

June 30, 2017

VIA ELECTRONIC MAIL

Rhode Island Power Sector Transformation Initiative
c/o Rhode Island Division of Public Utilities and Carriers & Office of Energy Resources
DPUC.powertransformation@dpuc.ri.gov

**RE: Rhode Island Power Sector Transformation Initiative
Notice of Inquiry and Request for Stakeholder Comment Dated June 14, 2017
National Grid's Responses to Questions Regarding a Utility's Role in Deploying
Beneficial Electrification in Rhode Island**

Dear Members:

On behalf of National Grid,¹ I enclose the Company's responses to the stakeholder questions outlined in the Division of Public Utilities and Carriers and the Office of Energy Resources Inquiry dated June 14, 2017 related to deployment of beneficial electrification in Rhode Island.

The Company looks forward to future discussions on these important inquiries. If you have any questions, please contact Kayte O'Neill at 781-907-1790, Tim Roughan at 781-907-1628, or me at 781-907-2153.

Very truly yours,



Celia B. O'Brien

Enclosure

¹ The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).



Rhode Island Public Utilities Commission, Division of Public Utilities and Carriers & Office of Energy Resources

Power Sector Transformation

Notice of Inquiry and Request for Stakeholder Comment Regarding a Utility's Role in Deploying Beneficial Electrification with a Focus on Plug-in Electric Vehicles

Responses of National Grid to June 4, 2017 stakeholder questions

II.A. BACKGROUND ON THE ROLE OF THE UTILITY

National Grid's business increasingly includes the provisioning of more than just safe, reliable, and affordable electric service... [T]he company is often the chosen, or statutorily directed, entity for administering programs designed to lower barriers to, and accelerate adoption of, certain activities aligned with state policy. Examples include National Grid's role in administering the state's energy efficiency and Renewable Energy Growth programs. In these roles, the company can reduce costs of deployment; reduce costs of market transactions services; consider externalities and inequities that markets may ignore; and grow, develop, and transform markets.

As context for exploring the role the utility may play in PEV deployment, consider some of the roles utilities have played in the past:

- *Safe, reliable, and adequate service provider*
- *System planner and operator*
- *System optimizer*
- *Program administrator (reduce costs and consider externalities and inequities)*
- *Programs optimizer (assuring programs work together efficiently)*
- *Transaction services provider*
- *Market accelerator and transformer*

Questions for stakeholders on the role of the utility

1) Are there other roles a utility might play in PEV adoption?

National Grid appreciates the thoughtful approach being taken by the RIPUC, RIDPUC and RIOER with regard to "Beneficial Electrification" and electric transportation, and welcomes the opportunity to submit these comments. The Company agrees that it plays many roles in serving electric and gas customers in RI and helping advance the state's energy and climate policy goals, as articulated in Section II of the Notice. The Company believes it is timely and important to consider how the electric distribution company can enable Rhode Island's ambitions to transform the transportation market.

The Company is committed to providing customers with safe, reliable electric service, as required to enable widespread transportation electrification, through system planning, operation, and optimization. The Company is also committed to providing both electric delivery service and commodity supply to customers at just and reasonable rates that also enable widespread

electrification. Finally, the Company believes that it has the expertise, responsibility, and long-term view required to support RI in providing adequate, efficient, and economical *transportation* energy advancing the state's long-term energy and climate policy goals.

Today, the Company owns and operates 49 charging station locations (102 ports) across RI, comprising approximately 60% of the 81 public charging stations installed to date in the state.¹ These stations were installed by the Company using grant funds from RI OER, in partnership with a charging equipment vendor and network service provider, between 2011 and 2014. Charging stations are owned by the Company and hosted by property owners ("site hosts") under an agreement with the Company, wherein the site host pays the electric bill and ensures dedicated driver access to parking. The Company collaborates with site hosts on determining pricing charged to drivers², and the Company pays for ongoing station operating costs, maintenance, and replacement.

In accordance with the Company's experience providing charging services to date, and in support of RI's goals for growing EV adoption roughly 50-fold (from about 800 to 43,000) by 2025, the Company suggests that its role in enabling EV adoption should also include continuing to serve as operator of charging stations (henceforth "Electric Vehicle Supply Equipment, or EVSE") in public and private locations, through the installation, ownership, and maintenance of EVSE and associated electrical equipment on both the distribution system and behind customers' meters.

While the Company expects that the nature of its role may evolve over time, in the near to medium term, allowing the Company to play the role of charging station operator as required to establish and maintain charging infrastructure that is not being sufficiently developed by competitive charging business operators or individual site hosts, could help to support achievement of the state's ZEV goals and GHG emissions reductions goals.

2) Who are the other key actors and what should their respective roles be?

Although electric vehicles have achieved dramatic improvements in performance and cost in recent years, they remain somewhat unfamiliar and unaffordable to the vast majority of Rhode Island consumers and fleet owners. ZEV goals require EVs to comprise about 15% of all new light-duty car sales in participating states by 2025³ – up from less than 1% today—and analysts predict that 2050 goals for GHG reductions can only be achieved with 90% electrification of the light-duty fleet in the region.⁴ Transformation of the electric vehicle market in Rhode Island as envisioned by policymakers requires a scale of planning, coordination, and investment that may not be possible if left to unregulated private sector actors alone.

The Company identifies several of the key actors or sectors below, and describes some of their prospective roles in achieving widespread transportation electrification.

¹ Data according to the US Department of Energy's Alternative Fueling Station Locator, as of 6/28/17:
<https://www.afdc.energy.gov/locator/stations/>

² At this time, nearly all site hosts with National Grid charging stations allow drivers to charge for free.

³ Source for ZEV goals as a percentage of new sales: "Multi-State ZEV Action Plan" (page 4), May 2014, ZEV Program Implementation Task Force: <http://www.nescaum.org/documents/multi-state-zev-action-plan.pdf/>

⁴ Source for light duty electrification required to meet 2050 goals: "Costs and Benefits of Plug-in Electric Vehicles in Massachusetts" (page 8), November 2016, MJ Bradley & Associates:
http://mjbradley.com/sites/default/files/MA_PEV_CB_Analysis_FINAL_17nov16.pdf

- **Vehicle owners and operators**, including consumers and fleet operators (public, private, and shared, including future autonomous)
 - o Purchasing or leasing electric vehicles, including fully-electric light-duty Battery EVs (BEVs) and Plug-in Hybrid EVs (PHEVs), as well as heavy-duty vehicle types
 - o Operating and maintaining electric vehicles and realizing benefits of electrification (including lower total cost of ownership)
 - o Purchasing, installing and operating EVSE, if feasible, or obtaining access to charging service from another entity
 - o Charging electric vehicles, including participating in applicable electric rates or programs, whether offered by the utility or a non-utility parties

- **Site hosts (property owners) who establish EV charging service** for the general public or for certain classes of private users, such as employees, customers, or guests
 - o Providing dedicated parking for EV charging public or private users
 - o Establishing EV charging service by either:
 - Installing, operating, and maintaining EVSE, or
 - Hosting EVSE that is owned and maintained by a charging business operator, with contractual obligations to that operator

- **Unregulated charging business operators**, excluding those site hosts/property owners who operate their own EVSE
 - o Identifying, recruiting, and contracting with site hosts
 - o Designing and preparing site for EVSE installation, including customer-premise electrical infrastructure and electric distribution upgrade, if required
 - o Selecting, procuring and installing EVSE
 - o Operating and maintaining EVSE at the level of reliability required by EVSE users/drivers, including paying electric bill and maintaining network service (described just below)
 - o Recovering invested capital and ongoing operating costs via payment from drivers (EVSE usage fee or membership) sponsorship, or other mechanism

- **EV Supply Equipment (EVSE) vendors and service providers**
 - o Sell EVSE and related services to site hosts, charging business operators, and/or vehicle owners/operators
 - o Support EVSE installation and hardware maintenance
 - o Provide network service, as applicable, including telecommunications capability (such as cell service) and network-enabled station management applications, including asset management / station control, driver access management, driver billing (if applicable), and other services
 - o Provide 24hr/day driver support (if applicable)
 - o Develop new innovative models of charging equipment (higher power levels, wireless charging, etc.) and new station management applications

- **Automakers and auto dealers**
 - o Design, manufacture, and market EVs in compliance with applicable federal and state laws and regulations (automakers)

- Educate customers about new vehicles and charging technologies (automakers and dealers)
- Sell EVs and support buyers in effective vehicle operation (dealers)
- Support EV charging development, as required to sell cars, or comply with legal requirement (automakers)

- **EV advocacy and membership groups**
 - Build awareness of vehicles, incentives, and charging options among consumers and businesses
 - Provide consumer insight and perspective to other stakeholders

- **RI executive agencies**
 - Establish targets, plans, and regulations to achieve ZEV, GHG, and transportation sector goals (e.g. RI OER and RIPTA)
 - Plan for necessary levels of EVSE availability and continuously assess adequacy (RI DOT, RIPTA)
 - Oversee regulated utility activity (RI DPUC and RI PUC)

The Company notes that these roles may be combined by certain actors, or conducted in ways that vary from the descriptions above; however, it is helpful to establish some of the key distinctions here (for example, between site hosts, charging business operators, and EVSE vendors and service providers).

II.B. GOALS FOR THE ELECTRIC SYSTEM AND PEVS

Rhode Island's goals for the electric sector include providing adequate, efficient, and economical energy at just, reasonable, and nondiscriminatory rates. State policy has also adopted new environmental, societal, and economic goals. In Docket 4600, Investigation into the Changing Electric Distribution System, the PUC adopted, as guidance for regulating National Grid's electric business, the following goals⁶:

- *Provide reliable, safe, clean and affordable energy to Rhode Island customers over the long term (this applies to all energy use, not just regulated fuels);*
- *Strengthen the RI economy, support economic competitiveness, retain and create jobs by optimizing the benefits of a modern grid and attaining appropriate rate design structures;*
- *Address the challenge of climate change and other forms of pollution,*
- *Prioritize and facilitate increasing customer investment in their facilities (efficiency, distributed generation, storage, responsive demand, and the electrification of vehicles and heating) where that investment provides recognizable net benefits;*
- *Appropriately compensate distributed energy resources for the value they provide to the electricity system, customers, and society;*
- *Appropriately charge customers for the cost they impose on the grid;*
- *Appropriately compensate the distribution utility for the services it provides; and*
- *Align distribution utility, customer, and policy objectives and interests through the regulatory framework, including rate design, cost recovery, and incentives.*

Power Sector Transformation is focused on certain transformative goals in the above list, as described above in the introduction.

The State of Rhode Island, local governments, public and private institutions, and energy consumers also have environmental, transportation, and economic goals that will likely affect PEV adoption and increase the need for charging equipment. New goals include the RI Zero Emission Vehicle Draft Plan goal of 43,000 electric vehicles by 20257 and the Executive Climate Change Coordinating Council (EC4) greenhouse gas emissions reduction scenario targeting the electrification of 34% of on-road vehicle miles travelled by 2035 and 76% by 2050.

Questions for stakeholders regarding goals

1) Which of these goals should be prioritized by the utility?

Goals for the Electric System

National Grid's core and fundamental purpose is the safe, reliable, efficient delivery of energy to our customers. This mission is at the heart of everything the Company does, and any new activities are undertaken with this mission in mind.

Responding to the needs and desires of our customers is a part of this core purpose and is manifested in everything the Company does. Trends in de-carbonization, decentralization, and digitization have driven a change in the way in which some customers choose to engage in their energy supply. The Company has a core role to play in facilitating this customer engagement, both by investing in a modernized grid and through the development of new solutions and offerings for customers. Through modernization investments and more sophisticated rate design, the Company expects to enable new opportunities for active customer participation on the system via a variety of distributed resources. The efficient integration of electric vehicles into the system can be enabled by these advances, which could in turn enable the vehicles themselves to provide (and be compensated for) services provided to the system.

The Company shares all of the goals articulated through both Docket 4600 and RI's Power Sector Transformation. Through its core mission, the Company enables many of the other articulated goals – expanding opportunities to customers, promoting economic development in the State, and working to ensure an efficient system characterized by equitable allocation of costs. Further advances in rate design and DER compensation can help to further encourage efficient use of the system and encourage beneficial behind-the-meter investments (including EVs) by customers.

Goals for PEVs

The Company commends the State of RI for its commitment to addressing climate change and its recognition that a reduction in transportation sector emissions through electrification will be essential to meeting emissions reduction goals. As discussed in the Company's response to the May 1, 2017 *Notice of Inquiry into the Electric Utility Business Model and Request for Stakeholder Comment*, the Company expects to play a key role in enabling the delivery of key energy policy goals for the State of RI. As discussed in our response to question II.A.1) above, transformation of the electric vehicle market in Rhode Island requires a scale of planning, coordination, and investment

that may not be possible if left to unregulated private sector actors alone. In support of this market transformation, the Company could take near-term action and help manage a long-term strategy to provide reliable, safe, clean and affordable *electric charging energy*, through a range of potential investments and programs.

2) Which goals should be shared with, or left to, other actors?

Achieving the goals articulated through Docket 4600, RI Power Sector Transformation, as well as the State's EV goals will require substantial shared efforts by the Company, in coordination with vehicle owners and operators, site hosts, unregulated charging business operators, EVSE vendors and service providers, automakers and auto dealers, EV advocacy and membership groups, RI executives agencies, and other stakeholders.

Regulators and policymakers – through the engagement of the utility, customers, and other stakeholders – will play a critical role in enabling the transformation of the system in a way that efficiently expands beneficial electrification. Their decisions ultimately shape the incentives faced by the utility, the customers it serves, and third parties providing energy services in competitive markets. Key priorities for regulators and policymakers that apply both broadly and in the specific context of beneficial electrification include:

- Build upon the existing regulatory framework in a manner that supports the utility's core obligation to deliver safe and reliable energy, while also aligning utility financial interests both with achievement of key policy outcomes such as system efficiency, GHG reductions or EV penetration, as well as customer interests;
- Supporting rate designs that encourage active management of customer peaks and encourage any new load to be added in off-peak hours, and that also support competitiveness and economic growth in the state; and
- Supporting rate designs that appropriately charge customers for the costs they impose on the grid, and appropriately compensate the distribution utility for the services it provides.

3) What other goals could be achieved by, and considered in, a utility's proposal to play a role in the adoption of PEVs?

Utility activities that support enablement of EV adoption by customers could also be addressed in utility proposals. These could include:

- Increasing charging availability and affordability. Lack of charging availability is a top barrier to customers' consideration of electric vehicles today.⁵ Increasing charging

⁵ A 2014 study of EV adoption in 30 countries found that EV charging infrastructure was the factor most strongly related to EV adoption. See William Sierzchula, et al., "The influence of financial incentives and other socio-economic factors on electric vehicle adoption," *Energy Policy*, vol. 68, May 2014, pp. 183-194. Available at <http://www.sciencedirect.com/science/article/pii/S0301421514000822>. In the US, automakers Nissan and Tesla have both reported significant impacts of new EV charging infrastructure on vehicle sales, with market research from Nissan suggesting that ample charging infrastructure would nearly double the number of Nissan Leaf owners

availability today, and over the long-term, should be considered a priority goal for utility proposals to help advance the state of RI's ZEV and GHG goals. In addition, utilities will likely have a role to play in ensuring that all customers are able to access the opportunities and benefits associated with greater electric vehicle penetration.

- Promoting customer awareness and demand for electric vehicles. Through its direct relationship with customers and its extensive, long-term, energy efficiency marketing efforts, utilities have the ability to merge the marketing for multiple programs to educate customers about vehicle and charging technologies, available incentives, potential energy savings from EV ownership, and broader environmental and system benefits of EV ownership in ways that can help to stimulate the market for vehicles. This outreach could be done in partnership with automakers and dealers, and could target both residential customers and those customers operating large vehicle fleets, in order to accelerate electrification.

4) What metrics might be useful in determining the effectiveness of a utility's PEV business or program?

Potential metrics for evaluation of program effectiveness and, if deemed appropriate, development of potential performance incentives, should be evaluated for their ability to reflect measurable outcomes that are of importance to the state and that are of value to customers.

Potential metrics might include:

- Station deployment
- Station reliability and availability
- Station utilization
- EV rate or program enrollment
- MWh of off-peak charging achieved as a result of rate or rebate program.
- Customer savings as a result of rate or rebate program
- Impact on customer conversion to electric vehicles
- Number of registered EVs in service territory
- Estimated emissions impact of the program

III.A. INVESTMENT NEEDS FOR PEVS

Currently, there are approximately 803 PEVs owned in Rhode Island that rely on home or private charging and 81 public stations throughout the state. Given state goals for PEV growth, it is likely there will be a need for investment in the PEV sector. Possible needs include:

- *Energy supply upgrades and procurement*
- *Distribution system upgrades*
- *Interconnection*

who would repurchase an EV. See slide 5 here:

http://www.pevcollaborative.org/sites/all/themes/pev/files/9_Nissan_DPeterson_20150309.pdf

- *Public, private, and shared electric vehicle supply equipment (EVSE) and installation*
- *Public charging station property*
- *Charging station communications, operations and management (physical and IT)*
- *PEV, EVSE, customer, etc. communication with the grid*
- *Marketing (vehicles and charging equipment)*
- *Customer service (end-use and/or station owners and providers)*

Questions for stakeholders regarding investment needs

1) What other investment needs, not listed above, are there in the PEV sector?

The Company believes the Notice Section III.A. is thorough in its identification of investment needs related to EV charging and associated electric service provision, as well as the marketing of vehicles and charging equipment. The Company only wishes to also point out the investment required in electrified vehicles themselves (by consumers and fleet operators) that will be needed to achieve the state's near-term and long-term ZEV and GHG goals.

The necessary scale of future investment in vehicles, and its likely sources (fully private or publicly-incentivized), will depend on the future cost trajectory of electric vehicles and batteries, as well as vehicle buyers' pace of adoption of new EV technologies. In the near-term, public incentives for vehicle purchases will almost certainly be needed to achieve the 2025 ZEV targets, given projections that EVs will not reach "cost parity" before that date.⁶ Beyond 2025, ongoing public incentives for ZEV purchases may also be needed to meet 2035 GHG targets, given the naturally slow pace of fleet turnover. For example, even if *100% of new passenger vehicles sold in 2025 were required to be zero-emission*—instead of today's ZEV program targets which correspond to approximately 15% of new vehicles sold being ZEVs by 2025—it could take another 18 years (2043) before 50% of the passenger fleet were electrified.⁷

The Company suggests this vehicle investment need be considered by RI PUC, DPUC, OER, and other stakeholders, when considering the total costs of transportation electrification.

2) What are the specific and relevant circumstances of Rhode Island's current and future transportation sector that might affect or prioritize these needs? For example, are load and generation growth on the distribution system relevant factors, are the size of the Rhode Island market and the geographical size relevant factors, is the public transportation sector a relevant factor, is the quantity of water-based vehicles a relevant factor, etc.?

Rhode Island's unique size and high level of population density make it well-suited for electric transportation alternatives.⁸ Fully or partially-electric vehicles are likely to meet most drivers' needs for daily commutes within the state, and also may well-serve drivers who commute into neighboring states. However, Rhode Island's size could work against it when considering the level

⁶ Source: <https://about.bnef.com/blog/electric-cars-reach-price-parity-2025/>

⁷ See analysis shown here: <http://www.fleetcarma.com/cars-new-law-timeline/>

⁸ As noted in the ZEV Action Plan draft (October 2015), RI is the second-most densely populated state in the US. <http://www.energy.ri.gov/documents/Transportation/Rhode%20Island%20ZEV%20Action%20Plan.pdf>

of future investment expected in the state by national auto manufacturers, charging operators, or EVSE vendors and service providers.

With these considerations in mind, in order to achieve RI's ambitious goals for electrification and GHG reductions, RI may require a more expanded utility role in EV charging investment and EV market development. The presence of a single utility in Rhode Island is a unique factor that enables close coordination between the utility, regulators, and stakeholders to advance policy priorities. The Company believes the strong history of collaboration in the State around energy efficiency and renewable energy growth will prove helpful for approaching the challenge of transportation electrification.

With respect to the distribution system, the Company is not aware of any unique distribution system conditions that would significantly constrain future potential for electric transportation in RI. To the extent feasible, the Company would expect to target load growth from electrification of transportation to areas on the system with excess capacity.

III.B. UTILITY INVESTMENT IN PEVS

In considering these likely investment needs, a utility could propose a wide range of investment strategies that include some or all of the investments that would both support PEV goals and align with state policy. However, there are a number of sources for PEV investments, including:

- *Market/Private capital*
- *End-user capital*
- *Taxpayer-funded programs*
- *Utility investor capital not included in rate base*
- *Utility investor capital included in rate base*
- *Ratepayer program charges*

Questions for stakeholders regarding utility PEV investments

1) What other source of PEV investment could be tapped in RI?

Given budget constraints faced by the State of RI, the Company expects future State funding sources for EV charging investment may be limited, and also believes that available State funding may prioritize vehicle incentives such as the RI DRIVE rebate⁹, rather than significant EV charging infrastructure investment.

The Company is aware of three primary candidate sources of investment in EV charging infrastructure and market development in RI: national automakers, national charging business operators, and independent site hosts located in RI.

National automakers

To the Company's knowledge, there are two national automakers who are directly developing EV charging infrastructure today: Tesla Motors and Volkswagen (VW). Tesla Motors has developed a large network of charging sites (both Level 2 and DC Fast Charging) for Tesla vehicles only, as a

⁹ According to the RI DRIVE website (accessed 6/28/17): "Effective July 10, 2017, the DRIVE program will be suspended due to the unavailability of program funding." <http://www.drive.ri.gov/>

means of supporting its initial vehicle sales. There are currently 8 Tesla-only DC Fast Charging ports at one site in RI, and 7 Tesla-only Level 2 ports at 4 destination locations (hotels) in RI. VW is in the early stages of planning a 10-year national investment strategy for EV charging that it plans to own and operate through a subsidiary company called Electrify America, under the terms of a national settlement agreement for violations of federal and state emissions regulations by VW diesel vehicles. VW will also be providing \$14 million to be administered by the state of RI for ZEV and emissions reductions purposes as part of that settlement.¹⁰

National charging business operators

At this stage, the Company is only aware of one company, EVgo, which operates a national charging business, focused on DC Fast Charging. There are currently 6 EVgo ports at 3 sites in RI.

Independent site hosts in RI

There are currently approximately 63 Level 2 ports and 5 DC Fast Charging ports in RI that are owned and operated at 24 independent site host locations. These site hosts are public or private property owners who choose to establish EV charging by installing, operating and maintaining EVSE.

2) Are any of these sources best suited for the investment needs and goals described above?

The Company expects the sources described above to make some limited continued investment in EV charging and market development in RI. However, it is uncertain whether they would fund sufficient charging infrastructure and other market development activities required in RI to achieve the state's EV market transformation goals.¹¹

National automakers: Electrify America could establish charging in RI as part of its planned national interstate DC Fast Charging program, but this investment would primarily enable interstate drivers rather than local drivers. Electrify America has chosen the Boston metropolitan area as one of 11 national metro areas for "community charging" focus during its initial phase; it is unlikely this infrastructure would meaningfully serve Rhode Islanders. Several other automakers have communicated to the Company that they do not plan for ongoing infrastructure investment as part of their business strategies, preferring to focus resources on vehicle development and production.

National charging business operators: The Company understands that the economics of a commercial EV charging business are challenging, due to the upfront capital costs required and the uncertainty of utilization. The only national charging business operator, EVgo, has funded its expansion through partnerships with automakers (principally Nissan, Ford, and BMW), rather than by usage fees or memberships paid by drivers. EVgo was recently sold by NRG and is now owned by a small sustainable investment fund.

¹⁰ Up to 15%, or \$2.1 million could be allocated by the State of RI to ZEV fueling infrastructure for passenger cars. The remainder of the \$14 million must be spent on vehicle retrofits or replacements, with a focus on medium-and-heavy duty applications and non-road applications.

¹¹ While it is uncertain exactly how much charging is needed to enable ZEV-levels of EV adoption in RI, analysis of EV charging in Massachusetts suggests that charging availability in that state may need to scale in proportion to the target number of vehicles on the road (i.e. 50-fold) within the next decade. See *Regional Charging Infrastructure for Plug-In Electric Vehicles: A Case Study of Massachusetts*, NREL, January 2017 (page 25)
<http://www.nrel.gov/docs/fy17osti/67436.pdf>

Independent site hosts: The Company considers there to be some capacity for future EV charging development by independent site hosts located in RI, but believes that this development could be limited by the uncertain financial return from EV charging, and by the other, higher priority business objectives of site hosts unrelated to EV charging.

3) Is ratepayer-funded investment aligned with certain goals and not others?

The Company believes that utility customer-funded investment is most appropriate for 1) investments that enhance reliability of the distribution system; and 2) investments with the potential to generate broad system and public benefits that can be shared across customers, particularly when such investments are not being provided already through competitive markets; and 3) investments that support delivery of state policy goals where the utility has a unique strategic role in the achievement of those goals. In the near term, the Company expects these criteria could include a range of investments, including electrical infrastructure and EVSE, that generally supports the State's goals around EV deployment. Utility customer-funded investment is less relevant for goals that might already be adequately served through competitive markets, or where any captured benefits are likely to be private in nature. Finally, rate-payer funded investment for electrification must be evaluated alongside other investment priorities with potential bill-impacts in mind, in order to ensure that bill impacts to customers are manageable.

4) In what ways might ratepayer-funded investment be balanced with other sources?

In the context of charging infrastructure, utility customer-funded investment could be considered as a complement to unregulated private sector sources of investment. The Company expects that potential EV charging investment could be focused on increasing EV charging availability:

- In partnership with other charging business operators (e.g. as a “make-ready approach” to sites where unregulated charging business operators are investing today or plan to invest, in order to help those private sources of investment go farther.)¹²
- With a focus on filling gaps in the marketplace in a manner that ensures widespread access to charging stations and helps to further stimulate private markets (e.g., by encouraging vehicle demand and in doing so improving the potential economics of investment for unregulated charging business operators over the longer term)
- In vehicle and transportation segments where no charging business operators or other providers exist (e.g. heavy duty)
- To encourage large-scale private and public vehicle fleet adoption of PEVs
- In a measured, phased approach subject to continuous evaluation by RI PUC, DPUC, OER, and other stakeholders

The Company anticipates that utility customer-funded investment in the near term could help to stimulate more private investment in EV deployment and infrastructure. Utility customer-funded investment in infrastructure, combined with other program elements, could enable private investment in EV ownership. At higher EV penetration levels, one would expect a more economic

¹² Under a make-ready approach the Company could invest in both the upstream electric distribution equipment and customer-premise equipment required to install EVSE. EVSE selection, ownership and operation could be left to the charging business operator.

business model for unregulated charging business operators, as well as a more robust marketplace for energy management solutions focused on EV-customer (or charging station owners) needs.

5) Is there anything particular about Rhode Island's current and future transportation sector that might limit or augment any of these investment sources?

The Company would refer to its comments in III. A. 2. and III. B. 1. above.

6) How could a utility recover costs and receive compensation for various types of investment strategies (e.g., rate base with return on investment, program charge with performance incentive, etc.)?

In addressing compensation and cost recovery for utility investment in beneficial electrification, it is important to note that under revenue decoupling the Company cannot retain any increase in revenue resulting from higher sales associated with further electrification of end-uses. Therefore, the regulatory framework around utility investments to support electrification will play an important role in aligning interests of the State, Company, customers, and stakeholders. Addressing the evolution of decoupling in the presence of beneficial electrification of transportation and heat will be important in anticipation of this new load growth.

The Company believes that the costs of an EV program consisting of charging infrastructure, rates or rebates to encourage off-peak charging, and customer education and outreach, would best be recovered through a traditional cost of service approach, with a return on the capital portion of the total cost. Targeted performance incentives could complement this approach in order to reward the utility for strong performance in the delivery of key outcomes of importance to the state.

IV. PEV PROGRAM DESIGN

It is important to consider which activities the utility is best suited to manage, which activities should be left to markets and other actors, and which activities, if any, should be shared or bridged between the two. These activities include:

Determining rates and cost recovery:

- *Implementing rates/charges (e.g., time-varying rates, demand charges, fixed charges)¹⁰*
- *Designing program and/or investment cost recovery and related earnings and/or incentives*
- *Allocating program costs and benefits*
- *Ensuring customer, class, and societal equity*

Developing and administering the program:

- *Co-optimizing a PEV program with other programs (e.g., programs related to energy efficiency, system optimization, renewable energy, planning, capital spending, etc.)*
- *Planning the program to interact with markets and consider customer decisions*
- *Establishing benchmarks to guide the expansion and curtailment of program activities*

Determining investment strategies:

- *Considering equipment neutrality and making technology choices*
- *Managing risk and exposure to stranded costs*
- *Managing a future with two-way power flow*

- *Developing a strategy for charger station deployment and coverage (including charger level decisions)*

Planning the system for PEV growth:

- *Integrating PEV growth (and charging needs) with distribution system planning*
- *Managing load growth and optimizing system build out*
- *Optimizing grid management*

Providing other services

- *Managing customer and charging data*
- *Managing and/or lowering soft costs (engineering, administration, lead generation, etc.)*
- *Providing transactive energy services and/or other support for markets*

Questions for stakeholders regarding PEV program design

1) What other activities are important to consider?

Again, RI PUC, DPUC and OER have been thorough in their identification of potential EV program design elements. The Company would only add customer outreach and education to the existing list of activities.

While automakers play the most important role in promoting new vehicle models to consumers, industry observers note that automakers face conflicting incentives, with EV sales (aside from luxury models) providing lower margins compared to other vehicle segments such as sport utility vehicles and trucks. The Company believes automaker promotion efforts may need to be amplified and complemented by others, including the regulated utility. The Company's customer communication channels have universal reach throughout its service territory, and the Company communicates with customers on at least a monthly basis through bills, home energy reports, and less regularly through other channels such as email, social media, billboards, print, and radio media. The Company is a national leader in communicating to customers about energy efficient products and services, and could leverage these capabilities in support of the state's policy goals.

2) Which should be prioritized in a utility proposal, and which should be left to other entities?

Given the policy goal of increasing ZEVs on the road by roughly 50-fold by 2025, the Company might expect to prioritize those activities which are most likely to directly increase EV purchases by its RI customers in the near-term, by increasing charging availability & affordability and by promoting customer awareness and demand for electric vehicles. In addition, the Company believes there may be near-term steps that could be taken to enable off-peak charging & begin preparing for future grid integration of electric vehicles.

Accordingly, the Company might prioritize the following activities identified in the Notice for potential proposals:

- *Determining investment strategies, and especially developing a strategy for charger station deployment and coverage (including charger level decisions)*

- *Developing and administering the program*
- *Determining rates and cost recovery*
- *Planning the system for PEV growth (specifically, optimizing grid management)*

Over the longer-term, the Company could prioritize other components of *Planning the system for EV growth (including Integrating EV growth and charging needs with distribution system planning)*; and *Providing other services*.

3) Of the elements that should be prioritized in a utility proposal, what design options are aligned with policy goals?

The Company views the following policy goals as most relevant to potential utility proposals around EV infrastructure and deployment:

- Ensuring safe, reliable, clean and affordable energy
- Increasing EV deployment in a manner that enhances system efficiency and reduces GHG emissions
- Enhancing customer choice and opportunity

In light of the above policy goals, the Company discusses each of the priorities and potential design elements below.

- *Determining investment strategies, and especially developing a strategy for charger station deployment and coverage (including charger level decisions):* Investment decisions made by the Company around charging infrastructure would likely focus on all three of the goals above – provision of safe, reliable, clean and affordable energy for EV charging, including utility ownership and operation of charging stations in a manner that does not preclude unregulated charging operator investment; strategic siting of charging infrastructure to maximize benefit and minimize cost; and successful customer education and outreach around the infrastructure investments.
- *Developing and administering the program:* Relevant design elements could include a robust customer outreach and education strategy leveraged with marketing from the Company's energy efficiency programs around available vehicle and charging technologies and program offerings; evaluation of interaction with efficiency and other relevant program offerings; optimization of new distribution system upgrades to address multiple system needs where possible; and development of a robust evaluation process to track progress along key metrics such as EV deployment, charging station utilization and load shapes, and the addition of off-peak load.
- *Determining rates and cost recovery.* Potential design elements to advance the goals above could include residential rate design (or rebate program) to encourage off-peak charging at home; determining an equitable allocation of infrastructure and program costs across customers to ensure a shared contribution to broadly share benefits; and performance incentives that would create opportunities for the utility to earn and customers to achieve further benefits around outcomes of importance to the state

The Company would expect to take a measured, phased approach in the expansion of its EV charging investment and market development activities, and would expect any programs to be subject to continuous evaluation by RI PUC, DPUC, OER, and other stakeholders.