Decision 13-11-002 November 14, 2013

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)

DECISION MODIFYING THE REQUIREMENTS FOR THE DEVELOPMENT OF PLUG-IN ELECTRIC VEHICLE SUBMETERING PROTOCOL

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Attachment 1 – California Public Utilities Commission Energy Division Staff Electric Vehicle Submetering Roadmap

DECISION MODIFYING THE REQUIREMENTS FOR THE DEVELOPMENT OF PLUG-IN ELECTRIC VEHICLE SUBMETERING PROTOCOL

1. Summary

Today's decision modifies the Plug-In Electric Vehicle Submetering Protocol requirements set forth in Decision (D.) 11-07-029 by adopting the Energy Division Staff Roadmap for a two-phase pilot project and extending until September 30, 2015 the deadline set forth in Ordering Paragraph 4 of D.11-07-029, as modified, for Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company to submit a final proposal on the Submetering Protocol. This proceeding is closed.

2. Procedural Background

Decision (D.) 11-07-029 (Phase 2 Decision) established requirements for Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E), collectively referred to herein as the Investor-owned Utilities (IOUs), to develop rules to incorporate customer-owned submeters into their billing and metering system for Plug-in Electric Vehicles (PEVs). Submetering was recognized as being beneficial for reducing customer costs associated with metering and rates.[1]

[1] D.11-07-029 at 43.

D.11-07-029 required the IOUs to submit a completed Submetering Protocol by July 30, 2012. The decision also established several interim requirements including a workshop and a roadmap report.

In October 2011, the Energy Division held a workshop to discuss the issues associated with submetering. In January 2012, the IOUs submitted a roadmap report outlining the steps to implement the submetering protocol. The report identified 17 scenarios for submetering in the context of PEVs. The report evaluated each of the scenarios to determine feasibility and prioritized the scenarios for near-term, mid-term and long-term adoption.

On January 31, 2012, the assigned Administrative Law Judge (ALJ) issued a ruling directing parties to address additional questions related to the report. The IOUs subsequently requested a one-year extension to the deadline for developing the Submetering Protocol set forth in D.11-07-029. This request was granted by the Executive Director. The deadline was extended to July 30, 2013.

On October 1, 2012, the IOUs also submitted to the Commission's Energy Division a draft report, entitled *Strawman for Plug-In Electric Vehicle Submetering Protocol* (IOU Strawman). The IOU Strawman proposed a set of rules and requirements for types of customer-owned submetering technology and configurations that could be used by customers for separately billing their PEV load. In response to the IOU Strawman, the Joint Electric Vehicle Service Providers (EVSP Coalition)[2] sent a letter to the Commission dated October 22, 2012 stating that the IOUs' proposal failed to meet the Commission's goals and asked the Commission to reject the proposal. Energy Division staff

[2] The EVSP Coalition consists of Chargepoint, Ecotality, and Betterplace.

determined that the IOU Strawman did not sufficiently meet the requirements of D.11-07-029.

The Energy Division held a workshop on January 8, 2013 and presented a proposal in response to the IOU Strawman. The Energy Division's proposal recommended a two-phase pilot to better understand the costs and benefits of electric vehicle submetering and also recommended an additional extension until September 30, 2015 for the IOUs to submit a final proposal on the Submetering Protocol.[3] Following this workshop, staff released a proposal, entitled *Commission's Energy Division Proposal for the Development of Electric Vehicle Submetering* (March 2013 Staff Proposal). This proposal was Attachment 4 to the March 25, 2013 Assigned Commissioner Ruling.

In a letter dated May 23, 2013, the IOUs jointly asked for a second extension of the submetering protocol deadline. On July 9, 2013 the Commission again extended the deadline for submetering to December 31, 2013.

This proceeding is closed.

3. March 25, 2013 Assigned Commissioner's Ruling and March 2013 Staff Proposal

The March 2013 Staff Proposal reviewed various submetering scenarios based on the number of customers of record involved in the transaction. As set forth in the proposal, a "customer of record" is defined as anyone that has an account with the utility. Submetering can involve a single or multiple customers of Record.

In the case of a "Single Customer of Record," one customer is the responsible entity that pays both the submeter load and the primary meter load.

[3] A protocol was required by Ordering Paragraph 4 of D.11-07-029, as modified.

In this case, measurement errors in the meter reading do not impact a third party, which minimizes the administrative complexity of billing and billing disputes. "Multiple Customers of Record" occurs when the submeter customer is different from the primary meter customer. In this case, additional issues arise related to billing disputes and meter accuracy.

For example, a tenant in a multifamily apartment building may be the customer of the submeter but the owner of the building is the customer of the master meter. Billing disputes may arise from the circumstance that liability for energy consumption behind the master meter may be attributed to different entities. The March 2013 Staff Proposal suggested that the Commission begins by piloting Single Customer of Record, due to its relative simplicity, and then pilot submetering with Multiple Customers of Record.

On March 25, 2013, the assigned Commissioner issued a ruling for Phase 4 (Phase 4 ACR). The ACR asked parties to comment on the March 2013 Staff Proposal and specifically to address three questions: [4]

1. What are the estimated utility costs of administering each phase of the pilot in the Energy Division's proposal? How should these costs be shared between electric vehicle service providers and the IOUs?
2. The Energy Division's proposal includes two pilots, a Single Customer-of-Record pilot and a Multiple Customer-of-Record pilot. Should the results of the Single Customer-of-Record pilot be used to determine the need to do the Multiple Customer-of-Record pilot?
3. How should the customer's experience with submetering be evaluated?

[4] *Assigned Commissioner's Scoping Memo and Ruling*, March 25, 2013 at 4.

The Phase 4 ACR requested party comments on the above issues and, in addition, some parties commented on the March 2013 Staff Proposal. The comments on the March 2013 Staff Proposal focused on the principles or rules that guide administrator conduct, the scope of the submetering scenarios tested, and required issues that must be finalized prior to implementation. A summary of parties' responses to each of these issues is taken in turn below.[5]

4. Summary of Comments on March 2013 Staff Proposal

4.1. Costs Estimation and Assignment

Each of the IOUs state that more information on the scope and requirements of the pilot are needed to provide a detailed cost estimate. Each IOU provided the following general cost estimates for the Single Customer of Record pilot. (1) PG&E estimated $0.8 to $1.2 million through Q3 2014, including manual billing and pilot promotion and enrollment;[6] (2) SCE estimated $1 to $1.2 million for monthly manual billing of up to 500 customers, including planning, development and implementation, management and labor;[7] (3) SDG&E estimated $0.4 to $0.6 million for the same activities and an additional $0.65 to $0.95 million for the Multiple Customers of Record phase of the pilot.[8]

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[5] On April 9, 2013, comments on the Phase 4 ACR were filed by: PG&E, SCE, SDG&E, California Center for Sustainable Energy (CCSE), Division of Ratepayer Advocates (DRA), Chargepoint and Ecotality jointly (EVSP Coalition), NRG Energy (NRG), Recurrent Energy (Recurrent), Natural Resources Defense Council (NRDC), and Green Power Institute and Community Environmental Council jointly (GPI/CEC). On April 19, 2013, reply comments were filled by all the above parties (except NRG and Recurrent) and in addition, the National Electrical Manufacturer's Association (NEMA).

[6] PG&E Opening Comments at 3.

[7] SCE Opening Comments at 4.

[8] SDG&E Opening Comments at 5.

Parties identify several sources for possible funding of the pilots. PG&E requests funding to test submetering through its Electric Program Investment Charge (EPIC) investment plan and requests that the pilot schedule be revised to maintain consistency with the EPIC funding schedule, if authorized by the Commission. Both SCE and SDG&E recommend establishing Memorandum Accounts to track costs and seek the approval of cost recovery from the Commission in a future proceeding.[9]

Parties disagree upon the treatment of implementation costs borne by the submeter service provider, or Submeter MDMAs and recommend either to assign Submeter MDMA costs to general ratepayers or to the pilot participant that incurred the expense.[10] The EVSP Coalition[11] proposes that their costs be covered by outside sources including EPIC or utility Research and Development budgets.[12] SCE states that relying on the Research and Development budgets is an inappropriate use of ratepayer funds and that costs should be assigned to the "entity responsible for implementing the respective pilot activities."[13] DRA and

[9] SCE Opening Comments at 6; SDG&E Opening Comments at 8.

[10] While parties generally referred to the submeter service provider as an Electric Vehicle Service Provider (EVSP), this decision uses the term Submeter Meter Data Management Agent (Submeter MDMA) to describe the entity that facilitates submetering activities. As used in this decision, the term "Submeter MDMA" is defined by nine roles and six functions listed at 17 of the Strawman PEVSMP. As noted in the IOU Strawman, the Submeter MDMA definition is based on the definition of an MDMA provided by the Commission in D.97-12-048. Electric Vehicle Service Provider is defined in the January 12, 2013 Assigned Commissioner's Ruling at 3-4.

[11] Chargepoint and Ecotality

[12] EVSP Coalition Opening Comments at 3 and 5.

[13] SCE Opening Comments at 4.

GPI/CEC agree that participating Submeter MDMAs or customers should pay their own respective "behind-the-meter" expenses.[14]

Alternatively, CCSE states that pilot costs be assigned to ratepayers that will benefit from a workable, cost-effective approach to submetering.[15] PG&E agrees on the basis that the objective of the pilot is to determine customer value for submetering.[16] The EVSP Coalition also asks the Commission to establish incentives for customer enrollment in the pilot.[17] While PG&E appears supportive of the EVSP Coalition's request for public funds for their "behind-the-meter" costs, PG&E opposes incentives, stating that incentives "defeat the purposes of the pilot" by skewing the adoption rates.[18]

4.2. Need for a Two Phase Pilot

The March 2013 Staff Proposal (Attachment 4 to the Phase 4 ACR) describes the submetering pilots as two consecutive phases in which the IOUs and EVSPs test the four submetering scenarios. The submetering scenarios are differentiated by the number of customers of record and the type of submeter (utility grade or non-utility grade).

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[14] DRA Reply Comments at 3, GPI Opening Comments at 5. "Behind-the-meter" generally refers to customer-owned infrastructure past the point of the utility-owned electrical meter.

[15] CCSE Opening Comments at 3.

[16] PG&E Reply Comment at 1-2.

[17] EVSP Coalition Opening Comments at 4 and 13.

[18] PG&E Reply Comments at 2.

Phase 1 tests single customer of record submetering using a utility-grade submeter. Single customer of record submetering is intended to be tested within three types of customers: Single Family Homes, Multi-Dwelling Units, and Commercial Facilities.

Phase 2 tests multiple customers of record using a utility grade submeter. Multiple customers of record submetering is intended to be tested within two types of customers: Multi-Dwelling Units, and Commercial Facilities.

Parties recommended various approaches to implementing the two phase pilot. These recommendations fall into three categories:

(1) consecutive implementation of the single customer of record pilot followed by the multiple customer of record pilot.

(2) contingent implementation of the multiple customer of record pilot based on the results of the single customer of record pilot.

(3) simultaneous implementation of both phases.

NRG and EVSP Coalition agree with the consecutive approach outlined in the March 2013 Staff Proposal. Both NRG and EVSP Coalition point out that the two phases focus on different customer segments and scenarios and that Phase 1 should inform the design of Phase 2.[19] The EVSP Coalition suggests that the Submetering Protocol should not be contingent on the results of the pilot and cautions against viewing the pilot as a "condition precedent" to implementing the Submetering Protocol.[20] DRA conditionally supports the consecutive approach because IOUs could incorporate lessons learned from Phase 1 into the

[19] NRG Opening Comments at 6; EVSP Coalition at 8.

[20] EVSP Coalition Opening Comments at 3.

Phase 2. DRA further recommends that if the first phase is not successful, to not pursue the second phase.[21]

In response, the IOUs suggests that the second pilot phase should be developed only after the results from the first phase are analyzed. PG&E states that the multiple customer of record pilot cannot be "scoped and designed" until the results of the Phase 1 pilot were analyzed.[22] Similarly, SDG&E states that the "staging" could not be done until more details were available from the first pilot.[23] SCE also suggests that the success of Phase 1 is "critical for determining the need for the Phase 2 Pilot."[24]

Other parties suggest implementing the phases simultaneously. CCSE states that the multiple customers of record pilot offed the best opportunities to drive innovation and reduce the barriers to PEV adoption.[25] GPI agrees.

[21] DRA Opening Comments at 2.

[22] PG&E Opening Comments at 4.

[23] SDG&E Opening Comments at 6.

[24] SCE Opening Comments at 5.

[25] CCSE Opening Comments at 3.

4.3. Evaluation of Customer Experience

PG&E, SCE, SDG&E, CCSE, DRA, EVSP Coalition, NRG, Recurrent, NRDC, and GPI/CEC comment on how the pilots should be evaluated.[26] Parties offer a number of ways to measure the customer experience, which generally aligned to the four primary benefits for submetering outlined in the March 2013 Staff Proposal[27] and the Commission's five policy goals for Electric Vehicle metering stated in D.11-07-029.[28] Nine specific pilot goals are identified by parties.

1. *Reduce metering infrastructure and billing costs for customers.* SDG&E, CCSE, EVSP Coalition, NRG, Recurrent, NRDC, and DRA suggest determining whether the pilots simplify installation time and costs to customers. Some suggest achieving this goal by comparing the differences in costs and installation between separate utility metering and submetering.
2. *Access to PEV tariffs while maintaining other non-PEV loads on tiered rates*. SDG&E, CCSE, EVSP Coalition, NRG, Recurrent, and NRDC suggest determining whether submetering provides adequate access to separate PEV tariffs. Several parties suggest that the pilot measure customers' ability to understand the benefit of being able to access time-of-use or other potential rate options.
3. *Allow multiple EVSPs and PEVs to operate under a single primary meter*. SDG&E, NRG, and Recurrent cite the

[26] PG&E Opening Comments at 4; SCE Opening Comments at 6; SDG&E Opening Comments at 6-7; CCSE Opening Comments at 4-5; DRA Opening Comments at 3-4; EVSP Coalition Opening Comments at 4 and 9-10; NRG Opening Comments at 3; Recurrent Opening Comments at 2-3 NRDC Opening Comments at 1-2; and GPI/CEC Opening Comments at 6.

[27] Assigned Commissioner's Ruling on Phase 4, Attachment 4 at 1.

[28] D.11-07-029, Finding of Fact 15 at 33.

ability to operate under a single utility meter as a threshold measurement of success for the pilot.

4. *Maintain utility disconnection capabilities over all Customers of Record.* SDG&E and Recurrent cite to the utility's ability to disconnect a customer as a threshold measurement of success for the pilot.

5. *Customer Choice.* The IOUs, CCSE, EVSP Coalition, Recurrent, DRA, and NRDC emphasize the need for a simple transactional process in which the customer understands their rate choices and billing. Recurrent describes an additional capability of submeters to allow customers to choose electricity with different energy resource attributes when charging a PEV. CCSE and GPI/CEC suggest that the pilot evaluate and understand the customer's motivations and the relative importance of benefits of submetering. SCE, EVSP Coalition, and GPI/CEC suggest measuring levels of customer satisfaction and identifying potential process improvements to enhance satisfaction. Toward these ends, SDG&E recommends recording the number of customers that are offered participation, enrolling, and remaining in the pilot for its entire term.

6. *Adequate Data and Technological Functionality*. PG&E, SDG&E, and DRA suggest that customer experiences rely heavily on the ability of submeters to provide accurate and credible data. Toward these ends, EVSP Coalition suggests the pilot measure across pilot participants the following: (1) the frequency and type of issues encountered by customers, (2) the ability to resolve issues with the "first-contact," and (3) customer loyalty.

7. *Innovation and Accommodating Technological Advances.* SDG&E and NRDC suggest that lessons learned and operations tested during the pilot accommodate future technology, which might be made available to all customers at scale. EVSP Coalition suggested making the result of the pilots available to other states.

8. *Common Technology Standards.* SDG&E and EVSP Coalition reference the use of common technology standards to reduce the duplication of national standard development efforts.
9. *Minimizing Costs*. SDG&E suggest recording all costs incurred by pilot participants, EVSPs, and IOUs to implement the pilot to ensure that the benefits provide cost-effective value to ratepayers. CCSE and EVSP Coalition suggested that customer submeter costs should be reduced or free.

Most parties commenting on the Evaluation of Customer Experience agreed that it will be necessary to survey customers' experiences. PG&E, SCE, EVSP Coalition, and DRA suggest that the survey methodology used and pilot rules that affect customer experiences be subject to stakeholder review. DRA and GPI/CEC suggest to survey customers on an ongoing basis. In contrast, SCE suggests a single survey at the completion of the pilot.[29] SCE, SDG&E, and EVSP Coalition suggest that a third-party evaluator conduct the customer survey. SCE and EVSP Coalition agree that an individual third party evaluator be used statewide. SCE and NRDC suggest comparing the experience of pilot participants with those of a control group, for example those enrolled under the IOUs' separate meter PEV tariffs. EVSP Coalition recommends the use of data collected from the IOUs, MDMAs and EVSPs in addition to customer survey data. EVSP Coalition and DRA suggest additional considerations to ensure customer privacy and allow for opt-outs.

[29] SCE Reply Comments at 5.

4.4. Guiding Principles for Participants

EVSP Coalition, NRG, Recurrent, PG&E, SDG&E, SCE, CCSE, and NRDC commented upon principles that guide the conduct of participants throughout the pilot, as summarized below.[30] These generally add to the Commission's five policy goals for Electric Vehicle metering stated in D.11-07-029.

- *Encourage stakeholder collaboration.* The EVSP Coalition recognized this as the primary element needed for the success of the submetering pilots. Collaboration requires determining an appropriate role for the participants to ensure that the pilots are implemented efficiently. PG&E and SDG&E agree.
- *Use the pilots to enhance the EV market to enable consumer choice.* The EVSP Coalition suggested that the pilot should reduce barriers to PEV adoption. NRG, Recurrent, CCSE and NRDC generally supported the potential for the pilots to improve customer choices in the PEV market. SDG&E's reference to the "customer choice" and "innovation and accommodating technological advances" goals from D.11-07-029 support this principle.
- *Conform standards implemented during the pilot with National Standards.* EVSP Coalition suggested to avoid prematurely setting a 'California standard' that might run counter to national efforts. The intention of the pilots to provide a platform to test new standards, technologies and processes, rather than implement a specific solution. The process used should be informed

[30] EVSP Coalition Opening Comments at 3-6; NRG Opening Comments at 1; Recurrent Opening Comments at 2; PG&E Reply Comments at 1; SDG&E Opening Comments at 6; SCE Reply Comments at 4; CCSE Reply Comments at 3-5; NRDC Opening Comments at 1.

by the national standards processes.[31] The EVSP Coalition cautioned against the development of "patchwork standards" that might harm California consumers or stymie PEV adoption. SCE similarly cited the unfinished national submeter and Energy Service Provider Interface requirements to caution against sequentially pursuing Phase 2.[32] SDG&E's reference to the "common technology standard" goal from D.11-07-029 supports this principle.

- *Address the cost reduction goals of the Zero Emission Vehicle (ZEV) Action Plan*. The ZEV Action Plan aims to reduce costs of PEV home charging, simplify metering options, and establish the submetering protocol to help homeowners access PEV time of use rates.[33] EVSP Coalition and NRDC reference the Plan. SDG&E's reference to the "cost minimization" goal from D.11-07-029 supports this principle.

4.5. Scope of Submetering Scenarios

In the March 2013 Staff Proposal, Energy Division recommended a two phase pilot. Parties suggest expanding the scope of the pilots to minimize costs, hasten deployment, and test novel charging arrangements. NRG suggests minimizing costs by using stand-alone, utility compatible submeters that are either customer-owned or utility-owned.[34] NRDC similarly asks that stand-alone submeters be allowed in the pilot in the event that meters embedded within Electric Vehicle Service Equipment (EVSE) or PEVs are unavailable or

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[31] Information on the national standards process is available at the American National Standards Institute Electric Vehicles Standards Panel at: http://www.ansi.org/.

[32] SCE Reply Comments at 3.

[33] Governor's Interagency Working Group on Zero-Emission Vehicles, *2013 ZEV Action Plan* at 16.

[34] NRG Opening Comments at 2.

insufficiently accurate.[35] NRDC also asks the Commission to clarify whether the IOUs are authorized to install "second meters in-series,"[36] as is the case with SMUD's Dedicated Meter Plan and SDG&E's PEV Rate Experiment. NRDC suggests that permitting utility use of in-series metering could immediately provide a lower cost alternative to separate metering for those that do not choose a third-party service provider and complement the customer-owned submeter pilots. CCSE agrees with NRDC's request and recommends modeling the potential financial benefits to customers who charge PEVs according to Locational Marginal Pricing.[37]

4.6. Implementation Issues

Parties, and in particular the IOUs, identify and comment upon a range of implementation issues to be defined before the pilots become operational. SDG&E identifies 15 specific issues.

1. Eligibility for PEV submetering;
2. Customer inquiries and data accessibility;
3. (MDMA service establishment for submetering services;
4. Submeter service request;
5. PEV submetering services;
6. Submeter reading data obligations;
7. Billing service options and obligations;

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[35] NRDC Opening Comments at 3-5.

[36] "Second meters in-series" refers to the use of an additional utility-owned meter on the same electrical circuit as the primary utility meter to measure PEV load.

[37] CCSE Reply Comments at 5-6. Locational Marginal Pricing is the calculation of electricity prices at nodes within the grid that accounts for transmission congestion and line losses per http://www.cpuc.ca.gov/PUC/energy/wholesale/01a_cawholesale/MRTU/01_lmp.htm.

8. Payment and collection terms;
9. Involuntary service changes;
10. Service disconnections and reconnections;
11. Standards for meter products;
12. Standards for meter data communications;
13. Standards for meter data management and meter reading;
14. Standards for submeter installation, maintenance, testing, and calibration; and
15. Standards for validating editing, and estimating interval data.[38]

4.7. Customer Enrollment

DRA recommends prioritizing the enrollment of submeter pilot participants that currently have electric vehicle supply equipment within the pilot to minimize cost.[39] SDG&E recommends leveraging the willingness to participate and existing facilities of its customers who are enrolled in the PEV Time-Of-Use Pricing and Technology Study[40] after it is completed at the end of 2013.[41]

5. Discussion

5.1. Appropriate Use of Pilots to Facilitate the Submetering Protocol

Parties support the general concept of using pilot projects to advance PEV submetering. We agree with this approach but also recognize the need to determine additional details about the pilot structure to ensure that the pilots

[38] SDG&E Opening Comments at 9.

[39] DRA Reply Comments at 4.

[40] Proposed in Advice Letters 2157-E-A and 2219-E, and approved in Resolution E-4334.

[41] SDG&E Opening Comments at 7.

achieve our goals. Therefore, in accordance with party comments, we adopt the March 2013 Staff Proposal for the Development of Electric Vehicle Submetering as modified below. A final version of this proposal, which reflects the modifications we adopt today, is found at Attachment 1, herein, and is referred to as the October 2013 Staff Roadmap.

5.2. Goals of Submetering Pilots

The March 2013 Staff Proposal suggests several goals for the submetering pilots. For Phase 1, the Energy Division staff proposes the following goals: (1) evaluate the demand for Single Customer of Record submetering, (2) estimate billing integration costs, (3) estimate communication costs, and (4) evaluate customer experience. For Phase 2, Energy Division staff proposes the same goals, in the context of Multiple Customers of Record submetering.[42] While parties suggests specific policies and implementation elements that should be included in the pilots as a means of achieving objectives to support PEV adoption, no additional goals are proposed by parties.

Drawing from the March 2013 Staff Proposal and comments, we establish the following goals for the submetering pilots:

- Evaluate customer demand under different submetering scenarios.
- Evaluate billing integration and communication costs under different submetering scenarios.
- Evaluate the customer experience to determine customer benefits under submetering.
- Evaluate the potential impacts submetering can have on supporting the State's ZEV goals.

[42] March 2013 Staff Proposal at 6-7.

5.3. Guiding Principles to Structure the Submetering Pilot

The guiding principles will assist in organizing the pilots in a manner that meets our goals. Parties offer many suggestions of what principles should guide organization and execution of the submetering pilots. We reaffirm the previous policy objectives for submetering set forth in D.11-07-029 and incorporate party comments in establishing the following principles to guide the pilot process:

- *Support collaboration between stakeholders.* Maximizing collaboration requires determining an appropriate role for each party to ensure that the pilots are implemented and executed efficiently.
- *Avoid prematurely setting a 'California standard' that might run counter to national efforts.* The pilots should provide a platform to test new standards, technologies and processes, rather than implement a specific solution. The process used should be informed by the national standards processes.
- *Remain open to new technologies and business models in the evolving PEV market.* Do not pre-determine outcomes by deliberately excluding certain technologies and submetering strategies. Instead, assist the Commission to identify the benefits and costs associated with different submetering scenarios. Prioritization of some use cases over others is not intended to preclude use cases from future consideration. NRDC states the uncertainty in submetering technology requires flexibility in future policy development. We concur.

Lastly, while the EVSP Coalition requests to order the development of the Submetering Protocol regardless of the results of the two phases of the Pilots, we find it more reasonable to determine the need for the Submetering Protocol after we review the results of the pilots, especially given uncertainty regarding

customer demand, implementation costs, and the viability of different submetering use cases.

5.4. Implementation

5.4.1. Structural Issues

Determination of Need for Both Pilot Phases. While some parties recommend that the second pilot phase be contingent on the successful outcome of the first phase, the Commission finds it reasonable to commit to both Phase 1 (testing Single Customer of Record) and Phase 2 (testing Multiple Customers of Record) now. Without the second phase of the pilot, we will not be able to fully judge either the merits or the costs of submetering. While the first phase will help us understand demand for submetering in situations where there is one Customer of Record, the second phase is important for evaluating demand for PEV charging business models that require more than one customers of record, which may be necessary to overcome barriers to plug-in electric vehicle adoption in multiple dwelling units and commercial facilities. Additionally, by committing now to both phases, we can avoid delays in implementing the second phase.

Role of EVSPs as Submeter MDMAs. In addition to providing charging services the Commission expects that a majority of the participating EVSPs will serve as their customers' Submeter MDMAs. In this case, the EVSP will need to register with the relevant IOU as a Submeter MDMA.

Physical location of submeter. The Commission appreciates that parties suggested ways to reduce costs for the pilots. For these pilots, we clarify that submeters need not be embedded within the EVSE or PEV. Consistent with D.11-07-029, the pilots will test submeters in various physical locations including

stand-alone customer-owned submeters or in an EVSE.[43] However, mobile submeters (e.g., those embedded within the PEV itself) will not be included in the first phase of the pilot, due to the complexity these mobile submeters present. Consistent with D.11-07-029, submeters used within the pilot must meet the meter data accuracy and communications standards that are developed as part of this pilot program.

The March 2013 Staff Proposal also suggests that mobile submeters could be incorporated in the second phase. We agree. In finalizing the implementation of Phase 2, Energy Division should evaluate any proposals that involve mobile submeters to determine if they are appropriate to test, based on the metering policy principles identified in D.11-07-029.

Utility ownership of submeter. NRDC states that customers may benefit from utility-provided submetering services in advance of the completion of the pilots in 2015. D.11-07-029 discussed ownership of single utility meters (for PEV and residential loads), separate utility meters (one for PEV load and one for residential load), and submeters for PEVs.[44] In D.11-07-029, the Commission found that IOUs should retain ownership of single and separate PEV metering to align with general metering policy that defined that customer/utility boundary.[45] The Commission also found that customer ownership of submeters was consistent with the goals for customer choice, supporting technological innovation, and minimizing cost.[46] For the submetering pilot program, we

[43] D.11-07-029 at 42.

[44] D.11-07-029 at 40.

[45] *Id.*

[46] *Ibid.* at 40-41.

maintain the decision in D.11-07-029 regarding utility ownership of single and separate PEV metering and customer ownership of submeters. If cost reductions or new technology became available in the future, the Commission is receptive to re-evaluating customer ownership of separate meters as determined in D.11-07-029.

While the utility ownership of submeters does not present clear value to ratepayers, we recognize that the utility may be able to provide value to customers as a data management agent for the submeter. Therefore in Phase 2, which requires greater billing complexity given the Multiple Customers of Record associated with a single account, we permit the IOUs to propose to the Commission that they be allowed to serve as the Submeter MDMA by filing a Tier 2 Advice Letter with a tariff to provide Submeter MDMA services to customers of EVSEs participating in Phase 2. This Advice Letter shall be submitted 30 days in advance of the party workshop preparing for the second phase and should address all necessary implementation elements.

ChargePoint argued that the IOUs should not be allowed to be serve as MDMAs, asserting that the utilities could 'unfairly compete' with third parties if they are allowed to enter this market.[47] SCE disagreed with ChargePoint, arguing that the utility role in this space would be limited to the pilot and would not impact this market. We recognize that allowing the utility to provide this function would impact third parties and their business models. However, we are also compelled to evaluate the benefits of this approach if the utilities are willing to provide these functions. Rules will have to be developed to ensure that they

[47] ChargePoint Opening Comments at 2.

do not unfairly compete with third parties during the pilot. After the pilot, the Commission will need to decide if it reasonable for the utilities to continue to play this role.

NRDC argued that the Commission should consider allowing utility-owned meters to expand the pilot to those without Level 2 charging stations and avoid under-participation due to the uncertainty of future charging service companies.[48] ChargePoint asserts that this issue is 'beyond the scope' of the pilot project.[49] We agree with ChargePoint that this issue is out of the scope of this pilot project. The purpose of this pilot is to test the viability and cost-effectiveness of customer-owned submeters. The use of utility-owned meters does not contribute to this purpose and may undermine the objective of this pilot. This Decision does allow the utility to serve as the MDMA during Phase 2, which may address NRDC's concerns about limited participation.

Participation in wholesale electricity market. The Commission recognizes the possible value in having PEVs directly participate in the California Independent System Operator wholesale markets, most recently with its approval of SCE's Vehicle-to-Grid Pilot Tariff for two Department of Defense customers.[50] The Commission also seeks to ensure that the scope remains manageable. Therefore, we do not incorporate metering, telemetry, potential interconnection studies, and tariff and contractual agreements because of the added complication to the enrollment aspects of the pilot, which are necessary to

[48] NRDC Opening Comments to Proposed Decision at 2.

[49] ChargePoint Reply Comments to Proposed Decision at 3.

[50] California Public Utilities Commission Resolution E-4595, July 15, 2013.

establish access the wholesale market. Service providers may simulate Locational Marginal Price-based charging. We encourage parties to propose these types of simulated activities within the pilots and to share results with stakeholders.

5.4.2. Implementation Terms

Parties identify a range of specific implementation terms that need to be defined. SDG&E identifies 15 specific issues. We use SDG&E's recommendations and comments and reply comments to the Proposed Decision as the basis for developing the following implementation terms that must be defined in order to execute the pilot:

1. Pilot Term;
2. Eligibility for Enrollment;
3. Customer Enrollment Process;
4. Customer Data Accessibility;
5. Submeter MDMA Service Establishment;
6. Data Measurement Requirements;
7. Data Reporting Requirements;
8. Billing Processing;
9. Dropouts;
10. Changes of Address;
11. Failure to Pay and Service Disconnect;
12. Billing Service Options and Obligations;
13. Service Connection and Reconnection;
14. Involuntary Service Changes;
15. Standards for Metering Products (Accuracy and Intervals);
16. Standards for Meter Data Transfer;

17. Data Processing Requirements;
18. Submeter Installation and Maintenance;
19. Submeter Testing and Calibration;
20. Standards for Validating, Editing, and Estimating Interval Data;
21. Submeter MDMA Performance Requirements

Each of these terms is discussed further below.

Pilot Term. The March 2013 Staff Proposal suggests that each of the pilot phases continue for one year. No parties object to this approach. The IOUs should implement the first phase of the pilot no later than May 1, 2014. The second phase of the pilot should start no later than May 1, 2015. The March 2013 Staff Proposal recommends allowing five months between the Decision and the start of the pilot, identifying five activities that needed to be completed before the pilots begin.[51] Parties identified a number of activities that needed to be completed before the pilot should commence. Those activities are described below. Based on this outline, we find that five months between the adoption of this decision and the start of the pilots is enough time to complete the activities, described in Attachment 1.

Eligibility for Submetering Services. The March 2013 Staff Proposal recommends that the pilot be open to any commercial or residential customer but capped at 500 participants per utility. No parties object to this provision. SCE, however, notes that a Single Customer of Record might have multiple primary meters, each of which has a submeter.[52] We agree for the need to limit the size of the pilot to contain costs. We clarify that no more than 500 *submeters* per utility

[51] March 2013 Staff Proposal at 9.

[52] SCE Opening Comments at 3.

service territory will be allowed to enroll and participate within each Phase. We do not limit the number of submeters a Single Customer of Record may request and also note that multiple PEVs may be served by a single submeter. This eligibility will apply to both phases of the pilot. Once the 500 submeter cap is reached, the utility is required to notify the Submeter MDMAs. Any customer enrolled in the submetering pilot will be eligible for Pilot Participation Period of at least 12 consecutive months, at the discretion of the customer.

Customers with PEV service equipment currently installed may enroll in the pilot, and we recognize the potential for cost savings by utilizing the base of existing customers. While SCE was concerned that evaluating the experience of existing PEV customers was "challenging" and recommended their exclusion from the Pilot, ChargePoint and ORA disagreed. [53] ChargePoint recommended focusing primarily on achieving the D.11-07-029 goals for submetering and less on the evaluation.[54] ORA highlighted that since the goal of the pilot is to estimate the cost of subtractive billing and their rate benefits, existing customers, which would have otherwise purchased EVSE for charging purposes (with embedded metering as a co-benefit), should be included in the pilot.[55] Perceived barriers to evaluating the experience of existing customers do not outweigh the cost savings and greater potential market associated with their inclusion in the pilot. Customers that install new PEV service equipment may also enroll in the pilot.

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[53] SCE Opening Comments to the Proposed Decision at 11.

[54] ChargePoint Reply Comments to the Proposed Decision at 4.

[55] ORA Reply Comments to the Proposed Decision at 1-2.

SCE recommended a clarification that customers enrolled in Net Energy Metering (NEM) or do not have an Interval Data Recorder (IDR) Meter should be ineligible to participate in the Pilot.[56] SDG&E concurred with excluding customers without IDR meters.[57] GPI disagreed with the exclusion of NEM customers given the number of PEV customers that are currently and potentially planning to enroll in NEM.[58] We recognize that in 2012 approximately 25% of IOU PEV customers are enrolled with NEM.[59] Since NEM customers are a key demographic of PEV adopters, they shall be eligible for submetering service during the pilot. We limit the number of participating PEV-submetered/NEM customers to 125 submeters (25% of 500) per IOU to contain any additional costs associated with the subtraction of PEV load from their net load. The utilities shall estimate the costs of NEM and non-NEM submeter billing within their Tier 2 Advice Letter to be submitted 60 days after this Decision. The IOUs may propose to change this limit in the Advice Letter according to updated NEM/PEV adoption data or cost concerns. Since interval data that can be expeditiously communicated between the MDMAs and IOUs, customers that do not have an IDR Meter are ineligible for submetering service.

ORA requests to apportion the number of submeters permitted in the pilot within each IOU territory in accordance with customer segments (Single

[56] SCE Opening Comments to the Proposed Decision at 9.

[57] SDG&E Reply Comments to the Proposed Decision at 2-3.

[58] GPI Opening Comments to the Proposed Decision at 4.

[59] Joint IOU Electric Vehicle Load Research Final Report submitted pursuant to D.11-07-029 at 13, 25, and 42.

Family, Multi-Dwelling Unit, and Commercial).[60] SDG&E and ChargePoint disagree with this allocation recommendation. Both note that the potential for submetering to benefit the MDU context be disproportionate in comparison to their share of utility customers and may burden EVSP strategies.[61] We agree and recognize the potential for submetering to generally benefit other types of customers if it can successfully be demonstrated in any one case.

Submeter MDMA Notice of Participation. All Submeter MDMAs must submit a Notice of Participation to participate in the pilot to the Commission's Energy Division April 1, 2014. The Submeter MDMAs must indicate the following in this Notice of Participation: (1) the number of submeters associated with customers that have agreed to participate as of the date they submit the Notice and (2) the total number of submeters that they plan to enroll and provide submeter service.

Submeter MDMA Registration. In its opening comments, SDG&E identifies "MDMA service establishment" as an issue to be addressed before implementing the pilots. We agree. The IOUs will be responsible for developing a registration form that will allow any Submeter MDMA to participate, including EVSPs operating as a Submeter MDMA, provided they receive customer permission to manage customer submetering data.

Customer Enrollment in Submetering Services. The March 2013 Staff Proposal provides that customer enrollment should be the responsibility of the Submeter MDMA. We agree. The Submeter MDMA is responsible for

[60] ORA Opening Comments to the Proposed Decision at 1-2.

[61] SDG&E and ChargePoint Reply Comments to the Proposed Decision at 3.

identifying potential participants, recruiting those participants, and submitting the appropriate Customer Enrollment Forms to register the customer's submetering service under their utility. In order to enroll a customer, the IOUs will require that the customer (or the Submeter MDMA as authorized by the customer) to submit an enrollment form that acknowledges that the customer is (1) agreeing to the terms of receiving submetering services from the Submeter MDMA and (2) allowing the Submeter MDMA to share the customer's submeter data with the utility. Customers should only be enrolled coincident with the beginning of a utility's billing period. The Submeter MDMA must notify the customer's IOU at least five days before the end of the billing period to be eligible to begin submetering during the following billing period. Enrollment will take place on a rolling basis during the first 6 months of each pilot phase. The IOU is obligated to honor any request made during this period.

For the purposes of fostering innovation and competition between established EVSPs operating as Submeter MDMAs and those with as-of-yet untested business models, all MDMAs will have a temporary right to a number of customers within each IOU territory in which they plan to participate. During this three month "Exclusivity Period" each MDMAs will have "Exclusivity Rights" to a number of submeters that will be determined by dividing the 500 maximum submeter enrollment by the number of Submeter MDMAs participating in the program and operating in that service territory. For instance, if there are five Submeter MDMAs participating in the submetering program within PG&E's territory, each Submeter MDMA will have Exclusivity Rights to 100 submeters.

To encourage the enrollment of participants, Exclusivity Rights will expire at the end of the third month of the Exclusivity Period. All Submeter

MDMAs must report the balance of unenrolled customers to the utility that will be available for enrollment during the Open Period. During this Open Period, beginning at the fourth month, Submeter MDMAs are able to enroll additional submeters on a first-come, first-served basis, reporting enrollments to the utility daily. The utility in turn notices the number of remaining submeters via email. The Open Period will end upon the enrollment of the 500th customer, but no later than the end of the sixth month of the Enrollment Period. Examples of this Customer Enrollment procedure are available in the October 2013 Staff Roadmap at Attachment 1.

PG&E and SCE suggested that the Pilot include options for the utilities in the event that too few customers or EVSPs participate to provide meaningful results. PG&E recommended an "off-ramp"[62] and SCE suggested that the Pilot terminate[63] if participation did not meet a minimum threshold. ChargePoint suggested downscaling the pilot to 10 to 20 customers per IOU if funding for MDMAs was insufficient, in order to determine the basic functionality of submetering.[64] We disagree. A primary goal for the pilot is to evaluate customer demand under the two Customer of Record approaches. The pilot will continue for their full duration regardless of participation level.

ORA suggested that the IOUs should do customer outreach to encourage pilot participation.[65] We agree that utilities can play a limited role in creating awareness about the pilot, but that this awareness should be

[62] PG&E Opening Comments to the Proposed Decision at 2.

[63] SCE Opening Comments to the Proposed Decision at 6.

[64] ChargePoint Opening Comments to the Proposed Decision at 5.

[65] ORA Opening Comments, October 21, 2013 at 2.

competitively neutral. Therefore, if IOUs share information about the pilot with customers who, for example, inquire about PEV rates, these customers should be made aware of third party MDMAs in a way that is competitively neutral.

Customer Inquiries and Data Accessibility. The utility is required to report to customers their submetering data usage through the customer bill. As this is a voluntary and temporary pilot, we are not requiring that customer submetering data be available online through the utilities' websites during the period of the pilot.

Data Measurement Requirements. The March 2013 Staff Proposal recommended that Energy Division develop the data reporting requirements with input from Submeter MDMAs and the IOUs. Energy Division will provide these requirements to the IOUs no later than 30 days after the date of this decision. As described below, the IOUs will submit final submetering data reporting requirements in a Tier 2 Advice Letter.

Data Reporting Requirements and Submeter Reading Data Obligations. To ensure that submetering data is presented in a useful format for the utility, the IOUs should develop Submeter Data Format Requirements that allow for the submission of the submetering data from Submeter MDMAs. During Phase 1, this format should allow data to be submitted from the Submeter MDMA to the utility in a simple format that can be sent electronically. At this time it is not necessary to develop a fully automated submission system but the IOUs and Submeter MDMAs should leverage, to the greatest extent possible, existing standards such as the GreenButton Submetering Profile to reduce costs and ensure the efficient transfer of data between multiple participating Submeter MDMAs. At a minimum, the IOUs should to develop a simple process that will

allow them to receive the data electronically and manually enter the data into their billing system.

Bill Processing. The March 2013 Staff Proposal recommended that the utility bill processing happen manually, to avoid the cost of billing system upgrades. We agree. Prior to making significant capital upgrades to the utility billing process, the Commission wants to understand the demand for submetering, evaluate the costs of a billing system, and determine how that cost will be assigned.

Dropouts, Changes of Address; Failure to Pay and Service Disconnect; Billing Service Options and Obligations; Service Connection and Reconnection; Involuntary Service Changes. For the Single Customer of Record pilot, many of the proposed terms refer either to standard utility electrical practices or require collaboration between the Submeter MDMAs and the IOU to ensure that the customer receives adequate and responsive billing service, whether or not they remain within the submeter pilot. Changes may be needed in Phase 2 given the multiple customers of record receiving service and the inability for the utility to maintain disconnection functionalities.

Standards for Metering Products (Accuracy and Intervals); Standards for Meter Data Transfer. The IOUs' request an opportunity to review and comment on metering standards prior to approval by the Commission.[66] The IOUs' request is consistent with the EVSP Coalition's request for collaboration to help ensure a cohesive and integrated approach to ensure customer confidence and

[66] PG&E Opening Comments at 4; SCE Reply Comments at 5; and SDG&E Reply Comments at 5.

conformity.[67] NEMA suggests that its EVSE Submeter /Embedded Meter Working Group would provide an interim guidance document prepared on embedded meters, data extraction, accuracy, removability and ability to replace by April 30, 2013, and a final document by April 2014.[68] After reviewing NEMA's progress to date, Energy Division will recommend requirements to the IOUs no later than 30 days after the date of this decision.

Submeter Installation and Maintenance; Submeter Testing and Calibration; Standards for Validating, Editing, and Estimating Interval Data. The EVSP Coalition suggests that they need to maintain control over contact lists, communications, and activities that impact business relationships with customers.[69] The Commission is responsible for ensuring the protection and safety of utility customers at large. Pursuant to these objectives, the Submeter MDMAs will be responsible for submeter installation and maintenance. The methodologies and results for submeter testing and calibration as proposed by the Submeter MDMAs will be reviewed by the IOUs. The IOUs and Submeter MDMAs share the goal of ensuring positive customer experiences for the pilot participants. To achieve this goal, the IOU and/or the Third Party Evaluator[70] may randomly, but with a member of the Submeter MDMA present, field test up to 5% of the submeters during the Pilot Term to ensure functionality according to the agreed-upon requirements. At the end of the pilot, the Third Party Evaluator

[67] EVSP Coalition Opening Comments at 4.

[68] NEMA Reply Comments at 2.

[69] EVSP Coalition Opening Comments at 12.

[70] Additional information on the Third Party Evaluator is found in Section 2.4.4, below.

in conjunction with the IOUs and Submeter MDMAs, is directed to report on the accuracy and functionality of a statistically significant number of submeters.

Data Processing Requirements. In a similar principle of collaboration identified above, the Commission directs the IOUs to work together with the Submeter MDMAs to develop data processing requirements that ensure the reliable and accurate subtractive billing to enable submeter services. The Commission proposes a starting point in the October 2013 Staff Roadmap at Attachment 1.

MDMA Performance Requirements. ChargePoint agreed to SCE's request to address "Performance Requirements"[71] on the condition that they be clearly established and subject to notice and appeal.[72] SCE requests guidance on terms including if an MDMA fails to timely transmit or process data accurately and if they terminate submeter service. The Commission directs the IOUs to work together with the Submeter MDMAs to develop exact terms to ensure adequate and expedient services to customers. The Commission defines which of the above Implementation Terms are subject to MDMA Performance Requrements in the October 2013 Staff Roadmap at Attachment 1. The IOUs shall propose the result of their collaboration with the Submeter MDMAs to Energy Division in the Tier 2 Advice Letter submitted 60 days after this Decision.

5.4.3. Implementation Requirements and Forms to Execute Pilots

In order to implement the first phase of the pilot, the following activities must be completed:

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[71] SCE Opening Comments to Proposed Decision at 11 and A-1.

[72] ChargePoint Reply Comments to Proposed Decision at 4.

1. Finalize the temporary metering requirements;
2. Develop a template format used to report submetered, time-variant energy data;
3. Register Submeter Meter Data Management Agents; and
4. Develop a Customer Enrollment Form.
5. Finalize MDMA Performance Requirements.

First, Energy Division will provide the temporary metering requirements to the IOUs no later than 30 days after the date of this decision.

Second, the template format should provide a standard way to communicate submetering data from the Submeter MDMA to the IOU.

Third, a registration form and process for the Submeter MDMAs is needed to identify which entities will be participating in the pilot.

Fourth, a customer enrollment form is needed to establish the data communication responsibilities between the IOU and the Submeter MDMA. The form should allow customers to authorize a third party to share the customer's data with the utility and should conform with any of the relevant criteria listed above. The enrollment form should include all the relevant customer data (e.g., meter identification, address, location) needed by IOUs to enroll a customer.

Fifth, a set of MDMA Performance Requirements are needed to establish a minimum standard by which the 21 Implementation Terms described in the previous section and in Attachment 1 will be met by the MDMAs and IOUs.

The IOUs will be responsible for developing the data reporting format, Submeter MDMA registration form and process, the customer enrollment form, and the MDMA Performance Requirements. Each of these items should conform to the requirements above. The four items above shall be

filed jointly by the IOUs as a Tier 2 Advice Letter no later than 60 days after the adoption of this Decision.

5.5. Evaluation of Customer Experience

The Commission recognizes that the parties agree that a third-party evaluator to survey the customers' experiences with submetering. An individual, impartial statewide evaluator would ensure consistent and fair evaluation of the pilots deployed throughout the three territories and reduce costs. The Commission directs parties to work together to finalize the scope and content of the customer experience evaluation. The metrics identified within the nine evaluation categories below may be included within the evaluation. PG&E with support from ChargePoint, recommend that the IOUs and interested parties, after consultation with Energy Division, may delegate responsibility for reporting the following after each Phase of the Pilots:[73]

1. *Comparison of the total cost of metering services*. Metering, electrical equipment and labor cost; installation time and processes; fixed, energy and/or demand costs; number of PEVs participating and miles driven. Compare total cost for submetering to (a) separate PEV metering and (b) Submeter Scenario 1.[74]

[73] PG&E Opening Comments to the Proposed Decision at 8 a ChargePoint Reply Comments to the Proposed Decision at 4.

[74] The Commission notes that Submeter Scenario 1 (Single Customer of Record with no submetering) can allow a customer to bill multiple EVSEs and PEVs and the utility to maintain disconnection capabilities through the "Vending Machine Model." The IOUs and EVSEs are encouraged to explore this scenario to the extent cost savings and participation external to the pilot can be expanded.

2. *Access to PEV tariffs.* Total number of PEV-only rate or charging options available to customers enrolled in submetering.
3. *Multiple Submeter MDMAs and PEVs operating behind a primary meter*. Total number of Submeter MDMAs (and distinct business models), and PEVs operating behind the primary utility meter for SFH, MDU, and CF customers. Compare total number for submetering to (a) separate PEV metering and (b) Submeter Scenario 1.
4. *Utility disconnection capability*. Determine whether the utility has physical ability to disconnect electric service to customer receiving submetering service.
5. *Customer satisfaction*. Process flows identifying all submeter transactions between the PEV, Submeter MDMAs, and IOU from enrollment to billing. The level of customer understanding of process, knowledge of rate and of charging requirements, and satisfaction with services rendered. Survey of customer motivations to use submetering. Options to streamline processes to improve services. Total number of customers solicited to participate, applicants, enrollees, retained, and wishing to continue.
6. *Reliability of Data, Technology, and Service*. Number, frequency, type of customer issues related to metering accuracy, and data accessibility. Ability of Submeter MDMAs or IOUs to resolve issues. Customer satisfaction with service.
7. *Service and Technology Innovations*. Opportunities to expand submetering tariffs or programs to additional PEV customers (or other customer types who would benefit from submetering, i.e., tenants or customers using preferred resources). Lessons learned that can be applied to Phase 2 on Multiple Customers of Record or future deployments.
8. *Technology Standardization*. Identification of opportunities to and implementation of national

standards for customer, EVSE, and IOU communication and analysis of meter and billing data.

9. *Cost minimization*. Costs incurred by pilot administrators in labor, incentives, equipment, manual billing and service operations. Estimation of budget requirements for Phase 2 testing Multiple Customers of Record. Estimation of potential changes in costs per customer, at scale, achieved through billing automation.

The Commission agrees with the need to provide the participants with flexibility as to not overburden the evaluation. To ensure the highest level of impartiality, the third party evaluator will be responsible for determining the appropriate methodology in executing the customer experience evaluation. Required data sources for the evaluation must include a customer survey and analysis of data collected by the service providers (IOUs and Submeter MDMAs).

The cost of the third party evaluator should be covered by the IOUs because general ratepayers would benefit from an expanded submetering program. One utility will be responsible for selecting and managing the contract with an evaluator on behalf of all the IOUs to reduce costs and administrative complexity. PG&E's proposal to fund submetering in its EPIC Investment Plan gives it the most flexibility in managing a contract with a Third Party Evaluator.[75] The evaluator must have experience with customer satisfaction survey design, electric utility operations, and PEVs. The evaluator must be selected via competitive solicitation. The Commission encourages their selection and contract commencement prior to the pilot start date. Energy Division will provide advisory input to the evaluator's activities, which must consult with Energy Division quarterly during the pilot. The evaluator will also be

[75] PG&E Application 12-11-003.

responsible for the meter sample testing described above. A final report, which at a minimum covers the categories above for both Phases of the pilot, is due to the Commission and for public release after the completion of each Phase. PG&E shall develop and file via a Tier 2 Advice Letter a timeline for the evaluation processes within 60 days after this Decision is finalized. This may be filed jointly with the other implementation forms as described above. The cost of the evaluation activities will be paid equally through the IOU's overall budget for the pilot.

5.6. Funding and Cost Assignment for the Pilots

Funding these pilots requires the Commission to address two questions: (1) Which participating entities' costs should be funded as part of the pilot? (2) How should pilot costs be financed?

First, parties differ on the treatment of Submeter MDMA costs. The IOUs do not think these costs can be accurately measured or assigned prior to the Commission clearly defining the roles of the IOUs and Submeter MDMA within the pilot. Estimating costs in response to the questions posed in the Phase 4 ACR was difficult without assigning responsibilities for the parties. Today's decision addresses the IOUs' concerns by clarifying the roles of the IOUs and the Submeter MDMAs in carrying out the pilot. Furthermore, we find that the IOUs' costs for administering the pilot can be estimated based on the parameters defined in this decision.

We agree with SCE's recommendation that the 'benefiting entity' should pay for their costs and use this approach to assign EVSP costs. However, we disagree with SCE that the EVSP is the sole beneficiary of their activities in this pilot. This pilot will shape long-term policies related to PEV metering. The beneficiaries of EVSP involvement in this pilot extend beyond the current

participants, reaching future PEV drivers and charge service companies. Therefore, we find that those costs that provide broader benefits should be funded by ratepayers.

In addition, ChargePoint contends that if the Commission does not authorize funding to support pilot MDMA activities, the ability of ChargePoint and other EVSPs to participate will be very limited, and the value of the pilot will be at risk.[76] The IOUs oppose this recommendation. SCE argues that the limited ratepayer funding that is available for these pilots should not cover activities EVSPs would normally conduct and potentially profit from under normal market conditions.[77] SDG&E argues that any proposal to fund EVSP costs through EPIC violates the Commission's current construction of EPIC.[78] PG&E contends that if the "beyond the meter" market for third-party submetering services to EV customers is not viable or not yet developed, then it would be a waste of utility ratepayer funds and premature to conduct any pilots.[79]

We disagree with the utilities. One of the goals of the pilots is to allow for multiple meter data management agents for submeters and a guiding principle is to remain open to new technologies and business models in the evolving PEV market. We see value in the pilot programs and seek to encourage EVSP participation to test possible new business models. In that regard, we order the utilities to provide an incentive payment to participating Submeter MDMAs from the utilities submetering pilot budgets. The incentive payment

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[76] ChargePoint Opening Comments on the Proposed Decision at 2.

[77] SCE Opening Comments on the Proposed Decision at 3.

[78] SDG&E Reply Comments on the Proposed Decision at 2.

[79] PG&E Reply Comments on the Proposed Decision at 2.

shall be a fixed amount per customer enrolled by the Submeter MDMA. The utility shall propose a reasonable per customer incentive payment for participating Submeter MDMAs in their Tier 2 advice letter filing due no later than 60 days following this decision.

We further find that utility costs to implement the pilot, including those incurred from the activities of the third party evaluator, should be funded as discussed below as these costs will eventually bring benefits to ratepayers who buy PEVs and who benefit from reduced vehicle emissions.

The second question to address regards the funding source. The EVSP Coalition suggested that the Electric Procurement Investment Charge (EPIC) Program budgets are an appropriate source of funding for this project. We agree. The purpose of the EPIC program is to fund public interest investments in applied research and development technology demonstration and deployment, market support, and market facilitation of clean energy technologies and approaches for the benefit of electricity ratepayers of the California IOUs.[80] The submetering pilot serves as a demonstration of a new energy technology eligible under the requirements of the EPIC program.

The IOUs expressed concern that the uncertainty of EPIC funding authorization and the amount of funding available under EPIC do not provide the assurance for full cost recovery related to the submetering pilot project. SCE proposes that the PD should order IOUs to file advice letters proposing mechanisms to recover their costs to implement the pilots. SCE recommends that these advice letters should propose to subtract from the revenue requirement,

[80] Decision 11-12-035 in R.11-10-003.

any EPIC funds that are approved for use for the pilots.[81] SDG&E requests that Commission order that the implementation of the submetering pilots be contingent on both the Commission's decision in this proceeding and the EPIC proceeding or, in the least, that it be granted authority to establish a Memorandum Account to track costs incurred from activities related to planning for and implementing the submetering pilots.[82]

PG&E contends that it prefers SCE's proposed ratemaking mechanism for cost recovery to SDG&E's fallback proposal of establishing a memorandum account with no CPUC decision on cost recovery until a later, unknown date.[83] ORA recommends that submetering pilot program costs be kept within the EPIC budget for each utility, if EPIC is adopted and authorized by the Commission.[84]

As of the date of this proposed decision, authorization for the EPIC program is still pending. Furthermore, we understand that the total costs for submetering pilot program is dependent on future, unknown, customer enrollment, and that initial utility cost estimates were based on a slightly more limited pilot program. That said, we do not believe that the total potential costs to the IOUs for implementation of the submetering pilots will be more than double what the utilities initially estimated in comments to the Phase 4 ACR. In that regard, we believe that all or the majority of costs for the submetering pilot program can be fully recovered through EPIC program funding, if approved. We further find that this proceeding does not supersede any conclusions, orders

[81] SCE Opening Comments on Proposed Decision at 5.

[82] SDG&E Opening Comments on Proposed Decision at 2.

[83] PG&E Reply Comments on Proposed Decision at 1.

[84] ORA Opening Comments on Proposed Decision at 6.

or findings in the EPIC proceeding including the total amount of funds available under the program as prescribed by OP 7 of D.12-05-037.

However, provided pending authorization of EPIC and the uncertainty of total costs for the submetering pilots and in order to ensure timely implementation of the pilot program, we authorize the utilities to establish memorandum accounts to track costs related to the submetering pilots. EPIC funding for submetering pilots, if authorized, shall be subtracted from memorandum accounts. These memorandum accounts are to serve as backstop mechanisms and the utilities should not expend more on the submetering pilots than they reasonably expect to recover from EPIC. If EPIC budgets are not authorized or are otherwise not sufficient to provide recovery for IOU costs related to submetering pilots, the IOUs may seek to recover their memorandum accounts up to $2 million per utility in excess of EPIC funding or up to $5 million per utility if the EPIC program is not authorized through an appropriate ratemaking proceeding. As a condition for recovery of submetering pilot memorandum accounts, the IOUs must show that costs were above what could be reasonably recovered from the EPIC program.

Each IOU shall include a preliminary submetering pilot budget, including proposed incentive payment to participating Submetering MDMAs and anticipated cost recovery from EPIC in the Tier 2 Advice Letter due no later than 60 days from the date of this Decision.

6. Second Phase of the Pilot

All of the requirements of the Single Customer of Record phase will also apply during the Multiple Customers of Record phase. However, the IOUs and other parties will be given the opportunity to recommend revising these rules based on the Phase 1 results. The IOUs are directed to submit a Tier 2 Advice

Letter no later than February 1, 2015, that will outline how Phase 2 will be implemented, as well as additional changes to the Implementation Terms (as defined within the revised Staff Proposal at Attachment 1). The Advice Letter should address how the IOUs propose to evaluate or study mobile submeters in Phase 2 of the pilot.

7. Submission of Final Submetering Protocol

D.11-07-029 ordered the IOUs to submit a final submetering protocol report to the Commission by February 1, 2016. The Staff Proposal proposed extending this deadline to accommodate the execution of the submetering pilot phases. The EVSP Coalition objected to this approach, instead suggesting that the results of the submetering pilots should not be a contingency for submitting the Submetering Protocol.[85] We find that the submetering pilots are a necessary component to developing the submetering protocol and concur with the Staff Proposal. We order the IOUs to submit the submetering protocol report by February 1, 2016. The Commission will evaluate this report to determine next steps, including whether to expand submetering beyond the pilot phases.

8. Schedule of Activities

A revision of the March 2013 Staff Proposal contains a completed list of activities and deadlines for the participants of the Submetering Pilot and is appended as Attachment 1.

9. Comments on Proposed Decision

The proposed decision of Commissioner Peterman in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of

[85] DRA Opening Comments at 2.

Practice and Procedure. Comments were filed on October 21, 2013, and reply comments were filed on October 28, 2013 by PG&E, SCE, SDG&E, ChargePoint, ORA, NRDC, and GPI/CEC. CCSE filed comments but not reply comments.

Comments and reply comments from parties focused on several issues. These included: cost recovery; cost allocation; rules for customer enrollment; rules for MDMAs; schedule and timeline; evaluating the need for phase 2 of the pilot; scope of work for the Independent Evaluator; and several other implementation issues including scale and termination of the pilot program.

All comments and reply comments have been considered and, where appropriate, incorporated into this decision. Specifically, the following changes have been made from the proposed decision:

- Regarding cost recovery, the IOUs are authorized to establish memorandum accounts and seek cost recovery in an appropriate ratemaking proceeding for expenses related to implementation of the submetering pilots that are above what could reasonably be recovered through EPIC.
- IOUs are ordered to provide an incentive payment to participating Submetering MDMAs.
- The IOUs will have greater flexibility in designing and implementing the pilots according to the utilities' respective capabilities.
- Existing PEV customers, including a limited number of Net Energy Metering customers, will be eligible to participate as part of the 500 submeters per IOU.
- The scope of the Independent Evaluator's role is reduced to allow the IOUs and EVSPs to contribute to data collection efforts.
- Requirements within the Roadmap timeline and Orders within the Decision have been corrected.

Assignment of Proceeding

Carla J. Peterman is the assigned Commissioner and Regina M. DeAngelis is the assigned ALJ in this proceeding.

Findings of Fact

1. D.11-07-029 directed that the IOUs submit a submetering protocol by July 30, 2012.

2. On July 9, 2013 the Commission extended the deadline for submetering to December 31, 2013.

3. The March 2013 Energy Division Staff Proposal reviewed various submetering scenarios based on the number of account holders involved in the transaction with "Customer of Record" being defined as anyone that has an account with the utility.

4. Submetering can occur in a situation where there is one Customer of Record or multiple Customers of Record.

5. The Commission should begin by piloting Single Customer of Record, due to its relative simplicity, and then testing Multiple Customers of Record to minimize the complexity at the start of the pilot.

6. The *Multiple Customers of Record* phase of the pilot should not be contingent on the results of the *Single Customer of Record* phase but should be informed by results found upon its completion.

7. The submetering pilot should be structured to support collaboration between parties, avoid prematurely setting a 'California standard' that is inconsistent with national efforts, and should be open to new and emerging business models in the evolving PEV market.

8. Each utility must support up to 500 eligible submetering participants in each pilot phase. Each enrolled customers will be able to participate in the pilot for at least 12 months.

9. The Single Customer of Record phase will begin enrollment on May 1, 2014. Customers may enroll to receive submetering service for up to six months or until the enrollment cap is reached.

10. The Multiple Customers of Record phase will begin enrollment on May 1, 2015. Customers may enroll to receive submetering service for up to 6 months or until the enrollment cap is reached.

11. Submetering pilots will help the Commission understand the cost of implementing submetering, the benefits to customers, and the total expected demand for submetering.

12. The use of a third party evaluator will help the Commission evaluate the costs and benefits of submetering.

Conclusions of Law

1. D.11-07-029 set requirements for the IOUs to develop rules to incorporate customer-owned submeters into their billing and metering system and recognized submetering as being beneficial for reducing customer costs associated with metering and rates.

2. The pilot project for PEV submetering is a reasonable approach as set forth in the Energy Division Staff Plug-In Electric Vehicle Submetering Roadmap at Attachment 1 for the Commission to evaluate customer demand for submetering, evaluate billing integration and communication costs, evaluate the customer experience under submetering, and evaluating how PEV submetering can support the State's Zero Emission Vehicles goals.

3. A PEV submetering protocol should not be fully implemented until the Commission conducts pilots and evaluates the results.

4. A two phase pilot, testing Single Customer of Record submetering and then Multiple Customers of Record submetering, is a reasonable approach for implementing the pilot program.

O R D E R

IT IS ORDERED that:

1. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company shall comply with the October 2013 Energy Division Staff Plug-In Electric Vehicle Submetering Roadmap (Attachment 1).

2. Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) shall submit a Tier 2 Advice Letter that includes the metering requirements provided by Energy Division to the utilities, draft versions of the data format template, the Submeter Meter Data Management Agent registration form, the customer enrollment form, and MDMA Service Requirements no later than 60 days after the date of this decision. PG&E, SCE, and SDG&E shall propose a single version of each of these forms that can be used in all service territories.

3. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company shall submit a Tier 2 Advice Letter with a preliminary budget for the submetering pilots no later than 60 days after the date of this decision. This may be filed jointly with the Advice Letter filing ordered in Ordering Paragraph 2.

4. Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) shall submit a

Tier 2 Advice Letter no later than August 1, 2014, to outline how Multiple Customers of Record submetering will be implemented and any additional changes to the rules of the first phase of the pilot. The Advice Letter should address how PG&E, SCE, and SDG&E propose addressing mobile submeters in the second phase of the pilot.

5. Energy Division is directed to hold a stakeholder workshop no later than February 1, 2015 to discuss preliminary results from Phase 1 and the utility proposal for implementing the Phase 2 pilot

6. Pacific Gas and Electric Company shall file a Tier 2 Advice Letter detailing a timeline for the submetering pilot program evaluation processes no later than 60 days after the date of this decision. This may be filed jointly with the Advice Letter filing ordered in Ordering Paragraph 2.

7. Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company are authorized to establish a memorandum account and seek cost recovery in an appropriate ratemaking proceeding for expenses related to implementation of the submetering pilots that are above what could reasonably be recovered through the Electric Program Investment Charge (EPIC). Costs recorded in this memorandum account shall not exceed $2 million per utility in the case of co-funding from EPIC and shall not exceed $5 million per utility in the case that the EPIC program is not authorized.

8. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company shall file a final submetering protocol report by February 1, 2016 as a compliance filing.

9. Rulemaking 09-08-009 is closed.

This order is effective today.

Dated November 14, 2013, at San Francisco, California.

MICHAEL R. PEEVEY
President
MICHEL PETER FLORIO
CATHERINE J.K. SANDOVAL
MARK J. FERRON
CARLA J. PETERMAN
Commissioners

ATTACHMENT 1

California Public Utilities Commission Energy Division Staff
Plug-In Electric Vehicle Submetering Roadmap
(R.09-08-009)

October 2013

California Public Utilities Commission Energy Division Staff
Plug-In Electric Vehicle Submetering Roadmap
(R.09-08-009)

October 2013

Background

D.11-07-029 required California's investor-owned utilities (IOUs) to develop a plug-in electric vehicle (PEV) submetering protocol for customer-owned submeters, and required the IOUs to submit a set of rules for submetering to the Commission by July 2012. In December 2011, the IOUs released a proposed roadmap, identifying submetering use cases and a timeline for implementing these use cases. In July 2012, the IOUs requested an extension to July 2013. This request was supported by stakeholders. IOUs and stakeholders agreed to revisions to the roadmap document and agreed that the IOUs would release a draft protocol document in October 2012. In response to the draft protocol, several parties filed letters to the CPUC that criticized the draft's approach for the timing and development of the submetering use cases and requested that CPUC intervene in the process.

In January 2013 CPUC held a workshop to clarify a path forward for electric vehicle submetering. During this workshop parties provided input on the direction of the development of the protocol, the prioritization of submetering use cases, and a phased approach for piloting submeter billing and communications. CPUC staff revised the proposal based on comments to the proposal within the Phase 4 Assigned Commissioner Ruling of March 25, 2013.

Goals of PEV Submetering

Electric vehicle submetering allows the electric vehicle to be billed off of a meter installed on the customer-side of the primary customer meter. This is believed to be important in facilitating PEV charger installation in apartment buildings and multiple-dwelling units (MDUs). Submetering can provide the following benefits:

- Reduce metering infrastructure and billing costs for customers
- Access to PEV tariffs while maintaining other non-PEV loads on tiered rates
- Allow multiple meter data management agents for submeters (Submeter MDMA)[86] and PEVs to operate under a single primary meter
- Maintain utility disconnection capabilities over all Customers of Record

Key Scenario Characteristics

Submetering can be characterized by two characteristics: 1) number of Customers of Record (COR) associated with a given primary meter and 2) the type of submeter.

Customer of Record (COR): The Customer of Record is defined that the entity or individual that is responsible for the usage for a given meter. The Customer of Record is legally responsible for paying for usage and is recognized as the account holder by the utility.

Types of Submeter: A submeter can either be utility grade or not. A utility grade submeter meets utility requirements for billing. The submetering protocol

[86] The term MDMA-S is defined by nine roles and six functions listed at 17 of the Strawman PEVSMP. As noted in the IOU Strawman, the MDMA-S definition is based on the definition of an MDMA provided by the Commission in D. 97-12-048.

is intended to outline rules for utility grade submeters. A non-utility grade submeter cannot be used by the utility to measure billable loads, however, it can be used by an entity that is compensating the utility on behalf of a customer, or a customer on behalf of a PEV driver.

Four Submetering Scenarios

Based on these two characteristics, there are four submetering scenarios:

1. Single COR with no submeter
2. Single COR with a non-utility grade submeter
3. Single COR with a utility grade submeter
4. Multiple COR with a utility-grade submeter

The first scenario is a baseline case used for comparison purposes.

There are three customer types that have unique characteristics relative to submetering. Under these different customer types, the relevant actors (PEV owner, electric utility account holder, and property owner) have different relationships to one another.

Single Family Home: A single family home is a residential setting where the owner of the property is assumed to be the same as the PEV owner. Additionally, it is assumed that this individual is also the Customer of Record on the account.

Multi-Dwelling Unit (MDU): A residence within a multi-dwelling unit where the PEV owner is not the same as the property owner. While many California apartment buildings have utility metering for each unit, this customer type assumes that the PEV is not located in proximity to their unit's utility meter and that the PEV does not have the option of charging off of the account associated with the unit. The PEV is assumed to be charging off of an account held by the property owner.

Commercial Facility: A non-residential facility where the property owner, the account holder, and the PEV driver are all different actors and the PEV charging is served from a common area unassociated with any individual tenant's electricity account.

Distinctions between Customer Types	Single Family Home	Multi-Dwelling Unit	Commercial Facility
Is the Owner of the Property the same as the PEV Driver?	Yes	No	No
Is the PEV Driver the same as the Account holder where the vehicle is charging?	Yes	No	No
Is the Property Owner the Customer of Record where the vehicle is charging?	Yes	Yes	No

The four submetering scenarios apply to the following customer types:

	Single Family Home	Multi-Dwelling Unit	Commercial Facility
1. Single COR with no submeter	X	X	X
2. Single COR with non-utility grade submeter	X	X	X
3. Single COR with utility grade submeter	X	X	X
4. Multiple COR with utility grade submeter		X	X

Billing Models

Submeter MDMAs can provide submetering services under four different types of billing models. Under each of these billing models, the Submeter MDMA takes on different liability and has different responsibilities related to the utility.

Vending Machine Model: The Customer of Record bills the PEV owner for charging a PEV on their utility account. The Customer of Record retains sole liability for the bill, but is reimbursed by the PEV owner for load associated with charging on their premises. The Customer of Record may or may not separately meter the PEV load. If they do separately meter the PEV load, they could install their own metering equipment or contract a Submeter MDMA to meter the PEV load. In any of the three cases the PEV owner agrees to be billed for charging services on a rate determined by the Customer of Record. No barriers exist to using this approach, though there are opportunities for Customers of Record (landlords) to increase tenant or visitor access to PEV charging infrastructure at their premises.

Remittance Model: The Submeter MDMA meters and pays the bill associated with PEV load on behalf of the Customer of Record by sending a payment to the utility for the Customer of Record's account. In this case a non-utility grade submeter may be used, subject to the agreement between the Submeter MDMA and the PEV owner using it. As a result, the Submeter MDMA is not liable to the utility for the bill nor do they collect billing data from the utility. The Customer of Record retains sole liability for the electric (primary) account. The Customer of Record may have an agreement with the Submeter MDMA to address liability between the two parties. No barriers exist to using this approach, though there may be opportunities for the utilities to simplify the

process and make it easier to scale. The customer's load and that of their PEV would be billed according to their currently applicable tariff. The Submeter MDMA could charge whatever rate the customer agrees to for the PEV usage.

Single Customer of Record (COR) Model: The primary meter customer is also the Customer of Record for the submeter. The Submeter MDMA cannot be the COR in this case. The customer could apply to the Remittance Model, but the Single COR Model would allow the customer to separately meter the PEV load and bill it on a separate tariff if the customer uses a utility grade submeter. To access a separate tariff the Single COR Model requires that the metering meet utility grade billing specifications and use of a communication protocol to facilitate the reporting of submetered usage to the utility. This model avoids the complexity of having two Customers of Record. However, the entire bill is the responsibility of one customer, which may reduce the administrative complexity of billing and dispute settlement.

The Remittance Model and the Single COR Model are not mutually exclusive. The Remittance model could be used with Single COR model, using either a utility-grade or non-utility grade meter.

Multiple Customers of Record (COR) Model: Under this arrangement, the primary meter customer is not the Customer of Record for the submeter. The submeter and its load would be the responsibility of a third party (Submeter MDMA) or the PEV owner. As is the case with the Single COR Model in which a PEV load has access to a separate tariff, the Multiple COR Model also requires that the meter meet utility grade billing specifications and that the communication of meter data be standardized. Having two different CORs under the same primary meter introduces billing complexity and dispute settlement complexity.

Characteristics of Each Submeter Scenario

		Access to separate tariffing for PEV load	Bill multiple Submeter MDMAs and/or PEVs under one primary meter	Preserves Utility service disconnection functionality	COR Liable for Submeter load cost	Role of third-party Submeter MDMA
Single Customer of Record (COR)	1. No Submeter	No	Yes, but only using the Vending Machine Model	Yes	Primary Meter Account Holder	Provide equipment (Optional)
	2. Non-Utility Grade Submeter	No	Yes, but only using the Remittance Model	Yes	Primary Meter Account Holder	Provide equipment Separately track load for charging stations and/or different users
	3. Utility Grade Submeter	Yes	Yes, but only using the Remittance Model	Yes	Primary Meter Account Holder	Provide equipment Separately track load for charging stations and/or different users
Multiple Customers of Record (COR)	4. Utility Grade Submeter	Yes	Yes	No	Submeter Account Holder(s)	Provide equipment Separately track load for charging stations and/or different users Manage utility billing account for submeter load

Relationship between Scenarios and Use Cases

In December 2011, the IOUs submitted a report that outlined a set of 16 Use Cases related to submetering. These Use Cases focused on location of the submeter, the communication technology, and the billing methodology. The table below shows the relationship between these use cases and the CPUC staff scenarios.

	No Submeter	Non-utility Grade Submeter		Utility Grade Submeter	
		Single PEV or Submeter MDMA	Multiple PEV or Submeter MDMA	Single PEV or Submeter MDMA	Multiple PEV or Submeter MDMA
Single Customer of Record	Use Case #0			Use Case #1	Use Case #2 Use Case #3 Use Case #4
Multiple Customers of Record				Use Case #6	Use Case #7 Use Case #8 Use Case #9

Use Case #5: Can be applied to any of the Single COR scenarios.

Use Cases #10-16: can be applied to any of the Single COR or Multiple COR scenarios

Phased Implementation of Electric Vehicle Submetering Pilot Demonstrations

To support the development of the submetering protocol, CPUC staff proposes that pilot projects be established to allow the testing of different levels of submetering complexity.

Principles Structuring the Submetering Pilot. Principles help determine how the pilot will be organized and will guide participant conduct and to achieve the goals of the pilot. The submetering pilots will reaffirm the five policy objectives of D.11-07-029. In addition, the pilots will:

- Support collaboration between stakeholders.
- Avoid prematurely setting a "California standard" that might run counter to national efforts.
- Remain open to new technologies and business models in the evolving PEV market.

Phase 1: Single COR Pilot. During Phase 1, the utilities would test the use of Single Customer of Record submetering. Single Family Homes, Apartment Units, and Commercial Facilities would be allowed to use submetering under a Single Customer of Record.

Goals of the Phase 1 Pilot are to:

- Evaluate the demand for Single COR submetering in Single Family Homes, Apartment Units, and Commercial Facilities, and customer uptake prior to making larger investments.
- Estimate billing integration costs under different communication methods.
- Estimate communication costs.
- Ensure a positive Customer Experience while determining customer perceptions, estimating customer costs and benefits of Single COR submetering-enabled services, and smoothly transitioning between tariffs.
- Evaluate the potential impacts submetering can have on supporting the State's ZEV goals.

Prior to beginning Phase 1, the following issues need to be addressed:

- Finalize the temporary metering requirements determined by CPUC. Develop a template for reporting sub-metered, time-variant energy data for Submeter MDMAs to communicate PEV meter data to utilities.
- Register Submeter MDMAs
- Develop a Customer Enrollment Form

At the conclusion of Phase 1, the Commission will reconvene parties to evaluate the results of the first phase and determine what modifications should be made to the implementation terms or schedule.

Phase 2: Multiple COR pilot. During Phase 2, the utilities will pilot the use of Multiple Customers of Record on a single primary meter. The pilot will be

subject to a service territory limit that will be determined after the completion of the Phase 1 Pilot.

Goals of the Phase 2 Pilot are to:

- Evaluate the demand for Multiple COR in Single Family Homes, Apartment Units, and Commercial Facilities.
- Estimate billing integration costs under different communication methods.
- Estimate integration and administrative costs associated with submetering.
- Ensure a positive Customer Experience while determining customer perceptions, estimating customer costs and benefits of Multiple COR submetering-enabled services, and smoothly transitioning between tariffs.
- Evaluate the potential impacts submetering can have on supporting the State's ZEV goals.

Prior to beginning Phase 2, the following issues need to be addressed:

- Evaluate the need to incorporate standard communication protocol between IOUs and Submeter MDMAs based on national standards (if available).
- Incorporate national standards (if available) and revise temporary metering requirements of Phase 1, if necessary.
- Develop rules among IOUs, Submeter MDMAs, and Customers of Record to address billing disputes, data sharing, and settlement of liability in particular due to the inability to disconnect utility service in the event of non-payment.
- Evaluate jurisdiction over submetering certification and installer licensing.
- Evaluate the revision of Phase 1 for temporary metering requirements for Phase 2.

- Determine the role that different meter form factors, including mobile submeters, will play in the pilot.
- Evaluate risks of customer "gaming" of multiple tariffs and determine appropriate mitigations.

At the conclusion of Phase 2, the utilities will submit a submetering protocol to the Commission. The protocol will address the issues identified in the R.09-08-009 Phase 2 Decision 11-07-029.

Implementation Terms

Pilot Term

Phase 1: Pilot Term begins no later than May 1, 2014 and ends 18 months afterward.

Phase 2: Pilot Term begins no later than May 1, 2015 and ends 18 months afterward.

Pilot Participation Period

Participating customers are permitted to receive submetering service for no more than twelve consecutive billing cycles, which continue at the discretion of the customer. The Customer may keep their submeter at the end of the pilot, according to their agreement with their Electric Vehicle Service Provider.

Eligibility for Submetering Services

Phases 1 & 2: Plug-in electric vehicle end-use charging loads at any residential (Single Family or Multi-Unit Dwelling) or commercial customer premise are eligible for submetering service. More than one PEV may be served per submeter at a customer's premise. A maximum of 500 submetered loads may be enrolled in submetering service within each utility service territory.

Customer Enrollment in Submetering Services

Phases 1 & 2: The enrollment of customers is the responsibility of the Submeter MDMA but requires the involvement of the IOUs. The commencement of a customer's submetering service must coincide with the start of the customer's billing cycle on their otherwise applicable tariff. The Submeter MDMA must notify the IOU of a customer's enrollment with the submission of completed Submetering Service Authorization Forms at least 5 business days before the end of the customer's billing cycle to be eligible for the next billing

cycle. The IOU is obligated to honor any request for submetering service pursuant to the terms of the Open Enrollment Period.

Enrollment Period

Phases 1 & 2: For the first 3 months of the Enrollment Period (the "Exclusivity Period"), each Submeter MDMA will have "Exclusivity Rights" equal to a number of submeters that will be determined by dividing the 500 maximum submeter enrollment by the number of Submeter MDMAs participating in the pilot program in that service territory. Exclusivity Rights expire at the end of the third month of the Exclusivity Period. Submeter MDMAs must report the balance of unenrolled submeters (those that they had Exclusivity Rights to, but have not enrolled a customer with their utility) to the utility that will be available for enrollment by other Submeter MDMAs during the "Open Period." During this Open Period, which begins at month 4, Submeter MDMAs are able to enroll additional submeters on a first-come, first-served basis, reporting enrollments to the utility daily. The utility in turn notices the number of remaining submeters to the participating Submeter MDMAs via email.

Phase 1: The first six months of the Pilot Term, May 1 – October 31, 2013, or until the maximum of 500 submeters is reached.

Phase 2: The first six months of the Pilot Term, May 1 – October 31, 2013, or until the maximum of 500 submeters is reached.

Customer Inquiries and Data Accessibility

Phase 1: Submetering data must be made available to customers online and by request. No requirement to directly display usage on the meter.

Phase 2: To be refined during preparatory Phase 2 Workshop, which should address the presentation or consolidation of submeter data with IOU "My

Account" data, and the role of the Green Button Connect My Data in presenting submeter data.

MDMA Service Establishment

Phase 1: All Submeter MDMAs must submit a non-binding Notice of Intent to Energy Division and the IOUs no later than 45 days after this Decision is final. The NOI must include: company operating experience and history particularly in regard to metering and meter data management; the service territory(-ies) they plan to serve during the pilot, the number of customers that they have secured as willing to participate in the pilot; the number of customers that they wish to serve during the pilot. To participate, the Submeter MDMA must agree to CPUC requirements for data reporting and accuracy. MDMAs must notify the IOU upon the termination of their provision Submetering services to customers.

Phase 2: Submeter MDMAs not participating in Phase 1 must provide notice 60 days prior to the start of Phase 2 enrollment. Additional requirements may be determined in preparation for Phase 2.

Submeter Service Authorization Forms

Phase 1: The two Submetering Service Authorization Forms include: 1) a Meter Data Authorization, in which a customer permits the EVSE/MDMA to access and transmit submetered energy usage information to the IOU; (2) an Enrollment Request in which a customer verifies their intent, eligibility, submetering provider, and basic account information needed to participate.

Phase 2: Service Authorization forms may be refined during the preparatory Phase 2 Workshop.

Data Measurement Requirements

Phase 1: Submeters must record and report time-of-use energy and demand data that can align with the IOUs' existing PEV tariff periods. Energy Division staff is responsible for developing data requirements that delineate accuracy and interval periods.

Data Reporting and Submetering Reading Data Obligations

Phase 1: The Submeter MDMA must report billing period data per the IOUs' Submeter Data Format Requirements by 3 business days after the end of the billing period.

Phase 2: Data reporting and submeter reading data obligations will be refined during the preparatory Phase 2 Workshop and will apply available National standards.

Submeter Data Format Requirements

Phase 1: Excel or other simple format developed by the IOUs and approved by the Commission for use by the Submeter MDMAs in transmitting billing period data.

Phase 2: If necessary, to be refined during workshop in preparation for Phase 2.

Dropouts, Changes of Address

Phase 1: The Submeter MDMA must report drop-outs and participants who plan to relocate their submeter to the utility as soon as possible prior to the start of the next billing period. As of the effective date of the drop out or change of address, the IOU will resume using the otherwise applicable tariff for the primary meter for all load at that premises. A relocated customer may resume submeter service coincident with the start of the next billing period.

Phase 2: If necessary, to be refined during the preparatory Phase 2 Workshop.

Failure to Pay and Service Disconnect

Phases 1 & 2: No change to existing IOU service terms.

Billing Service Options and Obligations

Phase 1: The IOU must maintain the same billing delivery options to the customer. For whichever option (paper or electronic), the bill must show both loads separately on the bill. There are no specific requirements for the EVSE.

Phase 2: Billing Service Options will be refined during the preparatory Phase 2 Workshop.

Service Connection and Reconnection

Phase 1: If service disconnection for primary meter is required to commence submetering service, follow standard IOU practices.

Phase 2: To be determined during the preparatory Phase 2 Workshop.

Involuntary Service Changes

Phases 1 & 2: No changes from otherwise applicable tariffs.

Standards for Metering Products (Accuracy and Intervals)

Phase 1: Temporary requirements developed by the Submeter MDMAs in coordination with the Commission, and reviewed by the IOUs.

Phase 2: To be refined based on Third Party Evaluator and party recommendations during the preparatory Phase 2 Workshop.

Standards for Meter Data Transfer

Phase 1: Means of communication agreed upon by Submeter MDMAs and IOUs according to industry best practices and building upon the Strawman PEVSMP where possible.

Phase 2: Means of communication agreed upon by Submeter MDMAs and IOUs according to industry best practices, refined during preparatory Phase 2 workshop with National Standards, as available.

Submeter Installation and Maintenance

Phase 1: Submeter MDMAs or their MDMA (if required under their service agreement with the customer) are responsible for submeter installation and maintenance.

Phase 2: To be refined during workshop in preparation for Phase 2.

Submeter Testing and Calibration

Phase 1: EVSEs must deliver the results of testing submeters for standard compliance and calibration to the IOUs. The IOUs and/or the Third Party Evaluator may randomly field test no more than 5% of the submeters for accuracy. A statistically significant number of submeters are subject to post-facto sampling for accuracy by the Third Party Evaluator.

Phase 2: To be refined during workshop in preparation for Phase 2.

Standards for Validating, Editing, and Estimating Interval Data.

Phase 1: The IOUs and Submeter MDMAs should collaborate in determining appropriate method for validating, editing, and estimating interval data, building upon the Strawman PEVSMP where possible.

Phase 2: To be refined during workshop in preparation for Phase 2.

Data Processing Requirements

Phase 1: Developed by the IOUs to be used for subtractive billing, similar to the requirements of Net Energy Metering, albeit completed through a manual processes.

Phase 2: To be refined during workshop in preparation for Phase 2.

MDMA Performance Requirements

Phases 1 & 2: MDMAs must meet the following terms, described herein: Customer Enrollment Process; Submeter MDMA Service Establishment; Data Measurement Requirements; Data Reporting Requirements; Dropouts; Changes of Address; Standards for Metering Products (Accuracy and Intervals); Standards for Meter Data Transfer; Submeter Installation and Maintenance; Submeter Testing and Calibration; Standards for Validating, Editing, and Estimating Interval Data. The IOU will notice the applicable MDMA of their failure to timely meet stated requirements in providing submetering service for two consecutive billing periods. Absent corrective actions, a service deficiency occurring after a

third consecutive month allows the IOU to petition Energy Division to terminate pilot participation by the MDMA and their customers.

Third Party Evaluator

Phases 1 & 2: A single, statewide Third Party Evaluator (3PE) will conduct a study of both Phases of the Submetering Pilot. PG&E will contract with the 3PE via competitive solicitation using funding allocated equally from each of the utilities. Energy Division will provide advisory input to the 3PE's activities. The 3PE must consult with Energy Division quarterly during the pilot, will be responsible for the meter sample testing, and preparing a final report. The Final Report will at a minimum cover the customer-experience related evaluation categories for both Phases of the pilot, and will be submitted to the Commission and for public release after the completion of each Phase. The specific scope of the 3PE's activities will be specified by the Energy Division after consultation with the utilities and interested parties, and taking into account the scope and schedule of the pilot.

Evaluation of Customer Experience

Evaluation Contract. An individual, impartial, statewide third party evaluator will survey customer experiences with both Phases of the submetering pilot. PG&E is responsible for selecting the 3PE through a competitive solicitation and managing the contract. The Commission encourages their selection and contract commencement prior to the Pilot Start date.

Potential Third Party Evaluator Responsibilities. The 3PE will:

- Receive advisory input from and consult with Energy Division quarterly during the pilots.
- Conduct post facto Submeter Testing and Calibration.

- Submit a final report, described below, covering each Phase of the pilot to the Commission and for public release after the completion of each Phase.

The third party evaluator will be responsible for determining the appropriate methodology in executing the evaluation. Required data sources must include a customer survey and analysis of data collected by the service providers (IOUs, and Submeter MDMA). The evaluation scope may inclue but is not required to include the nine evaluation categories below:

1. Comparison of the total cost of metering services. Metering, electrical equipment and labor cost; installation time and processes; fixed, energy and/or demand costs; number and type of PEVs participating and miles driven. Compare total cost for submetering to a) separate PEV metering and b) Submeter Scenario 1.
2. Access to PEV tariffs. Total number of PEV-only rate or charging options available to customers enrolled in submetering.
3. Multiple Submeter MDMA's and PEVs operating behind a primary meter. Total number of Submeter MDMAs (and distinct business models), and PEVs operating behind the primary utility meter for SFH, MDU, and CF customers. Compare total number for submetering to a) separate PEV metering and b) Submeter Scenario 1.
4. Utility disconnection capability. Determine whether the utility has physical ability to disconnect electric service to customer receiving submetering service.
5. Customer satisfaction. Process flows identifying all submeter transactions between PEV, Submeter MDMA, and IOU from enrollment to billing. Level of customer understanding of process, knowledge of rate and of charging requirements, and satisfaction with services rendered. Survey of customer

motivations to use submetering. Options to streamline processes to improve services. Total number of customers solicited to participate, applicants, enrollees, retained, and wishing to continue.

6. Reliability of Data, Technology, and Service. Number, frequency, type of customer issues related to metering accuracy, and data accessibility. Ability of Submeter MDMA's or IOUs to resolve issues. Customer satisfaction with service.
7. Service and Technology Innovations. Opportunities to expand submetering tariffs or programs to additional PEV customers (or other customer types who would benefit from submetering i.e. tenants or customers using preferred resources). Lessons learned that can be applied to Phase 2 on MCOR or future deployments.
8. Technology Standardization. Identification of opportunities to and implementation of national standards for customer, EVSE, and IOU communication and analysis of meter and billing data.
9. Cost minimization. Costs incurred by pilot administrators in labor, incentives, equipment, manual billing and service operations. Estimation of budget requirements for Phase 2 testing MCOR. Estimation of potential changes in costs per customer, at scale, achieved through billing automation.

Submetering Roadmap and Pilot Timeline

(days are calendar days)	Utility Development Requirements	CPUC Development Requirements	Pilot Milestones	Evaluator
Decision + 30 days		Energy Division submits meter data accuracy requirements to utilities		
Decision + 60 days	Utilities submit Tier 2 ALs with forms, metering requirements and budget proposal for phase 1			
Decision + 80 days	Protests to Utility Advice Letters due			
April 1, 2014			Deadline to declare intent to participate in submetering pilot phase 1	
May 1, 2014			Phase 1 begins for Single Customer of Record applications. Open Enrollment begins	
July 31, 2014			Exclusivity Period for Phase 1 ends	
October 30, 2014			Enrollment Period for Phase 1 ends	
Dec. 31, 2014				IE submits interim report on Phase 1 enrollment and costs

January 2015		Energy Division hosts workshop to discuss IE report and plan for Phase 2		
February 1, 2015	Deadline to submit Phase 2 Pilot Advice Letters to CPUC, including report on the interim results of Phase 1			
February 20, 2015	Protests to IOU ALs due			
May 1, 2015			Begin Phase 2 pilot. Open Enrollment	
July 31, 2015			Exclusivity Period for Phase 2 ends	
October 31, 2015			Enrollment Period for Phase 2 ends	
Dec. 31, 2015				IE submits interim report
February 1, 2016	Utilities submit Submetering Protocol report for both phases 1 and 2 to CPUC			
October 31, 2016			Latest possible date the Phase 2 pilot could end	
December 31, 2016				IE submits final report

(END OF ATTACHMENT 1)