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

Order Instituting Rulemaking on the
Commission's Own Motion to Consider
Alternative-fueled Vehicle Tariffs, Infrastructure
and Policies to Support California's Greenhouse
Gas Emissions Reduction Goals.

Rulemaking 09-08-009
(Filed August 20, 2009)

**PACIFIC GAS AND ELECTRIC COMPANY'S (U 39E)
COMMENTS AND RESPONSE TO QUESTIONS ON
PHASE 3 ISSUES IN ADMINISTRATIVE LAW JUDGE'S
RULING**

CHRISTOPHER J. WARNER

Pacific Gas and Electric Company
77 Beale Street, B30A
San Francisco, CA 94105
Telephone: (415) 973-6695
Facsimile: (415) 972-5220
E-Mail: CJW5@pge.com

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Attorneys for
PACIFIC GAS AND ELECTRIC COMPANY

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I. INTRODUCTION

Pacific Gas and Electric Company (PG&E) hereby provides its comments and responses to questions on Phase 3 compliance issues in the Administrative Law Judge's Ruling (ALJ Ruling) dated January 31, 2012 in this proceeding. PG&E first responds to the specific questions directed to the utilities in the ALJ Ruling, and then provides comments on the questions in the ALJ Ruling related to the Roadmap Report submitted by the utilities, including PG&E. PG&E's comments on the Roadmap Report are intended to supplement the information already contained in the Roadmap Report.

As a threshold matter, the key question at this stage of this proceeding is the status of the EV market in California in 2012 and over the next few years. The market for EVs in California is primarily a function of consumer demand, marketing by auto manufacturers, and planned product offerings by auto manufacturers. Utility support for EV infrastructure, such as rates, submetering, and service planning, is totally dependent on these factors in the development of EV markets. In this regard, the trend of known or forecast EV deployment in PG&E's service area indicates that the transition to mass market consumer demand for EVs is likely to be much slower than the utilities and California energy policymakers previously have predicted. At the end of 2011, 1,100 customers in PG&E's service area were on Schedule E-9 EV rates, and only 100 of those existing customers were on separately metered E-9B rates. Even assuming a

number of EV customers chose to stay on E-1 residential rates, PG&E forecasts that, as of the date of this filing, only about 2,800 EVs have been sold and are in use and being charged in PG&E's service area, less than 0.06% percent of PG&E's existing customers. More importantly, to date, *PG&E has received no requests from any customers for subtractive billing using third-party EV submeters.*

Additional domestic auto manufacturers, particularly Ford, are expected to begin marketing EVs in California in 2012 and 2013. However, the current state of the EV market indicates that the ramp-up of the EV market to a mass market level is likely to be much slower than previously predicted and assumed for utility and energy policy planning purposes.

Given these market trends, PG&E recommends that the Commission, utilities, EVSPs and other stakeholders in this proceeding remain very cautious about determining fundamental utility/EV service and ratemaking policies until the EV market further develops and EV consumer preferences are more fully developed and understood.

Over the next several months, PG&E intends to collaborate and consult with all interested EV stakeholders to narrow the use cases in the Roadmap Report to those that interested parties believe are worthy of more detailed cost-benefit analysis and consumer demand assessment. PG&E would hope that consensus cost effectiveness and market evaluations of these use cases could then be submitted for Commission consideration by the end of the year. In addition, these evaluations can take into account the trends in deployment of EVs in PG&E's service area and California generally, including the impact of the roll-out of vehicles from additional auto manufacturers during 2012.

II. RESPONSE TO QUESTIONS DIRECTED TO UTILITIES

Question 1: What was the basis for determining that some use cases are not cost-effective? Please share any quantitative analysis used to make this determination.

PG&E RESPONSE:

The Roadmap Report did not conclude that any use cases were "not cost-effective."

However, the Roadmap Report did conclude that certain use cases were not currently feasible without potentially significant upgrades to utility billing and metering systems, which may or may not be cost-effective. In addition, the Roadmap Report identified significant barriers to cost-effective and feasible implementation of the use cases, including (1) lack of national standards for third-party owned submeters; (2) lack of commercial and regulatory certainty regarding protocols, systems, regulatory requirements and commercial arrangements for subtractive billing between utilities and third-party submeter owners; (3) lack of predictable market and customer demand for EV submeters, and (4) lack of clarity on the commercial scale business plans and needs of third-party EVSPs for submetering or subtractive billing services from utilities.

PG&E, the other utilities and the other stakeholders in the proceeding are collaborating to develop a common “template” for estimating the per-customer costs of the most commercially feasible submetering use cases identified in the Roadmap Report, particularly the costs of implementing subtractive billing as part of submetering infrastructure and protocols. PG&E expects to file its costs estimates later this year in this proceeding based on the results of the collaboration.

Question 2: What specific electric tariff rule changes are required to implement the use case?

PG&E RESPONSE:

As a threshold matter, no electric tariff changes are required by PG&E in order to support EV submetering that does not include or require subtractive billing. This is because submetering of EV electricity loads and usage for purposes unrelated to utility billing and “beyond the meter” does not affect utility services or bills and is not subject to direct CPUC jurisdiction. On the other hand, submetering of EV loads for utility subtractive billing purposes does directly affect utility services and bills to utility customers, and such utility services and bills are subject to direct Commission jurisdiction under the Public Utilities Code. Thus, submetering for utility subtractive billing purposes would require changes to utility tariffs, rates and standards similar to

those adopted by the Commission for use by third-party direct access providers which own or operate their own meters and billing systems to serve DA customers who also take utility distribution and transmission service from Commission regulated utilities.

The following is a list of some of the tariffs, rates, and rules that apply to billing and metering of DA customers by third parties and thus would need to be applied in similar fashion to submetering of EV customers for subtractive billing purposes:

Electric Rule 1 Definitions

Electric Rule 9 Rendering and Payment of Bills

Electric Rule 10 Disputed Bills

Electric Rule 17 Meter Tests and Adjustment of Bills for Meter Error

Electric Rule 18 Supply to Separate Premises and Submetering of Electric Energy

Electric Rule 22 – Direct Access, including Subpart G governing Direct Access Standards for Metering and Meter Data (DASMMD), and Meter Data Management Agent (MDMA) Services

Electric Rule 23 – Community Choice Aggregation Service, including Subpart N regarding Meter Services

Electric Rule 24 (under development in DR proceeding)

In addition, rate schedules, tariffs and rules governing utility billing and services generally available to customers whose EV loads are submetered would need to be reviewed and revised to ensure consistency in the overlapping services provided by utilities and third-parties to such customers.

Finally, as current proceedings regarding the development of general Demand Response (DR) metering protocols demonstrate,¹ the utilities and the Commission have limited experience with procedures for auditing and resolving billing disputes related to multiple meters serving the same customers of record. If submetering of EV customers for subtractive billing purposes is to

¹ Demand Response Order Instituting Rulemaking, R.07-01-041, Phase 4, Part 2

be offered as a general utility tariffed service, the Commission, the utilities, utility customers, and third-party meter owners or operators need to establish new procedures for billing dispute resolution related to metering and billing protocols.

Question 3: Page 14 of the report states that there is a need to clarify the Commission's role relative to the Department of Food and Agriculture. Given that Food and Agriculture has authority over non-utility owned meters, what specific issues require clarification?

PG&E RESPONSE:

If submetering is used for purposes other than subtractive billing of utility services to utility customers, then the only issue requiring clarification regarding the role of the California Department of Food and Agriculture is whether it has sufficient staff, funding and technical expertise to test, certify and enforce consumer protection standards applicable to the non-utility submeters.

However, if submetering is used for utility subtractive billing, then it appears that the Department of Food and Agriculture lacks legal authority to test, certify, inspect and audit submeters used for utility subtractive billing. Specifically, California Business and Professions Code Section 12510(a)(4), which governs weighing and measuring devices, provides that metering devices used for measuring electricity are excluded from the authority of the Department of Food and Agriculture and instead are subject to CPUC's exclusive jurisdiction:

“[T]he use of any weight or measure or weighing or measuring instrument used by a public utility in connection with measuring gas, electricity, water, steam, or communication service subject to the jurisdiction of the Public Utilities Commission is exempt from this chapter.” *See* B&P Code Section 12510(a)(4).

Thus, the CPUC, not the Food and Agriculture Department, must establish the metering standards and specifications for EV submeters owned by customers or third parties that are used for purposes of utility subtractive billing. This Commission role is similar to the jurisdiction the Commission already exercises over meters owned by customers pursuant to Rule 22 for Direct

Access providers and has adopted detailed standards for such meters.² Thus, the Commission should confirm that it has jurisdiction over EV submeters that it permits or requires the IOUs to use to measure and subtractively bill electricity provided and billed by the IOUs to their customers.

III. COMMENTS ON ROADMAP REPORT

Question 1: Does the roadmap report adequately identify all the potential use cases for submetering?

PG&E COMMENT:

The Roadmap Report adequately identifies the majority of the potential use cases for submetering in the context of utility subtractive billing. There are additional potential use cases for which submetering may be utilized that do not require subtractive billing, including demand response and customer data access use cases. Those use cases are currently being considered by the Commission, utilities, and other stakeholders in other proceedings, such as the Demand Response portfolio proceedings, the Home Area Network implementation plan proceedings, and the customer data access proceedings.³

Question 2: Do you agree with the utilities assessment of the feasibility and cost-effectiveness of each of the use cases? In order to determine the benefits from submetering, how should the Commission assess potential demand for subtractive billing for Electric Vehicle load? Do the benefits of using each of these use case justify the cost of implementation? What information is missing to help the Commission evaluate the costs and benefits of different use cases?

² See PG&E's Rule 22.G.1.a, providing that the three meter services packages are "subject to CPUC control" and may be provided by the IOU, an ESP or a third party; *see also* the Direct Access Standards for Metering and Meter Data (DASMMD) as approved by the Commission.

³ See D.11-07-056, July 28, 2011, mimeo, pp. 164- 167, Ordering Paragraphs 6, 7, 8, 10 and 11; R.07-01-041, Phase 4, Part 2.

PG&E COMMENT:

As discussed in PG&E's response to the Commission's question regarding cost-effectiveness, the IOUs' Roadmap Report assessment of the various use cases did not draw conclusions regarding cost-effectiveness. Instead, the IOUs provided an assessment of the current feasibility of performing utility subtractive billing given the technical challenges, requirements for funding, need for separate Commission approval for funding and authorization, regulatory issues, and jurisdictional concerns over submeter accuracy and use that arise from the different use cases that include utility subtractive billing.⁴

A key data point in evaluating the cost-effectiveness of submetering for subtractive billing purposes is forecasting a reasonable adoption rate for consumer selection of subtractive billing using submeters. Currently, the best and only indicator of likely customer adoption of submetering is the adoption rate of separate EV metering tariffs by existing EV customers. This indicator could be aggressive compared to EV submetering adoption for subtractive billing purposes because early EV adopters are likely to be more aware and seek out more information regarding electric rate and tariff options compared to future EV adopters and thus are more likely to consider a different rate or service offering, such as separate submetering of their EV loads. Thus, even if the fixed costs of utility grade submetering decrease over time, the adoption rate of utility subtractive billing using submeters among a broader group of EV customers is not likely to be much higher than the adoption rate of current, "early EV adopters" who affirmatively choose separate EV metering over whole house EV rates.

⁴ In response to a data request from Energy Division, PG&E provided additional detail on technical issues associated with submetering for subtractive billing in PG&E's January 17, 2012, "Responses to Energy Division Comments on Data Response to ED DR_008."

PG&E appreciates that some may argue that the cost of utility-grade separate EV meters is the primary reason early EV adopters may choose whole house EV metering vs. separate meters. However, PG&E believes that a total resource cost analysis comparing the economic costs of separate utility metering to EVSP revenue-grade submetering for subtractive billing purposes is necessary to determine the impact of separate metering costs on consumer choice. This is because any cost-effectiveness evaluation of revenue-grade submetering for subtractive billing must consider the following per-customer costs in order to make a reasonable determination of the benefit-cost ratio from the customer's perspective: 1) adoption rate of EVs in general; 2) the expected cost curve for utility grade meters and submeters used by customers and the utilities for separately metered subtractive billing; 3) the discount rate utilized for the analysis; 4) the fixed and variable costs on the utility side of the meter associated with implementing, maintaining, and updating a utility subtractive billing system and arrangement with customers and third parties; and 5) the per customer cost for alternatives to submetering, such as separate utility metering, using the same EV market adoption rates.

In other words, the cost effectiveness for EV submetering includes not only a benefit-cost evaluation, but also a comparison of the societal costs and benefits of implementing a submetering solution versus the societal costs and benefits to perform equivalent tasks without a submetering solution. There are fixed, up-front costs for upgrades to utility billing and communications systems as well as for the costs of EV revenue grade submeters and these are likely to be significant. In contrast, the per-customer benefits attributable to EV submetering for subtractive billing purposes are likely to be highly dependent on the scale of consumer adoption of utility rate schedules which bill EV loads separately from whole house loads.

Thus, for purposes of evaluating submetering options, the Commission should base its

cost-effectiveness analysis on a total resource cost test. PG&E recommends that the Commission not proceed with determining or scheduling implementation of any EV submetering option until the societal net benefits are expected to exceed the societal net benefits of no EV submetering. This is also consistent with the Commission's "cost-causation" ratemaking and rate design policies, which require utility costs to be allocated to the customers who cause the costs, in order to avoid the general body of ratepayers being required to subsidize special utility services provided to a narrow group of customers.

Question 3: Which use cases should the Commission require the utilities to accommodate?

PG&E COMMENT:

As discussed above, until the cost-effectiveness of submetering for subtractive billing is fully evaluated, it is premature for the Commission to require the IOUs to implement any of the use cases. If a use case for EV submetering for utility subtractive billing is determined to be cost-effective and there is a compelling demand by customers for that use case, then it would be reasonable and prudent for the Commission to establish a schedule for IOUs to file applications to implement the use case and recover the costs from customers benefiting from the use case. If a use case for submetering for utility subtractive billing is not cost-effective or there is no compelling consumer demand to implement that use case, it would not be reasonable for the Commission to mandate that the IOUs implement that use case.

Question 4: What deadline should the Commission set for the utilities completing a submetering protocol and tariff sheets for each of these use cases? Should short-term workarounds be made available for use cases that cannot be implemented in the short-term?

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PG&E COMMENT:

See response to Question 4. It is premature for the Commission to establish a deadline for implementing submetering protocols and tariffs for any of the use cases, because none of the use cases have been determined to be cost-effective and subject to sufficient consumer demand. Short-term workarounds to these submetering issues are not available, because it is not clear that the costs of implementing subtractive billing using submeters are reasonable. On other hand, customers and third-party EVSPs who wish the benefits of submetering that does not require utility subtractive billing are free to implement such submetering with their own hardware and software with no need for utility support or approval for billing or any other purpose.

Question 5: Submetering may provide additional benefits related to vehicle-based demand response or grid services that may be enabled in the future. How important is direct metering of vehicles to performing these future functionalities?

PG&E COMMENT:

PG&E does not believe that utility subtractive billing with submeters is required to implement a demand response program with EVs. PG&E, Southern California Edison (SCE), and San Diego Gas and Electric (SDG&E), all have air conditioner cycling programs that have operated successfully for many years without any type of submetering. Air conditioner cycling programs uses the same use cases for appliance cycling that would be used for cycling EV charging devices and infrastructure.

Demand response with EVs on this basis can potentially provide significant benefit to the grid and ratepayers. However, enabling demand response with EVs is dependent on many other factors other than submetering. These factors include, but are not limited to:

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- the development or refinement of California Independent System Operator (CAISO) market products;
- the creation of EV demand response programs at the IOUs or the establishment of a mechanism to pay capacity values to third party demand response providers;
- the ability to communicate with and provide instructions to EVs;
- the knowledge of the location of the EV and the charging rate; and
- if the demand response with EVs is intended to mitigate the impacts of intermittent renewable resources, then the ability to send meter data to the CAISO every 4 seconds is required.

The potential benefit of submetering is the capability to isolate the change in load consumption from the overall premise. However, it is not necessarily clear that the CAISO will accept submetered load for settlement purposes due to behind the revenue billing meter interactions that it is not privy to. In addition to this uncertainty, the ability to pay for the demand response from EVs is complicated by the possibility that the demand response provider could incentivize the vehicles or the charging stations. If both the vehicles and the charging stations are incentivized, then the amount of demand response truly available will be less than expected when an incentivized vehicle is charging at an incentivized charging station. There has been no determination regarding what the correct method to incentivize EVs and charging stations and therefore there is no determination as to whether the vehicles or the charging stations are required to have metering associated.

Even if these issues with submetering are resolved, it is not yet certain that direct metering and submetering provide significant benefit for demand response applications. PG&E and others have been evaluating other methods to determine the amount of demand response

