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MFD and Rural EV Charging

Thank you for this opportunity to provide comments in Docket 20-TRANS-04, Rural and MFD Charging for light duty EVs.
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Additional submitted attachment is included below.

CEC Docket 20-TRAN-04
Comments by Dwight MacCurdy
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July 13, 2021

Thank you for this opportunity to provide comments to the CEC in Docket 20-TRAN-04.

Background

Dwight MacCurdy has worked in the electric utility industry for over 46 years, starting with two electric utility internships while attending UC Davis, 3 years with the Alaska Public Utilities Commission in auditing and rate case work, 6 years with the California Energy Commission on energy efficiency programs, mostly working with electric utilities, and 36 years with SMUD. The most recent 30 years at SMUD, starting in 1989, were in the SMUD Electric Transportation Program, motivated by the drive for cleaner air and U.S. oil independence/security issues and now to address climate change. He has worked on a variety of SMUD Electric Transportation programs, including light, medium and heavy duty EVs, fleet electrification and infrastructure, Battery Dominant PHEV Research with UC Davis and DARPA, Freeway Capable Lightweight Body EV Research with Horlacher, Esoro and DARPA, Electric Ground Support Equipment with Southwest at SMF, SMUD's fleet of light duty public EV charging stations, commercial customer EVSE site assessments, EV Workplace Charging and campus planning and the SMUD Smart Sacramento EV Innovators Pilot Project. Mr. MacCurdy retired from SMUD in July 2020, but remains active with EVs by supporting the Sacramento Clean Cities Coalition and the Sacramento Electric Vehicle Association.

Funding for Rural and MFD Charging of light duty EVs. Suggestions for Technical Requirements, Use Cases, Measurement and Evaluation

- MFD and rural residents will benefit from the exploration, documentation and analysis of a wide variety of **use cases for the purpose of reducing EVSE installation costs and monthly operating costs**.
  - Use cases may cover many different eras of buildings (e.g. pre-1960, 1960s-70s, 1980-2000, etc) with some building methods lending themselves to lower cost EVSE installations.
  - Location of parking at a building site to facilitate lower cost installations (i.e. distance from electrical panel, inside/covered vs. outside, etc.).
  - Installing Level 1 and Low Level 2 EVSE (e.g. 8A, 12A or 16A at 208V/240V) within the capacity of existing electrical panels and transformers in order to avoid costly upgrades.
  - Using non-networked EVSE approaches that satisfy data requirements for measurement and evaluation.

- The CEC may want to set aside a **specific funding amount for use-case studies** based on actual EVSE sites that explore the trade-offs between lower installed costs, lower monthly operating costs and lower life cycle EVSE costs in connection with EV driver preferences and increased EV adoption.

- Require all proposals to include a discussion of how lower cost installation methods and lower monthly operating costs were taken into account for all proposed sites, and provide extra points for proposals that include more extensive use-case analysis of less costly EVSE installation methods/costs, lower monthly operating methods/costs and lower EVSE life cycle costs in connection with customer preferences and increased EV adoption.

- **Require a Plan for Experimental Design, Measurement and Evaluation**
  - Add a requirement that all proposals include a plan for Experimental Design, Measurement & Evaluation that covers a variety of use-case analyses, including how to minimize the cost of data collection and billing while providing essential data for measurement and evaluation.
  - The plan should cover at least the following:
    - Project goals/objectives
    - Specific use cases to be addressed
    - Targeted baseline group and treatment groups
    - The methodology to measure and evaluate the extent to which project goals/objectives will be achieved, and the results for individual treatment groups, potentially including pre and post data collection and participant surveys
    - How potential EV driver charging preferences will be assessed, including discrete choice analysis
    - Specific data points required to measure and evaluate the results for each treatment group and overall results (e.g. kWhs used in 1 hour timeframes, peak kW demand over 1 hour timeframes, etc.) and how essential data will be collected while minimizing data collection costs
    - How the cost of grid impacts will be taken into account
    - How lessons learned will be developed

- **Award separate points for the Experimental Design, Measurement and Evaluation Plan** since this is critical to the learnings that will come from this and future funding round.

- **In order to achieve more robust use-case analysis and implementation, remove the requirement that all Level 1 and Level 2 EVSE must be equipped with an SAE standard J1772 convenience cordset/connector**
  - This adds cost which may be unnecessary for specific use cases, as all EV's come with their own L1 cordset and low cost ($350), and an increasing number of OEM convenience cordsets that come with the EV have an adaptor that provides for L1 and Low Level 2 charging.
  - Experimental design should be allowed to include Level 1 or Level 2 outlets without a J1772 connector in order to achieve less expensive installation costs and lower monthly fees, allowing residents to provide their own convenience cordset.

- **Remove the requirement that all charging stations must be network capable** This may add significantly to the installed cost and monthly operating fees and potentially reduces the number of MUD and rural residents with access to EV driving. Instead, require that proposals specify the data that is important to collect for measurement and evaluation and how they plan to collect that data in a low-cost and efficient manner.
    - For example, aggregation of non-networked EVSE served through a single electric utility meter, or individual non-networked EVSE spaces served through individual electric utility meters, could be utilized for specific use cases as a means of reducing life cycle costs in connection with less expensive billing methods, such as flat monthly fees for charging (including electricity and operational fees), or other methods with lower monthly fees.
    - Specific data requirements can also be achieved through smart electrical circuits, such as provided by Plugzio and Orange, but only if specific data requirements necessitate a smart circuit in addition to data from the electric utility meter.
    - Encourage proposers to use data the CEC has gleaned from prior grants to clarify what specific data is necessary for the Experimental Design, Measurement and Evaluation Plan.
        - For example: "Type of vehicle charged" may not be a necessary/ reasonable data point, but if so, it can be collected as part of participant registration rather than through networked EVSE, or perhaps a small wifi-enabled video camera at a charging site might be an inexpensive way to get that data.
    - Encourage proposers to minimize network fees, for example, by:
        - The use of networked EVSE in a statistically meaningful sample (10-20%) rather than requiring all EVSE at the entire site to be networked;
        - Use of the driver's cell phone and/or EV as the network device;
        - Use of systems that utilize a central controller that communicates with the cloud (EVSE with a single cell card that acts as a central controller, or a separate central controller with a cell card), but which communicates with the other EVSE at that site that do not use a cell card, but have reliable, local communication channels, e.g. hard-wired ethernet, or wireless zigbee.

- **Allow DCFC at an MFD only in addition to a substantial number of Level 1 and Low Level 2 at the MFD to learn more about customer charging preferences.**

- **Allow all types of DCFC at sites, including low level DCFC, e.g. 25 kW, and DCFC with built-in battery energy storage served by a Level 2 circuit, etc. in order to test a variety of lower-cost use cases and learn more about customer charging preferences.**

- **Onsite unassigned parking spaces shared across multiple units** may be sub-optimal for specific, lower-cost life cycle use cases unless it is in addition to a minimum of one assigned space/unit/site. Potential customer preference for

charging tied directly to the customer's electric utility meter should be assessed, rather than supplied through a third party ALMS, and customer preferences for having the freedom to choose participation in a demand management offerings by the electric utility, rather than through a third party ALMS.

- **Require proposers to address how the cost of EV charging will be kept as low as possible**
  - Although Automated Load Management Systems (ALMS) offer unique opportunities to serve larger numbers of MFD residents at lower cost, without a means for consistent competitive pressure, the ALMS provider may be tempted to allow the monthly fees to rise to the point where the EV driver is paying the equivalent cost of gasoline, or more.