the CEP that increases costs to customers or double counts benefits of energy storage.

Several parties, including the Sierra Club and GPI, request that the CEP be used for contract evaluation purposes and not just reporting or comparison purposes to provide better transparency in an otherwise opaque process.

### **Discussion**

In D.13-10-040 we permitted the IOUs to utilize proprietary methods for bid evaluation. To avoid any potential anti-competitive market behavior, the IOUs do not publish or compare their bid evaluation methodologies.

Since each utility will be using a different evaluation method, we required the IOUs to also utilize a consistent evaluation protocol for benchmarking and reporting purposes. As described in D.13-10-040, the CEP would include a “consistent set of assumptions and methods for valuing storage benefits, such as market services and avoided costs, and estimating project costs that allow adjustments for utility specific factors (such as location, portfolio, cost of capital, etc.) and utility-specific modeling tools based outputs affecting valuation as appropriate to provide a consistent basis for comparison across utilities, bids and use cases.”<sup>43</sup> While the CEP itself is not confidential, most of the cost data considered in the CEP is market sensitive and therefore confidential.

The CEP will be used for the first time at the conclusion of the IOU’s December 1, 2014 Energy Storage RFOs. The CEP provides a means to compare storage offers across the three IOUs, to provide more information regarding the

---

<sup>43</sup> D.13-10-040, Appendix A at 9.

costs and value of storage resources, and to identify any significant differences in the shortlisted storage offers across the three IOUs.

As summarized above, the IOUs and TURN believe that it is premature to make changes to the CEP format. Other parties request changes to the CEP format to capture and identify various quantitative and qualitative attributes, including system wide benefits of energy storage systems, GHG emissions, multi-use application benefits, and optionality or deferral benefits. These parties state that they desire more granularity, transparency and accountability in the CEP. We find that the current CEP format will provide sufficient information to compare bids across the IOUs and establish general benchmarks for storage, and that it is premature to make changes at this time.

We agree with the IOUs that the CEP currently captures the “first order”<sup>44</sup> GHG costs and GHG emissions reductions benefits as these are incorporated into the price forecasts used to establish the net market value of a storage offer. Although there may be “second order” effects associated with potential system-wide benefits of energy storage, we agree with ORA, TURN and the IOUs that these benefits are difficult to model with precision because we don’t know how renewable resources or energy storage projects will be operating at the time the potential storage resources would come on line. Attempting to evaluate the GHG emissions reductions associated with specific storage resources using WECC-wide models with and without each specific storage resource, as suggested by Sierra Club and others, would be an expensive and time-consuming effort that would be unlikely to yield sufficiently reliable results at

---

<sup>44</sup> See Workshop Report on Energy Storage 1, at 19. The term “first order” was introduced by PG&E.

this time. We also decline to adopt recommendations by EDF and others that would require the IOUs to group or “rank” bids based on certain subsets of estimated impacts.

Finally, energy storage bid and procurement information must remain confidential in order to maintain a competitive process that will lead to competitive market outcomes. The CEP was intended to be a benchmarking tool; to compare the IOU’s evaluation mechanisms. While the CEP replaces market prices with publicly available data in order to compare shortlisted projects on an equal basis, it also contains market-sensitive cost data from offers received, which is confidential. As such, the results are also confidential and should remain covered by the confidentiality protocols established in D.06-06-066. This is consistent with our finding in D.13-10-040 that treatment of procurement data of bids and contracts under the Energy Storage Framework should be governed by and consistent with the confidentiality requirements set forth in D.06-06-066. D.13-10-040 also found that it is important to balance the need to preserve a competitive RFO process with the need to provide procurement information to assist in the expansion of the storage market.<sup>45</sup> In order to maintain competitive market results the energy storage RFO should continue to be subject to the same confidentiality rules as the All-Source RFOs. No changes are needed at this time to the confidentiality rules.

The Commission should ensure that industry gets insight into how the market is developing, however, which can be achieved by the 2016 Energy Storage Procurement Framework and Design Program Evaluation Plan report.

---

<sup>45</sup> D.13-10-040 at 65.



Commission staff should also work with the IOUs to determine if there are aggregated data sets that can be made available to interested parties without violating the confidentiality requirements.

Only Energy Division staff, and interested non-market participants who sign a non-disclosure agreement, may access the completed CEP.

In its comments on the PD, GPI argues that the PD erred by creating a “blanket” confidentiality exclusion for the CEP. GPI urges that “a public version of the CEP should be offered by each IOU with any information that truly needs to be kept confidential redacted” in order to fulfill the “Commission’s long-standing policies on confidentiality, pursuant to D.06-06-066 and other precedent[.]”<sup>46</sup> GPI’s argument overlooks the fact that our decision simply directs the IOUs to follow the confidentiality procedures provided by D.06-06-066 for CEP data. GPI’s argument also ignores that, like other types of energy resources, this Commission already determined in D.13-10-040 at pages 65-66 energy storage bid and procurement information must remain confidential in order to protect California’s nascent energy storage market from anti-competitive bidding behavior which could impede the development of a diverse portfolio of technologies and applications that may provide diverse grid benefits in the future. GPI fails to produce any evidence that energy storage is significantly different from other procurement technologies and that it is immune from anti-competitive market effects. Such effects not only can impair short term development of storage technologies, but may ultimately harm consumers by reducing the variety of resources available to the grid. Further, GPI’s argument

---

<sup>46</sup> GPI January 4, 2016, Opening Comments at 4-7.

comes after the IOUs have already submitted their December 2015, applications for approval of energy storage contracts resulting from the 2014 energy storage RFOs that were conducted and filed with this Commission subject to the confidentiality rules promulgated in D.13-10-040. Granting GPI's request here could violate the due process rights of the utility applicants as well as the energy storage bidders who responded to the IOU RFOs with a reasonable expectation that their bids would remain confidential consistent with D.06-06-066. Therefore, we decline to adopt GPI's recommendations.

### **2.3. Flexibility of Energy Storage Targets Between Grid Domains**

As noted above, D.13-10-040 adopted energy storage targets for PG&E, SCE and SDG&E, allocated among three grid domains (points of grid interconnection): transmission, distribution and customer-sited. D.13-10-040 provided the IOUs some flexibility in shifting MWs between grid domain targets. Specifically, the IOUs are allowed to shift up to 80% of MWs between the transmission and distribution (T&D) grid domains, but no shifting is currently allowed between the customer and the T&D domains.

In this rulemaking the IOUs recommend that additional flexibility be allowed for the customer grid domain, and suggest that the current procurement targets for each grid domain be seen as a "floor" rather than as a "ceiling."<sup>47</sup>

SCE also recommends that additional flexibility in the IOU storage targets across the three grid domains (transmission, distribution, and customer) will encourage competition of all storage resources. Specifically, SCE asks the Commission to remove the cap on customer-connected storage by approving

---

<sup>47</sup> PG&E Opening Comments at 2, SCE Reply Comments at 17.

flexibility to shift storage megawatts (MW) among all storage domains. SCE recommends that the Commission maintain the transmission and distribution grid domain minimums of 20% as well as the customer grid domain target, but should allow the remaining 80% of the transmission and distribution grid domain targets, 396 MW in SCE's case, to be shifted among all grid domains.<sup>48</sup> According to SCE, this would support the Commission's goal of market transformation by requiring some amount of storage procurement in each grid domain while allowing the majority of the storage targets to be selected based on cost-competitiveness, minimizing cost to customers.

SCE explains that while it originally planned to procure resources across all grid domains in its first energy storage-only solicitation, the lack of flexibility on the customer target and SCE's large procurement of customer-connected storage in its LCR RFO prevented it from soliciting additional customer-connected storage.<sup>49</sup> SCE suggests that the customer-connected target be given the same flexibility as the transmission and distribution connected storage, thus allowing customer-connected storage to compete head-to-head against T&D connected storage.<sup>50</sup>

SCE further states that if we decide to grant the utilities' request for additional flexibility to shift storage megawatts to the customer grid domain, we should also permit all of SCE's customer-connected storage to count toward the storage targets. SCE notes that it took early action in its LCR RFO, and signed contracts for 100.5 MW of transmission-connected storage and 161 MW of

---

<sup>48</sup> SCE Opening Comments at 8.

<sup>49</sup> SCE Opening Comments at 5.

<sup>50</sup> Workshop Reports on Energy Storage Track 1, R.15-03-011, issued on September 18, 2015, at 7.

customer-connected storage.

SCE suggests that allowing flexibility on the customer grid domain would likely result in a higher portion of the overall storage targets being filled by customer-connected storage, and that, depending on how it is procured and what it is procured for, additional customer-connected storage may be paid for by all customers, or it may be paid for by bundled customers only. SCE notes that if the storage is procured for local reliability, as was the case in the LCR RFO, then the storage will be paid for by all customers, bundled and unbundled, because it benefits all customers. However, if the customer-connected storage is procured for a market purpose, such as resource adequacy capacity, through a biennial Storage RFO, then the storage would be paid for by bundled customers only.<sup>51</sup>

PG&E supports shifting of targets into the customer grid domain, to allow for maximum procurement flexibility and to enable the IOUs to plan grid-optimal mixes of energy storage. PG&E recommends that all customer-sited energy storage developed during the “storage target” time period count toward PG&E’s overall energy storage target of 580 MW, even if the final amount of customer-sited energy storage exceeds the original target of 85 MW by 2020. This should include all storage resulting from the SGIP and other Commission-approved customer domain storage resources, customer-sited storage projects resulting from direct procurement or Energy Storage Agreements approved by the Commission, and customer-sited energy storage pilot projects. PG&E also suggests that if increased customer-sited storage is

---

<sup>51</sup> SCE Opening Comments at 5.

offset by decreased storage in the distribution and/or transmission domains, then customer-sited storage may be funded through rates collected from all customers, whether bundled, community choice aggregation or direct access.

SDG&E also recommends that the Commission allow shifting of megawatts into and out of the customer grid domain, including allowing all of SDG&E's customer-connected storage to count toward the storage targets. Like PG&E, SDG&E suggests that if customer-connected storage serves a distribution reliability function (*i.e.*, deferring or displacing a conventional distribution system upgrade, or if it is procured under Long-Term Procurement Planning (LTPP)), then costs should be allocated to all customers as they would have for the conventional upgrade or procurement. SDG&E suggests shifting MW into the customer domain maintains existing cost allocation expectations as mentioned above.

ORA supports the recommendation to provide additional flexibility to shift resources between grid domains, but recommends that we apply quantitative boundaries for MW shifting between domains to ensure accountability and ensure that any shifting of MW between grid domains is cost effective.

ORA recommends that we allow up to 80% of allocated MW to be shifted. However, ORA maintains that in doing so, we should consider the extent to which greater flexibility of energy storage targets between grid domains: 1) may crowd out particular domains, 2) could improve the ability of the IOUs to optimize the grid, 3) could increase or decrease costs to ratepayers, and 4) would

be unnecessary if rules and regulations are adopted to facilitate the deployment of dual-use energy storage resources.<sup>52</sup>

CESA maintains that customer-sited energy storage should explicitly be allowed to participate and compete in all energy storage RFOs.<sup>53</sup> Moreover, CESA argues that if customer-domain systems are selected in RFOs, those winning energy storage projects should count toward the utilities procurement targets even if the utility has already fulfilled its customer-domain target amount. On the other hand, CESA also suggests that we prohibit the utilities from shifting procurement requirements *away* from the customer-sited domain target to transmission and distribution domain targets because one transmission project could effectively fulfill the entire customer domain target. Essentially, CESA argues that customer-sited systems should be eligible to fulfill all domain targets, but that T&D systems should not be eligible to fulfill customer-sited domain targets.<sup>54</sup>

CESA maintains that shifting of megawatts should not have negative cost allocation implications for ratepayers, because customer-domain energy storage projects are more likely to take advantage of multiple revenue streams, resulting in lower costs of providing a distribution level service (such as substation upgrade deferral) compared to an energy storage project dedicated only to that service.

Stem supports the solution suggested by CESA that megawatts should only be shifted into the customer domain if a customer domain project is

---

<sup>52</sup> ORA Reply Comments at 8.

<sup>53</sup> CESA Opening Comments at 6.

<sup>54</sup> *Id.*, at 11.

awarded a contract in a utility's storage RFO (either distribution or transmission). Further, Stem suggests that the megawatts shifted should be limited to the amount of the successful bid.

TURN supports allowing additional flexibility, but recommends that the current grid domain targets be seen as the minimum procurement target, or "floor," for each grid domain target rather than the maximum. This would allow the IOUs flexibility to satisfy some of their transmission and distribution grid domain targets through customer-connected projects (moving megawatts into the customer domain). However, TURN agrees with CESA that we should maintain the current prohibition on shifting megawatts out of the customer domain to prevent IOUs from satisfying customer domain MW targets with distribution or transmission projects. According to TURN, a "ceiling" should be adopted for the customer grid domain, equal to 200% of the current target for each utility.

Similarly, SolarCity recommends that procurement targets in customer grid domain should be seen as a floor and not a ceiling and that the customer side projects should be allowed to compete in all energy storage procurements. However, SolarCity does not recommend the same flexibility for transmission and distribution side projects. SolarCity maintains that procurement should not be shifted from the customer-side to the transmission or distribution side because a single transmission project could take up the entire capacity of the customer domain.

Sierra Club does not recommend any changes to the customer domain targets, expressing concern that transferring megawatts in and out of the customer grid domain would reduce energy storage procurement in other areas, thereby undermining the energy storage procurement targets. Sierra Club

suggests that raising the energy storage target in Track 2 of the proceeding would allow inclusion of customer side generation into the target without reducing overall targets.<sup>55</sup>

Shell Energy Inc. (Shell) recommends that if flexibility in grid domains is allowed then the Commission should find that the customer, or owner of the third party installed energy storage system, also owns the procurement “credit” associated with customer-sited energy storage. Shell further states that cost allocation issues may arise because customer-side storage may be associated with the energy procurement market function, reliability function while being supported by SGIP.<sup>56</sup>

Marin Clean Energy and the City of Lancaster (the CCA Parties) express concern about allowing for additional flexibility, arguing that the appropriateness of customer grid domain flexibility depends on how tracking and cost recovery issues are resolved. The CCA Parties argue that shifting storage targets between grid domains can impact cost recovery and, by association, the CCAs. The CCA Parties are concerned that shifting among grid domains may result in the IOUs freely shifting energy storage procurement into various grid domains, and, at the same time, obtaining an overly generous cost recovery policy that awards the IOUs credit toward their procurement targets, even if CCA customers pay for energy storage through the PCIA and other cost-recovery conventions. CCA customers would have to pay for energy procurement twice and receive only partial credit toward their providers’ own

---

<sup>55</sup> Sierra Club Reply Comments at 7-9.

<sup>56</sup> Shell Opening Comments at 2-3.



targets. They maintain that the Commission should leave the grid domain target allocations intact.<sup>57</sup>

GPI also suggests that some shifting should be allowed but recommends that no more than 25% in any given solicitation cycle, in order to preserve program consistency and market certainty.

### **Discussion**

We expect the IOUs to evaluate and procure storage projects based on whether they fulfill a system need at a reasonable cost. To the extent that shifting of megawatts into and out of the customer domain facilitates this goal, the IOUs should be permitted the flexibility to do so. Each of the IOU recommends allowing shifting of megawatts into and out of the customer grid domain and allowing all of customer-connected storage to count toward the storage targets. We find this proposal reasonable, if combined with the “floor” and “ceiling” limits articulated by TURN.

Specifically, so that customer domain targets are not significantly undercut by a single transmission or distribution project, we establish a minimum floor of 100% deployment in the customer domain (*i.e.*, T&D systems may not be used to fulfill the minimum customer domain targets). However, we will allow the IOUs to satisfy some amount of their T&D domain targets through customer-connected projects, up to a “ceiling” of 200% of the existing customer domain targets. These “floor” and “ceiling” for the customer domain targets are illustrated numerically in Table 1, below. Because customer-sited storage projects may have an unfair cost advantage through participation in SGIP, we further clarify that

---

<sup>57</sup> Marin Clean Energy and the City Lancaster Reply Comments at 2-3.

only customer-sited projects that are *not* funded through SGIP may count towards the T&D targets. There is no change in flexibility between distribution and transmission grid domains. In addition, in response to comments from ORA, we clarify that the flexibility given to customer-connected storage does not change the 2020 energy storage targets or require the IOUs to procure in excess of their specific 2020 energy storage targets.

Table 1: Customer Domain Energy Storage Procurement Targets

Utility	Total Customer Domain Targets Established by D.13-10-040 (MW)	Minimum Customer Domain Procurement (MW)	Maximum Customer Domain Procurement (MW)
SCE	85	85	170
PG&E	85	85	170
SDG&E	30	30	60

#### **2.4. Eligibility (Phase 1)**

AB 2514 and Pub. Util. Code Section 2853 (a) define what constitutes an eligible “energy storage system.” D.13-10-040 determined that all energy sources defined by Pub. Util. Code Section 2835 (a), except pumped storage resources over 50 MW, should be eligible to bid into energy storage solicitations.

D.14-10-045 then clarified eligible technologies to be included in the 2014 Energy Storage Solicitation but deferred a broader discussion of eligibility to this proceeding.<sup>58</sup> The Scoping Memo and Ruling adopted a two-phased approach to evaluating eligibility, with Track 1 focusing on new technologies not previously

---

<sup>58</sup> D.14-10-045 at 60.

considered in preparation for the 2016 energy storage solicitation process, and Track 2 addressing previously excluded technologies.

Two potentially eligible technologies were discussed by parties in comments and at the workshop for potential eligibility in the 2016 energy storage solicitation process. First, Bosch LLC seeks clarification on whether DC based storage for microgrids is eligible. Bosch LLC explains that DC based storage used as the storage component of a DC microgrid meets Section 2835(a) requirement because it is a “commercially available technology (batteries) that is capable of absorbing energy, storing it for a period of time, and thereafter dispatching the energy.<sup>59</sup>” Bosch LLC also explains that it meets the AB 2514 legislative requirements for an energy storage system since it will be cost effective, reduce greenhouse gas emissions, reduce peak demand, defer or substitute for transmission and distribution investments and will increase grid reliability. According to Bosch LLC, DC based storage also meets the “Guiding Principles” established by the Commission: grid optimization and integration of renewable energy.<sup>60</sup> No parties objected to or disagreed with the Bosch LLC comments. We find that Bosch LLC meets all the required criteria per AB 2514 and should be considered eligible.

The California Hydrogen Business Council (CHBC) also requested that we clarify that hydrogen Power-to-Gas (P2G) and Hydrogen Energy Storage is a viable energy storage technology consistent with AB 2514. CHBC explains that P2G is the process of using electrolysis to split water into hydrogen and oxygen.

---

<sup>59</sup> Bosch LLC Opening Comments at 4-8.

<sup>60</sup> *Id.*

Through this process, electrical energy is converted to chemical energy in the form of hydrogen, which can then be transported through the natural gas grid via blending or further conversion to methane, transported by other means such as trucks, or used directly at the point of production. The stored chemical energy can be used to generate electricity via a fuel cell or other generation device, as a transportation fuel, or for any other purpose for which hydrogen or methane is used.

In D.14-10-045, we found that a qualifying storage component included with a dairy, agricultural, or food waste biogas project, as described in that proceeding by Agricultural Energy Consumers Association (AECA) and GPI, was eligible to be counted toward the IOUs storage targets. However, we also found that the “natural gas pipeline” does not qualify as the storage component of a biogas projects.<sup>61</sup> For consistency, we apply the same biogas analogy here for P2G, and find that using stored hydrogen for natural gas pipelines, although a potentially valuable resource, should not be eligible to count toward the IOUs’ storage capacity target. We note that CHBC did not ask us to clarify whether hydrogen used by a distributed generator or a central power plant to generate electricity might be considered eligible, so we do not reach any conclusion regarding that potential application at this time. We also do not reconsider the eligibility of managed charging applications and their role in providing grid services at this time.

In comments on the PD, PG&E, CHBC, SoCalGas and SDG&E, request that we modify the PD to find that hydrogen P2G is an energy storage technology

---

<sup>61</sup> D.14-10-045, at 61-62.

consistent with AB 2514.<sup>62</sup> In this decision, we decline to revise our decision finding that a natural gas pipeline is ineligible as a storage device. We note that the scope of Track 2 of this proceeding includes consideration of new or evolving circumstances that pertain to previously excluded energy storage technologies to allow for further analysis.<sup>63</sup>

## **2.5. Energy Storage Target Tracking for CCAs and ESPs**

Parties disagree as to which entity, the IOU or the CCA/ESP, should be authorized to count particular projects toward their respective energy storage targets. D.13-10-040 set higher storage procurement targets for the IOUs than for ESPs/CCAs because ESPs/CCAs were required to pay certain non-bypassable charges that may be used by the IOUs to develop energy storage systems.<sup>64</sup> D.14-10-045 also approved all SGIP-funded storage, regardless of its location or load-serving entity, to count towards the IOU's 2014 storage procurement targets.<sup>65</sup>

The IOUs recommend that they continue to be awarded credit for any SGIP-funded projects located in their service territories.<sup>66</sup> They argue that we

---

<sup>62</sup> PG&E January 4, 2016, Opening Comments at 3-5; CHBC January 4, 2016 Opening Comments at 4; SoCalGas January 4, 2016, Opening Comments at 2-4; SDG&E January, 2016 Opening Comments at 2.

<sup>63</sup> January 6, 2016, Assigned Commissioner and Administrative Law Judge's Scoping Memo and Ruling Seeking Party Comments, at 6.

<sup>64</sup> *Id.*, at 46.

<sup>65</sup> D.14-10-045 at Conclusion of Law 35.

<sup>66</sup> SDG&E Opening Comments at 14; SCE Opening Comments at 12; PG&E Opening Comments at 7.

cannot now modify the counting rules without also revising the targets.<sup>67</sup> SCE specifically recommends that we consider, as part of our review of the energy storage procurement in Track 2, revised targets for both IOUs and ESPs/CCAs that are based on the same percentage of peak load.<sup>68</sup> Until then, SCE recommends that we continue to allocate SGIP-funded storage projects toward the IOU's storage targets consistent with the principles adopted in D.13-10-040. SCE also recommends that for voluntary storage deployments (*i.e.*, those installed by customers without an associated financial incentive from any load-serving entity) no load-serving entity should receive credit towards their respective targets. However, if we decide that the load serving entity should receive credit for voluntary storage deployments, SCE suggests that the treatment should be the same regardless of whether the deployment is in an IOU or ESP/CCA service territory.<sup>69</sup>

ORA and CESA suggest that for SGIP-funded projects deployed by an ESP customer or in a CCA's service territory, the load serving entity should receive the storage credit. ORA and CESA also suggest that if a customer of an ESP or a CCA voluntarily deploys an energy storage system within the service territory of the CCA in compliance with Public Utilities Code Section 2835, the voluntary deployment should count toward the associated load serving entity's procurement target.<sup>70</sup>

---

<sup>67</sup> SCE Reply Comments at 23.

<sup>68</sup> SCE Opening Comments at 13.

<sup>69</sup> SCE Opening Comments at 14.

<sup>70</sup> ORA Opening Comments at 7.

TURN also sees no need to distinguish between SGIP-funded and voluntarily deployed projects for allocation of storage credit. TURN suggests that since the SGIP is intended to set appropriate incentive levels to encourage distributed generation adoption, SGIP-funded projects should count towards the statewide targets adopted in D.13-10-040, and customer investments should be tracked to inform the Commission's assessment of the program's progress toward market transformation. TURN suggests that for customers who deploy storage with or without SGIP subsidies, storage "credit" should be evenly split between the load serving entity and the IOUs, if they differ. According to TURN, this would ensure that IOUs retain full credit for bundled customer storage projects.

Likewise, PG&E recommends that, because voluntarily deployed customer-sited projects are likely to be driven by the end-use customer's economic value propositions embedded within retail rates, and both the IOUs and the CCA/ESP contribute to the rate structures for CCA/ESP customers, customer-sited energy storage projects voluntarily deployed by CCA/ESP customers should be split between the IOU and the CCA/ESP.<sup>71</sup> PG&E recommends that we split each project's credit between CCAs/ESPs and IOUs based on each entity's energy storage targets as a percentage of that entity's 2020 peak load, "which would assign approximately one-third of the credit to CCA's for voluntary projects."<sup>72</sup>

---

<sup>71</sup> PG&E Opening Comments at 7.

<sup>72</sup> *Id.*

AReM/DACC argue that since public purpose charges, including funding for the SGIP, are collected from all customers, including direct access customers, permitting only the IOU s to count energy storage projects toward their targets is unfair, discriminatory and anti-competitive.<sup>73</sup> AReM/DACC note that while D.13-10-040 concluded that the IOUs would be permitted to count public purpose funded projects toward their energy storage targets, there is nothing in the decision that entitled them to count all future public-purpose projects in the same manner.<sup>74</sup> AReM/DACC point out that the Commission has addressed similar counting and crediting issues regarding the allocation of Renewable Energy Credits (RECs) for renewable customer-owned distributed generation facilities funded through the California Solar Initiative (CSI) or SGIP.<sup>75</sup> In D.07-01-018 for example, the Commission found that the customer installing the renewable DG facility was entitled to the REC, even when partially funded through SGIP, finding that: “[t]he Commission should allow all renewable DG system owners to retain the RECs produced by their facilities irrespective of whether or not they receive ratepayer funding from programs such as CSI, SGIP, or net metering.”<sup>76</sup>

Similarly, AReM/DACC state that customers voluntarily deploying, installing, and interconnecting energy storage facilities should retain all benefits of their installation, including the right to decide how best to use the associated energy storage credit. AReM/DACC state that the customer should “retain the

---

<sup>73</sup> AReM/DACC at 2-5.

<sup>74</sup> AReM/DACC Reply Comments at 6.

<sup>75</sup> AReM/DACC Opening Comments at 2-4.

<sup>76</sup> D.07-01-018 at 30.



storage credit,... and should be able to make that credit available to the LSE from whom it receives service or with whom it collaborated or partnered in deploying the storage project.”<sup>77</sup> Shell also proposes that the storage “credit” should belong to the customer, whether funded by SGIP or voluntarily deployed.

The CCA Parties propose that eligible energy storage procurement located in a load serving entity’s territory should be counted toward that provider’s targets, regardless of whether the provider is an IOU or a CCA. They note that this policy should apply to projects funded under the SGIP as well as other sources of funding, including projects that are financed by customers. They maintain that this outcome is necessary to prevent perverse outcomes, such as an IOU receiving credit for energy storage projects installed by CCA customers with assistance through a CCA program. The CCA Parties note that this approach should be modified for the ESPs because ESPs do not have “service territories” comparable to a CCA or an IOU. In this case, the CCA Parties suggest that storage credit for ESP customers should be excused from the service territory criterion and instead should be allocated to the ESP serving these customers or the DA customers themselves, whichever the Commission deems appropriate.<sup>78</sup>

### **Discussion**

D.13-10-040 set a procurement target for ESPs and CCAs to procure energy storage commensurate with 1% of their 2020 annual peak load with a requirement for project installation no later than the end of 2024, consistent with the requirements for the IOUs. In that decision, we stated that the target set for

---

<sup>77</sup> AReM/DACC at 4.

<sup>78</sup> CCA Reply Comments at 6.

ESPs and CCAs is “slightly lower than the percentage target we have adopted for the IOUs,” finding that “a lower percentage target is warranted since all customers, including those of ESPs and CCAs, will be required to pay certain non-bypassable charges that may be used by the IOUs to develop energy storage systems,”<sup>79</sup> and “customers of ESPs and CCAs will also pay for any energy storage systems procured for the IOUs’ distribution system as part of their distribution charges.”<sup>80</sup>

D.13-10-040 also determined that “Commission-approved incentive payment for advanced energy storage systems within the SGIP, presently approved for up to 35 MW of advanced energy storage statewide” would count toward each utility’s procurement targets.<sup>81</sup> These projects need not be bid into the final approved solicitation process.<sup>82</sup> In addition, D.13-10-040, concluded that a storage project may count towards the IOUs’ procurement targets if it meets the energy storage policy objectives of a) grid optimizations, renewable integration and GHG reduction, b) is under contract or installed after January 2010, and c) is operational no later than the end of 2024. We also found that storage projects authorized in other Commission proceedings, such as the demand response applications, distributed generation/California Solar Initiative Rulemaking, LTPP, and RA, count towards the IOUs procurement targets if they meet the three criteria described above.<sup>83</sup> D.13-10-040 found that ESPs and CCAs

---

<sup>79</sup> D.14-10-045 at 46.

<sup>80</sup> *Id.*

<sup>81</sup> D.13-10-040 at 27.

<sup>82</sup> *Id.*, at 29.

<sup>83</sup> *Id.*, at 36 and 58.

could meet their procurement targets in any configuration or use-case they chose, including customer-sited and customer-owned storage.<sup>84</sup>

As we noted in D.13-10-040, we set higher procurement targets for the IOUs than for ESPs/CCA specifically because the ESPs/CCAs will be required to pay certain non-bypassable charges that may be used by the IOUs to develop energy storage systems, including SGIP projects.<sup>85</sup> While we required the ESPs/CCAs to procure enough storage to meet 1% of their peak 2020 load, we set procurement requirements for the IOUs equivalent to approximately 2.5-3% of the IOU 2020 peak load. As noted above, in setting these requirements, we noted that the lower percentage for the ESPs/CCAs is warranted because the ESP/CCA customers will pay non-bypassable charges, including SGIP, that may be used to develop energy storage systems.

The Proposed Decision recommended that we not change prior determination to allocate credit for SGIP-funded storage projects to the IOUs in part out of concern that allowing ESPs/CCAs to receive credit for SGIP-funded storage projects may result in ESPs/CCAs relying entirely on SGIP-funded projects to meet their procurement requirements, reducing the incentive for incremental procurement of energy storage by ESPs/CCAs. However, in comments to the PD, parties point out that this reduced incentive is also applicable to the IOUs, and that prohibiting CCAs and ESPs from counting SGIP-funded projects would put the CCAs/ESPs at disadvantage relative to the IOUs. AReM/DACC renew their comment that the PD's approach is discriminatory,

---

<sup>84</sup> *Id.*, at 46.

<sup>85</sup> *Id.*

since public purpose charges, including funding for the SGIP, are collected from all customers, including direct access customers.<sup>86</sup> They suggest that if we are concerned that the ability to count SGIP-funded projects reduces the incentive to procure energy storage projects, we should prohibit all LSE's including IOUs, from counting projects funded by SGIP.

The CCA Parties warn that the PD's policy would require them to "defer customer-sited energy storage procurement until the distributed energy storage market is less uncertain and revenue streams are more quantifiable and available," because " projects would no longer be cost-effective at this stage of market development without SGIP"<sup>87</sup> As an alternative, the CCA Parties suggest that we could place a limit on the ability of CCAs to use SGIP-funded projects toward their procurement targets, and specify that a percentage of a CCAs energy storage procurement target can be met by projects that have been funded through the SGIP.<sup>88</sup>

Similarly, TURN recommends that if we are considering are considering alternatives to the PD's approach, we consider TURN's proposal to split the credit for SGIP-funded projects evenly between an unbundled customers' IOU and CCA/ESP to provide an equal incentive for both parties to support customer-installed projects."<sup>89</sup>

We find merit in the recommendations by TURN and the CCA Parties to split the credit between an unbundled customers' IOU and the CCA/ESP. As

---

<sup>86</sup> AReM/DACC January 4, 2016, Opening Comments at 6.

<sup>87</sup> CCA Parties January 4, 2016, Opening Comments at 10.

<sup>88</sup> CCA Parties January 4, 2016, Opening Comments at 13.

<sup>89</sup> TURN January 11, 2016, Reply Comments at 5.

TURN previously noted, the “rate structure, customers communications, and program offerings (including SGIP but also potentially relevant CCA offering, such as MCE’s support for on-bill repayment)”<sup>90</sup> of the IOUs and CCA/ESP may work in concert to drive the customer’s decision. AReM/DACC also suggested that we allow SGIP-funded projects to be counted by the CCA/ESP until that LSE’s Storage target is fulfilled, at which point the credit for SGIP-funded installations would be split 50/50 between the IOU and the CCA/ESP. Compared to the CCA Parties proposal to allocate credit to CCAs/ESPs up to an unspecified percentage of the CCA/ESP procurement target, or “cap”, we find the TURN 50/50 split proposal to be a more reasonable and straight forward mechanism to ensure that energy storage procurement incentives remain balanced. Therefore, for energy storage projects installed by customers of a CCA or ESP, credit for the SGIP-funded energy storage project should be split evenly between the unbundled customers’ IOU and the CCA/ESP.

In addition, order to encourage voluntary deployment of storage by ESP, and CCA customers, we find that voluntary storage deployments within a given load serving entity’s service territory, should count wholly towards that load serving entity’s storage target.

Recognizing that the ESPs do not have a defined service territory, we find that voluntary storage deployments by ESP customers should count toward the ESP’s storage target. We decline to adopt the PG&E and AReM/DACC proposals to “share” credits or assign credits to customers because they are administratively complex and, with respect to the AReM Proposal, there is no

---

<sup>90</sup> TURN Reply Comments on Track 1 Issues at 10-11.

market for credits toward a utility's storage procurement targets. Allowing credits to be sold or transferred between customers and load serving entities would likely increase costs and decrease efficiency.

## **2.6. Cost Recovery/PCIA**

The Power Charge Indifference Adjustment (PCIA) is a mechanism designed to ensure that customers departing bundled service remain responsible for their fair share of any above market cost associated with generation procured on their behalf prior to their departure. The PCIA was created in response to Public Utilities Code Section 366.2, which required "each retail end-use customer that has purchased power from an electrical corporation on or after February 1, 2001, should bear a fair share of the Department of Water Resources' electricity purchase costs, as well as electricity purchase contract obligations incurred as of the effective date of this act adding this section, that are recoverable from electrical corporation customers in commission-approved rates. It is further the intent of the Legislature to prevent any shifting of recoverable costs between customers."

In D.14-10-045, the Commission "*authorized* the use of the PCIA mechanism to recover above-market costs associated with direct access and other departing load for energy storage projects procured for bundled service, subject to Commission approval."<sup>91</sup> However, the Commission declined to approve actual stranded costs prior to establishment of an approved PCIA methodology for determining above market stranded costs and a sufficient showing of existence of these costs. The decision directed the IOUs to propose a PCIA

---

<sup>91</sup> D.14-10-016 at 46, emphasis in original.

methodology (a Joint IOU Protocol) for determining the above-market stranded cost of bundled energy storage in their December 2015 applications seeking approval of the 2014-2015 RFO results. D.14-10-045 declined a request to extend PCIA cost recovery for bundled energy storage contracts beyond 10 years given concerns about the mechanics of the application of PCIA to energy storage projects.

The intent of the PCIA is to ensure that bundled customers are indifferent to departing customer load by requiring the departing load to pay for any above-market stranded costs associated with the IOUs procurement to meet the customers' electricity needs before they departed. The PCIA calculation must therefore determine when the IOUs procurement costs are "above market" or "stranded." That determination is made by establishing a "market-price benchmark" in the PCIA calculation for the resources used to meet bundled load. In D.14-10-045 we noted that energy storage is a "nascent" market and "the existing market benchmark is not suited to determine the above market cost for energy storage projects."<sup>92</sup> We also noted that "there is insufficient data to develop appropriate market algorithms."<sup>93</sup>

In Track 1 of this proceeding, however, we sought input on whether we should extend the PCIA to future solicitations, and if so, on what basis. In addition, noting that D.14-10-045 denied a proposal to extend PCIA cost recovery beyond 10 years to the life of the contract, we questioned whether our review of

---

<sup>92</sup> D.14-10-045 at 45.

<sup>93</sup> *Id.*

the initial energy storage RFOs demonstrates that circumstances warrant considering an extension of PCIA to the life of the contract.

The IOUs state that no changed circumstances exist that warrant a deviation from our prior decision in D.14-10-045 and that any energy storage resources procured in future solicitations to meet bundled customer needs must be subject to cost recovery from those customers for whom the energy was procured, including above-market cost recovery to the extent recovered through the PCIA.<sup>94</sup>

SCE also argues that the ten-year limitation on the recovery of above-market costs through the PCIA from departing load customers should not apply to energy storage contracts unless those contracts are also less than ten year terms. SCE points out that D.04-10-048 established a ten year cost recovery limitation for fossil-fueled resources and utility-owned generation acquired as a result of the procurement process, and that, as a result, SCE has declined to enter into contracts that exceed this limitation to avoid placing bundled customers at risk of stranded costs as a result of departing load.

ORA notes that the PCIA would be triggered when energy storage systems are procured to meet generation needs or for energy market purposes, such as energy arbitrage or ancillary services. In this case, if above market costs exist, the storage system costs would be recoverable through generation charges, and are therefore paid for by both bundled customers and departing load customers via the PCIA.<sup>95</sup> ORA suggests that if we want to extend the application of the PCIA,

---

<sup>94</sup> SCE Opening Comments at 15.

<sup>95</sup> D.14-10-045 at 41.



we should first consider: 1) whether actual, above-market, stranded costs exist (are IOUs procuring energy storage for dual use or for market purposes and if so, what costs are incurred); 2) expected levels of customer attrition; and 3) expected levels of new customer growth. The potential above-market stranded costs would arise if the costs to procure energy storage are greater than market prices (which would be identified in the PCIA market bench price for energy storage) and bundled customers depart IOU service. ORA recommends we wait until the Joint IOU Protocol is filed to address any proposed changes to the PCIA cost recovery mechanism.<sup>96</sup>

TURN maintains that the Commission should extend PCIA treatment to future storage RFOs without any limit on duration, and continue the current requirement that the IOUs must demonstrate the reasonableness of PCIA treatment for any proposed contract, and resolve the methodological issues related to PCIA treatment as soon as possible.

AReM/DACC argue that the Commission should not approve the extension of the PCIA to future solicitations at this time because there is no above-market stranded cost for energy storage. AReM/DACC further argue that there have been no changed circumstances since we considered this issue in A.14-02-006 et al. and determined that the period for PCIA cost recovery would remain unchanged at 10 years.

### **Discussion**

Eligibility for PCIA treatment supports the “indifference principle” affirmed in D.14-10-045. However, while we found in D.14-10-045 that it was

---

<sup>96</sup> ORA Opening Comments at 8.

reasonable to authorize the utilities to seek PCIA treatment of storage contracts resulting from the 2014 solicitations, we placed the burden of proof on the utilities to “demonstrate circumstances that warrant PCIA treatment for specific proposed energy storage generation/market projects procured for bundled service.”<sup>97</sup> We noted the lack of an approved PCIA methodology for determining above market stranded costs and an insufficient showing of the existence of stranded costs as reasons for hesitancy to go farther. Neither of these conditions has changed as of today, therefore, we see no reason to change our prior determination for the purposes of the 2016 storage solicitation. We also find no new information to justify changing our prior determination regarding the IOU’s request to extend our authorization of the use of the PCIA from the current year limitation, to the life of the contract. We defer the resolution of the request for extension of the Power Charge Indifference Adjustment mechanism for market/“bundled” energy storage contracts beyond 10 years until the Commission has addressed the Joint PCIA mechanism filed with the IOU’s 2014 storage contracts on December 1, 2015. The Joint PCIA mechanism is expected to address the mechanics of the PCIA in terms of how it should be applied when dealing with non-generation resources. Cost recovery issues associated with any potential increase in targets will be considered in Track 2 of this proceeding.

### **2.7. Safety Standards**

The Commission is committed to ensuring the safe deployment and interconnection of energy storage resources. As several parties noted, the Commission reviewed safety issues related to the interconnection of storage as it

---

<sup>97</sup> D.14-10-045 at 46.

relates to the grid in R.12-11-005, and found that the safety of storage devices on customers' premises is addressed by numerous industry standards, rules and regulations. In D.14-05-033, we found that "with respect to the safety of interconnection storage as it interacts with the grid we find the safety standard set forth under Rule 21 to be sufficiently comprehensive."<sup>98</sup> Nevertheless, in this proceeding, the Scoping Memo and Ruling requested comment on the safety standards and certifications applicable to energy storage devices connected to the distribution grid, located at the utility substations, or collocated with power generation facilities. We also requested comment on how safety standards should be effectively monitored and communicated with the Commission and the public.

In comments, and at the August 19, 2015 joint workshop conducted by the Energy Division and Safety and Enforcement Division, various parties stated that new safety standards are under development for energy storage technologies, and current electrical standards are being revised to reflect the emerging technology.

Until specific standards are adopted for storage technologies, the IOUs state that they are following existing standards covering the design, operation, connection and maintenance for electrical systems generally. The IOUs explain that the interconnection and operation of storage systems are consistent with how each utility deploys any other technology it uses on the transmission and distribution system (*e.g.*, capacitors, circuit breakers, etc.). They note that while standards associated with interconnecting energy storage devices are fairly

---

<sup>98</sup> D.14-05-033 at 29.

mature, standards regarding the operation, maintenance, and safety aspects of storage systems are less developed and are continuing to evolve as entities become more familiar with the different technologies.

The IOUs also explain that their power procurement agreements, including contracts for energy storage, include provisions that require the developers of energy storage resources to ensure safe construction and operation of the facilities.<sup>99</sup> In cases where the energy storage is procured under contract to a utility and the third party controls the storage resource, the IOUs explain that they require all bidders and operators of an energy storage device under contract to demonstrate responsible safety management during all phases of the project lifecycle, including contractor qualification, construction, operation and maintenance.” Each operator of an energy storage device under contract to a utility will be required to provide energy storage service consistent with the “Prudent Electrical Practices” standard defined in each contract.

The IOUs note that they are actively involved in industry efforts to develop and refine safety standards for energy storage, and that they require all bidders to follow all applicable safety codes, standards and industry best practices that currently exist – and in the future they will require bidders to follow more specific standards for energy storage technologies as they emerge.

SCE notes that the two main standards for interconnecting energy storage devices, when co-located with power generation facilities, are the National Electric Code (NEC) 705 and the Institute of Electrical and Electronics Engineers (IEEE) 1547. NEC 705 broadly covers distributed resources interconnection and

---

<sup>99</sup> PG&E Opening Comments at 5.

applies to any power-production system connected to the utility through an inverter, regardless of the energy source. Similarly, IEEE 1547 is a series of standards for interconnecting distributed resources that is universally adoptable, technology neutral, and covers any distributed resource as large as 10MW. This series of standards defines the minimum functional technical requirements for performance, operation, testing, safety and maintenance of all types of distributed resources.<sup>100</sup>

SCE notes that IEEE 1547 is a requirement for interconnecting to SCE's system as stipulated in Tariff Rule 21, as well as in the Net Energy Metering Handbook. IEEE 1547 is being revised to address interoperability and to allow distributed energy resources to regulate voltage as well as to provide new rules regarding voltage and frequency. This amendment allows distributed energy resource devices to actively regulate voltage through changes in real and reactive power as long as they coordinate with the distribution grid operator. SCE further notes that these new standards are being implemented in California through modifications to Tariff Rule 21 and can improve operational predictability, and safety and reduce interconnection approval times.<sup>101</sup>

Representatives of the Underwriters Laboratory (UL), a standards development organization, and Sandia National Labs, described emerging energy storage safety standards at the workshop. One particular relevant standard for energy storage safety is UL 1973, which covers energy storage for solar and wind generation and other stationary applications as well as light

---

<sup>100</sup> SCE Opening Comments at 9-11.

<sup>101</sup> *Id.*

electric rail operations. It is evolving into a newer standard, UL 9540, which covers systems for storing energy from power sources or providing electricity to power conversion equipment. Other relevant standards come from the Institute of Electrical and Electronics Engineers, the National Electric Code, the National Fire Protection Association, and the International Electrotechnical Commission.

ORA recommends that we should apply consistent technology-specific safety standards that address energy storage components, storage systems, installation, operation and maintenance, and incident response across all IOUs.

<sup>102</sup> ORA also recommends that we consider how best to require the IOUs to demonstrate compliance with these standards and ensure that the process of reporting and monitoring compliance is transparent and consistent across all IOUs. According to ORA, the Commission could, for example, condition RFO bid eligibility on the RFO bidders' compliance with Commission-approved standards and require IOUs to file yearly compliance reports.<sup>103</sup> The Commission also could require the IOUs to maintain an online, publicly accessible database that includes results from monitoring storage facilities under contract with the IOUs.

CESA notes that in order to enter into an interconnection agreement, energy storage devices are required to meet all applicable standards required by the Rule 21 interconnection process, including UL certification standards.<sup>104</sup> Eligible energy storage devices must continue to meet the technical and safety

---

<sup>102</sup> ORA Opening Comments at 6.

<sup>103</sup> *Id.*

<sup>104</sup> CESA notes that UL is developing a standard (UL 9540) that covers the entire energy storage device and is a compilation of other codes and standards.

standards required for interconnection under Rule 21 to ensure safety during parallel operation with utility distribution systems.

### **Discussion**

As noted by many of the parties, energy storage technology is set to play a fundamental part in California's energy system in the future. It offers unique opportunities for balancing the growing penetration of renewable energy, for smoothing out voltage and frequency fluctuations and for supply of energy. However, it also introduces new challenges for all parties regarding safety and reliability.

As we continue to shape and monitor the utilities procurement of energy storage resources, it is incumbent upon us to also continue to create and shape the development and application of the necessary safety standards that will govern the safety of IOU energy storage interconnection, operation and maintenance. Both the Commission and the IOUs have critical roles in ensuring the safe connection, operation, and maintenance of energy storage resources. While the utility carries the ultimate responsibility for safety of resources connected to its facilities, regardless of whether those resources are utility owned or owned by entities under contract to the utilities, the Commission is also responsible for reviewing the utilities' plans and actions and ensuring that they follow all applicable, rules, standards and regulations regarding safety.

Currently, Tariff Rule 21 governs the safe interconnection and operation of energy storage as it interacts with the grid. As noted above, in our Rule 21 proceeding, we have found the safety standard set forth under Rule 21 to be sufficiently comprehensive. However, Safety and Enforcement Division staff does not currently have a specific inspection protocol for safety of storage, nor is there any exiting process for monitoring the IOUs own monitoring efforts or

compliance with the requirements of Rule 21. In order to closely monitor and participate in the identification and mitigation of the safety issues related to storage as the industry develops, we direct our Safety and Enforcement staff to convene a working group to develop and refine a CPUC energy storage inspection protocol based on expertise from the IOUs, codes and standards development organizations, energy storage developers, and other interested parties within 90 days of the effective date of this decision.

A Safety and Enforcement Division energy storage inspection protocol would not replace the various important standards developed by standards development organizations (SDOs) such as UL and NEC. Rather, the inspection protocol will serve as a high-level guide to Safety and Enforcement Division staff and will reference the existing standards, and Rule 21. The Commission's rules for other industries already reference the standards developed by SDOs, such as the rules for overhead electric line construction that reference the National Electric Manufacturers Association (NEMA) and American Society for Testing Material (ASTM) standards, and others (see G.O. 95). As new data on the safety record of many types of energy storage becomes available, and as new standards such as the just-launched UL 3001 focused on energy storage are completed, the Safety and Enforcement Division inspection protocol will be reviewed and updated periodically.

Each energy storage facility is unique, and it is not possible to have a guideline specific to each type. A preliminary list of possible high-level Safety and Enforcement Division inspection items for energy storage facilities includes:

- Is a safety plan in place?
- Is the safety plan documented?
- Is the safety plan implemented?



- Is the facility regularly inspected?
- Is the energy storage equipment certified?
- Has the safety plan been updated to include the latest available standards from SDOs?

by September 1, 2016, Safety and Enforcement Division staff should also recommend any changes to the Commission's General Orders that may be necessary or advisable to address energy storage interconnection, operation, and maintenance.

### **3. Categorization and Need for Hearing**

The June 15, 2015, Scoping Memo and Ruling of the Assigned Commissioner and Administrative Law Judge affirmed the categorization of this proceeding as quasi-legislative and determined that no hearings would be necessary for Track 1 of R.15-03-011.

### **4. 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 January 4, 2016, by PG&E, SCE, AReM and DACC (jointly) CHBC, CESA, GPI, the CCA Parties, ORA, Bosch, Shell, Sierra Club, SolarCity, Stem, the California Hydrogen Business Council (CHBC), SoCalGas and TURN. Reply comments were filed on January 11, 2016, by ORA, SDG&E, PG&E, SCE, Sierra Club, GPI, EDF, TURN, CHBC, CESA, AReM/DACC and jointly by AReM/DACC, MCE, the City of Lancaster, and Shell.

Edits have been made throughout the Proposed Decision to reflect comments of these parties. In addition to these edits, we provide the following clarifications. First, in their comments on the Proposed Decision, AReM/DACC,

Shell, and the CCA Parties argue that the recommendation to prohibit CCA/ESPs from counting SGIP-funded projects puts CCAs/ESPs at disadvantage relative to the IOUs. They suggest that if we are concerned that the ability to count SGIP-funded projects reduces the incentive to procure energy storage projects, we should prohibit all LSE's, including IOUs, from counting projects funded by SGIP. As an alternative, the CCA Parties suggest that we place a limit on the ability of CCAs to use SGIP-funded projects to count toward their procurement targets, and specify maximum percentage of a CCA's energy storage procurement target that could be met by projects that have been funded through the SGIP.<sup>105</sup> TURN also recommends that the credit for SGIP-funded projects be split evenly between an unbundled customers' IOU and the CCA/ESP. As discussed above, we find the arguments regarding the need to ensure that incentives remain balanced for all parties compelling, however, we find that TURN's 50/50 split proposal to be a more reasonable mechanism to ensure that energy storage procurement incentives remain balanced. We have modified the decision to adopt TURN's recommendation.

Second, in comments on the PD, several parties, including CESA, ORA and Sierra Club, recommend that estimates of storage proposals' impacts on GHG emissions should be calculated in Track 2 of this proceeding or in another proceeding. Although we do not require the IOUs to revise the CEP to include estimates of storage proposals' impacts on GHG emission, at this time, we are mindful that reducing GHG emissions is one of the three guiding principles set forth in D.13-10-010, consistent with AB 2514.

---

<sup>105</sup> January 4, 2016, comments of the CCA Parties at 13.

Third, as we discuss above, GPI urges in its comments on the PD that "a public version of the CEP should be offered by each IOU with any information that truly needs to be kept confidential redacted" in order to fulfill the "Commission's long-standing policies on confidentiality, pursuant to D.06-06-066 and other precedent[.]" This argument ignores that, like other types of energy resources, this Commission already determined in D.13-10-040 at 65-66 energy storage bid and procurement information must remain confidential in order to protect California's nascent energy storage market from anti-competitive bidding behavior which could impede the development of a diverse portfolio of technologies and applications that may provide diverse grid benefits in the future. GPI fails to produce any evidence that energy storage is significantly different from other procurement technologies that it is immune from anti-competitive market effects. Such effects not only can impair short term development of technology, but may ultimately harm consumers by reducing the variety of resources available to the grid.

Further, GPI's argument comes after the IOUs have already submitted their energy storage applications in December of 2015 for approval of RFOs that were conducted and filed with this Commission subject to the confidentiality rules promulgated in D.13-10-040. Granting GPI's request here could violate the due process rights of the utility applicants as well as the energy storage bidders who responded to the IOU RFOs with a reasonable expectation that their bids would remain confidential consistent with D.06-06-066. We decline to adopt GPI's recommendation.

Finally, in comments on the PD several parties assert that the issues concerning the PCIA should be addressed in Track 2 of this proceeding or in another separate proceeding rather than split between this proceeding and IOU's

Applications for approval contracts resulting from the 2014 Energy Storage RFOs. These parties suggest that addressing the PCIA issues in a single proceeding will encourage efficiency and consistency. We decline to adopt the parties' procedural commendations at this time, but note that the assigned Commissioner will take these concerns into account in the development of the scope and schedule for A.15-12-003 and A.15-12-004, along with the ongoing scope and schedule for Track 2 of R.15-03-011.

#### **5. Assignment of Proceeding**

Carla J. Peterman is the assigned Commissioner and Julie M. Halligan is the assigned ALJ in this proceeding.

#### **Findings of Fact**

1. Requiring the IOUs to be more prescriptive with storage attributes and specific project requirements in the RFOs would reduce the flexibility needed by the IOUs in developing their RFOs.

2. Maintaining the confidentiality of energy storage bid information is critical in preventing market-sensitive information from disclosure and protecting the integrity of the energy storage market.

3. Only PG&E is following an energy storage only RFO process to satisfy all of its 2014 energy storage targets.

4. The application process, which provides greater due process protections for all parties as well as greater opportunities for public involvement, is the appropriate venue for review and consideration of RFO results.

5. It is not appropriate to require the IOUs to estimate revenues related to new market mechanisms related to "multi-use applications and "flexible resource adequacy capacity" where the value is uncertain or unquantifiable.

6. D.13-10-040 permits the IOUs to utilize proprietary methods for evaluation of energy storage bids.

7. D.13-10-040 requires the IOUs to utilize a CEP for benchmarking and reporting purposes.

8. The CEP was not intended to determine the results of the RFO process.

9. The current CEP format will provide sufficient information to compare bids across the IOUs.

10. It is premature to make changes to the CEP.

11. D.13-10-040 determined storage bid and procurement information to remain confidential in order to protect California's nascent energy storage market from anti-competitive bidding behavior which could impede the development of a diverse portfolio of technologies and applications that may provide diverse grid benefits in the future.

12. It is difficult to model potential system-wide benefits of energy storage resources with precision absent reliable information regarding how renewable resources or energy storage projects will be operating at the time the storage resources would come on line.

13. A single transmission project could take up the entire capacity of the customer grid domain targets.

14. AB 2514 and Pub. Util. Code Section 2835(a) define what constitutes an eligible "energy storage system."

15. Bosch LLC meets the required criteria for an eligible energy storage system.

16. In D.14-10-045, we found that the "natural gas pipeline" does not qualify as the storage component of a biogas projects.

17. Allowing credit toward meeting the energy storage targets to be sold or transferred between load serving entities would likely increase costs and decrease efficiency.

18. The PCIA is intended to ensure that customers departing bundled utility service remain responsible for their fair share of any above-market cost associated with generation procured on their behalf prior their departure.

19. There is merit in splitting credit for SGIP-funded projects evenly between an unbundled customers' IOU and CCA/ESP to provide an equal incentive for both parties to support customer-installed projects.

20. No new information exists to justify changing our prior determination regarding the IOU's request to extend our authorization of the use of the PCIA from the current year limitation, to the life of the contract.

21. No new information exists to justify changing our prior finding that authorization of the use of the PCIA for potential above-market energy storage costs should be limited to 10years.

### **Conclusions of Law**

1. We should not require changes to the RFO process prior to consideration of the results of the first energy storage RFO.

2. The utilities should retain the flexibility to include specific use-case or project variations in their energy storage RFOs, but should not be required to do so.

3. The IOUs should retain the flexibility to require interconnection studies or specific site control information in their energy storage RFOs, but should not be required to do so.

4. We should not require the IOUs to independently forecast potential future revenue streams associated with storage project bids where the value is uncertain or unquantifiable.

5. It is not reasonable to require the IOUs to share confidential energy storage solicitation data such as prices, capacity, and technical capabilities of winning and losing bids.

6. The IOUs shall coordinate their energy storage RFO processes, to the extent possible, with the directions provided in the Commission's Distributed Resource Plan Rulemaking and Integrated Distributed Energy Resource Rulemaking for purposes of identifying optimal locations for the deployment of distributed resources.

7. PG&E's request to revise the RFO cycles adopted in D.13-10-040 should be denied.

8. PG&E's request to submit energy storage contracts through Tier 3 Advice Letters instead of applications should be denied.

9. The appropriate cost recovery mechanism applied to an energy storage project should be based on the service or regulatory function provided by the project.

10. In order to meet the requirements of Public Utilities Code Section 2835(a)(3) and the guiding principles adopted in D.13-10-040, GHG emissions reduction and avoidance require further assessment.

11. The utilities are required to utilize a consistent evaluation protocol for assessing bids to provide a consistent comparison across utilities.

12. The confidentiality of utility procurement data is subject to the confidentiality requirements contained in D.06-06-066.

13. The results of the consistent evaluation protocol will contain information that is market sensitive and therefore confidential.

14. The results of the IOUs' energy storage RFOs should continue to be subject to the same confidentiality rules as the results of the IOUs' All-Source RFOs.

15. It is not reasonable to require the IOUs to rank or group bids based on subsets of estimated system impacts.

16. It is reasonable to require the IOUs to evaluate and procure energy storage projects based on whether they fulfill a system need at a reasonable cost.

17. Transmission and distribution systems should not be eligible to fulfill customer-side domain targets, since a single transmission project could take up the entire capacity of the customer grid.

18. It is premature to consider changes to our prior determination regarding the authority to use the PCIA for recovery of potential above market stranded costs associated with departing load for storage projects.

19. It is reasonable to authorize the use of the PCIA mechanism to recover potential above-market stranded costs associated with departing load for market/bundled service energy storage projects for the 2016-2018 solicitation.

20. It is reasonable that the utilities continue to have the burden of proof to demonstrate circumstances that warrant PCIA treatment for actual stranded cost recovery.

21. It is reasonable to modify the existing grid domain target to adopt a "floor" of 100% the existing customer domain targets and a "ceiling" of 200% of the existing customer grid domain targets.

22. It is reasonable to prohibit the utilities from shifting procurement requirements away from the customer domain target to the transmission and distribution domain targets.



23. The flexibility given to customer-connected storage does not constitute a change in the 2020 energy storage procurement targets, nor does it require the IOUs to procure in excess of their specific energy storage targets.

24. We should not require the utilities to explicitly value unknown or unquantifiable values or revenue streams in their consistent evaluation protocol.

25. The IOUs should be required to submit applications, rather than Tier 3 Advice Letters, to seek approval of contracts resulting from successful RFO processes.

26. The Commission has the authority to interpret AB 2514 and Pub. Util. Code Section 2835(a) to identify eligible energy storage technologies.

27. Bosch LLC should be considered an eligible energy storage system under AB 2514 and Pub. Util. Code Section 2835(a).

28. Hydrogen Power-to-Gas technology, when using the natural gas pipeline as the storage component, should not be eligible to count toward the IOUs storage capacity targets.

29. For energy storage projects installed by customers of a CCA or ESP, credit for the SGIP-funded energy storage project should be split evenly between the unbundled customers' IOU and the CCA/ESP.

30. SGIP-funded storage deployments should not count toward the transmission and distribution domain targets of the IOUs.

31. Voluntary storage deployments by customers should count toward the storage target of the load serving entity in which that storage project is located.

32. Voluntary storage deployments by customers of an ESP should count toward the storage target of the ESP.

33. Energy storage bid and procurement information should remain confidential consistent with the requirements of D.06-06-066.

34. The mechanics of the PCIA in terms of how it should be applied when dealing with non-generation resources should be addressed in the investor-owned utilities' applications for approval of storage resources stemming from the 2014 RFOs filed December 1, 2015.

35. Cost recovery issues associated with any potential increase in targets or with multiple-use applications should be considered in Track 2 of this proceeding.

36. Extension of the PCIA mechanism for market/"bundled" energy storage contracts beyond 10 years should be considered in the applications for approval of contracts resulting from the 2014 storage solicitations process.

37. This proceeding should remain open to consider the Track 2 issues.

## **O R D E R**

### **IT IS ORDERED** that:

1. The Energy Storage Procurement Framework and Design Program adopted in Decision 13-10-040 is modified to permit the Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company to shift energy storage projects into the customer grid domain up to a "ceiling" of 200% of the customer domain targets.

2. Within 90 days of the effective date of this decision, Commission staff shall establish and convene a working group to develop and refine an energy storage inspection plan and protocol for the Commission based on expertise from the Investor-Owned Utilities, codes and standards development organizations, energy storage developers, and other interested parties.

3. Within 120 days of the effective date of this decision, Commission staff shall work with the Investor-Owned Utilities to determine if certain aggregated data resulting from the 2014 Energy Storage Procurement Framework and Design Program biennial solicitations that can be made available to interested parties without violating the Commission's confidentiality requirements.

4. Rulemaking 15-03-011 remains open.

This order is effective today.

Dated \_\_\_\_\_, at San Francisco, California.