



FILED

6-17-16
04:59 PM

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

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

A.15-02-009

GREEN POWER INSTITUTE OPENING BRIEF

June 17, 2016

Gregory Morris, Director
Tam Hunt, Consulting Attorney
The Green Power Institute
a program of the Pacific Institute
2039 Shattuck Ave., Suite 402
Berkeley, CA 94704
ph: (510) 644-2700
fax: (510) 644-1117
gmorris@emf.net
tam@communityrenewables.biz

TABLE OF CONTENTS

I. SUMMARY	3
II. BURDEN OF PROOF AND LEGAL STANDARDS	5
III. THE PROPOSED SETTLEMENT IS NOT COMPLIANT WITH PREVIOUS RULINGS AND DOES NOT MEET THE COMMISSION’S SETTLEMENT GUIDELINES.....	6
IV. PROGRAM SCOPE, DURATION AND COST	10
V. UTILITY OWNERSHIP	11
VI. PG&E SHOULD INCLUDE ADDITIONAL COST-EFFECTIVENESS ANALYSIS	14
VII. DEMAND CHARGES SHOULD BE MODIFIED FOR THIRD-PARTY DCFC OWNERSHIP.....	15
VIII. ADDITIONAL DCFC MAKE-READY STUBS SHOULD BE ADDED TO EACH DCFC LOCATION	18
IX. COORDINATION WITH DISTRIBUTION RESOURCE PLANS	20
X. EDUCATION AND OUTREACH	21
XI. ADVISORY COUNCIL.....	24
XII. CONCLUSION	24

TABLE OF AUTHORITIES

California Public Utilities Code

Public Utilities Code section 451 4

Other Authorities

D.11-07-029 Numerous
D.14-12-079 5, 10
D.16-01-045 4-10

GREEN POWER INSTITUTE OPENING BRIEF

The Green Power Institute respectfully submits this opening brief on PG&E's application to own EV charging infrastructure, the *Application of Pacific Gas and Electric Company for Approval of its Electric Vehicle Infrastructure and Education Program*.

The Green Power Institute (GPI) is the renewable energy program of the Pacific Institute, a non-profit environmental and social advocacy group. Under the direction of Dr. Gregory Morris, the Green Power Institute performs research and provides advocacy on behalf of renewable energy systems and the contribution they make to reducing the environmental impacts of fossil-based energy systems. The Green Power Institute is located in Berkeley, California.

I. SUMMARY

While strongly supportive of a utility role in helping to accelerate EV adoption, the GPI is not a signatory to the proposed settlement ("PS") because we feel that it doesn't qualify as a settlement under the Commission's own rules (only a third of the parties have joined the settlement), and because it doesn't include a pilot program that is compliant with the Commission's previous guidance. In short, the proposed settlement is not just and reasonable. A summary of our positions follows:

- ◆ While the GPI remains supportive in principle of IOUs, and PG&E specifically, owning EV charging infrastructure, PG&E's proposed program has not been modified sufficiently, based on our previous comments and testimony and that of other parties', as well as the Commission's own directives, to allow us to support the PS.
- ◆ We agree with the Non-Settling Parties that the PS is not compliant with the Commission's ruling on PG&E's full application in its September, 2015, ruling.
- ◆ The Commission should reject the proposed settlement and create an alternative along the lines we describe below.

- ◆ The alternative should consist of 2,500 L2 chargers and up to 300 DCFCs, deployed over a two-year period.
- ◆ PG&E should be allowed to own the make-ready stubs only, mirroring SCE's approach. There is no need to test a utility-ownership model for EV chargers in this pilot because that approach has already been approved and will be tested in SDG&E's similar EV pilot.
- ◆ We urge the Commission to require a cost-effectiveness analysis of PG&E's proposed program before it is approved, in line with the analysis provided by SDG&E and going beyond the sum costs approach that PG&E offers as an argument for why the net costs to ratepayers should be considered reasonable. EV programs have a large potential for cost savings as well as environmental benefits, and these attributes should be part of the record and highlighted as an example of a win-win program. If the Commission's cost-effectiveness analysis procedures need revising for the EV sector we urge PG&E to make this case.
- ◆ As another means for keeping the pilot's costs reasonable, we request that the Commission appoint an Independent Evaluator to ensure that program and equipment costs are kept as low as possible as the EV charging market matures. Use of an Independent Evaluator is a common approach for providing substantial third party review of IOU programs. The Program Advisory Council is not well-suited to act as an Independent Evaluator because it meets too infrequently and is purely advisory.
- ◆ Additional DC Fast Chargers (DCFCs) and/or high voltage Level 2 chargers should be added at each DCFC location, or at the least each location should be built in such a way that it can accommodate up to three DCFCs, for a total of up to 300 DCFCs at 100 locations. GPI feels that the addition of DCFCs to PG&E's pilot is the factor that should distinguish it from the two already-approved pilots. PG&E has indicated its intention to provide make-ready improvements for one additional charger at each location but we urge PG&E to expand this to at least two additional chargers (should use data from initial deployment warrant this)

- ◆ We also urge the Commission to limit the education and outreach (E&O) efforts that PG&E seeks to include in its program to the “targeted” E&O described in D.11-07-029 and instead award broader E&O efforts to third party entities and community-based organizations.

II. BURDEN OF PROOF AND LEGAL STANDARDS

D.16-01-045, which resolved SDG&E’s similar EV charging pilot application, described the overarching legal standard for any new utility program succinctly (p. 79): “The first consideration is Public Utilities Code Section 451, which provides that the charge to ratepayers must be just and reasonable.”

D.16-01-045 stated three additional legal standards that must be met for the Commission to approve a utility application for EV infrastructure ownership, including (id.): “To evaluate whether a utility should be permitted to own PEV charging infrastructure, the Commission in D.14-12-079 determined that this should be decided on a case-specific approach, and that the balancing test in D.11-07-029 of weighing the benefits of electric utility ownership of PEV charging infrastructure against the potential competitive limitation that may result from that ownership, should be used.”

Third, that decision stated (p. 80): “The third consideration is the various code sections in the Public Utilities Code, the H&S Code, and the Public Resources Code, that address the deployment of EVs, EV charging infrastructure, GHG reductions, and the amount of energy that is to come from renewable sources of energy. In addition, the Governor’s Executive Order and ZEV Action Plan provide further guidance concerning these various code sections, and what action needs to be taken.”

Last, D.16-01-045 states (id.): “The fourth consideration is that before a settlement can be approved and adopted, the Commission, pursuant to Rule 12.1(c), must evaluate whether the settlement is reasonable in light of the whole record, consistent with the law, and in the public interest.”

GPI keeps these standards in mind as we address specific program design issues below.

III. THE PROPOSED SETTLEMENT IS NOT COMPLIANT WITH PREVIOUS RULINGS AND DOES NOT MEET THE COMMISSION'S SETTLEMENT GUIDELINES

The September 4 2015 scoping memo and ruling denied PG&E's original program size and stated in clear terms (Scoping Memo, p. 7): "The supplement must set forth an initial phase of EV charging station deployment, limited to a maximum of 10% of the total originally proposed number of charging stations, to be deployed over no more than 24 months." PG&E complied with this order in its supplemental testimony by describing a "compliant proposal" but also offered an "enhanced proposal" that was significantly larger than the Commission had ordered PG&E to describe. The Commission should reject the enhanced proposal and the PS that is itself a modified version of the enhanced proposal, and instead adopt a program in keeping with the compliant proposal, but with the modifications described herein.

In terms of the proposed settlement ("PS"), the Commission has itself highlighted the fact that only one-third of the parties in this proceeding have joined the proposed settlement: "the Settling Parties represent only about one-third of the parties in this Proceeding ..." (ALJ Ruling, April 4 2016, p. 1). GPI agrees with the Non-Settling Parties that the proposed settlement should not be considered a viable settlement because it doesn't meet the basic criteria that the Commission has established for viable settlements, including primarily that the settlement doesn't actually settle any major objections by the settling parties other than the CCA issues highlighted by Marin Clean Energy. (Non-Settling Parties Response to Settlement Motion, April 1, 2016).

Because the PS shouldn't be considered a viable settlement of the issues presented we urge the Commission to offer an alternative approach for PG&E's phase 1 pilot similar to the manner in which the Commission resolved the SDG&E pilot application (A.14-04-014,

D.16-01-045). The alternative offered by the Commission should recognize the objections and suggestions raised by the parties to this proceeding over the last 16 months. The Commission offered an alternative approach to the proposed settlement in A.14-04-014 even though a larger proportion of parties had signed on, making the prospect of a Commission-proposed alternative in this case that much more appropriate.

GPI recommends the following framework for such an alternative to be offered by the Commission:

- ◆ Allow PG&E to build and own the make-ready infrastructure for a Phase 1 proposal that would include a mix of Level 2 and DC Fast Chargers.
- ◆ The size of the Phase 1 must be 10 percent of the original total (2,500 L2 chargers plus DCFCs), to be deployed over no more than 24 months, as was required by the Commission in its September 4 scoping memo.
- ◆ PG&E should include at least three make-ready stubs at each DCFC location, installing 1-3 DCFC initially, and building out the remaining one or two chargers at each location consistent with customer demand.
- ◆ Including up to 300 DCFC is the key distinguishing feature of PG&E's pilot under GPI's proposal when compared to the already-approved SCE and SDG&E applications.
- ◆ If third-party ownership of DCFCs is allowed, demand charge modifications will likely be necessary.
- ◆ Appoint an Independent Evaluator to help keep costs low as market prices drop.
- ◆ Approve the narrow education and outreach activities for PG&E's new pilot that were approved in D.11-07-029 but require that the broad E&O activities PG&E describes be managed by third parties, including Charge Ahead California and others that are not focused on disadvantaged and low income communities.

To provide a summary of how our proposal differs from the original proposal, the “enhanced proposal,” and the proposed settlement, see Table 1.

Table 1. *Comparing the alternative programs (adapted from Joint Motion to Adopt Settlement).*

	PG&E Original Proposal, February 9, 2015	PG&E Supplemental Testimony, Enhanced Proposal, October 12, 2015	Charge Smart and Save Settlement Agreement, March 21, 2016	GPI Alternative Proposal
Size	25,000 L2, 100 DCFC	7,430 L2, 100 DCFC	7,500 L2 ports, 100 DCFC	2,500 L2, up to 300 DCFC
Cost	\$654 million	\$222 million	\$160 million (4% lower average annual rate impact than approved in D. 16-01-045)	TBD but approx. \$50 million
Duration	7 years	3 years after initial construction	3 years after initial construction	2 year deployment period as required by Ruling
Utility ownership?	Yes	Yes	Yes	No
Site host choice of charging technology	No	No	Yes	Yes
Improving Cost Effectiveness and Efficiency through Dual Port EVSE and Site Specific DCFC Deployment	No	No	Yes, use of dual port L2 EVSE where appropriate and varying the number of DCFC per site to account for likely use cases	Yes, use of dual port L2 EVSE where appropriate and at least three DCFC make ready stubs at each location
Disadvantaged communities deployment and support	10%, plus \$5 million for additional programs in disadvantaged	10%, budget for additional disadvantaged communities	15% minimum in disadvantaged to \$3.7 million communities, plus additional	15% minimum in disadvantaged communities

	communities reduced		5% stretch goal in disadvantaged and CARE communities, plus \$5 million for additional programs in disadvantaged communities, plus vendor and contractor diversity provisions, plus coordination with federal, state and local EV programs in disadvantaged communities	
Customer Education and Outreach	Yes	Yes	Yes	Yes, but all broad E&O will go to third parties
Independent Review of EVSE Procurement	No	No	Yes, similar to "Procurement Review Groups" for utility energy procurement, non-market participants in PAC will review EVSE procurement	Yes, by an Independent Evaluator
Independent Evaluator?	No	No	No	Yes
Coordination and Collaboration with CCAs	No	No	Yes	Yes
Program Advisory	No	Yes	Yes, including specific duties	Yes, including specific duties

Council			and responsibilities approved in D.16-01-045	and responsibilities approved in D.16-01-045 and working closely with IE
----------------	--	--	--	--

We flesh out this framework in the remainder of this brief.

IV. PROGRAM SCOPE, DURATION AND COST

As already directed by the Commission in its Sept. 4 2015 ruling PG&E’s Phase 1 must be no more than 10 percent of the original number of chargers proposed by PG&E and be deployed over no more than 24 months (Scoping Memo and Ruling, p. 7). This equates to 2,500 L2 charges since the original number was 25,000. GPI agrees that this an appropriately-sized Phase 1, and nothing that PG&E or the Settling Parties have stated since that ruling has shown good cause for changing this approach. Once PG&E and partners have gained experience with the EV charging space with this Phase 1 pilot we look forward to learning about the merits of Phase 2.

In terms of costs GPI raised objections initially to PG&E’s proposed costs, but upon learning more through the discovery process our concerns were partially ameliorated, at least in terms of why PG&E’s proposed costs seemed to be substantially higher than SCE’s and SDG&E’s. We are, however, still concerned about the proposed costs of chargers and related infrastructure based on our polling of the current market price for DCFC and Level 2 chargers, as discussed in our direct and rebuttal testimony. With respect to DCFC costs in PG&E’s application we stated in rebuttal testimony (GPI Exhibit 142, p. 7):

For example, DCFC equipment and installation costs were, based on our inquiries, about \$38,000 per DCFC, with no accounting for discounts for bulk purchases (which would apply for PG&E), compared to \$250,000 total equipment and installation costs per DCFC in PG&E’s proposal. Even accounting for distribution grid upgrades required for each installation, which is not included in the \$38,000 figure, the \$250,000 total cost still seems far too high. We urge PG&E to provide

further explanation for these costs, and the Commission to undertake its own detailed examination of the costs.

As discussed below we also recommend that the Commission appoint an Independent Evaluator to ensure that PG&E is able to reap the benefits for ratepayers of declining equipment costs as EV markets ramp up around the world. We also discuss below the need for a more detailed cost-effectiveness analysis.

V. UTILITY OWNERSHIP

D.16-01-045 and D.14-12-079 require that the Commission apply a balancing test for utility requests for ownership. The Commission must find that the benefits of utility ownership outweigh the potential anti-competitive effects of that ownership, as described above under legal standards. GPI suggests that PG&E's request for ownership of EV chargers and infrastructure does not meet this balancing test because the primary benefit of allowing utility ownership, as opposed to the make-ready approach adopted for SCE's program, was to test the utility ownership model. That rationale no longer applies because SDG&E has been granted that authority and is currently developing a program that will test that approach.

PG&E seeks to own all infrastructure and charging stations under its original \$600+ million proposed program and also under its three Phase 1 proposals (compliance and enhanced cases and the PS revised proposal). PG&E states (PG&E Exh. 03, p. 17):

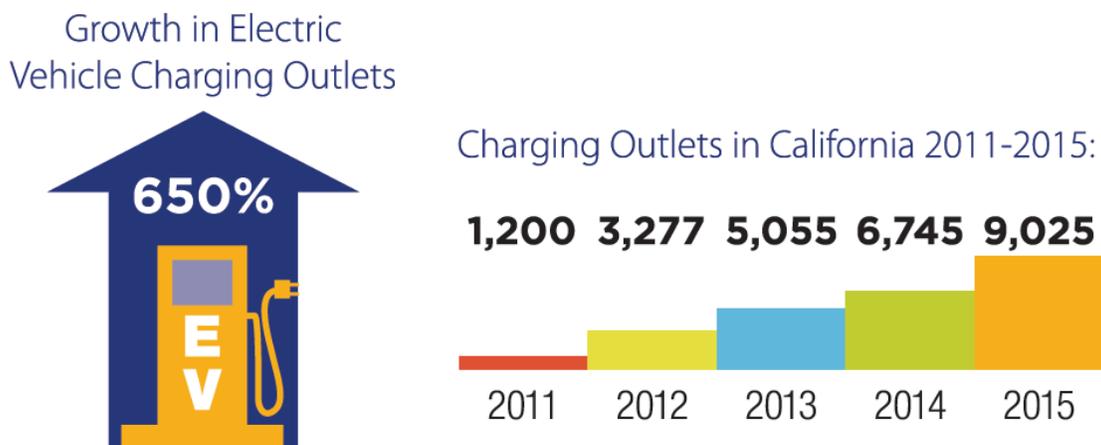
PG&E will purchase and install equipment procured from the competitive marketplace, and own the infrastructure, including the service connection, supply infrastructure and charging equipment. PG&E ultimately will be responsible for the operations and maintenance of the charging equipment, through contracts with equipment and service providers as partners in the program delivery and ongoing operations. PG&E's EV service partners (PG&E's customer of record) will buy the electricity from PG&E to resell to EV drivers at agreed upon prices.

PG&E argues that its ownership model will not bring anti-competitive effects (*id.*, p. 24): "PG&E's original proposal of 25,100 charging stations would amount to less than 1.8 percent of the national EV commercial charging station market in 2021." This is, however,

not the appropriate comparison because even if PG&E does, as it suggests it will, solicit bids from EV charger vendors, it is still the case that PG&E’s ownership and control of the charging stations will prevent third parties from owning, maintaining and controlling those stations in PG&E territory. Accordingly, allowing any ownership of charging stations by PG&E will induce at least some anti-competitive effects in its territory. The question for the Commission to consider is whether the anti-competitive effects are outweighed by the benefits of IOU ownership.

GPI urges, instead, that the Commission approve a “make-ready” approach, like that sought and approved for SCE in its similar pilot application, in which PG&E would own the infrastructure required to accommodate chargers but would not own, maintain or operate the chargers themselves. Rather, third parties would own, maintain and operate the chargers. This is an appropriate balance between the policy concern of promoting EV ownership and the EV market more generally, and anti-competitive impacts from allowing very large actors like PG&E to be direct owners of chargers when there are viable third parties that can do so. Indeed, California’s EV charging infrastructure has been growing robustly with very little utility involvement to date (see Figure 1 showing data through August 2015; many more chargers have been installed since that date).

Figure 1. *CA installed EV chargers (source: EVCA State of the Charge Report 2015).*



Sources: U.S. Department of Energy, Alternative Fuels Data Center (<http://www.afdc.energy.gov/data/10332>) and (http://www.afdc.energy.gov/fuels/stations_counts.html) As of 8/12/15.

We will need to grow by additional leaps and bounds in the coming years in order to meet the state EV and greenhouse gas emission reduction goals, but given that the private market has been doing a reasonably good job to date the Commission should at all times remain concerned about the anti-competitive effects of allowing large-scale utility ownership of EVSE when alternative and viable models are present and, indeed, have been proposed by PG&E's sister utility SCE.

At the least, we urge the Commission to allow no more than 50 percent PG&E ownership of chargers and provide the opportunity for third parties to bid on ownership of the remaining 50 percent.

SCE stated in its application (SCE Vol. 1 Testimony, p. 4) that it will own and maintain “the supporting electrical infrastructure” and customers will “choose, own, operate and maintain the charging stations.” GPI supported this distinction and supported SCE's request to own non-charger EV charging infrastructure, and we believe that PG&E should follow the same approach with respect to ownership. Also as with SCE's application, we support offering rebates to EV charger owners as required to create a viable business model for third parties.

Some parties have urged the Commission to allow utility ownership of EVSE under the theory that a diversity of approaches is required at this time to spur EV adoption. We agree in general with this rationale but we note that the Commission has already approved the SDG&E pilot's utility-ownership model, so there is no need for the Commission to approve PG&E's unwarranted plan for full ownership to test this approach in an additional utility pilot. Rather, PG&E and the Commission should look to the inclusion of DCFC as the key distinguishing feature of PG&E's proposal when compared to the other utility pilot proposals. This is a key reason why we have focused on “beefing up” the DCFC component of PG&E's pilot in this brief and in testimony.

VI. PG&E SHOULD INCLUDE ADDITIONAL COST-EFFECTIVENESS ANALYSIS

PG&E provides no detailed cost-effectiveness analysis. Rather, the proposed settlement suggests that because its program costs tally to \$2.64/ratepayer, compared to \$2.75/ratepayer approved as “just and reasonable” in the Commission’s decision on SDG&E’s EV pilot, that PG&E’s costs should also be considered just and reasonable (PG&E Exh. 1, p. 22). We agree that these figures are relevant but they shouldn’t be a substitute for a more complete cost-effectiveness analysis. While the cost of a latte is indeed a minimal cost for each ratepayer to bear for the potential benefits of the program, GPI’s hope is that green-oriented programs funded by ratepayers can in fact be cost-effective, that is, have no net costs or even return funds to ratepayers, in a true win/win situation for the environment and ratepayers’ wallets. When this is the case any potential arguments against such programs lose traction. The only way we can determine if a particular program is indeed cost-effective is if the utility or the Commission staff complete a cost-effectiveness analysis. We are also sympathetic to concerns stated by the ratepayer advocates such as TURN and ORA that even when particular program costs are relatively low, we cannot consider each program in a vacuum as the cumulative costs of all the ratepayer-funded programs can be substantial.

GPI recommends that the Commission require a cost-effectiveness analysis similar to those completed by SDG&E or SCE in order to better consider the rate impacts and benefits to ratepayers and taxpayers more generally. As SDG&E and SCE have shown (SCE’s analysis, provided to GPI in the course of discovery, is more sketchy than SDG&E’s), EVs have strong potential for ratepayer savings while also providing substantial environmental benefits and economic benefits more broadly.

PG&E was able to project substantially lower costs from a projected cost of \$222 million for the enhanced program to a cost cap of \$160 million for the PS pilot, reflecting in part the benefits of an evolving market (Exh. 1, p. 2). We can expect costs to come down substantially further as the markets continue to evolve. We also highlighted in our previous testimony how PG&E was probably over-stating the costs significantly for DC Fast

Chargers (GPI Exh. 141, p. 6, GPI Exh. 142, p. 7). As discussed in our testimony, our informal polling of the market found that costs per fast charger were around \$38,000, not including make-ready costs, which even when we include make-ready costs should be far lower than the \$250,000 per charger that PG&E estimated for its DCFC program.

For these reasons and more, we maintain our recommendations that PG&E should be required to submit a cost-effectiveness analysis and that the Commission should appoint an Independent Evaluator to ensure that costs for the pilot are kept as low as possible. The Program Advisory Council will not be a substitute for an IE because it will meet too infrequently and has limited scope.

VII. DEMAND CHARGES SHOULD BE MODIFIED FOR THIRD-PARTY DCFC OWNERSHIP

If the Commission does allow or require third party ownership of EV chargers, including DCFCs, demand charges will likely be an issue. This is the case because demand charges can present an obstacle to economic viability for charger owners, weighing in favor of some change to demand charge policy in this proceeding. Moreover, including smart charging capabilities for DCFCs can also provide the ability for charging stations to be demand response-capable, helping the utility in managing grids during periods of heavy load, and responding to short-term load fluctuations.

Demand charges are currently inhibiting market adoption of this critical tool¹ for allowing EVs to expand their range and improve “range confidence” for new and existing owners. For example, NRG is the leading DCFC provider and is required in their settlement with the State of California to build at least 200 DCFCs. Drop-in rates for a 20 minute charge session cost \$9,² which may give an EV owner 40-60 miles of range, depending on the state of charge at arrival. This cost is around double the cost of driving this distance in a hybrid

¹ For a report discussing the importance of DCFCs in EV adoption see: <http://www.greentechmedia.com/articles/read/fast-charging-key-to-electric-vehicle-adoption-study-finds>

² <http://www.nrgevgo.com/los-angeles-basin/>.

vehicle. While NRG does offer cheaper rates with an annual subscription, many EV drivers or potential EV drivers are instantly turned off by these high rates and won't use these DCFCs, hindering mass market EV adoption. PG&E responded to this concern in its rebuttal testimony with the following (PG&E Exh. 4, p. 32):

EV charging stations are specifically not eligible for Schedules A-1 or A-1TOU because these schedules lack both a demand charge and an adequately time-differentiated price signal. However, other rate options are available to charging stations. They include Schedule E-19 (for customers with demand between 500 and 1,000 kW), Schedules E-19V and A-10 (for customers with demand less than 500 kW) and Schedule A-6. Schedules E-19 and E-19V include fully cost based demand, customer and TOU energy charges. Schedule A-10 is offered with TOU energy charges and substantially lower demand charges than Schedule E-19. As a result, Schedule A-10 is somewhat less cost based than Schedule E-19 and E-19 V. Schedule A-6 is currently offered with a fully time differentiated TOU energy rate with a customer charge, and like A-1, does not currently include a demand charge. Schedule A-6 is available for new customers with demand less than 500 kW that make a request for the rate before the end of 2016. Beginning in 2017, Schedule A-6 will be available to new customers with demand less than 75 kW. All these rate options have been approved by the CPUC as providing an appropriate cost-based, pricing signal for EV charging services.

Despite PG&E's detailed response, GPI remains concerned with the demand charge burden for DCFCs because it is not clear that the rate schedules that PG&E points out actually ameliorate or eliminate the demand charges sufficiently to make the third-party owned DCFC business model viable. We request further clarity on this issue from PG&E and the Energy Division, as well as other parties.

Hawaii has in recent years started offering EV rates without demand charges and we urge the Commission to consider Hawaii as a good model.³ DCFCs are not only costly to procure and install, they can be costly to operate due to their impact on local utility infrastructure. However, if California is to reach the Governor's EV goals, it is reasonable to temporarily waive or reduce demand charges for DCFCs, especially until more EVs are on the road and using the charging network, which will then allow operators to spread these costs among

³ <http://www.heco.com/heco/hidden/Hidden/CorpComm/Hawaiian-Electric-Companies-offer-new-rates-for-public-EV-charging?cpsexcurrchannel=1>.

more charging sessions. While tariffs vary, many commercial site hosts find that DCFC electricity loads have dramatic impacts on their bill, reflecting utility demand charges to deliver the high power output to Fast Chargers that utilize 480-volt three-phase DC power. (Note that an emerging class of Fast Chargers can operate with 208-volt single phase power which pull less than 20 kW from the grid, which typically falls below the threshold for demand charges.)

The Joint Settling Parties (“JSP”) state that all DCFCs will be subject to demand charges per normal tariff rules (JSP response to settlement motion, p. 4): “PG&E’s DC Fast Chargers will be subject to demand charges, where applicable, consistent with PG&E’s approved rates and tariffs for similar commercial customers. Also, similar to other commercial entities, PG&E will meter a customer based upon 15-minute intervals.”

Demand charges may also be a serious issue even when PG&E owns the DCFC. The JSP state (*id.*): “With the TOU rate-to-driver option, the EVSP may apply an appropriate adder to recover the costs associated with fixed or demand charges, provided the additional charge reflects the actual costs.” Even with this option, GPI is still concerned about the price impact of normal demand charges being applied to DCFCs because any vendor can increase the price to make up for upstream costs, but the relevant question is whether such adders render the business model unviable because they may repel customers. We are not saying this is necessarily the case with respect to demand charges for DCFC customers, but we urge the Commission and PG&E to further explore this potentially important issue, particularly given that inclusion of DCFCs is the primary distinguishing feature of PG&E’s proposed pilot.

Actual costs of charging from DCFCs can be complex. For example, Aerovironment, a company based in Simi Valley that operates a DCFC network on the west coast, charges members \$19.99 a month, a one-time activation fee of \$15, and \$7.50 per session to charge.⁴ If a customer charged ten times in the first month of membership, the total cost would be \$110. If we assume 20 kWh per charge (the Nissan Leaf, for example, has about 24 kWh

⁴ <http://www.evsolutions.com/ev-network>.

capacity), this comes to $\$110/200 = 55$ c/kWh. Over time, this cost will decrease because the activation fee will not be charged more than once. With respect to the business impact of demand charges on EVSPs like Aerovironment it is not clear at this point how PG&E's current demand charges will manifest. We urge the Commission and PG&E, as well as EVSPs and other stakeholders, to look further into this issue before accepting the demand charge treatment that the JSP propose.

VIII. ADDITIONAL DCFC MAKE-READY STUBS SHOULD BE ADDED TO EACH DCFC LOCATION

GPI supports including DC Fast Chargers (DCFCs) in PG&E's program, as the PS states. The settlement suggests 100 DCFCs at 100 different locations, but also suggests that additional chargers may be installed in locations when warranted by usage data (Exh. 1, p. 5). This is an improvement from the 50-100 locations and chargers proposed originally by PG&E. PG&E'S rebuttal testimony also stated PG&E's intention to add at least one make-ready at each DCFC location in order to allow for up to two DCFCs per location if data warrants such expansion: "GPI argues that ' . . . at least, PG&E should construct each DCFC location in such a way that additional DCFCs could be installed easily.' PG&E agrees. In PG&E's original testimony, PG&E states that it is installing enough capacity and availability to make room for an additional DCFC and L2 station. PG&E will consider placing a second DCFC at each of its original locations if there is demand." (PG&E Exh. 4, p. 23, lines 7-12).

We recommend now and have done so previously, however, that PG&E go further and, at the least, include make-ready stubs for up to three DCFCs per location. A recent survey⁵ of Bay Area residents by NRG found that EV owners overwhelmingly prefer (12 to 1) DC Fast Charging to Level 2 charging. This survey was limited to 10 of NRG's EVgo stations at Whole Foods stores in the area, which include Level 2 and DCFCs. Accordingly, the survey is not definitive in terms of a more general trend to prefer DCFCs for public charging, but it is certainly suggestive and warrants PG&E's examination of the merits of adding a number

⁵ Online at <http://gas2.org/2015/11/10/ev-drivers-prefer-dc-fast-charger-12-to-1/>.

of additional DCFCs at its planned DCFC stations. More generally, it makes sense that customers would be willing to pay a bit more for much faster EV charging.

The recent success of Tesla's Model 3 program, in which Tesla has received almost 400,000 pre-orders since the late March release, is very encouraging for the prospect of EV demand growth in California and the concomitant need for many more DCFCs along highways and other locations. Additionally, Musk's recent announcement⁶ that Model 3 owners will not qualify for free Supercharger access, as is the case for all current Tesla vehicle owners, weighs further in favor of building out a robust independent DCFC network around the state in the next few years.

We do not recommend any additional locations be added to PG&E's Phase 1; rather, instead of just one DCFC per location, three DCFCs should be installed per location (PG&E Testimony, p. 4-1, footnote 1). This keeps the additional costs low while providing three times the functionality. As is, DCFCs are highly utilized,⁷ and in order to provide the range benefit that is the purpose of PG&E's program it would be far better to provide at least three DCFCs per site. The per unit cost of installing three DCFCs per site will also be substantially lower than installing just one per site due to the fact that many site and infrastructure costs may be spread across three chargers rather than just one.

If PG&E and the Commission disagree that three DCFCs per location are warranted at this time, PG&E should at the least install make-ready stubs for up to three DCFCs per location.

We also encourage PG&E to consider high-wattage Level 2 chargers in addition to additional DCFCs. High wattage chargers cost 25-33% of the cost of a DCFC, and have lower wattage requirements from the grid than DCFCs, but can charge about 50% as quickly

⁶ Online at <http://www.bloomberg.com/news/articles/2016-06-01/musk-says-it-s-obvious-model-3-owners-to-pay-for-superchargers>.

⁷ One analysis found that DCFCs were used on average 4 times per day compared to a little over 2 times per day for Level II chargers. <http://insideevs.com/ev-project-data-indicates-average-dc-quick-charger-is-used-4-times-per-day-level-2-chargers-only-0-23-times-per-day/>.

as a DCFC. Accordingly, costs should be capable of being kept relatively low while still providing much of the benefit of DCFCs. Combining some DCFCs for maximum speed of charging with some high-wattage Level 2 chargers, at each location, would make the most sense.

TURN opposes including 100 DCFCs in the proposed pilot (TURN comments on settlement motion, p. 8), arguing *inter alia* that the existence of three different plug standards for DCFCs will create stranded costs as one or more of these standards disappears. TURN's comment overlooks the fact that most new DCFCs are dual standard chargers that include both Chademo (the most common standard) and CCS charging options.⁸ Tesla's Supercharger standard is the third and increasingly common standard but available only to Teslas. Tesla vehicles can, however, charge on the Supercharger network or at Chademo chargers, so Tesla's standard is not relevant to the point that TURN raises. In sum, if PG&E's DCFCs are dual port chargers the issue that TURN raises is moot.

IX. COORDINATION WITH DISTRIBUTION RESOURCE PLANS

GPI has previously raised the issue of integration of the EV charging pilot with the DRPs (GPI Exh. 142, pp. 15-16) and we are pleased to see that PG&E has committed to coordinating its EV charging site selection with its DRP (PG&E Exh. 1, p. 13).

The JSP state that they will use the DRP's ICA information in determining charger sites (JSP response to settlement motion, p. 8):

Subject to further guidance by the Commission in those proceedings which is expected by the end of 2016, the Settling Parties intend PG&E and other EV stakeholders to use the Integration Capacity Analysis and other geographically-specific data on optimal DER locations and distribution hosting capacity to identify optimal locations for EV infrastructure deployment that would not require significant local distribution capacity upgrades.

⁸ See, for example: http://www.greencarreports.com/news/1096556_did-the-dc-quick-charging-standards-war-just-quietly-end-for-electric-cars and <https://chargedevs.com/newswire/bmw-and-nissan-partner-to-deploy-dual-standard-public-chargers/>.

GPI supports this move but urges PG&E and other parties to use this information cautiously as it has yet to be vetted for accuracy. Some vetting of SCE's similar information has been done and been found to have some serious problems. The ICA should still be considered to be in draft form, but should be finalized and/or vetted in time to be useful in selecting charger sites under PG&E's proposed pilot.

X. EDUCATION AND OUTREACH

The PS seeks to create a substantial education and outreach effort to promote awareness of EVs and charging options. GPI feels strongly that most or at least a large fraction of the proposed E&O efforts, insofar as they constitute broad rather than narrow E&O, should be assigned to third party organizations instead of to PG&E. Third parties should include both Charge Ahead California (as the PS currently proposes and discussed further below) and to entities other than Charge Ahead California because of that organization's focus on low income and disadvantaged communities.

The rationale for our recommended approach is that PG&E should do what PG&E does well and should work with third parties when third parties can likely do a better job and/or at a lower cost. On E&O matters generally it seems clear that third parties can probably do a better job and at lower cost. The Commission has in recent years agreed with this rationale in related E&O contexts such as energy efficiency and climate dividends, as discussed further below.

GPI does not support lifting the general limitations imposed on IOU E&O efforts by D.11-07-029, which PG&E fails to address in its application or in the PS. D.11-07-029 (p. 58, emphasis added) states the relevant precedent that limits IOU E&O efforts: "We also direct the utilities to pursue a targeted outreach policy, meaning we do not support mass marketing efforts but, to control costs, expect the utilities to target customers with an interest in Electric Vehicles."

In resolving PG&E's application the Commission will need to re-visit the question of whether the IOUs are in fact the most appropriate parties to receive E&O funding. There are more options available now than when D.11-07-029 was decided, including in particular the Energy Upgrade California program, a multi-agency effort to create a "one-stop shop" for E&O efforts.⁹ D.11-07-029 adds (p. 62): "As time goes on, we may revisit the parameters of utility Electric Vehicle education programs in response to new market conditions and revise these guiding principles and requirements accordingly." Accordingly, PG&E needs to make a strong case for why this precedent should be changed; they fail to make such a case, or even attempt to make such a case.

The GPI urges the Commission to instead open up the broader E&O efforts to third parties. Alternatively, we recommend that the Commission require PG&E to open E&O activities in specified areas to bids from all parties. Each party wishing to apply for funds should be required to make the case for why they are well-positioned to receive the funds and how they will efficiently use such funds. Typically speaking, IOUs are not very efficient in using funding for these kinds of programs, which is a large part of the reason why the Commission has shifted such funds away from the IOUs in recent years in the energy efficiency and climate change education contexts (discussed further below).

As GPI's direct testimony describes (GPI Exh. 141, pp. 12-15), the Commission should look to the energy efficiency and climate dividends proceedings for recent precedents. The Commission gave management of all statewide energy efficiency program monitoring, education and outreach (ME&O) activities to the California Center for Sustainable Energy (CCSE, now just the "Center for Sustainable Energy") in D.12-05-015.

We urge the Commission to include, at the least, a strong third-party and community-based organization (CBO) component to PG&E's E&O efforts. CBOs have proven in many contexts to be highly effective at E&O and inducing changed behavior. The Commission's energy efficiency programs currently include robust CBO funding efforts as an integral part

⁹ <http://www.energyupgradeca.org/en/>.

of their savings goals. We recommend a similar approach with respect to EV adoption, but we urge the Commission to engage with third parties to administer this additional program rather than using an IOU-administered model like in the energy efficiency context. D.12-05-015 strongly supports this recommendation, stating (p. 309):

Community-based organizations can be especially important in outreach efforts because many have proven track records and have earned the trust of their communities. Coordination with such organizations can also yield the added benefit of job creation in particular communities. These strategies are consistent with the Legislature's and the Commission's long-standing support for encouraging greater economic opportunity for women, minority, and disabled veteran business enterprises captured in both General Order 156 and § 8281.

If the Commission rejects our recommendation to have third parties conduct interested-customer E&O (the category of E&O that D.11-07-029 approved) we urge the Commission to provide third parties the ability to apply for funding to conduct E&O to customers who have not yet expressed an interest in EVs (i.e., the broader E&O effort than the efforts currently being conducted by IOUs).

GPI is pleased to see that the PS includes a \$5 million set aside for activities that would complement the Charge Ahead California (CAC) initiative,¹⁰ which focuses on E&O for disadvantaged and low-income communities (PS, p. 6), but we urge the Commission to conduct additional analysis, before including this \$5 million set-aside in its alternative proposal, as to whether CAC is the appropriate partner for these funds and not other entities equally or perhaps better-positioned to promote EV adoption in PG&E territory. There is nothing in the PS showing PG&E's or the settling parties' deliberations in deciding to include this large set-aside.

This \$5 million set-aside may be a step in the right direction for a broader and third-party-oriented E&O program, but it is only one step of many required because CAC's focus on

¹⁰ The PS motion states (p. 6): "Set aside an additional \$5 million to fund complementary and innovative programs to further the goals of the Charge Ahead California Initiative (SB 1275) and increase access to clean transportation in Disadvantaged Communities."

disadvantaged and low-income communities is only a tiny part of the potential EV market in California. There are an increasing number of relatively affordable EVs on the market or coming to the market, but EVs remain a product primarily for middle income and above families. Accordingly, robust E&O efforts must focus on markets most likely to buy EVs, not just on disadvantaged and low-income communities. While these latter communities will benefit greatly from the coming EV revolution, as a potentially rather small part of the overall EV market currently and in the next two years, they cannot be the sole focus of broad E&O efforts, as is the case for CAC and PG&E's planned \$5 million set-aside. We believe that the Commission overlooked this limitation of CAC's efforts in its recent ruling on GPI's and the Joint Minority Parties' joint motion to open a new track on E&O in R.13-11-007 (Assigned Commissioner's Ruling and Scoping Memo, March 30, 2016). We hope that the Commission fully considers the planned scope of CAC and related efforts in making its determination about the appropriate scale and scope of PG&E's E&O efforts.

XI. ADVISORY COUNCIL

GPI supports inclusion of an advisory council but we do not see it as a substitute for an Independent Evaluator, largely because the council would under the PS meet approximately twice a year (D.16-01-045's PAC proposal for SDG&E, which the PS states is the model for the PG&E pilot PAC, requires the PAC to meet "at least twice per year"). With such infrequent meetings, it seems that the council would be less of an active and independent overseer of PG&E's pilot and more of an information-gathering and monitoring body.

XII. CONCLUSION

For the reasons described above and in our direct and rebuttal testimony, GPI cannot support the settlement as proposed. We urge the Commission to reject the settlement as failing the test for being just and reasonable and to adopt an alternative pilot program with the features described herein.

Dated: June 17, 2016, at Berkeley, California.

Respectfully Submitted,



Gregory Morris, Director
The Green Power Institute
a program of the Pacific Institute
2039 Shattuck Ave., Suite 402
Berkeley, CA 94704
ph: (510) 644-2700
e-mail: gmorris@emf.net