



February 27, 2024

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

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

**Comments of the Vehicle-Grid Integration Council (VGIC)
On Proactive Planning and V2X**

Introduction

The Vehicle-Grid Integration Council (VGIC) is a 501(c)(6) membership-based advocacy group 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 to achieve a more reliable, affordable, and efficient electric grid. VGIC appreciates the opportunity to provide comments in response to the recent workshops on proactive planning for medium- and heavy-duty (MHD) EV charging infrastructure.

Proactive Planning Should be Balanced with VGI to Mitigate Ratepayer Impacts

VGIC recognizes the broad support among presenters and other stakeholders at the recent workshops for a proactive planning framework to support charging infrastructure deployment for MHD fleets. VGIC supports efforts by the Commission to advance transportation electrification and ensure that New York meets its ambitious EV adoption and climate goals. However, a proactive planning framework, which deviates from the traditional regulatory model for utility spending and cost recovery, also comes with potential costs and risks for ratepayers that the Commission will have to balance. VGI strategies have significant potential to lower the grid impacts and infrastructure needs to accommodate EV charging load, offering a valuable pathway to balance the new proactive planning paradigm under consideration. Recent studies have demonstrated a high value of VGI for New York's transportation electrification efforts. For example, NYSERDA's 2022 Transportation Electrification Distribution Impact Study found that

managed charging can reduce the necessary distribution system upgrade costs to support transportation electrification by 46% to 61%, depending on the scenario, corresponding to ratepayer savings of between \$2.59 billion and \$10.75 billion statewide by 2050.¹ Synapse Energy Economics' 2023 study, which Environmental Defense Fund discussed at the November 9, 2023 workshop, also shows significant infrastructure cost savings for the MHD sector resulting from even modest managed charging assumptions, ranging from \$100 million to \$190 million for Con Edison and \$80 million to \$140 million for National Grid in make-ready costs from 2023 to 2045.² More robust VGI participation, including through managed charging, demand management technologies (DMTs), and bidirectional charging with vehicle-to-grid (V2G), can deliver even more benefits for ratepayers and provide cost-saving and revenue opportunities for fleets, which can accelerate EV adoption by lowering the total cost of ownership. VGI strategies should be considered and incorporated into all phases of a proactive planning framework to capture these benefits and mitigate the cost burden on ratepayers and fleets seeking to electrify. VGIC offers several key recommendations below to accomplish these goals.

First, VGI should be incorporated into utilities' EV charging load forecasts. Planning assumptions regarding the magnitude and shape of EV charging load require careful consideration to right-size any proactive grid upgrades. For example, load forecasts may not need to assume that all EV charging loads will peak simultaneously. Fleets may employ load management strategies to lower infrastructure deployment costs, impacting the total infrastructure needed. Utilities should consider incorporating fleets' potential VGI activities into the load forecasts that guide investment proposals and proactive planning requests to avoid unnecessary investments.

Second, VGI solutions should be considered alongside traditional infrastructure upgrades in any proactive infrastructure investment proposals. Demand Management Technologies (DMTs), also referred to as Automated Load Management (ALM) or EV Energy Management Systems (EMS), include software-based (e.g., power-sharing) and hardware-based (e.g., co-located or integrated energy storage) strategies that limit the charging site's peak demand and service connection requirements to a level below the aggregate nameplate capacity of the chargers at the site. This, in turn, reduces the need for utility infrastructure to support EV load and accelerates site energization timelines. Additionally, when equipped with V2G capabilities and/or integrated with distributed generation and storage, EVs can also serve as non-wires

¹ NYSDERDA. *Transportation Electrification Distribution System Impact Study*, p. 44. 2022. <https://www.nysderda.ny.gov/-/media/Project/Nysderda/Files/Publications/Research/Transportation/22-13-Transportation-Electrification-Distribution-System-Impact-Study.pdf>

² Synapse Energy Economics. *Distribution System Investments to Enable Medium- and Heavy-Duty Vehicle Electrification*, p. 18-20. 2023. <https://www.synapse-energy.com/sites/default/files/Synapse%20MHDV%20Integration%20Costs%20Final%20Report.pdf>



alternatives (NWAs) and thus serve as substitutes for traditional infrastructure investments. VGIC recommends that the Commission require any proactive infrastructure investment proposals to consider feasible and cost-effective opportunities for VGI and other NWAs on equal footing with traditional infrastructure investments.

Beyond the planning phase, DMTs should also be encouraged through incentives and customer education during the site design phase. While VGIC appreciates the Joint Utilities' proposal to implement the Load Management Technology Incentive Program (LMTIP) in Docket 22-E-0236, it is possible that by the time a make-ready program or proactive planning framework is approved in this proceeding and implemented, the existing funding for the LMTIP will have run out. As discussed in VGIC's comments on the LMTIP, the Commission should consider a prescriptive dollar-per-kW incentive commensurate with the demand reduction and infrastructure cost savings resulting from the overall installation of DMTs across the entire system.³ The Commission should also consider incorporating such incentives directly into a potential MHD Make-Ready Program. Additionally, VGIC recommends that DMTs and VGI, in general, be incorporated into any technical assistance, marketing, education, and outreach activities, including any fleet advisory services. **It is essential to ensure that customers are well informed and empowered to make decisions about their site design based on the opportunities and benefits of these DMT/ALM technologies.**

The Commission could also consider Earnings Adjustment Mechanisms (EAMs) to incentivize utilities to prioritize load management and cost containment throughout the forecasting, planning, and implementation phases. EAMs could be aimed at overall cost reductions compared to a baseline, informed by data from the MHD Make-Ready Pilot in Docket 18-E-0138, similar to the EAMs approved for the Light-Duty Make-Ready Program in the same proceeding. Alternatively, the Commission could also consider an EAM that rewards utilities for achieving ratepayer savings by implementing DMTs and other cost-reducing technologies at the time of interconnection. For example, utilities could be eligible for a dollar-per-kW reward similar to the customer DMT incentives described above, commensurate with the demand reduction and infrastructure cost savings achieved due to the utilities' promotion of DMTs. VGIC offers itself as a resource to staff, utilities, and other stakeholders in the development of these innovative but critical elements to a balanced transportation electrification strategy.

³ VGIC Comments on the Load Management Technology Incentive Program, p. 4. Case 22-E-0236. 2023. <https://static1.squarespace.com/static/5dcde7af8ed96b403d8aeb70/t/64e3c62fc4559b7cc2b072cb/1692649008826/VGIC+Comments+on+Load+Management+Technology+Incentive+Program-1.pdf>

Additional Market Support for Bidirectional Charging is Necessary to Help Meet New York’s Energy Needs

Aside from proactively building out grid infrastructure to accommodate EV charging load, VGIC also appreciates the Commission’s focus on ensuring that transportation electrification helps meet New York’s overall energy needs and emission reduction goals. Bidirectional charging, especially with grid-tied V2G technology, can serve both as NWA to mitigate distribution infrastructure needs and as an essential tool to help meet New York’s energy needs in the coming years. Particularly, New York’s aggressive climate and environmental goals will necessitate the retirement of polluting fossil fuel resources. Since utility-scale renewable energy development faces significant financial headwinds and transmission interconnection challenges, the state **must leverage all available tools to ensure sufficient energy supply and reliability, especially in downstate areas.** For example, NYISO recently had to delay the retirement of peaker plants in New York City to ensure reliability, noting that New York City would otherwise face an expected 446 MW of capacity deficiency beginning in mid-2025.⁴ Given the high real estate costs in downstate New York, VGI has immense potential to serve the state’s needs since EVs and the associated charging infrastructure will already be deployed as a result of the state’s EV adoption goals. Unlike most other energy resources, unlocking bidirectional capabilities from these resources will not require the acquisition of additional real estate (i.e., compared to unidirectional charging). The NYISO Gold Book 2023 EV stock forecast includes 4,800 electric buses by 2025 and 28,800 electric buses by 2030.⁵ **Modestly assuming that half are school buses with 120 kWh batteries and 40 kW chargers, school buses alone would total 96 MW of capacity and 288 MWh of energy in 2025, and 576 MW of capacity and 1.728 GWh of energy in 2030.**

However, current infrastructure costs and export compensation mechanisms do not make investments in V2G-capable vehicles and chargers economically viable in New York. Additional policy intervention and market support, addressing both infrastructure costs and export compensation for V2G, are necessary to spur deployment and ensure that the emerging V2G resource can be leveraged to support New York’s decarbonization goals in the coming years. VGIC appreciates the Commission’s recent decision in Docket 18-E-0138 to require the Joint Utilities to update their VDER tariffs to include V2G, which will establish uniformity across the state regarding the eligibility of V2G resources to participate in VDER. However, based on VGIC’s estimates, the compensation under VDER is currently insufficient to warrant investments in V2G projects, especially in areas outside of ConEd territory. Using *highly*

⁴ S&P Capital IQ. “Facing New York City power shortfall, NYISO delays retirement of peaker plants.” 2023. <https://www.capitaliq.spglobal.com/apisv3/spg-webplatform-core/news/article?id=78946545>

⁵ NYISO. *2023 Load & Capacity Data Report (Gold Book)*, Table I-11a: Electric Vehicle Stock Forecast. 2023. <https://www.nyiso.com/documents/20142/2226333/2023-Gold-Book-Public.pdf>

generous assumptions for each 120-kWh electric bus (i.e., batteries discharge *all* 120 kWh of stored energy across three hours of a CSRP call window for 20 days per month), fleets can earn a maximum of approximately \$8,400 per vehicle over three summer months in ConEd territory by participating in VDER.⁶ However, in National Grid territory, the corresponding best-case-scenario compensation drops to only approximately \$1,800 per vehicle per summer. While VGIC has not developed similar estimates for the remaining IOUs, recent VDER statements show that the other IOUs' Value Stack credit rates are similar to or lower than those offered by National Grid, and therefore provide a similar or even lower compensation level for V2G projects.⁷ Given the relatively high upfront costs of developing and deploying bidirectional charging infrastructure and the enabling equipment, which is particularly high in the current, relatively nascent market stage that V2X equipment is in, the (somewhat unrealistic) best-case-scenario VDER revenue in most New York utility territories (with the exception of ConEd) would be wholly insufficient to unlock this latent V2G capacity. Additionally, the CSRP and DLRP programs require participants to forego the DRV and LSRV components of VDER but only include a small number of events each summer, resulting in even lower per-summer compensation than what fleets can earn from the DRV component alone.

In contrast, the ConnectedSolutions demand response (DR) programs offered by other utilities in New England provide a much more attractive compensation mechanism and should serve as a model for V2G program design. For example, National Grid's Massachusetts ConnectedSolutions Daily Dispatch program calls between 30 and 60 events per summer, each lasting two to three hours, and provides \$200 per kW per summer in compensation based on average performance.⁸ Eversource offers the same program (called Daily Curtailment), resulting in consistent compensation throughout Massachusetts.⁹ For comparison, assuming the same 120 kWh of battery capacity, the compensation amount fleets can earn from V2G is between \$8,000 and \$12,000 per vehicle per summer in Massachusetts.¹⁰ Similarly, Rhode Island Energy's ConnectedSolutions program provides \$300 per kW per summer, allowing a much smaller

⁶ This estimate assumes each vehicle exports its entire battery capacity over three hours for 20 days each month during the CSRP call window to maximize the DRV component, which has the greatest value. The estimate does not include the LSRV component, which is only available on a limited number of distribution circuits.

⁷ Joint Utilities of New York. Value of Distributed Energy Resources (VDER). <https://jointutilitiesofny.org/distributed-generation/VDER>

⁸ National Grid. Daily Dispatch. <https://www.nationalgridus.com/MA-Business/Energy-Saving-Programs/Daily-Dispatch>

⁹ Eversource. Demand Response. <https://www.eversource.com/content/business/save-money-energy/energy-efficiency-programs/demand-response>

¹⁰ This estimate assumes each vehicle exports its entire battery capacity over the entire duration of each event during all events called each summer. The lower estimate corresponds to a scenario with 100% three-hour events during which each vehicle exports at 40 kW; the higher estimate corresponds to a scenario with 100% two-hour events during which each vehicle exports at 60 kW.



vehicle battery (Nissan’s 60-kWh LEAF) on a much smaller charger (Fermata Energy’s 15-kW FE-15) to earn on average approximately \$4,000 per summer.¹¹

Based on these current program offerings, VGIC expects V2G investments on the east coast to likely concentrate toward New England states with ConnectedSolutions options. Even though revenue under the VDER tariff were comparable to the real-world results from V2G projects in New England, New York V2G site deployment will still likely lag, given the overall higher costs faced by fleets and technology providers in the state, especially in the downstate area. **Without improvements to its V2G export compensation mechanism(s), New York risks being left out of the development of V2G projects and, instead, may become home to an immense amount of a new type of *stranded asset*: latent distributed energy storage capacity locked away behind unidirectional chargers.**

VGIC proposes that the Commission establish a new DR program, similar to the Daily Dispatch / Daily Curtailment programs referenced above, to incentivize grid exports from V2G. The program could either 1) be an option in which fleets participate instead of receiving the DRV and LSRV credits under VDER, or 2) provide additional compensation on top of all VDER components. This strategy would mirror the Commission’s reasoning for establishing the Term-DLM and Auto-DLM programs: spur investments into a specific customer resource that will benefit the grid. In the case of Term-DLM and Auto-DLM, the goal was to support more long-term, capital-intensive stationary storage projects and spur the emerging stationary energy storage market to capture the commensurate grid benefits.¹² A new V2G-specific DR program, with program terms that are more suitable for this technology, is critically needed to deploy V2G projects in New York. Additionally, a V2G-specific DR program would allow the Commission to modify program terms and incentive levels more easily as lessons are learned and the industry matures without having to modify the VDER tariff, which applies to all distributed energy resources.

Besides ongoing export compensation, upfront infrastructure costs remain another key barrier to V2G resource deployment. As discussed in VGIC’s earlier comments in this proceeding, there is an approximately 30% cost premium for a bidirectional DC Fast Charger (DCFC) compared to a unidirectional DCFC. This cost premium, coupled with the lack of a compelling export compensation mechanism in New York, means that fleets are more likely to

¹¹ Michigan Public Service Commission. EV Technical Conference. January 25, 2024. Slide 63: Presentation from Fermata Energy. <https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/workgroups/technical-conference/EV-Technical-Conference-Presentation-Day-2.pdf?rev=5d8df7e45d4d4093add720e2bb8fa9e5&hash=FFC86A3557D5EFFEF7A6D4BAF79666B5>

¹² NY DPS. *Order Establishing Term-Dynamic Load Management and Auto-Dynamic Load Management Program Procurements and Associated Cost Recovery*, pg. 2. September 17, 2020. Case 18-E-1039. <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={BB230CF6-F7CC-476D-ADF3-A91DEA1357C8}>



install unidirectional chargers in the near future. These investment decisions, while at first glance seem reasonable under current conditions, would lock fleets out of participation in future V2G offerings and cause New York to miss out on the associated grid support benefits. Even before implementing export compensation improvements, as VGIC proposes, the Commission should aim to promote the bidirectional fleet charging infrastructure in the near term, to ensure customers can participate once a compelling V2G export opportunity is implemented.

For this purpose, VGIC believes it is reasonable to offer an incremental rebate to help partially offset the higher upfront costs of purchasing and interconnecting V2G-capable equipment. VGIC recognizes that the Commission recently declined to adopt incremental incentives for bidirectional chargers in the Light-Duty Make-Ready Program because bidirectional chargers do not reduce make-ready infrastructure upgrades and that the make-ready program does not provide incentives for chargers in general.¹³ However, incentives for V2G equipment should not be viewed simply as incentives for a more expensive charger, but rather as investments in a critical technological functionality that can transform EVs into grid resources and unlock a new distributed energy resource (DER) asset class to help meet New York's energy needs. The charging infrastructure installed under a potential MHD Make-Ready Program will serve vehicles with large batteries and predictable dwell times, such as electric school buses, with immense potential for energy and capacity contributions through V2G. VGIC urges the Commission to take advantage of this opportunity to provide a strong signal to the market to continue making investments in V2G and directing those investments to sites in New York. If the Commission opts against incentives for chargers in a make-ready program setting, incentives for V2G-capable chargers could be structured as a separate offering from make-ready incentives, similar to the relationship between the proposed Load Management Technology Incentive Program and the Light-Duty EV Make-Ready Program.

Conclusion

VGIC appreciates the opportunity to provide these comments and looks forward to working with the Commission, Department of Public Service Staff, the Joint Utilities, and other stakeholders to ensure the success of New York's transportation electrification, clean energy, and resilient communities efforts. We look forward to continued collaboration with all parties on this important initiative.

Respectfully submitted,

¹³ *Order Approving Midpoint Review Whitepaper's Recommendations with Modifications*, pg. 64. November 16, 2023. Case 18-E-0138. <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={6057D98B-0000-C912-9B64-A2D769C4790D}>



Ed Burgess

A handwritten signature in black ink that reads "Edward A. Burgess". The signature is written in a cursive style with a prominent initial "E".

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