

**Rhode Island Public Utilities Commission, Division of Public  
Utilities and Carriers, and 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 Focus on Plug-in Electric Vehicles**

**June 14, 2017**

Following the Beneficial Electrification Technical Session held on May 31, 2017<sup>1</sup>, which focused on Plug-In Electric Vehicles (PEVs), stakeholders are invited to submit comments in response to the discussion and additional questions provided in this document to inform the ongoing inquiry into deployment of beneficial electrification. **Comments should be submitted on or before June 30, 2017 by email to [DPUC.powertransformation@dpuc.ri.gov](mailto:DPUC.powertransformation@dpuc.ri.gov).**

**I. Introduction:**

Rhode Island's power sector is changing. More products and services that allow increasing customer choice and management for their energy use are available at attractive costs, and those costs are projected to decrease in the future. These services not only allow customers to produce energy and export it to the grid for a shared benefit (such as increased reliability, low-cost energy supply, greenhouse gas emissions reduction, etc.), but also allow customers to rely on the grid for energy needs for transportation and heating that, in Rhode Island, have traditionally been served by other fuel delivery systems. Rhode Islanders will therefore increasingly rely on, and provide to, the electric system.

On March 2, 2017, Governor Gina Raimondo asked the Public Utilities Commission (PUC), the Division of Public Utilities and Carriers (DPUC), and the Office of Energy Resources (OER) to develop a package of proposals, by November 1, 2017, to address various questions regarding the changing power sector. In response, the agencies have launched four work streams, collectively known as the Rhode Island Power Sector Transformation, related to the following:

- new utility business models,
- improved distribution system planning,
- grid connectivity and functionality, and
- beneficial electrification of transportation and heating.

The Rhode Island Power Sector Transformation seeks to shape the ongoing transformation of the electric grid to achieve three policy objectives:

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<sup>1</sup> A recording of the Technical Session can be viewed at [www.ustream.tv/channel/WqQyXw296dg](http://www.ustream.tv/channel/WqQyXw296dg).

- **Control the long-term costs of the electric system.** The regulatory framework should promote a broad range of resources to increase the ratio of average to peak electric load, helping to right-size the electric system to Rhode Islanders’ needs.
- **Give customers more energy choices.** The regulatory framework should allow customers to use emerging technologies and commercial arrangements to manage their energy production and use.
- **Build a flexible grid to integrate more clean energy generation.**

This document addresses how the adoption of electric vehicles and efficient electric heating can help optimize our system while maximizing economic and environmental efficiencies. The specific focus is on electric vehicles with the assumption that many of the principles may be extended to electrification of the heating sector.

## **II. Reasons to Inquire about the Role of the Electric Distribution System Utility**

### **II.A. Background on the Role of the Utility**

Electric distribution companies have a role to play as people increasingly choose to use plug-in electric vehicles (PEVs)<sup>2</sup> and efficient electric heating systems<sup>3</sup>. National Grid’s<sup>4</sup> core business in Rhode Island includes providing safe, reliable, and affordable electric service, and these new devices represent new sources of electricity demand.

The use of PEVs and electric heating systems, as well as the economic and policy developments that encourage their use, provide a range of business opportunities for utilities and markets. In many ways, these products are similar to other energy service products that are encouraged by state policy, such as energy efficiency and renewable generation products. These new products are most effectively deployed when the utility’s interests are properly aligned with the state’s policy goals related to the electric distribution system.

As such, National Grid’s business increasingly includes the provisioning of more than just safe, reliable, and affordable electric service. For example, the company’s core business includes procuring electric reliability in a manner that is efficient and cost-effective. Furthermore, the 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.

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<sup>2</sup> Here, “PEV” refers generally to any electric vehicle that can charge by plugging into the electric system, including plug-in hybrid electric vehicles, which are often distinguished in other documents as PHEV.

<sup>3</sup> Here the reference is made with the assumption that “efficient heating” means electric space heating through the use of efficient heat pumps. This assumption, however, is not intended to imply or determine that other electric heating could not also be efficient and/or beneficial in some circumstances.

<sup>4</sup> Throughout, “National Grid” refers to the company’s electric distribution company in Rhode Island, also known as The Narragansett Electric Company.

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?<sup>5</sup>
- 2) Who are the other key actors and what should their respective roles be?

**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 goals<sup>6</sup>:

- 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;

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<sup>5</sup> Rhode Island's Power Sector Transformation work also investigates different system-wide utility business models, new approaches to distribution system planning, and advancing grid connectivity and functionality. More on that work can be found at [www.ripuc.org/utilityinfo/electric/PST\\_home.html](http://www.ripuc.org/utilityinfo/electric/PST_home.html). We ask that respondents keep in mind the overall Power Sector Transformation work when addressing the questions posed in this document.

<sup>6</sup> Docket information, including the Stakeholder Report that unanimously supported these goals for a new electric system, can be accessed at <http://www.ripuc.org/eventsactions/docket/4600page.html>.

- 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 2025<sup>7</sup> 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.<sup>8</sup>

#### Questions for stakeholders regarding goals

- 1) Which of these goals should be prioritized by the utility?
- 2) Which goals should be shared with, or left to, other actors?
- 3) What other goals could be achieved by, and considered in, a utility's proposal to play a role in the adoption of PEVs?
- 4) What metrics might be useful in determining the effectiveness of a utility's PEV business or program?

### **III. Investment in PEVs**

#### **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.<sup>9</sup> 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
- Public, private, and shared electric vehicle supply equipment (EVSE) and installation

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<sup>7</sup> The Draft Plan reference the ZEV MOU that Rhode Island joined with other states in 2013. State of Rhode Island Zero Emission Vehicle Action Plan Draft, October 2015.

<http://www.energy.ri.gov/documents/Transportation/Rhode%20Island%20ZEV%20Action%20Plan.pdf>.

<sup>8</sup> See Scenario 2. Rhode Island Greenhouse Gas Emissions Reduction Plan, RI EC4, December 2016. <http://www.planning.ri.gov/documents/climate/EC4%20GHG%20Emissions%20Reduction%20Plan%20Final%20Draft%202016%2012%2029%20clean.pdf>.

<sup>9</sup> These PEV and station numbers are as of March 2017. Stations include 25 Level 1 outlets, 169 Level 2 outlets, and 19 DC Fast Charge outlets. See [www.energy.ri.gov/Transportation/index.php](http://www.energy.ri.gov/Transportation/index.php) for station data.

- 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?
- 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.?

**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?
- 2) Are any of these sources best suited for the investment needs and goals described above?
- 3) Is ratepayer-funded investment aligned with certain goals and not others?
- 4) In what ways might ratepayer-funded investment be balanced with other sources?
- 5) Is there anything particular about Rhode Island's current and future transportation sector that might limit or augment any of these investment sources?
- 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.)?

**IV. PEV Program Design**

In developing a PEV program aligned with state goals, a utility has many design options for various activities. Activities not included in a utility proposal will be developed by markets or other actors (e.g., customers, government programs, etc.), which may also provide a design aligned with state policy, but which may not be subject to the same regulatory oversight. 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)<sup>10</sup>
- Designing program and/or investment cost recovery and related earnings and/or incentives
- Allocating program costs and benefits<sup>11</sup>
- 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

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<sup>10</sup> Readers should note that the PUC has adopted for guidance in regulating National Grid's electric business a set of rate design principles, unanimously supported by the Stakeholders in Docket No. 4600—Investigation into the Changing Electric Distribution System. <http://www.ripuc.org/eventsactions/docket/4600page.html>.

<sup>11</sup> The PUC has also adopted for guidance in regulating National Grid's electric business a resource value framework (known as the Rhode Island Benefit Cost Framework), unanimously supported by the Stakeholders in Docket No. 4600—Investigation into the Changing Electric Distribution System (see also footnote 5). The PUC also recently approved an update to the Least-Cost Procurement Standards in Docket No. 4684—Rhode Island Energy Efficiency and Resources Management Council Proposed Energy Efficiency Savings Targets, 2018-2020. <http://www.ripuc.org/eventsactions/docket/4684page.html>.

- 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?
  - 2) Which should be prioritized in a utility proposal, and which should be left to other entities?
  - 3) Of the elements that should be prioritized in a utility proposal, what design options are aligned with policy goals?
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Stakeholders are invited to submit their comments and any additional materials relevant to beneficial electrification that they may wish to provide. Comments will be made available to the public on the PUC/DPUC website at [http://www.ripuc.org/utilityinfo/electric/PST\\_home.html](http://www.ripuc.org/utilityinfo/electric/PST_home.html). **Comments should be submitted on or before June 30, 2017 by email to [DPUC.powertransformation@dpuc.ri.gov](mailto:DPUC.powertransformation@dpuc.ri.gov).**