

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

Application of Pacific Gas and Electric Company (U 39-E) for Authorization to Procure Energy Storage Systems During the 2016-2017 Biennial Procurement Period Pursuant to Decision 13-10-040

(U39-E)

Application No. \_\_\_\_\_

**APPLICATION OF PACIFIC GAS AND ELECTRIC COMPANY (U 39-E)  
FOR AUTHORIZATION TO PROCURE ENERGY STORAGE SYSTEMS  
(2016-2017 Biennial Procurement Period)**

<b>APPENDIX A</b> <b>2016 Energy Storage Request for Offer Solicitation Protocol</b>	<b>ATTACHED HERETO:</b> <b>ARCHIVAL-GRADE DVDS</b> <b>(Separately filed in manila envelopes)</b>
<b>APPENDIX B</b> <b>Governing Statutes and Rules</b>	<b>ATTACHED HERETO:</b> <b>Four Typewritten Pages</b>

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Acronym	Term
“AB”	Assembly Bill
“BTM”	Behind the Meter
“CAISO”	California Independent System Operator
“CPUC” or “Commission”	California Public Utilities Commission
“CSAs”	Capacity Storage Agreements
“COL”	Conclusion of Law
“CEP”	Consistent Evaluation Protocol
“CAM”	Cost Allocation Mechanism
“DR”	Demand Response
“DRP”	Demand Response Provider
“EPIC”	Electric Program Investment Charge
“EV”	Electric Vehicle
“ESAs”	Energy Storage Agreements
“ES RFO”	Energy Storage Request for Offers
“FOF”	Finding of Fact
“GHG”	Greenhouse Gas
“IE”	Independent Evaluator
“IRP OIR”	Integrated Resource Plan Order Instituting Rulemaking
“IOUs”	Investor Owned Utilities
“LTPP”	Long Term Procurement Plan
“MW”	Megawatts
“NMV”	Net Market Value
“OP”	Ordering Paragraph

**TABLE OF ACRONYMS**  
(continued)

“PG&E”	Pacific Gas and Electric Company
“PLS”	Permanent Load Shifting
“PV”	Photovoltaic
“PAV”	Portfolio Adjusted Value
“PCIA”	Power Charge Indifference Adjustment
“PRG”	Procurement Review Group
“PIER”	Public Interest Energy Research
“PURPA”	Public Utilities Regulatory Policy Act
“PSA”	Purchase and Sale Agreement
“QFs”	Qualifying Facilities
“RPS”	Renewables Portfolio Standard
“RA”	Resource Adequacy
“RA Only”	Resource Adequacy - Only
“SC”	Scheduling Coordinator
“SGIP”	Self-Generation Incentive Plan
“SB”	Senate Bill
“TAC”	Transmission Access Charge
“T&D”	Transmission and Distribution
“TPP”	Transmission Planning Process

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**APPLICATION OF PACIFIC GAS AND ELECTRIC COMPANY (U 39-E)  
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**I. INTRODUCTION AND SUMMARY**

Pacific Gas and Electric Company (“PG&E”) files this application (“Application”) for California Public Utilities Commission (“CPUC” or “Commission”) approval of its Energy Storage Procurement Plan for the 2016-2017 biennial procurement period (“2016 Energy Storage Plan”), as required by the *Decision Adopting Energy Storage Procurement Framework and Design Program* (“Energy Storage Decision”).<sup>1/</sup> That decision directs PG&E, San Diego Gas & Electric Company, and Southern California Edison Company (the investor owned utilities or “IOUs”) to file on or before March 1, 2014, and biennially thereafter through 2020, an application for approval of a plan to procure energy storage resources to address the targets and policies of the Commission’s Energy Storage Program.<sup>2/</sup>

The cornerstone of PG&E’s 2016 Energy Storage Plan is its 2016 Energy Storage Request for Offers (“RFO”), by which PG&E will seek competitive offers to provide energy storage resources. This is PG&E’s second application for approval to conduct an Energy Storage

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<sup>1/</sup> Decision (“D.”)13-10-040.

<sup>2/</sup> Energy Storage Decision, Ordering Paragraph (“OP”) 3, referring to the ”Energy Storage Procurement Program Design – Procurement Application” found at Energy Storage Decision Appendix A, item 3.d. In this Application, the term ”resource” is used interchangeably with ”system” because the Commission generally directs the IOUs to procure ”resources.”

RFO. PG&E’s first application was filed and approved in 2014 by the “2014 RFO Decision.”<sup>3/</sup> PG&E accordingly issued its first Energy Storage RFO on December 1, 2014, signed contracts for 75 megawatts (“MW”) of energy storage resources, and submitted those contracts for Commission approval on December 1, 2015 in Application (“A.”) 15-12-004. The Commission should approve this Application and authorize PG&E to issue its 2016 Energy Storage RFO at the end of this year.

**A. Summary of PG&E’s 2016 Energy Storage Plan**

PG&E’s 2016-2017 energy storage procurement target of 120 MW (“2016 Target”) is spread between three point-of-interconnection domains. The individual domain targets are 65 MW interconnected at transmission level, 40 MW interconnected at distribution level, and 15 MW interconnected to customers, or “behind the meter” (“BTM”). PG&E may count 4.7 MW from existing eligible projects toward its 2016 Target.

PG&E must issue its 2016 Energy Storage RFO no later than December 1, 2016 to procure energy storage to meet its 2016 Target. If the RFO coupled with PG&E’s other storage procurement activities do not yield a sufficient amount of viable and cost-effective energy storage bids, PG&E may defer up to 80 percent of its 2016 Target, or 96 MW, to a future solicitation year. In the event of over-procurement, the amount of over-procured storage resources may be applied to future storage procurement targets.

In “Track 1” of its ongoing energy storage rulemaking proceeding, the Commission determined that it should address certain energy storage policy and program issues before commencement of the IOUs’ 2016 Energy Storage RFOs.<sup>4/</sup> In its Track 1 decision, the Commission decided not to require changes to the RFO process prior to consideration of the

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<sup>3/</sup> D.14-10-045.

<sup>4/</sup> *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, (“R.”)15-03-011 (“Storage Rulemaking”).*



results of the first Energy Storage RFO.<sup>5/</sup> Thus, PG&E plans to conduct its 2016 Energy Storage RFO much like its 2014 Energy Storage RFO, subject to guidance provided by the Commission. Based on previous expressions of interest received in response to its December 2012 Request for Information and offers received in its 2014 Energy Storage RFO, PG&E will consider RFO offers to provide the following types of energy storage services:

- a) A stand-alone transmission and distribution (“T&D”)-connected storage system for market participation that is controlled independently of other generation sources and participates in the California Independent System Operator (“CAISO”) markets,
- b) A storage system for market participation developed for PG&E ownership at one of three identified PG&E-owned solar photovoltaic (“PV”) Sites,
- c) A PG&E-designated T&D-connected storage system for reliability and capacity needs that would enable PG&E to defer otherwise planned investments, and
- d) Customer-connected energy storage facilities for direct ownership by PG&E or third-party owned customer connected projects expected primarily for market participation.<sup>6/</sup>

The Energy Storage RFO procedure, guidelines, timetable, and draft commercial documents are set out in the 2016 Energy Storage RFO Solicitation Protocol (“Storage Protocol”), which is being submitted for Commission approval as Appendix A to this Application. PG&E’s Application and testimony in support of the Application (“Testimony”) have been served on the service list of the Storage Rulemaking in accordance with Commission Rules 1.9(d) and 1.10. PG&E intends to refine its Storage Protocol and provide additional criteria in advance of its anticipated December 1, 2016 issuance of the 2016 Energy Storage RFO. After the RFO is issued, PG&E will employ the evaluation methodology described in this Application and Testimony to identify the most competitive offers, secure Participants’

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<sup>5/</sup> D.16-01-032 (“Track 1 Decision”).

<sup>6/</sup> Customer domain storage targets will also be achieved through the Self Generation Incentive Program (“SGIP”) and other CPUC-approved proceedings.

commitments to being shortlisted, negotiate final agreements with shortlisted Participants, and submit the executed agreements to the Commission no later than December 1, 2017. PG&E may also employ other Commission-approved means of procuring energy storage resources to meet its 2016 Target.

### **B. Request for Relief**

PG&E requests that no later than its first meeting in September, 2016, the Commission issue a decision that approves the Application and makes the following findings:

- PG&E has complied with D.13-10-040, Ordering Paragraph 4 by filing this Application;
- PG&E is authorized to issue its 2016 Energy Storage RFO on December 1, 2016;
- PG&E has correctly identified its existing eligible energy storage credits;
- The safety requirements in PG&E's 2016 Energy Storage RFO Protocol for a project's RFO participation, evaluation methodology for shortlisting, and terms and conditions for the provision of energy storage services are reasonable;
- PG&E should be authorized to recover the costs of its 2016 Energy Storage RFO procurement using the same ratemaking mechanisms that have been approved for its 2014 Energy Storage RFO and recover net costs through CAM pursuant to Section 454.51; and
- PG&E's deadline to request deferment of storage targets is postponed until PG&E files its application for approval of its 2016 Energy Storage RFO procurement.

### **C. Organization of this Application**

The information required by the Energy Storage Decision's Storage Framework can be found in PG&E's 2016 Energy Storage Plan and Testimony as indicated below.<sup>7/</sup>

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<sup>7/</sup> D.13-10-040, Appendix A, "Energy Storage Procurement Framework and Design Program" ("Storage Framework") lays out the requirements for each IOU's energy storage procurement application.

**Table 1: PG&E’s 2016 Energy Storage Plan**

PG&E’s 2016 Energy Storage Plan	Storage Framework Requirement
Testimony Chapter 2	A report on all storage resources procured to date in all Commission proceedings <sup>8/</sup>
Testimony Chapter 2	An updated table with estimates for biennial procurement targets for each storage grid domain from current year to 2020 <sup>9/</sup>
Testimony Chapter 3	An explanation of the type of storage resources and the associated MW quantities the IOU intends to procure, categorized by grid domains and use cases <sup>10/</sup>
Testimony, Chapter 3	Reference to 1) needs study by the California Independent System Operator for the IOU’s system, local, and flexible needs, if available, or 2) upgrade needs identified in the IOU’s transmission or distribution planning studies <sup>11/</sup>
Application Appendix A, Storage Protocol	A detailed description of how the IOU intends to procure resources specifying the structure of any RFO or alternative procurement processes and related timelines <sup>12/</sup>
Testimony Chapter 4	Operational requirements, to be applied either to all projects or separately with respect to transmission, distribution, and customer-sited storage <sup>13/</sup>
Within Appendix A, Storage Protocol, see: Appendix F1, Resource Adequacy Only Agreement Term Sheet Appendix F2, Capacity Storage Agreement Term Sheet Appendix F3, Behind-the-Retail Meter	Proposed storage equipment/power/services purchase agreements for successful bids involving third party-owned or –aggregated projects <sup>14/</sup>

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<sup>8/</sup> *Id.*, p. 9.

<sup>9/</sup> *Id.*, p. 7.

<sup>10/</sup> *Id.*, p. 8.

<sup>11/</sup> *Id.*

<sup>12/</sup> *Id.*

<sup>13/</sup> *Id.*

<sup>14/</sup> *Id.*, p. 9.

PG&E's 2016 Energy Storage Plan	Storage Framework Requirement
Capacity Product Term Sheet Appendix F4, Energy Storage for Reliability and Capacity Assets Purchase and Sale Agreement (PSA) Appendix F5, Energy Storage for Utility Owned PV sites PSA Appendix F6, Stand-alone Energy Storage for Utility Ownership Term Sheet for PSA	
Testimony Chapter 5	A proposed methodology for an analysis that evaluates bids on cost and fit submitted in a solicitation <sup>15/</sup>
Testimony Chapter 6	Request for cost-recovery authorization <sup>16/</sup>
Application Appendix B, Governing Rules and Statutes	A list of all applicable rules and statutes impacting the procurement plan <sup>17/</sup>

Section II of this Application summarizes the information that the Storage Framework requires PG&E to provide; complete information can be found in the Application and Testimony according to Table 1. Section III proposes a schedule for consideration of this Application. Section IV provides the information required for compliance with the Commission's Rules of Practice and Procedure. Section V sets forth PG&E's requested relief.

## II. INFORMATION REQUIRED BY THE STORAGE FRAMEWORK

### A. Summary of Storage Resources Procured Toward PG&E's 2014 Targets

On January 4, 2016, PG&E filed the *Report of PG&E Demonstrating Compliance with Energy Storage System Procurement Targets and Policies* as required by Public Utilities Code Section 2838(a)(1).<sup>18/</sup> The report shows that PG&E is in compliance with the storage procurement targets adopted by the Energy Storage Decision and the 2014 RFO Decision. While a complete report on all storage resources procured to date in all Commission proceedings is

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<sup>15/</sup> *Id.*

<sup>16/</sup> *Id.*, p. 10.

<sup>17/</sup> *Id.*, p. 8.

<sup>18/</sup> Unless otherwise stated, all statutory references are to the California Public Utilities Code.

presented in Testimony Chapter 2, “Report on all Existing and Eligible Storage Resources,” a tally of 2014 Energy Storage RFO procurement is provided below as context for PG&E’s 2016 Energy Storage RFO.

PG&E’s 2014 energy storage procurement target was 90 MW. The 2014 RFO Decision authorized PG&E to count 9.5 MW of previously procured energy storage toward its 2014 Target, resulting in a remaining amount of 80.5 MW to be procured during the 2014-2015 period.<sup>19/</sup> Customer-connected energy storage procured through PG&E’s SGIP counted 6.5 MW toward the target, leaving 74 MW of storage to be procured through the 2014 Energy Storage RFO.<sup>20/</sup>

PG&E’s 2014 Energy Storage RFO procurement totaled 75 MW of T&D-connected energy storage, consisting of 73 MW under Energy Storage Agreements (“ESAs”) to provide CAISO market-participating resources, and 2 MW under Purchase and Sale Agreements (“PSAs”) for PG&E distribution system reliability.

**B. PG&E’s Procurement Targets For 2016**

The Energy Storage Decision allows an annual energy storage procurement target to be met by any eligible storage projects that have been pre-approved by the Commission, the amount of customer-side storage under an available incentive program expected to be installed by the time of Application filing, and any energy storage procured in excess of the biennial procurement target.<sup>21/</sup> PG&E proposes to count toward its 2016 Target 0.5 MW at the distribution level, based on a pilot project procured outside the 2014 RFO process, and 4.2 MW at the customer level due to SGIP funding of storage. These credits are shown in the following table.

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<sup>19/</sup> D.14-10-045, Attachment A.

<sup>20/</sup> D.14-10-045, OP 1(a). PG&E’s proposed targets were adopted, except for its proposed credit for biomass energy storage.

<sup>21/</sup> D.13-10-040, Appendix A, p. 3.

**Table 2: PG&E’s 2016 Energy Storage Procurement Target  
Amounts Remaining to be Procured  
(All figures represent MW)**

<b>Storage Grid Domain</b>	<b>Transmission</b>	<b>Distribution</b>	<b>Customer</b>	<b>2016 Biennial Amounts</b>
Energy Storage Decision Target	65	40	15	120
Existing Eligible Projects (credits toward Decision Target)	0	.5	4.2	4.7
2016 Target Remaining to be Procured	65	39.5	10.8	<b>115.3</b>

PG&E’s full report of its biennial targets through 2020 is provided in Testimony Chapter 2.

**C. Needs Studies for PG&E’s System, Local, and Flexible Needs and Transmission/Distribution Studies**

The Storage Framework requires storage plans to include a “reference to CAISO needs study for the IOU’s system local, and flexible needs if available, or upgrade needs identified in the IOU’s transmission or distribution planning studies.”<sup>22/</sup>

**1. Commission Proceedings on Procurement Needs**

On March 25, 2015, the administrative law judge in Phase 1 of the 2014 Long-Term Procurement Plan (“LTPP”) proceeding issued a ruling finding that there was not sufficient evidence to determine whether there is a need for additional flexible or system capacity through 2024.<sup>23/</sup> In the Order Instituting Rulemaking to implement the Senate Bill (“SB”) 350 requirement that the Commission adopt an integrated resource planning process, (R.16-02-007, “IRP OIR”) the Commission stated that neither the LTPP modeling methodology nor refinements in the IRP OIR were anticipated to lead to procurement decisions in this 2016 LTPP/IRP cycle.<sup>24/</sup> With the scenarios and assumptions for the next planning cycle and the

<sup>22/</sup> D.13-10-040, Appendix A, p. 8.

<sup>23/</sup> *Administrative Law Judge’s Ruling Discontinuing Phase 1A and Setting Forth Issues for Phase 1B*, in R.13-12-010, which considered system reliability needs and issues related to grid operational flexibility needs.

<sup>24/</sup> IRP OIR, pp.15 and 16.

scope of the next LTPP/IRP still being determined, it is difficult to anticipate at this point whether or not additional energy storage resources will be needed to meet future reliability or renewable integration needs, or can be economically justified considering other alternatives available to integrate the increasing amounts of intermittent renewable generation. Nonetheless, consistent with Sections 365.1(c) and 454.51, the costs of any additional energy storage resources providing system reliability or renewable integration should be allocated using the Cost Allocation Mechanism (“CAM”) applicable to such resources.

## **2. CASIO Transmission Planning Process**

The Commission should encourage the CAISO, as part of its Transmission Planning Process (“TPP”), to continue the review of planned transmission investments to identify and validate whether energy storage projects could defer planned transmission investment. PG&E urges the Commission to take a cross-jurisdictional approach because engagement with CAISO is necessary to explore and develop the use of energy storage systems to provide transmission system reliability. If there is an identified need for storage resources to support transmission grid reliability, storage’s role should be recognized by including the cost of storage procurement in the statewide transmission access charge (“TAC”).

## **3. Commission Distribution Planning Proceeding**

The Track 1 decision in the Energy Storage rulemaking states that “[t]he 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.”<sup>25/</sup> At this time, optimal locations for distributed generation have not been identified in either proceeding.

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<sup>25/</sup> D.16-01-032, Conclusion of Law (“COL”) 6.

#### **D. PG&E's 2016 Energy Storage Procurement Activity**

The Energy Storage Decision requires PG&E to explain the types of storage resources it seeks and how they will be procured through its 2016 Storage Plan.<sup>26/</sup> PG&E intends to procure sufficient storage to meet its total 2016 storage procurement target through CPUC-approved means, such as:

- The competitive 2016 Energy Storage RFO to procure energy storage resources connected to the CAISO-controlled transmission system, the distribution grid, and BTM customer premises, which is the subject of this Application;
- CPUC-approved programs for customer-connected storage, which currently include the SGIP,<sup>27/</sup> Permanent Load Shifting (“PLS”) program,<sup>28/</sup> pilot projects to be filed by PG&E during the 2016-2017 period, such as Demand Response (“DR”) and Electric Vehicle (“EV”) pilots where applicable,<sup>29/</sup> the distributed generation/California Solar Initiative rulemaking, alternative-fueled vehicle rulemaking, and any future programs and pilots developed on an on-going basis.<sup>30/</sup>
- Eligible energy storage projects that are developed under Commission-approved contracts arising from other Commission proceedings, such as the LTPP proceeding, the Renewables Portfolio Standard (“RPS”) Program, and the Resource Adequacy (“RA”) proceeding;<sup>31/</sup>
- Other CPUC-approved channels, such as the California Energy Commission’s Public Interest Energy Research (“PIER”) or the CPUC’s Electric Program Investment Charge (“EPIC”)-funded projects, under certain conditions.<sup>32/</sup>

Other than closing out its 2014 Energy Storage RFO, PG&E has no plans to procure energy storage resources through competitive solicitations outside the 2016 Energy Storage RFO at this time. However, PG&E could use alternative means to obtain valuable energy storage

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<sup>26/</sup> D.13-10-040, Appendix A, p. 8.

<sup>27/</sup> Pub. Util. Code § 376.6; D.11-12-030.

<sup>28/</sup> D.12-04-045; CPUC Resolution No. E-4586.

<sup>29/</sup> D.13-10-040, p. 58.

<sup>30/</sup> D.13-10-040, COL 34.

<sup>31/</sup> D.13-10-040, COL 11 and p. 33, “Projects Authorized in Other Commission Proceedings.”

<sup>32/</sup> D.13-10-040, COL 10 and p. 33, “Projects Funded From Third Parties.”



benefits that were not offered into this RFO. Any project procured outside of the RFO process would be subject to Commission evaluation and approval on a case-by-case basis.<sup>33/</sup>

**E. Energy Storage Procurement Through PG&E’s 2016 Energy Storage RFO**

**1. Type of Energy Storage to be Procured**

PG&E expects to acquire primarily T&D-connected storage through its 2016 Energy Storage RFO. It is also seeking submissions of customer-connected storage in response to the RFO. As in the 2014 Energy Storage RFO, PG&E describes the type of energy storage that it intends to procure in terms of the energy storage project’s products and uses. PG&E has identified products and end uses for storage interconnected to the T&D grid and has mapped them to the Commission’s guiding principles. PG&E will determine which products and uses are being offered by each project based on its evaluation of the project offer. This focus on energy storage products and uses is the basis for a technology - neutral evaluation process that allows for the unbiased consideration of all storage system designs that meet the Commission’s storage principles.

**Table 3: Energy Storage Products / Uses Linked to Energy Storage Principles**

CPUC Energy Storage Guiding Principles	Energy Storage Products/Uses
<b>Optimization of the Grid</b>	Black start capability System/Local Resource Adequacy Frequency response (inertia) T&D capacity upgrade deferral T&D reliability upgrade deferral
<b>Integration of Renewable Energy</b>	Frequency Regulation Spinning/Non-Spinning Reserves Flexible Ramping Product Over-generation and curtailment support Energy shifting Flexible Resource Adequacy Reduces intermittency of renewable resource
<b>Reduction of Greenhouse Gas Emissions</b>	Energy shifting Over-generation and curtailment support Improves efficiency of a fossil-fired resource

<sup>33/</sup> D.13-10-040 Decision, p. 52.

In these early years of the Energy Storage Program, PG&E will focus on achieving project diversity in terms of technology, term, size, configurations and operational characteristics, in the agreements it executes. This should also result in the most cost-effective procurement consistent with the Commission's intent. PG&E provides a detailed discussion of the products being sought through the 2016 Energy Storage RFO in Testimony Chapter 3.

## **2. Operational Requirements**

Each shortlisted participant must meet the operational requirements for one or more of the energy storage products in Table 3. The operational requirements for a storage project will vary by its regulatory function, but will depend on the specific products and uses offered by the project. Under this technology-neutral approach, PG&E will consider procuring storage systems capable of meeting operational requirements that satisfy the Commission's guiding principles.

Generally speaking, PG&E will require an energy storage project participating in the CAISO market to meet the operational requirements required to provide the CAISO products related to the project's products and uses. Due to the emerging nature of certain CAISO products, modification of PG&E's transactional documents may be required to reflect the final version of CAISO's requirements. PG&E may also have additional project-specific operational requirements beyond those specified by CAISO; for example, storage projects providing the regulatory function of T&D reliability must meet the operational requirements needed to provide reliability on PG&E's system. Customer-sited storage will need to conform to the same operational requirements as T&D domain resources. PG&E's 2016 Energy Storage RFO documents will be updated with information as it becomes available. Additional information about operational requirements is provided in Testimony Chapter 4.

## **3. Energy Storage Offers**

Energy storage resources procured through the 2016 Energy Storage RFO generally function primarily as either wholesale market resources or T&D reliability assets. Energy storage wholesale market resources may be owned by third parties, but energy storage T&D reliability assets must be owned by PG&E. Third parties may develop and transfer resources to

PG&E under a turnkey PSA. Table 4 below describes the broad categories of eligible offers in terms of products, domain, facility owner, and agreement covered by Appendix A to this Application. Term Sheets noted in the table could be replaced by pro forma contracts before PG&E issues its 2016 Energy Storage RFO.

**Table 4: Energy Storage Offers Solicited in the 2016 Energy Storage RFO**

Offered Service	Domain	Owner	Agreement Type
RA Only	T&D	3d Party	PG&E will consider Offers for Resource Adequacy-Only (“RA Only”) products, provided the capacity comes from an eligible Energy Storage resource. Appendix F1.
RA Plus Energy Settlement	T&D	3d Party	PG&E will consider Offers for Capacity Storage Agreements (“CSAs”) from the Project, which includes an energy settlement component, from an eligible Energy Storage resource. Appendix F2.
Behind the Meter Capacity Product	Customer	3d Party or PG&E	Participants would be a Demand Response Provider (“DRP”) or similar provider to participate in the CAISO markets, and deliver Product from the Project to PG&E. Participant would sell all capacity attribute attributes to PG&E, Participant acts as the scheduling coordinator (“SC”) and controls all CAISO dispatch, and the Agreement includes an energy settlement component. Appendix F3.
Reliability and Capacity	T&D or Customer	PG&E	Energy Storage for reliability and capacity needs. These Projects would enable PG&E to defer otherwise planned investments. PG&E will identify reliability and capacity Projects that would enable PG&E to defer otherwise planned investments. Appendix F 4.
Storage connected to PV	T&D	PG&E	Energy Storage at PG&E owned photovoltaic (PV) generation sites. This Project would be constructed on one of three identified PG&E-owned PV Sites and must be capable of being connected to the PV system at the switchgear location. This Project would not result in increased generation from the PV site. Appendix F 5.
CAISO Market Participant	T&D	PG&E	Stand-alone projects. This Project would be a stand-alone Project anywhere in PG&E’s service territory that would act as a CAISO wholesale market resource. Appendix F6.

A more detailed description of the storage resources that PG&E expects to procure through the 2016 Energy Storage RFO is provided in Testimony Chapter 3. Additional information is available in the commercial document for each agreement type that is included in Appendix A to the Application, although the commercial documents are subject to revision by PG&E while the Application is under review. PG&E intends to supplement its Storage Protocol and provide additional commercial documentation to potential bidders before December 1, 2016. However, depending on counterparty responses to the 2016 Energy Storage RFO, the final versions of PG&E's energy storage pro-forma documents may differ, perhaps substantially, from the attached documents.

#### **4. PG&E's 2016 Energy Storage RFO Process**

The Storage Protocol being filed as Appendix A to this Application describes how PG&E intends to procure resources through its 2016 Energy Storage RFO. PG&E intends to initiate its Energy Storage RFO by issuing its Storage Protocol on December 1, 2016, hold the Energy Storage RFO Participant's Webinar in December, hold a Webinar to review the Offer Form with Participants, and receive offers by January 31, 2017.<sup>34/</sup> PG&E should notify selected Participants of their eligibility for shortlist negotiations by April 14, 2017 and execute contracts during the third quarter of 2017. Each executed agreement will be contingent upon final and non-appealable CPUC approval, as defined in the agreement. PG&E plans to submit executed contracts for Commission approval no later than December 1, 2017.

PG&E intends to engage an independent evaluator ("IE") approved by the Energy Division to oversee PG&E's 2016 Energy Storage RFO soon after this Application is approved. The IE will assess the competitiveness and integrity of PG&E's solicitation and prepare a post-solicitation report for submission along with PG&E's request for approval of its selected energy

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<sup>34/</sup> Except for dates determined by the CPUC, PG&E's 2016 Energy Storage RFO process dates are approximate and are subject to change as PG&E proceeds through the RFO.

storage projects. PG&E will inform its Procurement Review Group (“PRG”) of its 2016 Energy Storage RFO activities at key points in the energy storage procurement process.

The Energy Storage Decision authorizes the IOUs to request approval for deferment within three months after receipt of offers in response to its Energy Storage RFO.<sup>35/</sup> PG&E sought and received permission postpone the deadline for making such a request, if any, until it filed its contracts resulting from the 2014 Energy Storage RFO for Commission Approval.<sup>36/</sup> However, the Commission extended the term from three months to “no later than one year from the date of the first solicitation,” which appears to limit the Commission’s extension to one-time only.<sup>37/</sup> The reasons for the deferral, i.e., that three months is not enough time for PG&E to determine which offers will provide reasonable value, terms and conditions, and viability, are as valid today as they were for the 2014 Energy Storage RFO. PG&E expects that the size and scope of the response to its 2016 solicitation will likewise require additional time to fully evaluate the offers before determining the need for a deferral. The Commission should also extend the deadline for any deferral request to the date of RFO contract submission for the 2016 Energy Storage RFO.

#### **F. Evaluation Methodology**

PG&E submits its evaluation methodology for review as required by the Energy Storage Decision.<sup>38/</sup> PG&E’s methodology for evaluating offers and agreements resulting from the 2016 Energy Storage RFO is described in Chapter 5 of the Prepared Testimony.

The evaluation methodology for PG&E’s 2016 Energy Storage RFO is substantially the same as that used in PG&E’s 2014 Energy Storage RFO. Each proposal will be evaluated in terms of its ability to provide the products or uses that meet the Commission's principles for

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<sup>35/</sup> D.13-10-040, Appendix A, “e) Deferment of Procurement Targets,.” p. 10.

<sup>36/</sup> D.14-10-035.

<sup>37/</sup> Ibid, O.P. 1.10).

<sup>38/</sup> D.13-10-040, Appendix A, p. 9.

energy storage. PG&E’s evaluation process applies the principles of its Least Cost Best Fit methodology, using quantitative and qualitative criteria based on information contained in the offer forms received through the RFO. The same evaluation methodology will apply to T&D-connected and Customer-connected storage.

PG&E’s evaluation of offers for T&D-connected storage will cover three functions: (1) Generation/Market; (2) Transmission Reliability; and (3) Distribution Reliability. PG&E’s evaluation of these functions will include quantitative and qualitative criteria. The quantitative criteria include Net Market Value (“NMV”) and Portfolio Adjusted Value (“PAV”). The qualitative criteria include project viability, safety, credit, supplier diversity, contract terms and conditions, contract length and online date, counterparty concentration and technology diversity.

The Consistent Evaluation Protocol (“CEP”), as prepared jointly by the three IOUs, is included in Testimony Chapter 5. The CEP was not intended to determine the results of the 2016 Energy Storage RFO process and is not a replacement for the PG&E’s individual, proprietary, evaluation protocols.<sup>39/</sup> It is, however, included as a benchmarking tool to enable a comparison of the IOU’s evaluation mechanisms.

#### **G. Cost Recovery of Storage Procurement**

The Energy Storage Decision allows PG&E to request cost recovery authorization for procurement under the 2016 Energy Storage Plan.<sup>40/</sup> In the 2014 RFO Decision, the Commission determined that IOUs shall recover the cost of energy storage resource procured through their Energy Storage RFO through existing rate recovery mechanisms that correspond to the regulatory function being performed by the storage facility.<sup>41/</sup> The IOUs are authorized to use the Power Charge Indifference Adjustment (“PCIA”) to recover potential above-market stranded costs associated with departing load for market/bundled service energy storage projects for the

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<sup>39/</sup> D.16-01-032, Finding of Fact (“FOF”) 8 and COL 13.

<sup>40/</sup> D.13-10-040, Appendix A, p.10.

<sup>41/</sup> D.14-10-045, FOF 21.

2016-2018 solicitation.<sup>42/</sup> PG&E intends to rely on these decisions in any application it may file for approval and rate recovery of energy storage contracts resulting from the 2016 Energy Storage RFO.

Resource scenarios suggest that the market-participating energy storage procured through this solicitation is likely to provide cost-effective integration of renewable energy. Section 454.51 subsection (a) requires the Commission to identify such resources, and subsection (c) directs the Commission to “ensure that the net costs of any incremental renewable energy integration costs procured by an electrical corporation to satisfy the need” to ensure reliability and integrate renewable energy in a cost effective manner “are allocated on a fully non-bypassable basis consistent with treatment of costs identified in ... Section 365.1.” Section 365.1 provides that the net capacity costs of generation resources needed to meet system or local area reliability needs for the benefit of all customers will be collected on a non-bypassable basis. This is accomplished through the CAM. Thus, contracts resulting from the 2016 Energy Storage RFO may be eligible for CAM treatment.

### **III. PROPOSED SCHEDULE FOR APPLICATION APPROVAL**

PG&E respectfully requests that the Commission approve this Application as soon as practicable, but no later than September 15, 2016. This date is reasonable, given the limited scope of this Application, stakeholder familiarity with the Energy Storage RFO process, consideration of the time that may be needed for PG&E to conform its RFO materials to the Commission’s decision, and the benefit of circulating the RFO materials to the public prior to formal issuance of the 2016 Energy Storage RFO on December 1, 2016.

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<sup>42/</sup> D.16-01-032, COL 19.

**Table 5: Proposed Schedule**

<b>Activity</b>	<b>Date</b>
Application Filed	March 1, 2016
Application Noticed	March 2, 2016
Responses Filed	April 4, 2016 (next business day after April 2, 2016)
PG&E's Reply to Responses	April 14, 2016
Pre-Hearing Conference	April 29, 2016
Scoping Memo	May 13, 2016
Evidentiary Hearing	None
Concurrent Opening Briefs Due	May 27, 2016
Concurrent Reply Briefs Due	June 10, 2016
ALJ Proposed Decision Issued	August 15, 2016
Commission Vote	September 15, 2016

**IV. COMPLIANCE WITH THE COMMISSION'S RULES OF PRACTICE AND PROCEDURE**

**A. Contents of Application (Rule 2.1)**

**1. Requested Relief**

PG&E requests that the Commission approve as reasonable PG&E's 2016 Energy Storage Plan and grant the relief requested in Section V, below, as soon as practicable, but in any event no later than September 15, 2016. PG&E is not seeking up-front approval of any of the procurement described in this Application at this time.

**2. Statutory Authority**

This request for authorization to implement PG&E's 2016-2017 Energy Storage Plan is made pursuant to Sections 2835-2839, which establishes requirements for Energy Storage Systems. In particular, Section 2836(a) (2) requires the Commission to adopt appropriate targets, if any, for each load-serving entity to procure viable and cost-effective energy storage systems to be achieved by December 31, 2015, and December 31, 2020. Relief should be granted pursuant to Section 701 which confers plenary authority on the Commission to regulate every public utility within California.



### **3. Legal Name and Principal Place of Business**

The Applicant's legal name is Pacific Gas and Electric Company. PG&E's principal place of business is 77 Beale Street, B30A, San Francisco, California. Its post office address is P.O. Box 7442, San Francisco, California, 94120-7422. PG&E is a corporation organized under the laws of the State of California.

### **4. Correspondence and Communication Regarding This Application**

Correspondence regarding this Application should be directed to the following PG&E representatives in this matter:

Wade A. Greenacre  
Energy Supply Proceedings  
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P.O. Box 770000  
San Francisco, CA 94177-0001  
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Evelyn C. Lee  
Law Department  
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Facsimile: (415) 973-5520  
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### **5. Category of the Proceeding**

The Application should be categorized as a rate-setting proceeding.

### **6. Need for Hearing**

There is no need for an evidentiary hearing. The Commission should approve the Application without hearings, based on the information presented by PG&E in this Application and the Testimony that PG&E has served on the service list.

### **7. Issues To Be Considered, Including Relevant Safety Considerations**

The Commission should address the following issues in this proceeding:

- Whether PG&E has complied with D.13-10-040, Ordering Paragraph 4;
- Whether PG&E should be authorized to issue the 2016 Energy Storage RFO described in this Application on December 1, 2016;
- Whether PG&E has correctly counted its existing eligible energy storage credits toward its 2016 energy storage procurement target in the "updated table" required by D.13-10-040, Appendix A, at p.7;
- Whether the safety requirements in PG&E's 2016 Energy Storage RFO Protocol for a project's RFO participation, evaluation methodology for

shortlisting, and terms and conditions for the provision of energy storage services are reasonable;

- Whether PG&E should recover its 2016 Energy Storage RFO procurement costs through existing ratemaking mechanisms, recover the above market costs of this procurement attributed to departing load through the PCIA, consistent with the cost recovery for PG&E's 2014 Energy Storage RFO in D.14-10-045 and recover net costs through CAM pursuant to Section 454.51; and
- Whether the deadline for PG&E to request deferment of storage targets should be postponed until PG&E files its application for approval of its 2016 Energy Storage RFO procurement, as was provided for PG&E's 2014 Energy Storage RFO.

**B. Organization and Qualification to Transact Business (Rule 2.2)**

PG&E is, and since October 10, 1905 has been, an operating public utility corporation organized under California law. It is engaged principally in the business of furnishing electric and gas services in California. A certified copy of PG&E's Restated Articles of Incorporation, effective April 12, 2004, is on record before the Commission in connection with PG&E's Application 04-05-005, filed with the Commission on May 3, 2004. These articles are incorporated herein by reference pursuant to Rule 2.2 of the Commission's Rules.

**C. Authority to Increase Rates (Rule 3.2)**

PG&E does not seek authority to increase or otherwise modify its electric rates in this Application. This Application only requests the Commission to approve PG&E's 2016 Energy Storage Plan by deciding the issues listed in Section IV.A.7, above, in PG&E's favor. It does not seek Commission review and approval of any procurement transaction. Specific energy storage transactions will be submitted for subsequent Commission approval either through PG&E's General Rate Case or through a separate application. Any rate impact from the proposed procurement and PG&E's authority to increase rates will be determined in those subsequent proceedings.

**V. REQUESTED RELIEF**

PG&E respectfully requests the Commission to issue an order that:

1. Finds that PG&E has complied with D.13-10-040, Ordering Paragraph 4;

2. Authorizes PG&E to issue its 2016 Energy Storage RFO as described in this Application on December 1, 2016;
3. Finds that PG&E has correctly counted its existing eligible energy storage credits;
4. Finds that PG&E's safety criteria for a project's participation in the 2016 Energy Storage RFO, shortlisting, and provision of energy storage services are reasonable;
5. Postpones the deadline for PG&E to request deferment of storage targets until PG&E files its application for approval of its 2016 Energy Storage RFO procurement;
6. Authorizes PG&E to recover its 2016 Energy Storage RFO procurement costs through existing ratemaking mechanisms and to recover the above market costs of procurement attributed to departing load through the PCIA, consistent with the cost recovery determinations for PG&E's 2014 Energy Storage RFO in D.14-10-045 and recover net costs through CAM pursuant to Section 454.51; and
7. Grants PG&E such other relief as the Commission finds to be just and reasonable.

Respectfully submitted,

ROY M. KUGA

EVELYN C. LEE  
MARK R. HUFFMAN

By: /s/Roy M. Kuga  
ROY M. KUGA

By: /s/Evelyn C. Lee  
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PACIFIC GAS AND ELECTRIC COMPANY

Attorneys for  
PACIFIC GAS AND ELECTRIC COMPANY

Dated: March 1, 2016

## VERIFICATION

I, the undersigned, say:

I am an officer of Pacific Gas And Electric Company, a corporation and am authorized to make this verification for and on behalf of said corporation, and I make this verification for that reason, I have read the foregoing Application and am informed and believe that the matters contained therein are true and on that ground I allege that the matters stated here are true.

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

Executed at San Francisco, California, the 29<sup>th</sup> day of February, 2016.

*/s/Roy M. Kuga*

Roy M. Kuga

Vice President, Energy Supply Management

## **APPENDIX A**

### **2016 Energy Storage Request for Offer Solicitation Protocol**

**The Solicitation Protocol Could Not Be Electronically Filed and  
Has Been Omitted Intentionally Due to Its File Size**

**Submitted to the Commission in the form of  
Archival Grade DVD**

## **APPENDIX B**

### **Governing Statutes and Rules**

**Attachment B**  
**List of Applicable Statutes and Rules That May Impact Energy Storage Procurement**

Subject	Reference	Key Provision
Energy Storage	Assembly Bill (“AB”) 2514, codified at Public Utilities Code (“Pub. Util. Code”) § 2835	Requires California Public Utilities Commission (“CPUC”) to determine targets for load-serving entity procurement of energy storage resources
Energy Storage	CPUC Rulemaking (“R.”)15-03-011	Rulemaking to consider policy and implementation refinements to Energy Storage Procurement Framework and Design Program
Energy Storage	CPUC Decision (“D.”) 13-10-040	Requires Investor-Owned Utility (“IOU”) procurement of energy storage pursuant to biennial CPUC-approval Plan
Energy Storage	D.14-10-045	Approves IOU procurement applications for the 2014 biennial procurement period
Energy Storage	D.16-01-032	Addresses energy storage policy and program issues that must be resolved prior to the 2016 procurement solicitations
Greenhouse Gas (“GHG”) Emissions Performance Standard	Senate Bill (“SB”) 1368, codified at Pub.Util. Code § 8340 D.07-01-039	Prohibits “covered procurement” from exceeding CO2 emissions standard of 1100 lb./MWh
Renewables Portfolio Standard	SB 350, codified at Pub.Util. Code § 399.11 <i>et seq.</i>	Requires retail sellers and local publicly owned electric utilities to procure 50% of energy from renewable resources by December 31, 2030
Renewables Portfolio Standard Target	Pub.Util. Code § 399.15(b)(5)(B)(ii)	Retail sellers’ efforts to develop energy storage to integrate eligible RPS resources are among the factors underlying a CPUC waiver of an RPS target
Clean Energy	Pub.Util. Code § 400	The CPUC and California Energy Commission shall, where feasible, increase the use of energy storage, among other strategies, to meet clean energy objectives

GHG	AB 32, codified at Health & Safety Code § 38500 et seq.	Requires California to reduce GHG emissions to 1990 levels by 2020
Self-Generation Incentive Plan (“SGIP”)	Pub.Util. Code §§ 379.5 and 379.6 D.01-03-073; D.08-11-044; D.11-09-015	Establish SGIP to provide incentives for investing in distributed generation
Permanent Load Shifting (“PLS”)	D.12-04-045 Resolution E-4586	Adopts PLS programs and budgets.
Demand Response	D.08-04-050 D.10-12-036	Load Impacts of Demand Response and Demand Response Participation in CAISO Market
Resource Adequacy	D.13-06-024	Energy Storage may be procured as a form of flexible capacity used to provide resource adequacy
Resource Adequacy	R.14-10-010	Continued refinements to Resource Adequacy Program and establish flexible capacity requirements
Resource Adequacy	D.15-06-063	Decision refining Resource Adequacy Program adopting modification to flexible RA rules for storage
Alternative-Fueled Vehicle Programs	R.13-11-007	Evaluation of electric vehicle batteries for energy storage
Integrated Resource Plan	SB 350, codified at Pub. Util. Code §§ 454.51-454.52 R.16-02-007	Need determinations may tie to procurement of energy storage
Long-Term Procurement for Local Capacity Requirements	D.14-03-004	Authorizes procurement of preferred resources and energy storage
Distribution Resource Planning and Sourcing using Distributed Energy Resources (“DERs”)	Pub.Util. Code § 769(g); R. 14-08-013 (“DRP”); 14-10-003 (“IDER”)	Proceedings in process to develop plan and pilot programs for DER integration and to develop potential sourcing mechanisms for DER grid services
Local Capacity Requirement Application for Approval of Contracts in the Western LA Basin	D.15-11-041	Decision approving Energy Storage contracts resulting from SCE’s LCR RFO



Local Generation Charge (“LGC”)	D.13-03-029	Authorized SDG&E to establish an LGC rate component which is designed to recover new generation costs for local reliability that are deemed to be subject to Cost Allocation Mechanism (“CAM”) policy.
Procurement Rules	D.07-12-052	Utility procurement outside of competitive solicitations; development of utility-owned resource
Transmission Interconnection Rules	California Independent System Operator Corporation (“CAISO”) Large Generator Interconnection Agreement	Requirements for generator interconnection to grid at transmission level
Distribution Interconnection Rules	Wholesale Distribution Access Tariff	Requirements for generator interconnection with IOU-owned distribution system
Distribution Interconnection Rules	Rule 21	Interconnection at distribution level by Qualifying Facilities (“QFs”) under Public Utility Regulatory Policies Act of 1978 (“PURPA”), net metering, and SGIP
Net Energy Metering	D.14-05-033	Customer-sited systems interconnecting with storage are treated the same as systems interconnecting without storage
Net Energy Metering	D.16-01-044	The “storage mandate charge” is collected through the PCIA and should not be part of the non-bypassable charge in the NEM successor tariff
Confidentiality	Pub. Util. Code § 454.5(g); D.06-06-066, D.08-04-023, D.11-07-028	Confidentiality of energy procurement information submitted to CPUC
Confidentiality	CPUC General Order 66-C	Exceptions to Public Records Act
Cost Recovery	D.04-12-048	10-year limit on recovery of procurement costs
Cost Recovery	D.06-07-029	CAM for long-term procurement of new generation
Cost Recovery	D.08-09-012	Responsibility for non-bypassable charges
CAM	D.11-05-005	Modifies new generation and long-term contract CAM

Cost Recovery	Pub. Util. Code § 454.51(c)	Net costs of resources used to integrate renewable energy resources are allocated on a fully nonbypassable basis consistent with CAM
Standards of Conduct	D.02-10-062, as modified by D.02-12-074; D.03-06-067; D.03-06-076.	CPUC Standards of Conduct for energy procurement