



Fermata Energy

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To: Massachusetts Technical Standards Review Group (TSRG)

From: Steve Letendre, PhD, Senior Director of Regulatory Affairs

RE: UL1741-SB Waiver Request for Bidirectional Electric Vehicle Chargers

Fermata Energy respectfully submits this request to the Massachusetts Technical Standards Review Group (TSRG). As described below, Fermata Energy requests approval of a waiver for UL1741-SB certification for bidirectional chargers. The proposed waiver has support from additional organizations, including:

- Green Energy Consumers Alliance
- Highland Electric Fleets
- Vehicle Grid Integration Council

In March of this year the Massachusetts Department of Environmental Protection (DEP) formally adopted the California Air Resources Board (CARB) Advanced Clean Cars II standards (ACCII). The ACCII requires car manufacturers to steadily increase the percentage of vehicles they sell that are electric from 35% in model year 2026 to 100% in model year 2035. Today, just 4.4% of all vehicles registered in Massachusetts are either battery EVs or hybrid electric vehicles.¹

V2G technology has demonstrated the potential to not only support peak load reduction on the grid but reduce the total cost of owning an EV from the ability to receive compensation by providing those grid services. Massachusetts is a leader in recognizing the importance of V2G technology by enabling market incentives for V2G and is home to some of the first commercial V2G projects and pilot demonstrations in the nation.

Highland Electric Fleet's Beverly Public School fleet electrification project demonstrates the viability of electric school buses as bidirectional V2G resources, receiving revenue via National Grid's ConnectedSolutions program and providing a template to scale the service at additional

¹ See Massachusetts Vehicle Census available at <https://geodot-homepage-massdot.hub.arcgis.com/pages/massvehiclecensus>.

deployment sites. BlueHub Capital and Fermata Energy, the country's premier V2G services provider, recently launched the first V2G pilot program in the nation for multi-family affordable housing. The pilot is designed to increase affordable access to EVs for low-income drivers through an innovative V2G car share program that is partially financed by earning Eversource ConnectedSolutions revenue. Fermata Energy also worked with FirstLight Power and Skyview Ventures to deploy the first ever V2G bidirectional charging stations in Western Massachusetts.

Massachusetts is in jeopardy of stunting the development of the V2G industry due to the requirement that all devices seeking to interconnect to the distribution system be UL1741-SB certified. Unfortunately, there are no bidirectional chargers available today that have received UL1741-SB certification. The limited number of bidirectional chargers available today are UL1741-SA certified, which was the requirement in Massachusetts prior to October 1, 2023.

Charging station manufacturers estimate that it will be 18 – 24 months before more than one or two UL1741-SB certified bidirectional charging stations become commercially available. The amount of bidirectional capacity that will likely be installed in Massachusetts is expected to be limited in the next 18 to 24 months. Today, there is under 200 kW of installed bidirectional charging capacity in Massachusetts and will likely only expand by 10 MWs or less statewide within this timeframe.

The nascent bidirectional charging sector lags the larger and more mature solar and storage inverter manufacturers in achieving UL1741-SB certification. The solar and storage inverter sectors technologies have evolved over the past two decades with the changing UL certification requirements. The current UL1741-SB requirement acts as a barrier to entry for new DERs including V2G.

Fermata Energy requests utility approval of a capacity-based waiver by distribution feeder for bidirectional chargers to allow for V2G deployments in the short-term (1 - 2 years) until commercially available UL1741-SB products are available. In areas where utility hosting capacity shows incremental capacity for distributed resources in the relevant hosting capacity map, Fermata Energy recommends a 500 kW capacity limit per feeder or higher based on distribution utility discretion for bidirectional charger nameplate capacity with an overall limit of 5 MWs per MA distribution utility substation during this time. Bidirectional chargers that are UL1741-SA certified will be eligible to interconnect to the distribution system until the cumulative feeder capacity reaches the 500 kW limit.

Fermata Energy and the additional waiver supporters understand the challenges of managing a grid with increasing amounts of inverter-based resources and the ongoing interconnection constraints. We anticipate that most of the bidirectional charging infrastructure that will be installed in the next two years will be for commercial fleets, which tend to be located in urban areas that have fewer inverter-based resources interconnected to the distribution system versus the areas where the majority of large inverter-based resources are sited (e.g., multi-MW solar and/or battery farms).

To support utility hosting capacity analyses for V2G and further allay any concerns about the impact of V2G projects on grid reliability and safety, MA utilities could require that interconnection pre-application reports be filed for all bidirectional charging projects, regardless of size. Pre-application reports, filed before a customer or vendor submits an official interconnection application, can help identify the need for system upgrades and the impact of the proposed DER on the distribution system. Interconnection pre-application reports are helpful to provide additional detail that is not yet reflected in hosting capacity maps on a utility website and provide confidence to the customer about the likelihood of interconnection success. Fortunately, MA utilities already require pre-application reports for a generation facility of 250 kW AC or greater.

In sum, Fermata Energy's proposed capacity-based waiver of UL174-SB for bidirectional chargers would not impose any new risks to the reliability of Massachusetts's grid from the relatively small capacity additions from bidirectional charging in the next 18 to 24 months.

Other jurisdictions have made accommodations recognizing the nascent stage of bidirectional charging. Although California adopted the UL1741-SB standard in August of 2023, there is a waiver for bidirectional chargers enrolled in the Emergency Load Reduction Program, Sub-Group A.5 – Electric Vehicle (EV) and Vehicle-Grid Integration (VGI) Aggregators. In addition, there is a general waiver for bidirectional chargers that meet the date of manufacture exemption. This means that a bidirectional charger can be interconnected to the distribution system if the device met the UL certification requirements in place during the year of manufacture. Earlier this year, New York State's Joint Utilities recently approved a time-based waiver for bidirectional chargers creating an exemption from the UL1741-SB standard for inverter-based resources, which went into effect on January 1, 2023.

Given the above and the recognition among Massachusetts' stakeholders of the importance of bidirectional charging, Fermata Energy and its partners respectfully request that the TSRG adopt the proposed capacity-based waiver request and recommend that utilities waive the UL1741-SB certification for bidirectional chargers based on cumulative installed capacity at the feeder and/or substation level. Until the cumulative capacity threshold is met, bidirectional charging stations with UL1741-SA certification shall be recognized as eligible for interconnection in each of the utility service territories.

Respectfully,

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