

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

Application of SAN DIEGO GAS & ELECTRIC
COMPANY (U 902 M) for Approval of its Energy Storage
Procurement Framework and Program As Required by
Decision 13-10-040.

Application No. 14-02-____
(Filed February 28, 2014)

Application No. 14-02-____
Exhibit No.: (SDG&E-4)

**PREPARED DIRECT TESTIMONY
OF CYNTHIA FANG
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY**

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FEBRUARY 28, 2014**



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PREPARED DIRECT TESTIMONY
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ON BEHALF OF SDG&E

I. INTRODUCTION

The purpose of my prepared direct testimony is to present SDG&E’s cost recovery proposal for SDG&E’s procurement of energy storage systems pursuant to Decision (“D.”) 13-10-040 and Assembly Bill (“AB”) 2514. In addition to the cost recovery of energy storage projects my testimony will address SDG&E’s proposal for cost recovery of additional costs associated with the procurement of energy storage. Specifically, these additional costs include the cost of the SDG&E independent evaluator consistent with Ordering Paragraph (“OP”) 8, the cost of evaluation tools as described in the testimony of witness Pat Charles, and SDG&E’s allocated share of the California Public Utilities Commission (“CPUC”) program evaluation and analysis costs.

II. COST RECOVERY

A. Background

In the adoption of the Energy Storage Procurement Framework and Design program, D.13-10-040 established the proposed Energy Storage Procurement Targets for the Southern California Edison (“SCE”), Pacific Gas and Electric (“PG&E”), and San Diego Gas and Electric (“SDG&E”), collectively (“IOUs”) for 2014, 2016, 2018, and 2020 as well as a total for the planning period. Ordering Paragraph 3 required in part that “(o)n or before March 1, 2014, Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall file a procurement

1 application containing a proposal for procuring energy storage resources, as described in
2 Section 3.d. of Appendix A of this decision.”

3 Section 3.d of Appendix A, identifying the minimum requirements for the March
4 1 applications of the IOUs, included “(r)request for cost-recovery authorization as
5 appropriate.” The purpose of this testimony is to present SDG&E’s proposal for cost
6 recovery for SDG&E’s procurement of energy storage systems pursuant to Decision
7 (“D.”) 13-10-040 and Assembly Bill (“AB”) 2514. Parts of this proposal may not have
8 specific application to SDG&E’s initial procurement cycle as , per the testimony of Pat
9 Charles, SDG&E is not proposing to seek offers in the customer domain and because
10 SDG&E is not proposing to seek offers in the transmission domain for the
11 “Transmission Reliability” “Regulatory Function.”

12 **B. Proposal for Storage Project Costs**

13 The targets are defined in terms of megawatts (“MW”) and categorized into three
14 domains: transmission, distribution, and customer. Specifically the targets established
15 for SDG&E in D.13-10-040 are defined as following:
16

17 **Table CF-1**

Storage Grid Domain (Point of Interconnection)	2014	2016	2018	2020	Total
SDG&E					
Transmission	10	15	22	33	80
Distribution	7	10	15	23	55
Customer	3	5	8	17	30
SDG&E Total	20	30	45	70	165

18 D.13-10-040 recognized that the point of interconnection does not necessarily define the
19 operational characteristics or type of function of the storage procured. D.13-10-040
20 mapped Grid Point Interconnection to type of function that the storage project could
21

1 serve, identified as “Regulatory Function” in Table 1 of D.13-10-040. “Table 1” is
 2 presented below as Table CF-2. In addition, D.13-10-040 also identified “Use-Case
 3 Examples” for each Regulatory Function category for the different points of
 4 interconnection.

5 **Table CF-2: D.13-10-040 Table 1**

STORAGE GRID DOMAINS (Grid Interconnection Point)	REGULATORY FUNCTION	USE-CASE EXAMPLES
Transmission-Connected	Generation/ Market	(Co-Located Energy Storage) Concentrated Solar Power, Wind + Energy Storage, Gas Fired Generation + Thermal Energy Storage
		(Stand-Alone Energy Storage) Ancillary Services, Peaker, Load Following
	Transmission Reliability (FERC)	Voltage Support
Distribution-Connected	Distribution Reliability	Substation Energy Storage (Deferral)
	Generation/ Market	Distributed Generation + Energy Storage
	Dual-Use (Reliability & Market)	Distributed Peaker
Behind-the-Meter	Customer-Sited Storage	Bill Mgt/Permanent Load Shifting, Power Quality, Electric Vehicle Charging

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 7
 8 Table CF-3 below identifies existing cost responsibility definitions for existing asset
 9 categories, as well as the service/function these assets provide. Cost responsibility, that
 10 is which customers pay, is generally determined by which customers benefit from the
 11 services provided. SDG&E proposes to utilize existing cost recovery mechanisms to the

1 extent applicable. The appropriate cost recovery mechanism to be applied to any given
2 storage project should be determined by the service/function provided by the project.
3 Where existing cost recovery mechanisms do not provide a clear vehicle for recovering
4 costs would be where an energy storage application provides multiple benefits such as to
5 both FERC-jurisdictional transmission customers and CPUC-jurisdictional retail
6 customers, it may be necessary to devise new cost recovery mechanisms. SDG&E's
7 proposal follows CPUC and FERC history determining that costs should be recovered
8 from all benefitting customers, which in this instance would tie cost recovery to the type
9 of function.

10 For instance, the cost of a storage project that provides distribution services
11 should be recovered through distribution rates from all distribution customers.

12 Similarly, the costs of a storage project that provides commodity services should be
13 recovered through commodity rates from all bundled service retail customers, with
14 departing load customers bearing costs responsibility through the PCIA. For projects
15 with multiple functions, SDG&E proposes, at this time, to allocate based on primary
16 function. SDG&E may re-examine the allocation treatment of projects that perform
17 multiple functions at a later date.

18

1

Table CF-3: Asset, Service/Function and Cost Responsibility

<u>Asset Category</u>	<u>Service/Function</u>	<u>Cost Responsibility</u>
Generation/ Commodity	Provision of energy services to retail customers	Bundled retail customers, with Departing Load customers responsible for above market costs of vintaged resources through Power Charge Indifference Adjustment (“PCIA”)
Distribution	Distribution-level reliability and power quality services	All distribution customers
Transmission	Transmission-level reliability services, including voltage support and deferral of transmission upgrades	All transmission customers (distinguishing between high voltage and low voltage customers as applicable)
Cost Allocation Mechanism (“CAM”) Resources	Generation providing reliability services for all retail consumers	Bundled, DA, CCA customers

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3

SDG&E applies the cost recovery mechanism, as defined by the asset class

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above in Table CF-3, to the storage grid domains that were identified in D.13-10-040

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(Table CF-2). SDG&E further proposes that in the event an energy storage project is

6

identified to meet more than one regulatory function as defined below, cost recovery for

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the project should reflect the multiple functions.

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Table CF-4: SDG&E's Cost Recovery Proposal

D.13-10-040			
STORAGE GRID DOMAINS (Grid Interconnection Point)		Service/Function	Cost Responsibility
Transmission- Connected	Generation/ Market:	Commodity Service: provision of energy services	Bundled retail customers, with Departing Load customers responsible for above market costs of vintaged resources through Power Charge Indifference Adjustment ("PCIA")
	Transmission Reliability (FERC): Voltage Support, Deferral of Transmission Upgrades	Transmission service: transmission- level reliability	All transmission customers (distinguishing between high voltage and low voltage customers as applicable)
Distribution- Connected	Distribution Reliability: Substation Energy Storage (Deferral)	Distribution service: Delivery services to include distribution- level reliability and power quality	All distribution customers
	Generation/ Market: Distributed Generation + Energy Storage	Commodity Service: provision of energy services	Bundled retail customers, with Departing Load customers responsible for above market costs of vintaged resources through Power Charge Indifference Adjustment ("PCIA")
	Dual-Use (Reliability & Market): Distributed Peaker	CAM: Generation providing transmission-level or distribution-level reliability	Bundled, DA, CCA customers
Behind-the- Meter	Customer-Sited Storage		(Discussed further below)

1 SDG&E recommends that to the extent a storage project provides transmission-
2 level reliability benefits, the cost of providing those services be recovered through
3 FERC-jurisdictional transmission rates. This would require that the CAISO find that
4 there is a need for the transmission-level reliability service provided by the storage
5 project and that the storage project provides the most economical means of meeting that
6 need. Currently there are two basic ways of obtaining such findings from the CAISO.
7 One would be for the CAISO to include the storage project in its annual CAISO Board-
8 approved transmission plan. The other would be to include the project in an executed
9 Generator Interconnection Agreement (GIA). Either case represents agreement by the
10 CAISO that the applicable costs can be recovered through the CAISO's high or low
11 voltage Transmission Access Charge (TAC) mechanism (as applicable).

12 Because CAISO concurrence is essential for ensuring cost-recovery through
13 FERC-jurisdictional transmission rates, any contractual arrangements with an energy
14 storage project providing transmission-level reliability benefits would have to be subject
15 to inclusion of the energy storage project in either the CAISO Board-approved
16 transmission plan or in an executed GIA. SDG&E is unwilling to make binding
17 commitments to energy storage projects providing transmission-level reliability services
18 without such CAISO determinations.

19 However, in the event that recovery of the costs of storage projects providing
20 transmission-level reliability benefits, and which are authorized by the CPUC to meet
21 SDG&E's targets as determined by D.13-10-040, are not approved for recovery through
22 FERC-jurisdictional transmission rates, SDG&E requests authority from the CPUC to
23 recover those project costs through distribution rates.

1 With regard to customer-sited energy storage, SDG&E believes that cost-
2 recovery needs to be addressed on a case by case basis. As an example, SDG&E has
3 identified projects that may fall into existing programs, such as Demand Response
4 (“DR”), Self-Generation Incentive Program (“SGIP”), and Permanent Load Shifting
5 (“PLS”). In Rulemaking (“R.”) 12-06-013, *Order Instituting Rulemaking on the*
6 *Commission’s Own Motion to Conduct a Comprehensive Examination of Investor*
7 *Owned Electric Utilities’ Residential Rate Structures, the Transition to Time Varying*
8 *and Dynamic Rates, and Other Statutory Obligations*, the Commission set forth guiding
9 Principles for the evaluating Optimal Rate Design. Included in these Principles are:

10 **Principle 2:** Rates should be based on marginal cost;

11 **Principle 3:** Rates should be based on cost-causation principles;

12 **Principle 7:** Rates should generally avoid cross-subsidies, unless the cross-subsidies
13 appropriately support explicit state policy goals;

14 **Principle 8:** Incentives should be explicit and transparent;

15 Further, SDG&E defines an optimal rate design as one that meets the following
16 criteria:

- 17 • Utilities charge for the services they provide;
- 18 • Rates are designed to recover costs on the same basis as they are incurred; and,
- 19 • Incentives or subsidies that have been deemed necessary to further public policy
20 objectives are separately and transparently identified.

21 While SDG&E does not propose any changes to the to the current recovery of
22 existing programs such as such as DR, SGIP, and PLS, in this immediate testimony, to
23 ensure sustainability of these programs and that these programs support economically

1 efficient decision making (Principle 9), continual movement towards an optimal rate
2 design will be critical.

3 **C. Cost Recovery – Evaluation Costs**

4 In addition to the cost recovery of energy storage projects, my testimony will
5 address SDG&E’s proposal for cost recovery of additional costs associated with the
6 procurement of energy storage. Specifically, SDG&E independent evaluator, consistent
7 with OP 8, and evaluation tools as described in the testimony of witness Mr. Infanzon
8 and SDG&E’s allocated share of the CPUC program evaluation and analysis costs.
9 SDG&E requests the authority for a new subaccount within SDG&E’s existing
10 Independent Evaluator (“IE”) Memorandum Accounts¹(“IEMA”), IE-Energy Storage, to
11 record the evaluation costs associated with selection of energy storage projects required
12 by D.13-10-040. Further discussion regarding SDG&E’s proposed cost recovery is
13 presented below.

14 **1. Costs of SDG&E Independent Evaluator and Evaluation Tools**

15 OP 8 of D.13-10-040 states:

16 Pacific Gas and Electric Company, San Diego Gas & Electric Company, and
17 Southern California Edison Company shall employ an Independent Evaluator to
18 assess the competitiveness and integrity of its energy storage solicitation. The
19 independent evaluator’s report shall be submitted as part of the utility’s filing
20 requesting approval of contracts resulting from the solicitations.
21

22 SDG&E proposes that the costs associated with the IE and Evaluation Tool be
23 recovered in a manner consistent with the projects being assessed, with the additional
24

¹ http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-PRELIM_IEMA.pdf

1 requirement that they be recovered through CPUC jurisdictional rates. That is, if 60%
2 of the projects being evaluated provide commodity services and 40% provided
3 distribution services, then 60% of these costs would be recovered through commodity
4 rates and 40% through distribution rates. If 10% of these projects provided transmission
5 services and 55% commodity services and 35% distribution services, then 61% of the
6 costs would be recovered through commodity rates and 39% through distribution rates.

7 Therefore, SDG&E is requesting to following new subaccounts within its existing
8 IEMA:

- 9 • **IEMA – Energy Storage: Commodity** with disposition to Energy
10 Resource Recovery Account (ERRA)² for recovery through commodity
11 rates;
- 12 • **IEMA – Energy Storage: Distribution** with disposition to Electric
13 Distribution Fixed Cost Account (EDFCA)³ for recovery through
14 distribution rates; and
- 15 • **IEMA – Energy Storage: Local Generation** with disposition to Local
16 Generating Balancing Account (LGBA)⁴ for recovery through CAM.

17 **2. Costs of CPUC Consultant**

18 OP of 7 D.13-10-040 states:

19 Pacific Gas and Electric Company, San Diego Gas & Electric Company, and
20 Southern California Edison Company shall collectively fund an annual budget of
21 \$500,000 from all ratepayers, to be reimbursed to the Commission through the
22 regular budget process, to allow Commission staff to oversee evaluation and
23 analysis of the program and hire consultants for this purpose.
24

² http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-PRELIM_ERRA.pdf

³ http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-PRELIM_EDFCA.pdf

⁴ http://regarchive.sdge.com/tm2/pdf/ELEC_ELEC-PRELIM_LGBA.pdf

1 In addition, D.13-10-040 directed that “(t)he costs of the \$500,000 budget shall
2 be shared by the IOUs according to their proportional share of peak load.” (p.66 - 67)
3 SDG&E’s current share of peak load is 9.4%⁵, resulting in an allocated share of the
4 \$500,000 budget of \$47,116 per year. D.13-10-040 further states “(t)he expectation is
5 for Commission staff to be able to commence evaluation efforts by late 2014 or early
6 2015. The costs of the \$500,000 budget shall be shared by the IOUs according to their
7 proportional share of peak load, and collectable from ratepayers starting in 2015.” (p.67)
8 To comply, SDG&E requests the authority to record these costs to the proposed IE –
9 Energy Storage Subaccount for recovery in rates beginning January 1, 2015.

10 D.13-10-040 further states “(t)he IOUs shall collectively fund an annual budget
11 of approximately \$500,000 from all ratepayers” (p.67). Therefore, SDG&E proposes to
12 recovery these costs through distribution rates to ensure recovery from all ratepayers.

13 **III. CONCLUSION**

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15 This concludes my prepared direct testimony.
16

⁵ SDG&E’s proportional share of peak load was computed using information from the California Energy Commission’s adopted 2013 IEPR Demand Forecast (Adopted 12/11/2013). The annual non-coincident net peak demand values for SCE, PG&E and SDG&E were added together to create a total. SDG&E’s proportional share was computed by dividing SDG&E’s non-coincident net peak demand by the total.

1 **IV. STATEMENT OF QUALIFICATIONS**

2 My name is Cynthia S. Fang and my business address is 8330 Century Park
3 Court, San Diego, California 92123. I am the Electric Rates Manager in the General
4 Rate Case and Revenue Requirements Department of San Diego Gas and Electric
5 (SDG&E). My primary responsibilities include the development of cost-of-service
6 studies, determination of revenue allocation and electric rate design methods, analysis of
7 ratemaking theories, and preparation of various regulatory filings. I began work at
8 SDG&E in May 2006 as a Regulatory Economic Advisor and have held positions of
9 increasing responsibility in the Electric Rate Design group. Prior to joining SDG&E, I
10 was employed by the Minnesota Department of Commerce, Energy Division, as a Public
11 Utilities Rates Analyst from 2003 through May 2006.

12 In 1993, I graduated from the University of California at Berkeley with a
13 Bachelor of Science in Political Economics of Natural Resources. I also attended the
14 University of Minnesota where I completed all coursework required for a Ph.D. in
15 Applied Economics.

16 I have previously submitted testimony before the Federal Energy Regulatory
17 Commission and have submitted testimony and testified before the California Public
18 Utilities Commission regarding SDG&E's electric rate design and other regulatory
19 proceedings. In addition, I have previously submitted testimony and testified before the
20 Minnesota Public Utilities Commission on numerous rate and policy issues applicable to
21 the electric and natural gas utilities.