



October 25, 2023

Informal Comments of the Vehicle-Grid Integration Council on Ameren Illinois Electric Vehicle Pilots

Introduction

The Vehicle-Grid Integration Council (VGIC) is a 501(c)(6) nonprofit member-based association focused on accelerating the role of smart electric vehicle (EV) charging and discharging (i.e., vehicle-grid integration or “VGI”) through policy development, education, outreach, and research.¹ Scaling VGI is an essential part of transportation electrification and supports the following key goals:

- **Benefit EV drivers and fleet owners** by reducing the cost of ownership and providing additional value streams like backup power.
- **Decarbonize the transportation sector** by accelerating EV adoption through additional benefits to EV drivers and fleet owners.
- **Support the evolving electric grid** by providing essential grid services as intermittent energy generation and distributed energy resource penetration increases.
- **Increase affordability** by placing downward pressure on rates, in turn reducing electricity bills for all customers.
- **Improve community resiliency and security** during planned and unplanned grid outages.
- **Foster economic activity** through innovation, competition, and market transformation.

With the proper utility and regulatory support and coordination, these goals can be achieved, and EV drivers and fleets in Illinois can play a critical role in the acceleration of both transportation electrification and grid decarbonization. **Our vision for VGI encompasses the following key elements:**

¹ VGIC member companies and supporters include American Honda Motor Co., Inc., BorgWarner, Enel X North America, Inc., Fermata Energy, Ford Motor Company, General Motors, Nissan Group of North America, Nuvve Holding Corporation, Stellantis N.V., Toyota Motor North America, Blue Grid, BP Pulse, Customized Energy Solutions, dcbel, Emporia, EnergyHub, Enphase, EV.Energy, FlexCharging, FLO EV Charging, FreeWire Technologies, Inc., Gridwiz, Hoosier Energy, Innovation Core SEI, IoTecha, Kaluza, Kitu Systems, Landis+Gyr, NineDot Energy, Peak Power, QCells, Sacramento Municipal Utility District, Sunrun, Synop, The Mobility House, Inc., Utilidata, Veloce Energy, Inc., Wallbox USA Inc., and WeaveGrid. 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/>).

- **Ensure customer mobility needs are satisfied:** Drivers and fleets can support the grid without compromising mobility needs.
- **Managed charging will benefit EV drivers and fleet operators:** Drivers and fleets in Illinois will be provided a menu of opportunities to align charging with the times of day when electricity prices are low, reducing EV and fleet operating costs by as much as 50% compared to unmanaged charging. Lowering the total ownership cost will accelerate overall EV adoption by drivers and fleet managers in Illinois.
- **EVs provide reliable emergency power during blackouts:** During extreme weather blackouts or other power outages, EV drivers and fleets can utilize bidirectional charging capabilities to send energy to a home, building, or microgrid, serving as a generator and providing safe backup power for households and communities.
- **Charging infrastructure deployment accelerates:** Smarter management of EV charging can help accelerate the deployment of EV charging infrastructure, encouraging wider access to EV charging.
- **VGI enables EVs to provide valuable services to the grid and generate revenue:** V1G managed charging (unidirectional charging) and V2X (vehicle-to-everything bidirectional charging) will enable electric vehicles to both receive and feed power back to the grid, providing grid services such as demand response, peak shaving, frequency regulation, and more. A number of utilities across the US have implemented programs that provide compensation for these valuable grid services.

VGIC appreciates the opportunity to provide the following recommendations on the Ameren Illinois (“Ameren”) Draft EV Pilot Project Scope.

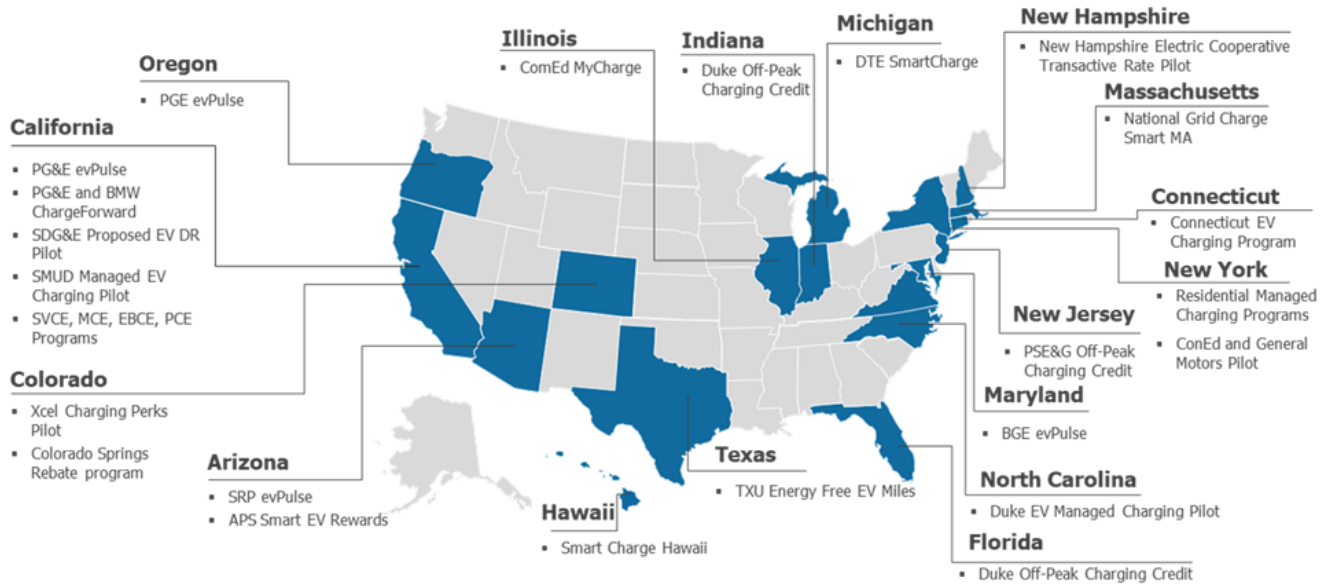
I. Ameren Should Focus on Implementing All Three Pilots Directly With Customers Rather Than at Ameren Facilities.

VGIC commends Ameren for taking important first steps in developing their proposed EV Pilot Projects, as presented at the Beneficial Electrification (“BE”) Pilot Program Stakeholder Meeting held on October 4, 2023.² Ameren presented the proposed scope of three EV pilots at the stakeholder meeting: a managed charging pilot, a sub-metering pilot, and an energy management systems (“EMS”) pilot. VGIC agrees these three focus areas can potentially increase the EV value proposition for owners and fleets immensely and, in turn, accelerate the growth of EV charging.

This vision has come to life as EV and VGI solution deployment has increased over the past several years. For example, in Minnesota, Xcel Company (“Xcel”) has offered a Residential EV Service program since 2018, reducing EV ownership costs for their customers. This program

² Ameren Illinois. *Draft EV Pilot Project Scope Overview*. October 4, 2023.

and Xcel’s Charging Perks program use networked EV supply equipment (“EVSE”) and telematics to manage charging and reduce customer fueling costs.³ Involved stakeholders deemed the program a success,⁴ and in 2020, the pilot was expanded to a permanent program for all eligible ratepayers in Xcel’s service territory. VGIC provides several other examples below of customer-implemented managed charging pilots and programs that have been implemented or approved for use with customers, including in Illinois:



Similarly, several states, including California, New York, Massachusetts, and Maryland, have all adopted a pathway for customers to use networked EVSE and/or vehicle telematics to submeter EV charging load.⁵ Regarding EV EMS, these solutions have been used for various use cases in recent years. For example, Pacific Gas and Electric (“PG&E”) has implemented this solution in its EV Charge Network program to save customers as much as \$200,000 at charging

³ Minnesota Public Utilities Commission, *Order Approving Electric Vehicle Home Service and Voluntary Electric Vehicle Charger Service Programs as Modified*. October 6, 2020. Pg. 3. <https://efiling.web.commerce.state.mn.us/edockets/searchDocuments.do?method=showPop&documentId=%7b20E1FE74-0000-C715-9765-D3D7DC10DE0A%7d&documentTitle=202010-167089-01>

⁴ According to Xcel, Pilot customers have saved on average over \$2,000 on upfront metering and charger installation costs. Furthermore, Pilot participants “have been charging approximately 96% off-peak, delivering savings on their electric bills and limiting the impact that charging may have on system peaks.” Xcel reported an 87% overall satisfaction rate for the Pilot and 95% overall satisfaction for the charger installation.

⁵ SCE Charge Ready Programs, *Southern California Edison Company’s Vehicle-Grid Integration Strategies Annual Report for 2022*. March 15, 2023. Pg. 15. New York Public Service Commission, *Consolidated Edison Company of New York, Inc. Managed Charging Implementation Plan*. September 26, 2022. Pg. 9-10; Massachusetts Three-Year Energy Efficiency Plan 2019-2021, Appendix K. <https://ma-eaac.org/wp-content/uploads/Exh.-1-Final-Plan-10-31-18-With-Appendices-no-bulk.pdf>; Public Service Commission of Maryland, *Order Approving, in Part, Modifications to the Statewide Electric Vehicle Charging Pilot Program*. January 11, 2022. Pg. 23.



sites.⁶ The EV EMS solution set is critical to addressing distribution grid constraints, which represents a major, fast-growing barrier for EV charger deployment and, to a greater extent, fleet depot development.

Given the myriad of successful, long-running pilots and programs implemented by similar utilities, Ameren should strongly consider focusing its resources on piloting customer implementation of these managed charging, submetering, and EV EMS solutions. Ameren is poised to learn much more from a small-scale, no-regrets customer deployment than from demonstrating well-established, commercially available technology that is already deployed throughout the country. Given the technology maturity and pace of deployment of managed charging, submetering, and EV EMS, **VGIC strongly recommends Ameren focus solely on implementing pilots in which Ameren customers can directly participate.** This will yield valuable, real-world learnings about customer marketing, education, and outreach (“ME&O”) strategies, customer support, customer billing system updates and integration, reductions to average service connection timelines, net peak load reduction, customer costs and benefits, utility costs and benefits, and ratepayer costs and benefits. Based on VGIC’s assessment of pilots and programs throughout the country, focusing on piloting customer-centric programs will provide the most efficient path toward Commission approval for future large-scale utility BE programs.

II. The Sub-Metering Pilot Should Focus on Subtractive Billing for Rates RTP, PSP, EVCP Using Embedded Submetering Technology.

The Illinois Commerce Commission (“ICC”) Order 22-0431 requires Ameren to “undertake a pilot that explores how to effectively facilitate sub-metering” and use practices to support sub-metering, “such as automated subtractive billing.” Ameren’s proposed submetering pilot appears to be largely focused on testing the feasibility of submetering technologies, including utility-owned submeters. VGIC reiterates that sub-metering technology is used throughout the country, and it may be most appropriate to focus on the ICC directive as it relates to automated subtractive billing rather than re-demonstrating commercially available submetering technology. Ameren should consider focusing its efforts on piloting the implementation of subtractive billing as it relates to Ameren’s TOU rates (i.e., RTP, PSP, and EVCP), which can promote EV customer participation in these TOU rates without installing a separate meter.⁷ Specifically, **VGIC recommends the Submetering Pilot should focus on implementing subtractive billing for Ameren’s RTP, PSP, and EVCP rates using non-utility-owned sub-meters.** Ameren’s proposed sub-metering pilot will “demonstrate the ability to sub-meter EV charging load” by

⁶ PG&E. *Vehicle Grid Integration Report by Pacific Gas and Electric Company (U 39 E) – Attachment A: Pacific Gas & Electric Annual Vehicle-Grid Integration Strategies Report*. March 15, 2023. Pg. 8.

<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M503/K589/503589008.PDF>

⁷ Illinois Commerce Commission, *Order 22-0431*. March 23, 2023. Pg. 128.

installing and leveraging both Ameren-owned and embedded sub-metering technologies. However, VGIC notes that current submetering implementations across the US use embedded submetering technology in the EVSE or vehicle, rather than utility-owned submeters, which results in lower overall costs and, in turn, increased TOU rate participation from EV customers. This approach will align with best practices, familiarize Ameren’s EV customers with TOU rates, and lay the groundwork for large-scale automated subtractive billing within Ameren’s billing system. In other words, the key question within this pilot should not be “Are submeters accurate?” (for which existing data and Utility Commission decisions across the country already answers), but rather “How can Ameren integrate non-utility submeter data into its billing system and enable subtractive billing?” Ensuring this more appropriate research question is asked will result in a more effective and valuable sub-metering pilot effort.

III. The EV EMS Pilot Should Include Level-2 Chargers and Consider Software- and Hardware-Based Solutions.

EV EMS can help deploy EVSE at sites that would otherwise face lengthy energization timelines, for example, due to primary and secondary distribution system upgrades that would be needed if EV EMS were not utilized. Additionally, as noted in its EV EMS Pilot proposal, customers can leverage “an EV EMS solution to manage EV charging loads thus minimizing the need for EVSE infrastructure costs”.⁸ VGIC commends Ameren for proposing a pilot that tests the ability of EMS to optimize charging load and minimize needed infrastructure upgrades. We recommend that Ameren leverage learnings and best practices from other EV EMS implementations across the nation. Specifically, VGIC recommends Ameren consider the following modifications to the EV EMS pilot:

- 1. The EV EMS Pilot should include L2 chargers in addition to L3 chargers.** VGIC agrees with Ameren that it is important to include L3 chargers as part of the EV EMS pilot, given the significant impacts that L3 charging can have on the grid. However, it is equally important to include L2 chargers in the pilot, as well. Long-dwell, multi-charger sites like workplace charging and multi-unit dwellings may be particularly well suited for software-based EV EMS that shares power across these chargers to ensure the maximum aggregate charging load does not exceed the electrical capacity of the grid at that location.
- 2. Ameren’s EV EMS Pilot should consider both software- and hardware-based solutions.** As proposed, Ameren’s EV EMS pilot would leverage an EV EMS solution to manage EV load, minimizing the need for EVSE infrastructure cost.⁹ While VGIC supports this concept, we recommend Ameren enhance the pilot by using hardware-based solutions as well as software-based EV EMS. Both solution sets can achieve the

⁸ Ameren Illinois, *Draft EV Pilot Project Scope Overview*, October 4, 2023. Pg. 19.

⁹ *Ibid.*

same goal of minimizing the need for EVSE infrastructure costs and shortening the service connection/energization timeline. Specifically, stationary energy storage systems (“ESS”) paired with EV charging can be used, and several commercially available technologies are in use today that either co-locate or integrate stationary batteries into the EV charging station. These ESS-paired chargers can also benefit from increased charger reliability, as the stationary battery can provide backup power to the charger during a grid outage.

IV. Ameren Could Enhance the Managed Charging Pilot by Considering Expansion to Non-Residential Customers and Customers Using Level 1 Charging.

The managed charging program examples in the figure above include non-residential customers and customers using Level 1 charging. With this in mind, Ameren’s proposed managed charging pilot could be modified in the future to include these customer types.

- 1. Expanding the Managed Charging Pilot to commercial customers could enhance the pilot design.** Commercial EV customers and fleets may provide a larger flexible load capacity per customer than residential customers. Additionally, some commercial fleets may have highly predictable duty cycles, which can make charge management easier and more reliable for the utility. With this in mind, VGIC recommends Ameren consider eligibility for commercial EV customers in the Managed Charging Pilot.
- 2. Ameren’s managed charging pilot could allow for participation from Level-1 (“L1”) charging customers participating through telematics.** As proposed, the Managed Charging Pilot would allow Ameren residential customers with Level-2 (“L2”) charging equipment to participate in the program through either the charger- or vehicle-based participation pathway to create a clear path for residential customers. While the pilot specifies it is for L2 charging customers, Ameren could allow those without networked Level 2 chargers (i.e., including customers using at-home Level 1 charging) to participate via vehicle telematics. This could be one pathway to increasing pilot participation as needed.

V. Ameren Should Consider Implementing a Fourth Pilot to Familiarize Itself with Bidirectional Charging Equipment.

In addition to the three proposed pilots, VGIC recommends that Ameren consider including a fourth pilot in the near future that focuses on vehicle-to-everything (“V2X”) bidirectional charging equipment. A V2X bidirectional charging pilot could start as a technology proof of concept for vehicle-to-grid (“V2G”) and/or vehicle-to-building (“V2B”), and could even include an export rate demonstration for V2G at a later phase. Ameren could also pilot a combined technology and



market transformation pilot for V2B and/or V2G. Notably, ComEd is pursuing a V2X electric school bus project at this time, and it may be appropriate for Ameren to explore this technology as part of their EV pilots.

VI. Conclusion

VGIC appreciates the opportunity to submit these comments on Ameren’s Draft EV Pilot Project Scope. We look forward to further collaboration with Ameren and other stakeholders in Illinois on this important initiative.

Respectfully submitted,

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