FREEWIRE TECHNOLOGIES COMMENTS ON ONTARIO ENERGY BOARD'S ELECTRIC VEHICLE INTEGRATION INITIATIVE: ELECTRIC DELIVERY RATES FOR ELECTRIC VEHICLES CHARGING REPORT

FreeWire Technologies ("FreeWire") appreciates the opportunity to comment on the Ontario Energy Board's ("OEB") Electric Delivery Rates for Electric Vehicles Charging Report (the "Report") produced as part of the Electric Vehicle Integration ("EVI") Initiative. FreeWire is impressed by the Report's thoroughness and detailed quantitative and qualitative analysis. While FreeWire acknowledges that Electric Delivery Rates - in particular high demand charges - *can* challenge the economics of operating a public fast charging station with low utilization, we believe that addressing this problem solely through rate design is inappropriate and risky. FreeWire has four primary concerns about implementing rate designs that contain demand charge alternatives for EVSE:

1. Removing demand charges for a new and rapidly growing class of customers can cause cross-subsidization and will have upward pressure on rates unless the alternative rate design is revenue neutral.

2. Alternative rate designs intended to lower the operating costs of fast charging stations in the near-term can create long-term reliance on subsidies.

3. Such rate designs can also reduce the incentive for customers to adopt innovative solutions like load management technologies and participate in managed charging programs which are necessary for the long-term success of transportation electrification.

4. Load management technologies can reduce the need for new grid infrastructure and facilitate managed charging which is critical to ensure that new EV load is beneficial for the grid and to all electric customers.

FreeWire kindly requests that the OEB conduct additional analysis of and research on technology and business model alternatives that can reduce the costs of deploying electric vehicles ("EVs") and Electric Vehicle Supply Equipment ("EVSE") before proceeding with any of the rate design alternatives contemplated in the Report. While some of these solutions are mentioned in Section 5 *Options for EV Customers to Mitigate Delivery Costs,* this section is brief and does not provide the same level of thorough analysis that is contained in other sections of the Report.

I. About FreeWire Technologies

FreeWire is a leading provider of battery-integrated direct current fast chargers ("DCFC") and associated battery energy management software that are helping to strengthen the electric grid while accelerating transportation electrification. FreeWire's unique solution effectively allows for the permanent reduction of EV charging load on the grid. Our battery energy management software enables further load shifting capabilities and the ability to provide other energy services both to the site host and to the grid. Battery-integrated and battery co-located EVSE have already been deployed at scale by a variety of EVSE companies, namely at commercial and retail locations like convenience stores and gas stations and at fleet charging stations across the globe, including in Canada.

FreeWire's technology uses a low-power input from the grid (drawing a maximum of 27 kW) to charge its internal battery energy storage system ("BESS") which then charges EVs with a high-power output (up to 200 kW). For context, FreeWire's 200 kW DCFC is equivalent to a permanent load reduction of 87% compared to a Traditional DCFC[1] with the same output power[2]. For site hosts, this can result in significant operating cost savings, primarily through reductions in demand charges, while still providing the fast and convenient charging experience that EV drivers expect. FreeWire's solution promotes equitable access to ultrafast EV charging by using existing low and medium voltage grid infrastructure or even single-phase power. On the

[1] Traditional DCFC refers to a DCFC that neither contains an integrated BESS nor is co-located with a stationary BESS.

[2] When replacing an existing 200 kW traditional DCFC. For a new install, FreeWire's 200 kW DCFC still offers the same benefit of permanent load reduction in that it requires 87% less input power to achieve the same output.

other hand, most Traditional DCFC[3] configurations require three-phase power at 480v. FreeWire's innovation and those like it minimize or even avoid the need for time-consuming and costly infrastructure upgrades on both sides of the meter that are often required to support Traditional DCFC with a comparable output power.

In addition to using the integrated BESS as a buffer to the grid, as described above, certain configurations of FreeWire's technology can export energy stored in the BESS back to the site host or to the grid. This creates immense flexibility as it can provide emergency backup power to a site host or can be aggregated into a Virtual Power Plant ("VPP") to provide a range of wholesale market and demand flexibility services.

II. Comments and Recommendations

Demand charge relief - even if temporary in nature - can create lasting market distortions, behaviors, and technology preferences, especially given the nascent stage of the EV charging market. Given that fast charging stations are long-term investments, the technology preferences created by alternative rate designs now will be felt for decades to come. Technology-specific rate designs such as demand charge relief for EV charging are often approved based on their perceived benefit to other policy goals (e.g., increasing the number of publicly accessible fast charging stations). While they may make an impact on that specific policy goal, the reality is that these programs are incentivizing customers to choose technologies that are reliant upon regulatory solutions and may always be. Such regulatory fixes can have unintended consequences, such as cross-subsidization (as the Report acknowledges) that can, among other challenges, exacerbate pre-existing energy justice issues[4]. Rates with demand charge alternatives may offer a quick-fix to improving the economic viability of owning and operating fast charging stations through reduction of operating costs, however, such short-term solutions have longer-term risks. The ultimate impact of demand charge alternatives is

[3] Traditional DCFC refers to a DCFC that neither contains an integrated BESS nor is co-located with a stationary BESS.

[4] This may be particularly true for lower-income customers for whom the real-world implications of rate increases are felt most severely. The cost of buying an EV may be out of reach for lower-income customers so they will not even benefit from new fast charging stations but their electricity bills will increase as a result of them.

that they will result in increased cost and grid impact of decarbonizing the transportation sector and could hamper this critical transition.

Meanwhile, well-designed demand charges incentivize customers to manage their electricity usage in a manner that is less strenuous to the grid (such as by consuming a steady amount of electricity throughout the day or reducing demand for electricity during peak periods). EV charging load has the potential to be beneficial to the grid but only if it is managed in a deliberate manner, and programs that reduce or eliminate demand charges remove the price signal to do so.

There are alternatives to using regulation to encourage the deployment of fast charging stations. Innovative load management technologies can offer cost-effective solutions and are born out of market innovation. These solutions manage new and significant electrical load from EV charging in a manner that is beneficial not just to site hosts (who realize lower demand charges) but also to the grid and to all ratepayers. They do this by optimizing the utilization of existing grid infrastructure thereby reducing or even eliminating the need for expensive and time-consuming grid upgrades.

Such solutions will be considered and are most likely to be chosen by charging site hosts if they are exposed to the true costs of their charging behaviors and technology choices. Those costs - including the costs of building, upgrading, and maintaining the grid infrastructure required to support traditional fast charging stations - are primarily conveyed to customers through demand charges. In this way, the motivation to *avoid* demand charges acts as a key price signal that incentivizes consumers to choose more “grid-friendly” solutions (i.e., load management technologies and managed charging) in the first place. If demand charges are removed, so is customers’ motivation to manage their electricity consumption.

The results from real-world applications of load management technologies are promising. Pacific Gas and Electric of California reported that charging sites that used load management technologies reduced a charging station’s power needs by more than 50% resulting in savings of $30,000 to $200,000 per site, primarily in avoided grid infrastructure upgrade costs[5]. In Brooklyn, New York, the EV charging company Revel

[5] Pacific Gas and Electric Company Electric Vehicle Charge 2 Prepared Testimony, pages 2-9 – 2-10, October 26, 2021.

leveraged load management software to reduce electricity costs at a publicly accessible fast charging station by nearly 17%[6]. Given such results, several states in the USA, including New York and Colorado, have proposed creating programs that incentivize customers to choose load management solutions and participate in commercial managed charging programs[7]. The value of these solutions cannot be overstated. For example, Synapse Energy Economics studied the grid impacts of transportation electrification on behalf of Pennsylvania's Department of Environmental Protection and found that, "[i]f EVs charge primarily during hours when the grid has excess capacity, the costs imposed on the grid will be minimal and EVs will help reduce electricity costs for all customers by spreading the costs of the grid over greater electricity sales. However, if EVs tend to charge when the grid is near capacity, EV load could result in millions of dollars of additional electric grid investments that are not fully offset by the revenue from EV charging"[8]. This result would only be exacerbated in cases where demand charge relief is provided and revenue further eroded.

The magnitude of load growth and demands on the electric grid from increased adoption of electric vehicles presents an opportunity to rethink how the electric grid is built and operated in an efficient, reliable, and cost effective way. EV fast charging stations are critical to equitable and widespread transportation electrification. Rate designs with demand charge alternatives carry significant risk of increasing electric rates for all ratepayers, creating unintended cost shifts and removing a key price signal which encourages customers to manage electricity consumption. This is particularly concerning because high electric rates can discourage customers from switching from internal combustion engine powered vehicles to electric ones in the first place (because doing so will become less economically beneficial). While rates with demand charge

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[6] Joint Utilities' Comment on Staff Whitepaper on Alternatives to the Traditional Demand Charge for Commercial Customer Electric Vehicle Charging. State of New Public Service Commission Case 22-E-0236 at page 30.

[7] In New York, for example, the Public Service Commission's decided to establish a separate upfront incentive program for load management technologies to ensure that demand charge relief programs do not eliminate the price signal for DCFC site hosts to manage their demand. Similarly, as part of their program to build public fast charging corridors, Colorado is offering an extra $25,000 to $45,000 to fast charging stations that utilize battery energy storage systems[#].

[8] Maximizing the Benefits of Transportation Electrification in Pennsylvania. The Role of Rate Design. Prepared for Pennsylvania Department of Environmental Protection by Synapse Energy Economics. At page i.

relief may offer a short-term fix to deploying fast charging stations, successfully decarbonizing the transportation sector requires long-term solutions that strategically address the challenges of electrification. Load management technologies and managed charging programs that support them offer this promise.

Given these dynamics, FreeWire respectfully encourages the OEB to conduct a thorough analysis of the *Options for EV Customers to Mitigate Delivery Costs* in Section 5 of the Report before moving forward with any of the alternative rate designs. If the OEB is inclined to immediately adopt one or more of the rate design solutions, then we hope that OEB would consider: (1) equivalent incentives for load management technologies and creating complimentary managed charging programs (so as not to make load management solutions uncompetitive) and (2) limiting the approved duration of such rates to 3 years and undertaking a comprehensive review of the benefits and costs associated with the rate before reauthorization.

FreeWire commends the leadership and vision of the OEB in holding this proceeding and in producing such a detailed and thoughtful Report. We look forward to continuing to collaborate in this proceeding and to helping Ontario realize their transportation electrification goals.

Sincerely,

C Silverman

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Energy Services Manager