STATE OF CALIFORNIA Edmund G. Brown Jr., *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

April 23, 2013

Advice Letter 4115-E

Brian K. Cherry
Vice President, Regulation and Rates
Pacific Gas and Electric Company
77 Beale Street, Mail Code B10C
P.O. Box 770000
San Francisco, CA 94177

Subject: Load Research Plan Under Alternative Fueled Vehicle Rulemaking

Dear Mr. Cherry:

Advice Letter 4115-E is effective October 31, 2012.

Sincerely,

Edward Randolph

Edward F. Randolph, Director
Energy Division

Clay Faber
Director – Regulatory Affairs
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San Diego, CA 92123-1548

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October 1, 2012

ADVICE 2403-E
(San Diego Gas & Electric Company; ID U 902-M)

ADVICE 2786-E
(Southern California Edison Company; ID U 338-E)

ADVICE 4115-E
(Pacific Gas & Electric Company; ID U 39-M)

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

SUBJECT: LOAD RESEARCH PLAN UNDER ALTERNATIVE FUELED VEHICLE RULEMAKING

Pursuant to the August 21, 2012, Administrative Law Judge's Ruling in Rulemaking (R.) 09-08-009, the Alternative Fueled Vehicle Order Instituting Rulemaking (AFV OIR), Southern California Edison Company (SCE), Pacific Gas & Electric Company (PG&E), and San Diego Gas & Electric Company (SDG&E), (collectively referred to as the Investor Owned Utilities or IOUs) hereby submit for filing their joint Advice Letter (AL) outlining their load research plan. The Load Research Scoping Document is attached hereto as Attachment A.

PURPOSE

The purpose of this AL is to provide the IOUs' load research plan pursuant to the August 21, 2012 Administrative Law Judge's Ruling in R.09-08-009, the AFV OIR, to the California Public Utilities Commission (CPUC).

BACKGROUND

In Decision (D.)11-07-029, the CPUC ordered the IOUs to conduct load research and cost tracking for Plug-in Electric Vehicles (PEVs). Ordering Paragraph (OP) 6 instructed the IOUs to jointly prepare a load research plan and undertake load research to accomplish the following:

1. Track and quantify all new load and associated upgrade costs in a manner that allows PEV load and related costs to be broken out and specifically identified. This information shall be collected and stored in an accessible format useful to the Commission.
2. Evaluate how metering arrangements and rate design impact PEV charging behavior.
3. To the extent relevant, determine whether participation in demand response programs impacts PEV charging behavior.
4. Determine how charging arrangements, including metering options and alternative rate schedules impact charging behavior at MDU.

5. Evaluate whether distribution costs are increased by different charging levels, i.e., Level 1, Level 2, and quick charging, in public locations.
6. Separately track costs associated with PEV-related residential service facility upgrade costs and treated as "common facility costs" between the effective date of this decision and June 30, 2013, and propose a policy and procedural mechanism to address these residential upgrade costs going forward.

In collaboration with the CPUC and stakeholders, the IOUs developed a load research plan and on December 1, 2011 distributed the plan to the parties to the AFV OIR. On February 16, 2012, the CPUC hosted a workshop to discuss the scope of the load research plan with interested parties. On August 21, 2012 an Administrative Law Judge's Ruling was issued in R.09-08-009 providing additional guidance on load research reports and directing the IOUs to file a revised research plan via a Tier 2 advice letter. The final load research report is due January 1, 2013 and preliminary results are to be presented in a workshop at least 45 days in advance of January 1, 2013.

REVISED LOAD RESEARCH PLAN

The August 21, 2012 Administrative Law Judge's Ruling in R.09-08-009 directed the IOUs to file a revised research proposal to collect additional detailed data needed to assist the Commission in obtaining a more complete picture of charging behavior and specifically address requirements #2, #4 and #5. The ruling also directed the IOUs to consult with the Air Resources Board (ARB) to identify opportunities to collaborate on PEV research. A summary of the plan that addresses each of these requirements is as follows:

Requirement #2 - Metering arrangements and rate design impact on PEV charging behavior will be addressed by identifying and analyzing data for whole house PEV time of use rates, separately metered PEV time of use rates, and tiered domestic rates (see pages 7-10 of Attachment A).

Requirement #4 - Charging arrangements, including metering options and alternative rate schedules impact on charging behavior at Multi-Dwelling Units (MDU) will be addressed by identifying and analyzing data for customers residing at multi-unit dwellings (see pages 7-10 of Attachment A).

Requirement #5 - Whether distribution costs are increased by different charging levels, i.e., Level 1, Level 2, and quick charging, in public locations will be evaluated by tracking and analyzing the cost of non-residential upgrades completed under Rules 15 and 16 (see pages 5-7 of Attachment A).

On August 28, 2012 the IOUs consulted with the ARB to identify opportunities to collaborate on PEV research. The IOUs and ARB discussed opportunities to collaborate on ARB's planned research project "Advanced Plug-in Electric Vehicle Travel and Charging Behavior". The project is currently under development and will begin sometime in 2013. The ARB project's results will not be available within the timeframe established by the CPUC given the IOU's final load research report is due January 1, 2013.

EFFECTIVE DATE

Pursuant to the August 21, 2012 Administrative Law Judge's Ruling in R.09-08-009, this AL is submitted with a Tier 2 designation. This filing will become effective on October 31, 2012 which is thirty days after the date filed.

PROTEST

Anyone may protest this AL to the Commission. The protest must state the grounds upon which it is based, including such items as financial and service impact, and should be submitted expeditiously. The protest must be made in writing and must be received within 20 days of the date this Advice Letter was filed with the Commission, or October 21, 2012. There is no restriction on who may file a protest. The address for mailing or delivering a protest to the Commission is:

CPUC Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102

Copies of the protest should also be sent via e-mail to the attention of Energy Division at EDTariffUnit@cpuc.ca.gov. A copy of the protest should also be sent via both e-mail and facsimile to the address shown below on the same date it is mailed or delivered to the Commission.

Attn: Megan Caulson
Regulatory Tariff Manager
8330 Century Park Court, Room 32C
San Diego, CA 92123-1548
Facsimile No. (858) 654-1879
E-mail: MCaulson@semprautilities.com

Akbar Jazayeri
Vice President of Regulatory Operations
Southern California Edison Company
8631 Rush Street
Rosemead, California 91770
Facsimile: (626) 302-4829
E-mail: AdviceTariffManager@sce.com

Brian K. Cherry
Vice President, Regulatory Relations
Pacific Gas and Electric Company
77 Beale Street
San Francisco, CA 94177
Facsimile: (415) 973-7226
E-mail: PGETariffs@pge.com

NOTICE

A copy of this filing has been served on the utilities and interested parties shown on the attached list, including interested parties in R.09-08-009 by either providing them a copy electronically or by mailing them a copy hereof, properly stamped and addressed.

Address changes should be directed to SDG&E Tariffs by facsimile at (858) 654-1879 or by e-mail at SDG&ETariffs@semprautilities.com.

CLAY FABER
Director – Regulatory Affairs

Attachments

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY
ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No. **SAN DIEGO GAS & ELECTRIC (U 902)**

Utility type:
☒ ELC ☐ GAS
☐ PLC ☐ HEAT ☐ WATER

Contact Person: Joff Morales
Phone #: (858) 650-4098
E-mail: jmorales@semprautilities.com

EXPLANATION OF UTILITY TYPE
ELC = Electric GAS = Gas
PLC = Pipeline HEAT = Heat WATER = Water

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: 2403-E

Subject of AL: Load Research Plan Under Alternative Fueled Vehicle Rulemaking

Keywords (choose from CPUC listing): Compliance, Rulemaking

AL filing type: ☐ Monthly ☐ Quarterly ☐ Annual ☒ One-Time ☐ Other

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #:
Rulemaking 09-08-009, Decision 11-07-029

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: None

Summarize differences between the AL and the prior withdrawn or rejected AL[1]: N/A

Does AL request confidential treatment? If so, provide explanation: N/A

Resolution Required? ☐ Yes ☒ No

Tier Designation: ☐ 1 ☒ 2 ☐ 3

Requested effective date: 10/31/2012

No. of tariff sheets: 0

Estimated system annual revenue effect: (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: None

Service affected and changes proposed[1]: None

Pending advice letters that revise the same tariff sheets: None

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this filing, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Ave.,
San Francisco, CA 94102
EDTariffUnit@cpuc.ca.gov

San Diego Gas & Electric
Attention: Megan Caulson
8330 Century Park Ct, Room 32C
San Diego, CA 92123
mcaulson@semprautilities.com

[1] Discuss in AL if more space is needed.

General Order No. 96-B
ADVICE LETTER FILING MAILING LIST

cc: (w/enclosures)

Public Utilities Commission
DRA
Y. Schmidt
W. Scott
Energy Division
P. Clanon
S. Gallagher
H. Gatchalian
D. Lafrenz
M. Salinas
CA. Energy Commission
F. DeLeon
R. Tavares
Alcantar & Kahl LLP
K. Harteloo
American Energy Institute
C. King
APS Energy Services
J. Schenk
BP Energy Company
J. Zaiontz
Barkovich & Yap, Inc.
B. Barkovich
Bartle Wells Associates
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S. Blaising
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C. Sweet
California Farm Bureau Federation
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Dept. of General Services
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M. Clark
Douglass & Liddell
D. Douglass
D. Liddell
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Duke Energy North America
M. Gillette
Dynegy, Inc.
J. Paul
Ellison Schneider & Harris LLP
E. Janssen
Energy Policy Initiatives Center (USD)
S. Anders
Energy Price Solutions
A. Scott
Energy Strategies, Inc.
K. Campbell
M. Scanlan
Goodin, MacBride, Squeri, Ritchie & Day
B. Cragg
J. Heather Patrick
J. Squeri
Goodrich Aerostructures Group
M. Harrington
Hanna and Morton LLP
N. Pedersen
Itsa-North America
L. Belew
J.B.S. Energy
J. Nahigian
Luce, Forward, Hamilton & Scripps LLP
J. Leslie
Manatt, Phelps & Phillips LLP
D. Huard
R. Keen
Matthew V. Brady & Associates
M. Brady
Modesto Irrigation District
C. Mayer
Morrison & Foerster LLP
P. Hanschen
MRW & Associates
D. Richardson
OnGrid Solar
Andy Black
Pacific Gas & Electric Co.
J. Clark
M. Huffman
S. Lawrie
E. Lucha
Pacific Utility Audit, Inc.
E. Kelly
R. W. Beck, Inc.
C. Elder
School Project for Utility Rate Reduction
M. Rochman
Shute, Mihaly & Weinberger LLP
O. Armi
Solar Turbines
F. Chiang
Sutherland Asbill & Brennan LLP
K. McCrea
Southern California Edison Co.
M. Alexander
K. Cini
K. Gansecki
H. Romero
TransCanada
R. Hunter
D. White
TURN
M. Florio
M. Hawiger
UCAN
M. Shames
U.S. Dept. of the Navy
K. Davoodi
N. Furuta
L. DeLacruz
Utility Specialists, Southwest, Inc.
D. Koser
Western Manufactured Housing Communities Association
S. Dey
White & Case LLP
L. Cottle
Interested Parties
R.09-08-009

San Diego Gas & Electric Advice Letter 2403-E
Southern California Electric Advice Letter 2786-E
Pacific Gas & Electric Advice Letter 4115-E

October 1, 2012

ATTACHMENT A

Joint IOU Load Research Scoping Document

Modified Post February 16, 2012 Workshop

Filed on October 1, 2012

Load Research & Cost Studies

R.09-08-009

(AFV OIR)

Ordered in D.11-07-029

Pacific Gas and Electric Company

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

SDGE
A Sempra Energy Utility

Table of Contents

Background

California's transportation sector is the largest contributor of the State's total greenhouse gas emissions.[1] California Air Resources Board (CARB) proposed a comprehensive strategy to reduce greenhouse gas emissions from vehicles, to reduce carbon content of the fuel vehicles use, and to reduce miles vehicles travel. Electrification of vehicles is a critical part of this strategy. On July 25th, 2011 the California Public Utilities Commission (CPUC) issued D.11-07-029 to evaluate policies and develop infrastructure sufficient to overcome barriers for the deployment and use of plug-in electric vehicles (PEVs) in California. The decision directs electric utilities to collaborate with the CPUC and other stakeholders to develop policies for PEVs while also ensuring just and reasonable cost based utility rates. With many unknowns in the early stages of this market, several fundamental questions must be answered in order to set sound policy.

To inform future PEV policy development, the CPUC ordered IOUs to conduct PEV load research and cost studies. Ordering Paragraph six of D.11-07-029 outlines the following six areas for load research and cost tracking:

1. Track and quantify all new load and associated upgrade costs in a manner that allows PEV load and related costs to be broken out and specifically identified. This information shall be collected and stored in an accessible format useful to the Commission.

2. Evaluate how metering arrangements and rate design impact PEV charging behavior.

3. To the extent relevant, determine whether participation in demand response programs impacts PEV charging behavior.

4. Determine how charging arrangements, including metering options and alternative rate schedules impact charging behavior at MDU.

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

6. Separately track costs associated with PEV-related residential service facility upgrade costs and treated as "common facility costs" between the effective date of this decision and June 30, 2013, and propose a policy and procedural mechanism to address these residential upgrade costs going forward.

In collaboration with the CPUC and third party stakeholders, California's IOUs have developed the following list of metrics to report on based on information available to them. On February 16th, 2012, the CPUC hosted a workshop to discuss the scope of the load research with third parties. Although there may be other questions that will remain unanswered after this study, these metrics are designed to address the requests of the CPUC in the spirit of formulating sound rate design and line/service extension allowance policies at the end of 2012 for implementation in 2013 and 2014.[2] On August 21,

[1] D.11-07-029. p. 3

[2] Ibid. Revenue Allocation & Rate Design Staff Paper filed September 10, 2010 described the standard allowance, per Tariff Rule 15, as "a prepayment of future rate base expenditures to be paid over time by all ratepayers"

2012 an Administrative Law Judge Ruling providing additional guidance on load research reports was issued in R.09-08-009 directing the IOUs to file a revised research proposal to collect additional detailed data needed to assist the Commission in obtaining a more complete picture of charging behavior. The final report providing data and rate and cost allocation policy recommendations will be filed prior to January 2013. Summarized data as a result of these studies will be released with the final report. However, when considering policies based on the dataset to be provided, it is imperative that parties note the behavior of early adopters of PEV technology may not be representative of the average customer. Likewise, PEV charging and metering technology is continuously evolving and may present new opportunities and challenges in the future.

Cost Tracking

To meet requirements 1, 5 and 6, tracking of costs have been split into residential and non-residential segments and will be undertaken monthly and reported on a quarterly basis:

#	Metric	Total	Percent	Order #
1	Total Estimated PEVs			
2	Residential PEVs as of 12/31/10			
3	Total Residential PEVs to Date			
4	Residential Customers Requiring Upgrades Related to PEV Load to Date			**1, 6**
5	Residential PEV Customers on a PEV Rate to Date			
6	Non-Residential PEVs as of 12/31/10			
7	Total Non-Residential PEV Customers to Date			
8	Non-Residential PEV Customers Requiring Upgrades Related to PEV Load as of 12/31/10)			**1, 5**

1. Total Estimated PEVs:
This estimate will be produced by each IOU to provide context to the overall market size in a specific service territory. Included will be residential and commercial PEVs, which will be separately broken out. IOUs may use information from a variety of sources, including but not limited to, education and outreach contacts, "notification" data from automakers, press announcements, other 3rd parties, and the Department of Motor Vehicles (DMV) pursuant to SB 859.[3] Depending on the sources used by each IOU, the estimates may not completely capture the entire market. Each of these sources potentially provides information the IOUs may use for service planning and identifying necessary upgrades, but customers may or may not contact the utility and furthermore may not select a separate EV rate.

2. Residential PEVs as of 12/31/10
This metric will be used to separate out the latest generation of PEVs to provide better context as to the proportion of newer PEVs that are in the marketplace. Since the deliveries of the new mass produced PEVs began to trickle into market in mid-December of 2010, using January 1, 2011 is a reasonable date

provided to the consumer "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."

[3] SB 859, passed 9/26/11, allows the DMV to provide the address where a PEV is registered to the utilities. As yet, there is no agreement for exchange of this information, though the IOUs are currently exploring this option.

to begin tracking. With this information the IOUs will be able to identify trends and track growth of the market in their service territories over time.

3. Total Residential PEVs to Date:
This metric will include PEVs IOUs know were in the marketplace and charging in residential settings prior to and after January of 2011.

4. Residential Customers Requiring Upgrades Related to PEV Load to Date
Based on confirmed notification from one of several sources, the utilities' service planning departments' personnel have conducted and will continue to conduct field assessments which include inspecting the local utility electrical infrastructure to ensure the additional PEV load can be supported by the existing electrical system. If it is discovered that previously added loads have brought the existing electrical infrastructure to the point where it cannot support additional PEV load, and an upgrade/reinforcement of the existing system will be required, the utility representative will prepare the appropriate paperwork and the additional Rule 15/16 costs in excess of the allowance will be treated according to the Decision with costs tabulated quarterly.

5. Residential PEV Customers on a PEV Rate to Date
By presenting this metric, utilities will be able to demonstrate the number of customers on an EV rate as compared to the total number of PEV customers to date.

6. Non-Residential PEV Customers as of 12/31/10
Akin to metric 2 in examining the residential customers, using the starting date of January 2011 will provide context and identify trends and adoption of PEVs amongst non-residential customers. "Non-Residential" includes Commercial, Industrial, and Government and Agricultural customers on SCE rates TOU-EV-3 & TOU-EV-4 and other customers IOUs identify through various research and engagement with these customers. Although SCE is the only IOU that may be able to report on this metric as it is the only IOU with commercial EV rates, all 3 IOUs will attempt to identify non-residential PEV customer load through notification and discussions with customers through customer service representatives. As charging PEVs may not cause a need for upgrades and may not add a significant amount of material load, which would require them to engage the IOUs under Rule 3, IOUs will be constrained in their ability to identify non-residential PEV customers that are not on a designated EV rate.

7. Total Non-Residential PEV Customers to Date
This metric will include PEVs IOUs know were in the marketplace and charging in non-residential settings prior to and after January of 2011. Information to create this metric may consist of the number of customers on non-residential EV rate accounts as noted above in metric 6.

8. Non-Residential PEV Customers Requiring Upgrades Due to PEV Load as of 12/31/10
For non-residential customers requiring local distribution upgrades due to the addition of PEV load, IOUs will work with customers to plan and coordinate work. The IOUs will report the cost of known upgrades to the local distribution system relating to Non-Residential PEVs.

Costs Due to the Addition of PEV Load:

Per Orders 1, 5 & 6 the following costs will be tracked with the information available to the IOUs. The IOUs have created EV specific work orders to ensure costs are accurately captured. These work orders will only be used when previously added loads have brought the electrical infrastructure to the point where additional PEV load would cause it to be overloaded. In other words, if the customer adds other loads such as air conditioners, washers, dryers, and pool pumps, the upgrade costs will be treated as normal under Rules 15/16. This is due to the IOUs' inability to disaggregate load and assign costs by appliance.

For the purposes of tracking costs, the IOUs have determined that "upgrade costs" shall include all costs (distribution, service, common facility material and labor, overheads, etc.) resulting from upgrades and reinforcements to existing facilities associated with the addition of PEV load. As IOUs cannot reasonably disaggregate load for the purposes of attributing costs to a specific technology or appliance, it is necessary to apply a set of counting rules:

1. Upgrade Required – New PEV Load – When the utilities are made aware of new PEV load and a load assessment does not identify any other material sources of new load to be contributing to an upgrade to support additional PEV load, all costs will be allocated to the PEV.
    a. Alternatively, if the utilities identify new PEV load but determine that an upgrade was necessary even prior to the addition of the PEV load no costs will be attributed to the PEV load.

2. Upgrade Required – Multiple Sources of New Load – Due to the utilities' inability to disaggregate load and accurately attribute costs, the utilities will attribute no upgrade cost to PEV loads when multiple sources of new load have been identified.

3. No Upgrade Required – New PEV Load – In the circumstance where there has been an addition of PEV load but no immediate upgrade is deemed necessary, no costs will be attributed to the PEV.[4]

The utilities acknowledge that using this set of rules may understate or overstate costs related to PEVs, but these rules have been developed to be transparent and operationally practical. However, given the method, these figures should be used as estimates and treated with appropriate caution. The IOUs have determined that, given existing IOU cost tracking resources, this method is the most practical way to present costs due to PEVs. The IOUs believe that alternative methods would be out of scope for this study or inappropriately bias the costs related to PEVs.

#	Costs	Average	Total	Range	Order #
9	Total Costs of Residential Upgrades Related to PEV Load Completed Under Rules 15 &16				**1**
10	Total Costs of Residential Upgrades Related to PEV Load Completed Under Rule 16				**1, 6**
11	Estimated Foregone Rule 16 Billings				**1, 6**
12	Total Costs of non-Res Upgrades Related to PEV Load Completed Under Rules 15 & 16				**5**

[4] While the addition of the PEV load may not immediately require an upgrade, it may bring the system materially closer to needing an upgrade, resulting in costs at some point in the future. No upgrade costs will be allocated to the PEV in this circumstance.

13	Total Cost of non-Res upgrades Related to PEV Load Completed Under Rule 16				**5**
14	Costs Billed to non-Residential Customers Under Rule 16				**5**

These metrics will be tracked on a monthly basis and will represent closed work orders with specific EV service requests.

9. Total Costs of Residential Upgrades Related to PEV Load Completed Under Rules 15 &16

Actual work order costs include total labor, material and other charges for completing the Rule 16 service and Rule 15 distribution upgrades.

10. Total Costs of Residential Upgrades Related to PEV Load Completed Under Rule 16

Actual work order costs include total labor, material and other charges for completing the Rule 16 upgrades.

11. Estimated Foregone Rule 16 Billings

The amount the PEV customer would have been billed under Rule 16, minus the applicable residential allowance, prior to the AFV OIR Phase 2 Final Decision issued on July 25, 2011. The foregone Rule 16 billings for a project are calculated as the amount by which the estimated cost of the upgrade exceeds the customer allowance, if any (the current allowances are different for each utility).

12. Total Costs of Non-Res Upgrades Related to PEV Load Completed Under Rules 15 & 16

To the extent possible, IOUs will track actual non-residential work order upgrade costs, which include total labor, material and other charges for completing the Rule 16 service and Rule 15 distribution upgrades. IOUs have limited notification of public charging being installed. Unless specifically notified, IOUs find out about such installations through public sources, such as press releases, newspapers, and trade journals. In some cases, even if IOUs are notified, the addition of public chargers may not require an upgrade. To the extent the IOUs are aware of new public charging stations, and there are upgrade costs, the costs will be tracked and reported. SCE has commercial EV rates TOU-EV-3 and TOU-EV-4, while the other IOUs do not, making it more difficult to track commercial upgrades related to PEVs for the IOUs without commercial EV rates.

13. Total Cost of Non-Res Upgrades Related to PEV Load Completed Under Rule 16

Actual work order costs include total labor, material and other charges for completing the Rule 16 service upgrades.

14. Cost Billed to Non-Res Customer Under Rule 16 Upgrades

As commercial customers are not exempt from paying for costs above allowances of Rule 16, these costs will be reported. If the IOUs are able to identify these costs as associated with EV load, they will be documented. The IOUs will also attempt to identify the exact charging infrastructure (Level 1, Level 2 or DC Fast Chargers) related to PEVs.

Load Research:

To satisfy orders 2, 3 & 4, metering data will be collected to provide insight into residential charging behavior under:

- Whole House TOU Rates
- Separately Metered TOU Rates
- Tiered Domestics Rates

This metering data will provide a basis for analysis as to how charging behavior might be impacted by tariff rates or charging levels. Additionally, the recorded metrics will allow the evaluation of metering scenarios on PEV charging behavior for customers in the following situations:

- Single Family Home
- Multi Family Home
- Net Energy Metering (NEM) or Solar
- Demand Response (DR)

The IOUs will track Load Research data on a monthly basis and will provide three months of data during each reporting period. The usage and demand of customers by average weekday and average weekend will be tracked in each rate group. The goal of this structure will be to determine how monthly usage varies by time and type of day to determine how rates impact peak demand and usage amongst this group of customers. A baseline for residential customers will be provided for context in the form of an average for a month during the season being examined.

The report will include customers who have a minimum of one month of data at the beginning of the period that is being tracked. If IOUs are missing data from a subset of customers, they will scale valid existing data. The IOUs determined the minimum amount of customers to produce useful information is 15. Metrics with less than 15 customers will be clearly noted and not reported due to the 15/15 Rule adopted by Decision 97-10-031.[5]

All statistics for items two through seven in the table below are provided as an average on a per customer basis in each rate group. All statistics for items 4 through 7 are based on interval data to be collected by each IOU.

All time periods will be reported in clock time.

[5] The 15/15 Rule was adopted by the Commission in the Direct Access Proceeding (Decision 97-10-031) to protect customer confidentiality. The 15/15 rule requires that any aggregated information provided by SCE must be made up of at least 15 customers and a single customer's load must be less than 15% of an assigned category. If the number of customers in the complied data is below 15, or if a single customer's load is more than 15% of the total data, categories must be combined before the information is released. The Rule further requires that if the 15/15 Rule is triggered for a second time after the data has been screened once already using the 15/15 Rule, the customer be dropped from the information provided.

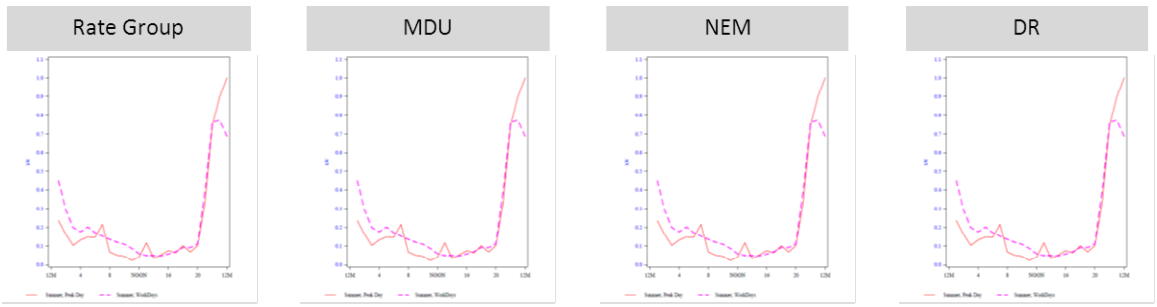
#	Residential Load Research Metrics by EV Rate Group	Baseline by Season	Group	Single Fam	MDU	NEM	DR
1	Number of Accounts at Beginning of Month	n/a	#	#	#	#	#
2	Average Monthly Usage (KWh)	kWh	kWh	kWh	kWh	kWh	kWh
3	Average TOU Distribution By Period (IOU Specific – On/Off Peak etc.) (%)	n/a	%	%	%	%	%
4	Average Diversified Peak Load (KW)	KW	KW	KW	KW	KW	KW
5	Time of Diversified Peak Load	00:00	00:00	00:00	00:00	00:00	00:00
6	Sum of Non-Coincident Peak Load Averaged (KW)	KW	KW	KW	KW	KW	KW
7	Average Load Coincident with IOU System Peak (KW)	KW	KW	KW	KW	KW	KW
Meets Order #::		**2**	**2**	**2**	**2, 4**	**2**	**2, 3**

1. Number of Accounts at Beginning of the Month

For each EV rate, IOUs will report the number of customers enrolled on the rate including the number of customers on the rate that can be identified as multi-family (MDU), net energy metering (NEM), and demand response (DR) program participants. In order to ensure consistency and integrity of the data, only customers enrolled on the rate at the beginning of the month will be used for tracking. This is to ensure the metrics represent customers with a full month of data. Data for customers that enroll after the first day of the month will be recorded in the following month.

2. Total Average Monthly Usage

Average monthly usage will be reported for the customers on the rate, broken out by weekend and weekday. To comply with the orders, IOUs will identify the usage of multi-dwelling or multi-family units (MDUs) to determine if differences in behavior can be determined. In addition, residential customers on a demand response program such as an air conditioning cycling program will be identified to determine if their behavior is different. As there has been some focus on the combination of PEVs and solar systems, the IOUs felt it was critical that customers with self-generation units such as solar on a net energy metering (NEM) rate be tracked to determine if there is a difference in usage.



3. Average TOU Distribution By Period

In addition to the reporting of monthly kWh, IOUs will stratify usage by TOU time period (e.g on, mid and off-peak) to determine how and when customers use energy. The periods will vary in time and length across rates and IOUs, and the differences will be noted.

4. Average Diversified Peak Load

Based on interval data, the IOUs will determine the diversified group peak load, which represents when the group's demand peaks as a whole. This is the maximum simultaneous demand of customers in each rate group.

5. Time of Diversified Peak Load

Noting the time of the diversified peak load is important to determine how customers respond to price signals and if the pricing signals impact the peak for each rate group.

6. Sum of Non-Coincident Peak Load Averaged (Total of individual peaks)

The IOUs define the total non-coincident peak demand as the sum of the individual customers' peak demands within each rate group during the monthly period, regardless of time of occurrence. This metric will be helpful in illustrating the total amount of load if all PEVs are charged or their loads peak at the same time.

7. Average Load Coincident with IOU System Peak (At time of system peak)

It is important to determine the contribution of PEV charging to the system peak. The IOUs will report on the demand of each rate group at the time of each monthly system peak.

Final Report

The final report will consist of data and recommendations from the three IOUs to inform rate design and line/service allowance policies. The IOUs will consolidate their findings and make recommendations to inform the CPUC on cost allocations and the effect of rate structures on behavior ahead of filing new rate design proposals.

In addition to providing the accumulated data described above, in the final report the IOUs will report on the load profiles of identifiable residential PEV customers (Cost Tracking Metric #2) who decide to stay on their existing domestic rate if their interval usage is recorded. As the IOUs have varying deployment and cutover schedules for their advanced metering infrastructure systems, data may not be available for some of these customers. To the extent possible, the IOUs will report this information as it will provide valuable context to the analysis and discussion of rate design.

Furthermore, the IOUs may include additional relevant information and studies related to PEV infrastructure costs, rates and charging behavior to the extent possible from other work that is completed before the filing of the final report. Information may include the impact of new innovations in metering on rate adoption, or any other changes that may arise. SCE will include its "Nissan Leaf Early Buyer Study" in the final report, which will provide insights on driving behavior and charging location, and times of charging. SDG&E will include the "First Year Evaluation for San Diego Gas & Electric's Electric Vehicle Pilot," from its ongoing experimental rate study which will provide insight on the impact of pricing on separately metered PEV units. Additionally, the IOUs will review other PEV-related studies conducted in California and across the country and to the extent relevant will include them in the final

report to inform sound cost policy and rate design recommendations. Organizations with relevant results may include the California Center for Sustainable Energy, the California Energy Commission, the University of California, Los Angeles, the Electric Power Research Institute, and Idaho National Labs.

Reporting Timelines

The CPUC has ordered the IOUs to provide quarterly updates prior to a final report due no later than January 1, 2013. Detailed timelines are as follows[6]:

Activity	Proposed Date
Scope of Load Research	Developed by utilities and circulated to parties on December 1, 2011
Load Research Scoping Workshop	Workshop held February 16, 2012
Workshop on Findings	Late October, early November 2012 (At least 45 days in advance of 1/1/13)
Final Report	Final load research report to be filed on or before January 1, 2013

Cost Tracked	Load Research Tracked	Report Date
Oct – Dec 2011	June – Aug. 2011	January 31, 2012
Jan – March 2012	Sept. – Nov. 2011	April 30, 2012
April – June 2012	Dec. – Feb. 2012	July 31, 2012
July - Sept. 2012	March – May 2012	October 31, 2012
Sept. – Oct. 2012	June – Aug. 2012	November 15, 2012*

* Workshop over 45 Days in advance of January 1, 2013 Final Load Research Report Deadline

[6] Assigned Commissioner's Scoping Memo and Ruling – Phase 3, July 28, 2011

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