D.P.U. 21-91: Comments of the Vehicle-Grid Integration Council (VGIC) on National Grid's Proposed Phase III EV Market Development Program

I. Introduction

The Vehicle-Grid Integration Council (VGIC)[1] is a 501(c)(6) membership-based trade association committed to advancing the role of electric vehicles (EVs) and vehicle-grid integration (VGI) through policy development, education, outreach, and research. VGIC supports the transition to decarbonized transportation and electric sectors by ensuring the value from EV deployments and flexible EV charging and discharging is recognized and compensated in support of achieving a more reliable, affordable, and efficient electric grid. VGIC appreciates the opportunity to provide comments to the Department of Public Utilities (DPU) on National Grid's proposed Phase III EV Market Development Program.

II. EV Time-of-Use (TOU) Rates are Needed to Support Massachusetts's Transportation Electrification (TE) Efforts

Managed charging or "V1G" is an important tool to support TE efforts, as it shifts EV charging away from on-peak periods, which can help lower overall charging costs and support the grid.EV TOU rates are one of the most effective V1G strategies to shift EV charging. While VGIC is generally supportive of National Grid's Off-Peak Charging Rebate, including the proposed flexible scheduling and eligibility expansion to fleet customers, time-varying EV rates can unlock a far greater level of load flexibility from EVs.

For example, with the off-peak charging rebate, a residential customer receiving delivery service and fixed price supply from National Grid would pay 26.787 cents/kWh for on-peak charging, and 21.787 or 23.787 cents/kWh for off-peak charging (depending on the season), resulting in a 1.13:1 to 1.23:1 differential between on- and off-peak charging rates.[2] For

[1] VGIC member companies and supporters include American Honda Motor Co., Inc., dcbel, Enel X North America, Inc., Fermata, LLC., FlexCharging, Inc., Ford Motor Company, General Motors Company, Nissan North America, Inc., Nuvve Corporation, Stellantis N.V., The Mobility House, Toyota Motor North America, Inc., and Veloce Energy, Inc. The views expressed in these comments are those of VGIC, and do not necessarily reflect the views of all individual VGIC member companies or supporters. (https://www.vgicouncil.org/).

[2] Using rates from National Grid's 2019 Summary of Rates. https://www.nationalgridus.com/media/pdfs/billing-payments/electric-rates/ma/cm4394_maweb.pdf

comparison, Pacific Gas & Electric's EV-B rate offers a 4:1 on- and off-peak differential,[3] while Xcel Energy Minnesota's A08 – Residential EV Service offers a roughly 4:1 to 5:1 differential.[4] A similarly designed EV TOU rate would present more dynamic price signals and more effectively encourage customers to shift EV charging away from on-peak periods. Notably, the proposed demand charge alternative is not a load management strategy and therefore is not a substitute for such EV TOU rates.

In addition, an off-peak charging incentive may not be a sustainable mechanism to encourage beneficial charging behavior. While a rebate for off-peak charging would be an acceptable first step in exploring financial incentives for off-peak charging, its continuation is dependent upon subsequent funding decisions by the Department. On the other hand, EV TOU rates can be designed to be revenue neutral and appropriately recover utility costs, and thus do not require additional ratepayer funding. When approving the off-peak charging rebate in 2018, the Department stated that the rebate would allow National Grid to "gain experience and gather data necessary to develop new time-of-use rates for EV customers in the future." VGIC believes that sufficient time has passed since this decision for National Grid to have gathered the necessary data to develop EV TOU rates. EV TOU rates are a necessary long-term tariff offering, and VGIC urges the Department to direct National Grid to file proposals for EV TOU rates for residential and commercial customers 6 months from the approval of its proposed Phase III EV Program.

III. Submetering via EV supply equipment (EVSE) and vehicle telematics should be utilized to support billing for EV TOU rates

The absence of advanced metering infrastructure (AMI) need not delay progress on EV TOU rates, as existing EVs and EV supply equipment (EVSE) are capable of measuring charging for the purposes of billing. To unlock this capability, EV TOU rates, off-peak charging incentives, and any other TE incentive related to charging behavior should allow submetering via the EVSE or vehicle telematics. While both National Grid and Eversource have expressed concerns over metering accuracy related to using smart chargers and vehicle telematics, VGIC notes that these

[3] PG&E. Electric Vehicle Rate Plans. https://www.pge.com/en_US/residential/rate-plans/rate-plan-options/electric-vehicle-base-plan/electric-vehicle-base-plan.page. Pacific Gas & Electric's EV-B rate includes charges of 56 cents/kWh during on-peak periods and 14 cents/kWh during off-peak periods – a 4:1 on- and off-peak differential.

[4] Xcel Energy Minnesota Electric Rate Book. Rate Code A08. https://www.xcelenergy.com/staticfiles/xn/Regulatory%20&%20Resource%20Planning/Minnesota/Me_Section_5.pdf. Xcel Energy Minnesota's A08 – Residential EV Service includes charges of 16.508-20.497 cents/kWh during on-peak periods and 4.170 cents/kWh during off-peak periods – a 3.96:1 to 4.92:1 differential.

potential issues are based on flawed and out-of-date studies and less paramount than the benefits that these technologies can deliver. In fact, EVSE and vehicle telematics submetering capabilities are found in commercially available products and are in use today. Notably, FERC recently approved the CAISO's methodology for EVSE submetering.[5] Xcel Energy Minnesota has implemented the Residential EV Service Pilot since 2018, using the metering capability of smart chargers to allow residential customers to enroll in EV TOU rates, and the Pilot was made a permanent program offering in 2020.[6] The Department itself has also directed National Grid and Eversource's proposals for demand charge alternatives to allow EV charging data for billing purposes to be collected via smart or networked chargers and EV telematics.[7]

Enabling EV- or EVSE-based submetering approaches help avoid the cost of a second meter, which may be borne by the customer or socialized to all of a given utility's customers - however, either approach would disproportionately impact low-income customers. For instance, allowing submetering through the charger has helped participants in Xcel Minnesota's Residential EV Service Pilot save an average $2,196 each in upfront costs.[8] Furthermore, Eversource is already proposing to provide rebates for customers installing networked Level 2 EVSE,[9] and networked EVSE and vehicle telematics are already used by National Grid and Eversource to enable EVs to participate in the Active Demand Reduction demand response program[10]. It would be a missed opportunity if such capabilities are not fully leveraged to support billing for EV TOU rates as well. As such, VGIC strongly recommends the Department direct Eversource to develop EV TOU rates that offer customers the option to elect EV- and EVSE-based measurement in lieu of installing a separate meter.

IV. National Grid's School Bus Offering Should Include a Vehicle-to-Grid (V2G) Component

Electric school buses are ideal candidates for V2G use cases due to their large batteries and operational schedules. For example, the V2G-capable electric bus from Blue Bird has 155

[5] *Order Accepting Tariff Revisions* issued on September 30, 2020 in Docket No. 20-2443-000 at 8. http://www.caiso.com/Documents/Sep30-2020-LetterOrderAcceptingEnergyStorageandDistributedEnergyResourceStakeholderESDERPhase3-ER20-2443.pdf

[6] Minnesota PUC. October 6, 2020. *Order Approving EV Home Service and Voluntary EV Charger Service Programs as Modified*. Docket 19-559.

[7] DPU 20-69-A, pg. 42. 2021.

[8] Xcel Energy Minnesota. 2020. *Annual EV Report*, pg. 11-12. Docket 17-817.

[9] Eversource Exhibit NG-EVPP-1. Docket 21-91.

[10] Massachusetts Three-Year Energy Efficiency Plan 2019-2021, Appendix K. https://ma-eeac.org/wp-content/uploads/Exh.-1-Final-Plan-10-31-18-With-Appendices-no-bulk.pdf

kWh of battery capacity,[11] while the Thomas Built Buses Saf-T-Liner C2 Jouley has up to 226 kWh of battery capacity.[12] If used to offset site electric load or dispatched to support local or system grid needs, electric school buses would provide meaningful benefits to both EV customers/EVSE sites hosts and non-EV ratepayers. Notably, school buses may not have a primary customer mobility obligation during summer months, and therefore have greater availability to support summer peak reliability needs, thereby presenting a potentially low-cost method for reducing systemwide capacity costs. Compensating V2G services would also unlock an additional revenue stream for school districts, mitigating the costs of bus electrification and, in turn, accelerating TE. Given the range of benefits school bus V2G can offer, National Grid should include a V2G component in its school bus offering. Example strategies that can facilitate adoption and use of V2G technology include:

A. Ensuring V2G EVs and EVSE are eligible for the school bus rebate and any other relevant TE incentives;
B. Offering incentives to cover incremental upfront or ongoing costs of V2G (e.g., incremental cost of V2G EVSE, V2G management services, electrical equipment needed to facilitate backup power use case);
C. Offering a reasonable ongoing compensation level for V2G use (e.g., compensation for V2G exports) that provides systemwide grid benefits to all ratepayers.

VGIC notes that the City of Beverly has been partnering with Highland Electric Transportation to use electric school buses to provide V2G services in National Grid territory.[13] National Grid should build on this experience and expand V2G offerings to school districts that receive rebates for electric school buses under the proposed EV Program.

V. Automated Load Management Should be Enabled and Incorporated into Advisory Services

Automated Load Management (ALM) is the use of software or other behind-the-meter technologies to strategically share charging capacity across multiple charging ports at the same charging site, helping safely connect multiple charging ports whose total nameplate load would

[11] Nuvve Corporation. Blue Bird Delivers North America's First-Ever Commercial Application of Vehicle-to-Grid Technology in Electric School Bus Partnership with Nuvve and Illinois School Districts. March 23, 2021. https://nuvve.com/blue-bird-v2g-electric-bus-with-nuvve-and-illinois-school-districts/
[12] Thomas Built Buses / Daimler Trucks North America LLC (2021). The Safe-T-Liner C2 Jouley Electric School Bus. Retrieved September 1, 2021 from https://thomasbuiltbuses.com/school-buses/saf-t-liner-c2-jouley/
[13] Rewnewable Energy World. 2020. "Start-up bets on new model for putting electric school buses on the road." https://www.renewableenergyworld.com/2020/11/02/start-up-bets-on-new-model-for-putting-electric-school-buses-on-the-road/#gref

otherwise exceed the rated capacity of the customer connection. By using ALM, customers can avoid or defer the need to upgrade certain distribution system infrastructure to accommodate the new EV charging load. For example, if a multi-unit dwelling seeks to deploy a charging station with 5 ports, each with a 10-kW capacity, the distribution upgrades would normally be sized to accommodate 50 kW of incremental coincidental charging demand, equal to all 5 ports charging at full capacity. However, ALM can lower the coincident charging demand to below 50 kW even when all 5 ports are occupied, thus reducing distribution system upgrades to what is required for only 3 or 4 ports. In this scenario, when fewer ports are occupied, the EVs can still charge at full speed. ALM can lead to significant savings and ensure that investments in transportation electrification are used efficiently. Pacific Gas & Electric has worked with EV service providers to implement ALM solutions at 20 multi-unit dwelling and workplace host sites as of Q4 2020 and saved between $30,000 and $200,000 per project.[14] Southern California Edison also worked with PowerFlex to implement ALM to deploy 168 charging stations at $3,000 per port, significantly less than comparable deployments at $10,000-$15,000 per port without ALM.[15]

Moreover, many low-income and other disadvantaged communities are served by outdated utility infrastructure (substations, transformers) that may require significant and costly upgrades to be able to accommodate EV charging load. The use of ALM can help mitigate these infrastructure upgrade costs, therefore making charging infrastructure more affordable for disadvantaged communities. ALM is a VGI technology that is particularly well-suited for multi-unit dwellings (MUDs), commercial buildings, workplace charging, and other non-single family home sites, where low-income customers may be more likely to charge.

ALM would reduce the amount of infrastructure upgrades needed and thus lower the costs of fleet electrification and of preparing a MUD site for EV charging. As such, VGIC recommends National Grid ensure that ALM is available to customers as an option and that ALM is fully incorporated into the proposed Fleet Assessment Services and EV Ready Site Plans. It is critical that EV advisory services fully inform customers of all cost reduction measures available to them, including ALM.

VI. Managed Charging Offerings Should Center the Customer

The customers must be at the center of any managed charging or load management program. If program incentives are not attractive or visible enough to customers, participation will be low, and the offerings will fail to deliver grid and ratepayer benefits. To the extent that

[14] Pacific Gas & Electric. 2021. Presentation at CPUC ALM/EV EMS Workshop, Panel 2.
[15] EPIC Policy + Innovation Coordination Group. 2021. *Transportation Electrification Workstream Report*. https://epicpartnership.org/resources/Transportation_Electrification_Workstream_Report_Final.pdf

customers are willing and able to participate in any voluntary load management activities, they will be reducing distribution system costs for all utility customers and therefore should be rewarded accordingly. VGIC suggests that these programs include appropriate customer incentives, akin to Massachusetts' long-standing approach towards funding energy efficiency and demand-side management activities.

Additionally, the Department should consider allowing customers to simultaneously participate in multiple managed charging offerings, rather than requiring them to choose between different options. This would not only maximize customer value but also leverage EV batteries across the off-peak charging rebate, flexible scheduling, demand response (i.e., Active Demand Reduction), and other incentive programs to provide multiple benefits to the grid.

Lastly, the benefits of participation in load management offerings must be effectively communicated to customers in order to ensure high enrollment rates. National Grid should consider partnering with OEMs and EV service providers for this communication, since they are effective messengers regarding EV products and services.

VII. Conclusion

VGIC appreciates the opportunity to provide these comments and looks forward to working with National Grid, the Department, and other stakeholders to ensure the success of Massachusetts's transportation electrification efforts.

Respectfully submitted,

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