June 26, 2023

Hon. Michelle L. Phillips
Secretary
New York Public Service Commission
3 Empire State Plaza
Albany, NY 12223-1350

RE: Case 23-E-0070: Proceeding on Motion of the Commission to Address Barriers to Medium- and Heavy-Duty Electric Vehicle Charging Infrastructure

Joint Reply Comments of the Vehicle-Grid Integration Council (VGIC) and New York Battery and Energy Storage Technology Consortium (NY-BEST) on Medium- and Heavy-Duty Electric Vehicle Charging Infrastructure

Introduction

The Vehicle-Grid Integration Council (VGIC) and New York Battery and Energy Storage Technology Consortium (NY-BEST) appreciate the opportunity to respond to other parties' comments related to medium- and heavy-duty ("MHD") EV charging infrastructure. Similar to initial comments, our reply comments will also focus on VGI and energy storage issues, in line with the Commission's questions 11 and 12 in the Order Instituting Proceeding and Soliciting Comments.

Benefits of Vehicle-Grid Integration Strategies

Overall, there is broad agreement among commenters on the benefits and importance of VGI strategies, including hardware- and software-based Automated Load Management ("ALM")

approaches, integration with distributed energy resources ("DERs"), and managed charging.[1] These benefits range from reduced upfront as well as ongoing infrastructure needs to opportunities for fleets to lower their charging costs, leading to improved economics for transportation electrification.

However, each of these benefits are unlocked by different types of rules, programs, and rates. A suite of utility practices and offerings are necessary to maximize the diverse benefits of VGI strategies for the grid, ratepayers, and fleets. For example, managed charging programs alone will not help reduce or avoid upfront make-ready infrastructure costs because they only provide incentives that *encourage* fleets to charge off-peak and/or avoid on-peak charging. In order for utilities to be able to safely reduce the site connection requirement, utility practices need to go beyond only providing incentives for managed charging to also establishing contractual requirements under which the charging equipment is limited to a defined level of demand.[2] This "flexible connection" framework can be enabled by ALM technologies such as energy storage and/or power sharing. While managed charging programs can improve the value proposition for these technologies through value stacking opportunities (e.g., load shifting, demand response), utilities and the Commission still need to take steps to enable and incentivize the adoption of ALM technologies up front. Environmental Defense Fund and FreeWire provided an example from the New Jersey Board of Public Utilities Staff's Straw Proposal for MHD EV Charging Ecosystem, under which project developers can elect one of two options to lower the cost of adopting "load-modifying technologies:"[3]

[1] See comments from ChargePoint (p. 9-10), City of New York (p. 4), New York Power Authority (p. 4), Environmental Defense Fund (p. 27), RMI (p. 6-7), ACE NY and Advanced Energy United (p. 11-12), Earthjustice and Sierra Club (p. 11), Joint Utilities (p. 30, 32-33), ABB E-mobility (p. 12-13), Livingston Energy Group (p. 5-6), Gage Zero (p. 7-8), PowerFlex (p. 7-8), Metropolitan Transit Authority (p. 8), The Mobility House (p. 5), NineDot Energy (p. 3, 5, 7-8), FreeWire (p. 3-4), Alliance for Transportation Electrification (p. 8), World Resources Institute (p. 4), Daimler Truck (p. 8), and Highland Electric Fleets (p. 16).

[2] See The Mobility House comments, p. 5.

[3] See comments from Environmental Defense Fund (p. 28) and FreeWire (p. 4). See also NJ BPU December 2022 Notice, Docket No. QO21060946, https://publicaccess.bpu.state.nj.us/DocumentHandler.ashx?document_id=1285620.

1. Interconnect to the utility system based on net energy demand, after considering any load-modifying technologies, subject to the utility's right to physically limit service to the modified level; or
2. Request that the utility evaluate make-ready and distribution system upgrade costs without the load-modifying technologies and provide up to the "but for" level of funding for the project, including all load-modifying technologies.

Additionally, VGIC and NY-BEST support FreeWire's recommendation that the Commission consider Earnings Adjustment Mechanisms ("EAMs") to incentivize utilities to promote load management technologies that reduce infrastructure costs.[4] The Commission should leverage the MHD Make-Ready Pilot in Docket 18-E-0138 as an opportunity to collect robust baseline data to inform the design of EAMs for the full MHD Make-Ready Program being considered in this proceeding.

Vehicle-to-Everything Technology Readiness

In initial comments, some stakeholders expressed skepticism towards the maturity of bidirectional charging (i.e., vehicle-to-everything or "V2X") and advised the Commission against considering the impacts of V2X in short-term planning.[5] While it is true that V2X is not yet mature and commercially deployed in all MHD EV segments, the technology is the most suitable for and sufficiently mature in the school bus segment, which is expected to be among the first MHD segments to electrify given state and federal policies. In April 2022, Governor Hochul signed legislation requiring all new school bus purchases to be zero-emission by 2027 and all school buses on the road be zero-emission by 2035.[6] With funding from the Bipartisan

[4] See FreeWire comments, p. 3.
[5] See comments from Tesla (p. 4), City of New York (p. 11), Joint Utilities (p. 32), ABB E-mobility (p. 13), Livingston Energy Group (p. 5), Gage Zero (p. 7), World Resources Institute (p. 3-4), Daimler Truck (p. 8). While the Commission and some of these parties used the term "VGI technology" in this discussion, VGIC and NY-BEST interpreted that the parties referred to V2X (bidirectional charging) technology, given that most of the parties also voiced support for other VGI strategies (e.g., battery storage, managed charging) in their comments.
[6] https://legiscan.com/NY/text/S08006/id/2567276/New_York-2021-S08006-Amended.html

Infrastructure Law, the Environmental Protection Agency's (EPA) Clean School Bus Program provides $5 billion between 2022 and 2026 to support school bus electrification.[7] These state and federal programs will lead to significant numbers of electric school buses in the coming years. The New York Independent System Operator (NYISO) Gold Book 2023 EV stock forecast includes 4,800 electric buses by 2025 and 28,800 electric buses by 2030.[8] Assuming half are school buses, 20 kW per EV charger, and 100 kWh per vehicle, school buses alone would have an aggregate power rating of 48 MW and a storage capacity of 240 MWh in 2025 and 288 MW/1.44 GWh in 2030. This potential magnitude of load and grid resource would certainly warrant consideration in planning processes.

As discussed by Nuvve, NineDot Energy, and Highland Electric Fleets, the remaining barriers to widespread adoption of V2X technology, at least for school buses, are regulatory rather than technical.[9] Although vehicle-to-grid ("V2G") exports are eligible for compensation under the VDER tariff, it does not account for the full suite of grid and resiliency benefits that V2G technology can provide. For example, extreme weather events, which are increasingly frequent and severe due to climate change, are challenging the grid's ability to deliver reliable electricity, underlining the need for novel solutions to help utilities meet demand spikes as well as for backup power to keep essential services such as schools and healthcare facilities online. Electric school buses are ideal candidates to help address this need. The expected compensation from VDER alone, however, is unlikely to justify the higher upfront investments in bidirectional capability for fleets. Once sufficient revenue streams are unlocked, such as through demand response programs, V2G deployment will increase significantly.

Before these additional compensation mechanisms can be put in place, however, the Commission should provide incentives to help offset the higher costs of bidirectional EV supply

[7] https://www.epa.gov/cleanschoolbus
[8] See NYISO Gold Book 2023, Table I-11a: Electric Vehicle Stock Forecast, https://www.nyiso.com/documents/20142/2226333/2023-Gold-Book-Public.pdf/c079fc6b-514f-b28d-60e2-256546600214
[9] See comments from Nuvve (p. 3-4), NineDot Energy (p. 7), and Highland Electric Fleets (p. 15)

equipment so that fleets adopt the necessary technologies to enable bidirectional charging once sufficient revenue streams are available. Without such incentives, school districts and their fleet operators will likely be inclined to install unidirectional equipment given project economics in the short term. However, passing on bidirectional equipment would preclude these school bus fleets from participating in bidirectional charging offerings in the future, leading to a significant missed opportunity for New York to leverage the battery capacity of these vehicles. Incentives for bidirectional charging infrastructure presents a future-proofing solution that adds only marginal incremental cost at present but opens the door to significant benefits for ratepayers, fleet owners/operators, and the grid that will accrue over decades to come.

Conclusion

VGIC and NY-BEST appreciate the opportunity to provide these comments and look forward to working with the Commission, the joint utilities, and other stakeholders to ensure the success of New York's transportation electrification efforts.

Respectfully submitted,

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