STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

PUBLIC UTILITIES COMMISSION
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TO PARTIES OF RECORD IN RULEMAKING 09-08-009

This is the proposed decision of Commissioner Michael R. Peevey. It will not appear on the Commission's agenda sooner than 30 days from the date it is mailed. The Commission may act then, or it may postpone action until later.

When the Commission acts on the proposed decision, it may adopt all or part of it as written, amend or modify it, or set it aside and prepare its own decision. Only when the Commission acts does the decision become binding on the parties.

Parties to the proceeding may file comments on the proposed decision as provided in Article 14 of the Commission's Rules of Practice and Procedure (Rules), accessible on the Commission's website at www.cpuc.ca.gov. Pursuant to Rule 14.3, opening comments shall not exceed 15 pages.

Comments must be filed pursuant to Rule 1.13 either electronically or in hard copy. Comments should be served on parties to this proceeding in accordance with Rules 1.9 and 1.10. Electronic and hard copies of comments should be sent to ALJ DeAngelis at rmd@cpuc.ca.gov and Commissioner Peevey's advisor Carol Brown at cab@cpuc.ca.gov. The current service list for this proceeding is available on the Commission's website at www.cpuc.ca.gov.

/s/ KAREN V. CLOPTON
Karen V. Clopton, Chief
Administrative Law Judge

KVC:oma

Attachment

Decision **PROPOSED DECISION OF COMMISSIONER PEEVEY**
(Mailed 3/15/2011)

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)

PHASE 2 DECISION ESTABLISHING POLICIES TO OVERCOME BARRIERS TO ELECTRIC VEHICLE DEPLOYMENT AND COMPLYING WITH PUBLIC UTILITIES CODE SECTION 740.2

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PHASE 2 DECISION ESTABLISHING POLICIES TO OVERCOME BARRIERS TO ELECTRIC VEHICLE DEPLOYMENT AND COMPLYING WITH PUBLIC UTILITIES CODE SECTION 740.2

1. Summary

In accordance with Senate Bill 626 (Kehoe, Stats. 2009, c. 355, § 1.), which added Pub. Util. Code § 740.2,[1] today's decision furthers the Commission's efforts to evaluate policies to develop infrastructure sufficient to overcome barriers to the widespread deployment and use of plug-in hybrid and electric vehicles (PEV) and adopts relevant rules. We act in conjunction with recent efforts by other state agencies, such as the California Air Resources Board, to address greenhouse gas emissions in the transportation sector. Our actions today are consistent with the 2008 Climate Change Scoping Plan[2] which announced a statewide plan to reduce greenhouse gas emissions to 1990 levels by 2020. Notably, the Plan includes several measures likely to accelerate the introduction of PEVs by automakers and the adoption of PEVs by Californians.

As Californians increasingly adopt PEVs, the electric utilities that the Commission regulates, including Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company,[3] will take on a critical role in the transportation sector as procurers, deliverers and suppliers of transportation fuel—in this case electricity. In anticipation of the

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[1] All statutory references are to the Public Utilities Code unless otherwise noted.

[2] *Climate Change Scoping Plan, A Framework for Change, Pursuant to AB 32, the California Global Warming Solutions Act of 2006*, adopted by the California Air Resources Board on December 11, 2008. The 2008 Scoping Plan is available at: http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm.

[3] The named respondents to this rulemaking are Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company.

utilities' role in the transportation sector, the Commission initiated this rulemaking to review existing utility electric vehicle tariffed rates, develop policies to facilitate the use of PEVs in the residential and non-residential setting and ensure that the electric charging of PEVs will not have adverse impacts on the reliability and safety of the state's electric system.

With input from a wide range of key stakeholders, today we address the most critical and time-sensitive issues to support California's PEV market from now through approximately 2013. Specifically, this decision achieves the following:

- Directs electric utilities to collaborate with automakers, state agencies, and other stakeholders to develop a notification process through which utilities can identify where PEV charging will likely occur on their electric systems and plan accordingly;
- Affirms that, with limited exceptions, the electric utilities' existing residential PEV rates are sufficient for early PEV market development, and, similarly, that existing commercial and industrial rates are sufficient in the early PEV market for non-residential customers. The decision also sets out a process to re-examine PEV rates in the future;
- Considers opportunities to migrate toward new and lower cost metering technologies for PEV charging and sets out a process to develop PEV metering protocols to accommodate increased PEV metering options, such as submetering;
- Determines that, on an interim basis, until June 30, 2013, the costs of any distribution or service facility upgrades necessary to accommodate residential PEV charging will be treated as a shared costs; and
- Defines the role that utilities should play in education and outreach related to PEVs and PEV charging.

Today's decision closes the proceeding.

2. Procedural History - Phase 2

Consistent with the January 12, 2010 Assigned Commissioner's Scoping Memo, the Administrative Law Judge (ALJ) on August 3, 2010 issued a ruling setting forth the substantive issues to be considered and the procedural schedule for phase 2 of this proceeding.[4] In addition, on August 30, 2010, Energy Division issued a Staff Workshop Issues Paper, entitled *The Utility Role in Supporting Plug-in Electric Vehicle Charging* (Utility Role Staff Paper). Energy Division issued a second Staff Workshop Issues Paper on September 10, 2010, entitled *Revenue Allocation and Rate Design: Facilitating PEV Integration* (Rates Staff Paper).

Parties were invited to file opening and reply comments to both of these papers. The following parties filed comments during phase 2 of this proceeding: Better Place, California Air Resources Board, California Department of Food and Agriculture, Californians for Renewable Energy, Inc. (CARE), Clean Energy Fuels Corporation (Clean Energy), Consumer Federation of California (CFC), Coulomb Technologies, Inc. (Coulomb), Division of Ratepayer Advocates (DRA), Environmental Defense Fund, EVSP Coalition (including Better Place, Coulomb Technologies, Inc., and Ecotality, Inc.), Friends of the Earth, General Motors Company (GM), Greenlining Institute, Green Power Institute, International Council on Clean Transportation, Interstate Renewable Energy Council, Natural Resources Defense Council (NRDC), North Coast Rivers Alliance, Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), Sam's West, Inc. and Wal-Mart Stores, Inc. (Sam's West/Wal-Mart), Southern California Edison Company (SCE), Sacramento Municipal Utility District

[4] The majority of the record for this proceeding is available online at www.cpuc.ca.gov at the link, *Docket Card*.

(SMUD), The Utility Reform Network (TURN) and Western States Petroleum Association (WSPA).

Energy Division convened all-party workshops to discuss matters set forth in the Staff's Workshop Issues Papers. Workshops were held on September 27, 29, and 30, 2010. Following the workshops, the ALJ issued a ruling on October 27, 2010 seeking additional information on various topics. Parties responded to this ruling on November 12, 2010 and December 3, 2010.

This decision closes the proceeding.

3. Discussion - Phase 2 Issues

Consistent with SB 626 (Kehoe, Stats. 2009, c. 355, § 1),[5] we initiated this Order Instituting Rulemaking (OIR) on August 20, 2009 to ensure that California's investor-owned electric utilities are prepared for the projected

[5] SB 626 was codified on January 1, 2010 as § 740.2. Section 740.2 states, in pertinent part, the Commission, in consultation with the Energy Commission, State Air Resources Board, electrical corporations, and the motor vehicle industry, shall evaluate PEV policies and the Commission shall adopt rules to address the following: "(a) The impacts upon electrical infrastructure, including infrastructure upgrades necessary for widespread use of plug-in hybrid and electric vehicles and the role and development of public charging infrastructure. (b) The impact of plug-in hybrid and electric vehicles on grid stability and the integration of renewable energy resources. (c) The technological advances that are needed to ensure the widespread use of plug-in hybrid and electric vehicles and what role the state should take to support the development of this technology. (d) The existing code and permit requirements that will impact the widespread use of plug-in hybrid and electric vehicles and any recommended changes to existing legal impediments to the widespread use of plug-in hybrid and electric vehicles. (e) The role the state should take to ensure that technologies employed in plug-in hybrid and electric vehicles work in a harmonious manner and across service territories. (f) The impact of widespread use of plug-in hybrid and electric vehicles on achieving the state's goals pursuant to the California Global Warming Solutions Act of 2006 and renewables portfolio standard program and what steps should be taken to address possibly shifting emissions reductions responsibilities from the transportation sector to the electrical industry."

statewide market growth of plug-in hybrid and electric vehicles (PEVs). In the August 20, 2009 OIR, we stated our intention to "consider the impacts electric vehicles may have on our state's electric infrastructure and what actions this Commission should take." To accomplish this, the Commission planned to evaluate "tariffs, infrastructure and policies needed for California investor-owned electric utilities to ready the electricity system in a consistent, near-term manner for the projected statewide market growth of [PEVs] throughout California."

Today's decision, similar to efforts by broad stakeholder groups, including the California Plug-In Electric Vehicle Collaborative,[6] considers the connection between PEVs and efforts by the state of California to reduce greenhouse gas emissions, increase the state's reliance on renewable energy, reduce overall transportation fuel costs, and improve the efficiency of the electric system.

Today's decision builds upon our policies set forth in the first decision issued in this proceeding, Decision (D.) 10-07-044.[7] In D.10-07-044, the Commission found that the provision of electric vehicle charging services does not make an entity a public utility and that electric vehicle service providers (EVSPs)[8] are, with certain exceptions, end-use customers of a regulated utility.[9]

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[6] The California Plug-in Electric Vehicle Collaborative: *Taking Charge: Establishing California Leadership in the Plug-in Electric Vehicle Marketplace*, December 2010. http://www.evcollaborative.org/evcpev123/wp-content/uploads/2010/07/Taking_Charge_final2.pdf.

[7] Applications for Rehearing of D.10-07-044 were timely filed by TURN and PG&E. These applications are pending before the Commission.

[8] EVSPs are providers of electric vehicle charging services and could include owners of stand alone electric vehicle charging spots. (D.10-07-044 at 3.)

[9] D.10-07-044 at 20.

Within this context, today we seek to establish a process to notify utilities of the purchase of PEVs so that utilities can plan infrastructure upgrades accordingly and we address PEV rate design principles, related cost recovery issues, PEV metering options, utility PEV education and outreach, and the use of smart charging technologies for PEVs. Generally speaking and for the purpose of this decision, near-term goals means those needing attention by the end of 2011. We anticipate revisiting the longer-term goals identified in the decision after obtaining data based on real-life experiences with PEVs from PEV load research by the utilities, required herein.

4. Utility Notification – PEV Data Clearinghouse

During phase 2 of this proceeding, electric utilities and other parties expressed a need for a process to alert them when their customers purchase a PEV. Utilities explained that, to thoroughly prepare for PEV charging in their service territories and avoid adverse impacts to the electric grid, utilities need to know the location where the PEV charging will likely occur. In some instances, a PEV buyer might voluntarily inform the utility of the physical location of charging. PEV buyers are motivated to contact utilities to, for example, obtain service under a PEV electric rate. It appears, however, that PEV buyers have little motivation to contact a utility for the purpose of notifying utilities of the location of the PEV charging. In addition, no formal standardized notification program exists so that a utility can identify all PEVs being introduced into their service territories.

Utilities and other parties pointed to a number of benefits of some type of notification process. We find the benefits of such a process compelling. Most critically, if a utility knows a PEV customer plans to charge at home, then the utility can study the adequacy of the local distribution system in advance and upgrade the infrastructure if needed. Obtaining information concerning the

identity of the PEV customer has other benefits as well. If a utility can identify PEV owners, then the utility can target consumer education and outreach to encourage PEV owners to opt into time-of-use rates that reflect the cost of charging on-peak. In other words, with timely notification to the utility that a PEV will be charging in its service territory, the utility can avoid potential reliability problems, keep infrastructure costs down, and ensure that PEV owners have positive experiences with PEVs.

Other parties also noted the importance of customer-to-utility notification and proposed solutions to expedite the creation of such a process. GM advocated for a national opt-in notification system. SCE, PG&E, and SDG&E proposed a statewide notification process, referred as a data clearinghouse, to help notify utilities of customer PEV purchases, thereby giving utilities more time to adjust their electrical systems to meet PEV load growth. In connection with this proposal, SCE, PG&E, and SDG&E requested Commission approval of initial funding to support the evaluation of the data clearinghouse.

NRDC expressed support for a data clearinghouse. CFC requested Commission scrutiny of data clearinghouse-related privacy issues. DRA urged the Commission to reject funding on the basis that ratepayers should not bear the cost of the initial evaluation for the utilities' data clearinghouse.

We conclude that, given the priority we place on avoiding adverse impacts to and ensuring the safety of the electric grid, the utilities' proposal for a data clearinghouse could prove to be a long-term, scalable solution to the utility notification challenge, provided privacy concerns are adequately addressed. We are encouraged by the fact that, while no formal standardized communication program currently exists, utilities are presently exploring bilateral agreements with auto manufacturers to establish arrangements that would provide utilities with notice when customers in their service territories purchase PEVs.

We want to ensure that progress continues in the development of a notification system. Accordingly, we direct SCE, PG&E, and SDG&E to collaborate with stakeholders to further develop such a system. We will refer to this notification system as a data clearinghouse. The first step toward development of this data clearinghouse should be a feasibility analyses. This data clearinghouse should effectively track the temporary or permanent relocation of PEVs, such as re-sold PEVs, and will likely require participation from the Department of Motor Vehicles (DMV) or other government agencies to identify and address any privacy concerns that may arise due to the sharing of relevant information. Therefore, we further direct utilities to work with the DMV and other relevant government agencies to determine what data can be legally made available to the data clearinghouse or to the utilities directly consistent with all applicable privacy laws.

We deny the requests by PG&E, SCE, and SDG&E that we authorize additional funding to cover the costs of the data clearinghouse. Instead, we find that, since the clearinghouse is intended to enable the utilities to avoid potential additional costs associated with making emergency grid repairs in response to unplanned for PEV charging, our expectation is that utilities will not require incremental funding to develop and participate in a data clearinghouse.

While we direct utilities to use existing funds to develop this proposal, we do not find that utilities should bear the entire cost of developing and maintaining a data clearinghouse. Entities other than the utilities, such as auto manufactures and electric vehicle service providers, will benefit from such a clearinghouse. These benefits could, for example, include opportunities to connect charging stations to drivers and to develop PEV information campaigns targeted at specific PEV growth areas. Therefore, utilities should ensure that non-utility entities pay a fair share of all costs associated with development of

the data clearinghouse, including initial feasibility studies and implementation costs.

To ensure that this data clearinghouse develops in a timely fashion, the utilities shall jointly file a report in this proceeding within 120 days of the effective date of this decision. The proceeding shall not be reopened by the filing of this report. At a minimum, the report shall comprehensively outline a data clearinghouse proposal and establish a development schedule. This report shall also explain how stakeholders will participate and how utilities will ensure co-funding from stakeholders that will benefit from the data clearinghouse. These stakeholders could include, for example, publicly-owned utilities, government agencies, EVSPs and PEV manufacturers. During this 120 day period, utilities shall seek the involvement of the Commission's Energy Division Staff and provide regular updates to Energy Division Staff on a schedule to be determined by Staff.

Lastly, we agree with GM that a national data clearinghouse, rather than a California-specific data system combined with various regional data systems, is ultimately preferable. PEVs are inherently mobile and resold. This creates problems where PEVs may migrate from one service territory to another or from one state to another. In the absence of a national notification system, it will likely be more difficult for utilities to effectively adjust their electric systems to account for PEV load growth. By establishing a path toward a California statewide data clearinghouse system, we seek to support the development of a national data clearinghouse system.

5. PEV Rate Design

In the August 20, 2009 OIR which initiated this proceeding, the Commission emphasized how electricity rates, if appropriately structured, can encourage PEV charging behavior that avoids adverse impacts to the electric

grid and keeps costs down for PEV owners and non-PEV owners alike. The Commission stated:

> Large increases in charging during the daytime could increase utility procurement costs and reduce the carbon emission reductions associated with electric vehicle use. Rate design could potentially discourage daytime charging by establishing high daytime rates that reflect the marginal cost of increasing load. Likewise, an electric vehicle tariff can encourage charging during nonpeak hours by establishing rates that reflect the lower procurement costs during these periods.[10]

Simply put, rate structures can convey the costs and environmental impacts of the supply and demand of electricity to consumers. We now consider principles and criteria to apply to PEV rate options to achieve these policy goals. We first consider PEV rates for residential customers. Second, we consider PEV rates at non-residential locations.

5.1. Residential PEV Rates

Currently, each utility has at least two PEV rate schedules available for residential customers seeking to charge their PEVs.[11] Residential customers also have the option to remain on their pre-existing residential rate schedule, which

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[10] August 20, 2009 OIR at 15.

[11] SCE Electric Tariff Rate Schedule TOU-EV1 (2 meters) at: www.sce.com/NR/sc3/tm2/pdf/ce114-12.pdf; SCE Electric Tariff Rate Schedule TOU-D-TEV (1 meter) at: www.sce.com/NR/sc3/tm2/pdf/CE324.pdf; PG&E Electric Tariff Rate Schedule E-9a (1 meter) at: www.pge.com/tariffs/tm2/pdf/ELEC_SCHEDS_E-9.pdf; PG&E Electric Tariff Rate Schedule E-9b (2 meters) at: www.pge.com/tariffs/tm2/pdf/ELEC_SCHEDS_E-9.pdf; SDG&E Electric Tariff Rate Schedule EV-TOU (2 meters) at: www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EV-TOU.pdf; SDG&E Electric Tariff Rate Schedule EV-TOU2 (1 meter) at: www.sdge.com/tm2/pdf/ELEC_ELEC-SCHEDS_EV-TOU-2.pdf.

includes rates that increase as the residential customer's cumulative usage increases during a billing period. The PEV rate schedules include time-of-use rates with relatively higher prices during daytime, peak periods and relatively lower prices during off-peak periods. Some of these residential PEV time-of-use rate schedules require that PEV electricity usage be measured separately, via a separate meter. Other residential PEV rate schedules combine PEV usage with all other electric usage measured through a single residential meter, also referred to as a whole house metered rate. While meter and rate issues, at times, overlap, meter issues are specifically discussed in Section 6, herein.

During this proceeding, most parties agreed that existing PEV rates are sufficient for the early market. For example, SCE stated that "In the shorter term, existing SCE rates for PEV charging meet the objectives of the Staff's Rates Issues Paper by providing for fair and efficient cost recovery, as well as encouraging off-peak charging, which lowers emissions and promotes grid stability." (SCE September 24, 2010 comments at 2.)

We also conclude that the existing PEV residential rate schedules are sufficient for the early PEV market, until approximately 2013. By 2013 the Commission will have more PEV load profile data to inform future rate design, including data from the load research studies described in Section 8, herein and from the studies being conducted by the Coulomb ChargePoint America and the Ecotality Electric Vehicle Projects funded, in part, by the U.S. Department of Energy.

5.1.1. Residential Single Meter PEV Rates

As noted above, while utilities' electric tariffs permit residential customers to continue to receive service under regular residential rates after the purchase of a PEV, each utility also currently offers residential single meter PEV rates and separate meter rate options. A residential single meter PEV rate, while

specifically designed for PEV charging, also applies to the residence's entire electricity usage. Separate meters allow for residential PEV rates that apply only to PEV electric usage.

SCE's and PG&E's single meter (also referred to as whole-house) PEV rates are tiered, i.e., the rates increase as the residential customer's cumulative usage increases during a billing period. SDG&E's single meter PEV rate is not tiered. All of the utilities' single meter rates (and all existing utility PEV rates) are optional (opt-in), meaning a residential customer must make a proactive voluntary decision to go onto the PEV rate.

The challenge of PEV rate design, as summarized by SCE, is to structure a simpler cost-based opt-in single meter (whole house) time-of-use rate that bypasses the pricing inequities associated with tiered or incremental rates but still recovers, at a minimum, the incremental cost to serve PEVs. (SCE December 6, 2010 comments at 12.) SCE is currently exploring the feasibility of offering a single meter (whole-house) non-tiered time-of-use rate for residential PEV customers.

NRDC and the EVSP Coalition do not support single meter (whole-house) PEV rates because, according to them, the increased electric usage that results from the customer's PEV load effectively places the customer into the upper tiers of the rate structure and, as a result, subjects the PEV load to, what these parties describe as, high vehicle mileage costs. While removing the tiers from the single meter (whole-house) rate would address this concern, NRDC also expressed concern that switching PEV charging from a tiered single meter (whole-house) rate to a non-tiered single meter (whole-house) rate could eliminate the conservation signals provided by the tiers.

Because a single meter PEV rate motivates a customer to better manage the peak impacts of the entire customer's electricity usage, not just the PEV

electricity usage, we will not prohibit single meter (whole-house) PEV residential rates. Furthermore, a single meter PEV rate may be attractive to some customers as a way to avoid additional metering costs.

5.1.2. Residential Separate and Submetered PEV Rates - Opt-In, Non-Tiered and Time-of-Use

To encourage off-peak charging, we find that PEV residential rates should be opt-in, non-tiered and time-of-use for separately metered PEV customers. As stated by DRA, "For separately-metered or submetered residential customers, PEV rates should be opt-in, non-tiered, and strongly time-differentiated (including delivery rate components). To the extent that existing PEV rates do not conform to these attributes, they should be changed." (DRA September 24, 2010 comments at 13.)

Opt-in rates are optional and voluntary rate plans. PG&E emphasized the importance of the opt-in nature of PEV rates, stating, "A much more efficient and 'customer friendly' approach for new PEV rates today is voluntary participation..." (PG&E September 24, 2010 comments at 10.)

Non-tiered, time-of-use rates vary by time periods, not cumulative usage blocks or tiers. We find that a non-tiered rate is preferable to a tiered rate because a non-tiered rate will not unreasonably discourage consumption that can be characterized as "good" load growth, meaning load growth that furthers state policy goals of decreasing greenhouse gas emissions in the transportation sector. Furthermore, we find time-of-use rates are appropriate for PEVs because the time-of-use aspect of the rate better reflects cost causation principles than a non-time-differentiated rate and encourages PEV charging when the costs imposed on the system are lowest.

SDG&E and SCE already offer PEV rates that are opt-in, non-tiered, and time-of-use. PG&E does not. PG&E's separately metered E-9b rate is a tiered,

time-of-use rate.[12] Therefore, we direct PG&E to file an advice letter to modify Electric Rates Tariff Schedule E-9b to eliminate the tiers. This advice letter shall be filed as a Tier 3 advice letter within 60 days of the effective date of today's decision.

5.1.3. Residential PEV Demand Charge

In the context of PEV rate design, we asked parties whether demand charges should be added to PEV residential rates. A typical demand charge is a rate component enumerated in dollars per kilowatt that is multiplied by a customer's maximum kilowatt electricity usage during a billing period. A demand charge may alternatively be multiplied by the maximum electricity usage during a particular time period, e.g., during peak periods. Demand charges are a common component of medium and large commercial and industrial rates and are, generally, intended to reflect the fixed generation, distribution, and transmission costs incurred to serve a customer. In short, demand charges seek to reflect marginal costs. Demand charges are not currently a component of residential rates. Instead, in the residential setting, costs are collected through volumetric charges.

In the context of residential PEV rates, a demand charge could be included as a rate component so that PEV customers who place higher costs on the electric system by, for example, PEV charging at higher voltages, are assessed rates based on the maximum demand they impose on the distribution circuit.

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[12] PG&E's E-9 rate was also a mandatory rate, not opt-in. However, in PG&E Advice Letter 3751-E, filed November 2, 2010, PG&E requested a modification of Electric Schedule E-9 to make the rate optional for customers. Advice Letter 3751-E was approved by the Commission effective December 2, 2010.

Some parties, including SCE, DRA, NRDC and Green Power Institute, stated that residential demand charges may not be necessary since time–of-use rates can accomplish this same goal. SCE also noted that customer class revenue recovery could be handled through a simple customer charge. Nevertheless, some of these same parties acknowledged that demand charges are a more efficient tool for recovering demand-related costs. In contrast, SDG&E stated that increasing the time-of-use differentials could lead to an issue with recovery of the costs to serve a growing PEV customer group, which argues for the need to introduce fixed and demand charge components to the PEV rate structure.

We are persuaded that adding demand charges to residential PEV rates would be too significant of a change to residential rates at this time. Instead, we direct each utility to re-evaluate the feasibility and benefits of a PEV residential demand charge in its next review of PEV rates, described below in Section 5.5, herein.

5.1.4. Rates for EVSPs in Residential Settings

During this proceeding, parties often discussed situations involving EVSPs operating in public locations. Several parties, however, highlighted situations in which EVSPs might operate in a residential location. For example, an EVSP may provide all the equipment required to charge a PEV at a home together with a charging service. In such a situation, parties asked that the Commission clarify what rates EVSPs are eligible for in a residential setting.

SCE recommended that all EVSPs be placed on commercial rates, regardless of the location. Under SCE's recommendation, EVSPs would only be eligible for commercial PEV rates, even if the EVSP provided service in a residential location. (SCE September 24, 2010 comments at 2.) No parties commented on SCE's recommendation.

We find that in order to preserve equitable, cost of service treatment and maintain a level playing field between utilities and third party charging service providers, existing residential PEV rates should apply to EVSPs operating in the residential setting. This finding is consistent with D.10-07-044.

5.1.5. Inter-Utility PEV Residential Rates

In the August 20, 2009 OIR, we asked parties whether special arrangements were necessary for a residential customer to pay for electricity when charging a PEV in another utility's service territory. For example, should the utilities establish a single billing procedure to link all PEV electric usage, regardless of the service territory within which the PEV charging occurs, to a customer's home utility? In the Staff's Rates Issue Paper, this issue was referred to as inter-utility billing. (Rates Issue Paper at 38.)

SCE and SDG&E were opposed to implementing inter-utility billing. SCE stated that a special rate for inter-utility billing could cause some utilities to over-collect and others to under-collect because wholesale market energy prices and costs to serve customers differ between service territories. (SCE September 24, 2010 comments at 16.) In contrast, Green Power Institute and NRDC stated that the Commission should not foreclose any options regarding inter-utility billing at this time.

While we do not foreclose the possibility that further development of this concept may be useful in the future, we find that it is premature for the Commission to direct the utilities to implement inter-utility billing now.

5.2. PEV Rates at Non-Residential Customer Premises

In addition to residential PEV rates, we address which electric rate schedules apply to PEV charging at a non-residential customer premises, such as workplace or retail locations. Our analysis of this issue is structured around a

number of policy objectives associated with PEV charging in non-residential settings which were identified by parties.

These policy objectives include the following: (1) assure net cost recovery for PEV load at non-residential locations, taking into consideration that these costs may change over time as the PEV market develops and the charging behavior for a larger market of PEV drivers emerges; (2) simplify rate attributes for early market PEV charging facility hosts; (3) enable customer choice with respect to rate options and metering arrangements; and (4) provide a transparent, dynamic price signal to PEV charging providers that reflects higher costs of service for PEV charging during hours of peak demand and lower costs of service for PEV charging during hours of reduced demand.

Currently, when a non-residential customer installs a PEV charging facility, the electricity consumed at the charging station is measured along with all other usage that is connected to the same meter and all the electricity usage at the meter is subject to the same rate schedule. (SCE November 12, 2010 comments at 19; SDG&E November 12, 2010 comments at 12; PG&E November 12, 2010 comments at 6.) In the non-residential setting, one utility, SCE, also offers a separately metered time-of-use non-residential charging facility rate, rate schedule TOU-EV-3.

Based on the objectives noted above and the comments by parties, we find that, in the near term, charging equipment located at non-residential customer premises should continue to be eligible for the non-residential rates for which that customer would otherwise qualify. We understand that different entities may own the charging equipment located on a non-residential customer's premises. (SCE December 3, 2010 comments at 5, SDG&E November 12, 2010 comments at 12.) In the event that the owner of the charging equipment is an EVSP, we find that the utility should treat the EVSP offering charging services to

the public no differently than other similarly situated non-residential customers. By way of clarification, however, we note that curbside charging facilities, i.e., charging facilities located at street curbs and in areas close to public street lamps, are not eligible for street lighting rates, per existing tariff terms of service.

We decline to adopt NRDC's recommendation to require, as a precondition of service, that an EVSP's customers are in some manner informed of the costs of the electricity portion of the services provided by an EVSP. NRDC's recommendation seeks to address its concern that, only if vehicle owners have information on the cost of electricity when re-charging their vehicles at a location operated by an EVSP, will the vehicle owner respond to the price signals and seek to charge off-peak.

To ensure that charging-related infrastructure costs are shared by bundled and unbundled electric customers, the Commission intends to continue to employ cost-of-service ratemaking in setting the transmission and distribution components of the rates for all the utilities' distribution customers, including Electric Service Providers and Community Choice Aggregators. Rate design should reflect any additional distribution system costs that result from peak PEV charging that impose demands on any distribution-constrained facilities (including, potentially, time-variant transmission and distribution charges).

Furthermore, time-of-use prices embedded in existing non-residential rate schedules are designed to send an appropriate price signal to a customer for electric usage at the non-residential premises, including when charging a PEV with a non-residential customer's charging equipment. As explained in D.10-07-044, "[t]he rate that an electric vehicle charging provider pays to the utility will be a cost of doing business that the charging provider may pass on to its customers or absorb. The charging provider will have a strong incentive to operate its business in a manner that is compatible with the needs of the electric

grid." We find this incentive is sufficient for PEV load and other load, and do not find it is necessary to explicitly require electricity costs be precisely passed through to the vehicle owner using the EVSP's charging services.

For all these reasons, we find that utilities should treat EVSPs who offer charging services to the public no differently than other non-residential customers, including charging facility hosts that offer PEV charging services to private tenants or employees.

5.3. PEV Rate Schedules - Other Considerations

Existing PEV rates, which are generally non-tiered and time-of-use, are designed to induce customers to avoid charging in a manner that results in adverse impacts to the electric grid. In order to further influence PEV charging behavior, NRDC proposed the Commission require that, when a PEV customer installs electric vehicle charging equipment, the equipment include communications and controls so that charging can respond to load management signals to limit grid impacts. (NRDC November 12, 2010 comments at 9.) In response to this proposal, the EVSP Coalition stated that charging equipment capable of supporting demand response and smart charging is readily available today. DRA, however, was unaware of any technology ready for wide-scale deployment. (EVSP Coalition December 3, 2010 comments at 10; DRA November 10, 2010 comments at 10.) SCE replied that the market for charging equipment is nascent and a service precondition for a load management device on the customer side of the meter may subvert customer choice. (SCE December 3, 2010 comments at 11.)

While we support the intent of NRDC's proposal, we decline to require that load management technology (demand response) be part of electric vehicle service equipment at this time. The Commission views the preservation of customer choice as an important policy objective and believes customers should

be able to choose whether or not to use equipment with load management capabilities. The Commission also finds that, because widely accepted standards for communications and controls-related to electric vehicle charging are still under development, it is premature to adopt specific requirements at this time. We may revisit this determination in future.

5.4. Rate Schedule for Non-Residential "Quick Charging"

The August 20, 2009 OIR noted that PEV consumers can choose from several different voltage options for PEV charging. The voltage options differ from each other with regard to the amount of power that the electric vehicle charging equipment draws from the electric system, which, in turn, impacts the amount of time it takes to provide a PEV battery with a full charge. The different voltage options include Level 1 charging, which occurs at 120 volts and relies on a standard 120 volt outlet, and Level 2 charging, which occurs at 240 volts and typically draws 7.2 to 9.6 kilowatts depending on the amperage. Level 2 could draw as much as 19 kilowatts but this scenario is not expected to be typical.[13]

Another PEV charging voltage option is referred to as "quick charge." Quick charging facilities, also known as direct current charging facilities, are designed to charge an electric vehicle battery to 80 percent capacity in approximately 30 minutes by drawing as much as 20 to 200 kilowatts or even more, 50 to 250 kilowatts. As a result, quick charging facilities place a considerably higher kilowatt demand on the electric system than even the fastest Level 1 or Level 2 charging. It is expected that quick charging will most

[13] Additional information on Level 1 and Level 2 charging is found in the August 20, 2009 OIR at 10-11 and the Rates Staff Paper at 21.

commonly be available at non-residential sites or EVSP charging spots and will function similarly to a gasoline filling station.

SCE and PG&E stated that quick charging facilities should be eligible for existing non-residential rate schedules. NRDC stated that such facilities will place a greater stress on the electrical grid and emphasized the importance of assuring that terms of service be imposed to prevent price signals from being masked. (NRDC September 24, 2010 comments at 17.) SDG&E stated that differing rates should apply to facilities, such as quick charge facilities, that place a higher kilowatt demand on the system and, specifically, that those differing charging levels should incorporate monthly fixed charges and both on-peak and non-coincidental demand charges. (SDG&E September 24, 2010 comments at 10.)

At this time, we do not see a reason to treat non-residential electric vehicle charging differently from other types of non-residential electricity usage. We find that, at this early market stage, any additional costs placed on the system should be reflected in existing rates applicable to non-residential customers, generally. Therefore, no need exists to develop rates specifically for customers with quick charge facilities.

5.5. Future Review of Rates

Many parties supported addressing PEV rate design issues in the next general rate case cycle for each utility. DRA stated, "the Commission should revisit PEV rate design in 2013 to evaluate whether changes are needed to facilitate PEV adoption and/or ensure that PEV-related cost responsibilities are equitably assigned. The Commission should direct the utilities to reflect the guidance from a 2013 PEV rate design proceeding in their next GRC phase 2 rate design proceeding(s)." (DRA November 12, 2010 comments at 5.) The EVSP Coalition stated, "the Commission should revisit existing PEV rates after it has

obtained a sufficient understanding of consumer PEV usage and charging by early adopters. Two studies that will yield instructive results are the Department of Energy (DOE) EV Project and Coulomb ChargePoint America." (EVSP Coalition November 12, 2010 comments at 7-8.)

We agree that PEV rate design should be revisited. We find 2013 - 2014 to be a reasonable time frame to review the utilities' PEV rates. By 2013, additional information will exist about PEV charging load profiles, the costs and benefits of PEV charging, and analysis concerning how consumer charging behavior responds to PEV time-of-use price differentials.

Based on the utilities' current general rate case schedules set forth in D.89-01-040, as modified, PG&E will file phase 2 (rate design) of its 2014 General Rate Case in early 2013. SCE and SDG&E will be filing their 2015 General Rate Cases in early 2014. To put the review of PEV rate design on approximately the same schedule for all three electric utilities, we direct PG&E to include PEV rate design proposals in its 2014 General Rate Case and direct SCE and SDG&E to file PEV rate proposals in Rate Design Window applications in 2013, as provided for and in accordance with the schedule in D.89-01-040. (D.89-01-040 at 579.)

In these filings, each utility is directed to include analysis of PEV charging load profiles, analysis of the costs and benefits of PEV integration and charging, and analysis concerning how consumers respond to PEV time-of-use price differentials.

6. PEV Metering

We now evaluate whether certain PEV metering options are preferable and how these options might support data collection on PEV electricity usage.

6.1. Metering Options

The Utility Role Staff Paper explored available and future metering options for PEVs and identified three categories of metering arrangements for PEVs:

(1) single metering - Single meter arrangement measures and bills PEV load as part of the total customer load using the pre-existing meter.

(2) separate metering - Separate metering requires an additional meter dedicated to measuring PEV load. This arrangement measures PEV load as if the PEV load were a separate service account, and enables the PEV load to be billed separately from other non-PEV load served on the premises.

(3) submetering - Submetering, like separate metering, uses a dedicated meter for the PEV load; however, that submeter is typically located on the customer's side of the primary meter, requiring billing calculations that avoid double counting the PEV load on the primary meter in cases where the PEV load and the remaining load are billed on different rate schedules. At the present time, only separate metering and single metering are available to utility customers. Submetering is not an available option.

6.2. Metering Policy Goals

The record in this proceeding supports the Commission's consideration of the following policy goals for PEV metering: (1) customer choice, (2) minimum data and technological functionality, (3) accommodating technological advances, (4) common technology standards and (5) minimizing costs. The appropriateness of these policy goals within the PEV metering context are discussed in more detail below.

6.2.1. Customer Choice

Parties overwhelmingly favor customer choice as the primary policy goal in utility metering policies. PG&E, SCE, SDG&E, Better Place, Coulomb

Technologies, EV Service Providers, NRDC, Sam's West/Wal-mart and IREC all indicated support for customer choice in metering.

IREC argues that Commission policies on metering arrangements should "not foreclose options for customers as the PEV market develops…this flexibility will best support customer investment." (IREC September 20, 2010 comments at 3.) PG&E concludes that the developing nature of the PEV market justifies that the Commission allow "maximum flexibility" in metering options, and that customer choice is "always preferable" to a situation without customer choice. (PG&E September 20, 2010 comments at 2 and 8.) SDG&E concurs, stating that it is "better to enable more rather than less choices." (SDG&E September 20, 2010 comments at 2.) SCE suggested that customer choice should be "reasonably accommodated." (SCE September 20, 2010 comments at 5 and 6.) DRA also recommends allowing choice during the initial years of adoption.

We agree and adopt a meter policy that promotes customer choice. Our policy will both allow customers to identify options that best serve their needs and help support the on-going development of metering technology and services to improve PEV charging.

6.2.2. Minimum Data and Technological Functionality

Within the PEV context, achieving minimum data and technology functionality is important to ensure that metering can perform to meet utility and customer data needs. In evaluating this policy goal, however, we do not conclude that the meter is needed for anything other than measuring electricity usage at this point in time. Other functions – such as demand response functionality – can be achieved through a variety of existing technologies. Numerous components of the PEV charging process – including the vehicle, the

electric vehicle supply equipment and Home Area Networks[14] (HAN) – may in the near future be able to perform other desirable communication and measurement functions. Utilities suggested that the PEV meter should, at a minimum, be Advanced Metering Infrastructure (AMI) and HAN enabled, meaning the meter should be able to communicate to the utility through the AMI network and should be able to communicate with a HAN within a customer's premises. We view AMI and HAN functionality as essential to communicating electricity consumption to the utility and to the customer. Accordingly, at this time, we confirm the utilities' obligation to ensure that PEV meters are AMI and HAN enabled.

6.2.3. Accommodating Technological Advances and Future Policies

Parties identified a number of future data needs, such as potential tracking of road taxes and soon to be implemented California Air Resources Board's Low Carbon Fuel Standard[15] (LCFS) credits, that may be required of PEV metering. Several parties thought it important that we encourage metering requirements with enough flexibility to take advantage of emerging PEV and metering technologies. For example, Coulomb and Better Place are developing or using meters embedded in the Electric Vehicle Service Equipment (EVSE) as a means

[14] Home Area Network devices enable communication between various devices and the customers electric meter.

[15] More information about the California Air Resources Board's LCFS is available at www.arb.ca.gov. The LCFS is defined in Title 17 of the California Code of Regulations §§ 95480 et seq. and, generally, its purpose is to implement a low carbon fuel standard which will reduce greenhouse gas emissions by reducing the full fuel-cycle, carbon intensity of the transportation fuel pool used in California.

of measuring PEV load. Similarly, Green Power Institute identified advantages in future technology that includes on-board vehicle metering.

Accommodating these future data needs and other yet-to-be-developed technologies could present opportunities to reduce costs and improve the performance of PEV meters. As such, we recognize the importance of these potential methods of data collection. However, because underlying data needs related to tracking LCFS credits and road taxes have yet to be clearly defined, we cannot assume that a specific grade of meter, such as a meter that produces data accurate and detailed enough to be used for billing purposes (referred to as a "revenue-grade" meter), will be required for these purposes. Instead, we take a "wait and see" approach regarding the level and types of non-billing-related functionality required in a PEV-specific meter. We find that the potential cost of requiring early adopters to purchase metering equipment that may ultimately not be needed or which is soon rendered obsolete justifies our wait-and-see approach.

6.2.4. Common Technology Standards

The January 12, 2010 Assigned Commissioner's Scoping Memo recognized the importance of interoperability standards for the PEV market and noted that the Commission has already initiated a review of standardization issues, generally, in the Smart Grid Rulemaking, R.08-12-009. In that proceeding, the Commission recognized, among other things, the vital importance of national standardization in keeping equipment costs down and decided to defer adopting statewide Smart Grid standards and protocols until after the National Institute of

Standards and Technology[16] achieves consensus on specific standards. (D.10-06-047 at Conclusion of Law 5.)

R.08-12-009 will continue to serve as the forum for the Commission's consideration for national interoperability of PEV and PEV charging equipment with other parts of the electric system. Furthermore, we find that, based on the Commission's endorsement of national standards and guidelines for interoperability in the Smart Grid proceeding, these goals are equally important in the context of PEV metering. The result of standardization will be to reduce customer costs and avoid stranded investment. As stated by PG&E, the adoption of "standardized and streamlined vehicle charging infrastructure protocols and technical specifications" is necessary to develop the PEV market. (PG&E
October 5, 2009 comments at 6.) Many parties joined in this recommendation. We agree and support the adoption of national standards with participation from a variety of PEV stakeholders.

6.2.5. Minimizing Costs

According to DRA, NRDC and PG&E, PEV metering policies should encourage off-peak charging to reduce overall costs associated with PEV adoption. PG&E identified off-peak charging as one of the over-arching questions that should guide metering policies. DRA and NRDC expressed concern that separate metering of PEV charging is needed to properly encourage off-peak charging. However, these parties seem to assume that the rates for PEV households on a single meter (whole-house) would not be time-of-use rates or

[16] The National Institute of Standards and Technology and the Federal Energy Regulatory Commission are charged by the U.S. Congress to coordinate development and adoption of interoperability standards.

would have low on-peak rates. Some rate designs clearly provide stronger incentives to charge off-peak. However, rates can be designed to optimize or minimize incentives to charge during different times of day whatever the metering configuration.[17] Furthermore, PEV charging would not need to be separately metered for participation in existing demand response programs. These demand response and off-peak charging incentives are more a function of rate design than meter arrangement.

As a result, while we adopt minimizing costs as a policy goal to guide PEV metering options, we also find that metering policy must be considered together with rate design to understand total cost impacts on the customers.

6.3. Metering Options - Residential Locations

We use the metering policy goals adopted above to guide our review of metering options for PEVs. The Utility Role Staff Paper offered short-term and long-term recommendations for PEV metering options. In the short-term, Staff recommended that utilities encourage residential customers to use single metering (whole-house metering), i.e., no separate PEV meter or submeter. Staff's recommendation was based on its conclusion that PEV-specific metering functionality requirements were still forming and "until all PEV metering and data requirements are better understood, utilities should encourage customers to use a single meter arrangement for PEVs to avoid stranded costs." (Utility Role Staff Paper at 36.) Staff also expressed concern that separate PEV meters

[17] This statement assumes that each account at which PEV charging takes place has or will soon have an AMI meter that can enable time-of-use rates, as the investor-owned utilities are currently in the process of installing AMI meters throughout their territories.

installed in the near-term might become redundant and unnecessary in the future.

During workshops and in comments, parties generally recommended that the various metering arrangements be made available to all customers. For example, PG&E stated that single metering might offer some advantages to early market PEV customers but all options should be made available. (PG&E September 20, 2010 comments at 1-2.) Some parties disagreed with the Staff recommendation that single metering be encouraged by utilities in the short-term. These parties cited to the potential that a single metering requirement would give utilities an unfair advantage if single metering was prioritized, even if for only 3-5 years. (WSPA September 20, 2010 comments at 3.)

We find that the utilities should continue to make available all existing meter arrangement options to customers, which currently include single meters or separate meters. PEV submetering is not yet available. Our finding emphasizes the importance of preserving customer choice in PEV meter arrangements at this early PEV market development stage as a means of encouraging technological advancements. For these reasons, we conclude that, despite benefits of single metering in terms of keeping initial equipment costs low, we will not direct single metering to be solely encouraged by utilities in the short term.

Later in this section, we address opportunities to use submetering as a lower cost alternative to separate metering. This option cannot be made available to PEV customers until a PEV submeter protocol, a set of technical requirements for PEV submetering, is developed. We address establishing a process to create a PEV submeter protocol in Section 6.7, herein.

6.4. Metering Options - Multi-Dwelling Units and Non-Residential Locations

SCE and Coulomb describe examples in multi-dwelling unit (MDUs) settings, such as apartment complexes, and in the non-residential setting, such as office buildings, in which multiple PEV owners use the same PEV charging equipment. These settings are in contrast to the single meter residential setting where the residential utility customer will be the primary user of the PEV charging equipment. Parties did not identify specific issues that the Commission should address related to multi-user submetering. Accordingly, we find that submetering at MDUs and workplaces requires additional evaluation to determine what protocols and policies, if any, are needed to support this option and direct that MDUs and non-residential metering issues be included among the submetering issues addressed in the PEV submeter protocol process, which we discuss in Section 6.7, herein.

6.5. Metering and Photovoltaics

With respect to special metering issues related to customers who purchase a PEV and have photovoltaic (PV) panels installed, Staff noted that "parties did not raise any unique metering issues for customers with existing or considering the option of installing solar PV panels and use a PEV. Any of the three metering options discussed could be utilized by CSI [California Solar Initiative] customers who own PEVs." (Utility Role Staff Paper at 20.)

At this time, we decline to adopt any specific policies on the integration of PEV and PV metering. We find that PV customers should be provided with the ability to choose from a range of metering options to accommodate data requirements. Based on the comments from the utilities, any of the existing metering categories can meet data functionality requirements.

Several parties identified implications on the use of PV and various tariff rate structures. Green Power Institute, Coulomb, Better Place and DRA recommended future Commission examination of submetering or PV net-energy metering integration. We agree that this relationship merits further examination and direct that this issue be addressed through the development of the PEV submeter protocol process, which we discuss in Section 6.7, herein.

6.6. Ownership of PEV Single Meters, Submeters and Electric Vehicle Service Equipment

Within the evolving PEV market, the Utility Role Staff Paper identified two key customer-utility boundary issues to address related to metering: ownership of the EVSE and ownership of a PEV submeter. The customer-utility boundary, which determines ownership, has generally been defined in the single-meter situation so that the meter that is used to measure a customer's billable usage and the equipment on the utilities' side of the meter is owned by the utility while equipment located on the customer's side of the meter is owned by the customer.[18] (Utility Role Staff Paper at 27-28.)

Our analysis of these questions is guided by two prior Commission decisions adopted in 1993 and 1995. In D.93-07-054, the Commission adopted for the first time policy guidance for low and zero emission vehicles and identified four criteria for determining whether utility investments in low emission vehicle refueling infrastructure are consistent with the interest of ratepayers. These criteria included the following: 1) whether the investments contribute to reliable and efficient utility service; 2) whether the investments provide safe service;

[18] The Utility Role Staff Paper identifies several exceptions to this general rule. For example, a Direct Access customer or the Direct Access customer's Energy Service Provider can own the meter used for billing.

3) whether the investments provide environmentally and socially responsible utility service; and 4) whether the investments maintain reasonable rates. (D.93-07-054 at 19-24.)

In 1995, the Commission relied on the criteria adopted in D.93-07-054 to deny requests by utilities for Commission approval of additional funding to support low emission vehicle equipment, including electric vehicle charging equipment. In denying the utilities' request for funding, the Commission found that because low emission vehicles do not constitute a monopoly market, utility participation in the low emission vehicle market should not be as a protected monopolist. The Commission also found no clear ratepayer benefit stemming from a utility's purchase of electric vehicle charging equipment, apart from the benefit gained by the electric vehicle owner. In short, the Commission found that shareholders should bear these costs and found that no reason existed for the utility to be the sole provider of the electric vehicle metering and recharging equipment. (D.95-11-035 at 15-19.) The Commission also prohibited regulated utilities from using ratepayer funds for charging infrastructure investments. (D.95-11-035 at 35.)

In preparing the Utility Role Staff Paper, Staff revisited the issue of utility ownership of PEV meters and submeters and identified a variety of advantages and disadvantages of customer ownership of PEV meters. Similar to the Commission's finding in D.93-07-054, Staff suggested that customer ownership of meters would allow customers to respond to technology changes and to directly incur the costs and, likewise, receive the benefits of adopting innovations in metering. Staff suggested that the effect of competition for meters could produce cost savings for customers. Staff also pointed to several disadvantages to customer-owned meters, including the potential for lack of standardization of metering functionality, the need to have a governmental agency verify meter

performance, and elimination of the opportunities to reduce costs through utility economies of scale. Staff concluded that utilities should own the meters in the case of single or separate metering, but that the customer should be given the option to own the meter in the case of PEV submetering. (Utility Role Staff Paper at 37.)

With the guidance provided by D.93-07-054 and D.95-11-035 together with the information provided by the Utility Role Staff Paper, we evaluated the ownership issues of PEV meters and electric charging equipment by turning to the previously identified metering policy goals: fostering customer choice, achieving specified minimum data and technological functionality, allowing for future technological advances, recognizing common technology standards and minimizing cost. Our analysis follows.

6.6.1. Ownership of Single and Separate PEV Meters

In the case of single and separate PEV metering, we continue to designate the meter as generally on the utility side of the customer-utility boundary. Changes to the ownership of single and separate meters used for PEVs would represent a change in general metering policies. Based on the parties' comments, we do not find sufficient justification to adopt this approach for single or separate PEV meters at this time. In the longer term, however, technological and communication advances may support customer-owned meters used for separate PEV metering that is more consistent with our policy goals. Thus, we remain open to re-evaluating customer ownership of separate meters should the appropriate technology develop to reduce costs associated with customer-owned separate meters.

6.6.2. Ownership of PEV Submeters

In the case of ownership of PEV submeters, we find that customer-ownership of submeters is consistent with all of our above-noted PEV metering goals, especially those policy goals related to customer choice, supporting technological advances and minimizing cost. For example, we anticipate that customer ownership of submeters will allow customers to take advantage of new metering technologies to support new billing methods. Therefore, we find that PEV submeters should be treated consistent with the treatment of any other equipment located on the customer side of the meter.[19]

The primary meter, as opposed to the PEV submeter, will remain under the ownership of the utility. A submeter would measure PEV load and be used by the utility in its billing calculations. This arrangement will provide utilities with control over the total billing level and limit opportunities for fraud or meter tampering. Most likely, incidences of fraud would be limited to tampering with the submeter's calculation of the PEV subload, which does not impact the utility calculation of the total load at the primary meter.

In support of utility ownership of submeters, some parties, including SMUD, PG&E and SCE, explained that utility ownership of submeters would ensure utility access to the submeter as well as appropriate monitoring of calibration and meter tampering. SDG&E notes a different concern, that "it is too early to limit the role of any party," given the nascent state of the PEV market (SDG&E September 20, 2010 comments at 2). SMUD raises an efficiency

[19] Parties and Staff identified two potential submetering options: EVSE-embedded meters and on-board vehicle metering. It is not clear how these options could be facilitated under a system in which utilities own the submeter.

argument. It points out that utilities may be more efficient at providing these submetering services because of their existing staff dedicated to this function.

While these parties have identified several potential benefits of utility ownership, we find that such benefits do not outweigh the above-noted benefits of customer ownership of submeters.

6.6.3. Ownership of Electric Vehicle Service Equipment

We now turn to the question of whether utilities should be permitted to own electric vehicle service equipment. Our analysis takes into consideration the Commission finding in D.95-11-035 that utilities could not recover costs related to electric vehicle charging equipment from ratepayers. During this proceeding, some parties pointed to the advantages of utility EVSE ownership. For example, NRDC and SDG&E suggested utility ownership of this equipment could provide safety advantages, reduce customer cost, and support utility notification of location where vehicles will be charged.

Regarding safety advantages, we do not find convincing evidence that utility ownership of EVSE will result in safety advantages over EVSE owned by customers or other entities. Municipal governments already have permitting requirements that review project installations for their safety merits. Additionally, national standards on EVSE couplers and other equipment features ensure manufacturers' adherence to safety standards. Accordingly, we do not find that utility ownership of EVSE will improve the safety of these devices or of the installation.

Regarding the potential to reduce customer costs, we find that concluding that utility ownership of EVSEs reduces customer costs is speculative. Using economies of scale to purchase large amounts of EVSEs could reduce the cost of EVSE for PEV users. However, the utility is not the only entity that could make large scale purchases. Furthermore, a "single buyer" approach could realize

scale by limiting customer choice. In the longer term, we would be concerned that the potential for limiting customer choice would prevent market competition that could be beneficial for introducing new technologies and reducing the ultimate cost of EVSE.

Perhaps utility ownership of EVSE could facilitate utility notification of the purchase of a PEV (and the potential charging location) in some instances. However, allowing utility ownership would not help in cases where the customer purchases and owns the EVSE.

As such, we do not find that the benefits of utility ownership of EVSE outweigh the competitive limitation that may result from utility EVSE ownership. At the September 27, 2010 workshop, the utilities expressed a concern that prohibiting utility ownership of EVSE at this early stage of market development may result in underserved markets or market failures in areas where non-utility entities fail to properly serve all markets. Recognizing this possibility, we may revisit this prohibition in the future, after the PEV market has had a chance to develop. Should the Commission revisit this issue, we will revisit the concerns outlined above, among others, including the potential cost-subsidization implications of any utility proposal to own public electric vehicle charging stations.

6.7. PEV Submeter Protocol

As part of this proceeding, we asked parties whether a PEV submeter protocol is needed to determine rules for customer-owned PEV submeters and, if so, to identify stakeholders to be involved in the development of such a protocol, the issues to be addressed, and whether we might learn from our experience in other Commission proceeding's, such as the Direct Access metering protocol adopted in D.98-12-080.

Parties generally agreed that a need exists for a PEV submeter protocol to determine rules for customer-owned meters. Parties suggested that some of the goals in establishing a PEV submeter protocol should be to establish minimum functionality and communication requirements for any submeter used to measure PEV load so that manufacturers and customers could be sure that the PEV meters, whether purchased separately or included in the vehicle or EVSE, will be compatible with the utility billing and communication system. In addition, NRDC and PG&E stated that the process to develop a PEV submeter protocol should include a range of stakeholders, including EVSPs, utilities, and government agencies. In addition, parties suggested that the California Department of Food and Agriculture will play a key role in any submeter process as the regulator of non-utility measurement devices.

We agree that a process is needed develop a PEV submetering protocol. We also agree with NRDC that the PEV submeter protocol should create standards that can incorporate new emerging metering technologies. The submetering category as defined here remains broad and any PEV submeter protocol should support the use of submeters in various physical locations, such as in an EVSE or a vehicle. We also agree that the California Department of Food and Agriculture will play a key role in regulating non-utility measurement devices and that their participation in the PEV submeter protocol process is crucial.

During this submeter protocol process, stakeholders should also examine mobile detachable meters[20] as described in SDG&E's September 20, 2010

[20] Mobile detachable meters include technology for a meter that can be physically separated from the PEV but also travel with the PEV.

comments. The California Air Resources Board expressed a concern that on-board vehicle metering will be expensive, but others, including GM, found it premature to reach this conclusion. GM further suggested that on-board vehicle metering "could provide the most cost effective, communications capable, regulatory compliant and utility/customer friendly solution for measuring and recording" PEV electricity consumption. (GM December 1, 2010 comments at 2.)

For this and other reasons, we are interested in the creation of PEV submetering protocols that do not prejudge the merits or functionality of future technology developments.

The PEV submeter protocol does not need to address subtractive billing. We consider this a utility issue that should be addressed through, perhaps, a utility application following the development of the submeter protocol.[21] We agree with PG&E that the purpose of the PEV submeter protocol is to certify the accuracy of the devices used for utility billing of PEV electricity consumption. The protocol need not address HAN devices unrelated to utility billing. Rather, the purpose of the PEV submeter protocol is to certify devices that measure PEV subload used for utility billing, i.e., revenue quality data. The requirements for submeters should be limited to the functionality needed to provide revenue quality billing data. While submeters may be HAN-enabled, establishing a PEV submeter protocol that applies to HAN-enabled PEV submeters does not affect

[21] Subtractive billing refers to the process through which a utility can bill PEV usage separately from other usage. All usage is first measured through the primary meter, while the PEV usage is also measured by a dedicated submeter. The PEV usage can be subtracted from the usage measured by the primary meter to bill the house consumption and the PEV consumption separately. This subtractive billing is accomplished by back office billing software that links the meter data from the two meters and separately calculates the charges. (Utility Role Staff Paper at 18.)

the utility's role in authenticating or certifying the accuracy of other HAN devices.

In response to Coulomb's request that we consider a "lightweight" certification process for submeters, we defer to the California Department of Food and Agriculture. The comments submitted by California Department of Food and Agriculture recognized that the regulation of customer-owned meters generally falls under its purview. For this and other reasons, we strongly support the California Department of Food and Agriculture's participation in the PEV submeter protocol process.

Finally, parties suggested that protocols be developed quickly. We agree and direct the utilities to cooperate with stakeholders to form a working group to develop a PEV submeter protocol that could be adopted by the Commission as revisions to PG&E and SCE Tariff Electric Rule 18 and SDG&E Tariff Electric Rule 19. The utilities are to include in the working group, at a minimum, Commission Staff, California Department of Food and Agriculture, automakers, and electric vehicle service providers. The utilities shall hold at least one publicly noticed workshop and shall issue a public report following the workshop. The report shall be filed in this proceeding. The filing of the report will not reopen the proceeding. On or before October 31, 2011, the utilities are directed to file Tier 3 Advice Letters proposing submetering protocols.

The filed protocols must achieve, at a minimum, the following: (1) support the use of submeters located in an EVSE or on a vehicle, including mobile detachable meters, as described in SDG&E's comments on the Utility Role Staff Paper; (2) determine the technical performance requirements for any submeters; (3) identify the minimum communication functionality and standards; (4) describe how submeter data management will support and protect the security and privacy of PEV user data collected by utilities and third party

entities; (5) provide a methodology for settling disputes; and (6) identify and adhere to all existing and applicable national standards for measurement and communication functions.

6.8. Metering Cost Recovery and Allocation

Utilities do not at present recover the costs of separate, utility-owned PEV meters uniformly. PG&E currently assesses a "per meter charge"[22] to establish a service point for a second meter. In addition, PG&E's existing optional Schedule E-9b for PEV customers includes a dollar per meter per day meter charge. However, the charge does not apply to a customer that has a Smart Meter. SCE also includes a customer charge to recover the cost of services dedicated to the customer, including costs for a utility-owned separate meter.[23] SDG&E does not have a meter charge but recovers meter costs through general distribution charges borne by all SDG&E ratepayers.[24]

Cost allocation and recovery for utility-owned separate PEV meters are important because a separate meter is presently the only viable option to physically segregate PEV usage from household usage; the separate meter

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[22] Approved and implemented under PG&E Advice Letter 2552-G/2517-E. (PG&E January 7, 2011 Response to Energy Division Data Request.)

[23] SCE states that the separately metered TOU-EV-3 and TOU-EV-4 commercial EV rates have the same customer charge as GS-1 and GS-2 customers, respectively. In the case of separately metered residential SCE TOU-EV-1 rate, this separate meter charge was set equal to zero as part of the 2009 general rate case phase 2 settlement. For residential customers, the uncollected metering cost is collected via an adder to the volumetric rate. (SCE January 7, 2011 Response to Energy Division Data Request.)

[24] SDG&E states it removed the separate meter charge pursuant to a revenue allocation agreement in the AMI settlement, D.07-04-043. (SDG&E November 12, 2010 comments at 3.)

currently is needed for certain existing special time-of-use rates for PEV owners, and there is at present non-uniform utility treatment of separate meter costs.

As DRA and TURN note, the basic provision of utility service to a standard single residential account does not include a second meter. (DRA December 3, 2010 comments at 3; TURN December 3, 2010 comments at 1.) As a result, the standard allowance for residential account service installations, borne by all ratepayers, does not typically include the cost of a second meter to segregate a particular customer load.[25]

We agree with DRA and TURN. The proposal by PG&E to include the cost of the separate meter in the rate-based standard installation allowance pursuant to Electric Tariff Rules 15 and 16 is inconsistent with current allowances associated with typical residential accounts.

Regarding the competitiveness concerns raised by the EVSP Coalition and Green Power Institute, Pub. Util. Code § 740.3(c) establishes that the Commission's policies shall "… ensure that utilities do not unfairly compete with nonutility enterprises." We find that placing the costs of existing separate PEV meters on the general body of ratepayers may result in an unfair advantage for utilities relative to the non-utility EVSPs.

NRDC expressed concern that a customer's choice to avoid increased incremental meter costs at the point of purchase of a PEV might create greater overall system costs in the long term. We find that type of uneconomic behavior even more likely when a customer faces the full, upfront cost of the separate

[25] The Rates Staff Paper described the standard allowance, per Rule 15, as "a prepayment of future ratebase expenditures to be paid over time by all ratepayers" provided to the customer "for the cost of upgrades for new load. The allowance for residential load is a fixed amount. The allowance for non-residential load is based on forecast consumption."

meter. However, SCE's and PG&E's customers who currently pay for a separate meter do so via monthly meter charges rather than upfront payments. (SCE December 3, 2010 comments at 3; Commission Staff White Paper[26] May 22, 2009 at 72.) It appears that when provided the choice, some customers choose to pay up front and others choose to pay for the separate meter via monthly charges. (SCE December 3, 2010 comments at 3.)

Regarding on-bill financing,[27] proponents of this concept point to its ability to reduce the customer's initial capital outlay and encourage adoption of technologies that result in long-term customer savings. However, on-bill financing is typically for non-residential facilities. Program eligibility restrictions may complicate this as a near-term option. (SDG&E December 3, 2010 comments at 3.) Also, SDG&E is correct in pointing out that on-bill financing typically applies to devices that are owned by the customer. For these reasons, on-bill financing is not a viable option for residential separate meters at this time.

Accordingly, we agree that if the individual utility customer chooses a separate metering option to qualify for certain special PEV rates, the customer (rather than all ratepayers) shall bear the cost of the separate meter. Further, to avoid upfront costs and potential on-bill financing program restrictions, we support the use of monthly meter charges to recoup the cost of the separate meter and of other services dedicated to the customer.

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[26] CPUC Policy and Planning Division Staff White Paper: Light-duty vehicle electrification in California: Potential Opportunities and Barriers, May 2009. http://www.cpuc.ca.gov/NR/rdonlyres/AD8A4A5E-6ED9-4493-BDB6-326AB86A028E/0/CPUCPPDElectricVehicleWhitePaper2.pdf.

[27] On bill financing refers to a loan program providing zero percent (0%) interest financing to qualified customers towards the purchase and installation of new energy efficient measures or equipment at the customer's premises.

7. Cost Recovery Policy for Electric Infrastructure Upgrades

In some cases, PEV charging could require a utility to make infrastructure upgrades to accommodate the added demand. For example, if a residential customer purchases a PEV and decides to install faster charging equipment, the utility may determine that the transformer or other equipment serving that customer needs to be upgraded. We now address the question of who pays for such upgrades under existing rules, whether it is the individual residential customer or the broader body of electric customers. We then consider whether PEV charging merits different treatment than provided for under existing rules.

7.1. Existing Policy Concerning Electric Grid Upgrades--Electric Tariff Rule 15 and Rule 16

The existing policy concerning electric grid upgrades due to increased customer usage is embodied in two Electric Tariff Rules--Rule 15 (Distribution Line Extensions) and Rule 16 (Service Line Extensions). Generally speaking, Electric Tariff Rule 15 pertains to grid equipment that is used by multiple customers, e.g., a transformer serving multiple homes, while Electric Tariff Rule 16 pertains to grid equipment that is used by just one customer. During this proceeding, we sought input from parties on whether the electric tariff rules pertaining to system upgrades required any changes to address PEV charging in the near term.

According to Electric Tariff Rule 15, an upgrade to equipment serving multiple customers is considered a utility expense and the associated cost is borne by the general body of ratepayers. Thus, if in conjunction with a customer's addition of electric vehicle charging, the utility determined that a transformer serving that customer and his or her neighbors needed to be upgraded, then the cost of that upgrade would be borne by all utility customers,

not just by the PEV customer or just by the customers being served by the transformer.

The cost recovery of upgrades to equipment serving a single customer, which is governed by Rule 16, is more complex. For upgrades due to increased electricity that is designated as "new load," the customer is provided an "allowance." The allowance is a fixed dollar amount for all residential customers within a utility service territory. Any upgrade costs up to the level of the allowance are paid for by the general body of ratepayers. Any costs in excess of the allowance are paid by the specific customer served by the equipment.

PG&E provided examples of how Rules 15 and 16 are applied for both new and existing facilities. According to PG&E, under Rule 15, the cost to replace a shared distribution transformer would be considered a system asset and ratebased (without any need for assessment of an allowance), while the cost to replace a customer-specific service transformer would be at the customer's expense. However, under Rule 16, a new residential customer (i.e., with or without a PEV load) would be given the current fixed allowance for hookup as determined by PG&E Rule 15(C)3 ($1,918 per meter or residential dwelling unit) as well as for upgrades to existing facilities as determined by PG&E Rule 16(F)1 (Service Reinforcement).

In short, according to PG&E's explanation, if a residential customer were to add PEV load, any cost to upgrade common facilities would be borne by all customers, and, additionally, the cost to upgrade the facilities serving the specific customer would be paid by all customers, up to the level of the utility's residential allowance.

Parties, however, took a variety of positions regarding whether PEV load constitutes "new load" that should be treated as described by PG&E.

In response to the Rates Staff Paper (Questions 2 and 3), PG&E, SCE, SDG&E, NRDC and Coulomb agreed that the allowance should apply to PEV distribution infrastructure upgrades in the short-term. In contrast, TURN and DRA opposed such a designation. TURN stated that PEVs do not represent permanent load and should be treated as special facilities.

TURN "strongly believes that the utilities are misinterpreting and misapplying their electric service extension rules by providing full extension allowances to existing customers to install or upgrade new services extensions to accommodate charging facilities for plug-in electric vehicles (PEV)." (TURN November 12, 2010 comments at 6.) TURN goes on to state that "the line and service extension policies and allowances are designed to extend new line and service extensions to new customers that have permanent loads. By definition, PEVs are not permanent load and therefore should not receive allowances." (TURN November 12, 2010 comments at 7.)

PG&E, however, states that "PEV loads should be treated in the same fashion as any other load installed by a utility's customers. PG&E's existing extension and service rules adequately address PEV charging installations at present." (PG&E November 12, 2010 comments at 9.) PG&E disputed TURN's comments that PEVs are not permanent loads "because other customer loads for other appliances, such as portable air conditioners, washers and dryers, and even agricultural pumps are subject to the same variability…" (PG&E November 12, 2010 comments at 10.)

Others, including Green Power Institute and Better Place, favored a new, separate allowance for PEV charging. In contrast, SCE did not advocate a special allowance (higher or lower) at this time because the cost studies have not been done. (SCE September 24, 2010 comments at 9.) DRA called for a "revision [to Rule 16] to reduce the allowances provided for residential service upgrades."

(DRA November 12, 2010 comments at 6.) TURN, though opposed to such a designation, agrees that it is premature to even contemplate recalculating the allowance.

In comments to the Rates Staff Paper most parties agreed that there is insufficient data in this nascent market on the cost impacts, benefits and charging profiles of PEVs, and that it is difficult to clearly identify and differentiate these impacts and benefits from other "new load." As stated by SCE, "In the end, it is the aggregation of all such end-use loads that drives the utility costs. As such, it stands to reason that the total customers' load in a rate class should be the basis upon which utility rates are set and the appropriate revenue requirement is recovered." (SCE September 24, 2010 comments at 7.) SDG&E maintained "there must first be a clear, credible methodology in place to determine the cost related causal relationship between any incremental load and the related upgrades (that is, one must be able to separate added PEV loads from other previously added loads).

Although PEV load may be the tipping point for indicating the need for a distribution system upgrade (i.e., the last load added that causes an upgrade to be evaluated), tracking PEV related upgrade costs should also take into account other prior loads that have been added over time leading to this tipping point (e.g., load additions caused by a new pool or spa pump loads, electric spa heaters, central air conditioning, room addition, wide screen plasma televisions and more) all of which may have also contributed to the need to upgrade a utility facility. Historic information of this nature does not exist today. (SDG&E September 24, 2010 comments at 8.) Additionally NRDC stated that PEV charging should be better understood before the existing cost allocation framework of the Electric Tariff Rules is altered. (NRDC September 24, 2010 comments at 1.) NRDC goes on to state "For the purposes of net cost recovery,

the Commission should err on the side of caution and avoid differentiating between PEV load separate from other residential loads until more experience is gained." (NRDC September 24, 2010 comments at 1.)

SDG&E "contended that alternative fuel vehicles, specifically PEVs, are different from many other devices that increase electricity demand and usage in that they deliver environmental benefits to society. While PEVs charging can be treated as new load from a policy perspective, SDG&E suggested that alternate-fueled vehicles should not face greater administrative, regulatory and other barriers to entry than other energy consuming devices and appliances." (SDG&E September 24, 2010 comments at 2.)

As referenced in the Rates Staff Paper there exists a great deal of variability with respect to the cost implications of different charging scenarios. The Paper references a preliminary PG&E (transmission and distribution analysis, which suggests "that distribution upgrade costs to accommodate charging for residential circuits may be as much as five to twenty times greater on-peak as compared to off-peak." PG&E asserts "that it would be rare for a residential PEV load to require reconductoring the distribution line to support that added load. However, it is possible that the distribution transformer, which serves nearby customers as well, may need to be changed out." (Response to October 27 Ruling at 9.) However, given this variability, Better Place recommends "the Commission may want to consider [investor-owned utility] IOU level allowance pools rather than individual residential allowances to optimize PEV adoption. In this way, existing allowances do not act as a disincentive to PEV adoption and the costs are tracked on a system-wide IOU basis. (Better Place September 24, 2010 comments at 3.)

7.2. Interim Policy - Costs in Excess of Allowances for Electric Grid Upgrades

The policy question before us is who should pay for distribution system upgrades that are required to accommodate residential PEV charging?

The Rates Staff Paper's recommendation that we answer this question by developing a cost-benefit framework for PEV charging is an analytically appealing way to ensure that PEV owners and other ratepayers pay costs that are commensurate with the benefits they receive. However, we do not have enough information at this time to quantify costs and benefits associated with PEV charging. Even after the market further develops we are concerned that tracking and differentiating upgrades triggered by PEVs from those triggered by other loads will be difficult, if not impossible.

Given these challenges, we conclude that, at least in the near-term, PEV charging load should be treated like other load, and that upgrade costs related to PEV load should be treated pursuant to the existing rules. In particular, we find that new PEV load should be treated as permanent load, and, therefore, customers should be afforded a standard allowance to cover the costs of any required facilities upgrades.

We disagree with TURN's view that the utilities are misapplying their rules to PEV load and that, thus, facilities upgrades due to PEV load should not be covered by an allowance. We do not find evidence that the characteristics of PEV load merit that new PEV load be treated differently from other types of new load. PG&E identifies other types of new load such as portable air conditioners, washers and dryers, and agricultural pumps that can also be added and removed from a customer premises and have variable consumption patterns. We find these examples to be persuasive.

For similar reasons, we decline to adopt a unique allowance for new PEV load. Our record does not quantify benefits that would merit a higher allowance, nor does the record demonstrate that the existing allowance is unreasonable.

In many cases, applying the existing rules to new PEV load will mean that the customer adding PEV charging is not directly assessed for the cost of facilities upgrades. However, there may be a limited number of cases in which the service line upgrade costs exceed the allowance. In light of the directive in SB 626 to reduce barriers to PEV adoption, so as not to stand in the way of a nascent market, and given that PEVs can help the state to achieve its greenhouse gas emissions reduction goals, we choose to adopt special interim cost treatment for service upgrade costs that exceed the residential allowance.

Between the effective date of this decision and June 30, 2013, all service facility upgrade costs in excess of the residential allowance should be treated as common facility costs rather than being paid for by the individual PEV charging customer. This policy will not apply in the non-residential context.

In January 2013, several months before the expiration of this June 30, 2013 deadline, the utilities will have completed the PEV-related load research discussed herein at Section 8. This load research will serve to inform the Commission of the nature of the load impacts and costs and potential system benefits from PEV charging, including treating the facility upgrade costs in excess of the residential allowance as common facility costs. Utilities shall propose a policy to address these upgrade costs in their January 2013 reports, discussed in Section 8 and a procedural mechanism for the Commission to address these costs, if needed.

8. PEV-Related Cost Tracking and Load Research

The August 20, 2009 OIR suggested that "quantifying the social benefits and system costs associated with electric vehicles could assist in the

development of modified electric vehicle tariffs that reflect related costs and benefits."[28] As explained in the Rates Staff Paper, "after identifying the costs and benefits associated with the additional PEV load and determining which of these costs are appropriately borne by the individual customer, the resulting revenue requirement [can] be determined." (Rates Staff Paper at 10.)

Non-residential upgrades that are the result of "new load" are currently tracked. New non-residential upgrades are subject to a peak load upgrade cost evaluation and an allowance formula is utilized in order to recover this cost.

However, due to the quantity, and relatively low load, associated with individual residences, this evaluation has not been practical at the residential level. Therefore, residential "new load" upgrades are not currently tracked, much less "new load" upgrades related to PEVs. While separately identifying and tracking residential PEV-related costs could be challenging, we find the utilities should attempt to collect such data to inform future PEV policy-making.

In addition to PEV-related cost tracking, the need exists to collect more load and behavioral data before making a number of longer term policy decisions regarding the integration of the next market development stage of PEVs onto the electricity grid. We identify the following PEV issues that should be the subject of additional utility research:

(1) Track and document all PEV-related costs. This information shall be collected and stored in an accessible format useful to the Commission and shall be used to inform Commission policy for the next market development stage of PEVs.

(2) Evaluate how metering arrangements and rate schedules impact PEV charging behavior.

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[28] August 20, 2009 OIR at 14.

(3) Determine whether participation in demand response programs impacts PEV charging behavior.

(4) Determine whether charging arrangements, including metering options, rate schedule options and other variables, in MDUs impact charging behavior at MDUs.

(5) Evaluate whether distribution costs are increased by different charging levels, i.e., Level 1, Level 2 and quick charging, in public locations.

We direct the utilities to jointly prepare a PEV load research plan to track PEV-related costs and address the other issues identified above. The PEV load research shall be completed by January 1, 2013 so it can inform the PEV rate design recommendations submitted with PG&E's 2014 General Rate Case (rate design phase) and SCE's and SDG&E's rate design window applications in 2013. This research should also serve to inform the Commission's consideration of issues related to the next market phase for PEVs. The PEV load research shall include a publicly noticed workshop to allow stakeholders to evaluate and provide input. The Commission staff shall be provided regular updates, at least one per month, on the substance and the progress of the research. The utilities shall file their PEV load research as a report in the proceeding. The filing of this report will not reopen the proceeding.

9. Education and Outreach

Parties generally agree that regulated utilities have a unique role to play in communicating information to potential and actual PEV customers and purchasers. Some parties asserted that utilities are "uniquely situated to engage in customer education and outreach in order to minimize costs for all customers." (Environmental Coalition November 12, 2010 comments at 4; CFC November 12, 2010 comments at 11.) CFC acknowledged the utility's role in conducting outreach but suggested that many communication responsibilities be

"executed by an independent body free from business interest," such as the Commission. (CFC November 12, 2010 comments at 11.) Utilities generally cautioned against limiting their role on education and outreach too early in the developing PEV market. (PG&E November 12, 2010 comments at 5.) Instead, utilities encouraged the Commission to address this issue after further market development to avoid discouraging utility communication on PEV issues. (SDG&E December 3, 2010 comments at 6.)

Parties identified additional issues that the utilities should include in utility-directed PEV education and outreach programs. NRDC asserted that the scope of communication should be broadened to "direct utilities to play a role in assuring that customers understand the environmental, energy efficient, financial, and system benefits of PEVs" because these issues are consistent with the "traditional responsibilities" of a utility. (NRDC December 3, 2010 comments at 3-4.) Parties also argued that utility education and outreach in areas related to load management could lower customer costs by mitigating the need for additional generation investments, preventing service disruptions, reducing peak events and facilitating the use of intermittent renewable resources.

The EVSP Coalition raised concerns that the utilities' education and outreach programs may result in an unfair competitive advantage over EVSPs. As a result, the EVSP Coalition recommended restricting any utility communication to utility-specific information. The EVSP Coalition also recommended requiring that utility communication be neutral or non-competitive as it relates to any specific PEV services and products or to the societal benefits of PEV adoption, such as off-peak charging. (EVSP Coalition December 3, 2010 comments at 5-6.)

In D.05-05-010,[29] the Commission addressed similar questions when establishing the scope of the utilities' ratepayer funded customer education programs on low emission vehicles. At that time, the Commission determined that it would support reasonable funding for the utilities' low emission vehicle customer education programs, provided that the customer education programs primarily furthered the goals of ratepayer safety and reliability of electric and natural gas systems, controlled ratepayer costs, and informed customers about related load impacts and methods for mitigating them in a manner that is responsive to their and the public's needs. (D.05-05-010 at 12, 14 and 16.) In that decision, the Commission generally recognized that it is not the role of the utilities to promote low emission vehicle adoption, but also recognized that it is difficult to achieve the educational goals without also incidentally acknowledging the social and economic benefits of using low emission vehicles.

We reaffirm that these principles are generally appropriate for the current PEV market.

9.1. Principles to Guide Utility Education and Outreach

Based on the prior discussion, we adopt the following principles and requirements to guide utility education and outreach:

a. Utilities have an important role in customer education and outreach and have a role in educating customers about PEV charging, given their existing relationship with customers (including customer information) and their roles as electricity providers. Each utility has an obligation to provide their customers with information regarding the

[29] *Opinion on Contents of Utility Low Emission Vehicle Program Application*, Application 02-03-047 (SDG&E), Application 02-03-048 (SCE), and Application 02-03-049 (PG&E) effective May 10, 2005 (addressing Low Emission Vehicle programs and contents of future applications for seeking funding of such programs).

choices available to the customer for charging a PEV, consistent with the below.

b. Consistent with D.05-05-010, utilities shall not use funds for PEV education and training that does not primarily serve to ensure safety, reliability and cost reductions for utility electricity and gas systems, though program elements may incidentally educate the public generally about the environmental or societal benefits of clean air or PEVs.

c. Utilities have no role in actively and broadly promoting PEV adoption or the societal or environmental benefits of PEV adoption. Incidental and passive promotion (e.g., via websites) is not prohibited, but the utilities' customer education and outreach programs should focus on safety, reliability, and cost reductions for utility electricity and gas systems.

d. A list of permissible topics for customer education and outreach follows: metering arrangements, rates, demand response programs, EVSE equipment, EVSE installation, safety, reliability, and off-peak charging.

e. Regarding metering arrangements, rates, demand response programs, EVSE equipment, and EVSE installation, utilities may communicate information to customers, but such information must be communicated in a competitively neutral manner, with no value judgments or recommendations, due to the potential conflicts of interest involved. For example, a utility is not allowed to promote a particular metering arrangement because of advantageous impacts on revenues or ratemaking principles.

f. Regarding safety, reliability, and off-peak charging, utilities may present information and make value judgments and recommendations. We relax the neutral communication requirement for these specific topics because safety and reliability are primary utility responsibilities and because presenting information on these topics is unlikely to result in conflicts of interest and anti-competitive behavior.

The Commission directs Energy Division to identify over the next several years any examples of utility violations of the PEV communication principles and requirements described in this decision. As time goes on, we may revisit the parameters of utility PEV education programs in response to new market conditions and revise these guiding principles and requirements accordingly.

9.2. Costs of Utility Education and Outreach

Currently, utility activities for electric vehicles are supported by their low emission vehicle programs. While we acknowledge parties' comments about appropriate customer education funding levels, we will not address funding in this rulemaking. The utilities should seek approval for funding for education and outreach within the context of their general rate cases. We agree with SCE that "[a]ttempting to set spending limits in the context of this rulemaking is inappropriate" and is instead the province of general rate cases, the current method by which low-emission vehicle program funding levels are set. (SCE December 3, 2010 comments at 8.)

10. PEV Smart Charging Programs and Allowing for Demand Response

The California Plug-In Electric Vehicle Collaborative plan identified the potential value of smart charging programs that allow for demand response:

> Emerging technologies and communications between the grid and PEVs could enable customers to opt into programs that allow for demand response from PEV charging. Under such scenarios, charge rates could increase or decrease to match intermittent renewable generation and optimize the use of power plants and local electricity distribution systems. These demand response programs, which might allow consumers to charge their PEVs based on utility price signals, can provide load predictability, which may help to balance intermittent

> wind generation, optimize use of thermal power plants, and may have net cost benefits.[30]

The October 27, 2010 ALJ ruling asked parties to consider whether the Commission should direct utilities to include cost-effective "smart charging" programs targeting PEV charging in their next demand response application (ALJ Ruling October 27, 2010 at 7.)

Parties note "smart charging" has the potential to provide demand response services for vehicle charging (EVSP Coalition November 12, 2010 comments at 11.) More broadly, parties note smart charging of PEVs includes hardware and software technologies that relate to several areas, such as load shaping, remote utility operation, HAN interaction, Vehicle 2 Grid (V2G), demand response, renewable generation integration, ancillary services, and more. (DRA November 10, 2010 comments at 9.)

Existing optional time-of-use rates enable price-based demand response from end-use customers who charge a PEV. However, while price-based demand response is the focus of the SDG&E EV Pilot Project study and other industry studies, the extent to which price signals influence PEV charging behavior is unclear. We agree with DRA and TURN that utilities should demonstrate sufficient need for and feasibility of incentive-based smart charging programs before we order such programs. (DRA November 10, 2010 comments at 9; TURN November 12, 2010 comments at 12.) In order to maximize the potential effect of time-of-use price signals, any future demand response proposals for incentive-based PEV programs should be coupled with dynamic or time-of-use rates.

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[30] The California Plug-in Electric Vehicle Collaborative. *Taking Charge: Establishing California Leadership in the Plug-in Electric Vehicle Marketplace*, December 2010 at 58.

In addition to price-based demand response, and incentive-based demand response programs, parties identify potential grid support products and services available in wholesale energy markets that smart charging enables. (Sam's West /Wal-mart November 12, 2010 comments at 2.) The Commission recognizes that "managed charging of PEVs, coordinated among megawatts of charging load, could help provide ancillary services or emergency reliability services."[31]

For PEVs to provide grid support services and demand response at an economic scale, there must first be a sufficient PEV market. At this nascent market stage, we view demand response applications for the 2012-2014 cycle as the appropriate forum to consider utility requests for pilot funding for PEV demand response programs. We note there are currently no demand response incentive-based programs tailored to residential PEV customers that would enable smart charging goals.[32]

We have previously authorized electric vehicle technology demonstration pilots (for example, D.09-08-027 authorized the ongoing PG&E Electric Vehicle Smart Charging Pilot). We note that on March 1, 2011, the utilities filed timely demand response applications.[33] Consistent with guidelines for research, development, and demonstration programs set forth in Pub. Util. Code § 740.1(d), we expect utilities addressed in these March 1, 2011 demand response applications how any utility requested ratepayer funding for PEV demand response programs does not "unnecessarily duplicate research currently,

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[31] ISO/RTO Council. March 2010. "Assessment of Plug-in Electric Vehicle Integration with ISO/RTO Systems." Available at: http://www.isorto.org/atf/cf/%7B5B4E85C6-7EAC-40A0-8DC3-003829518EBD%7D/IRC_Report_Assessment_of_Plug-in_Electric_Vehicle_Integration_with_ISO-RTO_Systems_03232010.pdf.

[32] PG&E response to December 2, 2010 Energy Division data request.

previously, or imminently undertaken by other electrical or gas corporations or research organizations." If utilities failed to make this showing, utilities should seek the approval of the presiding officer to submit supplemental testimony in their application proceedings addressing this matter. The requests to the presiding officer should be made within 15 days of the effective date of this decision. Supplemental testimony should be submitted 30 days after approval is obtained unless otherwise determined by the presiding officer.

11. Issues Identified in the Scoping Memo for Phase 3 or Subsequent Rulemaking

We now address the remaining matters identified in the January 12, 2010 Assigned Commissioner's Scoping Memo.

11.1. Natural Gas Vehicles

The January 12, 2010 Assigned Commissioner's Scoping Memo included natural gas vehicle (NGV) issues in the scope of this proceeding in recognition of the fact that such vehicles play an important role in the Commission's overall goal of reducing greenhouse gas emissions. The Scoping Memo did not identify specific NGV issues that must be addressed in this proceeding and stated that this proceeding would not revisit the existing natural gas vehicle regulations and policies adopted in D.91-07-018 and D.93-07-054.

In this rulemaking, Clean Energy argued that the Commission should initiate a periodic, perhaps biennial, statewide Alternative-Fueled Vehicle (AFV) proceeding similar to the Low Emissions Vehicle Proceeding that was in place during the 1990s and continued until 2005. Clean Energy argued that the current approach of considering NGV issues in General Rate Cases and Biennial Cost

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[33] Application (A.) 11-03-001 (PG&E), A.11-03-002 (SDG&E), and A.11-03-003 (SCE).

Allocation Proceedings does not allow the Commission to develop consistent statewide policy and results in NGV issues receiving less attention from senior utility management. (Clean Energy November 12, 2010 comments at 6-7.)

We decline to initiate a new AFV proceeding at this time. Given constraints on Commission resources, we conclude that existing regulatory processes should continue to be used for NGV issues.

11.2. Low Carbon Fuel Standard

At its April 23, 2009 public hearing, the California Air Resources Board approved the adoption of the California Code of Regulations, Title 17, §§ 95480, 95480.1, 95481, 95482, 95483, 95484, 95485, 95486, 95487, 95488, 95489, and 95490. The approved sections comprise a regulation for implementing the LCFS. The LCFS regulations apply to any transportation fuel, as defined in the regulation, which includes electricity used as a transportation fuel.

While, the scope of this Commission proceeding does not include a review of the LCFS regulations themselves, the scope does include two issues related to LCFS. First, the rulemaking has considered how the LCFS regulations affect our policies related to the metering of electric vehicle charging. Section 6.2.3 of this decision addresses this issue.

Second, the January 12, 2010 Assigned Commissioner's Scoping Memo indicated we would consider addressing the disposition of any revenues that utilities receive from the sale of LCFS credits. However, given that the some important details of the California Air Resources Board's regulations remain unresolved, we conclude this issue is more appropriately addressed in a future rulemaking or in the utilities' future general rates cases.

11.3. Impact of Electric Vehicles on Greenhouse Gas and Renewable Energy Policy

As the January 12, 2010 Assigned Commissioner's Scoping Memo noted, Pub. Util. Code § 740.2(f) requires the Commission to consider what impact the widespread use of electric vehicles could have on the state's greenhouse gas emissions reduction goals and renewable portfolio standard program and whether steps should be taken to address the "shifting of emissions reductions responsibilities from the transportation sector to the electrical industry." The Scoping Memo suggested that we may determine that any specific recommendations or rules are best considered and adopted in a Commission proceeding that is specifically focused on greenhouse gas policy and/or the renewable portfolio standard.

We affirm the suggestion in the Scoping Memo. Given the early stage of the PEV market, any conclusions concerning whether or how the growth of PEVs requires changes to greenhouse gas or renewable portfolio standard policies would be speculative and premature. More importantly, greenhouse gas and renewable energy policies should not be viewed solely through the lens of PEVs. Rather, the shifting of emissions reductions responsibilities from the transportation sector to the electrical industry should be examined in a broader context and policy forum. Therefore, we conclude that this issue should be addressed through broad greenhouse gas and renewable energy forums, which could include ongoing or future proceedings at the Commission or at the California Air Resources Board.

12. Comments on Proposed Decision

The proposed decision of the Assigned Commissioner 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

Practice and Procedure. Comments were filed on _____, and reply comments were filed on _____ by _____.

13. Assignment of Proceeding

Michael R. Peevey is the assigned Commissioner and Regina M. DeAngelis is the assigned ALJ in this proceeding.

Findings of Fact

1. If a utility knows that a consumer plans to charge at home, the utility can study the adequacy of the local distribution system in advance, upgrade the infrastructure if needed, and target consumer education and outreach to encourage PEV owners to opt into time-of-use rates that reflect the cost of charging on-peak.

2. Given the priority the Commission places on avoiding adverse impacts and ensuring the safety of the electric grid, a notification system or data clearinghouse could prove to be a long-term, scalable solution to the utility notification challenge, provided privacy concerns are adequately addressed.

3. Each utility has at least two PEV rate schedules available for residential customers seeking to charge their PEVs in addition to the option of remaining on the pre-existing residential rate schedule. The PEV rate schedules include time-of-use rates with relatively higher prices during daytime, peak periods and relatively lower prices during off-peak periods.

4. A residential single-meter (whole-house) PEV rate may avoid additional metering costs and motivate a customer to better manage the peak impacts of the entire customer's electricity usage, not just the impact of the PEV electricity load.

5. Time-of-use rates for PEVs better reflects cost causation principles than a non-time-differentiated rate and, in addition, time-of-use rates serve to encourage charging when the costs imposed on the system are lowest.

6. In the context of residential PEV rates, a demand charge could be included as a rate component to ensure that PEV customers who place higher costs on the electric system by, for example, charging at higher voltages, are assessed rates based on the maximum demand they impose on the distribution circuit.

7. EVSPs might operate in a residential location by, for example, providing all the equipment required to charge a PEV at a home together with a charging service.

8. Inter-utility billing could cause some utilities to over-collect and others to under-collect because wholesale market energy prices and costs differ between service territories.

9. The rates that an electric vehicle charging provider pays to the utility will time-differentiated and a cost of doing business that the charging provider may pass on to its customers or absorb and, as such, the electric vehicle charging provider has a strong incentive to operate its business in a manner compatible with the needs of the electric grid.

10. In approximately 2013, PEV rate design should be revisited because additional information will exist about PEV charging load profiles, the costs and benefits of PEV charging, and information concerning how consumer charging behavior responds to PEV time-of-use price differentials.

11. A metering policy that promotes customer choice allows customers to identify options that best serve their needs and helps support the on-going development of metering technology and services to improve PEV charging.

12. Within the PEV context, achieving minimum data and technology functionality is important to ensure that metering can perform to meet utility

and customer data needs but, at this time, PEV metering is primarily needed for measuring electricity usage.

13. PEV metering options could accommodate future data needs and other yet-to-be-developed technologies and, thereby, present opportunities to reduce costs and improve the performance of PEV meters but these future needs are presently speculative.

14. The result of standardization will be reduced customer costs and avoided stranded investment.

15. Metering policy should encourage off-peak charging to reduce overall costs associated with PEV adoption by taking into consideration rate design to understand total cost impacts on customers.

16. Despite the benefits of single metering in terms of keeping initial equipment costs low, residential customers should be able to select from all available metering options, which currently include single metering or separate metering. PEV submetering is not yet available for residential customers.

17. Submetering issues at MDUs and workplaces requires additional evaluation to determine what protocols and policies, if any, are needed to support this option.

18. Any of the existing metering options could be utilized by PV customers who own PEVs, and PV customers should be provided with the ability to choose from the entire range of available metering options to accommodate data requirements.

19. In the case of single and separate PEV metering, the meter will generally be designated on the utility side of the customer-utility boundary.

20. Customer-ownership of submeters is consistent with the PEV metering policy goals, especially those policy goals related to customer choice, supporting technological advances, and minimizing cost.

21. Certain benefits of utility ownership of EVSE may exist, such as safety advantages, decreased customer cost, and utility notification of PEV purchases, but these benefits are speculative and do not outweigh the competitive limitations that may result from utility EVSE ownership.

22. A need exists for a PEV submeter protocol to determine rules for customer-owned PEV submeters.

23. The basic provision of utility service to a standard single residential account does not include a second meter and, as a result, the standard allowance for residential account service installations, borne by all ratepayers, does not typically include the cost of a second meter to segregate a particular customer's load.

24. In analyzing the question of who pays for distribution system upgrades that are required to accommodate PEV charging, a cost-benefit framework for PEV charging is an analytically appealing way to ensure that PEV owners and other ratepayers pay costs that are commensurate with the benefits they receive but not enough information exists at this time to quantify costs and benefits associated with PEV charging.

25. In the near-term, PEV charging load should be treated as other load and upgrade costs related to PEV load should be treated pursuant to the existing utility electric tariff rules.

26. New PEV load should be treated as other permanent load and, as a result, customers should be afforded a standard allowance to cover the costs of any required facilities upgrades.

27. The record does not quantify benefits that would merit a higher allowance for PEV load or demonstrate that the existing allowance is unreasonable.

28. There may be a limited number of cases in which the service line upgrade costs exceed the residential allowance. In those cases, an interim policy is appropriate.

29. Value exists in tracking and differentiating costs for all PEV load in an effort to inform future revenue allocation and rate design.

30. The need exists to collect more load and behavioral data before making a number of longer-term policy decisions regarding the integration of large numbers of PEVs onto the electricity grid.

31. It is not the role of the utilities to promote low emission vehicle adoption, but it may be difficult to achieve educational goals without also incidentally acknowledging the social and economic benefits of using low emission vehicles.

32. A potential value of smart charging programs for PEVs exists that allows for demand response.

33. It is currently unclear the extent to which price signals influence the PEV driver to charge behaviors.

34. It is currently unclear whether sufficient need exists for and the feasibility of incentive-based smart charging program.

Conclusions of Law

1. The existing PEV residential rates are sufficient for the early PEV market, until approximately 2013.

2. Utilities should continue to offer residential single-meter (whole-house) PEV rates because of the cost effectiveness and the conservation signals provided.

3. To encourage off-peak charging, PEV residential rates should be opt-in, non-tiered and time-of-use for separately metered PEV customers.

4. Opt-in, non-tiered, time-of-use residential rates for PEV charging that is separately metered are appropriate because this rate structure more accurately reflects cost of service ratemaking principles.

5. It is unnecessary to add demand charges to residential PEV rates at this time because other options exist.

6. To preserve equitable, cost of service treatment and maintain a level playing field between utilities and third party charging service providers, existing residential PEV rates should apply to EVSPs operating in the residential setting.

7. It is premature for the Commission to direct the utilities to implement inter-utility billing at this time.

8. PEV Charging equipment located at non-residential customer premises should continue to be eligible for the non-residential rates for which that customer would otherwise qualify because these rates reflect costs related to PEV charging at non-residential premises.

9. To put the review of PEV rate design on approximately the same schedule for all three electric utilities, PG&E should include PEV rate design proposals in the rate design phase of its 2014 General Rate Case and SCE and SDG&E should file PEV rate proposals in Rate Design Window applications in 2013, as provided for and in accordance with the schedule in D.89-01-040.

10. A meter policy should promote customer choice.

11. A metering policy should seek to incorporate minimum technology functionality essential to communicating electricity consumption, including AMI and HAN functions.

12. A metering policy should seek to plan for future data needs and other yet-to-be-developed technologies but take a "wait and see" approach regarding

the level and types of non-billing-related functionality required in a PEV-specific meter.

13. A metering policy should support standardization because this policy will reduced customer costs and avoid stranded investment.

14. A metering policy should encourage off-peak charging to reduce overall costs associated with PEV adoption.

15. Utilities should continue to make available all existing residential metering arrangements to customers, which currently include single meters or separate meters, based on the importance of preserving customer choice in PEV meter arrangements at this early PEV market stage and as a means of encouraging technological advancements.

16. The PEV submeter protocol process should, among other issues, address submetering issues at MDUs and workplaces because these issues require additional evaluation to determine what protocols and policies, if any, are needed to support these options.

17. Because various PEV metering options exist for PV customers and the implications on the use of PV with various metering and tariff rate structures is unclear, these issue should be addressed through the development of the PEV submeter protocol.

18. To remain generally consistent with existing metering policies on the ownership of single and separate meters, single and separate PEV meters should be designated as on the utility side of the customer-utility boundary.

19. Because customer ownership of PEV submeters is consistent with the metering policy goals, PEV submeters should be treated consistent with the treatment of any other equipment located on the customer side of the meter.

20. The benefits of utility ownership of EVSE do not outweigh the competitive limitation that may result from utility EVSE ownership.

21. Utilities should cooperate with other stakeholders to form a working group to develop PEV submeter protocols to be adopted by the Commission as revisions to PG&E and SCE Tariff Electric Rule 18 and SDG&E Tariff Electric Rule 19.

22. Adopting an interim cost treatment policy for residential service upgrade costs that exceed the residential allowance is reasonable in light of the directive in SB 626 to reduce barriers to PEV adoption so as not to stand in the way of a nascent market and given how PEVs can help the state to achieve greenhouse gas emissions reduction goals.

23. Between the effective date of this decision and June 30, 2013, all service facility upgrade costs in excess of the residential allowance should be treated as common facility costs rather than being paid for by the individual PEV charging customer. This interim policy should not apply in the non-residential context.

24. The utilities may seek approval for funding for education and outreach within the context of their general rate cases.

O R D E R

IT IS ORDERED that:

1. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall (1) collaborate with stakeholders to further develop a plug-in hybrid and electric vehicle data clearinghouse proposal, including feasibility analyses, to track the location and re-location of plug-in hybrid and electric vehicles charging on the electric grid, (2) work with the Department of Motor Vehicles and other relevant government agencies to determine what data can legally be made available to the data clearinghouse or to the utilities directly consistent with all applicable privacy laws, (3) ensure

entities other than utilities pay a fair share of all costs related to the development of the data clearinghouse, including initial feasibility studies and implementation costs, and (4) jointly file a report in this proceeding within 120 days of the effective date of this decision. At a minimum, the report shall comprehensively outline the data clearinghouse proposal, establish a development schedule, and explain how other stakeholders will participate and fund the data clearinghouse. This proceeding shall not be reopened by the filing of this report.

2. Pacific Gas and Electric Company shall file an advice letter to modify Electric Rates Tariff Schedule E-9b to eliminate the tiers but retain time-variant pricing. This advice letter shall be filed as a Tier 3 advice letter within 60 days of the effective date of today's decision.

3. Pacific Gas and Electric Company shall file a plug-in hybrid and electric vehicles rate design proposals in the rate design phase of its 2014 General Rate Case. San Diego Gas & Electric Company and Southern California Edison Company shall file plug-in hybrid and electric vehicles rate design proposals in Rate Design Window applications in 2013 as provided for and in accordance with the schedule in Decision 89-01-040. These plug-in hybrid and electric vehicles rate design proposals shall include an analysis of plug-in hybrid and electric vehicles charging load profiles, the costs and benefits of plug-in hybrid and electric vehicle integration and charging, and how consumers respond to plug-in hybrid and electric vehicles time-of-use price differentials. These rate design proposals shall also include an evaluation of the feasibility and benefits of a plug-in hybrid and electric vehicles residential demand charge.

4. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall form a working group to develop a plug-in hybrid and electric vehicle submeter protocol to be filed as proposed revisions to Pacific Gas and Electric Company's and Southern

California Edison Company's Electric Tariff Rule 18 and San Diego Gas & Electric Company's Electric Tariff Rule 19. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall include in the working group, at a minimum, Commission Staff, California Department of Food and Agriculture, automakers and electric vehicle service providers, hold at least one publicly noticed workshop, and issue a report following the workshop. This report shall be filed in this proceeding but will not reopen the proceeding. On or before October 31, 2011, Pacific Gas and Electric Company and San Diego Gas & Electric Company, and Southern California Edison Company shall file Tier 3 Advice Letters proposing submetering protocols which shall achieve, at a minimum, the following:

a. Support the use of submeters in various locations, such as in electric vehicle service equipment or mobile detachable meters, as described in San Diego Gas & Electric Company's comments on the Utility Role Staff Paper;
b. Determine the technical performance requirements for submeters;
c. Identify the minimum communication functionality and standards;
d. Describe how submeter data management will support and protect the security and privacy of plug-in hybrid and electric vehicles user data collected by utilities and third party entities;
e. Provide a methodology for settling disputes; and
f. Identify and adhere to all existing and applicable national standards for measurement and communication functions.

5. Between the effective date of this decision and June 30, 2013, all residential service facility upgrade costs in excess of the residential allowance shall be treated as common facility costs rather than being paid for by the individual plug-in hybrid and electric vehicle customer. This policy shall not apply in the

non-residential context. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall propose a policy and procedural mechanism to address these residential upgrade costs in the January 1, 2013 reports regarding load research to be filed in this proceeding. The filing of these reports will not reopen this proceeding.

6. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall jointly prepare a load research plan and undertake load research to accomplish the following:

a. Track and document all plug-in hybrid and electric vehicle-related costs. This information shall be collected and stored in an accessible format useful to the Commission and shall be used to inform Commission policy for the next market development stage of plug-in hybrid and electric vehicles.

b. Evaluate how metering arrangements and rate schedules impact plug-in hybrid and electric vehicle charging behavior.

c. Determine whether participation in demand response programs impacts plug-in hybrid and electric vehicle charging behavior.

d. Determine whether charging arrangements, including metering options, rate schedule options and other variables in multi-dwelling units (MDUs) impact charging behavior at MDUs.

e. Evaluate whether distribution costs are increased by different charging levels, i.e., Level 1, Level 2 and quick charging, in public locations.

7. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall complete the load research required by the preceding Ordering Paragraph by January 1, 2013. The load research shall include a publicly noticed workshop. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison

Company shall provide the Commission staff with regular updates, at least one per month, on the substance and the progress of the research. Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company shall file their load research as a report in this proceeding by January 1, 2013. The filing of this report will not reopen this proceeding.

8. The following principles and requirements apply to the education and outreach of Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company (herein "utilities") regarding plug-in hybrid and electric vehicles. The Commission's Energy Division shall identify and bring to the Commission's attention any examples of utility violations of the below principles and requirements.

a. The utilities have an important role in customer education and outreach and have a role in educating customers about plug-in hybrid and electric vehicle charging, given their existing relationship with customers (customer information) and their roles as electricity providers. Each utility shall provide their customers with information regarding the choices available to the customer for charging a plug-in hybrid and electric vehicle consistent with the requirements in this Ordering Paragraph.

b. Consistent with Decision 05-05-010, utilities shall not use funds for plug-in hybrid and electric vehicle education and training that do not primarily serve to ensure safety, reliability and cost reductions for utility electricity and gas systems, though program elements may incidentally educate the public generally about the environmental or societal benefits of clean air or plug-in hybrid and electric vehicles.

c. Utilities have no role in actively and broadly promoting plug-in hybrid and electric vehicle adoption or the societal or environmental benefits of plug-in hybrid and electric vehicle adoption. Incidental and passive promotion (e.g., via websites) is not prohibited, but the utilities' customer education and outreach programs shall focus on safety,

reliability, and cost reductions for utility electricity and gas systems.

d. A list of permissible topics for utility customer education and outreach follows: metering arrangements, rates, demand response programs, electric vehicle service equipment, electric vehicle service equipment installation, safety, reliability, and off-peak charging.

e. Regarding metering arrangements, rates, demand response programs, electric vehicle service equipment, and electric vehicle service equipment installation, utilities may communicate information to customers, but such information must be communicated in a competitively neutral manner, with no value judgments or recommendations, due to the potential conflicts of interest involved. For example, a utility must not promote a particular metering arrangement because of advantageous impacts on revenues or ratemaking principles.

f. Regarding safety, reliability, and off-peak charging, utilities may present information and make value judgments and recommendations. A neutral communication requirement does not apply for these specific topics.

9. Rulemaking 09-08-009 is closed.

This order is effective today.

Dated _____, at San Francisco, California.