STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Case No. 23-1364-INV

Public Utility Commission 2023 Investigation into Rates Related to Electric Vehicles

VERMONT DEPARTMENT OF PUBLIC SERVICE COMMENTS

The Vermont Department of Public Service ("Department") appreciates this opportunity to comment on electric vehicle ("EV") rates and their importance to managing financial impacts of EV charging on all ratepayers. In line with the Vermont Public Utility Commission's ("Commission") order opening this investigation, these comments outline key issues related to EV rates that are prudent to address throughout the proceeding, including during the planned workshop.

The Department acknowledges that there are many adjacent topics relevant to EV rates. Comments by the Department submitted in December of 2022[1] outlined progress towards EV supply equipment ("EVSE") deployment as well as metering and payment standards for public chargers under the Agency of Agriculture, Food and Markets' Weights and Measures Section.

Transformer upgrades are one such important adjacent topic. For both residential and commercial locations, charger management is typically limited to Level 2 and fast chargers (there are virtually no commercially available controls for Level 1 chargers). The installation of this higher capacity EVSE may require a utility to upgrade the distribution transformer serving the customer; costs—either in whole or in part—are typically the responsibility of the customer under the applicable line extension tariff. As a result, access to EV rates may be dependent on the ability to afford transformer upgrade costs and on any wait associated with supply chain availability or installation issues the wait time for transformers serving heavy-duty fleet customers can exceed multiple years). Transformer upgrades may fall outside the scope of this proceeding but remain a fundamental consideration in EV adoption, EVSE deployment, and related load management.

The legislation that spurred this investigation, Act 55 of 2021, calls for the efficient integration of EVs into the electric system while encouraging EVs generally, and public charging specifically. EV rates should be designed to maximize the value of EVs as a grid resource to benefit the entire electric system, especially in terms of adequacy, reliability, and affordability. To this end, state policy should aim to ensure as much charging as possible is a managed load, with an objective to make managed charging the default condition as the transportation fleet electrifies.

[1] Comments were submitted as part of Case No. 22-4869-INV.

Key Issue 1: Economic Basis of Rates

A distribution utility ("DU") can build each EV rate from the bottom-up, by considering power-supply costs alone, or top-down, by starting with a standard rate and reducing avoided costs (such as peak-related costs) to reflect the utility costs associated with EV charging. The former approach looks at marginal costs alone; the latter method better accounts for systemwide embedded costs. Act 55 requires that EV rates include "a reasonable contribution to historic or embedded costs required to meet the overall cost of service" while requiring no adverse impacts on (non-participating) ratepayers and fair compensation to EV rate participants for acting as a grid resource.

These multiple objectives effectively prohibit a cross-subsidy either benefiting or burdening EV rate participants but do not prescribe which approach must be taken in rate development. As DUs create or expand EV rate options, there is value in discussing the specific approach needed to comply and whether there should be a consistent approach across DUs.

Key Issue 2: Participation by Residents of Multiunit Dwellings

Past Commission reports have identified at-home charging for residents of multiunit (or multifamily) dwellings as a consistent challenge. Frequent barriers include meter configuration, assigned customer class, lack of assigned parking, and lack of authority to install a charger at a rental property. These and other barriers also make participation in an EV rate difficult, thereby effectively prohibiting some multiunit dwelling residents from accessing a rate's lower costs. Other ratepayers miss out on potential benefits when that EV charging goes unmanaged.

While this is a complex issue that mainly falls outside the bounds of rate design, the proceeding should address how EV rates, tariffs, and other utility policies and incentives can better include residents of multiunit dwellings.

Key Issue 3: Appropriateness of Whole-Home Time-of-Use Rates

Act 55 allows whole-home (or whole-premises) rates provided the proposed rates meet other criteria of the legislation. Various Vermont DUs have offered whole-home time-of-use ("TOU") rates for many years with limited customer interest. TOU rates have value, but also require effort to understand their nuance and rely on changing human behavior to deliver benefits to both participants and other ratepayers.

Two practical aspects reduce the usefulness of whole-home TOU rates in managing EV load. First, customers who participate in such a rate must understand the entirety of their home's electricity use and not just a single major load. There is a mental burden in tracking all equipment and devices; the burden is reduced when limited to EV charging alone. It is easier for a customer to comprehend when a vehicle is charging or not, and EV chargers are more likely than other devices to include ways to schedule electricity consumption without active intervention by the customer.

Second, TOU rates become less valuable as the time of monthly and annual grid peaks becomes less predictable. Future integration of new electric loads, energy storage, and renewable

generation will be better suited to dynamic load management rather than static, time-based rates that vary at an appointed hour. While this aspect impacts all TOU rates (including EV-only rates), EVSE is more likely than other major loads to have the capability to receive load management signals to stagger or vary charging activity. As a result, whole-home TOU rates may prove less valuable than EV-specific rates for managing EV load for the mutual benefit of the EV owner and the overall utility customer base. The Department encourages DUs to discuss past experiences and future plans regarding whole-home TOU rates.

Key Issue 4: Demand Charges for Public and Commercial EVSE

The Department's comments of December 2022 noted the impact of high demand charges on public and commercial EVSE (analyses, alternatives, and recommendations were provided in the Department's 2019 report focused entirely on demand charges[2]).

Demand charges are a major financial barrier to installing DC fast-charging equipment given their high instantaneous loads and—at this early stage of EV adoption—low overall load factors, especially in rural locations.[3] In order for the owner of the EVSE to recover his or her costs, demand charges are passed through to consumers in the form of higher charging fees.

Private EVSE serving commercial customers can also incur high demand charges, including fleet operators of work vans, trucks, and school and transit buses. The significant impact of demand charges on EV operators calls for meaningful attention in this investigation.

Thank you for the opportunity to provide comments. Please contact the undersigned parties should additional questions arise.

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[2] Vermont Department of Public Service. January 31, 2019. https://publicservice.vermont.gov/content/act-194-2018-demand-charges-analysis-and-recommendations.
[3] Alliance for Transportation Electrification. May 27, 2022. https://evtransportationalliance.org/wp-content/uploads/2022/06/Rate.Design.TF_.Demand-Charge-Paper-Final-5.25.22.pdf.