Comments of the Vehicle Grid Integration Council
on Reducing Soft Costs Associated with the Construction of L2 and DCFC Chargers

To: The United States Department of Energy, Vehicle Technologies Office

From: Vehicle Grid Integration Council,
with support from the following organizations:

Leadership Circle Members:

- *American Honda Motor Co., Inc.*
- *Enel X North America, Inc.*
- *Ford Motor Company*
- *General Motors Company*
- *Nissan Group of North America*
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- *Veloce Energy, Inc.*
- *Wallbox USA Inc.*
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Defining Vehicle Grid Integration (VGI):

Vehicle grid integration represents a unique opportunity to establish and advance US leadership at the intersection of decarbonized transportation and electric sectors by ensuring that the value from flexible electric vehicle charging and discharging is recognized and compensated.

Reducing Soft Costs Associated with EV Charger Deployment with VGI

Vehicle Grid Integration Council (VGIC) is a 501(c)(6) nonprofit trade association focused on accelerating the role of smart EV charging and discharging through policy development, education, outreach, and research. VGI solutions, including managed charging, automated load management, and vehicle-to-everything ("V2X") bidirectional charging systems, can play a critical role in reducing an EV's total cost of ownership ("TCO"). These solutions can lower capital costs (i.e., through automated load management or "ALM") and reduce operational costs (i.e., managed charging and V2X bidirectional charging systems) for the deployment of EV supply equipment ("EVSE"). Both ALM and V2X bidirectional charging systems can also provide value as a source of power to support on-site load and backup power to support customer or community resiliency.

We appreciate the opportunity to share the below recommendations for reducing soft costs associated with deploying Level 2 ("L2") and Direct Current Fast Chargers ("DCFC") and look forward to further collaboration with the Vehicle Technologies Office and other stakeholders on this critical initiative.

1. **Automated Load Management (ALM) strategies can reduce energization timelines and associated costs by deferring or even completely avoiding the need for certain distribution utility infrastructure upgrades and other make-ready work.** ALM solutions include:
    a. Software-based approaches that share available electrical capacity among EVSE: Sites with multiple EVSE and long dwell times, including workplace charging sites and multi-unit dwellings, are particularly well suited for software-based ALM. Software-based ALM is used to draw less total power than the aggregate nameplate charging rate at a site. For example, a site with a combined 76 kW maximum charger demand could use software to ensure the actual demand does not exceed 62 kW.
    b. Battery-integrated EVSE or co-located energy storage systems sized to avoid or defer the need for additional electrical capacity and infrastructure on both the utility and customer side of the meter: Sites with short dwell times, including public DCFC stations and certain fleet charging depots, are particularly well suited to implement integrated or co-located energy storage as an ALM solution. Batteries can be integrated into a charging station or external to a charging station but co-located behind the same meter. These batteries charge from the grid when EVSE utilization and energy costs are low and discharge to meet EVSE load when utilization and energy costs are high. For example, using existing battery-integrated EVSE or co-located energy storage technologies, a site with less than 30 kW of available power could deliver a 200 kW charge to a single vehicle. Said another way, a site with a 200 kW EV charging demand can inherently ensure demand will not exceed 30 kW.

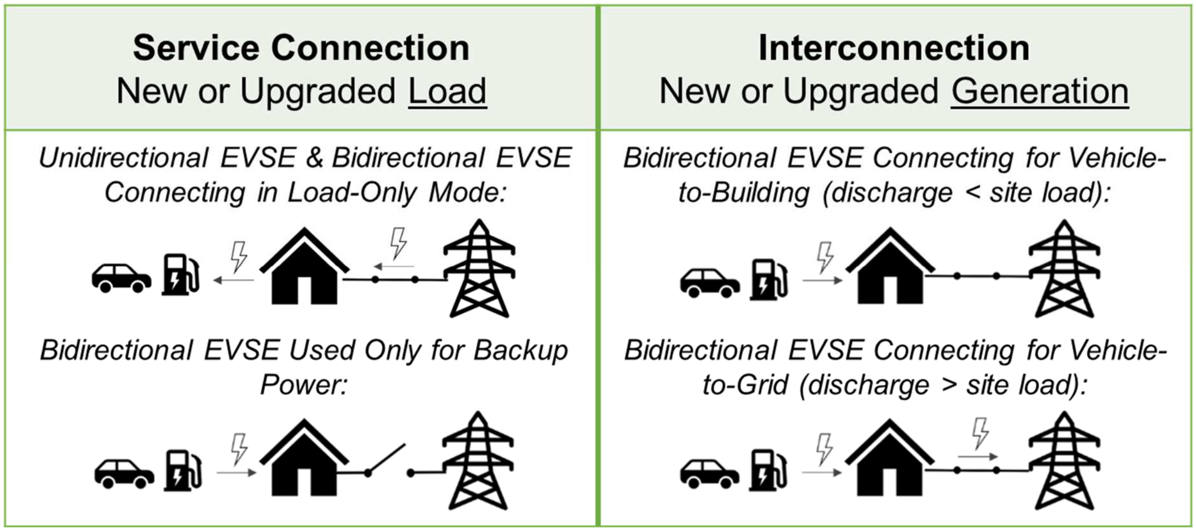
New distribution utility and on-site electrical infrastructure can delay service connection/energization timelines, leading to higher soft costs for EVSE site hosts. For some EVSE site hosts, ALM solutions can facilitate the interim use of EVSE at a lower power until any needed distribution utility and on-site infrastructure upgrades are completed, at which point they can operate at full power. For others, ALM solutions can defer or avoid the need for distribution utility or on-site infrastructure upgrades altogether. In these cases, site hosts experience reduced time to connect/energize their EVSE and contribute to infrastructure cost savings which accrue to site hosts, drivers, and utility ratepayers at large. Additionally, ALM solutions can support other desirable use cases, including managing charging load during peak electricity demand, lowering demand charges for the site host, enabling EV charging when the grid goes down, providing backup power to the site host to enhance resilience, or providing power to the site and ancillary services to the grid. The set of these co-benefits available to a given site will depend on whether software-based ALM or integrated/co-located energy storage – or both – strategies are implemented.

Today, utilities do not widely accept or promote ALM solutions, and utility make-ready programs often do not send the proper price signals to the market thereby undermining any justification for customers to elect ALM solutions that can right-size infrastructure. VGIC recommends the following strategies to promote ALM:

- Ensuring it is an option for customers to choose from and not a requirement.
- Conducting marketing, education, and outreach to inform utilities, customers, and utility regulators of available solutions and the benefits associated with each.
- Offering incentives to site hosts that elect ALM, including (1) a $/kW rebate for reducing distribution utility infrastructure upgrades, applied to each kW reduced below aggregate nameplate charger capacity at a site, (2) a fixed incentive for installing EVSE that avoid the need for make-ready work, and (3) a fixed incentive for installing EVSE behind existing utility meters. The value of each incentive should be commensurate with the average cost across a utility's system to conduct these upgrades.

2. **Streamlined and predictable processes for energization and interconnection of unidirectional EVSE, V2X bidirectional charging systems, and ALM solutions.** Unidirectional charging systems are load-only devices, whereas V2X bidirectional charging systems can discharge from the EV battery to serve a customer's onsite electrical load or export to the grid without compromising a customer's mobility needs. Unidirectional charging systems are most common, whereas early deployments of V2X bidirectional charging systems include providing backup power to a customer's home or business, using electric school buses to support the grid during peak electricity demand, and managing customer bills at commercial sites. Today, customers interested in these use cases, as well as ALM solutions detailed above in recommendation 1, face delays and confusion that can significantly increase soft costs for all stakeholders involved.

Firstly, VGIC believes that a collective understanding of the following common unidirectional and V2X bidirectional charging system configurations is needed:



Secondly, VGIC recommends against "reinventing the wheel" for these systems. For example, if a notification, approval, or interconnection pathway for distributed energy resources ("DER") already exists, it is unlikely that a new process would be needed for V2X bidirectional charging systems. V2X systems used for backup power that can safely disconnect from the grid can fit within existing notification processes for fossil fuel backup generators. Additionally, grid-parallel exporting V2X systems fit into existing processes for grid-parallel exporting DERs. Lastly, the appropriate process, technical requirements, forms, timelines, closeout documentation, and applicable fees for each configuration should be clear and readily accessible to customers and installers online. Any requirements for site plans or single-line diagrams to be certified by a Professional Engineer (PE) should be communicated early in the process and readily accessible on the utility's website to the extent feasible.

Additionally, both unidirectional and bidirectional systems should be permitted to submeter charging load as well as kWh discharged to support the full spectrum of VGI use cases. If EVSE are required to be on a separate meter – as is currently a condition of receiving make-ready incentives and eligibility for EV-specific rates in many jurisdictions – site hosts, utilities, and ratepayers miss out on the resiliency benefits that VGI can provide.

Based on our understanding of the unidirectional and V2X bidirectional charging markets, developing a shared understanding of common configurations and implementing the above-mentioned process improvements are critical to reducing soft costs.

3. **Grid "hosting capacity" maps and data should be made available and easily accessible to support siting of L2 and DCFC chargers, especially for large sites.** Available electrical capacity at a certain point on the distribution grid, or "hosting capacity," will not always be sufficient to accommodate new L2 and DCFC charger installations. As noted above in recommendation 1, ALM can help to defer or avoid upgrades when there is no available hosting capacity. However, steps can be taken earlier in the planning process to ensure charging site developers can make informed decisions when selecting charging locations. Knowing whether

there is hosting capacity at a potential location can support developers looking to determine the financial feasibility of a project. Additionally, the lack of grid hosting capacity data leads to project delays and, in turn, increases soft costs.

Depending on the fleet size and duty cycle, the electrification of medium- and heavy-duty fleets may require significant electrical capacity. Notably, large commercial electric customers are often located near each other in industrial areas, which further exacerbates the challenges of medium- and heavy-duty fleet electrification. To reduce both the soft and direct infrastructure costs needed to accommodate the EV charging load of multiple large commercial customers, VGIC recommends that nearby fleets collaborate during the planning, design, and construction phases of charging infrastructure development. Utilities, infrastructure developers, charging service providers, and other stakeholders must coordinate closely to streamline charger deployment for these use cases. Notably, there is a significant opportunity for large and clustered fleet customers to pursue ALM strategies outlined above in recommendation 1, and these entities should be encouraged and incentivized, though not required, to consider these options. In addition to hosting capacity maps, VGIC recommends technical assistance programs, including those administered by utilities, to facilitate the necessary level of collaboration and ALM promotion for these larger customer sites.

Conclusion

VGIC appreciates the opportunity to submit this feedback on reducing soft costs associated with constructing L2 chargers and DCFC. We look forward to further collaboration with the Vehicle Technologies Office and other stakeholders on this important initiative.

Respectfully Submitted,

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