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April 26, 2018

VIA REGULAR MAIL AND EMAIL TO upendra.chivukula@bpu.nj.gov

The Honorable Upendra Chivukula
New Jersey Board of Public Utilities
44 S. Clinton Ave., 3rd Fl. Ste. 314
P.O. Box 350
Trenton, NJ 08625-0350

Re: I/M/O the Petition of Atlantic City Electric Company for Approval of a Voluntary Program for Plug-In Vehicle Charging

BPU Docket No. EO18020190

Dear Commissioner Chivukula:

This firm represents ChargePoint, Inc. ("ChargePoint") in the above-referenced matter.[1] For the reasons set forth herein, ChargePoint respectfully joins the motion of the Division of Rate Counsel ("Rate Counsel") requesting a stay in this matter (the "Motion"), and responds to the reply of Atlantic City Electric Company ("ACE") against such stay.

ChargePoint is the leading electric vehicle ("EV") charging network in the world, with charging solutions in every category. EV drivers charge, at home, work, around town and on the road. With more than 48,000 independently owned public and semi-public charging spots and thousands of customers (businesses, cities, agencies and service providers), ChargePoint is the only charging technology company on the market that designs, develops, and manufactures

[1] ChargePoint filed for intervention in this matter on April 13, 2018. As of this writing, no decision has been made on its motion for intervention.

hardware and software solutions across every use case. Leading EV hardware makers and other partners rely on the ChargePoint network to make charging station details available in mobile apps, online, and in navigation systems for popular EVs. ChargePoint drivers have completed more than 36 million charging sessions, saving upwards of 36 million gallons of gasoline and driving more than 868 million gas-free miles.

As outlined in Rate Counsel's Motion, the Board of Public Utilities ("BPU" or "Board") convened the Electric Vehicle Stakeholder Group (the "EV Stakeholder Group," or "EVSG") in late 2017 to develop recommendations for the Board to consider in the development of the EV industry in New Jersey. This group is examining the appropriate roles that regulated utilities like ACE should take in New Jersey's competitive EV infrastructure market, in addition to a number of other critical policy and regulatory issues related to supporting sustainable and scalable growth in EV charging across the state, and will make recommendations to be considered by the Board.[2]

ChargePoint is in favor of developing and implementing consistent statewide policies for the development of EV infrastructure in New Jersey, and firmly believes that a formal proceeding, with decisions by rule, would be the most suitable method to determine the appropriate role for regulated utilities in the competitive EV charging market, as well as what, if any, circumstances justify cost recovery from ratepayers for public EV charging investments by utilities. This

[2] For further background on the EV Stakeholder Group, as well as ChargePoint's participate in same, ChargePoint refers to Attachment A to this filing, which contains ChargePoint's responses to the Task 1, 2, and Task 1 follow up Questions circulated to participants in the EV Stakeholder Group.

approach has been taken by many other jurisdictions around the country, including Massachusetts[3] and most recently in New York.[4] ChargePoint believes that before the ACE filing is considered by the Board, there should be clearly defined statewide policies and objectives, including the appropriate role of the utility, which is the primary purview of the Board. Should the Board continue to consider the petition of ACE prior to establishing a clear regulatory framework, there is a risk of development of piecemeal, inconsistent EV infrastructure programs in each utility territory.

A robust statewide process would be consistent with the Murphy Administration's actions on EV and EV charging issues. Governor Murphy recently joined New Jersey with 13 other states through a Memorandum of Understanding ("MOU") to "work collaboratively with other states to support the deployment of zero-emission vehicles ("ZEV") as part of the Multi-State ZEV Task Force."[5] The Board will play a key role in achieving ZEV MOU goals by establishing a clear framework for regulated utilities in the competitive EV and EV charging markets, and the EVSG is a critical part of the Board's process. Evaluating the ACE proposal in the context of a comprehensive, statewide approach would efficiently and effectively support the Murphy

[3] Massachusetts Department of Public Utilities Docket No. 13-182-A – Order on department jurisdiction over electric vehicles, the role of distribution companies in electric vehicle charging and other matters.

[4] New York Public Service Commission Docket No. 18-E-0138 - Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure.

[5] http://www.nj.gov/governor/news/news/562018/approved/20180403b_emissions_standards.shtml

Administration's commitment to achieving the goals of the ZEV MOU. As noted by Rate Counsel, failing to ensure "basic rules of the road risks inconsistent outcomes and wasted resources."[6]

The EVSG process can, and should, be informed by New Jersey-specific data. As noted by ACE, such data would "help the Board assess how the market is developing, and to determine if new or additional measures are required to reach the Board's goals."[7] EV charging network providers can already supply such data, including the millions of charging sessions that have taken place on ChargePoint's network, to help inform the Board and the EVSG process. Waiting to generate new data from ACE's filing simply is not necessary.

At its heart, ACE's petition presumes that the recommendations of Board staff as a result of the EV Stakeholder Group will include directives to the utilities to subsidize EV infrastructure development with ratepayer dollars consistent with ACE's proposal. ChargePoint believes that any expansion of the traditional role of regulated utilities must complement New Jersey's existing competitive market, support customer choice in EV charging equipment and network services, create value for ratepayers, drivers, riders, and non-program participants, as well as New Jersey's economy, environment, and grid.

ChargePoint agrees with Rate Counsel's argument that ACE's proposal to finance and install EV equipment and infrastructure, and provide rebates and subsidies for EV equipment owned by ACE customers, is ultimately a foray into the competitive market and the provision of

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[6] *See* Rate Counsel Motion to Stay, at p. 2.

[7] *See* Reply to the Motion filed by Atlantic City Electric Company at p. 6

competitive services. The EV Stakeholder Group is still considering whether or not electric vehicle charging is a competitive service defined under the Electric Discount and Energy Competition Act ("EDECA"), N.J.S.A. 48:3-49 *et seq.* And as ACE admits, Board approval is required for a utility to provide competitive services.[8] ChargePoint notes that while ACE has filed a petition for approval of its proposed EV programs, ACE has not filed for permission to provide such competitive services – ACE *presumes* it is allowed to provide these services.

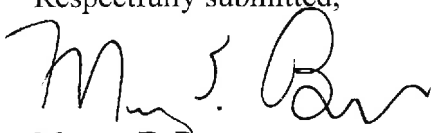
ChargePoint believes that EV charging stations are competitive services pursuant to EDECA. In part, EDECA declares it is the policy of the State to "[p]lace greater reliance on competitive markets, where such markets exist, to deliver energy services to consumers in greater variety and at lower cost than traditional, bundled public utility service;" and "[e]nsure that rates for non-competitive public utility services do not subsidize the provision of competitive services by public utilities." N.J.S.A. 48:3-50(a)(2), (6). There is a competitive market for the provision of EV charging stations. ChargePoint – and other competitive entities – are *actively* engaged in the provision of this competitive service. ChargePoint believes that utilities can and should play an active role in supporting utility customers to adopt efficient technologies such as EVs and to guide the associated load to be most beneficial to the grid, among other potential roles. However, the way such a program is designed and implemented can have very different impacts to site host choice and control of charging services, EV driver experience, and ongoing market innovation.

[8] Id. at p. 7.

To allow ACE's petition to move forward, without guidance and consideration by the Board, is clearly in opposition to the policy goals adopted in EDECA.

Rate Counsel's request was clear – stay the current proceeding until the EV Stakeholder Group has concluded and the Board has made its policy decisions. As Rate Counsel notes, ACE will not be prejudiced by holding this matter in abeyance. The EV Stakeholder Group will help the Board develop a policy position and framework for EV infrastructure, in a comprehensive manner that applies to all utilities in the State. ChargePoint also agrees with Rate Counsel's assertion that ACE's petition preempts the Board's policy-making process currently underway. Because the EV Stakeholder Group is still active and has not issued recommendations for the Board to consider, ChargePoint believes that ACE's filing is premature and should be stayed until the conclusion of the Board's active process.

Respectfully submitted,



Murray E. Bevan

Enclosures

cc: Service List, via electronic mail only

I/M/O the Petition of Atlantic City Electric Company for Approval of a Voluntary Program for Plug-In Vehicle Charging

BPU Docket No. EO18020190

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ATTACHMENT A

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October 16, 2017

New Jersey Board of Public Utilities
Attn: Michael Hornsby, Chief Project Development Officer
44 S. Clinton Avenue
Trenton, NJ 08625

Re: Responses to Task 1 Questions

Dear Mr. Hornsby,

Attached for electronic filing in the above-referenced matter, please find comments on behalf of ChargePoint, Inc. Please let me know if you have any questions.

Respectfully,

Kevin George Miller
Director, Public Policy
ChargePoint

New Jersey Board of Public Utilities: Task 1 Questions
Comments by ChargePoint, Inc.

A. Introduction

ChargePoint is pleased to offer comments to the New Jersey Board of Public Utilities ("BPU", or "the Board") in response to its request for comments on Task 1 Questions. Regulatory policies have the potential to accelerate sustainable growth in the electric vehicle ("EV") and EV supply equipment ("EVSE") markets, and this docket is a timely opportunity for the Board to support transportation electrification in New Jersey.

In these comments, we will provide background on ChargePoint and EV charging; encourage the Board to consider the unique aspects of electrified transportation rather than apply existing statutory definitions of energy efficiency and demand side management; and recommend that the Board determine that the provision of EV charging services is not the same as the generation or distribution of electricity.

B. Background

1. ChargePoint's Interest in this Proceeding

ChargePoint is the largest electric vehicle (EV) charging network in the world, with charging solutions for every charging need and all the places EV drivers go: at home, work, around town and on the road. With more than 41,000 independently owned charging spots and more than 7,000 customers, ChargePoint drivers have completed more than 29 million charging sessions, saving upwards of 28 million gallons of gasoline and driving more than 687 million gas-free miles. More than 550 of these charging spots are deployed in New Jersey.

Fig. 1: ChargePoint charging spots in New Jersey

ChargePoint designs, develops, and deploys residential and commercial AC Level 2 ("L2") and DC fast charging ("DCFC") electric vehicle charging stations, software applications, data analytics, and related customer and driver services aimed at creating a robust, scalable, and grid-friendly EV charging ecosystem.

ChargePoint sells EV charging equipment and network services that enable EV charging station owners to provide charging services to their own or other EVs. In almost every case, ChargePoint does not own or operate the equipment. ChargePoint sells charging solutions to a wide variety of customers, including residential EV owners, employers, commercial and industrial businesses, cities and public agencies, ports, schools, public transit, delivery truck fleet operators, and multi-unit dwelling owners. ChargePoint offers a broad array of products and services that can serve light, medium or heavy duty electric vehicles.

The site host network services offered by ChargePoint enable customers to manage their charging infrastructure using cloud-based software tools. These tools provide the station owner or operator with everything needed to manage and optimize utilization of their charging stations, including online management tools for data analysis, billing and payment processing, load management and access control. Stations connect to ChargePoint over a secure, cellular data network (or Wi-Fi in the case of residential) allowing station owners to manage all their charging operations from a single dashboard. Maintenance and customer service are a priority for our company. ChargePoint offers a comprehensive set of support services, including: a 24/7/365 hotline for station users, parts and labor warranty, site qualification, installation and validation services, and a help line for site host specific questions.

ChargePoint stations include embedded metrology that enables separate metering of charging events and facilitation of other data collection. ChargePoint stations meet or exceed the requirements set forth in the electricity-as-motor-fuel sections of NIST Handbooks 44 (device code). In utility terms, our charging stations meet the accuracy requirements of ANSI C12.1-2008 (1% class) as applied to embedded EVSE metering.

As of December 2016, ENERGY STAR has established power consumption requirements for Level 1, Level 2 and dual Level 1/Level 2 EVSE. The specification provides allowances for network connectivity and displays and establishes basic criteria for certified EVSE capable of supporting Demand Response (DR). Under these ENERGY STAR efficiency requirements, savings from ENERGY STAR certified EVSE will grow to more than $17 million each year and more than 280 million pounds of annual greenhouse gas emissions would be prevented, equivalent to the emissions from more than 26,000 vehicles. ChargePoint is proud to be the first, and at this time, the only EVSE manufacturer to achieve ENERGY STAR compliance on its Level 2 products.

All products include ChargePoint Assure, the industry's first and only parts and onsite labor warranty as well as our sophisticated yet easy to use cloud services, built on the

experience of having the world's largest network of charging stations.

2. Pricing for EV charging services

Networked EV charging stations provide site hosts with the ability to the opportunity to set a pricing for EV charging services in many ways. These dynamic pricing tools allow EV charging site hosts to incentivize driver behavior, which is essential given that EV charging is a combination of vehicle refueling and parking. Flexibility in pricing allows site hosts to tailor pricing to the unique needs of the site, including, but not limited to:

- A free charging session;
- A fixed rate for the session, for which the driver pays a set fee for the entire session;
- An energy rate, for which the driver pays for the energy consumed on a per kilowatt-hour (kWh) basis;
- An hourly rate, for which the driver pays per hour, similar to how a parking meter operates;
- Length-of-Stay pricing, for which one price is charged during the first x hours and another price is charged for every hour afterwards;
- Time-of-Day pricing, for which one price is charged during peak hours and another during off-peak hours.
- A minimum and/or a maximum fee per session;
- A combination of the above, in which, for example, a flat session fee followed by an hourly rate, an hourly rate followed by per kWh pricing, a minimum session fee followed by an hourly rate, or a free period of time followed by per kWh pricing; and
- Driver groups, for which station owners may set unique policies for different classifications of drivers (e.g. employees vs. visitors) using the options above.

3. Unique use case for EV charging

The nature of "refueling" an electric vehicle at an AC Level 2 station is inherently different than refueling an internal combustion engine ("ICE") vehicle, and the business models for site hosts of both types of technologies are similarly different[1]. Whereas refueling an ICE vehicle takes a matter of minutes and does not result in longer-term parking with the driver absent from the vehicle, charging an EV at an AC Level 2 station has a longer timeframe and often results in a parked, unattended vehicle. The combination of charging and parking services associated with EV charging infrastructure is unique.

Similarly, DC fast charging involves a driver plugging in for typically 10-30 minutes, where they may also park and leave their vehicle. The combination of pricing both the charging and parking services ensures that the driver returns to the vehicle when fully charged and

[1] C2ES, "Business Models for Financially Sustainable EV Charging Networks" 2015.

allows other drivers to use that charging resource. Pricing policies may also encourage the driver to visit the site and spend time shopping or otherwise provide value to the site host, which in turn will encourage the site host to set pricing policies that lead to the greatest possible utilization of that charging station.

It is critical that a site host have the ability to incentivize turnover at the EV charging station. Limiting the ability for site hosts to incentivize drivers to leave once charging is complete would lead to an inefficient use of equipment and ultimately limits access to charging for all drivers.

When pricing options are limited to being either free or flat hourly rates, site hosts are prevented from taking the wide array of power needs across the EV market into account. The battery capacity and rate of charge of EV models vary greatly, from the 3.3 kW charging rate of the 2017 Toyota Prius Prime Plug-in Hybrid to the ~7.4 kW charge rate of the BMW i3. By failing to incorporate a variable cost component associated with each vehicle's power draw, a Prius Prime would be assessed the same flat hourly or session fee as a Chevy Bolt while receiving approximately half of the electric mile range provided during the same period.

C. Responses to Track 1 Questions

1. Do EVs fall under the definition of demand side management and energy efficiency as set forth at N.J.S.A. 48:3-51 and/or N.J.S.A. 48:3-98.1.d.?

Electric vehicles, in part or fully powered by electricity from the grid, along with the associated charging infrastructure, do not by themselves necessarily fall under the definition of demand side management and energy efficiency as set forth at N.J.S.A. 48:3-51 and/or N.J.S.A. 48:3-98.1.d. Some electric vehicles and charging equipment have the capability to undertake load management functions and ensure the efficient use of energy (for more detail, see Appendix). Furthermore, electrification of vehicles is generally considered to be a more efficient form of transportation, and there are certain charging technologies that are more efficient in the provision of fuel than others. However, the primary purpose of EVs and EVSE is to support the conveyance of drivers, riders, and goods between destinations. These critical transportation functions are outside of the scope of the above referenced statutory definitions.

Notwithstanding the transportation-based differences, applying the above referenced definitions to EVs or EV charging as an entire category would allow those technologies to be included in existing utility filings and programs without due consideration for how best to create potential benefits to the grid, reduce costs for ratepayers, or avoid negative impacts to the competitive marketplace. The Board has already identified the need to determine the appropriate role for utilities and other public and private stakeholders in EV adoption, charging infrastructure deployment, and managed charging in its Track 2 Questions. It would be

premature to apply the existing statutory definitions without broader consideration for the needs of drivers, riders, charging site hosts, the respective markets, ratepayers, and the grid.

We respectfully urge the Board to establish a consistent, statewide regulatory framework for market participants rather than broadly apply existing regulatory processes to transportation electrification technologies. By so doing, New Jersey would be in a position to accelerate the sustainable and scalable growth of its EV and EV charging markets while also creating a beneficial load for the grid.

2. **Should owners and operators of EVSE that provide electric vehicle charging service be regulated as electric utilities? Are operators of EVSE reselling electricity or providing a charging service?**

Owners and operators of EVSE that provide electric vehicle charging service should not be regulated as electric utilities. Furthermore, ChargePoint respectfully urges the Board to reach a statewide determination that the provision of EV charging services is not the generation, transmission, distribution, or sale of electricity.

In jurisdictions around the country, ChargePoint has observed that clarifying the regulatory status of third party providers of EV charging equipment and services is an important step in order to provide the regulatory certainty necessary to support a competitive charging market and private investment. ChargePoint applauds the Board for raising this important question. ChargePoint supports clarification that these third-party providers should not be regulated as a public utility for providing this service, nor should they be restricted to setting pricing at the residential or commercial rate as defined by utility tariffs to their premise.

There are many non-utility entities that own and operate public EV charging stations in New Jersey. The owners of these charging stations purchase electricity from the local utility to provide EV charging as a service to drivers. These include landlords, employers, universities, municipalities, state and local government agencies, operators of shopping malls and other commercial businesses, hospitals, transit operators, national parks, non-profit organizations, fleets, and commercial electric vehicle service providers.

The provision of EV charging services is not, in practice, consistent with the generation, transmission, distribution, or sale of electricity to end users. Rather, EV charging station site hosts purchase electricity to provide a discrete EV charging service to their customers. The use of electricity is just one component of the provision of EV charging service through a privately-owned charging station. The charging service provided by the charging station owner or operator is not delivered by that owner or operator over distribution system wires or circuits, but rather by a cord and a connector in the sole purpose of fueling an electric vehicle.

The transaction between an EV service provider and an EV driver has nothing in

common with a traditional sale of electricity by a utility to a consumer. Indeed, non-utility companies selling charging services are themselves retail customers that purchase electricity from a regulated utility in order to provide charging services, which will in most cases include providing the user access to the charging station, use of related metering and communications software, participation in a network, billing, and various other options. In this respect, a provider of EV charging services has more in common with a coffee shop that allows users to plug in to charge their computer batteries or a cell phone battery-charging kiosk at the airport than with a regulated public utility operating a grid and selling electricity to local businesses and households.

In order to remove regulatory uncertainty about the jurisdictional status of EV charging services, and to foster innovation, competition and private investment, numerous states have passed statutes explicitly exempting non-utility EV charging services from regulation under the statutes defining and prescribing rules applicable to public utilities and competitive suppliers of electricity.[2] In some jurisdictions, state Boards have addressed this question, and have likewise concluded that EV charging stations are not jurisdictional electric plant and that the service provided is not the resale of electricity.

For example, in California, one of the first states to take up this question, the Public Utilities Commission determined that:

> *Facilities that are solely used to provide electricity as a transportation fuel do not constitute "electric plant" pursuant to Pub. Util. Code § 218. Thus, an entity owning, controlling, operating, or managing electric vehicle charging facilities is not an "electric corporation" pursuant to Pub. Util. Code § 218 and not a "public utility" pursuant to Pub. Util. Code § 216, unless an entity falls under § 216 and § 218 for other reasons. As such, the Board would not have regulatory authority regarding the price that an electric vehicle charging facility operator charges for charging services or other aspects of the operation of such facilities unless the charging facility operator is a public utility by reason of its operations other than providing electric charging.*[3]

After investigation, the California PUC held that:

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[2] CAL. PUB. UTIL. CODE, § 216(i); COLO. REV. STAT. § 40-1-103.3(2); D.C. CODE §§ 34-207, 34-214; FLA. STAT. § 366.94; HAW. REV. STAT. § 261-1(2); IDAHO CODE § 61-119; 220 ILL. COMP. STAT. §§ 5/3-105(c), 5/16-102; ME. REV. STAT. ANN. tit. 35, §§ 313-A, 3201(5), 3201(8-B); MD. CODE PUB. UTILS. §§ 1-101(j)(3), 1-101(x)(2); MINN. STAT.§ 216B.02 (subd. 4); OR. REV. STAT. § 757.005(1)(b)(G); UTAH CODE §§ 54-2-1(7)(c), 54-2-1(19)(j); VA. CODE ANN. § 56-1.2:1; WASH. REV. CODE § 80.28.310; W. VA. CODE § 24-2D-3.

[3] *Order Instituting Rulemaking to Consider Alternative-Fueled Vehicle Tariffs, Infrastructure and Policies to Support California's Greenhouse Gas Emissions Reductions Goals,* Assigned Boarder's Scoping Memo at 4-5 (P.U.C. Rulemaking No. 09-08-009, filed Aug. 20, 2009).

> *Pursuant to §§ 216 and 218 the Board regulates as public utilities corporations and persons owning, controlling, operating, or managing facilities used for the transmission, delivery, or furnishing of electricity to the public. However, the Board does not have the legal jurisdiction to regulate vehicle service stations.*[4]

The New York Public Service Commission held that EV charging stations are not utility plant, and charging services are not subject to its jurisdiction, by distinguishing between the sale of electricity and the sale of charging services:

> *Charging Stations do not fall within the definition of "electric plant" because Charging Stations are not used for or in connection with or to facilitate the generation, transmission, distribution, sale or furnishing of electricity for light heat or power. Instead, and as urged by several commenters, Charging Stations are used to provide a service, specifically, charging services. This service requires the use of specialized equipment and allows the customer to do only one thing, charge a PEV's battery. The primary purpose of the transaction between Charging Station owners/operators and members of the public is the purchase of this service and the use of this specialized equipment. While the customer is using electricity, this is incidental to the transaction.*[5]

The New York PSC further held that "the method of calculating the transaction fee, specifically, the use of a per kWh price, will not confer jurisdiction where none otherwise exists."[6]

The Massachusetts Department of Public Utilities followed the same rationale and found that EV charging equipment does not constitute a distribution facility, because the "equipment component of EVSE used to supply the electricity is in the nature of a connector or cord, not a line" and "ownership or operation of EVSE does not transform an entity that otherwise is not a distribution company into a distribution company."[7] The Massachusetts DPU

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[4] *Order Instituting Rulemaking to Consider Alternative-Fueled Vehicle Tariffs, Infrastructure and Policies to Support California's Greenhouse Gas Emissions Reductions Goals*, Decision in Phase 1 on Whether a Corporation or Person That Sells Electric Vehicle Charging Services to the Public Is a Public Utility, Cal. P.U.C. Decision.10-07-044 (Aug. 2, 2010) at 19. (P.U.C. Rulemaking No. 09-08-009, filed Aug. 20, 2009). This determination was subsequently codified at California Public Utilities Code, § 216(i).

[5] *In the Matter of Electric Vehicle Policies*, Declaratory Ruling on Jurisdiction over Publicly Available Electric Vehicle Charging Stations at 4 (NYPSC Case No. 13-E-0199, issued Nov. 22, 2013).

[6] *Id.*

[7] *Investigation by the Department of Public Utilities upon Its Own Motion into Electric Vehicles and Electric Vehicle Charging*, Order on Department Jurisdiction over Electric Vehicles, the Role of

also found that EVSE owners or operators are not "selling electricity" within the meaning of the Massachusetts public utility statute, because:

> *an EVSE owner or operator is selling EV charging services, i.e., the use of specialized equipment – EVSE – for the purpose of charging an EV battery. EVSE allows the customer do to only one thing, charge an EV battery. This result is true regardless of the business model the EVSE owner/operator uses to charge customers for charging services, even if the charge is by a per-kilowatt hour basis or other volumetric energy basis.*[8]

The Massachusetts DPU also found that providing EV charging does not constitute submetering, because submetering involves a re-sale of electricity, not the sale of a service, *i.e.* EV charging service; and for the same reason, the Massachusetts DPU found that EVSE owners/operators are not competitive suppliers of electricity. *Id.* at 7–8.

In total, 21 jurisdictions across North America have clarified that EV charging stations should not be regulated for providing a charging service.[9] ChargePoint encourages the Board to examine the reasoning of other regulatory Boards and make a similar determination.

D. Conclusion

Thank you for the opportunity to provide these comments. We look forward to continue working with the Board to achieve New Jersey's energy, environmental, transportation, and economic development goals by reducing barriers to sustainable and scalable growth in the competitive EV charging market.

Distribution Companies in Electric Vehicle Charging and Other Matters (Mass. D.P.U. 13-182-A, issued Aug. 4, 2014). In common industry usage, the term Electric Vehicle Supply Equipment ("EVSE") is used to refer to EV charging equipment.

[8] *Id.* at 7.

[9] Jurisdictions with exemptions for EV charging site hosts from being regulated like a public utility include Arkansas, California, Colorado, Connecticut, D.C., Florida, Hawaii, Idaho, Illinois, Maine, Maryland, Massachusetts, Minnesota, Nevada, New York, Ontario, Oregon, Utah, Virginia, Washington, and West Virginia

Appendix: Background on Smart Charging

"Smart" charging is a broad term, but generally refers to the EVSE having at least the ability to meter electricity passing through the unit, provide load management and scheduled charging features, provide for point of use payment and access control, and incorporate two-way communication from the EVSE to the driver as well as the station operator. These capabilities can be of significant importance to a utility as it can provide a wealth of information related to charging behaviors and load profiles, and can also enable various demand side management programs. Those programs could include emergency curtailment via demand response, modulated vehicle charging rates, or even a TOU rate specific to just EV charging in the home through utilization of the embedded metrology. The associated communication, back office, and technology platform can also be leveraged to provide enhanced station management features for site hosts and well as an improved driver experience through greater visibility and interaction.

Different EVSE and charging networks offer varying degrees of load management capabilities. ChargePoint's stations and cloud services provide the ability for station operators to conduct load management/demand response of the allowable power level in real time. The allowable power levels can be completely shed, partially shed on a percentage basis of the actual load, or a lower power level ceiling can be set. This load management event can be scheduled to expire after a period of time, returning to the equipment normal maximum power output, or the event can be immediately rescinded at any time. These demand response events can be programmed to occur for individual charging ports or any desired groups of ports.

An example of how smart EVSE can manage the energy used to charge EVs is ChargePoint's Power Management feature. Power Management allows site hosts to reduce the costs of installing EV charging stations by avoiding expensive upgrades to their electrical service. This type of feature also allows site hosts to manage ongoing energy costs. Intelligently sharing existing electrical power at sites with power management allows station hosts to install enough charging ports to cover all their vehicles, and still ensure each one gets fully charged.

In each case the overall power load never exceeds the rated capacity of a circuit, panel or site. Instead, power is safely allocated among the vehicles needing a charge. In general, the longer the vehicles are parked the higher the oversubscription that may be supported, allowing a greater number of vehicles to charge at a lower rate.

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November 30, 2017

New Jersey Board of Public Utilities
Attn: Michael Hornsby, Chief Project Development Officer
44 S. Clinton Avenue
Trenton, NJ 08625

Re: Responses to Task 2 Questions

Dear Mr. Hornsby,

Attached for electronic filing in the above-referenced matter, please find comments on behalf of ChargePoint, Inc. Please let me know if you have any questions.

Respectfully,

Kevin George Miller
Director, Public Policy
ChargePoint

I. Introduction

ChargePoint is pleased to submit these comments in response to the Task Two questions issued by the New Jersey Board of Public Utilities ("BPU", or "the Board"). We applaud the Board's collaborative approach considering goals and the appropriate roles for regulated utilities and other stakeholders in supporting transportation electrification in New Jersey.

ChargePoint is the largest electric vehicle (EV) charging network in the world, with charging solutions for every charging need and all the places EV drivers go: at home, work, around town and on the road. With more than 42,000 independently owned charging spots, including 645 DC fast charging locations, and more than 7,000 customers. More than 590of our charging spots are deployed in New Jersey. ChargePoint drivers have completed more than 30 million charging sessions, saving upwards of 29.9 million gallons of gasoline and driving more than 716 million gas-free miles.

Fig 1. ChargePoint Spots in New Jersey

II. Task Two Questions

A. What goals for EV Infrastructure should be established?

Over the last ten years, ChargePoint has worked hand-in-hand with cities, states, and national governments to identify, pursue, and achieve transportation electrification goals. In our experience, the most successful goals (i) set high-level targets that challenge industry to deliver more efficiently and effectively and (ii) avoid specifically prescribing how those targets are achieved.

Transportation electrification is leading to a paradigm shift in which drivers will primarily "refuel" their vehicles when they arrive at, rather than on their way to, a destination. Given that personal vehicles typically spend more time parked than not, the types of locations where EV drivers can "refuel" has already expanded significantly beyond traditional fueling stations.

It is also critical to note that rapid shifts in transportation technology will require flexibility in how charging solutions meet evolving charging needs. Advances in autonomous vehicles, mobility-as-a-service, and the electrification the full scope of transportation options will continue to disrupt conventional EV charging.

While it is appropriate to set high-level goals for deploying infrastructure, such as stating that public/utility funding should support electric transportation in underserved communities, we caution against adopting overly-prescriptive targets in New Jersey that could inadvertently lock-in charging solutions that are inadequate or insufficient to meet evolving needs.

B. What role should the Board, other government agencies, non-governmental organizations and the private market have in addressing EV/infrastructure adoption?

1. The critical role of EV charging site hosts

In New Jersey and around the country, publicly available EV charging stations are primarily owned and operated by a variety of "site hosts" that participate in the competitive EV charging market. Site hosts are the customers of record with the local utility for electricity sales, which in turn provide EV charging as a service to drivers. Examples of site hosts include landlords, employers, universities, municipalities, state and local government agencies,

operators of shopping malls and other commercial businesses, hospitals, transit operators, national parks, non-profit organizations, fleets, car-share companies and commercial electric vehicle service providers.

Site hosts provide EV charging services for a variety of reasons: offering a valuable employee benefit to a cutting-edge workforce; attracting new tenants to and meeting existing tenants needs in multi-unit dwellings; electrifying public transit fleets while simultaneously increasing access to charging when parking is limited in urban environments; providing a new service that brings in new customers for longer periods of time; and many more.

In well-established residential and commercial EV charging markets, innovative new products, new market participants and new business models are flourishing and proliferating. In emerging markets for EV charging products and services that support vehicle fleets and medium/heavy-duty equipment, competition and innovation are driving creative solutions and addressing unique customer needs and preferences. Innovations in software and cloud-based charging solutions enable sophisticated data collection and analysis, smart charging, and participation in demand response programs that benefit the grid. This growth and innovation is driven by competition, customer choice and private investment.

2. Policy development and regulation

State policies and regulatory decisions can have immediate and long-term impact on the development of innovative and disruptive technologies, such as those associated with transportation electrification.

Regulators and policymakers have critically important roles to play in achieving statewide transportation electrification goals. Decision-makers are in the unique position to identify priorities through statute and regulation (e.g., relating to equity, environmental, safety, energy, transportation, and other priorities), authorize incentives and investments, determine the balance between costs to direct and indirect participants in and any resultant benefits that may be derived from accelerating transportation electrification, and maintain sustainable and scalable growth in the market.

Statutes and regulations are not adopted in a vacuum; optimal outcomes will be driven by insights provided by drivers, site hosts, municipalities, NGO advocates, and regulated and private companies, as the Board is currently doing.

ChargePoint respectfully recommends broadening the range of consulted stakeholders to include robust representation of all of those that could stand to benefit from transportation electrification and all of its related environmental, health, energy, and economic development benefits. Ensuring broader participation in the development of policies and regulations in New Jersey will ensure that transportation electrification is transformational and that its benefits are experienced equitably.

C. What role should utilities have in addressing EV/infrastructure adoption?

1. EV Grid Integration

Utilities have very important roles to play in achieving New Jersey's transportation electrification goals. First and foremost, utilities are well-positioned to ensure that the associated new EV load is incorporated into the grid in a safe, reliable, and efficient manner. This can be achieved in a variety of ways including EV education and outreach, load research and grid impact studies, technology evaluation, and demand side management programs to encourage off-peak charging behaviors.

Assessing the potential grid impacts from increased EV adoption would be best informed by utilities conducting ongoing EV and EVSE analysis. This could take place in the form of building EV projections into long-term planning, as well as through targeted studies into residential costs of service and the evaluation of incentives for notifying utilities when adding an electric vehicle to personal or business vehicle fleets. Utilities could also more actively participate in EV grid integration by incentivizing load management, particularly in workplaces, or by deploying residential smart chargers with time of use rates to better integrate vehicle charging and the grid.

2. EV Rates (TOU, Demand Charges, etc.)

a) Residential

The vast majority of EV charging occurs at the home. Given longer residential dwell times, this is a use case in which there is a great deal of flexibility in when the vehicle must

actually be charged. As such, drivers are often very willing, with the right incentive, to defer charging to later times when it is more ideal and efficient for the grid.

Utilities are in the unique position to evaluate the most efficient, effective, and accurate means to encourage off-peak charging at the home. Several options exist today with EVSE technology to enable and incentivize this charging behavior including load management and using the embedded EVSE meter to support on-bill, or off-bill, incentives based on specific EV charging time-of-use.

Successfully implementing an EV-only TOU rate hinges on the accurate measurement of electricity usage that is solely attributable to charging an EV. This can be achieved through the installation of an additional utility meter, though the upfront costs of secondary meters can be a significant barrier to enrolling customers. However, there are a range of alternative methods available on the market that can facilitate the implementation of EV specific rates that don't require the added cost of secondary utility meters.

One such method is ChargePoint Home, our single family residential Level 2 charging station product. The station is connected to our cloud via the home WiFi. This allows residential customers to track their energy usage using the ChargePoint Mobile App. Charging data is capable of being transmitted to a utility for billing purposes or simply used by a resident to manage their own home energy use on a whole-home TOU rate or other EV tariff. ChargePoint Home meets or exceeds the requirements set forth in the electricity-as-motor-fuel sections of NIST Handbooks 44 (device code). In utility terms, our charging stations, including Home, meet the accuracy requirements of ANSI C12.1-2008 (1% class) as applied to embedded EVSE metering.

The Minnesota Public Utilities Commission is currently considering a pilot proposal by Xcel Energy to reduce the upfront cost burden for customers looking to opt into EV tariffs by implementing the tariff directly with a "smart" EVSE. The MNPUC has ordered Minnesota Power to follow suit and develop its own program to pilot feasible alternatives to using traditional utility meters. *See* Minnesota Docket No. 17-817: Petition for Approval of a Residential EV Service Pilot Program *and* Minnesota Docket Nos. E002/M-15-111, 112, 120: Order Accepting 2017 Annual Reports and Establishing Requirements for Next Annual Reports.

b) Commercial rate design

DC fast charging technology is rapidly becoming a standard charging option on battery electric vehicles. Battery capacities and the associated electric mile range for such vehicles also continues to rise, likely resulting in more vehicles needing a greater amount of charge in a shorter period of time. Access to DC fast charging solutions will play an important role to increase EV driver range confidence with on-the-go charging; support community charging in dense urban areas; and enable heavier-duty fleet electrification.

Utilities typically use peak demand charges as part of large commercial rates to allocate costs based on the required electrical facilities and to ensure they have adequate capacity available for all customers. Demand charges to customers are typically based on the highest average 15 minutes in a monthly billing cycle. However, DC fast charging stations are currently characterized by having a low load factor, with sporadic instances of high energy use due to a limited number of vehicles in the market that will use these stations in the near term. This can subject fast charging site hosts to significant demand-based charges despite low utilization, making it impractical for site hosts to provide fast charging solutions during the critical phase of early adoption. The next generation of DC fast chargers, such as our 400 kW Express Plus product, will only exacerbate this issue, especially as OEMs increasingly electrify heavy-duty vehicles.

Utilities are uniquely situated to pilot alternatives to traditional rate structures and utility cost recovery mechanisms to support customer deployment of DC fast charging solutions. Such pilots could specifically take into account electric vehicle load, across all use cases, along with the grid and societal benefits associated with transportation electrification. Eventually, the anticipated large-scale adoption of electric vehicles and associated higher utilization of DC fast chargers will mitigate the impact of demand charges, but low utilization in the early years makes ongoing costs a significant barrier. Utilities around the country are proposing such alternative rate structures for faster charging, including Baltimore Gas & Electric, Southern California Edison, and National Grid.

3. Utility Role in Supporting EV Charging Infrastructure Deployment

ChargePoint urges the Board to fully consider the range of costs and benefits associated with expanding the traditional role of utilities into the competitive EV charging market. In contrast with other stakeholders, regulated utility participation in the EV charging market with ratepayer funds can have an impact on competition in and the continued health of the market. The manner in which ratepayer-funded investments are structured can either complement, or compromise, the competitive market and ongoing innovation.

From ChargePoint's experience in deploying more than 42,000 charging spots, site hosts that make a financial contribution to the charging station are far more likely to actively support the successful installation and ongoing preventive maintenance of the charging station because they have "skin in the game." Historic and projected growth in the EV charging market show that private dollars are increasingly flowing into the market. If ratepayer funds are directed to leverage private funds and maintain site host choice of equipment and services, the value of a program will increase, be more sustainable, and create a larger positive impact on deployment of EV charging equipment. Maintaining site host ability to select the best charging solutions to meet the needs of their individual use case ensures a competitive process and will foster ongoing innovation in the market. In addition, site hosts must be able to manage the driver experience and optimize utilization of the station through the ability to manage driver fees and access control. Any utility program that proposes to procure stations, make decision on features and design on behalf of the site host, or suggest a one-size-fits-all driver pricing policy, would unnecessarily pick winners in a competitive market, ignore customer choice, lock in rapidly changing technology, and result in poor station utilization.

There are many innovative approaches to infrastructure deployment that the Board should consider that both support competition and address significant market barriers, such as those faced in increasing equitable access electric transportation in environmental justice communities and multi-unit dwellings. Across all of these deployment opportunities, there are several ways in which ratepayer-funded investments in EV charging can expand access to charging, provide utilities the key value of charging data and demand response capabilities, while also complementing the private market.

a) "Make Ready"

One potential program design would expand the utility's involvement in EV charging to include the installation of the electrical infrastructure on the customer side of the meter up to, but not including, the EV charging station itself. This is commonly referred to as the "make ready."

In a "make ready" program, the utility would construct, own, and maintain the electric infrastructure from the distribution transformer through the customer meter up to the charging station. By covering this electrical infrastructure, the utility reduces costs for customers to deploy charging stations without the need to own and operate the charging station itself. This program approach has been approved in cases before the California Public Service Commission by Southern California Edison and Pacific Gas and Electric, and is also proposed by Eversource in a case pending before the Massachusetts Department of Public Utilities. *See* DPU Docket 17-05.

While a utility does not need to own the equipment in this example, it is able to set the minimum qualification standards for the charging equipment to ensure data, load management, and other key utility needs are addressed.

b) Rebates

Another complementary approach to expanding the role for regulated utilities in the EV charging market is the issuance of rebates for a set percentage of EVSE project costs. The rebate would apply to costs incurred by private businesses or other entities deploying EV charging infrastructure that meet functional requirements of the utility program to ensure that grid benefits are created.

In a rebate program, participating EV charging site hosts receive a utility incentive to support the purchase and installation of smart EV charging infrastructure that meet core functional requirements, such as collecting data and providing the ability for load management, thus creating opportunity for grid benefits. Rebate programs have been utilized by investor owned utilities for years supporting energy efficiency programs so there is already an administrative framework making it simple to add EV program incentives without driving utility costs upward required under larger construction projects.

Cost recovery for utility rebates can be approached in several ways. One approach would be to treat the rebate as a regulatory asset, thereby allowing both cost recovery and a rate of return on the investment similar to other capital investments. Another approach, which was recently proposed by National Grid in Massachusetts, would recover a performance-based incentive tied to achieving the program's deployment target. *See* Massachusetts Department of Public Utilities Docket No. 17-13.

Yet another approach would be to provide utilities with cost recovery to help accelerate the deployment of charging infrastructure without the ability for a rate of return, with the focus being on adding beneficial load at times when the utility system has excess capacity and the cost can be justified by the new revenue created by the electric vehicle charging, particularly at night when most vehicles are parked at the residential setting.

ChargePoint would recommend that rebate levels be based on guidelines that are supported by the Board with broad stakeholder input, including residential, workplace and other commercial locations that would still requiring private investment by site hosts.

4. What is the present status of EVs and EV infrastructure in New Jersey?

New Jersey's EV and EV charging markets are growing. Vehicle registration data can be easier to obtain, whereas EV charging deployment is not always as readily accessible. ChargePoint recommends that the Board consider how encouraging the deployment of smart EV chargers can support

While the US Department of Energy's Alternative Fuels Data Center identifies 511 publicly available EV charging ports in New Jersey, this is only one part of the picture. Over 90% of charging takes place at home and at work, which are not typically "publicly available charging ports". ChargePoint respectfully urges the Board to consider how, when, and where charging is taking place when assessing the status of EV charging in New Jersey.

D. What EV/EV infrastructure developments can be expected in the short/medium term under a Business as Usual scenario?

The private EV charging market is growing in a number of ways. Globally, the EV charging infrastructure industry is projected to grow at a compound annual rate of 46.8% from

2017 to 2025, reaching $45.59 billion in revenue by 2025.[1] In the U.S. alone, revenue increased by 576% between 2011 and 2016, growing from $27 million to $182 million. If the annual increase in revenue matches the 11% growth rate from 2015 to 2016, the U.S. could see more than $276 million by 2020.[2] in terms of technology, and as noted above, the EV charging market is dynamic and evolving to meet rapidly changing transportation needs.

ChargePoint encourages the Board to consider how New Jersey's market is growing when evaluating how best to support sustainable and scalable growth in the EV charging market.

III. Conclusion

Thank you for the opportunity to provide these comments. We look forward to continue working with the Board to achieve New Jersey's energy, environmental, transportation, and economic development goals by reducing barriers to sustainable and scalable growth in the competitive EV charging market.

[1] Grand View Research, Inc., "Electric Vehicle (EV) Charging Infrastructure Mark Analysis By Charger Type (Slow Charger, Fast Charger), By Connector (CHAdeMo, Combined Charging System), By Application, By Region, And Segment Forecasts, 2014-2025."

[2] Advanced Energy Economy, "Advanced Energy Now 2017 Market Report."

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February 9, 2018

New Jersey Board of Public Utilities
Attn: Michael Hornsby, Chief Project Development Officer
44 S. Clinton Avenue
Trenton, NJ 08625

Re: New Jersey Board of Public Utilities Electric Vehicle Stakeholder Group – Follow-up Task 1 Questions: Comments by ChargePoint

Dear Mr. Hornsby,

Attached for electronic filing in the above-referenced matter, please find comments on behalf of ChargePoint, Inc. Please let me know if you have any questions.

Respectfully,

Kevin George Miller
Director, Public Policy
ChargePoint

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FOR THE NEW JERSEY BOARD OF PUBLIC UTILITIES

Electric Vehicle Stakeholder Group

Follow-up Task 1 Questions

COMMENTS OF CHARGEPOINT, INC

Introduction

ChargePoint is pleased to offer comments to the New Jersey Board of Public Utilities ("BPU", or "the Board") in response to its request for comments on Follow-up Task 1 Questions.

Background

ChargePoint is the leading electric vehicle (EV) charging network in the world, with charging solutions in every category EV drivers charge, at home, work, around town and on the road. With more than 45,000 independently owned public and semi-public charging spots and more than 7,000 customers (businesses, cities, agencies and service providers), ChargePoint is the only charging technology company on the market that designs, develops and manufactures hardware and software solutions across every use case. Leading EV hardware makers and other partners rely on the ChargePoint network to make charging station details available in mobile apps, online and in navigation systems for popular EVs. ChargePoint drivers have completed more than 31 million charging sessions, saving upwards of 30 million gallons of gasoline and driving more than 732 million gas-free miles.

ChargePoint sells EV charging equipment and network services that enable EV charging station owners to provide charging services to their own or other EVs. In almost every case, ChargePoint does not own or operate the equipment. ChargePoint sells charging solutions to a wide variety of customers, including residential EV owners, employers, commercial and industrial businesses, cities and public agencies, ports, schools, public transit, delivery truck fleet operators, and multi-unit dwelling owners. ChargePoint offers a broad array of products and services that can serve light, medium or heavy duty electric vehicles.

The site host network services offered by ChargePoint enable customers to manage their charging infrastructure using cloud-based software tools. These tools provide the station owner or operator with everything needed to manage and optimize utilization of their charging stations, including online management tools for data analysis, billing and payment processing, load management and access control. Maintenance and customer service are a priority for our company. ChargePoint offers a comprehensive set of support services, including: a 24/7/365 hotline for station users, parts and labor warranty, site qualification, installation and validation services, and a help line for site host specific questions.

1 USDOE – AFDC Findings

1.1 Are the analysis and findings of the USDOE AFDC and ANL accurate and supported by other independent analysis? Please cite why or why not.

1.2 Should the NJBPU run the ARL GREET model for several different types of EV, ICE vehicles and other alternate fuel vehicles under different New Jersey driving conditions for various New Jersey electric generation mixes? Or not?

1.3 If the Rutgers LESS energy efficiency evaluation shows favorable results for PEVs under NJ driving conditions and a NJ energy mix, how should that information be leveraged by the BPU to accelerate the pace of EV adoption in NJ? If not what actions should be taken by BPU?

2 Energy Efficiency

2.1 Would an EV fueled by electricity from the current New Jersey electric generation sources be more efficient, less efficient or the same level of energy efficiency than the EVs noted in the ANL analysis? If so why? If not why not?

Based on the BPU's Follow-Up Task 1 Questions issued on December 20, 2017, ChargePoint understands that Rutgers University is currently under contract with the BPU to conduct the above referenced analysis.

2.2 Would an EV fueled by a New Jersey electric generation mix meet the definition of conserving energy in the definition for energy efficiency as set forth at N.J.S.A. 48:3- 98.1? If so why? If not why not?

No, an EV fueled by a New Jersey electric generation mix would not meet the definition of conserving energy in the definition for energy efficiency as set forth at N.J.S.A 48:3-98.1 ("RGGI Act") for technological, statutory, and practical reasons.

The above referenced scenario would not meet the definition of conserving energy in the definition for energy efficiency given EV and EV charging technology. As ChargePoint explained in its answer to the BPU's Task One Questions:

> *Electric vehicles, in part or fully powered by electricity from the grid, along with the associated charging infrastructure, do not by themselves necessarily fall under the definition of demand side management and energy efficiency as set forth at N.J.S.A. 48:3-51 and/or N.J.S.A. 48:3-98.1.d. Some electric vehicles and charging equipment have the capability to undertake load management*

> *functions and ensure the efficient use of energy... Furthermore, electrification of vehicles is generally considered to be a more efficient form of transportation, and there are certain charging technologies that are more efficient in the provision of fuel than others. However, the primary purpose of EVs and EVSE is to support the conveyance of drivers, riders, and goods between destinations. These critical transportation functions are outside of the scope of the above referenced statutory definitions.*[1]

Furthermore, the statutory definition of energy efficiency in the RGGI Act is unrelated to the above-referenced scenario. As noted by the Division of Rate Counsel in their responses to the BPU's Task 1 Questions, the intent of the RGGI Act was to support "a reduction of electric load as a result of EE and conservation programs", which would provide utilities with "a full return on invested capital and foregone electric and gas distribution fixed cost contributions associated with the implementation" of energy efficiency programs.[2]

2.3 Would an EV fueled by a New Jersey electric generation mix meet the definition of using less electricity or natural gas in the definition for energy efficiency as set forth at N.J.S.A. 48:3-98.1? If so why? If not why not?

See answer to 2.2.

3 Electric Systems Impacts

3.1 What could be the expected percentage increase in electric energy attributable to EVs result in by 2025, 2030 and 2050?

3.2 What could be the expected impacts and costs (positive and negative) on generation, transmission and distribution systems by the years 2025, 2030 and 2050?

4 Grid Integration, Demand Response and V2X (consisting of Vehicle to Grid (V2G), Vehicle to House (V2H), etc.

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?

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[1] ChargePoint, Inc. "Responses to Task 1 Questions". October 16, 2017. Accessed on January 30 at http://www.bpu.state.nj.us/bpu/agenda/stakeholdercomments.html

[2] NJ Division of Rate Counsel. "New Jersey Board of Public Utilities Electric Vehicle Stakeholder Group Task 1 Questions: Comments of the New Jersey Division of Rate Counsel". October 16, 2017. Similarly accessed.

ChargePoint's stations and cloud services provide the ability for independent station operators to conduct load management/demand response of the allowable power level in real time. The allowable power levels can be completely shed, partially shed on a percentage basis of the actual load, or a lower power level ceiling can be set. This load management event can be scheduled to expire after a period of time, returning to the equipment normal maximum power output, or the event can be immediately rescinded at any time. These demand response events can be programmed to occur for individual charging ports or any desired groups of ports.

In order to support utilities, which may not necessarily own or directly operate stations at home or in the commercial space, ChargePoint also provides the ability for station operators to grant access rights to utilities to conduct demand response on their stations. Like any other utility demand response program, the participants would likely receive some incentive in exchange for offering this capability. ChargePoint also offers the ability to utilize standards-based application programming interfaces, or APIs, to automatically send demand response commands to the ChargePoint Cloud and control stations in the field. Furthermore, the ChargePoint server is certified as OpenADR2.0b compliant, providing a common and open standard based interface for utilities to conduct load management events.

The most common and value-added demand response application for EV charging is to target charging at the home where over 80% of total charging needs occur. Vehicles are often parked for over 12 hours at home, yet only needs to actively charge for several hours to fully refill the battery. Without incentives or guidance, EV drivers will just plug in when they arrive home and this often can often be in the late afternoon/early evening when peak coincident times also occur. With existing technologies provided by networked charging solution providers, utilities can easily integrate with a variety of platforms (similar to smart thermostats) to issue load shedding commands, confirm response, and analyze charging data. In addition to load shedding events, utility programs can also use price signals to encourage off-peak charging of EVs.

ChargePoint recommends that the Board encourage utilities to explore demand response and load shifting programs targeted at reducing system peak, relieving distribution system congestion, and supporting renewable integration via smart charging at the home. It is also recommended that utilities be encouraged to work in concert with automakers and the EV charging industry to develop solutions that leverage existing "consumer electronics" products and driver interfaces while being agnostic to specific vendors.

4.2 V2X: Is the two way communication of the EV to the grid a commercially available technology or not? If so why? If not why not? What is the availability of the technology now and how/when will that availability evolve? What actions should NJBPU take and when to take advantage of the use of EVs in V2X technology?

Two-way communication between EVs and the grid can be incorporated into a variety of different applications. From a communications standpoint, ChargePoint's stations already have the capability of communicating through standardized communication protocols, such as

OpenADR2.0b. Advanced vehicle-to-grid (V2G) applications are also being explored through the utilization of other protocols, such as ISO 15118. California's Vehicle Grid Integration Working Group identified more than 70 different V2G applications that were possible through the use of ISO 15118.

One of the more commonly discussed "two-way" V2G functions is the ability of the EV to feed back, or "export", energy back onto the grid for the purposes of providing frequency regulation or other ancillary services. The technology and standards around this particular use case is less developed than other more commercial applications discussed in the previous response. There are several challenges to the mass deployment of this type of functionality, including: vehicle battery warranty concerns, vehicle technological capabilities, metering and telemetry requirements, interconnection rules to ensure safe grid operations, comprehensive control algorithms, and contractual requirements that would provide sufficient value to all parties. Each of these challenges would likely require multiple policy actions, some which may include necessary action by PJM to address the ability of EVs to export energy onto the grid.

ChargePoint recommends that the Board work with stakeholders to identify the practical applications of V2X/V2G for the utilities distribution system management and address specific barriers related to those functions.

4.3 Could the EV electric customer access the energy markets directly, through an aggregator or Network Operations Center (NOC), through the electric utility or blockchain?

It would be feasible for a range of stakeholders to participate in energy markets. Regardless of which market actor participates, it is essential that market participants are accountable and can ensure reliable and accurate data.

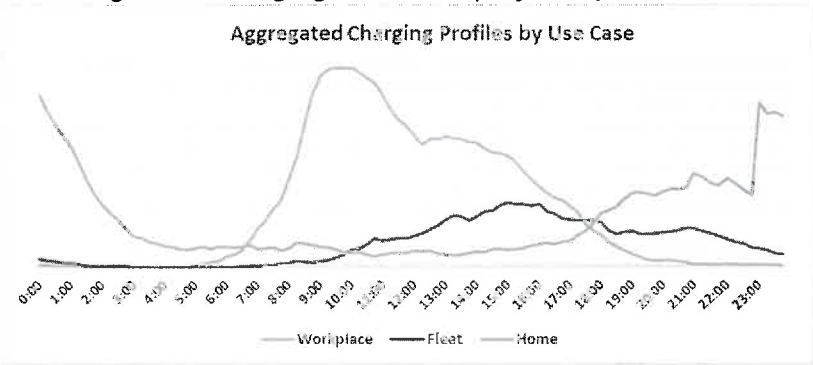
4.4 If the EV could be utilized as a demand response technology in a two way communication with the grid, distribution and/or transmission, would the EV meet the definition of demand side management in N.J.S.A. 48:3-51? If so why? If not why not?

No, the scenario in 4.4 would not meet the definition of demand side management in N.J.S.A. 48:3-51. The extent to which EVs or EVSE can be incorporated into demand response programs will not materially change the fact that the primary purpose of EVs and EVSE is not demand side management. Rather, their primary purpose is the conveyance of drivers, riders, and goods between destinations.

4.5 What are the types and level of benefits to the grid of EVs in a demand response program and what would be the overall costs to develop and implement this program?

Demand response is just one of many ways to carry out energy management programs associated with EV charging. The types and levels of benefits to the grid from EV charging taking place under an energy management program will vary greatly by EV charging use case:

Fig. 1: EV charging utilization profiles by use case



ChargePoint recommends that the Board keep two key questions in mind before evaluating the relative value of energy management programs in different EV charging use cases: (i) what will be the impact on driver experience, and (ii) is this the best use case for energy management?

Workplace charging naturally aligns with incorporating renewable generation to mitigate the "duck curve", or over-generation of solar assets, where such issues are relevant. In addition, there are opportunities to flatten out the workplace load through direct load management, as well as frequency regulation possibilities. However, workplace charging is mismatched for traditional, afternoon demand response programs, as workers tend to leave during or before afternoon peak.

Fleet charging, on the other hand, typically aligns well with traditional demand response and frequency regulation programs. In the event that active demand response programs are not implemented, load can otherwise be managed to shift charging away from the afternoon peak.

Residential charging is perfectly suited for load management. In addition, numerous studies have shown that residential charging is extremely responsive to price signals through TOU rates.[3] As such, demand response is not the only demand side management tool available to encourage off-peak charging.

[3] See, e.g., Electric Power Research Institute. "Duke Energy: Charging Demos Inform PEV Readiness Planning". 2013; Nexant. "Final Evaluation for San Diego Gas & Electric's Plug-in Electric Vehicle TOU Pricing and Technology Study. 2014; EPRI. "DTE Energy: Driving the Motor City Toward PEV Readiness". 2014

Commercially-available charging, such as those deployed at retail or destination sites, are much less well suited for demand response programs due to greater unpredictability in utilization and the inherent need of drivers to charge when they need to charge at public stations. The transient nature of such station users adds additional challenges.

4.6 If the EV could be utilized as a demand response technology, should the BPU consider changes to demand charges? If so why? If not why not?

ChargePoint encourages the Board to consider demand response opportunities separately from the challenges posed by traditional, demand-based commercial rate structures.

Utilities use peak demand to properly size electrical facilities for their individual customers and to ensure they have adequate generating capacity available for all customers. Demand charges to customers are typically based on the highest average 15 minutes in a monthly billing cycle. Unfortunately, DC fast charging stations are currently characterized by having a low load factor with sporadic instances of very high energy use due to a limited number of vehicles in the market that will use these stations in the near term. This means that site hosts can potentially face very high demand charges despite low utilization in the early years, which effectively penalizes site hosts for providing DC charging services in earlier stages of adoption.

Several options can be considered in any future evaluation of rate design specific to providing service to DC fast charging stations and to encourage more site hosts to deploy such stations by providing a more predictive and manageable operating cost structure. Examples include:

- Demand charge could be replaced with or paired with higher volumetric pricing to provide greater certainty for charging station operators with low utilization. This rate could be scaled based on utilization or load factor as charging behavior changes over time with increased EV adoption.
- The bank of charging stations could be put on a separate meter in order to use a unique "EV charging" rate that is designed to reflect charging needs. Note: it is not necessary to separately meter every single charging station, since many charging stations have embedded metrology.
- A pilot rate could be developed specifically for fleet operators, particularly those that operate electric bus fleets that may charge overnight and provide time of use benefits to the grid.
- A demand charge "credit" could be applied for a period of time to qualifying service application that only provide power to support electric vehicle charging.
- The utility could consider pricing signals to the station operator, such as time-of-use or critical peak pricing.
- Utilities should factor in the overall EV load from all vehicles in its service territory and its benefit to the grid not just that metered at the DCFC. With increased EV adoption, there will be increased load, which could lead to greater grid benefits in the future.

4.7 Should the BPU consider the use of telematics (such as Con Edison's SmartCharge New York program) in any demand response program and to address changes to demand charges. If so why? If not why not?

We recommend that the BPU consider technology-neutral approaches to demand response programs that could include traditional fixed devices associated with utility accounts (e.g. networked charging stations at a residential or commercial property), in addition to alternative means including telematics that are associated with mobile assets.

4.8 If the EV is not using less electricity or natural gas per the definition for energy efficiency as set forth at N.J.S.A. 48:3-98.1 and the EV could be utilized as demand response for the EV to meet the definition of demand side management in N.J.S.A. 48:3-51, what could be the expected impacts on the grid for increased generation capacity by 2025, 2030 and 2050? What could be the level of costs and over what timeframe?

4.9 If there is an increase in electric energy usage from the increase in EV but not a generation capacity increase because of demand response of EV what would the increase efficiency of the grid be in 2025, 2030 and 2050? If not why not?

5 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?

The EV charging market is growing and dynamic, and there is no one static business case for the EVSE industry or for EV charging site hosts. The business case, or value proposition, for various entities to install and operate charging stations incorporate many different value streams and varies across use cases. Site hosts balance costs against the value created by hosting a station, which are often beyond direct revenue that may be generated. Non-financial benefits include providing fringe benefits to attract and retain employees, attracting new customers and have them stay for longer periods of time for businesses, meeting sustainability goals for local governments and businesses, appealing to new tenant, amongst many others. Residential customers acquire EVSEs for use at home in order to take advantage of faster charging rates and provide for a connected, user interface to support scheduling and tracking of charging at home.

Costs related to deploying EV charging infrastructure can be broadly categorized as either upfront ("capital") costs or ongoing ("operating") costs. Capital costs include the cost of the station, installation costs (which often exceed station costs), any potential distribution service or system upgrades, additional electric infrastructure (meters, panels, disconnect switches), etc. Barriers related to operating costs include electricity costs (including demand charges), ongoing operations and maintenance, and network services.

Different EV charging technologies present EV charging site hosts with differing capital and operating cost barriers. For example, operating costs are much higher for DC fast charging site hosts at corridor and urban hub locations that they would be for site hosts with a few AC Level 2 charging stations. Capital cost barriers are similarly higher for DC deployments, whereas installation cost barriers for AC Level 2 stations can be significantly mitigated by adopting EV Ready building codes to ensure that the necessary wiring and conduit is in place to facilitate installation at a later date.

Participants in different market segments may have differing abilities to support the financial costs and derive value from deploying and operating charging stations. For example, workplaces, destination locations, and retail businesses can often more immediately derive value from the provision of charging services. However, capital and operating costs may serve as greater barriers for site hosts in environmental justice communities to enter the EV charging market.

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?

ChargePoint respectfully suggests that the Board consider whether managed charging programs provide for net benefits for participants and non-participant utility ratepayers, meet drivers' needs, support innovation in equipment and services, and complement private market activity.

Utilities have very important roles to play in meeting New Jersey's transportation electrification goals. First and foremost, utilities are ideally situated to ensure that the associated new load is incorporated in a safe, reliable, and efficient manner. ChargePoint is proud to be a partner of utilities around the country in deploying utility-supported charging infrastructure and pilot programs that incorporate capability for load management. We believe that there is a vital role for utilities in supporting efficient integration of EV load and that the right program design can encourage the installation of more charging stations around the state in a manner that complements, and does not duplicate or conflict with, the private market.

When considering whether to expand the role for utilities to utilize ratepayer funds for cost recovery of incentives or assets on the customer side of the meter (i.e., the competitive EV charging market), it is important to consider New Jersey's market today and how it is growing into tomorrow's market. The private sector is actively selling EV charging stations around the

state. There is demand for charging stations as evidenced by the more than 600 charging spots sold to customers in New Jersey by ChargePoint alone to date. These charging spots have been purchased by workplaces, hotels, public entities, retail sites, residential locations, and more.

Well-designed utility programs can complement current market activity, but do not necessarily do so by default. Please see the answer to 5.5 for further detail on recommendations on guidelines for utility EV charging programs.

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?

See answer 5.2 and 5.5.

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?

Please see answer to 5.5.

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

ChargePoint encourages the Commission to identify clear criteria and guidelines for evaluating utility EV charging programs. Identifying "rules of the road" for utility programs up front can ensure that programs complement the competitive market, are reviewed efficiently, and support continued innovation in transportation electrification.

Most managed charging programs can be implemented in a way that does not presuppose that the utility must own the asset and can be agnostic to the specific vendor which a local site host or EV driver may wish to choose. Established EV charging network features exist today to allow for utilities to received detailed interval level charging data and to conduct load management through rights granting, or via open standard based platforms like OpenADR2.0b.

In the event that utilities are permitted to expand their traditional role to provide incentives or own assets on the customer side of the meter in New Jersey, we recommend that the following three guidelines be included for any utility program:

- Support equitable access to electric transportation & electric mobility in EJ/economically disadvantaged communities;
- Complement private market activity without duplicating it; and
- Allow for site hosts to have a choice in EV equipment and services.

A number of jurisdictions have already identified guidelines for utility programs that could serve as case studies for the Board. For example, the Massachusetts Department of Public Utilities (DPU) developed a three-pronged set of criteria to evaluate proposals in which costs would be recovered through rates:

> "For Department approval and allowance of cost recovery, any proposal must: be in the public interest; meet a need regarding the advancement of EVs in the Commonwealth that is not likely to be met by the competitive EV charging market; and not hinder the development of the competitive EV charging market." *See* D.P.U. 13-182-A at 13.

The Massachusetts criteria are specific enough to ensure that ratepayer investments complement, rather than compete with, private market activity. This focus on complementing the private market ensure that market power of regulated utilities is focused on overcoming market segments that face the highest barriers to entry.

In addition, the Massachusetts criteria are flexible enough to account for differences in program design, support technological innovation, encourage multiple business models. For example, the Massachusetts DPU recently evaluate of two very different utility EV charging programs: Eversource Energy's $45 million make ready program (Docket No. 17-05) was recently approved, and National Grid's $24 million rebate-based approach (Docket No. 17-13) is currently awaiting a decision.

The California Public Utilities Commission implements a "balancing test", which requires "that the benefits of utility ownership of PEV charging infrastructure must be balanced against the competitive limitation that may result from that ownership". *See* CPUC Decision 14-12-079 at 5.

6 Utility Role in "Charge Ready"

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?

There are several ways in which ratepayer-funded investments in EV charging can expand access to charging while also complementing the private market:

"Charge Ready" (or "Make Ready") Programs

A potential program design for a utility pilot would target the utility's involvement on the installation of the electrical infrastructure on the customer side of the meter up to, but not including, the EV charging station itself. This is commonly referred to as the "make ready." The utility would construct, own and maintain the electric infrastructure from the distribution transformer through the customer meter up to the charging station. By covering this electrical

infrastructure, the utility reduces costs for customers to deploy charging stations without the need to own and operate the charging station itself. The utility can still guide the capabilities of charging stations through a qualification process to ensure that the necessary charging data and/or load management capabilities are enabled. This program approach has been approved in cases before the California Public Service Commission by Southern California Edison and Pacific Gas and Electric, as well as by Eversource in Massachusetts.

Utility Rebates

One program design that is structured with simplicity in mind is the issuance of rebates for a set percentage of project costs. The rebate would apply to costs associated with private businesses or entities deploying EV charging infrastructure that meet functional requirements of the utility program to ensure that grid benefits are created.

Under this program design, participating EV charging site hosts receive a utility incentive to support the purchase and installation of smart EV charging infrastructure that meet core functional requirements, such as collecting data and providing the ability for load management, thus creating opportunity for grid benefits. Rebate programs have been utilized by investor owned utilities for years supporting energy efficiency programs so there is already an administrative framework making it simple to add EV program incentives without driving utility costs upward required under larger construction projects. This program design also allows utilities to avoid the need to obtain permanent easements, which can reduce administrative and operational burdens for the utility and program participants.

Cost recovery for utility rebates can be approached in several ways. One approach would be to treat the rebate as a regulatory asset, thereby allowing both cost recovery and a rate of return on the investment similar to other capital investments. Another approach, which was recently proposed by National Grid in Massachusetts, would recover a performance-based incentive tied to achieving the program's deployment target. A third approach would be to provide cost recovery to help accelerate the deployment of charging infrastructure without the ability for a rate of return, with the focus being on adding beneficial load at times when the utility system has excess capacity and the cost can be justified by the new energy revenues created by the electric vehicle charging, particularly at night when most vehicles are parked at the residential setting.

ChargePoint would recommend that rebate levels be based on guidelines that are supported by the Commission with broad stakeholder input, including residential, workplace and other commercial locations that would still requiring private investment by site hosts ("skin in the game") when possible.

Utility Ownership of Stations

Should the Board consider direct ownership of EVSE by utilities, ChargePoint respectfully recommends that the Board identify program requirements associated with such ownership to avoid any unintended market impacts.

For example, the Board could ensure that such programs include local site host choice of networking solution vendors and control over the pricing to the EV driver. In doing so, market forces can still be in play, private market actors will be encouraged to invest their own capital and local site hosts will be able to maximize station utilization and optimize the driver experience. Examples of such programs that include utility ownership with local site host choice and control include San Diego Gas & Electric "Power Your Drive" and Pacific Gas & Electric's EV Charge Network in California.

7 Advanced Metering Infrastructure (AMI) - Smart Grid / Smart Meters

7.1 What policies should the Board establish to take advantage of AMI, Smart Grid / Smart Meters with respect to the EV market?

It is not clear to what extent AMI/Smart Meters are necessary to support the EV market or a managed charging program. Networked charging stations can include their own energy meters, using two-way communications to transmit that data to a central service hosted by the EV networking service company. This data can be run through reports, filtered, and accessed by the operator of the station as well as a third party, such as a utility. Where allowed and desired, the data can also be accessed and merged with meter data management systems to associate with utility meters and customers of record for tracking or billing purposes. The same technology platform and network can also provide the necessary load management signals to control chargers.

ChargePoint recommends that utilities take advantage of the existing consumer solutions that are present in the market that include secure, cloud-based communication protocols to access charging data and conduct load management. Doing so will complement the existing network and solution features that are already designed to support site hosts and EV drivers without potentially having to pick winners or shut out solution providers in a rapidly evolving market.

One potential policy area that could support managed charging of electric vehicles would be if AMI and smart meter technology can enable more nuanced TOU rates to a customer of record (residential or commercial), which themselves operate a charging station behind that meter. The customer of record can then use those pricing signals to support their own charging decisions, or to factor into pricing that they set for other EV drivers using their station.

7.2 Would a utility managed charging program support and supplement any smart grid (SG) or automatic meter initiatives (AMI)? If not why not and what programs should be developed instead of AMI? If so what would be the level and value of the benefit to and from the AMI programs. If not describe why not and what would be the level of value in any other program?

See answer for 7.1