Rhode Island Office of Energy Resources
House Resolution Report
Addressing Regulatory Issues Affecting Electric Vehicles

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LETTER FROM THE COMMISSIONER

To Governor Gina M. Raimondo, Senate President Teresa Paiva Weed, House Speaker Nicholas A. Mattiello, and the Members of the General Assembly:

In 2014, Representative Deborah Ruggiero introduced and the Rhode Island House of Representatives passed House Resolution H-7726 "respectfully requesting the Rhode Island Office of Energy Resources commence an investigation of the issues affecting PEVs with the goals of facilitating PEV adoption, maintaining and enhancing system reliability, minimizing cost, and maximizing environmental benefits." The following report presents the Office of Energy Resources' (OER) findings and recommendations related to regulatory issues affecting electric vehicles. The OER would like to thank Representative Ruggiero for introducing this Resolution.

Transportation is the costliest and most environmentally damaging energy sector in Rhode Island. One third of all energy use can be attributed to the transportation sector, which is heavily dependent on petroleum-based fuels. Annually, $1.4 billion is spent on transportation-related energy costs, consuming 64 trillion BTUs of energy and releasing 4.5 million tons of CO_2 into the atmosphere. Additionally, almost 100% of energy consumption comes from petroleum fuels sourced from outside our state.

In order to reduce demand and increase our energy security, Rhode Island will need to invest in a suite of strategies such as alternative modes of transportation, sustainable development and land-use, and pilot programs to incentivize reduced discretionary driving.

This report provides a summary of the ongoing collaborative work underway to support the increased deployment of alternative clean transportation solutions. The report also highlights opportunities and challenges still to be addressed by policymakers and stakeholders to further enhance Rhode Island's transportation energy sector.

The OER looks forward to working diligently on these tasks with local and regional stakeholders to improve the efficiency and security of transportation on behalf of all Rhode Island residents, businesses, and communities.

Respectfully submitted,

Marion S. Gold, Ph.D.

Commissioner, Rhode Island Office of Energy Resources

GLOSSARY

ARRA – American Recovery and Reinvestment Act

BEV – Battery Electric Vehicle

DEM – Department of Environmental Management

DMV- Department of Motor Vehicles

DOA – Department of Administration

DOT – Department of Transportation

DPUC – Division of Public Utilities and Carriers

EV – Electric Vehicle

EVSE – Electric Vehicle Supply Equipment

GHG – Greenhouse Gas

ISO-NE – ISO New England

MOU – Memorandum of Understanding

NESCAUM – Northeast States for Coordinated Air Use Management

NGRID – National Grid

NREL – National Renewable Energy Laboratory

OER – Office of Energy Resources

OSCC – Ocean State Clean Cities

PEV – Plug-In Electric Vehicle

PHEV – Plug-In Hybrid Electric Vehicle

PUC – Public Utilities Commission

RFP – Request for Proposal

RGGI – Regional Greenhouse Gas Initiative

TCI – Transportation Climate Initiative

TVR – Time Varying Rates

ZEV – Zero Emission Vehicle

REPORT ON PLUG-IN VEHICLES TO THE RHODE ISLAND HOUSE OF REPRESENTATIVES

In February 2014, Representative Deborah Ruggiero introduced House Resolution H7726 requesting the Rhode Island Office of Energy Resources (OER) to investigate and report on issues affecting plug-in electric vehicle (PEV) adoption in the Ocean State, as well as associated implications that include impacts on electricity demand; system reliability; consumer cost; and our environment.

According to the resolution:

> *Increasing the use of electricity for transportation through the large-scale adoption of PEVs represents a significant opportunity to advance important state policy goals to reduce transportation expenditure on imported gasoline and diesel, boost economic activity by keeping more of our energy dollars in state, diversify our transportation fuel networks, reduce greenhouse gas pollution, and reduce criteria air pollutants.*

In consideration of these potentially substantial benefits to our state's economic, energy, and environmental systems, as well as the complexities associated with effectuating those benefits, the House tasked OER with investigating and providing policy recommendations on these and other matters on or before April 15, 2015. This report details OER's ongoing collaborative work to support the increased deployment of alternative clean transportation solutions throughout Rhode Island, and identifies some of the opportunities and challenges still to be addressed by local stakeholders and policymakers.

BACKGROUND AND CONTEXT

Until recently, there has been very little coordinated policy or programmatic activity at the state level to support the deployment of alternative clean energy transportation solutions, such as PEVs. However, in October 2013, Governor Lincoln Chafee signed Rhode Island onto the Multi-State Zero-Emission Vehicle (ZEV)[1] Programs Memorandum of Understanding (MOU). Through this MOU, the Ocean State joined seven other states[2] committed to reducing greenhouse gas emissions (GHG) in the transportation sector (collectively) by placing 3.3 million ZEVs on the road by 2025. To facilitate PEV deployment by local residents and businesses, the state completed the installation of fifty (50) Level II Electric Vehicle Supply Equipment (EVSE) stations utilizing federal American Recovery and Reinvestment Act (ARRA) funds in October 2013.

Rhode Island's advancement of multi-state collaboration and in-state infrastructure were important first steps to foster the increased penetration of ZEVs throughout our transportation system. However, if the state is to realize the full potential of this technology, it must take a comprehensive look at the multitude of interdependencies and complexities associated with robust ZEV deployment.

House Resolution 7726 provides a guide to the many outstanding issues associated with PEV adoption, and outlines many of the complexities which must be addressed by state policymakers and regulators if Rhode Island is going to capture the full range of economic, energy, and environmental benefits derived from these alternate clean transportation solutions. In particular, the Resolution requests OER

Figure 1: EVSE installation, East Matunuck State Beach

guidance on the following issues:

1. *Establish guiding principles to inform decision-making for plug-in electric vehicle issues;*
2. *Establish a schedule for forecasting loads as PEVs are integrated into the system, including the impact of PEVs charging on electric demand and transmission and distribution facilities during periods of peak demand;*
3. *Establish reporting and analysis requirements for utilities over time;*
4. *Identify rate-setting mechanisms, including time-variable rate design for residential customers, to encourage PEV owners to maximize vehicle charging during periods of lower impact on the grid in order to minimize costly investments in distribution infrastructure;*
5. *Explore the implications of allowing for the purchase of stored energy back from electric vehicle owners (vehicle-to-grid) and changes to rates and standards that would facilitate this;*

[1] A "Zero Emission Vehicle" is any vehicle that does not emit tailpipe pollutants from its onboard power source. A BEV or "Battery Electric Vehicle" is classified as a ZEV. PHEVs or "Plug-In Hybrid Electric Vehicles" can emit pollutants from gas generators on board that function when battery power is diminished.

[2] Signatory states include California, Connecticut, Maryland, Massachusetts, New York, Oregon, Rhode Island, and Vermont.

6. *Develop procedures for accelerated utility review and service upgrades related to PEVs;*
7. *Define regulatory treatment for non-utility, third –party transportation electricity providers;*
8. *Establish requirements for consumer education for PEV owners concerning vehicle charging costs, residential charging infrastructure installation, protecting the reliability of the distribution system, and other challenges that new PEV owners may face;*
9. *Determine appropriate policies for competition and market forces;*
10. *Address the issues related to the provision of electricity by non-utilities for delivery of PEV charging, and clarify whether companies that procure electricity at wholesale will be subject to the same set of regulations and requirements as any other entity wishing access to wholesale markets directly; and*
11. *Require coordination, to the maximum practicable, with other New England states to maximize consistency among state policies.*

This report details OER's efforts to address these issues to date as it attempts to develop a comprehensive suite of policies and regulatory initiatives that will foster PEV adoption while maximizing potential economic, energy, and environmental benefits to Ocean State residents and businesses. More specifically, the following pages describe OER's utilization of a collaborative, stakeholder-driven working group that is actively examining these and other complex issues.

RHODE ISLAND'S ZERO EMISSION WORKING GROUP

To investigate the multitude of issues related to wide-scale PEV adoption and EVSEs and, more specifically, the items outlined in House Resolution 7726, the OER has taken steps to collect data and solicit feedback from stakeholders through the recently established Zero Emission Vehicle (ZEV) Working Group. Formed in 2014, the ZEV Working Group is a collaboration between the OER, the Department of Environmental Management (DEM), the Department of Transportation (DOT), and Ocean State Clean Cities (OSCC) to bring together state and quasi-state agencies, private and non-profit companies, auto dealers, and utility providers to discuss the actions necessary to promote the responsible growth of the ZEV market in Rhode Island. The working group has been tasked with exploring issues critical to the efficient and effective deployment of ZEV solutions across the policy, regulatory, and business landscapes.

These issues include, but are not limited to:

- the expansion of electric and fuel cell vehicle infrastructure;
- encouraging the purchase and lease of ZEVs;
- reducing up-front costs;
- removing barriers to deployment; and
- provide recommendations to the state on how to accomplish these initiatives.

The ZEV Working Group is split into three subcommittees, with a Steering Committee overseeing the work and recommendations of the subcommittees. The three subcommittees have the following focus areas: Marketing & Outreach; State, Municipal, Consumer & Business Incentives; and Infrastructure, Planning & Regulatory Issues.

As of the date of this report, the ZEV Working Group has held two meetings (December 19, 2014 and March 3, 2015), with another meeting planned for May 2015. The Subcommittee members have also participated in multiple conference calls to further review the action items described in the Multi-State ZEV Action Plan and, tailor them to best fit Rhode Island's interests and overall policy goals. The goal of the ZEV Working Group is to create a Rhode Island ZEV Action Plan, with actionable items and defined timeframes including continuing to research the complex tasks outlined in House Resolution 7726.

To address the broad-ranging suite of issues included in House Resolution 7726, this report is organized into four overarching sections: Guiding Principles and Regional Coordination; Electric System Infrastructure and Demand Management; Consumer Education; and Third Party Charging Stations.

Current Participants include:

Rhode Island Office of Energy Resources
Rhode Island Department of Transportation
Rhode Island Department of Environmental Management
Drive Electric New England
Vermont Energy Investment Corporation
Rhode Island Statewide Planning
Acadia Center
Ocean State Clean Cities Coalition
Northeast States for Coordinated Air Use Management
National Grid
Connecticut Center for Advanced Technology
Rhode Island Public Utilities Commission
Town of North Smithfield
ChargePoint
Conservation Law Foundation
Massachusetts Hydrogen Coalition
Rhode Island Public Transit Authority
New England Clean Energy Council
ChargePoint, Inc.
Rhode Island Department of Health
Rhode Island Department of Administration
American Lung Association, Northeast
Rhode Island House of Representatives

***Bolded** agencies are part of the Steering Committee.

GUIDING PRINCIPLES AND REGIONAL COORDINATION

The ZEV Working Group brings together key public and private stakeholders to establish recommendations and guidelines to facilitate the growth of zero emission vehicles while maximizing, to the greatest extent possible, associated economic, energy, and environmental benefits. To date, the ZEV Working Group has identified and prioritized a suite of potential actions that could be implemented to create a ZEV-friendly climate in Rhode Island.

House Resolution Issue #1:

"Establishing guiding principles to inform decision-making for plug-in electric vehicle issues"

The ZEV Working Group reviewed many ways to support the ZEV market and selected four (4) guiding principles for decision makers to consider. The principles are:

- identify best practices from other states;
- determine which regulatory measures will have the lowest cost and highest impact;
- maximize policies that have the greatest net benefits to the electrical grid; and
- remove barriers and create a business-friendly atmosphere to promote economic development.

The ZEV Working Group determined that these guiding principles will have the highest impact in creating an open, fair, and secure marketplace for ZEVs.

House Resolution Issue #11:

"Require coordination, to the maximum practicable, with other New England states to maximize consistency among state policies"

In collaboration with other New England states, Rhode Island has been working diligently to coordinate both existing and anticipated policies that seek to expand ZEVs throughout the northeast region. The I-95 corridor is being referred to as the next "EV Highway" – mimicking the "West Coast Green Highway" that will provide electric vehicle infrastructure from California to British Columbia, Canada. Working together with the Northeast States for Coordinated Air Use Management (NESCAUM) and the Georgetown Climate Center's Transportation Climate Initiative (TCI), the state has been actively involved in sharing knowledge and data with other member states. A brief overview of the regional efforts is provided below.

The Transportation Climate Initiative is a "regional collaboration that seeks to develop the clean energy economy and reduce oil dependence and greenhouse gas emissions from the transportation sector."[3] The TCI is unique in that it brings together the state directors from Transportation, Energy and Environmental Management agencies. Rhode Island has been joined on the TCI by Connecticut, Maine, Massachusetts, New Hampshire and Vermont, as well as Delaware, Maryland, New Jersey, New York, and Pennsylvania. Rhode Island's OER, DEM, and DOT have all been active participants, listening and sharing experiences on calls and in

[3] http://www.transportationandclimate.org/

meetings. TCI has conducted numerous outreach and fact-gathering exercises on behalf of the states, applying for grants, and compiling research and lessons learned into reports and guidance documents. The TCI team has been a valuable resource, helping to pull together the collective thoughts of each state to better focus policy and program design.

NESCAUM, a nonprofit association of state environmental agencies, serves as a facilitator for regional ZEV issues and provides technical and policy assistance to the states. In September 2014, NESCAUM's ZEV Multi-State Task Force organized state staff into eight separate multi-state implementation teams with responsibility to execute the eleven high-level action items in the ZEV Multi-State Action Plan.[4] These eight multi-state implementation teams are focused on the following general topics that track the organization of the Action Plan: Incentives; Dealers; Infrastructure Planning; Infrastructure Regulatory; Fleets; Hydrogen; Workplace Charging; and Outreach. Rhode Island serves as the multi-state lead for the Fleets and Workplace Charging implementation teams. As Rhode Island works through the development of its own state action plan, NESCAUM and leaders from other states are contacted to collaborate with the goal of executing programs and policies in a coordinated manner.

In addition to these ongoing efforts, the ZEV Working Group has identified a suite of potential actions that may provide answers to the items identified in House Resolution 7726, as well as form the basis of the upcoming Rhode Island ZEV Action Plan. All of the action items listed below are deemed "high priority" – meaning that these will be the first issues addressed by the group.

Action Item	Leading Role	Supporting Role
Promote priority parking for ZEVs using consistent striping and signage.	RI DOT; Statewide Planning	NESCAUM Multi-State Task Force; OER; DOA

Promoting ZEVs through the use of non-monetary incentives, such as priority parking, is a low cost action that can lead to a boost in ZEV adoption rates. Many EVSE installations are already situated in highly visible, priority-access locations. Staff from Rhode Island's Department of Transportation and Statewide Planning will work with NESCAUM, the OER, and Department of Administration to research and suggest best practices for striping and signage. Additionally, the group will utilize lessons learned from other states. The group hopes to have recommendations completed by Spring 2016.

[4] http://www.nescaum.org/topics/zero-emission-vehicles

Action Item	Leading Role	Supporting Role
Evaluate and seek implementation of effective ZEV incentive programs to inform and guide state and local government policy on the implementation of rebates, sales tax credits, and other programs such as excise tax exemptions, and consider new programs as further incentives for ZEV buyers and ZEV infrastructure installation in the near term.	OER	Multi-State Task Force; TCI; DOA; DEM
Provide incentives for state, municipal, and public university ZEV and EVSE purchases.	OER	DEM; DOT

The Incentives Subcommittee has begun the process of investigating policies and programs implemented by other states within the region, as well as nationwide. The goal is to have recommendations developed by the fall of 2015. Currently, Rhode Island is trailing neighboring states in providing easily accessible, high value incentive programs. This is slowing ZEV adoption as seen in Table 1.

State	# of PEVs
Massachusetts	4,613
Connecticut	2,476
Vermont	840
New Hampshire	761
Maine	696
*Rhode Island	415

Table 1: Data as of January 1, 2015

The OER is taking the lead on these initiatives, and is developing an RFP that will allow state and municipal agencies, as well as private and non-profit entities to apply for grant funding for EVSEs. The OER hopes to launch the program and have initial installations started by Summer of 2015. For more information, visit http://www.energy.ri.gov/rggi/.

Action Item	Leading Role	Supporting Role
Evaluate policies with respect to utility demand charges and interconnect fees for PEV charging.	Steering Committee	PUC/DPUC; Acadia Center; NGRID

For this subtask, the ZEV Steering Committee will work with the Rhode Island Public Utilities Commission (PUC), the Division of Public Utilities and Carriers (DPUC), Acadia Center, and National Grid to evaluate policies in other states and apply them, as appropriate in Rhode Island.

Action Item	Leading Role	Supporting Role
Develop ZEV infrastructure policy for major new developments and include PEV charging requirement criteria in state environmental project reviews.	**OER**	Planning; Building Code Commission; Mass H2

The OER will be working closely with Statewide Planning and Building Code Commission colleagues to develop an infrastructure policy for new developments. The Massachusetts Hydrogen Coalition will also be involved to help determine the necessary requirements for hydrogen infrastructure. An example of an action under consideration would be to require all new parking structures to pre-wire and trench to provide easier and more cost effective installation for future expansion of EVSEs.

Action Item	Leading Role	Supporting Role
Evaluate policies with respect to utility demand charges and interconnect fees for PEV charging.	**Steering Committee**	PUC/DPUC; Acadia Center; NGRID

As previously mentioned, the OER is developing a program utilizing Regional Greenhouse Gas Initiative (RGGI) funds to install level II charging infrastructure at state, municipal, private, and non-profit agencies. The program will help facilitate the expansion of workplace charging programs. Opportunities to charge electric vehicles while at work is viewed as a high priority action item to support the growth of EV sales.

House Resolution Issue #9:

"Determine appropriate policies for competition and market forces"

As more electric vehicles and charging infrastructure come online, the need to ensure a competitive market structure for these technologies will be more pronounced. In order to keep competition high and drive the market, the state will need to keep barriers to a minimum. Examples of barriers to charging stations include interoperability, restrictive memberships and fees, and EVSEs that are incompatible with certain electric vehicle models.

Action Item	Leading Role	Supporting Role
Strive to ensure that all appropriate charging/fueling installations receiving public funding be open to the public and accessible to all PEV/FCEV drivers.	**OER**	DOT; NGRID; EVSE Providers

One area the state can focus its attention on is to ensure that publically-funded EVSEs remain open and available to the public. Many of the fifty EVSEs installed utilizing ARRA funds were set up this way, remaining open and available to the public at no cost. This was done to help incentivize the public to purchase PEVs and reduce range anxiety. Stations were geographically dispersed throughout much of the state, with clusters of stations residing in high-impact, urban areas. The OER, DOT, and National Grid, along with EVSE providers will look to continue this effort with future funding opportunities.

ELECTRIC SYSTEM INFRASTRUCTURE AND DEMAND MANAGEMENT

Electric vehicles offer a wide variety of benefits, but can also present some risk of impacts to our local and regional electricity systems. These risks are highest if the new electricity demand from EVs is completely unmanaged. However, there are a wide variety of policy options available to manage demand and minimize the need for new infrastructure. Utilities will need to evaluate and project the potential impact on the system. A related challenge will be to determine how to minimize impacts of vehicle charging on grid operation, an effort that could be synchronized with other grid modernization efforts, In the long run, EVs can be treated as a resource for optimizing the system, potentially preventing the need for new investment in distribution, transmission, and generation capacity by acting as a dispatchable storage device in many circumstances. (As a result, infrastructure planning and demand management are two sides of the same coin). Good policy decisions will involve calculating reasonable estimates of electricity demand impacts without demand management, assessing the costs and benefits of various demand management policies, and then implementing the appropriate programs.

Grid Planning, Upgrades, Reporting and Analysis

House Resolution Issue #2:

"Establish a schedule for forecasting loads as PEVs are integrated into the system, including the impact of PEVs charging on electric demand and transmission and distribution facilities during periods of peak demand"

Utilities and other entities, notably ISO-NE, should plan on the basis of the best available information, including projections about new electricity demand from EVs. However, most information on EVs is only available at an aggregate level. This information can be used for many purposes, but it is of limited use for distribution system planning, where investments are often made on a circuit by circuit basis. More information is needed to plan properly for distribution investments because it is possible, or even likely, that EV purchases will not be distributed randomly across Rhode Island.

The ZEV Working Group has identified the following actions related to forecasting electrical loads and the impact PEVs will have on demand and transmission:

Action Item	Leading Role	Supporting Role
Evaluate policies with respect to utility demand charges and interconnect fees for PEV charging.	**Steering Committee**	PUC/DPUC; Acadia Center; NGRID
Design utility demand charges and interconnect fees for PEV charging.	**OER**	PUC/DPUC; Acadia Center; NGRID

The Steering Committee will be the primary lead in evaluating and designing policies related to utility demand charges and interconnection fees. With members of the PUC, DPUC, and National Grid already actively participating in the working group, we will look to move these actions forward in a timely manner.

House Resolution Issue #3:

"Establish reporting and analysis requirements for utilities over time."

As more granular data becomes available, more policy options may be feasible. For example, the OER is currently working with the Department of Motor Vehicles (DMV) to identify the zip codes of registered vehicles to better plan for future charging infrastructure needs. Similarly, reporting of the installation of high power draw EV charging infrastructure to the utility may be required. This would better allow a utility to identify possible upgrade needs but would also allow them to better target customers for either EV-specific or more general demand management programs. The action item identified below will research these concerns.

Action Item	Leading Role	Supporting Role
Create appropriate utility notification requirements for EV purchasers and EVSE installers to allow for proper planning and prevent problems with the distribution grid.	OER	Acadia Center; NGRID; EVSE Providers

The OER has been working with the DMV to identify the number of Battery Electric Vehicles (BEVs) and Plug-In Hybrids (PHEVs) currently registered in Rhode Island. This data will be shared with NESCAUM, who will be launching a website that will collectively track member states progress towards meeting the 3.3 million ZEV goal by 2025. The action item below, identified by the ZEV Working Group, outlines this.

Action Item	Leading Role	Supporting Role
Report annually on ZEV MOU state landing page: (by community) · The number of ZEVs registered in our states. · The number of public fueling stations in our states. · State fleet ZEV acquisitions.	OER	Multi-State Task Force; Ocean State Clean Cities; DMV

House Resolution Issue #6:

"Develop procedures for accelerated utility review and service upgrades related to PEVs."

In general, projections of electric vehicle demand – both peak and total energy usage – should be incorporated into broader grid modernization planning. This will involve many different steps, including forecasts to identify upgrade needs, determination of a combination of infrastructure investments and customer-side resources to meet any upgrade need, and backwards-looking reporting and analysis about the chosen mix of resources to meet the need. State agencies in the ZEV Working Group will be key parts of broader grid modernization processes. Through the action item below, led by the Steering Committee, the working group will look to develop these model procedures and work alongside the utilities to ensure they are implemented.

Action Item	Leading Role	Supporting Role
Explore the role utilities, energy service companies, and other public or private entities can play in the deployment of ZEV fueling infrastructure, particularly with respect to fast charging to facilitate long distance travel and charging for those without dedicated home charging.	Steering Committee	Acadia Center; NGRID; EVSE Providers; DENEW; PUC

Policies to Manage Electric Vehicle Demand

House Resolution Issue #4:

"Identify rate-setting mechanisms, including time-variable rate design for residential customers, to encourage PEV owners to maximize vehicle charging during periods of lower impact on the grid in order to minimize costly investments in distribution infrastructure"

There are numerous options for programs to minimize the need for new distribution infrastructure due to additional load from electric vehicles. First, there are indirect options like electricity rate mechanisms. Certain types of electricity rates, such as time-varying rates (TVR), provide economic incentives for customers to shift their electricity consumption from high cost times to low cost times.

Introducing new types of metering infrastructure may allow many more options for time-varying rates, albeit at a cost. More granular TVR allows electricity pricing that is higher at more narrowly defined peak hours. Reductions in peak electricity demand due to these pricing structures can lead to lower system costs that justify the additional expenditures on metering. There are a wide variety of time-varying rate structures. Simple time-of-use rates, with higher prices during the day and lower prices at night, are particularly of interest for residential electric vehicle owners. In addition to providing economic incentives to minimize the need for new infrastructure, the availability of low cost charging at night provides lower fuel costs for residential EV owners – another reason to switch from an internal combustion vehicle to an electric vehicle.

For EV owners, time-varying rate options can apply to all of a customer's electricity usage or can be applied selectively to the electricity used for charging an electric vehicle. If voluntary, TVR options that only apply to EV charging may lead to higher adoption rates because it avoids the need for a residential customer to consider whether their overall electricity consumption patterns could benefit from TVR. There are other rate mechanisms that provide incentives to avoid peak hours. For example, demand charges that are based on system peaks can provide significant incentives to avoid consumption at on-peak times. These options also require expenditures for more advanced types of metering as well.

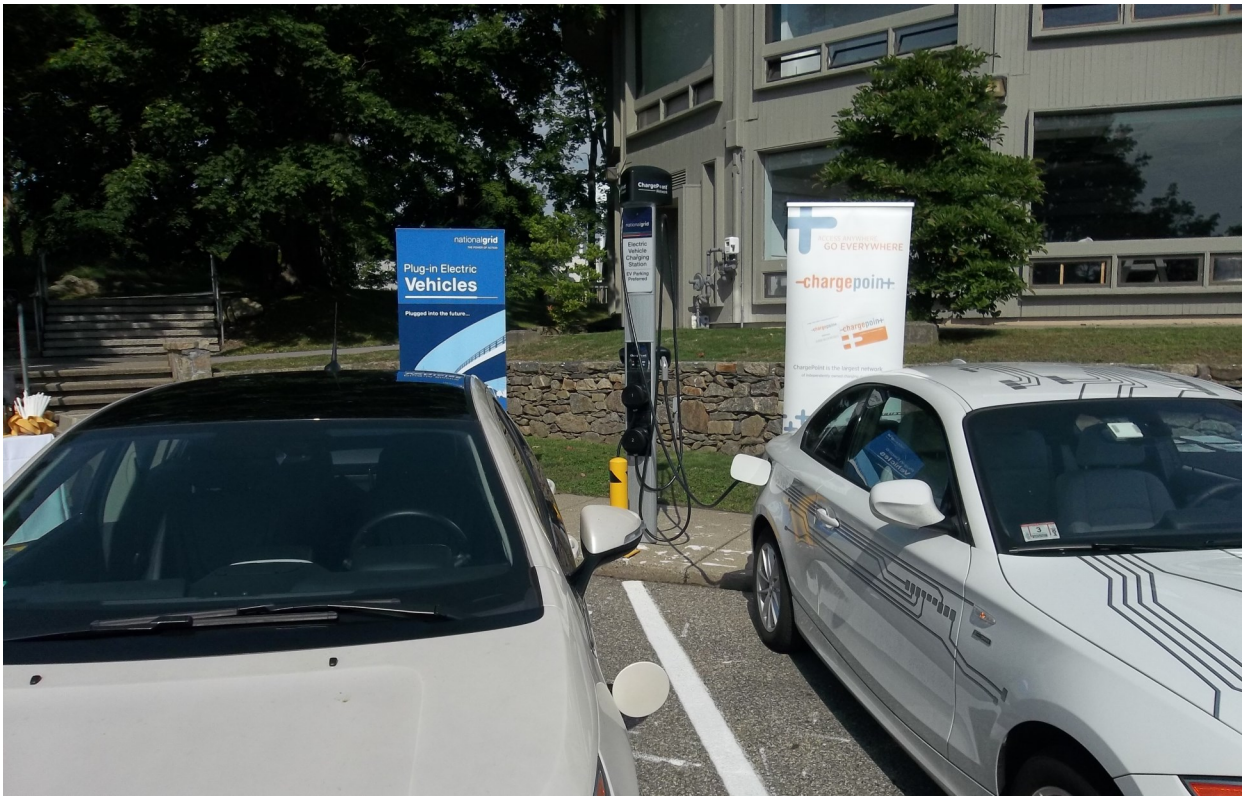
Action Item	Leading Role	Supporting Role
Evaluate residential and business electric utility rate structures or other mechanisms, consistent with statutory authority, that provide lower-cost electricity for off-peak charging.	**Steering Committee; PUC/DPUC**	NGRID

Programs beyond just rate design offer more direct ways to control the impact of EV charging on state and regional infrastructure. The simplest versions of these programs can be referred to as "managed charging," either stopping or slowing the rate of charge at peak times. Like the many types of TVR, there are many different types of managed charging, ranging from simple to complex. These programs lead to a loss of convenience by EV owners because of limits on how they can charge their vehicle and, consequently, their driving patterns. This loss of convenience can be minimized by allowing the customer to override the managed charging controls but this feature could lead to lower benefits to the electric system. Managed charging programs typically require new expenditures for special equipment.

House Resolution Issue #5:

"Explore the implications of allowing for the purchase of stored energy back from electric vehicle owners (vehicle-to-grid) and changes to rates and standards that would facilitate this"

In the future, advanced battery and control technology could allow electric vehicles to be used as a more refined resource for the electric system. As electric and hydrogen vehicles become more mainstream in our transportation sector, they will offer a unique ability that current gasoline vehicles cannot: the capability to store and recycle energy back to the grid. This ability is due in large part to the battery systems found on both types of vehicles. In the aggregate, this could allow major reductions in system peaks that drive distribution, transmission and capacity costs. In addition, energy exports or variations in charging levels could help manage the frequency of the grid or provide other local ancillary services. The technologies and standards that would enable these programs are still in their infancy. The OER and ZEV working group will monitor progress being made nationally on these issues and further study will be warranted.



Future vehicle-to-grid technology could allow EVs to be used as a more refined resource for our electrical system.

CONSUMER EDUCATION

House Resolution Issue #8:

"Establish requirements for consumer education for PEV owners concerning vehicle charging costs, residential charging infrastructure installation, protecting the reliability of the distribution system, and other challenges that new PEV owners may face "

The OER is in the process of developing an updated website which will include a transportation energy page devoted to alternatively-fueled vehicles. The website will have insightful resources and links to current information on ZEVs, charging station infrastructure, and other useful tools. The OER will use the website as a repository for data collection efforts that are underway, such as the number of EVSEs available within the state and their location, and how many PEVs are registered in Rhode Island.

This work will coincide with the new website and online guides that NESCAUM is developing for the eight northeastern states. Additionally, the U.S. Department of Energy's Alternative Fuels Data Center (www.afdc.energy.gov) has been and continues to be featured on the OER's website, and is a valuable tool for those looking for more information on alternative fueled vehicles. Through our Marketing and Outreach subcommittee, we plan to host several events in 2015 devoted to consumer and business ZEV education.

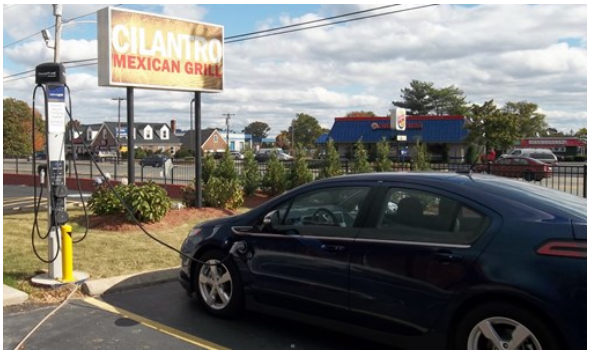
Members of this subcommittee are currently organizing a Workplace Charging Challenge event at a Rhode Island-based business (to be determined) in

June 2015. This event will bring local private and public organizations together to learn about the benefits of workplace charging. In September 2015, the OER and Ocean State Clean Cities will host the second annual National Drive Electric Week event at Garden City Center, Cranston. The focus of the event is to bring together current and prospective PEV owners, dealers, and charging station providers to share experiences and answer questions. Dealers on hand will offer attendees the ability to see the vehicles up close and answer any questions on pricing, availability, and performance that the public may have.

Last year's event was a tremendous success, with more than 150 people and 37 electric vehicles in attendance. It was the largest Drive Electric Week event in the Northeast, featuring speeches from Senators Jack Reed and Sheldon Whitehouse, Congressmen Jim Langevin and David Cicilline, and Cranston Mayor Allan Fung. OER Commissioner Marion Gold announced the formation of the ZEV Working Group, as well as the RGGI funding for EVSE installations. DMV Administrator Anthony Silva also announced the new Rhode Island Electric Vehicle license plate, shown above.

THIRD PARTY CHARDGING STATIONS

Third party charging providers are defined as charging providers that are not owned by an entity regulated as a public utility, or those owned by vehicle owners themselves. Examples of these types of installations include level II workplace charging stations operated by employers and public chargers at retail facilities. These stations play a vital role in creating the necessary infrastructure needed to support increased PEV adoption, and offer unique opportunities that our current petroleum-based transportation sector cannot. At the same time, it raises important questions that will need to be addressed in order to meet our transportation goals.



Public EVSE station, Cilantro Mexican Grill, Warwick RI

House Resolution Issue #7:

"Define regulatory treatment for non-utility, third –party transportation electricity providers"

Working with members of the Infrastructure, Planning, and Regulatory Issues subcommittee, the OER plans to write a formal letter to petition the Rhode Island Public Utilities Commission (PUC) to open a docket to address the regulatory treatment for non-utility, third-party transportation electricity providers. Many states have already taken action either through a public utility commission ruling or directly through legislation. The public utility commissions in both California and Oregon have already made determinations that charging station providers are not public utilities. Other jurisdictions that have come to the same conclusion, but enacted legislation to exempt station owner-operators, include Colorado, Florida, Hawaii, Illinois, Maryland, Minnesota, Washington, Virginia, and Washington D.C. A ruling in Rhode Island would help clear the way for those who may be considering an EVSE for their business, but are concerned that they would have to deal with heavy regulatory requirements.

Action Item	Leading Role	Supporting Role
Address the issues related to the provision of electricity by non-utilities for delivery of PEV charging, and clarify whether companies that procure electricity at wholesale will be subject to the same set of regulations and requirements as any other entity wishing access to wholesale markets directly	**Steering Committee**	OER; Acadia Center; EVSE Providers

The Steering Committee, along with OER, Acadia Center, and EVSE providers, will need to work collaboratively to define and regulate these third-party hosts. The first step of petitioning the PUC to issue a ruling will be done within the next couple months, with the hope of a ruling sometime around winter 2015.

House Resolution Issue #10:

"Address the issues related to the provision of electricity by non-utilities for delivery of PEV charging, and clarify whether companies that procure electricity at wholesale will be subject to the same set of regulations and requirements as any other entity wishing access to wholesale markets directly "

The ZEV Working Group will be exploring the treatment of third-party transportation electricity providers. Once a determination is made by the PUC regarding regulatory treatment, a number of additional measures will be needed to ensure the proper regulation of these stations. In general, third-party charging should be treated like all other electricity customers. Any PUC decision or subsequent statutory amendments should take care to avoid unintended consequences, such as opening loopholes in the Renewable Energy Standard or other important electric sector programs.

Consumer protection measures will also be addressed. Similar to gas stations and other infrastructure used to provide services for a fee to the public, measurement accuracy and price disclosure will be paramount in ensuring proper regulation. The ZEV Working Group will work with personnel from the Department of Labor and Trainings Weights and Measures division to address these concerns. Ensuring proper delivery amounts to consumers will be essential to providing a fair and open market. Additionally, other open access policies will need to be implemented. Measures that will be further investigated include:

- Eliminating membership-only EVSEs;
- Allowing multiple forms of payment, such as credit card or mobile technology; and
- Disclosing station characteristics and location with the National Renewable Energy Laboratory.