

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA



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In the Matter of the Application of Pacific Gas and Electric Company for Approval of its Electric Vehicle Infrastructure and Education Program (U39E).

Application 15-02-009
(Filed February 9, 2015)

**COMMENTS OF THE OFFICE OF RATEPAYER ADVOCATES ON
THE PHASING OF PACIFIC GAS AND ELECTRIC COMPANY'S
ELECTRIC VEHICLE INFRASTRUCTURE AND EDUCATION PROGRAM**

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The Office of Ratepayer Advocates (ORA) provides these comments in response to the Administrative Law Judge's (ALJ) June 16, 2015 Ruling requesting comments on Pacific Gas and Electric Company's (PG&E) Electric Vehicle Infrastructure and Education Program (EV Program) Application (A.)15-02-009. ORA requests the Commission divide PG&E's EV Program into phases to help ensure that the program's design and implementation flaws can be corrected before the Commission approves a full scale program. The benefits of phasing include:

- Testing the effectiveness of the EV Program's underlying cost, design, and implementation assumptions before deploying a subsequent phase in the EV Program larger in size;
- Providing the Commission and stakeholders with early data and findings regarding EV Program gaps, limitations, strengths and weaknesses and utilizing this information to develop the next phase of the EV Program;
- Providing data to justify the size of the next phase in the EV Program and to determine whether a third phase is needed;
- Identifying design and implementation modifications needed before the next phase of the EV Program is implemented; and
- Examining the justification for funding of a large-scale EV Program.

I. INTRODUCTION AND BACKGROUND

On February 9, 2015 PG&E filed its application for Approval of its EV Program. PG&E proposes to:

- Deploy, own and maintain approximately 25,000 Level 2 (L2) electric vehicle (EV) charging stations and 100 Direct Current (DC) Fast Chargers at approximately 2,600 sites;
- Target public facilities, workplaces and multi-unit dwellings (MUDs);
- Offer education and outreach materials to drive EV adoption;
- Target approximately 10 percent of the charging infrastructure for disadvantaged communities; and
- Use time-variant pricing.¹

PG&E estimates that it will incur capital costs of \$551 million and operating expenses of \$103 million. PG&E anticipates EV Program implementation over five years.²

On March 13, 2015, ORA filed its protest recommending PG&E revise its application to add a pilot program to test the assumption that expanding plug-in electric vehicle (PEV) charging infrastructure will indeed increase PEV adoption.³ The Prehearing Conference (PHC) for PG&E's EV Infrastructure Program was held on June 12, 2015. At the PHC, parties were asked to provide input on what the scope and schedule of PG&E's proposed EV Program might look like if implemented in phases. On June 16, 2015, the ALJ issued a ruling requesting comments by July 3, 2015 on phasing the program. The Ruling asked three questions:

- 1) Can, and should, PG&E's proposed EV Program be phased to allow for a smaller initial deployment?
 - a. If so, describe exactly what the phased Program should look like, and explain what benefits the phased Program offers.
- 2) If the proposed EV Program is phased, how should the scope and schedule of the application be prioritized?

¹ PG&E Electric Vehicle Infrastructure and Education Program Application, p. 3.

² Id. p. 5.

³ Protest of the Office of Ratepayer Advocates to the Application of PG&E's Electric Vehicle Infrastructure and Education Program p. 1.

- a. If PG&E’s proposed EV Program is phased what, if any, issues become out of scope; what if any, issues become narrower in scope; and what, if any, issues become the highest priority?
- 3) If PG&E’s proposed EV Program is phased, how can it be done in a manner that allows for continuity and market certainty between phases?⁴

II. DISCUSSION

1) **A Smaller Initial Deployment Will Allow The Commission, Stakeholders And PG&E To Gather Information On The Impact Of EV Infrastructure On The Rate Of EV Adoption And Identify Barriers And Solutions While Minimizing Risk to Ratepayers.**

PG&E’s EV Program can and should be phased. Launching a smaller Phase 1 can provide the benefits that generally accrue from the deployment of a pilot, such as providing advance warning of potential weaknesses in a proposed study, informing feasibility, identifying modifications needed in the design of the larger study,^{5,6} “test[ing] whether the components of the main study [i.e. the larger program] can all work together,”⁷ and helping to avoid unnecessary costs and delays of an inadequately designed project. Generally, in research, a smaller program is implemented in order to:

confirm expected results and relationships, understand expected variation in the process and its possible impact to the consumer, improve a solution, improve the implementation, lower the risk of failure, improve the ability to better predict monetary savings from a proposed solution, increase opportunities for feedback, increase buy-in, quickly deliver a version of a solution to a particular segment, [and] validate the measurement system.⁸

⁴ A.15-02-009 Administrative Law Judge’s Ruling Requesting Comments, p. 1.

⁵ Conducting Pilot Studies. Excerpts adapted from: Simon, M.K. (2011). Dissertation and scholarly research: Recipes for success (2011 ed.) Seattle, WA: Dissertation Success, LLC.

⁶ Leon, A.C., Davis, L.L., and Kraemer, H.C. “The Role and Interpretation of Pilot Studies in Clinical Research.” *Journal of Psychiatry Res.* 2011 May; 45(5): 626-629.

⁷ Arain, M., Campbell, M.J., Cooper, C.L. and Lancaster, G.A “What is a pilot or feasibility study? A review of current practice and editorial policy.” *BMC Medical Research Methodology* 2010, 10:67 Downloaded from: <http://www.biomedcentral.com/content/pdf/1471-2288-10-67.pdf>

⁸ Stroud, J.D. To Pilot or Not To Pilot a Six Sigma Project or Design, <http://www.isixsigma.com/implementation/project-selection-tracking/pilot-or-not-pilot-six-sigma-project-or-design/>

PG&E already proposes to deploy EV infrastructure in a phased approach. While PG&E has proposed to perform an internal review of the EV Program approximately 24 months after its initiation,⁹ officially phasing the program will allow the Commission to measure program assumptions and performance with preliminary data from the initial deployment of charging stations. Phasing the program will inform the Commission, PG&E and stakeholders as to what metrics, strategies, practices and procedures have been most effective and provide a quantitative and/or qualitative basis for how best to scale the program. To the extent PG&E seeks ratepayer funding of its EV program, gathering and examining data is essential to minimizing ratepayer risk.

A phased approach will enable the Commission to gather more data on the correlation between the availability of charging infrastructure and EV adoption. A multi-country study¹⁰ that examined socio-economic factors influencing PEV adoption identified a correlation between charging infrastructure and PEV adoption levels but cautioned that there is no guarantee that the relationship would hold for all countries. In fact, in some countries there was a weak correlation between charging infrastructure and PEV market share. For example, the study showed that Austria, Sweden and the United States had comparable PEV market shares (percent of annual car sales). However, the charging infrastructure (per 100,000 residents) in Austria was six times as much as that of the United States, and in Sweden it was twice as much, casting doubt as to how much the presence of charging infrastructure impacts PEV market share. Similarly, the study showed that other countries, such as Ireland and Denmark, with six times as many charging infrastructure (per 100,000 residents) as the United States, had PEV market shares smaller than the United States. A phased approach would allow the Commission to identify other confounding factors, such as the price of an EV, that may play a role in increasing PEV adoption and use that information to direct the most effective use of ratepayer and utility investment.

PG&E approximates having 10% of installations completed by the end of Year 2, 20% in Year 3, 35% in Year 4, and 35% in Year 5.¹¹ A phased approach can be consistent with these

⁹ *Testimony of Pacific Gas And Electric Company Chapter 2: Electric Vehicle Program Design and Implementation*, p. 2-5. A.15-02-009

¹⁰ Sierzchula, W., Bakker, S., Maat, K., and van Wee, B. "The influence of financial incentives and other social-economic factors on electric vehicle adoption." *Energy Policy* 68 (3014) 183-194.

¹¹ *Testimony of Pacific Gas And Electric Company Chapter 6: Electric Vehicle Program Costs and Results of Operations*, p. 6-5. A.15-02-009

figures. During Phase 1, ORA recommends that the Commission authorize PG&E to install EV infrastructure to support up to 1,700 charging stations in its service territory—this is roughly 6.5% of the total proposed by PG&E and about half of what PG&E expects to deploy by the end of Year 2 of its program.¹² This is also relatively consistent with the general guidance that the size of a pilot study should be about 10% the size of the anticipated full-scale program.¹³ Installation of 1,700 stations during Phase 1 would also increase the number of charging stations in PG&E’s service territory by 65%.¹⁴

During this initial phase, priority issues and concerns such as EV siting methodologies, effect of EV infrastructure deployment in different market segments (e.g., MUDs, Disadvantaged Communities) on PEV adoption, the impact of the EV Program on the EV charging market, and utility versus electric vehicle service provider (EVSP) role in marketing, education and outreach, should be addressed and to the greatest extent possible, resolved.

Implementing an initial smaller Phase 1 program will provide a more accurate foundation for potential large scale deployment by:

- Testing if there is a strong correlation between increased EV infrastructure and increased EV adoption;
- Collecting data of unexpected factors that helped or hindered deployment of EV infrastructure;
- Gathering and analyzing data on non-EVSE related barriers to EV adoption;
- Providing insight on solutions to unexpected problems;
- Testing methods to identify strategic locations for charging stations that will increase EV adoption and Zero Emission Vehicle miles driven;
- Testing how siting infrastructure at different locations affects EV Charger Equipment use;

¹² This number of charging stations was proposed in its *The Office of Ratepayer Advocates’ Motion to Consolidate Proceedings and Implement its Alternative Proposal for Deployment of Investor owned Utility Electric Vehicle Infrastructure Pilots*, April 13, 2015. ORA’s estimates are based on the 1500 charging stations SCE proposed for its Phase 1 pilot. The 1500 charging stations were then scaled by the number of customers PG&E has in its service territory—the scaling uses SCE’s 14 million customers as the base. The number of customers in PG&E’s service territory is 16 million.

¹³ Conducting Pilot Studies. Excerpts adapted from: Simon, M.K. (2011). Dissertation and scholarly research: Recipes for success (2011 ed.) Seattle, WA: Dissertation Success, LLC.

¹⁴ As of September 2014, there were approximately 2,600 charging stations in the PG&E service territory.

- Gauging the impact of ratepayer funded EV charging station infrastructure on charging station deployment;
- Helping to refine cost estimates for EV charging station and related infrastructure and EV chargers, including identifying the sites that require distribution infrastructure upgrades;
- Helping to identify areas in which more knowledge about EVSE is needed;
- Providing information for stakeholder input to improve the program;
- Helping to identify the role of the utility in EVSE; and
- Evaluating whether a full program (full-scale implementation) is feasible and worth funding or whether a third phase is needed.

Additionally, to prevent the development of an anti-competitive market during Phase 1, ORA recommends that PG&E not own any EV charging stations (i.e. EV Charger Equipment). During Phase 1, the program should be restricted only to deployment of EV Service Connection and EV Supply Infrastructure as defined in PG&E’s application. If the Commission wishes to authorize PG&E to own EV charging stations during the information gathering pilot stage, then the Commission must first apply the balancing test reaffirmed in Decision (D.) 14-12-079 to determine the impact such utility-owned charging stations would have on competition in the electric vehicle service provider (EVSP) market.¹⁵

ORA further recommends that Phase 1 for PG&E’s EV Program should be 12 to 18 months in length, depending on how much infrastructure is actually deployed and the amount of data available for analysis. ORA suggests that PG&E provide a report to the Commission at the end of Phase 1 regarding findings on a list of performance metrics including, but not limited to, EVSE deployment per market segment, EV charger utilization at the site level, and load impacts. A tentative Phase 1 timeline along with Phase 1 deliverables is provided in Section II, Sub-section 3 below.

¹⁵ Phase 1 Decision Establishing Policy To Expand The Utilities’ Role in Development of Electric Vehicle Infrastructure, D.14-12-079, Ordering Paragraph 2. “The benefits of utility ownership of PEV charging infrastructure must be balanced against the competitive limitation that may result from that ownership.”

2) The Scope And Schedule Should Be Modified For An Expedited Decision On Phase 1

If the PG&E EV Program is phased, as ORA recommends, the schedule should include evidentiary hearings on Phase 1. The scope of issues in Phase 1 should include: EVSE Siting Methodologies, Data Metrics, Marketing, Education and Outreach, and what kind of EV Charger Technology (Level 1, L2 or DCFC) should be utilized. Phase 1 of the program should provide answers to the following questions:

- What *is* the utility's role in EV infrastructure deployment and siting per market segment?
- Who is better suited to select siting locations—the utility, the electric vehicle service providers (EVSPs) or, for those areas served by Community Choice Aggregation (CCAs), the CCAs themselves? How can these various entities collaborate with each other to better deploy EV infrastructure and achieve the Governor's goals and reduce Green House Gas (GHG) emissions?
- Is utility ownership of EV charger equipment required? ORA recommends that Phase 1 of the EV Program should exclude utility ownership of EV charging stations until such time that data is collected to answer this question and the Commission balances the interests at stake, including a competitive market for charging stations. Phase 1 may identify areas where IOU ownership of EV charging stations is essential to encourage EV adoption.
- What are the requirements for performance metrics, data analysis, and reporting?
- What is the utility and EVSP role in marketing, education and outreach?
- How will load management at site host locations be tracked and monitored?

The scope of issues reserved for the next phase, Phase 2, of the EV Program should include:

- Utility ownership of EV charging stations;
- Appropriate EV Program size and cost;
- Rate schedules where appropriate;
- Advanced siting methodology;
- Market segments;
- Merits of installing Direct Current Fast Chargers (DCFC).

Data and lessons learned from Phase 1 will determine the size of Phase 2 and whether a third phase is required.

3) PHASING PG&E’S PROGRAM CAN ALLOW FOR A SMOOTH TRANSITION BETWEEN PHASES

A smooth transition between EV Program phases can be accomplished by starting the regulatory process for Phase 2 towards the latter half of Phase 1 and requesting the Commission to render a decision on Phase 2 at least one month prior to the official end date of Phase 1. The following timeline assumes that a sufficient number of charging stations (at least 50% of Phase 1) have been deployed by the 9th month of Phase 1, and there is sufficient data to analyze in order to determine the merits of Phase 2. (The timeline also assumes only two phases are required, but the same process can be applied for three phases.)

Year	Month	Phase 1 Deliverables and Commission Actions	Phase 2 Deliverables and Commission Actions
Year 1	1	Start of Phase 1	
	2		
	3	Quarterly Report 1	
	4		
	5		
	6	Quarterly Report 2	
	7		
	8		
	9	Quarterly Report 3 and Interim Report	PHC scheduled
	10		
	11		
	12	Quarterly Report 4	Testimony Filed
Year 2	1		
	2		Hearings
	3		
	4		
	5		Commission Decision

	6	End Phase 1	Start Phase 2
	7	Final Report	
	8		
	9		
	10		
	11		
	12		

III. CONCLUSION

ORA recommends that PG&E’s proposed EV Program should be divided into phases as discussed above, to minimize risks to ratepayers while maximizing adoption of electric vehicles.

Respectfully submitted,

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