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March 22, 2013

Advice 4119-E-A
(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: Supplemental: Home Area Network-Demand Response Integration Advice Letter (Phase 3.0)

Pacific Gas and Electric Company ("PG&E") hereby submits to the California Public Utilities Commission ("Commission" or "CPUC") supplemental Advice 4119-E-A in compliance with Decision 12-04-045 (Ordering Paragraph 65), Decision Adopting Demand Response Activities and Budgets for 2012 through 2014, with a plan to implement a Home Area Network-Demand Response Integration project. PG&E filed Advice 4119-E on October 1, 2012 to submit its Home Area Network-Demand Response Integration project to the Commission. On October 30, 2012, the Energy Division suspended Advice 4119-E for 120 days. On February 12, 2013, in response to the Energy Division's request, PG&E agreed to supplement Advice 4119-E, and to a further extension of the suspension to April 29, 2013.

Overview

PG&E proposes to build upon the Home Area Network (HAN) infrastructure developed under SmartMeter™Upgrade Decision 09-03-026 to create and communicate load control signals, such as price signals and Demand Response (DR) event notification messages that can expand DR opportunities for residential and small and medium business (SMB) customers. The HAN platform, used in conjunction with third party devices, may help customers effectively manage their response to time-varying electric rates by reducing or shifting load. This effort will initially target customers on existing DR programs for residential and small business customers (i.e., SmartRate and SMB PDP customers). In light of the evolving role of the utility in the DR marketplace, PG&E is prioritizing the implementation of notification and pricing signals to the premise, whereby a customer can program an automated response, over utility direct load control signals, where the utility determines the device response, (e.g., switching a device on/off or ramping a device temperature). By implementing signals to the premise, customers can choose manual or automated actions in response to the signals and have full control over how to respond to balance between costs and convenience.

In order to meet the objectives outlined above, PG&E will be implementing an IT platform that i) integrates a new rate application that will determine a customer's rate components and current price at a point in time; and ii) integrates with existing DR event notification systems.

i. A new rate application will integrate with PG&E's AMI HAN head-end system and back-end systems. The rate application will provide the ability to determine the tariff that a participating customer is on and the applicable rate components of that tariff (e.g., baseline territory, tier thresholds, TOU time periods, billing cycle start and end date, etc.). PG&E's current applications are built to calculate a bill once a month. The rate application will connect to PG&E's billing and data warehouse applications and is needed to calculate and provide data for a current point in time price (e.g. current cost of energy, current bill to date) and corresponding data necessary to integrate into the HAN-DR systems. This rate application has the capability to expose current pricing information across PG&E programs which require this level of information. PG&E will explore the potential of the rate application to accelerate the provision of information to customers on the energy portal. For the HAN-DR integration project, the rate application will have the capability to determine and deliver the current price for SmartRate and PDP customers.

ii. The DR event notification platform will integrate existing DR event notification platforms for SmartRate and SMB PDP, amongst others, to send notifications through the AMI HAN head-end system and receive confirmation messages (if applicable) from end-use devices.

IT will approach the implementation of these systems in two main phases.

1) Design and implement the rate application and integration with the DR event notification systems. This work is largely independent of HAN standards (i.e. ZigBee SmartEnergy Profile).

2) PG&E will integrate these systems with communications channels using the appropriate SEP standard at that point in time so that these systems will be able to communicate to the meter and, ultimately, the in-premise HAN devices. At this point this communication channel is SEP 1.x. PG&E will request Energy Division approval in order to use SEP 2.0.

PG&E is undertaking a separate corporate initiative called "Channel of Choice" that will standardize customer and 3rd party communications through a common hub. Part of this initiative is to rationalize customer preferences for types of

communications, for example, DR event notifications. There are a number of communications protocols included, but are primarily focused on AMI via SEP, and the Internet via OpenADR. Both of these communication protocols are being considered as part of the HAN-DR Integration pilot.

Upon successful completion of the enhancements to the IT infrastructure described in items 1 and 2 above, PG&E will use these systems to validate the enhanced HAN capabilities. This pilot evaluation project ("the pilot") will involve up to 2,000 residential and small business customers with a variety of HAN devices that can be responsive to load control signals. This limited scale roll out will be facilitated through the project's user acceptance testing (UAT) period and will enable PG&E to identify issues, obtain feedback from its customers, and evaluate the effectiveness of the solution before offering these capabilities more broadly to the larger customer base. The feedback and results will be used to enhance the HAN platform before making the load control signals (pricing and event notification) available to all qualifying customers in 2015. The systems developed as part of the HAN-DR Integration project will be scalable to support customer demand for these capabilities beyond the 2014 timeframe. The pilot results will be used to inform the development of a future HAN-DR program offering.

It is important to note that PG&E is building a data platform and not prescribing end devices or use cases for the information delivered to the platform. As part of this project, PG&E is expanding the platform to deliver the near real time DR signals (e.g. price and event notification) to the meter. The HAN ecosystem of device manufacturers and service providers will continue to innovate on how to use this information and provide unique customer experiences with various types of HAN devices and services. For example, one category of HAN devices may display the information in order to provide the customer with an awareness of their usage at a point in time. The customer would need to see this information and take manual actions in order to make changes. Other device types may take the pricing information and perform an analysis and alert the customer when user defined conditions are met and automated actions take place. PG&E is not prescribing how the information delivered to the device via the HAN platform should be displayed or used as part of the Home & Business Area Network. PG&E will provide the information in a standards-based format and the third party ecosystem will provide innovative solutions to customers on how to manage their energy usage.

Table 1: Project Cost by Category by Year

Release 1 - Project	Cumulative	2013	2014	2015
Total	$9,509,665	$4,581,680	$4,553,908	$374,077
Project Management	$1,702,800	$619,200	$928,800	$154,800
Customer Care	$1,095,400	$252,000	$790,733	$52,667
Marketing & Incentives	$0	$0	$0	$0
Information Technology	$2,988,440	$1,610,480	$1,300,560	$77,400
Hardware & Software	$0	$0	$0	$0
Operations Support	$223,025	$0	$133,815	$89,210
Vendor Software	$3,500,000	$2,100,000	$1,400,000	$0

Table 2: Project Schedule by Major Activity (assumes a May 2013 project start)

Id #	Task Name	Start	Finish
1	Develop business and technical definition, project scope, tin test requirements and dependencies.	Q2 2013	Q2 2013
2	Create technical and functional design of the solution	Q3 2013	Q3 2013
3	Development and integration c rate service	Q2 2013	Q1 2014
4	Build out technical solution.	Q3 2013	Q1 2014
5	Testing of the technical solu	Q1 2014	Q2 2014
6	User Acceptance Testing	Q2 2014	Q4 2014
7	Deployment	Q4 2014	Q1 2015

Problem Statement

Over the next few years, many SMB and residential customers will face time-varying pricing in addition to likely rising electric rates over time, which will generate the need for simple and helpful enabling technology options. PG&E proposes to build upon the HAN infrastructure to create and communicate load control signals, such as price signals and DR event notification messages. The HAN platform, used in conjunction with third party devices and/or services, can be used to serve a variety of customer needs, including energy usage and price feedback and remote control or optimization of customer loads, which can help customers effectively manage their response to time-varying electric rates to reduce or shift load. This effort will be initially targeted to SmartRate and SMB PDP customers. An evaluation of this technology will allow PG&E to learn from its customers and determine the most effective coupling of technology and programs to drive behaviors and reduce and/or shift energy usage.

A methodology to test the cost effectiveness of this pilot is premature at this point. Pilots have traditionally not been subject to the cost effectiveness evaluation; however one purpose of the pilot will be to better understand the long term cost effectiveness of the technology.

How the pilot will address a DR goal or strategy

As part of the HAN-DR pilot (which will take place as part of the system UAT testing) PG&E intends to study the effectiveness and utilization of HAN technologies as well as customer feedback on the technology to determine the most effective coupling of technology and programs to drive behaviors and reduce, shift energy usage during peak times, and/or increase mass market participation in DR. These results will be used to inform the development of a future HAN-DR program offering.

Objectives and goals for the pilot

PG&E believes that HAN-based emerging technologies could potentially aid in mass market participation in DR. However, no such program currently exists, and in order to encourage adoption, PG&E proposes this pilot as a means of gauging the efficacy of potential program designs.

Specifically, the HAN-DR pilot will concentrate on determining:

- Customer Response: Evaluate customers' usage patterns, preferences, behavior, and reactions to HAN devices capable of receiving price and DR messages.

- Device Response Characteristics: Evaluate how quickly and in what manner various HAN devices respond to price and event messaging signals and longevity of device use (i.e. how long devices stay connected). Determine the actionability and effectiveness of notification messages for DR events through HAN.

- Communication Capabilities: Evaluate the technical capability to provide timely two way communication, such as price and DR messages, to the various HAN devices over the advanced metering infrastructure (AMI) network using national standards. Test and analyze AMI communications and their efficacy to securely deliver near real time information from PG&E's back office systems.

PG&E will follow its standard project methodology for the pilot. Upon approval of this advice letter, PG&E will go through plan, analyze, design, build, test, and deploy stages to deliver the HAN-DR functionalities. The details of the pilot design will be more thoroughly detailed during the analyze and design stages. During the analyze stage, the project team will work with the stakeholder groups to determine the technical (e.g. meter type, baseline territories, etc.) and non-technical requirements (e.g. participation in other programs) of the pilot participants and of the qualifying HAN devices in order to meet the pilot objectives. The exact number of residential SmartRate and SMB PDP customers that PG&E will target and recruit, as well as how PG&E will achieve this, will be determined during the design phase of the project using the requirements outlined in the analyze phase of the projects. During this time, PG&E will also determine how and when to design and gather the objectives outlined above (e.g. customer responses via surveys or focus groups, EM&V treatment and control groups, technical reporting and metrics of device characteristics, etc).

Budget and timeframe

The funding for the HAN infrastructure developed under SmartMeter™ Upgrade Decision 09-03-026, allows for PG&E to register a HAN device and provide near real time energy usage information to its customers. This functionality is being deployed through PG&E's Initial Rollout and Early Adopter phases using SEP1.X technologies. The additional IT infrastructure work to create and communicate load control signals (funded through D-12-04-045, "the Decision") will begin its Plan and Analyze Stages in May 2013, with the build of the solution taking place in the latter part of t2013 and early 2014. As described above, this work is largely independent of HAN standards (i.e. ZigBee SmartEnergy Profile). However, as noted in the Decision, the "HAN field is fast-changing in nature," especially as it relates to the technology and related standards. Starting in 2014, PG&E will integrate the systems developed to deliver load control signals with the utility implemented, approved SEP standard at that point in time, so that these systems will be able to communicate to the meter and, ultimately, the in-premise

HAN devices. Upon successful completion of the enhancements to the IT infrastructure, PG&E will evaluate these capabilities with up to 2,000 residential and small business customers as an extended user acceptance testing period and to enable PG&E to identify issues, obtain feedback from its customers, and evaluate the effectiveness of the capabilities through surveys/focus groups and load impact studies. This pilot is planned to take place through the 2014 DR season.

The Project (Table 1) and Pilot (Table 3) is requesting $11.94 million over the course of the implementation cycle.

Table 3: Pilot Cost by Category by Year

Release 1 - Pilot	Cumulative	2013	2014	2015
Total	$2,430,883	$0	$2,336,925	$93,958
Project Management	$0	$0	$0	$0
Customer Care	$0	$0	$0	$0
Marketing & Incentives	$1,966,483	$0	$1,872,525	$93,958
Information Technology	$464,400	$0	$464,400	$0
Hardware & Software	$0	$0	$0	$0
Operations Support	$0	$0	$0	$0
Vendor Software	$0	$0	$0	$0

Table 4: Pilot Schedule of Major Activities

Id #	Task Name	Start	Finish
1	Pilot Solution deployed to Qı Assurance (QA) Environment.	Q1 2014	Q1 2014
2	Customer Segmentation	Q1 2014	Q3 2014
3	Usability Study	Q1 2014	Q3 2014
4	Focus Groups	Q1 2014	Q3 2014
5	Customer Recruitment	Q1 2014	Q3 2014
6	Agency Planning and Web Content	Q1 2014	Q3 2014
7	Marketing Materials	Q1 2014	Q3 2014
8	Device Incentives	Q2 2014	Q2 2014
9	Execute Pilot	Q2 2014	Q4 2014
10	Satisfaction Study	Q3 2014	Q1 2015

Standards and metrics

PG&E will benchmark relevant programs by other utilities and program administrators on their HAN efforts. PG&E will keep track of the following as it relates to this initiative:

- Performance of HAN resources versus expected response.
- Customer satisfaction with the different types of HAN capabilities and device types.
- Enabling technologies evaluated and deployed.
- Load response and speed of response

As the evaluation project progresses, new standards and metrics may be developed and the proposed metrics may not be relevant.

Methodologies to test the cost-effectiveness of the pilot

A methodology to test the cost effectiveness of this pilot is premature at this point. Pilots have traditionally not been subject to the cost effectiveness evaluation; however an objective of the pilot is to better understand the long term cost effectiveness of the technology.

Evaluation, Measurement and Verification plan

PG&E will work with DRMEC to properly prepare and implement a plan to evaluate the pilot. The base evaluation will identify and include, but will not limited to, the following:

- A thorough evaluation of customer impact and satisfaction must be undertaken to evaluate future programs.
- Evaluate SmartMeter™ data from each of the customers that participates in the pilot and estimate the load reduction.
- Any emerging technologies (ET) used for this HAN-DR Pilot will be coordinated alongside PG&E DR's ET group.

Strategy to identify and disseminate best practices and lessons learned

PG&E is involved in several forums in which they can identify and disseminate best practices and lessons learned to the CPUC and other California IOUs.

- PG&E will conduct quarterly meetings with the Energy Division throughout the pilot period. The meetings will include current work, budgets, and foreseeable next steps to ensure parties are well informed. Any changes to the objectives, approach, or metrics identified above will be communicated and discussed with the Energy Division at that time. The ILP report will contain a page on the HAN-DR Integration project status.

  At the conclusion of the pilot, PG&E will provide the Energy Division a report highlighting the lessons learned from this pilot. Any key lessons that can be extracted from this pilot will be used to enhance existing or new DR programs in the 2015 – 2017 DR Program and Budget Application.

  This report will be published and be made publicly available on a designated public internet site by PG&E.

- PG&E meets quarterly with the other IOUs regarding HAN topics. PG&E will share its lessons learned in this forum and work with the Commission, its staff, and other utilities to standardize, when appropriate, on best practices for HAN implementations across CA.

- Additionally, PG&E is involved in national HAN standards making bodies, which share best practices and incorporate new or updated requirements in an effort to continuously improve test plans for certified HAN products. These national standards-making bodies bring together utilities, product and chip manufacturers, academia, and others to develop standards that will result in interoperable, plug and play devices.

Protests

Pursuant to General Order 96-B, Section 7.5.1, due to the limited nature of this supplemental advice letter, PG&E is requesting the protest period not be reopened by the filing of this supplement.

Effective Date

PG&E requests that this Tier 2 supplemental advice filing becomeeffective October 31, 2012, concurrent with 4119-E.

Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list and the below service lists. Address changes to the General Order 96-B service list should be directed

to e-mail PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter filings can also be accessed electronically at: http://www.pge.com/tariffs.

Brian Cherry /IG

Vice President, Regulatory Relations

cc: Service List A.11-03-001 and R.07-01-041.

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. Pacific Gas and Electric Company (ID U39 E)

Utility type:
ELC ffi GAS
PLC HEAT WATER

Contact Person: Igor Grinberg
Phone #: 415-973-8580
E-mail: ixg8@pge.com and PGETariffs@pge.com

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

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) # 4119-E-A Tier: 2
Subject of AL: Supplemental: Home Area Network-Demand Response Integration Advice Letter
Keywords (choose from CPUC listing): Compliance and Demand Side Management
AL filing type: Monthly Quarterly Annual One-Time Other _____
If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #: Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: D.12-04-045
Summarize differences between the AL and the prior withdrawn or rejected AL: N/A
Is AL requesting confidential treatment? If so, what information is the utility seeking confidential treatment for:
Confidential information will be made available to those who have executed a nondisclosure agreement: N/A
Name(s) and contact information of the person(s) who will provide the nondisclosure agreement and access to the confidential information: N/A
Resolution Required? Yes ffi No
Requested effective date: October 31, 2012 (concurrent with Advice 4119-E) No. of tariff sheets: N/A
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: N/A
Service affected and changes proposed: N/A
Dispositions, and all other correspondence regarding this AL are due no later than 20 days after the date of this fi unless otherwise authorized by the Commission, and shall be sent to:

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ED Tariff Unit
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E-mail: EDTariffUnit@cpuc.ca.gov

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