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

| Order Instituting Rulemaking to Consider Alternative-Fueled Vehicle Programs, Tariffs, and Policies. | Rulemaking 13-11-007 (Filed November 22, 2013) |
|---|---|

# RESPONSE OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902 M) TO THE ORDER INSTITUTING RULEMAKING TO CONSIDER ALTERNATIVE-FUELED VEHICLE PROGRAMS, TARIFFS, AND POLICIES


STEVEN D. PATRICK

*Attorney for*

SAN DIEGO GAS & ELECTRIC COMPANY
555 West Fifth Street, Suite 1400
Los Angeles, CA 90013-1011
Phone: (213) 244-2954
Fax: (213) 629-9620
E-Mail: SDPatrick@semprautilities.com


December 13, 2013

## Table of Contents

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

| Order Instituting Rulemaking to Consider Alternative-Fuel Vehicle Programs, Tariffs, and Policies | R.13-11-007 (Filed November 22, 2013) |
|---|---|

# RESPONSE OF SAN DIEGO GAS & ELECTRIC COMPANY (U 902 M) TO THE ORDER INSTITUTING RULEMAKING TO CONSIDER ALTERNATIVE-FUELED VEHICLE PROGRAMS, TARIFFS, AND POLICIES

## I.
## INTRODUCTION

In accordance with Rule 6.3 of the California Public Utility Commission's ("Commission" or "CPUC") Rules of Practice and Procedure, San Diego Gas & Electric Company ("SDG&E") hereby submits these comments in response to the Commission Order Instituting Rulemaking to Consider Alternative-Fueled Vehicle Programs, Tariffs, and Policies ("AFV OIR").

SDG&E commends the Commission for continuing the effort started in Rulemaking 09-08-009 to address critical issues that face the Alternative-Fueled Vehicle ("AFV") market. The Plug-in Electric Vehicle ("PEV") market is at a critical crossroads poised to grow rapidly with proper CPUC policy support. SDG&E believes this proceeding can address important issues in the AFV market while not hindering the ongoing development of innovative measures and pilot programs to address Vehicle-Grid Integration ("VGI") solutions that will be critical to improving the utilization of utility assets and delivering value to all utility customers.

The Commission raises many relevant and timely issues within the specific questions posed in this OIR. With input from all stakeholders, SDG&E is optimistic that the work of this

OIR will support the rapid growth of the AFV market in California necessary to meet the Governor's Zero Emission Vehicle ("ZEV") Action Plan targeting 1.5 million ZEVs in California by 2025[1]. SDG&E supports the Commission in carrying out its role in addressing the ZEV Action Plan and goals. In this proceeding, SDG&E recommends that the Commission focus more broadly on electric transportation market development, rather than just the narrower concerns of business segment development, as was the focus of R.09-08-009. SDG&E asks the Commission to exercise its oversight role and use the utilities as a vehicle to accelerate the growth in the overall AFV market, as was done during the formative years in the development of the energy efficiency market. SDG&E fully supports: (a) the Commission's focus of this proceeding as a "mid-stream assessment of the utility role in the market"; and (b) that the Commission does not intend for this rulemaking to delay the gathering of practical experiences to be gained in the market today through pilot programs.

SDG&E believes that CPUC regulatory policies and utility initiatives can and should be designed to promote the accelerated adoption of AFVs, as well as to increase the total zero emission miles driven with the following goals in mind:

1. Ensure even handed policies that avoid preferences for one technology or business or business model over another; that is, let the market participants and customers determine preferences;
2. Ensure that safe and reliable utility infrastructure is available to meet AFV energy needs of utility customers, while concurrently improving the utilization of energy resources and the utility system in order to increase the benefits to all of its customers; and,
3. Ensure that utility customers are educated about AFV technologies and benefits.

Utilities have and will continue to play critical roles in supporting the growth of AFVs, particularly electric transportation during its formative stages of market development. SDG&E will continue to do its part to accelerate the growth of electric transportation by ensuring the safe,

[1] California Executive Order B-16-2012.

reliable and efficient integration of electric transportation loads with the grid. SDG&E submits this is best accomplished by working with all stakeholders to support the market through technology, pricing, innovation and education. SDG&E welcomes the continuing discussion about its past and current leadership role in the AFV market.

SDG&E is pleased that the Commission, in this OIR, is drawing upon the policy discussion in other relevant proceedings, including energy storage.[2] All customers can benefit from the addition of flexible PEV charging loads when the energy storage characteristics inherent in PEVs are used to improve system utilization and grid reliability. Efficient integration of PEV loads can lead to cost savings if the additional load is managed in ways that minimize utility infrastructure additions. Furthermore, advancement in grid-integrated charging will lessen the impact of evening peak demand and enable the efficient integration of renewable energy resources. Conversely, transportation electrification could have negative impacts on the grid and societal costs if customer-centered policies and measures are not taken to enable efficient and effective Vehicle-Grid Integration.

## II.
## GUIDING PRINCIPLES

### A. Market Assessment

The proposed scope of this AFV OIR is forward-looking, but SDG&E believes this rulemaking can also benefit by reflecting on what has been learned since 2009 when the CPUC opened the first AFV OIR, R.09-08-009 ("1st AFV OIR"). In the 1st AFV OIR, the CPUC set out to make relevant and timely decisions in 2010[3] and 2011[4] without the benefit of much actual market data in areas such as vehicle sales, usage patterns for charging, consumer preferences, use of charging equipment and consumer reaction to rates. This new AFV OIR can benefit by reflecting on progress in the market since the 1st AFV OIR was opened:

---

[2] See R.10-12-007.
[3] See D.10-07-044 regarding CPUC jurisdiction over electric vehicle charging services.
[4] See D.11.07-029 regarding utility notification of electric vehicles, rate design for electric vehicles, submetering protocols for electric vehicle load, load research and cost tracking for electric vehicles, utility education and outreach for electric vehicles, etc.

- What aspects of the AFV market are working well?
- What geographic locations or customer segments are underrepresented or underserved?
- What are the market barriers and gaps to achieving AFV benefits, and how can these be addressed?
- What is the best path to achieve the Vehicle-Grid Integration (VGI) benefits outlined in the VGI White Paper?

What aspects of the AFV market are working well? Vehicle sales have achieved tremendous growth in California, and the cooperative efforts of many stakeholders in support of the market have been exemplary (e.g., the California Plug-in Electric Vehicle Collaborative). The challenge today is to sustain, and hopefully accelerate, this market momentum.

What geographic locations or customer segments are currently underrepresented or underserved? This rulemaking should immediately address how best to ensure that all customer segments have access to charging services – and in light of the VGI objectives, grid-integrated charging services for Multi-unit Dwelling and workplace customers.

What are the market barriers and gaps in the AFV market? Little progress has been made in the development of grid-integrated charging services in line with the objectives of the VGI White Paper. SDG&E believes strong utility leadership is necessary to achieve these objectives, which can be achieved in a manner that supports market-based solutions, fosters innovation, and addresses environmental justice interests.

As learned from SDG&E's PEV Pricing and Technology Study, much can be achieved through pricing with simple enabling technology. SDG&E advocates simple customer-centric solutions to achieve VGI objectives. The benefits of VGI can be achieved by leveraging innovative pricing with customer-centered enabling technology that offers a pathway for customer-choice driven solutions.

For example, SDG&E is encouraged by the CPUC's interest in re-examining the role of the utility as well as the need for data from pilot programs to inform CPUC policy:

> "While this proceeding is designed as a mid-stream assessment of the utility role in the market, we recognize that RD&D projects and pilot programs can continue innovation already achieved to date. For this reason, we do not intend to foreclose proposals in parallel applications for particular pilot programs or RD&D projects parties may find timely and worthwhile while this proceeding is pending."[5]

SDG&E believes understanding and appreciating customer preferences and behavior are critical to the success of VGI. During the course of the 1st AFV OIR little information was available for Commission consideration concerning these topics. In this AFV OIR the Commission should place emphasis on research findings and studies that shed light on customer response to rates and pricing, charging decisions and preferences, as well as vehicle preferences, in light of unique regional differences. In line with these Commission interests, SDG&E intends to file a vehicle-grid integration pilot proposal with the Commission, parallel with this rulemaking proceeding. The goal of the pilot will be to investigate the costs and benefits of an innovative experimental rate with a grid-integrated vehicle charging platform, building on SDG&E's most recent PEV Pricing and Technology Study findings. These findings result from two years of operation of SDG&E's experimental PEV tariff approved by the CPUC on June 24, 2010.[6]

## B. Charging Infrastructure, Product and Service Policy

Ensuring utility infrastructure is available to meet the AFV energy needs of SDG&E's customers in a manner that provides benefits to all customers is an immediate priority. The growth in and expansion of pricing, technology and business model options should be encouraged. To that end, utilities should be allowed to actively participate in all aspects of transportation electrification, including owning and operating grid-integrated charging facilities. The CPUC can oversee this activity to ensure that it does not stifle market competition and that there is adequate availability of grid-integrated charging infrastructure for all customers.

---

[5] R.13-11-007, OIR, pages 14-15. A continuation of the previous OIR (R.09-08-009), in support of California Executive Order B-16-2012, which set a target of 1.5 million zero-emission vehicles ("ZEVs") in California by 2025, there is a renewed focus on vehicle grid integration.

[6] CPUC Resolution E-4334, approval of Advice Letter 2157-E, filed March 26, 2010, entitled PEV Pricing and Technology Study. Interim report filed December 28, 2012, reported in the Electric Vehicle Load Research Final Report, 2012.

Specifically, utility leadership in the deployment of grid-integrated charging is an appropriate and necessary role in the market – it is incumbent upon the utility and the Commission to ensure that all customers are protected from costs that can be avoided through VGI measures. SDG&E asks that the Commission remain open to utility participation in providing innovative products and services to create an excellent customer experience for its PEV customers.

### C. Medium-duty, Heavy Duty and Off-road Electric Vehicles

SDG&E welcomes the discussion of medium-duty electric vehicles, heavy-duty electric vehicles, and off-road electric vehicles as part of this rulemaking. Although the timeline for availability of such vehicle stock lags that of light duty PEVs, there is common ground in terms of rate and charging facility solutions. This is an important subject area for this rulemaking but should be covered after the more immediate and higher priority subject areas are addressed in the light duty PEV markets.

## III. DISCUSSION

SDG&E offers the Commission feedback on the specific questions set forth in this proceeding.

### A. White Paper

#### (1) Is the VGI framework proposed in the White Paper a reasonable way to organize VGI activities and scenarios?

Yes, the White Paper has created a good framework for near and long term issues. As it states, "VGI may enable the return of these cost savings as a revenue source that improves the value proposition of owning and operating a PEV.[7]" PEV customers need to be the focus of the value opportunity since they are the key actors who will ultimately decide whether or not PEVs will become VGI resources. Use cases should be prioritized based on the likelihood to deliver sufficient value to PEV customers to persuade them to participate in VGI.

[7] R.13-11-007, OIR, Attachment 1, VGI Whitepaper, page 3.

Two additional issues that should be considered within the framework are customer-centric solutions (e.g., price-driven decision making) and expansion of ways to harness value of the flexibility of PEV load (e.g., by location, frequency and rate of charge).

**Increase Focus on Customer-Centric Solutions**

Simple, near-term solutions that increase customer choice through innovative pricing and VGI enabling technology should be explored first. All customers can benefit from improved grid utilization. The emphasis should be placed on learning more about how customers respond to price signals, especially those with enabling technology. Effective customer charging behavior can facilitate cost minimization for both the grid and the fuel cost for the AFV customer. This benefits all utility customers through improved utilization of the grid.

**Leverage flexibility of PEV load**

Another area that should be explored is examining current measures to efficiently integrate flexible PEV charging loads at the home or commercial setting through the use of Energy Management Systems ("EMS") and other load management measures. The White Paper focuses mainly on PEV charging load segregation, when, in fact, there is also much to be gained by efficiently integrating these loads at a customer's premises, where possible. Given the flexible nature of the PEV loads, for example in terms of charge rate and charge times, load diversity and load management possibilities can be increased. In commercial settings, adopting site load management practices can minimize the impact on a customer's bill.

**(2) Do you agree with Energy Division's prioritization of the VGI scenarios?**

Yes, the Energy Division's general prioritization of V1G before V2G is most important since the current and near future inventory of PEVs is V1G enabled. SDG&E agrees that Use Case 1 faces no serious implementation barriers. For example, most existing Demand Response (DR) rates and programs already accommodate vehicle load as an effective flexible DR-type load.

The top priority should be to focus on use cases that enable direct VGI participation by PEV customers. Coordination of Actor objectives is a considerable issue for the remaining use

cases, and will take time to resolve. VGI benefits will accrue to the Actor that interacts (or transacts) with the Wholesale Market and/or Utility. It is the responsibility (or business opportunity) of that Actor to find willing PEV customers. Consequently, PEV customers and grid-integrated charging service providers who can directly transact with the Wholesale Market and/or Utility will likely garner the most direct benefits of VGI.

**(3) Does the White Paper capture all the utility regulatory barriers to VGI?**

Regulatory prohibition against utility owned PEV submetering will need to be revisited, especially if grid-integrated charging is at stake (similar to the White Paper characterization of Unified Actors case). Only the utility has the (proprietary) information necessary to implement grid-integrated charging optimization with its distribution system conditions. The California Independent System Operator (CAISO) does not have utility grid condition visibility.

The White Paper contemplates the need to coordinate Fragmented Actors. The Fragmented Actors may seek to interface with the Wholesale and/or Utility VGI markets, using separate meters, potentially meters in parallel with other Actors. VGI markets may require metering and telemetry capabilities not currently available in some commercial products. Utility provided meters and submeters may be an option preferred by some market Actors, and may facilitate various Aggregator models and VGI markets.

The CPUC may need to clarify regulatory authority over customer-owned PEV submeters used in utility billing and VGI markets. D.13-11-002 Modifying the Requirements for development of Plug-in Electric Vehicle Submetering Protocol does not contain a schedule to clarify if the CPUC or if the California Department of Food and Agriculture's Division of Measurement Standards has authority to ensure the accuracy of EV submeters used for utility billing purposes or for use in VGI markets. This clarification over accuracy authority will impact the development of VGI markets. The White Paper identifies metering and telemetry as an issue that must be resolved in order to implement VGI.

**(4) How should we address any potential safety and reliability concerns associated with VGI?**

Safety and reliability should be addressed as the use cases are more fully developed and implemented. SDG&E policies and procedures incorporate safety and reliability and these concerns certainly can be evaluated against any new scenarios once developed. Implementation may also require safety rules that customers and other actors must follow to participate in VGI.

**B. Rate Design Policy**

**(1) What is the utility experience to date regarding customer election to use PEV-specific tariffs?**

SDG&E's residential customers who are on time of use tariffs have largely responded to price signals and charged in the off-peak and super off-peak periods. Over a 12 month period, residential customers on a separate meter for their PEV charge less than 10% during the on-peak period (noon to 8pm), and charge over 90% during the off-peak (8pm to midnight and 5am to noon) and super off-peak periods (midnight to 5am). Electric vehicle residential customers on a single meter rate (whole house rate) charge 30% during the peak period (noon to 6pm) and about 70% during the off-peak and super off-peak periods.

However, 60% of PEV customers remain on SDG&E's tiered rate structure. Many of these customers have both solar and a PEV with the solar system sized to remain out of the upper tiers. These customers will tend to charge as soon as they get home, which is during the residential circuit peak time as they do not receive a price signal to influence them to charge during off-peak periods.

SDG&E's billing department has not received many complaints or confusion from its EV customers; this is likely attributed to SDG&E's PEV educational efforts with customers.

**(2) What issues need to be considered when designing PEV rates for residential charging?**

As with all rate design elements, PEV rates for residential charging should follow the Commission's 10 rate design goals, which advocate for accurate price signals that encourage

conservation of energy and infrastructure and allow customers to make economically efficient decisions.[8] A key component of the rate design principles is that any subsidy or incentive be transparent and direct. The relevant aspect here then is how to integrate PEV load with the grid in a manner that increases overall efficiency of grid operations and infrastructure build out. As noted throughout SDG&E's opening comments, increasing overall grid efficiency can lower overall costs. From a rate design perspective there should be clear accounting of the cost of serving PEV customers, as well as any services PEV customers provide to the grid. In this manner, the efficient integration of PEV loads with the grid will lower the cost of service to all customers.

**(3) Should the Commission consider new rate tariffs for workplaces providing PEV charging?**

The Commission should consider utility proposals for new rates that can increase accuracy in the cost of service of workplace PEV charging as well as account for the services the PEVs can potentially provide to the grid, for example, from grid-integrated charging. As PEVs are flexible load, their value can be further realized through price signals and enabling technology that can capture peak system conditions, peak circuit conditions and periods of excess supply of energy that can result from high penetration of renewable energy resources.

**(4) How can residential and workplace PEV rates incentivize smart charging and allow controlled charging?**

There are two components that can unlock the value of PEV charging potential:

1. Accurate price signals; and
2. Efficient integration of PEVs and PEV charging assets with the grid.

Rates can be designed to account for the level of service a customer's PEV charging requires from the grid. The ability to provide rates that recognize the maximum benefit that PEV

[8] R.12-06-013.

charging can provide will depend upon the amount of flexibility that is provided to the utility to manage PEV charging to avoid adverse grid impacts and maximize grid benefits.

**(5) How should the Commission address demand charges for medium - and heavy-duty plug-in electric vehicles?**

Recovery of grid costs are appropriately done through demand charges where the customer has the ultimate flexibility of deciding service demands based on the utility price signals. Should customers decide to capture the value of PEV load flexibility and provide the utility the management of PEV charging under specific conditions then the utility can more readily integrate these resources with the grid, optimizing with distribution system conditions and needs. Under these conditions utilities should be able to look at other rates that provide more flexibility to PEV charging yet provide the same level of certainty on the recovery of grid costs.

**(6) What changes, if any, are needed to tariffs related to compressed natural gas vehicles?**

At this time, no changes are needed to SDG&E's CNG tariffs.

**(7) What other issues related to alternative fuel vehicle rates should the Commission address?**

The Commission will need to address how to allow utilities the ability to engage with PEV charging loads in a manner that will allow the benefits of PEVs to be realized, to the benefit of all utility customers. In particular, the issue of efficient integration of PEV loads with the grid and the role utilities can play with PEV customers to unlock the benefits of grid-integrated charging for all customers. Customers can be provided greater alternatives in rate structures in exchange for greater utility interaction with and management of their PEV charging as an integral part of efficient grid management.

The Commission should approve utility proposals to launch pilot programs focusing on initiatives, to further explore price and technology solutions and identify the benefits of VGI. PEVs have a tremendous potential to assist with storage solutions and increase the utilization of

renewable energy resources, as part of an overall VGI platform. In the near term, PEVs can be part of broader load management solutions, as well as a Demand Response program resource.

## C. Financing

**(1) Should the Commission direct the utilities to provide financing to customers to encourage PEV adoption? If so, what financing options should be considered?**

SDG&E appreciates the Commission's recognition that direct investment of capital by utilities can help advance markets that serve Commission policy goals and ratepayer interests. SDG&E is not clear as to what issue the Commission is trying to address with financing or financing-related measures. For example, SDG&E does not believe it can add value to the consumer and fleet vehicle financing and leasing markets today. In the case of financing programs in the PEV space, SDG&E does not currently see value in SDG&E offering such programs and does not believe that it would be appropriate to mandate such programs.

**On-Bill Repayment ("OBR")**

Utility pilot programs in the energy efficiency area are currently exploring the concept of On-Bill Repayment ("OBR") which has yet to be implemented.[9] SDG&E submits that the market conditions surrounding the need for OBR are a unique solution in the energy efficiency market and are not directly applicable to AFV adoption and EVSE installation. Any consideration of OBR repayments in this rulemaking proceeding should prudently be considered only after reviewing the results of these energy efficiency OBR pilots.

## D. General

**(1) What changes to the Commission's Rules or new Rules are needed to facilitate the goals outlined in this OIR?**

**Grid-integrated Charging Infrastructure and Policy**

To date, SDG&E has not observed progress in the market to enable grid-integrated vehicle charging, or time-variant pricing (that reflect the changing cost of energy and grid

[9] D.13-09-044 Energy Division, CPUC leads, among other pilots, the On-Bill Repayment (OBR) pilot program proposals in the energy efficiency program area.

conditions throughout the day). SDG&E believes that strong utility leadership is necessary to accomplish the VGI objectives described in the White Paper. SDG&E is interested in pilot testing one or more grid-integrated charging solutions, especially for customers who may not have regular access to or resources for installing vehicle charging. Examples include (but not limited to) Multiple-unit Dwellings ("MuD") and workplace customers.

A closer examination of issues related to commercial customers reveals that solutions for increasing the installation of workplace EVSE are more complex. Because commercial customers usually have a variety of financing options available to them, financing is likely not the main driver (see the PEV Collaborative publication "Amping up California Workplaces"[10]). Similarly, for MuD EVSE installations, while financing solutions may have an impact, there are more challenging aspects in play for the MuD customer segment, as reported in the recently published findings by the PEV Collaborative (see "Plug-in Electric Vehicle Charging Infrastructure Guidelines for Multi-unit Dwellings"[11]). A utility option for grid-integrated charging services could be made available under Commission oversight and in ways that support competitive markets. This will ensure an equitable distribution of grid-integrated electric transportation- related services to all customers, communities and locations. SDG&E believes that the PEV adoption rate can be greatly accelerated, and the Governor's ZEV goals achieved, through the ubiquitous availability of grid-integrated charging services throughout the state of California.

SDG&E's vehicle-grid integration developmental work under way today (with employee workplace charging at its SDG&E campus) will provide opportunities to test various technologies to help set the requirements needed to advance grid-integrated charging standards. This is an appropriate leadership role for the utilities, acting under Commission oversight, as facilitators of early market development. This will help to maximize the benefit of the utility role while supporting market-based solutions and innovation, and also addressing environmental

[10] http://www.evcollaborative.org/sites/all/themes/pev/files/WPC_Report4web.pdf.
[11] http://www.evcollaborative.org/sites/all/themes/pev/files/MUD_Guidelines4web.pdf.

justice interests. The Commission should remain open regarding utility participation in providing innovative products and services to help increase the adoption of AFVs.

## IV.
## CONCLUSION

SDG&E appreciates the opportunity to provide these comments and looks forward to further dialogue with the Commission and stakeholders.

Dated at Los Angeles, California, this 13th day of December, 2013.

Respectfully submitted,

By: _____*/s/ Steven D. Patrick*_____
Steven D. Patrick

*Attorney for*
**SAN DIEGO GAS & ELECTRIC COMPANY**
555 West Fifth Street, Suite 1400
Los Angeles, CA 90013-1011
Telephone: (213) 244-2954
Facsimile: (213) 629-9620
E-Mail: SDPatrick@semprautilities.com