EXHIBIT GPI-2

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

REBUTTAL TESTIMONY OF GREGORY MORRIS ON SOUTHERN
CALIFORNIA EDISON CHARGE READY AND MARKET EDUCATION
PROGRAMS

on behalf of

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JUNE 4, 2015
BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Southern California Edison
Company (U 338-E) for Approval of its Charge
Ready and Market Education Programs.            Application No. 14-10-014

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REBUTTAL TESTIMONY OF THE
GREEN POWER INSTITUTE ON SOUTHERN CALIFORNIA EDISON
CHARGE READY AND MARKET EDUCATION PROGRAMS

June 5, 2015

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The Green Power Institute (GPI) respectfully submits this rebuttal testimony on Application ("A.") 14-10-014, SCE’s application for approval of its Charge Ready and Market Education Program.

The Green Power Institute 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. Replies to opening testimony

a. TURN

TURN is generally supportive of SCE’s proposed Phase 1 pilot but raises a number of concerns nevertheless, including an argument that SCE’s pilot program “does not guarantee” a large number of EV sales (TURN Opening Testimony of Eric Borden, p. 2). While we agree with TURN that there is no necessary linkage between increased public EV charging infrastructure and higher EV adoption, we note that there is no guarantee that any energy policy will achieve its desired outcome. We cannot aim for guarantees in policymaking, but merely good likelihoods.

TURN makes five key recommendations for revising SCE’s pilot program (TURN Opening Testimony, p. 3). We quote the summary of each below and offer our response.

• Recommendation 1: The utility should amend and re-file the phase 2 portion of their application after phase 1 is completed. This would allow parties sufficient
opportunity to evaluate results, including the phase 1 report and “best practices”
learned from phase 1. SCE currently proposes that phase 2 be initiated “on the
heels” of SCE’s Pilot report, without re-filing of their application.

The GPI does not believe that SCE should be required to re-submit its Phase 2
application. Rather, lessons learned from Phase 1 should be used by the Commission in
evaluating the Phase 2 application in a later decision in this proceeding. SCE may submit
a revised application in this same proceeding, as appropriate and if it deems that this is
required, and the Commission will adjudicate the merits of that application. Given the
broader merits of SCE’s application we feel that this is a more prudent course than
requiring SCE to re-submit its Phase 2 application.

• Recommendation 2: Data collected and analyzed during phase 1 should be
expanded from SCE’s relatively limited proposal. Additionally, a workshop prior
to a decision on this application should be ordered to evaluate potential data
collection and analysis. One of the primary benefits of SCE’s phased approach is
the ability to utilize real-world data to optimize program design.

We agree that data collection should be expanded from SCE’s proposal and we agree
with TURN’s recommended list of expanded data points to be collected.

• Recommendation 3: Utility investment and allowed rate of return should be
limited to the “make-ready stub.” Therefore, no rebates for the actual charging
stations should be authorized by the Commission. This recommendation does not
apply to SCE’s disadvantaged community target (up to 10%), which TURN
recommends should be allowed to receive rebates for up to 100% of the base cost
of charging stations if deemed necessary

The GPI disagrees that there should be no charging station rebate. We believe that a 25
percent cap on the rebate is appropriate, as discussed in our comments on ORA’s opening
testimony. The current business model for charging station ownership is a difficult one to make without some support for the installation or other benefits accruing, such as increased clientele for the business where the charging station is located. By providing a 25 percent rebate, we believe that ratepayer liability is minimized in an appropriate way while recognizing the tightness of the business model under the current price structure of charging stations and installation costs.

• Recommendation 4: Ratepayer subsidized charging infrastructure should be placed at sites most likely to spur EV adoption. The importance of EV adoption for the realization of non-participant ratepayer benefits is discussed throughout this testimony and is not disputed, to TURN’s knowledge, by any party.

We agree with this recommendation that charging stations should be placed at sites most likely to spur EV adoption, and we support a more detailed look, including a workshop, at how to craft the best site selection methodology.

• Recommendation 5: If rebates for charging stations are approved, the utility should not be authorized to earn its allowable rate of return on these rebates, but rather should treat them as an expense. See testimony of Garrick Jones.

We also agree with this recommendation, which mirrors EDF’s testimony in the SDG&E pilot application.

TURN makes a case against any causal relationship between increased charging infrastructure and increased EV adoption, arguing that SCE misinterpreted a study that SCE cites in its application (TURN Opening Testimony, pp. 4-5). TURN, however, misinterprets the study itself, stating that the study “does not provide support for SCE’s claim that increased charging infrastructure leads to EV adoption.”

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The study does in fact provide support for SCE’s claim with its finding of a positive correlation between increased charging infrastructure and increased EV adoption. The abstract of the Sierzchula study states (emphasis added): “The model found financial incentives, charging infrastructure, and local presence of production facilities to be significant and positively correlated to a country's electric vehicle market share. Results suggest that of those factors, charging infrastructure was most strongly related to electric vehicle adoption. However, descriptive analysis suggests that neither financial incentives nor charging infrastructure ensure high electric vehicle adoption rates.” The study also states in its conclusion: “charging infrastructure was the best predictor of a country's EV market share. … On the whole this analysis provides tentative endorsement of financial incentives and charging infrastructure as a way to encourage EV adoption.”

In the section of the study on “policy implications,” it states (emphasis added):

Based on our results, a sensible policy approach for addressing EV market failures arising from pollution abatement and knowledge spillover would be for governments to provide consumer subsidies and/or increase their number of charging stations. Due to the importance of consumer adoption during the commercial introduction of a radical innovation (Nemet and Baker, 2009), such supportive measures could make a wide difference in the level of EV diffusion in the coming decades. As the charging station variable was the strongest predictor of EV adoption based on Beta values stress tests, their installation may be more effective than financial incentives.

The study does also, as TURN states, caution against drawing a conclusion about a simple causal relationship between more charging stations and higher EV adoption. But this is the nature of any study of correlation because, as every scientist or student of statistics knows: correlation is not causation. Many factors can make a positive correlation look like causation, when it is not necessarily a causal relationship, and this is what the study’s authors were alluding to with their warning, quoted by TURN: “Therefore, while this study does show that financial incentives and charging infrastructure are positively correlated to national EV market shares, it is definitely not evidence of a causal relationship and should be treated with prudence.”
In sum, while SCE’s case should, and could be, stronger in terms of the argument that increased charging stations will lead to increased EV adoption, TURN’s critique of SCE’s argument goes too far because a positive correlation between these two factors is support for SCE’s contention, and the paper’s specific language is indeed supportive of SCE’s contention—it’s just not the degree of support that we should look for in making a case for the broad-scale pilot SCE hopes to implement with Phase 2 of its application.

More work should be done in establishing the correlational and causal links between increased charging stations and increased EV adoption. This, of course, is a key point of the IOU pilots, including SCE’s Phase 1 pilot. From GPI’s perspective, there is enough evidence from the surveys cited by SCE and other IOUs, as well as the Sierzchula study, to support the SCE Phase 1 pilot as a wise use of ratepayer funding. The data from the Phase 1 study will then be used to inform the merits of the larger Phase 2.

GPI has also argued in this proceeding, in R.13-11-007 and in A.14-04-014, that there is good evidence and strong support from the policy community for the ability of robust education and outreach (E&O) programs to positively impact EV adoption. For this reason, we strongly support SCE’s dual focus on charging station installations and increased E&O. As discussed in our opening comments, however, we urge the Commission to award the majority of E&O funding to third parties like Energy Upgrade California rather than SCE. We won’t rehash that argument here other than to note that TURN’s critiques regarding the causal relationship between charging stations and EV ownership should weigh in support of an increased focus on E&O as an equally, if not more, reliable way of increasing EV adoption.

A report jointly produced by the UCLA School of Law and the UC Berkeley School of Law, “Electric Drive by ’25,” found that lack of awareness of the benefits of EVs was the single biggest obstacle to EV sales. This report was produced in 2012, only a year and a half after the first mass-market EVs (the Chevy Volt and the Nissan Leaf) were introduced in the U.S. However, substantial additional research and expert opinion continues to support the view that E&O efforts will likely be a major boost to EV
adoption. The same 2012 report includes building out a robust public charging
infrastructure as its third recommendation.

The 2014 CalETC Transportation Electrification Assessment contains good discussion on
the importance of E&O, worth quoting at length (pp. 59-60):

Except for high-level messaging, there is a general lack of awareness of PEVs in
the consumer market today. For instance,

- Navigant reports that the awareness of EVs other than the LEAF and
  Volt among survey respondents is less than 25%. Even with the Volt and
  LEAF, only 44% and 31% are extremely familiar or somewhat familiar
  with these vehicles, respectively.

- Disappointingly, the numbers from Navigant’s 2013 survey are not too
dissimilar from those reported in a 2010 survey by Ernst & Young. Ernst
  & Young found that 62% of respondents had never heard of PHEV
technology or have heard of it but don’t know what it is. Similarly, 40% of
  respondents have never heard of PEV technology or had heard of it but
don’t know what it was.

- Even in the San Francisco Bay Area, one of the top markets for EVs, a
  survey of City CarShare members showed that only 47% of respondents
  were very familiar or somewhat familiar with EVs. (Note: at the time, City
  CarShare only had about 10 PEVs in its fleet). Other responses to the
  survey indicate that consumers may not be as familiar with PEVs as these
  surveys indicate. For instance, respondents were asked to identify specific
  PEV model names. Despite 84% of respondents saying they considered
  themselves at least “slightly familiar” with PEVs, nearly 20% of
  respondents identified a vehicle that was neither a BEV nor a PHEV.
  Rather, the respondents regularly identified an HEV (e.g., Toyota Prius) or
  a small fuel efficient car such as the SmartCar.

The 2013 Governor’s ZEV Action Plan highlights E&O as the second most important
hurdle to increased EV ownership: “Consumer awareness of ZEVs is limited. Many
consumers are unaware that ZEVs are available for purchase or lease. Others don’t fully
understand ZEV benefits such as operational cost savings, availability of High
Occupancy Vehicle (HOV) lanes on state freeways, accessible public charging and—in
some places—free or reduced parking.”
The Center for Sustainable Energy is the statewide manager for all EV rebates (funded by the Energy Commission). CSE also collects various survey information on customers who apply for rebates. While CSE hasn’t conducted research specifically on the degree to which various E&O efforts influence consumer adoption of EVs, they have surveyed applicants for the decision factors that resulted in their EV purchase. Figure 4 shows the survey results.

Figure 4. Decision factors for California EV rebate applicants to buy an EV (source: http://energycenter.org/clean-vehicle-rebate-project/survey-dashboard.)

Seeing that, for example, the top three factors are saving money on fuel costs, reducing environmental impacts and increased HOV lane access, allows statewide E&O efforts to tailor their messages best. CSE also contains regional survey information rather than just aggregated statewide information, allowing further refinement in E&O efforts for specific areas of California.
We also know that satisfaction with their EV is very high for most EV owners. A
www.greencarreports.com article\(^2\) summarized some relevant surveys:

General Motors has said the Chevrolet Volt, launched in December 2010, has the
highest satisfaction scores it has seen on any vehicle it's ever built. And Consumer
Reports confirmed the high satisfaction in its own survey, with the Volt topping
its fall 2012 satisfaction index.

Same for the Nissan Leaf: Nissan CEO Carlos Ghosn said the car has the highest
owner-satisfaction survey results Nissan's seen since it began asking owners their
opinions.

In France, Nissan's alliance partner Renault got the same result for the Zoe
battery-electric subcompact it launched a little more than a year ago (a car not
sold in North America).

Then, late last year, the Tesla Model S knocked the Volt off the top of
the Consumer Reports chart. The magazine said the electric luxury sedan had
some of the highest owner satisfaction ratings it had ever seen.

While we have not been able to find any studies specifically assessing the degree to
which E&O efforts are linked to increased EV adoption, we can put together a good
empirical case based on the above data, in the following manner: 1) there are a number of
affordable EV and PHEV models on the market today, not even accounting for fuel
savings; 2) when fuel savings are included, the savings are even more pronounced; 3) a
large proportion of EV owners buy EVs because of non-financial benefits, including
reducing environmental impacts, increased HOV lane access and increased energy
independence; 4) EV owners generally have very high satisfaction with their EVs.

Accordingly, spreading awareness of these issues through robust state-wide E&O
programs should result in a strong boost in EV adoption. In other words, affordable and
quality EVs and PHEVs are here today, with many more such models coming out in the
next few years, so the technology is viable already and the main hurdle facing increased
EV adoption seems to be the lack of robust E&O efforts.

The GPI, in considering the empirical evidence to date alongside the policy community’s

recommendations with respect to the merits of increasing charging stations and increasing E&O, sees a good rationale for increasing E&O budgets for each IOU’s program concurrently with a more pilot-scale charging station program. In terms of SCE’s proposed program, this line of reasoning is further support for focusing just on SCE’s Phase 1 at this time and leaving any determination on Phase 2 until a date when more data is available to the Commission in this proceeding. IOUs will through such a shift in budgets earn less in terms of increasing their rate-base, but ratepayer funding will very likely go significantly further in terms of promoting EV adoption with the advocated shift toward increased E&O funding than it would under the IOUs’ proposals focused largely on charging station installations and far less on E&O.

In sum, we urge the Commission to seriously examine the merits of shifting a portion of the funding SCE (and the other IOUs) has requested for EV charging station infrastructure and ownership into robust statewide E&O programs, with a focus on Energy Upgrade California and other third parties leading the way on broad E&O efforts (as opposed to targeted E&O efforts and E&O efforts that are solely about SCE EV programs). Residents of disadvantaged communities would benefit the most from increased EV ownership, so E&O efforts should include a specific focus on these communities.

b. ORA

ORA is also generally supportive of SCE’s Phase 1 pilot, but proposes some substantial modifications (ORA Opening Testimony, p. 1-1, 1-2):

To minimize ratepayer risks while enhancing its effectiveness, ORA recommends that the Commission adopt the following modifications to SCE’s Charge Ready Phase 1 Pilot Program:

• Limit the EV charger rebate to 25% of the total EV charger cost that will include a 10% rebate that is tied to demonstrable EV charger utilization;
• Develop metrics that can better inform the Commission of the pilot’s performance; and
• Develop guidance on the role of the utility in marketing, education and outreach efforts.
These recommendations are consistent with ORA’s Cal EVIP proposal which advances near-term, appropriately scaled deployment of IOUs’ EV infrastructure on a statewide basis.

GPI agrees with the recommendation to limit the EV charger rebate to some percentage of the charging station cost, though we caution about the specific numerical value due to the tenuousness of the business model for EV charging station ownership. The large majority of public EV charging stations have been installed to attract clientele to an entirely separate business by offering free charging and often free parking. For the charging station market to grow beyond this free charging model, the Commission should be careful in limiting the pilot rebate effort. The purpose of the pilot is, after all, to test the market to see what works best.

GPI agrees with no reservation with ORA’s recommendation to develop metrics to better inform the Commission on the pilot’s performance.

We also agree with ORA’s recommendation on developing guidance on the utility role in E&O. We have focused on this issue extensively, including in our opening testimony and previous comments in this proceeding and in the sister proceedings R.13-11-007, A.14-04-014, and A.15-02-009. Our view is that existing Commission precedent arguably requires that any broad outreach on EVs be administered by Energy Upgrade California, as discussed in our opening testimony. In light of the proposed SDG&E settlement agreement, which includes no broad E&O component, the need for a robust state-wide E&O program administered by a third party is more pressing.

ORA makes a number of additional recommendations, some of which we address here.

ORA recommends that the Advisory Board that SCE calls for be expanded beyond the proposed membership that SCE provides (ORA Opening Testimony, p. 2-4). GPI agrees with ORA’s recommendation based on our view that a broad membership in the
Advise the Board at this crucial development stage of EV charging programs will allow SCE and the Commission to gather the most useful advice and feedback.

ORA also recommends that the majority of ratepayer-funded charging stations be installed at MUDs, arguing that improved battery range may moot the need for workplace charging (ORA Opening Testimony, p. 3-2). As we described in our testimony in the SDG&E EV pilot application, there are compelling reasons why MUD and workplace charging station installations should be weighted equally. ORA’s point ignores two important factors: 1) most PHEVs (as opposed to all-electrics) today have less than 32 miles of range; 2) there are major benefits to the grid that arise from daytime charging of EVs. We flesh out these points below.

Today’s PHEVs generally have less range than the average 32-mile commute. The Chevy Volt has a range of 38 miles, and this figure is rising to a reported 50 miles for the 2016 model. The Volt’s all-electric range was in fact designed explicitly to allow for most commuters to drive without worrying about requiring additional charging or using the gasoline engine to supplement the battery. However, there are many other PHEVs, either on the market already, or soon to be on the market, that have substantially less than 32 miles range, as Figure 1 shows. BMW and Mercedes have each announced about ten new plug-in models coming out in the next two years, all of which will have about 20 miles electric-only range.

Figure 1. Available and soon-to-be-available PHEVs and battery range (source: GPI).
Moreover, the California Energy Commission forecasts up to ten-fold or more PHEVs than EVs on the road in the coming decade in its 2014 demand forecast, in the “high scenario,” and twice or more PHEVs than BEVs in the “low scenario.” Either scenario strongly supports the need for workplace charging (Figure 2).

Figure 2. CEC forecast for BEVs and PHEVs (Jan. 2014 Energy Demand Forecast 2014-2024).

The Center for Sustainable Energy’s surveys of California EV rebate applicants shows that access to workplace charging is one of the more significant incentives for consumers choosing to buy an EV, with more than half stating that it was important in their decision (Figure 3).

Figure 3. Center for Sustainable Energy survey data on specific incentives (source: ).
We also note that NRDC’s Opening Testimony contains substantial discussion of new research from the National Research Council and others that support a dual focus on MUD and workplace charging.

Workplace charging provides significant value to the grid by absorbing solar over-generation. Daytime charging is required for this task and most charging at MUDs will be at night.

ORA recommends (p. 3-6) that a methodology be developed to ensure that charging stations aren’t installed with ratepayer funding when they would likely have been
installed even without such ratepayer funding. GPI agrees in principle with this recommendation but we caution the Commission that it is impossible to determine with full confidence where charging stations might be installed without ratepayer funding because we cannot of course run the same scenario twice in the real world at particular locations. The best that can be done—and that should be done—is to create a workable model for assessing where the market is likely to produce charging stations without ratepayer funding. But it will be necessary to err on the side of caution, that is, on the side of including rather than excluding locations in SCE’s program, in order to ensure that the EV pilot’s goals and the broader state EV goals are met.

ORA recommends that the scope of IOU involvement in education and outreach (E&O) efforts should be determined in a separate track in R.13-11-007 (ORA Opening Testimony, p. 3-8). The GPI generally agrees with ORA’s approach on E&O issues and both GPI and ORA have been calling for most E&O activities to be administered by Energy Upgrade California rather than the IOUs. However, we disagree that the IOU role in E&O should be resolved in R.13-11-007 because this is very much a live issue in A.14-10-014. The Commission will have to rule on this component of the proposed pilot because it is a substantial part of the pilot. We reiterate our position from our Opening Testimony that all broad-based E&O (that is, E&O not targeted to likely EV customers and/or activities that bear directly on SCE’s EV charging program) should be managed by Energy Upgrade California.

Last, we agree with ORA’s recommendation (ORA Opening Testimony, p. 3-9) that a workshop should be held to discuss methodologies for selecting EV charging station locations in disadvantaged communities.

c. ChargePoint

ChargePoint generally supports the Phase 1 pilot in opening testimony, stating (ChargePoint Opening Testimony, p. 3): “The SCE Phase 1 Pilot is well-structured, forward-thinking, and thoughtfully designed. We agree with SCE that the Phase 1 Pilot is
needed in order to meet statewide Zero-Emission Vehicle goals, and that it will help
address identified obstacles to expansion of EV charging infrastructure at the customer
sites targeted by the program.”

ChargePoint makes some recommendations for program changes, including a suggestion
that the ten charging station per site rule be modified (Opening Testimony, p. 4):
“ChargePoint is concerned that SCE’s ‘general rule’ that eligible sites must be able to
support a minimum of ten charging stations may be too restrictive.” ChargePoint
recommends that this rule be applied as a rule of thumb rather than as a strict limitation.
GPI agrees. As with SDG&E’s pilot program, we support an approach that seeks an
average of ten chargers per site, rather than a strict limit of ten per site.

ChargePoint also calls for an opportunity for parties to comment on the final details of
the pilot program (Opening Testimony, p. 6). GPI again agrees with this recommendation
based on our belief that providing more chances for input into these highly important
pilot programs is a good policy in general.

II. Conclusion

For the above reasons, we urge the Commission to adopt our proposed changes to SCE’s
program.

This concludes our rebuttal testimony.

Respectfully Submitted,

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