



February 9, 2018

Board Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue
Trenton, NJ 08625

RE: BPU EV Stakeholder Group Task 1 Follow-Up Questions

Dear Board Secretary,

Greenlots is pleased to submit these comments in response to Task 1 follow-up questions posed to the EV Group December 20th:

4.1 What is the state of the technology that could allow the EV to be utilized as a demand response technology? What is the availability of the technology now and how/when will that availability evolve? What actions should NJBPU take to take advantage of the use of EVs as demand response technology? If not why not?

Managed charging technology, such as Greenlots' software platform, allows EVs (EV charging) to be utilized in demand response programs. Indeed, Greenlots has worked with a number of utilities for over three years on demand response pilots and programs spanning workplace, residential, and DC fast charging. Demand response signals via OpenADR 2.0b, SEP2.0, and other means can be accepted and acted upon, and demand response controls can also be set within the software platform directly, and facilitated with driver access via app.

More and more technology providers are incorporating demand response functionality for EV charging, though there is still relatively modest experience in the marketplace.

The BPU can support the uptake of EV charging in the context of demand response by encouraging utility managed charging programs and supporting the inclusion of such capabilities in general infrastructure programs, even if those programs don't have a managed charging component coming out of the gate. Ensuring that vehicle loads can be aggregated or otherwise participate in traditional demand response programs is also a critical step or investigation the BPU could undertake in coordination with PJM Interconnection.

4.4 If the EV could be utilized as a demand response technology in a two way communication with the grid, distribution and/or transmission, would the EV meet the definition of demand side management in N.J.S.A. 48:3-51? If so why? If not why not?

For clarity, Greenlots interprets two way communication to mean just that, not two way energy flow. Yes, EV demand response technology should be considered as demand side management technology in N.J.S.A 48:3-51. While two way communication between EV charging and the grid

is currently available, the methodology that exists to extend this through charging to the vehicle itself is not universally available. Nonetheless, there are enough pathways to consider including the vehicle itself in this definition.

5.0 Electric Vehicle Supply Equipment (EV Charging Station) State of the Competitive Market

5.1 Is vehicle charging a fully competitive market across all market sectors (e.g. residential, public L2, public DCFC, low income communities and Multi Unit Dwellings)? If not which market sectors are not competitive and why not? Which market sectors are competitive? What is the business case for the EVSE industry and where does the business case fail?

This question strikes to the core of BPU and regulated utility involvement in EVSE, as the existence of a competitive market would mean that less involvement may be necessary. In short, while some elements of the market could be considered competitive, vehicle charging is not a competitive market across all market sectors. To further answer this question, it is helpful to split the market into different sectors.

First, we must contrast publicly available EVSE with privately-installed EVSE, most commonly within a residential context. This latter category, which would include residential chargers, is arguably the market sector that is closest to being considered competitive. This being said, there are important parts of this sector, including multi-unit dwellings, that are decidedly not competitive due to market barriers such as the well-documented split incentive between tenants and landlords, or between unit owners and HOAs or building managers. Additionally, added costs to bring electric service to specific parking spaces in multi car garages present further barriers. While there are a variety of suppliers that would or could serve this important market, it remains severely underserved due to these barriers.

Second, looking at the much less developed market of publicly available EVSE, this sector must further be conceptually split into two categories. The first category would comprise scenarios where a business of some sort is owning and operating EVSE on their premises as a service or amenity to their customers and/or employees. Businesses may do this for a wide array of reasons, including employee satisfaction, social/environmental responsibility, attracting customers or otherwise differentiating themselves in the marketplace. There is no shortage of EVSE suppliers that will sell EVSE products and services to such entities. In this sense, there is a competitive (but relatively small) market for supplying these products and services.

The second and arguably more critical category of publicly available EVSE is every other scenario where there is not another commercial endeavor that the EVSE is adding value to or being perceived to add value to. These EVSE are deployed purely to provide charging services—chargers for charging and nothing more. This could include lower powered chargers at public parking spaces or parking garages of certain multi-unit dwellings, or higher-powered chargers in metro areas or key transportation corridors to facilitate longer range travel. For this second

critical category, unfortunately a sustainable, competitive market is aspirational, and is unlikely to arise prior to the adoption of a critical mass of electric vehicles. This is primarily on account of a lack of a business model for the ownership and operation of public charging stations based on sustainable revenues from charging activities, and this has thus far resulted in a fundamentally inadequate amount of private investment in such charging infrastructure.

5.2 If the charging market sections are not competitive should the utilities be allowed to develop managed charging programs for the non-competitive charging market sections? If not why not?

Yes, utilities should be allowed, and indeed—encouraged—to develop managed charging programs for the charging market in all market sectors, whether or not they are considered to be competitive. Regardless of how developed a particular market sector may be, the utility acting as the central hub or nexus may be essential for a successful managed charging program.

The promise of EVs to the grid is not only in increasing utilization to put downward pressure on rates, but also in putting downwards pressure on rates by utilizing grid assets more efficiently and in a more flexible manner. Managed charging programs further help to ensure this in the same way that demand response programs do, except they are much more powerful as they can not only curtail load, but also increase load. This capability is extremely powerful in helping to manage and maximize the utilization of grid assets. The utility therefore is both the obvious and necessary nexus for managed charging activities.

With the utility at the center of managed charging programs, they can utilize their close relationship with and deep understanding of customer needs, motivations, and expectations while directly and proactively managing the needs of the grid to most efficiently create beneficial charging and behaviors. This as a result also maximizes the value of such programs to ratepayers and can leverage and build upon existing customer education and outreach activities and long-standing utility core competencies in these areas.

In executing these programs, just as utilities do with traditional DR programs, they would qualify and work with competitive vendors in deploying the solution, which as discussed earlier is imperative that it is based on open standards to maximize interoperability, competition, choice and flexibility. If done intelligently, as discussed earlier, such solutions could be entirely software based and not require any additional hardware or metering infrastructure.

5.3 If the charging market sections are competitive should the utilities be allowed to develop managed charging programs for the competitive charging market sections? If not why not?

Greenlots does not believe the charging market is competitive at this point in time, and believes utilities have a critical role to play in fostering a future market where greater profitability and through it—competition—can develop.

5.4 If the utilities are allowed to develop managed charging programs is there a time limit or

other criterion that should be imposed on this participation? If so what timeframe? Should any utility managed charging program have a sunset date?

Greenlots believes that managed charging is critical to improving system efficiency, integrating renewables, and ensuring that EV charging benefits all ratepayers. Therefore, Greenlots believes that managed charging programs should be encouraged, and grown—not shrunk or sunset.

5.5 If the utilities are allowed to develop managed charging programs what guidelines should be developed for this participation? If not why not?

Greenlots firmly believes that managed charging programs—and indeed, all networked charging infrastructure—should be built upon open communication protocols that facilitate a maximum of competition and guard against vendor lock-in and the stranding of assets.

6.1 Should electric utilities engage in rate-based “Charge Ready” programs? What additional measures beyond Charge Ready are appropriate in non-competitive markets? Should utilities offer rebates on EV chargers or own/operate EV chargers in non-competitive markets?

As discussed earlier, the lack of a truly competitive market for EVSE across most market sectors represents a significant challenge for private investment and EV adoption. Especially for public charging, the fundamental economics simply do not currently support sufficient private investment to get the market to where it needs to be to support current and future drivers and their purchasing decisions sufficiently.

This fundamental issue is a market challenge to which utility involvement is both necessary and appropriate given the existence of this market failure. Without prescribing a specific role for the utility within the context of market accelerator, Greenlots believes that providing flexibility for the utility to self-select the role(s) that best fit(s) its distribution system, customers, and future planning is essential to helping motivate the utility to be excited about its involvement in accelerating the market.

While some jurisdictions are examining a range of utility roles and program designs through pilots, others are considering a broader “portfolio” approach. Regardless of strategy, regulatory commissions must balance and sufficiently consider the requirements of a regulated service with the imperative to accelerate market transformation, which in doing so will allow a competitive market to develop. This both breaks through the existing market stagnation to get to that point while also addressing underserved and disadvantaged communities which are unlikely to be sufficiently served by any private market. Broader approaches exploring an array of different program designs and affording utilities sufficient flexibility will be key in accomplishing this. This regulatory strategy mirrors those used successfully with utility conservation programs in many parts of this country. Amid changing technology, such flexibility affords utilities the ability to offer different options for EV charging services, tailored for different customer types and market segments, ensuring and promoting customer choice.

As part of this, and given this early stage of the market, ownership and operation of charging infrastructure—including charging stations—is an appropriate and in many respects necessary role for the utility in accelerating the market across most market segments, supporting competition and choice, and attracting private investment. This should not be confused for anti-competitive behavior. Rather, utility investment in charging infrastructure, growing the installed infrastructure base, will help spark EV purchasing decisions and grow the total customer base, getting the market closer to an inflection point where asset utilization rates of charging infrastructure can attract greater private investment and hopefully sustain a healthy, competitive market.

States and regulatory commissions that have taken narrower approaches or that have been prescriptive in the programs utilities can employ can also limit the impact, cost effectiveness and net benefits of utility EVSE programs.

For example, rebate-only programs have a variety of shortcomings that should be noted. Under such a model, the responsibility of researching, purchasing and acquiring the EVSE, hiring and managing installation contractors, maintaining the equipment and coordinating administrative and rebate logistics, in addition to handling potential warranty issues, falls entirely upon the customer. Together these can represent a significant barrier to adoption, especially so in the context of disadvantaged communities. On top of this, rebate-only models present barriers to ensuring that the utility and its commission have insight into certain data and metrics that are especially important in the context of pilot or demonstration programs, such as time and locational information pertaining to charging loads and customer response to price signals, or ensure that charging is managed to maximize benefits to the grid and all ratepayers, including those without EVs.

Similarly, there is reason to believe that the charge-ready or make-ready model may impose barriers that adversely affect certain market segments. For example, in the context of multi-unit dwellings, which suffer also from split incentive issues, landlords and building managers simply may not have the incentive, ability or capacity to finance, procure, own, maintain and otherwise handle the installation of EVSE.

Additionally, leveraging the full involvement, assets and capabilities of utilities to accelerate transportation electrification better positions ratepayers to realize the full array of benefits this technology transformation can bring. Whether this be in the development of managed charging programs as discussed earlier that better manage EV loads in ways that best support the needs of the grid, or in minimizing or avoiding grid investments by knowing where, when and how EV loads are interacting with distribution infrastructure, these benefits along with a long list of others will not be fully realized without active participation by the utility.

Moreover, the nature of EVSE assets, being a natural extension of existing utility infrastructure, with similar hardware, features and capabilities as smart meters for example, fit very well within

the core competencies and capabilities of utilities. This is true particularly with respect to asset ownership and maintenance of widely-dispersed, long-lived electricity-dispensing and metering equipment, and ensuring for its safety and reliability. Having existing qualified field personnel allows for this, while purchasing power to lower costs and having relevant system, business process, software and customer service expertise and capabilities further aligns naturally with the demands of successful EVSE deployment.

On account of this, utility programs also by and large extend the same type of reliability to EV charging infrastructure that ratepayers expect for all other utility services. A badly undervalued aspect of the EV charging equipment and services market is the cost necessary for keeping equipment up and running and repairing or replacing it quickly if and when it encounters an issue. While early adopters of EVs may tolerate the often-poor reliability associated with much of the charging infrastructure that is deployed today, the broader market likely will not. Moreover, as the demands on EVSE deployments increase with more EV drivers on the road, the factors that lead to poor reliability will compound also. This therefore represents a key barrier to widespread transportation electrification. To achieve the level of reliability drivers currently experience from traditional fueling stations, much more needs to be done. Utility program investment offers opportunity for electric vehicle service providers to benefit from a more accurately valued maintenance service that will not only improve reliability of EVSE within the utility program, but will likely extend beyond the bounds of the program to benefit EV charging equipment and service providers in the market as a whole.

Without an integrated, holistic approach developed by the utility, the ability of the EV consumer to engage suffers, with the EV charging space fragmented by geography, market segment, business structure and sales priorities. The end consumer becomes frustrated and confused as a result of this fragmented and disparate approach. The utility however stands in a unique and powerful position to help resolve these issues with a more comprehensive, structured and rational approach that overcomes barriers to market growth and ensures and maximizes benefits to all ratepayers.

Greenlots looks forward to continuing to engage in this process and supporting the BPU's investigation into these and other issues related to deploying EV infrastructure and growing EV adoption. Please don't hesitate to reach out with questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'T. Ashley', with a stylized flourish at the end.

Thomas Ashley
Vice President, Policy