BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Policies Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program and Other Distributed Generation Issues. U 39 E	Rulemaking 12-11-005 (File November 8, 2012)

PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E) COMMENTS ON THE PROPOSED DECISION REGARDING NET ENERGY METERING INTERCONNECTION ELIGIBILITY FOR STORAGE DEVICES PAIRED WITH NET ENERGY METERING GENERATION FACILITIES

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TABLE OF CONTENTS

Page

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I. INTRODUCTION

Pursuant to Rule 14.3 of the California Public Utilities Commission (CPUC or Commission) Rules of Practice and Procedure, Pacific Gas and Electric Company (PG&E) makes this filing in response to the *Proposed Decision Regarding Net Energy Metering Interconnection Eligibility for Storage Devices Paired with Net Energy Metering Generation Facilities* (PD) issued on April 15, 2014. The PD provides direction that storage paired with net energy metering (NEM) generation should have interconnection fee, study and distribution upgrade costs and standby charges waived when they are installed as an addition or enhancement to the NEM-eligible system. PG&E appreciates that both maintaining the integrity of the NEM program and the safety of the electric grid are stated objectives. PG&E urges that the Commission make several changes in the PD to better align with these important goals. The following recommendations are discussed in more detail:

- Conclusion of Law No. 5 should be deleted from the PD to make sure there is no question that storage operating in parallel with the grid will continue to be reviewed by the utility under Rule 21.

- Distribution upgrade costs should not be waived for storage.
- Storage sizing should be based on the NEM generator capacity except for storage systems sized 6 kilowatt (kW) and under.
- Second meter costs should not be capped at $500.
- Third party data should not be used to de-rate NEM exports for single inverter or smaller storage systems. Instead, alternatives should be adopted.
- NEM paired storage interconnection subsidies should have a sunset date of December 31, 2015.

II. DISCUSSION

A. The Rule 21 Definition of a Generating Facility Should Continue to Include Storage

Storage should continue to be defined as a "Generator" under the PG&E's Electric Tariff Rule 21 governing interconnection.[1/] Conclusion of Law 5 of the PD provides that "Storage itself is not a 'generator' as defined under the Rule 21 interconnection tariff." This proposed statement should be deleted from the PD.[2/] This revised definition is not needed to implement the interconnection cost treatment for NEM paired storage as proposed in the PD. If left unchanged it would have negative implications that extend beyond the scope of this proceeding and would reverse Commission precedent.

1. Rule 21 review is needed to provide for safe interconnection of storage operating in parallel with the grid.

By concluding that storage is not a generator within the meaning of Rule 21, the PD implies that customer energy storage devices interconnecting in parallel with the utility grid, whether paired with NEM or not, are not subject to the technical review process defined in Rule 21 (and all associated certifications and requirements) which ensures the continued safe and

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1/ Hereinafter Rule 21.

2/ The discussion on page 10 of the PD echoing Conclusion of Law 5 should also be deleted.

reliable operation of the electric system. Energy storage systems perform the same function as renewable or fossil fuel generators in that they convert mechanically and/or chemically stored energy into electricity to serve on-site load or export onto the electric grid. Therefore, energy storage is a device that converts an energy source into electricity when discharging and thus should be treated as a generator.[3/] The energy storage devices contemplated in this PD will parallel with the utility grid like all other generators covered by Rule 21. Storage devices are-from a technical, operational, and electrical standpoint-exactly the same as any other generating facility that is governed by Rule 21. Rule 21 evaluations are necessary to ensure that customer storage systems meet the requirements necessary for safe and reliable interconnection.

2. The PD's Conclusion of Law 5 is inconsistent with Commission precedent.

One stated purpose for opening the Distributed Generation Interconnection Rulemaking (R. 11-09-011 or OIR) was to review and, if necessary, revise the rules and regulations governing interconnecting generation and storage resources to the electric distribution systems.[4/] The June 20, 2012 Scoping Memo states that, for phase 1 of the OIR, one of the objectives was to "[c]reate distribution-level interconnection procedures for storage technologies." This goal was accomplished with the adoption of Decision (D.) 12-09-018 that extensively revised Rule 21 pursuant to a Settlement Agreement that addressed the storage interconnection topic.[5/] This Decision added the phrase "including storage" to the definition of Generating Facility.[6/] The Decision explicitly states why the phrase "including storage" was

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3/ Rule 21 defines "Generator" as: "A device converting mechanical, chemical, or solar energy into electrical energy, including all of its protective and control functions and structural appurtenances. One or more Generators comprise a Generating Facility."

4/ September 21, 2011 Order Instituting Rulemaking 11-09-011, p. 1.

5/ D.12-09-018, Decision Adopting Settlement Agreement Revising Distribution Level Interconnection Rules and Regulations – Electric Tariff Rule 21 and Granting Motions to Adopt the Utilities' Rule 21 Transition Plans.

6/ Rule 21C. Definitions " **Generating Facility:** All Generators, electrical wires, equipment, and other facilities, excluding Interconnection Facilities, owned or provided by Producer for the purpose of producing electric power, ***including storage.***" Emphasis added.

added: "The inclusion of this term means that storage systems are eligible for and treated under the same evaluation processes as a generating facility."[7/] This was further confirmed in Finding of Fact No. 2 of D.12-09-018: "The Proposed Settlement responds to issues framed by this rulemaking, including . . . creating distribution-level interconnection procedures for storage technologies." It is referenced again in Finding of Fact No. 3: "The Proposed Settlement supports the broad goals of the Commission regarding transparency, predictability, and timeliness of the distribution level interconnection process by . . . confirming that storage facilities are eligible for interconnection evaluation under Rule 21". It would be a step backward and a safety concern to remove storage from the definition of a generator under Rule 21.[8/]

3. There are many other potential problems stemming from Conclusion of Law 5.

For several reasons, including unintended consequences and potential market disruption, storage should not be removed from the definition of generator or generating facility under Rule 21.

a. Uncertainty for stand-alone storage

First, without the Rule 21 process it is uncertain how PG&E would continue to proceed to interconnect stand-alone energy storage generators that are paralleling with the grid but not paired with a NEM-eligible generator. These projects represent the majority of storage Megawatts (MWs) expected to interconnect with the grid in PG&E's service territory and clearly need to be studied to assess their impact on the safe and reliable operation of the grid. PG&E is concerned that this will leave a large number of projects in regulatory limbo.

7/ D.12-09-018, p. 22.

8/ Many parties including PG&E, Southern California Edison Company and Solar City Corporation, pointed to the importance of Rule 21 in providing for the safety of storage interconnections with the grid in the January 8, 2014 responses to the January 6, 2014 *Assigned Commission Ruling Regarding the Safety Considerations of Energy Storage systems Paired with Renewable Generators Eligible for Net Energy Metering.*

b. Lack of process to meet SGIP requirements

Second, it is not clear how storage systems would receive Self Generation Incentive Program (SGIP) funding without an approved interconnection agreement. The SGIP rules properly require an approved interconnection, *"in accordance with the local Electric Utility rules for customer generating facility interconnections"* in order to receive incentives. Without Rule 21 there would be no process to review and approve the interconnection of SGIP storage projects.

c. Storage additions require review

Finally, if storage is not defined as a generator, it is unclear how any desired addition or enhancement to an existing, interconnected NEM generator will be studied to ensure safe and reliable service. It is important to note that any desired addition or enhancement to an existing, interconnected generator will, in almost every case be considered a material modification to an existing system, triggering an interconnection request for the new, enhanced generator to make sure it meets Rule 21 requirements for safety.

For all these reasons PG&E strongly urges the Commission to remove Conclusion of Law No. 5. This will avoid policy uncertainty for energy storage projects and allow the continued utilization of Rule 21 to interconnect energy storage devices in a safe and reliable manner.

B. Storage Should Help Avoid Distribution System Upgrades, Not Increase Such Costs

The PD provides that distribution upgrades triggered by the interconnection of energy storage devices coupled with NEM generators should be paid for by the utility's general customer population. PG&E requests that the Commission reconsider adoption of this blanket policy since 1) as a practical matter, it appears to run counter to one of the primary interests in encouraging behind-the-meter energy storage, namely reducing capacity and distributed energy generation impacts on the distribution grid, and 2) if that is the intent, it is unfair to other customers to require them to absorb increased distribution costs attributable to storage.

Behind-the-meter energy storage provides a potentially valuable tool to better align customer energy generation with utility system operations by potentially reducing the grid impacts of distributed energy generation. It also provides another choice for customers to manage their electricity use. To this end, the installation of energy storage devices for behind-the-meter applications that triggers distribution upgrades may be contrary to one of the policy objectives of encouraging customer storage. Extending the distribution upgrade cost subsidy enjoyed by renewable NEM generators to also cover additional upgrade costs due to the installation of storage will not incent appropriate and sustainable use cases and technology development for storage. PG&E supports waiving interconnection application fees and study costs for NEM-paired storage systems for the time being, but the Commission should reconsider waiving distribution upgrade costs associated with the interconnection of storage to better align the incented storage use-cases with the overall policy objectives.

Further, PG&E also wants to be clear that these exceptions are for NEM-paired storage only. Stand-alone energy storage and storage paired with a non-NEM generator will continue to follow the appropriate Rule 21 Interconnection cost rules. Also, if in the future customers that have been approved for interconnection through this NEM paired storage application then decide to move their storage off of NEM and apply for another tariff (i.e., wholesale), those customers will need to apply and pay for any associated fees and costs for that particular interconnection application.

C. Sizing Requirements

PG&E generally supports the PD's sizing proposal that discharge kW capacity of the storage system shall not exceed the NEM generator's maximum kW capacity.

However, PG&E does have concerns with the proposal to waive sizing requirements for storage systems sized 10kW and less and requests that the Commission reduce this to 6 kW and less. This change is needed because the proposed sizing exception is unnecessarily broad for two reasons. First, the vast majority of smaller sized (residential) PV systems fall within the 3kW-6kW range and therefore the up to 10kW unrestricted storage size is well above the capacity of

the NEM generators with which the storage devices will be paired. Second, based on interconnection applications received to date, 6 kW is a more accurate representation of small energy storage systems available in the marketplace. PG&E has already received 26 interconnection applications with storage systems sized at 6kW or less. If the unrestricted storage size is set at up to 10kW, there will not be a strong linkage between the system size and the on-site generation for a number of the smaller NEM systems. PG&E urges the Commission to adopt 6 kW as the maximum size for NEM storage systems that do not need to adhere to sizing requirements.

D. Metering Requirements

PG&E supports the requirement of additional metering in order to protect, to the greatest extent possible, the integrity of the NEM Program. However, PG&E proposes more effective alternatives to the PD's proposals in the following sections.

1. The Proposed $500 Meter Cost Cap is not sufficient

PG&E appreciates the need to establish concrete metering costs for customers. As such, PG&E has proactively worked with storage industry participants to develop a cost structure for meter installations under the Net Energy Metering Multiple Tariff (NEMMT) guidelines. The $500 meter cost cap proposed in this PD is not sufficient and should be removed. Instead PG&E proposes a cost structure based on actual costs. For meter configurations allowing for a SmartMeter installation, PG&E's charge would be roughly $600[9/] as explained in the chart below to cover the meter, cost of labor, ITCC tax,[10/] and the cost of ownership (COO).[11/]

9/ Systems that require a meter sized 400 amps or above may have varied costs.

10/ ITCC rates and costs are subject to change.

11/ In addition PG&E continues to explore additional low cost alternative metering options compatible with PG&E's billing system.

Table 1 – Illustrative Cost Summary:

Type of Meter	KV2C
Cost of Residential Smart Meter installations	$125
Labor Cost for Installation (1 hour)	$165
Sub Total for Smart Meter Installed Costs:	$290
ITCC Tax at 34%	$98
COO at 0.46% per month	$208
TOTAL UPFRONT METER COST	**$596**

Notes:

1. Smart Meter option is only available for customers if wireless service is offered at their location and the customers has not opted out of a smart meter installation

2. The meter installation fees may vary in the future and this is only illustrative (as labor costs may vary). This cost represents 1 hour of labor at $165.00

3. The ITCC represents the "Income Tax Component of Contribution" and current rates can be viewed in this AL: http://www.pge.com/nots/rates/tariffs/tm2/pdf/GAS_3176-G.pdf

4. The Cost of Ownership is .46% of the installed costs and can be viewed in Electricity Rule 2 http://www.pge.com/tariffs/tm2/pdf/ELEC_RULES_2.pdf

For installations where a SmartMeter is not sufficient to capture data, more complex metering is required. In these more complex facilities the costs for a second meter can range from $1,700 for a Transformer-rated meter to over $12,000 for a Primary Transformer-rated Meter Installation (25 kV).[12/],[13/] Given this range, PG&E urges the Commission to set a cost cap of $600 for simple SmartMeter installations and remove the cost cap for more complex metering arrangements. As explained above, it is not appropriate to develop a one-size-fits-all cost cap for all meter installations, as meter installation costs depend on a myriad of factors, with more complex/larger customer installations requiring more expensive metering.

2. Metering Alternatives Need Adjustment

PG&E generally agrees with the PD's determination that storage should comply with NEMMT provisions when coupled with renewable generation, with limited exceptions.

12/ The PG&E NEMV Tariff for instance provides for a range in metering costs.

13/ The costs can be slightly higher or lower depending on site specific characteristics

However PG&E urges that compliance with NEMMT should be required for all storage systems over 6 kW (not 10 kW), except single inverter systems discussed in more detail below.

The PD proposes that storage systems under 10kW not be required to install additional metering. As an alternative to separate metering of the renewable generator, the PD proposes that PG&E rely on third party data via a data acquisition system using the de-rating equation as identified by SunVerge[14/] to estimate exported energy qualifying for NEM.

PG&E supports adoption of the de-rating factor in the PD, but strongly opposes use of third-party data. Third-party data would introduce additional complexity and cost into NEM billing while at the same time sacrificing billing and metering accuracy requirements for NEM customers. Forcing the utilities to rely on potentially inaccurate and unvalidated third-party data will be administratively burdensome, confusing to the customer, and require significant billing system enhancements. It is unclear how the utility would receive this data, verify its validity, and input a rolling percentage into the existing utility billing system.

Instead PG&E urges the Commission to adopt the alternate proposals summarized in Table 2 below. Key proposals include requiring a second meter for all NEM paired storage systems larger than 6 kW. For systems sized 6kW and under with separate inverters, the customer would have the choice between 1) installing a second SmartMeter at the NEM generator at customer cost under NEMMT; or 2) using a set de-rate factor calculated using the equation described below along with an annual export cap based on the maximum expected generation of the customer's renewable system. This would avoid the problems and expense associated with using third party data discussed above and would have the added benefit of providing more certainty to customers about how exports would be treated.

PG&E proposes the below de-rating calculation based on the NEM generator maximum potential generation compared to the storage device using a potential percentage calculation.

14/ The PD equation is provided on pg. 19.

The energy storage generation potential is defined as one full charge/discharge cycle per day over the course of one year.

Equation:

Example: If the potential NEM eligible generation is 1,700 kWh per year and the potential energy storage device's generation is 2,000 kWh then the maximum available NEM credits would be roughly 46% of the total export from the customer's generating facility (1700/(1700+2000) = 46%). This calculated percentage will be applied on a monthly basis to the kWh exported to the grid. Additionally, a yearly cap on NEM credits per generating facility would be set at the maximum potential generation of the NEM Eligible Generating Facility over a one year period.

The PD does not appear to explicitly address the situation where a storage device is combined with a renewable generator behind a single inverter. For these situations PG&E proposes that systems sized 6 kW and larger install a meter on the AC side of the inverter to measure energy drawn from the grid and apply the PD derate factor.[15/] For systems 6 kW and under the customer would have a choice between the meter option or use of the PG&E-proposed derate calculation as described above.

15/ See equation on PD p. 19.

Table 2
Storage System Size

NEM-Storage Inverter Configuration	<= 6kW	> 6kW
Single/Shared Inverter	1) Use PG&E-proposed de-rating equation to establish estimated basis for de-rating factor, or 2) Customer may elect to install a SmartMeter on the AC side of the inverter to measure energy drawn from the grid and apply the PD derate factor	Customer must install the appropriate meter on the AC side of the inverter to measure energy drawn from the grid and apply the PD derate factor
Separate Inverters	1) Follow NEMMT requirements, or 2) Customer may elect to use PG&E-proposed de-rating equation to establish estimated basis for de-rating factor	Follow NEMMT requirements

PG&E also proposes to implement the de-rated NEM billing adjustment equation on a monthly basis. This will better align with standard billing practices and result in less customer confusion and avoid potentially large changes to customer bills that would occur on an annual true-up cycle.

Finally, while the cost is likely to be less than if the third party data proposal in the PD were adopted, PG&E cautions that this estimation approach to billing will require enhancements to the NEM billing system because currently there is no credit estimation for NEM. Any such changes will require an appropriate time frame for implementation, testing to ensure feasibility, and any necessary budget requirements for IT billing system upgrades.

E. Limitation of Subsidy through 2015

The subsidies created by this PD will create a cost shift to other customers. PG&E agrees with the PD proposal to track these costs to support further Commission evaluation of these new

subsidies for NEM paired customer storage. While the PD is supportive of increased use of storage to meet customer energy needs, the Commission must balance the interests of participants and nonparticipants. PG&E requests that any subsidies expire on the December 31, 2015 for further evaluation as specified in the PD, unless the Commission makes a final determination to extend some portion of the subsidies beyond 2015.

III. CONCLUSION

PG&E appreciates the opportunity to provide these comments and respectfully requests that the Commission modify the PD as discussed above.

Respectfully submitted,

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