

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



**FILED**

07/14/20  
04:59 PM

Order Instituting Rulemaking to Continue the  
Development of Rates and Infrastructure for Vehicle  
Electrification.

Rulemaking 18-12-006  
(Filed December 13, 2018)

**COMMENTS OF ENVIRONMENTAL DEFENSE FUND  
ON TRANSPORTATION ELECTRIFICATION FRAMEWORK STAFF PROPOSAL  
(SECTIONS 7 AND 8)**

Larissa Koehler  
Senior Attorney  
Environmental Defense Fund  
123 Mission Street, 28<sup>th</sup> Floor  
San Francisco, CA 94105  
Phone: (415) 293-6093  
Email: lkoehler@edf.org

Pamela MacDougall  
Senior Manager  
Environmental Defense Fund  
257 Park Avenue South, 17<sup>th</sup> Floor  
New York, NY 10010  
Phone: (212) 616-1251  
Email: pmacdougall@edf.org

Dated: July 14, 2020

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

Order Instituting Rulemaking to Continue the  
Development of Rates and Infrastructure for Vehicle  
Electrification.

Rulemaking 18-12-006  
(Filed December 13, 2018)

**COMMENTS OF ENVIRONMENTAL DEFENSE FUND  
ON TRANSPORTATION ELECTRIFICATION FRAMEWORK STAFF PROPOSAL  
(SECTIONS 7 AND 8)**

**I. INTRODUCTION**

Environmental Defense Fund (EDF) files the following comments on Section 7 (Safety) and 8 (Technology and Standards). Per the extension of time granted by Administrative Law Judge (ALJ) Goldberg via e-mail on July 2, these comments are timely filed.

**II. ANSWERS TO QUESTIONS POSED IN SECTION 7**

*A. Answer to Question 7.1.1: What revisions, if any, are needed to improve the safety procedures and implementation processes for the investor-owned utilities' (IOU) transportation electrification programs?*

EDF does not have additive comments to this point. As the stakeholders with the most comprehensive and up-to-date knowledge of necessary safety procedures and implementation processes, industry representatives (including charging station operators and hardware/software providers) are best placed to make recommendations. EDF trusts these recommendations and believes that they should be supported as far as feasible.

*B. Answer to Question 7.1.2: Are specific procedures appropriate and necessary to allow IOUs to provide make-ready infrastructure intended to support testing of pre-commercial electric vehicle charging technology, and if so are any specific safety rules required?*

EDF is not clear whether the California Public Utilities Commission (CPUC or Commission) is referring to ensuring make-ready infrastructure is well-designed to support

currently feasible and pre-commercial technology (i.e. future proofing in order to prevent stranded assets) or using existing make-ready infrastructure to test out more nascent technology. In the latter case, pre-commercial equipment should be required to meet pre-determined safety and performance standards, informed by work being done by the National Institute of Standards and Technology (NIST) and EnergyStar, as well as ensure that communication standards facilitate interoperability and reduce the risk of stranded assets and that cybersecurity on stations are effective in preventing unintentional release of sensitive customer information.

In order to effectively future-proof assets, to ensure that they continue to be used and useful over a long-term horizon, the CPUC should see that standards allowing open access, interoperability, and advanced charging are set. The communication standards and NIST/EnergyStar standards that are already contemplated in the TEF<sup>1</sup> are sufficient to ensure that charging stations themselves will continue to be useful and operational. However, considerations that go beyond just looking at the charging stations and exploring how to make sure that charging stations and vehicles are well-equipped to maximize benefits to the customer and the grid are necessary. This includes ensuring that utility billing operating systems offer seamless transitions to residential and commercial time-variant rates and provide easily understandable energy usage data and comparisons to other rates in a way that allows customers to understand how they can best take advantage of the rate to save money. As well, utilities must adequately monitor energy usage and standardize data formats across service territories as they collect data from third party-operated submeters in order to prevent a situation where the third party providing the submeter has to reformat the data for different parts of the state.

---

<sup>1</sup> California Public Utilities Commission, *Transportation Electrification Framework: Energy Division Staff Proposal*, R. 18-12-006 at 81, 84.

*C. Answer to Question 7.1.3: What policies or procedures, if any, should be included in IOU program design to ensure TE infrastructure is safely maintained or decommissioned once a program period has ended?*

As the CPUC recognizes, it is imperative that the risk of stranded assets is minimized to the extent possible – a failure to do so means that ratepayer funds may not be put to the best use, or more funding may be requested down the line to replace charging stations that can no longer effectively support electric vehicles. The owner of the charging station – most likely to be the customer who purchases the charging station directly from a third-party provider – may not be able to ensure themselves that a facility is maintained beyond the life of the program (i.e., for the actual life of the equipment). As such, utility programs should look at the feasibility of requiring that operations and maintenance from third party providers show a commitment to regular operations and maintenance practices in their bid to be a considered an approved provider.

Failure to provide that duty of care could prevent contracts from being awarded to that company in the future and/or utilities could integrate a clause in the contract reflecting the fact that failure to ensure that charging stations remain in a state of good repair at all times will void the ability of the third party provider to take part in the program. Of course, to avoid a charging station thereby becoming a stranded asset, an open charge point protocol (OCPP) that allows other companies to take over a charging station and OpenADR that standardizes participation in demand response –already contemplated in the TEF<sup>2</sup> – will be critical. As well, the Commission needs to adopt an industry-supported standard related to communication between the vehicle and the charging station that meets the cybersecurity standards and vehicle-grid integration goals described elsewhere in these comments.

---

<sup>2</sup> *Id.* at 79.

*D. Answer to Question 7.2.1 - Should the investor-owned utilities (IOU) include workforce development plans in their Transportation Electrification Plans? a. If yes, what specific gap(s) should be addressed to ensure the availability of a sufficiently trained workforce to support IOU transportation electrification programs, and what organization(s) are best positioned to fill the gap(s)?*

While utilities should not be solely responsible for workforce development, there are some areas for which utility intervention via Transportation Electrification Plans (TEPs) is appropriate:

- A sufficient workforce to meet the deployment goals built into the TEPs. That is, enough Unionized workers that abide by minimum safety standards that can facilitate make-ready installations and necessary grid upgrades in a timely manner and in a way that avoids lengthy installation delays to the extent possible. Projected growth should also be considered in deciding whether an external contractor identified to aid in installation and upgrades in the future is warranted.
- Utilities should ensure that customer service is prioritized. That is, as TEP programs and an existing/future applications are getting off the ground, employees that are equipped to carry out effective marketing, education, and outreach on the benefits of vehicles; available rates and how best to take advantage of lower hourly price signals; information on installation and charging stations; if and help with operations and maintenance will all be critical to ensuring a successful outreach. In particular, outreach to medium- and heavy-duty fleets will be critical to scaling up adoption in those nascent sectors and achieving key transportation emissions reductions.
- Training to ensure utility employees are adapted to an increasingly decentralized grid. As California – and utilities – are going to be increasingly relying on distributed energy resources. This includes using electric vehicles to provide reliability and resiliency services. As such, employees will have to understand this paradigm shift and be able to bring customers along in a way that effectively shifts focus away from large-scale generation to distributed resources that can more cleanly, nimbly, and cost-effectively serve the grid.

### III. ANSWERS TO QUESTIONS POSED IN SECTION 8.1 – ELECTRIC VEHICLE SUPPLY EQUIPMENT STANDARDS

- A. *Answer to Question 8.1.5: What are the expected costs of requiring vehicle-grid integration (VGI)-enabled electric vehicle supply equipment (EVSE) across all investor-owned utility (IOU) EVSE investments?*
- a. *What are the projected costs of requiring all ratepayer funded EVSE meet International Organization for Standardization (ISO) standard 15118, and aligning with the protocol updates currently underway?*
  - b. *What are the projected costs of installing VGI-enabling hardware after EVSE are deployed for existing and forecasted IOU-funded programs?*

EDF does not offer an answer to this question, but reserves the right to comment on this subject in reply.

- B. *Answer to Question 8.1.6: How can IOUs account for and/or project the scale of vehicle-to-grid enabled EVs in their service territories within their Transportation Electrification Plans?*
- a. *Without existing interconnection standards, how can vehicle-to-grid (V2G) technology be tested and scaled?*

Utility programs should be designed to test out interconnection procedures and business models. However, this is impossible without improved interconnection standards. Following the best practices discussed by the “Vehicle to Grid Alternating Current Interconnection Subgroup”<sup>3</sup> that adapt Rule 21 to allow for enhanced vehicle-to-grid capabilities is a good start, but utilities need to put this into practice. Currently, there is only one limited-scale utility pilot exploring this, conducted by San Diego Gas & Electric,<sup>4</sup> but, in addition to the very small sample size contemplated by the pilot, the project does not consider interconnection standards. The

---

<sup>3</sup> *Final Report of the Vehicle to Grid Alternating Current Interconnection Subgroup*, Order Instituting Rulemaking to Continue the Development of Rates and Infrastructure for Vehicle Electrification, R. 18-12-006 at 22, <https://static1.squarespace.com/static/5b96538250a54f9cd7751faa/t/5df293184c2e38505cebb5bd/1576178475052/2019-12-11+V2G+AC+Interconnection+Subgroup+Report+in+R.18-12-006+-+FINAL.pdf>.

<sup>4</sup> *Prepared Testimony of David M. Goldgraben on Behalf of San Diego Gas & Electric Company – Chapter 3*, Application of San Diego Gas & Electric Company (U902E) for Approval of SB 350 Transportation Electrification Proposals, A. 17-01-020 (Jan. 22, 2018), <https://www.sdge.com/sites/default/files/regulatory/Chapter%203%20-%20V2G%20Pilot%20-%20MD%20and%20HD%20EVs.pdf>.

standards that are recommended by the Working Group should be applied in a real-world context to light-, medium- and heavy-duty electric vehicles to ensure that vehicle-to-grid capabilities can be effectively scaled up.

- b. How should V2G electric vehicles (EV), which can serve power back onto the grid, be forecasted differently than load-only EVs in IOU planning processes?*

First, EDF cautions against taking too narrow a lens in how forecasting is conducted. Commission staff, however inadvertently, seems to make a false, black- and- white comparison between vehicles that dispatch energy back onto the grid and vehicles that are just contributing to demand. In reality, even if vehicles are not harnessing vehicle-to-grid (V2G) capabilities, managed charging and use of energy stored in batteries to power buildings and homes can offer significant benefits in terms of integrating renewable energy, smoothing load, and providing resiliency. The ability of managed charging (V1G)/vehicle-to-building (V2B)/vehicle-to-home (V2H) to shape load should not be discounted in how significantly it can impact load – and be planned for and appropriately incentivized through market signals that put V2G and V2B on equal footing with large-scale generators and non-mobile storage.

From a logistical standpoint, the power served back onto the grid can be measured similarly to current net metering programs for solar customers. That is, utilities can measure feed-in surplus power through a special third-party net energy metering (NEM) programs or through the customer's meter itself. Of course, similar to the NEM program, it will be necessary for the utility to provide credits for the energy provided back to the grid (ideally at a more fair wholesale market signal than IOUs currently offer) in order to garner V2G customers in numbers adequate to provide significant grid services.

#### IV. ANSWERS TO QUESTIONS POSED IN QUESTION 8.2 – CYBERSECURITY

*A. Answer to Question 8.2.7: Are any cybersecurity standards beyond those described in the Transportation Electrification Framework available to be deployed by IOU transportation electrification (TE) infrastructure programs now?*

EDF points to the need to align with NIST standards, which include the following, at a minimum:

- Physical access protection for public infrastructure: removing all jacks accessible from the external electric vehicle supply equipment (EVSE), encryption algorithms on controller boards that meet National Security Agency standards, and ensuring that a signal allows an EVSE provider to easily see if the charging station has a network connection.
- Protecting against remote threats by ensuring all data storage services hosting information on remote services contain FedRAMP certification and any remote access to the EVSE through a web server requires the use of secure HTTPs communication
- Combined charging system protection, such that the only data collected is that which is required for the charging, secure digital signature and encryption is used for all vulnerable messages, and storage of signature keys and certificates is as protected as possible.

Ensuring these minimum standards will mean that utilities are in line with general industry best practices, as well as those set out by the National Electrical Manufacturers Association.

In addition, all communication that takes place between the EV and EVSE should include Transport Layer Security (TLS). If ISO 15118 is used a standard – which incorporates TLS, but does not do so automatically – the utility and third party charging station provider, as appropriate, should be sure that TLS is used at all times to further protect sensitive customer information from cyber-attacks; in the alternative, if Commission staff require use of OCPP, this presents an ideal scenario, as the cyber security embedded automatically into OCPP meets industry standards.

*B. Answer to Question 8.2.8: Do the existing cybersecurity standards leave any gaps? If so, how should the IOUs endeavor to fill those gaps?*

To the extent that existing cybersecurity standards don't incorporate the standards listed by EDF in its response to Question 8.2.7, the Commission should ensure that the two sets of standards are compared in order to ensure that critical protections are put in place.

*C. Answer to Question 8.2.9: Are any new, more effective cybersecurity standards under development?*

*a. If so, when are the new standards expected to be adopted and available for deployment?*

*b. Would the standards currently under development leave any remaining gaps? If so, what is the best process to address those remaining gaps?*

EDF defers to industry knowledge on emerging cybersecurity standards and their importance in these opening comments, but reserves the right to offer additional thoughts in our reply.

#### **V. ANSWERS TO QUESTIONS POSED IN SECTION 8.3 – ELECTRIC VEHICLE SUPPLY EQUIPMENT INTERCONNECTION**

*A. Answer to Question 8.3.1: How would stakeholders rank the following potential barriers resulting from the utility service application process? Please explain why.*

*a. Length of process*

*b. Uncertainties regarding process*

*c. Cost*

*d. Uncertainty regarding cost*

*e. Competitive treatment*

EDF believes that all of the barriers presented above demonstrate barriers to increased vehicle electrification – and that Rules 15, 16, and 21 could be streamlined or amended to help mitigate those barriers. EDF defers to industry knowledge, including, critically, fleet representatives operating medium- and heavy-duty vehicles, as well as charging station operators and companies managing fleet charging (including, where applicable, utilities), and vehicle manufacturers. However, we reserve the right to provide additional comments in our reply.

*B. Answer to Question 8.3.2: Should the CPUC direct the IOUs to meet specific connection deadlines or establish clearer timeframes for electric vehicle supply equipment (EVSE) application and energization processes?*

EDF believes a firm deadline, on which the CPUC predicates success or failure, is premature for vehicles, particularly with respect to medium- and heavy-duty electric vehicles that remain an emerging technology. As stated in opening comments, deadlines like these that provide unrealistic expectations should be avoided so that forward progress is not artificially stunted – thereby letting enemy be the perfect of the good. That being said, there is a need for a metric that evaluates the success of the utility in reducing the connection time and establishes a deadline for information gathering on interconnection times by subgroup or sector – as well as formulation of a process to allow for course corrections where possible.

*C. Answer to Question 8.3.3: Should EVSE connection and application timelines be tiered based on the type of upgrade required and/or the size of the incremental load?*

No. Tiering connection and application timelines based on these criteria paints too broad of a picture. While these categories create a good rule of thumb for the timelines, each situation needs to be evaluated to determine whether there are complexities for which the Commission needs to account that could either alter the timeline or require unique action on the part of the utility.

*D. Answer to Question 8.3.4: Have stakeholders encountered other barriers that are not listed above? If so, please explain and propose potential solutions.*

EDF does not provide an answer to this question but reserves the right to comment on this topic in our reply.

*E. Answer to Question 8.3.5: Should the Rule 15/16 exemption that has been offered to residential customers for over ten years be made permanent, or should other revisions to the IOUs' rules be made to help socialize the cost of upstream upgrades that may be triggered by new residential electric vehicle load?*

EDF does not object to continuation of the Rule 15/16 exemption for residential customers, as this could facilitate critical vehicle electrification and consequent grid services. However, to avoid a situation where electric vehicle customers benefit from being exempted from the cost of a service extension to accommodate their charging station without providing any benefit, the utility could predicate the exemption on being paid back if the customer does not manage their charging or provide energy back to the grid as expected or feasible. The exemption with strings should not apply, however, to lower income individuals, or individuals living in disadvantaged areas already disproportionately impacted by harmful air pollution.

In addition, the Commission should consider whether it makes sense to extend the exemption to commercial fleets starting to operate medium- and heavy-duty fleets, particularly with respect to smaller businesses and businesses operating in disadvantaged communities (DACs). Given the nascent nature of these electric vehicles, and the additional complexity inherent in electrifying these sectors, utilities should continue to ensure that upfront cost is mitigated to a reasonable extent.

*F. Answer to Question 8.3.6: What data is needed to determine whether utility distribution and service connection costs for commercial electric vehicle charging infrastructure should be treated as common costs for all ratepayers?*

EDF believes that the following data needs to be collected in order to establish the appropriate nature of common costs for ratepayers:

- Load data to show impact on the grid of different sectors
- Data on cost of installation of infrastructure
- Average costs of infrastructure
- Grid upgrade costs for different customer classes
- Revenue from a particular customer class

- Emission reductions from a particular sector
- Placement of infrastructure in DACs and number of vehicles supported in DACs
- Average fleet/load size as a way to ensure that funds are distributed equitably
- Costs avoided by enabling V2G, managed charging and reducing congestion

*G. Answer to Question 8.3.7: What data should be regularly reported by the IOUs to provide third-party EVSE installers and site hosts information needed to assess projected installation costs?*

Data that should regularly reported by the IOUs includes the following:

- Timelines for interconnection and build-out of infrastructure
- Installation and grid upgrade costs
- Rates available as a way to manage charging and success rate of those rates (insofar as they lead to charging that doesn't exacerbate peak demand and helps to integrate renewable energy)
- Available vehicle-grid integration programs in which customers can participate

Further, this information should be separated out for light-, medium- and heavy-duty sectors.

*a. Should the EVSE installation data be incorporated in the existing IOU interconnection reports or provided separately?*

Yes, it makes sense to incorporate EVSE installation data into existing interconnection reports as a way to streamline the process and decrease burden on stakeholders.

*b. Should the data for IOU transportation electrification (TE) programs be directly compared to EVSE installations not participating in the IOU TE programs?*

This comparison should be made as a “gut check” for the Commission and the utilities and a way of ensuring that costs attributed to ratepayers are kept as low as possible. By ensuring that utility programs and third party EVSE installations have comparable costs and timelines, the Commission can help ensure that costs are appropriate and that current and future participants in utility programs are disadvantaged by having to suffer outsize interconnection timelines or discouraged from participation in the program altogether.

## VI. ANSWERS TO QUESTIONS POSED IN SECTION 8.5 – EMERGING TECHNOLOGY

- A. *Answer to Question 8.5.10: What additional evaluation would be necessary to determine whether a program similar to the existing energy efficiency Emerging Technology Program is necessary for TE and what the scope of such a program could be?*

EDF does not believe a program similar to the existing energy efficiency Emerging Technology Program is necessary for transportation electrification (TE) – which has subprograms to support the development, assessment, and introduction of new technologies. Technology is still at an early stage, and needs to be nurtured by firm targets, such as the recently approved Advanced Clean Truck rule at the California Air Resources Board (CARB).<sup>5</sup> As well, assistance from the Commission and utilities is needed in order to deploy infrastructure capable of supporting different vehicles classes. However, existing efforts will spur manufacture and development of these vehicles – without the need for a separate, particularly onerous and costly program.

- B. *Answer to Question 8.5.11: Are the type of activities addressed by the energy efficiency Emerging Technology Programs currently addressed by other organization(s) for TE charging technologies?*

Assuming EDF is interpreting this question correctly, the subprograms embedded in the Emerging Technology Programs<sup>6</sup> – development, assessment, and introduction of emerging technologies – could be sufficiently covered by the programs and regulations currently in place at the California Energy Commission (e.g., the Vehicle-Grid Integration Roadmap<sup>7</sup>), CARB, and the Commission if the right guidelines are put in place such that emerging technologies are

---

<sup>5</sup> California Air Resources Board, *California takes bold step to reduce truck pollution*, <https://ww2.arb.ca.gov/news/california-takes-bold-step-reduce-truck-pollution>.

<sup>6</sup> California Public Utilities Commission, *Fact Sheet: Statewide Emerging Technologies Program (2013-2014)*, July 2013.

<sup>7</sup> California Energy Commission, *California Vehicle-Grid Integration Roadmap Update*, <https://www.energy.ca.gov/programs-and-topics/programs/california-vehicle-grid-integration-roadmap-update>.

included in utility programs in a way that ensure these technologies are integrated into utility operations and can be scaled up effectively in the future. If appropriate support is provided through these levers – and these agencies continue to prioritize and nurture more nascent sectors like medium- and heavy-duty vehicles and emerging grid capabilities like V2G, there is no need for a separate Emerging Technology Programs effort for transportation electrification.

*C. Answer to Question 8.5.12: Is it an appropriate IOU role to create an emerging technology program for TE and leverage existing energy efficiency Emerging Technology Programs experience? Why or why not? If not, is there any other role IOUs should play in identifying emerging technology that may be needed for future TE programs?*

No. See EDF's response to Question 8.5.10.

## **VII. CONCLUSION**

EDF thanks the Commission for the opportunity to submit these comments and looks forward to continued engagement in the proceeding.

Respectfully submitted,

July 14, 2020

/s/ Larissa Koehler

**LARISSA KOEHLER**

Senior Attorney  
Environmental Defense Fund  
123 Mission Street, 28<sup>th</sup> Floor  
San Francisco, CA 94105  
Telephone: (415) 293-6093  
E-mail: lkoehler@edf.org

AND

/s/ Pamela MacDougall

**PAMELA MACDOUGALL**

Senior Manager  
Environmental Defense Fund  
257 Park Avenue South, 17<sup>th</sup> Floor  
New York, NY 10010  
Telephone: (212) 616-1251  
E-mail: pmacdougall@edf.org