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Subject: **Comments of the Public Advocates Office on the Workshop on Metrics and Methodologies for Evaluating Transportation Electrification Programs and on the Standard Review Project Data Collection and Reporting Templates**

INTRODUCTION

The Public Advocates Office at the California Public Utilities Commission (Public Advocates Office or Cal Advocates) hereby submits these comments on the Workshop on Metrics and Methodologies for Evaluating Transportation Electrification Programs (Workshop) and on the Standard Review Project Data Collection and Reporting Template (Template). Decision (D.) 18-01-024, D.18-05-040, and D.18-09-034 established data collection and reporting requirements for the Investor-Owned Utilities' (IOUs') Senate Bill (SB) 350¹ Transportation Electrification (TE) programs. While the data collection and reporting template for the Priority Review Projects (PRPs) has already been finalized, the Template for the Standard Review Projects (SRPs) is still being finalized and is addressed in these comments.

The Workshop was held by California Public Utilities Commission (Commission) staff on May 9, 2019 as part of Rulemaking (R.)18-12-006, with the intent of discussing the metrics being collected through the IOUs' TE programs. During the Workshop, various presentations were made by Commission staff, Energetics, the California Air Resources Board (CARB), the California Energy Commission (CEC), Cadmus, the Electric Power Research Institute (EPRI), and the University of California at Davis (UC Davis) on the topics of data collection, program evaluation, and electric vehicle (EV) market status. Issues raised during the Workshop are addressed in these comments.

¹ Senate Bill 350 (de León, 2015), Chapter 547, Statutes of 2015.

SUMMARY OF RECOMMENDATIONS

The Public Advocates Office makes the following recommendations for the development of data collection templates for future TE programs:

- The Commission should hold additional workshops to discuss the metrics to be measured, determine the data necessary to obtain those metrics, and develop ideas for the best ways to collect each data point.
- The Commission, CEC, and CARB should develop cohesive data collection efforts and compile all data into a singular database.
- The cost-per-unit of a pilot program should not be accepted as the cost-per-unit of the corresponding full-scale program. The cost-per-unit of a pilot program should be evaluated by the Commission to determine the appropriate cost-per-unit of the corresponding full-scale program.

Additionally, the Public Advocates Office makes the following recommendations for the Template:

- Sections 1-3 of the Template should add columns to reflect all vehicle sectors listed in Appendix C of D.18-05-040.
- Section 1 of the Template should add a row for the collection of load factor data in addition to utilization rate and in-service time data.
- Section 2 of the Template should include a field for reporting any grid upgrade costs caused by electric vehicle supply equipment (EVSE) installations.
- Section 4 of the Template should include a field for reporting the average cost of EV charging that the site host pays.
- Section 5 of the Template should add columns for reporting if a site is in a disadvantaged community (DAC) as well as if it is located in a low-income community (as defined by CARB for Assembly Bill (AB) 1550).²

DISCUSSION

A. THE COMMISSION SHOULD HOLD ADDITIONAL WORKSHOPS FOR THE DEVELOPMENT OF DATA COLLECTION TEMPLATES FOR FUTURE TE PROGRAMS

The workshop held on May 9, 2019 was a good starting point for the development of a more robust and cohesive data collection and evaluation methodology. It provided the opportunity for parties to share their goals, evaluator insights, best practices, and lessons learned from the TE programs. However, there was inadequate time and opportunity for stakeholder discussion and problem-solving to make significant progress in the development of this data collection and evaluation methodology. Follow-up workshops with the opportunity for small group discussions, guided by specific questions and goals, would advance progress of this vital component of the Commission's and the State of California's TE efforts.

² Assembly Bill 1550 (Gomez, 2016), Chapter 369, Statutes of 2016.

It is important to note that not all programs may achieve a high performance in every performance metric, but programs should achieve a high performance in specific pre-determined metrics. Although these metrics will vary depending on the objective of the program, having a consistent set of metrics that all programs can be compared to creates more accountability and allows more opportunities for improving current and future programs with lessons learned from programs that are achieving high performance in a specific metric. For example, if the goal of a program is to install a high target number of EVSE in multi-unit dwellings (MUDs), programs with high performance in MUD metrics can be evaluated and components of those programs can be combined and replicated. However, this is only possible if parties are given the opportunity to discuss the purpose and efficacy of the metrics and provide recommendations on what metrics should be measured and what data must be collected. Therefore, the Public Advocates Office recommends that the Commission hold additional workshops for the development of a data collection and evaluation methodology, and that these workshops provide the opportunity for small group discussions.

B. THE COMMISSION, CEC, AND CARB SHOULD DEVELOP A COHESIVE DATA COLLECTION EFFORT AND DATABASE

In the interest of gathering lessons learned from programs from corresponding efforts of the Commission, CEC, and CARB (collectively Sister Agencies) jurisdiction, the Sister Agencies should develop a common data collection template. This template should be developed based on two key goals: (1) measuring common metrics; and (2) creating a cohesive data collection effort that allows all TE programs to be more easily compared to each other and improved based on lessons learned from other TE programs.

In addition, to facilitate ease-of-access, the Sister Agencies should develop a single database that can store all the data from the data collection templates, allowing stakeholders from all Sister Agencies to access data from all TE programs.

C. THE COST-PER-UNIT OF A PILOT PROGRAM SHOULD NOT BE ACCEPTED AS THE COST-PER UNIT OF THE CORRESPONDING FULL-SCALE PROGRAM

There is currently no mechanism for ensuring that a utility employs all lessons learned from their pilot programs into full-scale programs. Without this mechanism, the utilities can argue that pilot costs reflect the costs to implement pilot programs and, therefore, that they should be approved for even larger programs at the same cost-per-unit.³ However, due to economies of scale, ordering chargers in bulk, and the implementation of lessons learned from pilot programs, it is unlikely that there would not be significant cost-per-unit savings.

To ensure full-scale programs reflect cost-savings compared to pilot program costs, the Commission should thoroughly evaluate pilot program costs and how lessons learned, and economies of scale, can reduce those costs before approving full-scale programs with similar costs-per-unit.

³ A unit can be a port, an EVSE, a site, an electrified vehicle, and others depending on the metric that is being measured.

D. THE COMMISSION SHOULD COLLECT DATA SPECIFIC TO EACH MEDIUM- AND HEAVY-DUTY VEHICLE SECTOR IN ORDER TO BETTER UNDERSTAND EACH VEHICLE SECTOR’S USE CASES

Currently in Sections 1-3 of the Template there are only four applicable column categories for medium- and heavy-duty (MD/HD) vehicles (fleets, schools, transit agencies, and other non-light duty applications). These four categories are not sufficient to cover the diverse use cases that may appear for MD/HD applications.

For example, the current “school” category could incorporate either EVSE for school buses, or EVSE for faculty staff’s light-duty EVs. This conglomeration of EVSE for school bus and light-duty makes it difficult to discern school bus-specific costs and usage patterns. Similarly, under the current categories, airport ground service equipment (GSEs) and truck stop electrification (TSEs) could be categorized as “other non-light duty applications”. This again creates opacity in discerning the individual characteristics for these very different use cases. As a result, targeting the specific needs of each use case is more difficult.

To ensure use cases are granular, the Commission should add column categories to Sections 1-3 of the Template for all MD/HD programs that span multiple use cases to reflect all of the vehicle sectors listed in D.18-05-040, Appendix C. This requirement will allow the MD/HDs to be categorized with greater granularity specific to each use case.

E. THE COMMISSION SHOULD COLLECT LOAD FACTOR DATA IN ADDITION TO UTILIZATION DATA BECAUSE UTILIZATION DATA DOES NOT ACCOUNT FOR DIFFERING CHARGING SPEEDS AT THE SAME EVSE

Section 1 of the Template collects data on “Average EVSE utilization rate (% of hours)”. However, because charging on the same-level EVSE will not always be at the same speeds, data on utilization rate⁴ as a percent of hours does not always capture the actual amount of charging occurring.

Consider two hypothetical 50 kW direct current fast charger (DCFC) EVSE. One DCFC serves exclusively Chevy Volts (maximum charging speed 7.2 kW),⁵ whereas the other serves exclusively Tesla Model 3s (maximum charging speed 90 kW).⁶ Each DCFC charges vehicles on average 2 hours per day. Based on the “Average EVSE utilization rate (% of hours)”, both DCFCs appear to be similarly utilized at 8.3% (2 hours /24 hours). However, the actual electricity dispensed from the DCFCs differs. The DCFC serving the Chevy Volt dispenses up

⁴ Here, utilization rate refers to the hours that an EVSE is in use out of the total hours the EVSE is available for use (hours in use / total hours available) expressed as a percentage.

⁵ <https://electrek.co/2018/06/28/2019-chevy-volt/>.

⁶ <https://evbox.com/electric-cars/tesla/tesla-model-3>.

to 14.4 kWh per day (7.2 kW * 2 hours), while the DCFC serving the Tesla Model 3 dispenses up to 100 kWh per day (50 kW * 2 hours).⁷

The inclusion of a “load factor”⁸ metric will allow for quantification of this differing electricity consumption despite similar utilization rates. The Chevy Volt DCFC will have a load factor of 1.2% (14.4 kWh / (50 kW * 24 hour)) whereas the Tesla Model 3 DCFC will have a load factor of 8.3% (100 kWh / (50 kW * 24 hour)).

Note that it may be useful to have both a utilization rate and load factor metric, rather than simply having the load factor metric replace utilization rate. For example, very high utilization rates could indicate that a site is being limited by charging port availability.

Moreover, the Commission should collect separate data for utilization rates and load factor for each site’s first year of operation versus year 2 onwards. Initially, there may be a learning curve for customers to utilize EVSE at a new site, and so initial data may be non-representative of long-term usage. Having separate data collection for year 1 remedies the issue. For example, data through November 2018 from SCE’s Charge Ready Pilot Program showed inception to date usage of 145 kWh/month (approximately 3.1% load factor) per workplace charging port, whereas these ports averaged 226 kWh in November 2018 (4.8% load factor).⁹ Similarly, a DCFC site installed as part of the NRG Settlement dispensed only 265 kWh in its first 13 days of operation (0.8% load factor), yet dispensed 2,696 kWh the following month (3.6% load factor), and 2,851 kWh the month after (3.8% load factor).¹⁰

Therefore, to ensure that utilization of EVSE is better captured and understood, the Commission should add a row to Section 1 of the Template for recording load factor data.

F. THE COMMISSION SHOULD ADD SECTIONS TO THE TEMPLATE THAT TRACK ADDITIONAL LOCATION-SPECIFIC INFORMATION

The current Template would benefit from tracking additional information to allow insight into both the associated grid development costs and location-specific information of the charging stations.

⁷ In actuality, many EVSE have an initial ramping period and will not immediately charge at the max charging capacity. Moreover, as EV batteries approach a 100% state of charge, their charging speeds will generally decrease below max charging. For the purpose of simplicity of this example, these details are ignored. Note that ignoring these details do not void the conclusions of this example. The Tesla Model 3 should still charge on average faster than the 7.2 kW max capacity possible of the Chevy Volts, though it never reaches its max capacity of 90 kW because of the limitation of being served by a 50 kW EVSE

⁸ Here, load factor refers to the energy that an EVSE dispenses out of the total energy the EVSE could have dispensed (energy dispensed / total energy available) expressed as a percentage.

⁹ SCE’s follow up response to Energy Division Q01 in SCE’s Charge Ready 2 Program Workshop, based on SCE’s methodology of calculating inception-to-date average usage in Cell O43.

¹⁰ NRG Settlement Year 6 – Second Quarter Progress Report. P. 12 states that a Bakersfield DCFC site was operational with two 50 kW DCFCs on June 18, 2018. P. 14 shows that 265 kWh was dispensed in June 2018. Hence, 265 kWh was dispensed in the first 13 days of operation.

Section 2 of the Template (Tab 2, titled “Utility Project Costs”) contains variables associated with distribution project costs, such as site costs associated with assessment and design and make ready installation and infrastructure costs. Costs are also listed in reference to the location (such as MUDs or single-family residences).

Given that the Template includes some of the costs for the make ready installation, the Public Advocates Office recommends the Template add a few rows outlining any associated grid upgrade costs with the installation. These rows would ideally allow room for a description of the necessary upgrade and what prompted the upgrade. For example, if a transit center installs enough onsite solar and electric charging stations, the utility may need to upgrade the local transformer to accommodate the increased load.

Section 4 (Tab 4, titled “Hourly Metrics”) of the template tracks costs such as energy provided by the EVSE and the price paid by the end-user by hour, at each site and aggregated across all sites within the service territory. In addition to these costs, the Public Advocates Office recommends tracking the average price charged to the site host in addition to the price paid by the end user. Although sometimes these prices are aligned, often charging pilot programs allow for the site host to set the prices charged to the end user at their own discretion. For this reason, the Public Advocates Office recommends this information be tracked separately to better understand what costs are being passed on to the drivers versus the site hosts.

Finally, Section 5 (Tab 5, titled “Charging Station List) of the template tracks the locations of each charging station with some granularity, including the coordinates of each charger, number of ports, and the EVSE service provider. Given that many of the utility charging pilot programs and legislative initiatives specify that residents of DACs and low-income communities should be targeted, the Public Advocates Office recommends including two more columns to track this data. This information would allow stakeholders to see if installations include these communities in practice as well as in theory.

The Public Advocates Office recognizes that a column for DACs is included in the Utility Project Costs section of the template. However, the information collected in Section 2 is neither associated with site costs specifically, not geographic location, nor AB 1550 designated low income communities. Therefore, including this information in the same section as other geographic information should allow for a more nuanced portrait of where in the state installations are occurring, and whether they are reaching residents across income levels.

CONCLUSION

For the above reasons, the Public Advocates Office recommends that the Commission hold additional data collection and evaluation workshops, develop cohesive data collection efforts with CEC and CARB, evaluate pilot costs before program approval, and make modifications to the SRP data collection and reporting template. Attachment A is Public Advocates Office’s recommended tracked changes to the Template. Please contact Fidel Leon Diaz at Fidel.Leon.Diaz@cpuc.ca.gov or (415) 703-2043 with any questions regarding these comments.

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