

Illinois Commerce Commission Initiative on Plug-In Electric Vehicles

Report and Recommendations March, 2012

Executive Summary

Background

The Illinois Commerce Commission Initiative on Plug-In Electric Vehicles (Initiative) was formed in September, 2010 to ensure that the Commission is proactive in assessing the potential impacts of plug-in electric vehicles (PEVs) on the State's electric system and to help guide the Commission in understanding and beginning to consider future regulatory issues necessary to accommodate this new mode of transportation.

To begin the process, the Commission requested that Ameren, ComEd, and MidAmerican prepare Initial Assessments of PEV-related issues. The Commission then invited stakeholders to provide comments on those Assessments and held a Policy Committee meeting for stakeholders to discuss their views with the Commission. In the summer of 2011 the Commission asked the utilities and stakeholders to provide comments on an additional set of questions, and held a follow-up Policy Committee meeting.¹

The input the Commission received from the Assessments, comments, and Policy Committee meetings led to the formation of five stakeholder-led Workshops in the fall of 2011. The specific work done by the Workshops is outlined in the body of this report. Workshop #1 focused its efforts on the Commission's Integrated Distribution Company (IDC) rules; Workshop #2 collaborated to discuss the best customer education and outreach plans for PEV purchasers; Workshop #3 was dedicated to assessing potential reliability impacts of PEV usage; Workshop #4 studied the best rate options for PEV users; and Workshop #5 explored the legal status of public charging stations. The Commission asked Workshop participants to address several specific areas that the Commission noted required further exploration. Among those focus areas were the following: the legal status of public charging stations, electric rate options, reliability impacts, education, and the potential need for revisions to the rules governing the utility marketing of PEV-related programs. Those Workshops reached a variety of conclusions that largely reaffirmed existing policies and practices in Illinois. Based on this collaborative process the Workshop participants also offered several specific recommendations to the Commission on these issues.

¹ The Initial Assessments, comments, Policy Committee transcripts, and other documents of the Initiative can be located at: www.icc.illinois.gov/Electricity/PEV.aspx.

Workshop Recommendations

All five Workshops provided the Commission with reports which are attached as appendices to this report. However, there were three main recommendations that the Commission had to consider. Those three recommendations came from Workshops 2 and 5. The Commission has considered and adopts the following ICC Workshop recommendations:

- 1. Workshop #2 (Education/Customer Outreach):** The Commission should continue its active participation in the Electric Vehicle Advisory Council.

The Commission plans to continue to participate in the Electric Vehicle Advisory Council.

- 2. Workshop #2 (Education/Customer Outreach):** Consumer education and interest will be positively impacted by a reference to PEVs on the Commission's Plug In Illinois Website.

The Commission's Office of Retail Market Development maintains the Plug In Illinois website that provides information about retail supply options for residential customers and it is planning to incorporate information relevant to PEV owners. The Commission deems this recommendation to have merit and approves its inclusion on the ICC website. The Commission is convinced that such timely information will further the knowledge base of Illinois consumers regarding the status of PEVs in our state.

- 3. Workshop #5 (Legal Status of Public Charging Stations):** The Commission [should] coordinate with the Illinois Electric Vehicle Advisory Council to explore recommending new state legislation, promoting uniformity of policies and laws assuring the continued development of an accessible and convenient Electric Vehicle Equipment and Service Provider charging network throughout Illinois supported by open and competitive markets.

The Commission will review and consider support for legislation that clarifies the legal status of public charging stations. However, support is dependent on the specific provisions and requirements of any such proposal. While the Commission will coordinate where appropriate with the EVAC, as an independent State agency the Commission has its own legislative review process.

PEV Charging Rates

Many other States have focused their PEV policy efforts on the introduction of special time-variant rates for PEV owners that are intended to facilitate off-peak charging. The Rates Workshop reaffirmed that customers of ComEd and Ameren already have a real-time pricing option that serves this role and that MidAmerican offers a time-of-use rate.

There is also evidence from other States that Alternative Retail Electric Suppliers (ARES or RES) will offer time-variant rates as smart meters become available. The combination of existing utility-offered rates, and the rapidly growing competitive retail market for electricity, places Illinois in a strong position in terms of providing the correct price signals to PEV owners for their vehicle charging needs.

Electric Vehicle Advisory Council

After the commencement of the Initiative, Public Act 97-0089 was enacted that established the Electric Vehicle Advisory Council (EVAC). The Executive Director of the ICC was designated as one of the members of the Council. The EVAC issued a report with recommendations to the Governor and General Assembly in December, 2011. Several recommendations involve the ICC and are discussed in this report.

Conclusion

The PEV Initiative has largely reaffirmed that many existing policies in Illinois are well suited for the introduction of PEVs, and that the regulatory issues that need to be addressed are either narrowly focused, or longer term in nature.

The Commission appreciates all the hard work that stakeholders have put into participating in the various phases of the Initiative. Their efforts have provided the Commission with valuable information and a clear path on which to proceed. The Initiative will periodically reconvene to explore emerging and developing PEV policy issues germane to the Commission's regulatory authority.

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Initiative on Plug-In Electric Vehicles**

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Table of Contents

Formation of the Initiative.....	1
Initial Assessments and Comments	1
Follow-up Request for Additional Information.....	3
Summary of Assessments and Key Issues of Discussion.....	4
<i>Legal Status of Public Charging Stations</i>	5
<i>Adoption Rates</i>	5
<i>Impact of Dynamic Pricing/Real-time Pricing Rates</i>	6
<i>Local Distribution System Impacts</i>	7
<i>Other Issues</i>	8
Formation of Stakeholder-led Workshops.....	8
Workshop Conclusions and Recommendations.....	9
<i>Workshop #1: Defining the scope of what waivers (if any) to the Integrated Distribution Company (IDC) rules would facilitate utilities' role in facilitating the adoption of PEVs and related services</i>	9
<i>Workshop #2: Developing customer education and outreach plans</i>	10
<i>Workshop #3: Modeling and assessment of potential localized reliability impacts</i>	11
<i>Workshop #4: Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization, and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging</i>	12
<i>Workshop #5: Developing a petition to the Commission to clarify the legal status of public charging stations</i>	13
Electric Vehicle Advisory Council	14
<i>EVAC Recommendations</i>	15
Conclusion.....	17

Appendices

Workshop Reports

1. Defining the scope of what waivers (if any) to the Integrated Distribution Company (IDC) rules would facilitate utilities' role in facilitating the adoption of PEVs and related services
2. Developing customer education and outreach plans
3. Modeling and assessment of potential localized reliability impacts
4. Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization, and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging
5. Developing a petition to the Commission to clarify the legal status of public charging stations

Illinois Commerce Commission Initiative on Plug-In Electric Vehicles

Report and Recommendations March, 2012

Formation of the Initiative

The Illinois Commerce Commission (ICC or Commission) Initiative on Plug-In Electric Vehicles (Initiative) was formed in September, 2010 with the intention of helping the Commission be proactive in assessing the potential impacts of plug-in electric vehicles (PEVs) on the State's electric system, and to help guide the Commission in understanding and beginning to consider future regulatory issues necessary to accommodate this new era of transportation. The Initiative is co-chaired by Chairman Doug Scott¹ and Commissioner Erin O'Connell-Diaz.

When the Initiative was first established its goals/objectives were to:

- Determine the impact of the initial deployment of PEVs on the State's electric grid
- Determine potential/future regulatory considerations necessary to accommodate PEVs
- Establish consistent Statewide policies for managing PEV infrastructure and use
- Generate accelerated interest by auto manufacturers for introduction of PEVs into Illinois markets
- Craft consumer education and outreach information components

It was anticipated that the Initiative would:

- Develop Statewide standards/best practices for integration of PEVs into the electric grid
- Develop a Statewide policy framework for adoption of PEVs
- Initiate an infrastructure improvements strategy to maintain safe and reliable system operation
- Increase PEV auto manufacturer interest for launching PEV roll-out in Illinois
- Improve customer education and awareness of this new green mode of transportation

Initial Assessments and Comments

The Initiative has been conducted through a series of inquiries from the Commission and responses from utilities and stakeholders. The first was a request to Ameren Illinois

¹ In March, 2011 Chairman Scott replaced Acting Chairman Manny Flores who was initially the Co-Chair of the Initiative.

Company (Ameren), Commonwealth Edison Company (ComEd), and MidAmerican Energy Company (MidAmerican) (collectively, the utilities) for Initial Assessments. That request was issued in September, 2010. The request specified an interest in early (e.g., next two years) action items on the following topics:

1. Distribution system impacts
2. Rate options
3. Public charging infrastructure deployment
4. Clear adequate information to obtain necessary utility service and third-party equipment for in-home/business charging

The utilities were asked to provide specific responses, to the extent possible from existing data and information, on the following subjects:

1. A discussion of the Commission's jurisdiction and role over the development of electric vehicle charging infrastructure and the provision of electric vehicle charging services, including a discussion of the legal status of the entities that offer such services;
2. A projection of the number, location and timing of customers adding electric vehicles to the utility's system based either on surveys of the utility's customers or other available data;
3. An analysis of any distribution system upgrades necessary to ensure that the distribution system is able to accommodate the anticipated number of electric vehicles without disruption in service for any customer;
4. An analysis and assessment of dynamic, real-time or time-of-use pricing to enable the use of plug-in electric drive vehicles to contribute to meeting peak-load demand reduction, ancillary service power needs, energy efficiency and/or other programs to minimize the need for existing infrastructure upgrades;
5. An analysis of any other equipment and technology, other than rates, that may encourage owners of electric vehicles to charge in a manner that avoids detrimental impacts on the distribution system, transmission system and bulk power system and assists in the integration of renewable resources;
6. An analysis of the need for separate metering to track usage of electric vehicles;
7. An assessment of public and private electric charging infrastructure necessary to support deployment of electric and hybrid electric vehicles;
8. A description of any regulatory barriers that might create unnecessary delay for consumers for installation of at-home charging infrastructure;
9. A description of the utility's system-wide fuel profile, including the proportion of electricity generated or purchased from coal, natural gas, and renewable sources during peak and off peak periods and by season;

10. A discussion of how the utility plans to comply with any regulations that may be issued by the Federal Energy Regulatory Commission pursuant to Section 1305(d) of the Energy Independence and Security Act of 2007, to the extent such regulations are known, concerning the protocols and standards for integrating plug-in electric vehicles into an electrical distribution system, including Smart Grid systems and devices as described in Title XIII of the Energy Independence and Security Act of 2007, in 2011 and thereafter; and
11. A summary of organizations consulted on the development of each plan, including appropriate environmental, civic and consumer organizations, as well as any existing organizations within each utility's service territory that advocate for or represent an interest in electric vehicles.

The Initial Assessments were received by the Initiative in December, 2010. The Commission then requested interested parties to provide comments on the Initial Assessments by the end of January, 2011.² Comments were received from the BlueStar Energy Solutions (BlueStar), the Citizens Utility Board (CUB), the City of Chicago, CNT Energy/I-Go, the Environmental Law and Policy Center (ELPC), the Galvin Electricity Initiative, the Illinois Competitive Energy Association (ICEA), and the Natural Resources Defense Council (NRDC). The full Commission subsequently held a Policy Committee meeting on March 9, 2011 to discuss the Initial Assessments and comments. BlueStar, the City of Chicago, CNT Energy/I-GO, CUB, ELPC, ICC Staff, ICEA, NRDC, and the utilities participated in the meeting.

Follow-up Request for Additional Information

In response to the information gathered in this first phase of the Initiative and at the March 9th Policy Committee meeting, in July, 2011 the Initiative issued a more focused request for information regarding the following specific issues:

- The appropriate regulatory paradigm (if any) for private and public charging stations.
- In order to facilitate the charging of electric vehicles that provides the maximum societal, environmental and economic benefits, what modifications (if any) should be made to existing utility rates? In addition, what metering options and charges should be considered while taking into account the existence of competitive retail suppliers?
- What cost causation and rate design modifications will be required to handle distribution upgrades for increased penetration of higher voltage at-home charging?

² The Initial Assessments and subsequent comments referenced in this report can be located at: www.icc.illinois.gov/Electricity/PEV.aspx.

- Which costs, if any, should be socialized and why (rationale, benefits, etc.)? Assuming there are costs to be socialized, what are the proper methods for such allocation?

Comments were received from Carbon Day, the City of Chicago, CNT Energy/I-Go, CUB, the Electric Vehicle Service and Equipment Provider Coalition, ELPC, Environmental Defense Fund (EDF), ICEA, Illinois Science and Technology Coalition (ISTC), NRDC, and the utilities. A Policy Committee meeting was then held on August 23, 2011 to further discuss these issues. Carbon Day, the City of Chicago, CNT Energy/I-Go, CUB, EDF, ELPC, ICEA, the Illinois Department of Commerce and Economic Opportunity (DCEO), ISTC, NRDC, and the utilities participated in that meeting.

Summary of Assessments and Key Issues of Discussion

The Initial Assessments prepared by Ameren, ComEd, and MidAmerican covered the wide range of topics requested by the Initiative. Of particular note were the analysis of the legal/jurisdictional issues for public charging stations, forecasts of adoption rates for PEVs in each utility's service territory, analysis of the impact of dynamic/real-time pricing structures, and the potential impact of PEV introduction on local distribution systems. While the Initial Assessments and subsequent comments and discussions at Policy Committee meetings covered additional issues, these primary issues will be discussed here in more detail.

Notably, the Initial Assessments were the first coordinated analyses of PEV issues in Illinois and provided a baseline of data that was previously unavailable to the public. The Initial Assessments from the utilities and the subsequent follow-up comments from stakeholders contained a high degree of overlap of opinions on many issues. This report contains a synthesis of the opinions in the Initial Assessments and subsequent rounds of comments that provide an overview of the activities of the Initiative. The Initial Assessments, stakeholder comments and transcripts of Policy Committee meetings are all available on the Initiative's website, www.icc.illinois.gov/Electricity/PEV.aspx.

In general, stakeholders expressed interest in the potential positive benefits of PEVs. While there were a range of opinions on the rate of adoption of PEVs, differing levels of interest in the coordination of PEVs with renewable energy sources and demand response programs, and some differing views on rate options and related issues for PEVs, there were no stakeholders who expressed opposition to the formation of policies to encourage the broader adoption of PEVs. No stakeholder expressed an opinion that the addition of PEVs to the electric grid would create insurmountable problems or that it was not a good public policy goal.

Legal Status of Public Charging Stations

All three utilities provided extensive discussion regarding their views on what regulatory framework should cover public charging stations. However, neither the utilities nor other stakeholders could state with absolute certainty what that framework was. As MidAmerican cautioned, "...current statutes could be interpreted to require either public utility or alternative retail electric service provider status for the providers of public charging services."³ While a variety of critiques to this interpretation were offered, the lack of clarity and certainty on this issue existed throughout the various rounds of comments and discussion during the Initiative. After much consideration and discussion the overall consensus of the parties leaned towards an outcome that the Commission not regulate public charging stations. Ultimately the resolution of this issue, be it through Commission action, or changes to the Illinois Public Utilities Act,⁴ was an issue that the Initiative deemed appropriate to be addressed in a Workshop format in order to develop it into a more detailed recommendation.

Adoption Rates

A projection of adoption rates for a new technology is a difficult task and each utility reviewed a variety of public sources (e.g., reports from national firms and organizations such as KEMA, IDC, EPRI, and EEI) as well as internal research to develop estimates. Both Ameren and MidAmerican cautioned that just prorating national forecasts to their service territories was problematic due to issues of regional variation that led them to conclude that their service territories would have adoption rates lower than national averages. MidAmerican estimated a five year adoption rate of 200 vehicles with an added peak load of 400 kW.⁵ Ameren estimated a range of 42,326 to 64,130 PEVs by 2015 with an added peak load of 76 to 115 MW. ComEd provided an analysis with a wider range due to more variables factored in. Based on an extrapolation of U.S. PEV sales projections, ComEd estimated that by 2020 a range from 32,000 to 300,000 PEVs on the road in its service territory was possible. Subsequently, in the Reliability Workshop a new estimate of PEV adoption rates in Illinois was developed which was based on more recently issued national forecasts that were developed by EPRI. That estimate was for somewhere between 110,000 and 415,000 PEVs in Illinois by 2020. This broad range indicates an ongoing uncertainty when forecasting PEV adoption rates.

Stakeholders appeared to have no significant concerns with these forecasts and discussion of these forecasts after the Initial Assessments was limited.

³ MidAmerican Initial Assessment, p. 2.

⁴ 220 ILCS 5/1-101 *et seq.*

⁵ MidAmerican provided an analysis for their entire service territory which suggested 2,000 vehicles and 4 MW of added peak demand. The Illinois portion of their service territory is approximately ten percent of their customers and the numbers here are extrapolated to just the Illinois portion.

Impact of Dynamic Pricing/Real-time Pricing Rates

One of the key areas that a regulatory agency such as the Commission will have jurisdiction over that relates to PEVs is the rates used for charging. Many states promoting the adoption of PEVs have focused their efforts on developing new rate options to incent off-peak PEV charging by PEV owners. Illinois faces a slightly different set of issues related to the exploration of new rate options. First, it is a retail choice state where for Ameren and ComEd, new products and services are expected to be provided by the competitive marketplace, and there are restrictions regarding the marketing and promotion of supply services by utilities. Second, Ameren since 2007, and ComEd since 2003, have had in place optional real-time pricing rates.⁶ MidAmerican follows a different regulatory structure because it remains a vertically integrated utility that owns its own generation. Retail choice is not available for its customers, but a time-of-use (TOU) rate option is available. For these reasons, the Initiative requested the utilities to first model how these existing dynamic pricing rate options would impact the charging of PEVs compared to the otherwise applicable flat electricity rate.

MidAmerican does not have a real-time pricing option. MidAmerican noted that in comparison to its generally low flat residential rate that its existing optional TOU option might not work well due to the structure of the demand charge portion of that rate.

Ameren provided an analysis of the incremental electricity that would be needed to charge a PEV at home under a standard flat rate, and various real-time pricing charging patterns. Ameren modeled a customer who would otherwise spend \$800 a year on gasoline, but with their PEV used an additional 3,000 kWh per year. If the customer were not on a special rate for electric heating, they would spend between \$115 and \$158 per year on electricity (depending on the geographic rate zone) for PEV charging under the current flat rate, but as low as \$66 to \$87 for “super off-peak” charging, and between \$94 to \$115 for more typical off-peak charging.

ComEd modeled several scenarios. The first ComEd model estimated a higher use of electricity for PEV charging than the Ameren model; 5,548 kWh per year for Level 1 charging. Under the ComEd model the flat rate would have cost \$394 per year while the real time pricing would cost between \$205 and \$287 depending on charging time. An additional factor would be the cost of the capacity obligation included in real time rates. If a customer kept charging at off-peak times, the capacity component of the real time rate would cost only \$130 per year, while if charging took place at peak times (e.g., 5pm) it could be as much as \$197 per year. The second ComEd model was for a

⁶ Both utilities have basic real-time pricing tariffs available to all customers. Public Act 94-0977 added additional optional program elements and features for residential customers. Those programs are currently undergoing a statutorily-mandated evaluation and review in Docket Nos. 11-0547 (Ameren) and 11-0546 (ComEd).

customer using Level 2 charging and estimated 10,512 kWh per year of usage. This model would cost \$782 on the flat rate and between \$502 and \$709 on a real-time rate. The capacity component of the real-time rate would range between \$220 and \$426 per year again depending on if the charging was done on-peak or off-peak.

Both the Ameren and ComEd analyses were based upon historical pricing patterns. While it is well established that wholesale electricity prices (which form the basis of real-time prices) vary by the hour and are lower at night and on weekends, the specific level of those prices compared to the flat rate does vary and cannot be guaranteed in the future.

The level of potential savings demonstrated by these models of existing real-time pricing options carried through to a general consensus in subsequent comments and discussion about the value of dynamic pricing in general, and real-time pricing in particular. The issue was further discussed during one of the Workshops. Several stakeholders also noted that the IDC regulations could have an impact on how any new rate options are offered, and this also was a topic addressed in one of the Workshops.

The analysis in the Initial Assessments focused on typical residential charging rates because a variety of national studies have indicated that most charging of PEVs will occur in the evening and at home each night. However public charging stations are anticipated to provide an important additional charging option for PEV owners who need to replenish their batteries while away from home. As discussed in the public charging section, the general sentiment is that public charging stations will be provided by the competitive market and not by utilities. Public charging stations will be located at commercial locations, and therefore will have the option of either default electric supply service from the utility, or supply from an ARES. However several parties noted that adding high voltage DC quick charging options at public charging stations could have an impact on the regulated distribution rates for those locations.

Local Distribution System Impacts

All three utilities expressed optimism that their distribution system could handle the additional load from PEVs, while conceding the possibility of sporadic localized issues with transformer overloads from Level 2 charging. ComEd suggested that the use of direct load control technology could mitigate this impact, while ComEd and Ameren recommended that notification of the purchase of a PEV could help the utility plan for possible upgrades. Stakeholders likewise expressed interest in using demand response programs to help mitigate distribution system impacts.

It appears that the utilities are confident in their planning processes to handle localized distribution impacts. The question of how costs are recovered for handling those impacts was explored in the second round of comments. In general, existing regulatory

principles related to cost causation were considered appropriate for the case of PEV charging and other models of socializing costs are unnecessary. The Initiative appreciates the analysis conducted by the utilities on the issue of local reliability. Ensuring reliability is a key duty of the Commission and the Initiative requested a Workshop to continue to explore the issue of how to best address it.

Other Issues

A variety of additional issues were raised by stakeholders. These included:

- The intersection of renewable energy and PEV charging including net metering, photovoltaic integration with public charging stations, and vehicle to grid functionality
- Education efforts to promote PEVs
- Metering issues related to PEVs
- Coordination with the Secretary of State and other agencies to aid utilities in knowing where PEVs and associated charging infrastructure is being installed
- Building codes and local permitting issues. In general there was interest in better coordination of these issues, but these issues fall outside the regulatory purview of the Commission
- Privacy, access to data and information protocols

The Initiative had a Workshop to explore education issues, and to a limited extent metering issues were discussed in the Rates Workshop, but otherwise the Initiative is not actively pursuing the other topics listed. Some of these issues have been taken up by the Electric Vehicle Advisory Council discussed below. The input of stakeholders on these issues is duly noted and appreciated by the Commission and where appropriate, they may be taken up at a future time.

Formation of Stakeholder-led Workshops

In October, 2011 the Initiative requested that stakeholders participate in five informal stakeholder-led Workshops to explore more thoroughly relevant issues and return findings to the Initiative with proposed recommendations. The five topic areas for these Workshops were:

1. Defining the scope of what waivers (if any) to the Integrated Distribution Company (IDC) rules⁷ would facilitate utilities' role in facilitating the adoption of PEVs and related services;
2. Developing customer education and outreach plans;

⁷ Title 83, Sections 452.230 and 452.240 of the Illinois Administrative Code. IDC rules govern the limitation that Ameren and ComEd have on marketing rates, programs and services so as not to impede the development of competitive retail electricity markets.

3. Modeling and assessment of potential localized reliability impacts;
4. Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization, and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging; and
5. Developing a petition to the Commission to clarify the legal status of public charging stations.⁸

A kick-off meeting for the Workshops was held on October 13, 2011 and facilitators for each Workshop selected. The Workshops met from November, 2011 through February, 2012, and issued reports to the Commission. In general, the Workshops had few specific recommendations for Commission action, but rather reached a variety of conclusions (mostly, but not completely, with consensus) that indicated that existing policies and practices in Illinois are adequate for facilitating the adoption of PEVs. Specific recommendations and conclusions are discussed below.

Workshop Conclusions and Recommendations

Full reports from the five Workshops are available at:

<http://www.icc.illinois.gov/Electricity/PEV.aspx>. Below is a summary of the key conclusions and recommendations from the Workshops. The Commission accepts all of the specific recommendations discussed herein.

Workshop #1: Defining the scope of what waivers (if any) to the Integrated Distribution Company (IDC) rules would facilitate utilities' role in facilitating the adoption of PEVs and related services

Workshop #1 had the purpose of monitoring the recommendations of the other Workshops to determine what, if any, impact those recommendations would have on the current Integrated Distribution Company (IDC) rules. The IDC rules govern the actions of Ameren and ComEd as they relate to fostering competition and retail choice in Illinois. Currently ComEd has a waiver of IDC rules for the marketing of its residential real-time pricing program. Ameren does not have a waiver for its residential real-time pricing program. Based on a review of those programs, and of the conclusions of the other Workshops, Workshop #1 concluded that currently there is not a need for a waiver for Ameren, nor is there a need for an expansion of ComEd's waiver, in order to facilitate the adoption of PEVs and related services. The Workshop did note that in response to future policy mandates, this conclusion may need to be reconsidered.

⁸ For further description of the scope of each of these topics, see document "ICC To Host Plug-In Electric Vehicle Workshop" at <http://www.icc.illinois.gov/Electricity/PEV.aspx>.

Workshop #2: Developing customer education and outreach plans

Workshop #2 provided two recommendations to the Commission:

1. “The Commission Should Continue its Active Participation in the EVAC” (p. 10)⁹
2. “The Commission Should Consider Referencing PEVs on the Plug In Illinois Website” (p. 11)

The Commission finds those recommendations reasonable, and will adopt them. The Commission was already planning on continuing its involvement in the EVAC, and reaffirms that commitment.

The Office of Retail Market Development (ORMD) maintains the Plug In Illinois Website which provides information and education to customers on the electric supply options. ORMD will update the website to add information relevant to PEVs.

Workshop #2 also reached several other conclusions that were not in the form of recommendations to the Commission, and therefore require no Commission action. First, the Workshop concluded that, “We do not recommend that the Commission take a prescriptive approach to consumer education.” (p. 2) The Commission appreciates the Workshop’s flexible approach to planning consumer education that is subsequently detailed in their report. The report describes the educational content the Workshop expected would be needed by PEV consumers and the expected messengers. The content included: basic information about PEVs, general vehicle charging options, residential charging, real-time pricing and other rate options, utility notification (e.g., notification by the PEV owner to the utility about installation of Level 2 and higher charging stations), public and workplace charging, and renewable energy/net metering. Messengers were categorized to include Utilities and/or ARES; Auto Manufacturers and/or Dealers; State Government; Local Governments; Environmental/Public Interest Groups; First Responders; Educational Institutions; and Charging Station Businesses.

Second, the Workshop suggested that, “[T]he Commission is encouraged to continue its existing pattern of inquiry into PEV integration, ensuring that PEV information provided by entities under its jurisdiction provide accurate and useful information to customers, particularly on the topics of time-of-use rates and off-peak charging.” (p. 10) The Commission expects that the PEV Initiative will continue and at appropriate times will continue to explore critical issues. In addition, ICC Staff is already engaged in monitoring and studying a variety of PEV related issues both in Illinois and nationally.

⁹ Page references refer to the Workshop Reports that are available in the Appendices of this Report.

Workshop #3: Modeling and assessment of potential localized reliability impacts

Workshop # 3 did not provide any specific recommendations to the Commission. The report outlines the PEV industry landscape, existing load addition processes used by the utilities, potential distribution system impacts, and availability of load management tools.

The report states that given the projections for PEV adoption shown in the report, “PEV charging is not expected to have widespread impacts to the distribution system.” (p. 14) However the report goes on to say that, “since PEV adoption is likely to be “clustered” by geographic area and subsequently by distribution system components, local distribution assets could be impacted if PEV charging at Level 2 (240 volt, 30 amps) or greater is not appropriately managed” and that, “The Impact Study that ComEd conducted with EPRI identified service transformers as particularly vulnerable to impacts of Level 2 charging.” (p. 16)

With respect to managing the impacts of PEV charging on the grid, the report states that, “effective load management tools will be important to mitigate impacts of EV charging not only to the PEV owner, but to other customers served by the same distribution equipment.” (p. 17) The report goes on to discuss time-variable rates, advance notification to the utility prior to installing PEV charging rated at Level 2 or greater, and advanced metering infrastructure (AMI) as effective existing and future load management tools.

The report concludes, “Given the projections for PEV adoption discussed in this document, PEV charging is not expected to have widespread distribution system impacts for Ameren Illinois, ComEd, or MidAmerican. The utilities have existing load addition processes in place to manage the addition of charging facilities that may occur in the near term, and they continue to investigate new technologies and tools that may facilitate more automated and seamless integration of PEV charging with the grid as PEV adoption become more widespread in the future.” (p. 20)

The Commission notes one potential area of concern. In discussing the existing processes for load additions, the report states that, “ComEd expects that any customer that is adding enough load that it could impact the utility system will likely be using a qualified electrician. ComEd also expects the electrician will be familiar with ComEd’s processes for load additions and the need to contact to ensure adequate distribution facilities.” (p. 13) However, the report does not discuss what will happen if those

expectations are not met, and electricians fail to have the adequate training or knowledge, or if they fail to follow ComEd's established processes.

The licensing and regulation of electricians that could address that concern is generally outside the jurisdiction of the ICC; however, recently enacted Public Act 97-0616 contains the provision, "Within 180 days after the effective date of this amendatory Act of the 97th General Assembly, the Commission shall initiate a rulemaking proceeding to establish certification requirements that shall be applicable to vendors that install electric vehicle charging stations." (220 ILCS 5/16-128A(d)) While that rulemaking has not yet commenced, and therefore the scope of it has not yet been determined, it is possible that the rulemaking may serve as a vehicle to help address this issue.

Workshop #4: Expanding PEV rate options in order to improve current distribution, transmission and generation asset utilization, and to prevent unnecessary and duplicative investment in infrastructure for on-peak charging

Workshop #4 did not provide any specific recommendations. Instead the Workshop thoroughly explored rate options to consider if there were any "known statutory or regulatory barriers" to either supply services or demand response programs that could improve current distribution, transmission and generation asset utilization and could prevent unnecessary and duplicative investment in infrastructure for on-peak charging. Given that Illinois is a restructured State with unbundled electricity rates, supply and distribution issues were considered separately. The consensus of the Workshop was that for both residential and non-residential customers there were not any known barriers for either supply services or demand response programs.

While not a recommendation to the Commission, perhaps the most significant conclusion of the Workshop's report is its consideration of existing rate options in Illinois, and how the availability of those rate options sets Illinois apart, and ahead of, other States. The report notes that, "Regarding residential supply services, the consensus was largely based on the belief that sufficient supply offerings are or will be available in the future. Specifically, the existing residential Real-Time Pricing Programs (RTP) available from Ameren Illinois [Company (AIC)] and Commonwealth Edison (ComEd) today, and/or the potential for future time-variant price offerings from RESs, as evidenced by offerings available in other states meet these objectives." (p. 3) Many other states that have considered PEV policies have focused that consideration on introducing time-variant pricing for PEV owners as an incentive for off-peak charging. The confidence the Workshop had that existing (and potential) offerings in Illinois are sufficient in this regard, indicates a significant departure for Illinois from the approaches being undertaken elsewhere. Existing Illinois policies that promote the use of real-time

pricing and of competitive retail choice have already created a roadmap for customers to best match their electric supply to their PEV charging habits.

Workshop participants did, however, express interest in ongoing monitoring of rate options, agreeing, “that further study of PEV charging and rates should be conducted in the near-term and over the next several years, as PEVs begin to arrive in Illinois. Specifically, the group agreed that customer acceptance and utilization of, and responsiveness to, available time-variant pricing structures should be monitored and reviewed regularly.” (p. 3) While there is not a specific recommendation to the Commission in that statement, the Commission will encourage ongoing study of and experimentation with time-variant rates.

The Workshop also noted that, “While no stakeholder advocated making time-variant supply pricing mandatory for EV owners at this time, the group did identify a need to incorporate time-variant supply pricing options into PEV owner education plans as soon as possible.” (p. 4) This issue was covered by the Education Workshop in more detail.

The Workshop also considered issues relating to delivery services rates, specifically those relating to unbundling metering and the potential for “subtractive metering” where PEV load would be separately tracked from other load in order to facilitate vehicle to grid transactions. Workshop participants did not agree on the near-term relevance of the issue, but agreed that “there are no known legal or regulatory impediments to the adoption of a Commission policy mandating unbundled subtractive metering. In fact, the Commission has already exercised its authority to unbundle metering (See *generally* ICC Docket No. 99-0013, Order (Oct. 4, 2000)), although not in a subtractive context.” (p. 6) As the PEV industry evolves and vehicle to grid options move from theory to reality, this issue may require further investigation, but at the present time it appears that no action is required by the Commission.

Workshop #5: Developing a petition to the Commission to clarify the legal status of public charging stations

Workshop #5 explored ways in which the legal status of public charging stations could be clarified. The Workshop started with the concept of a petition to the Commission for a declaratory ruling, but because of Commission rules that were interpreted to mean that, “a declaratory ruling only has a binding legal effect on the party making the filing,” (p. 2) the Workshop chose not to further pursue that option because its limited scope would not fully address and resolve the issue.

The Workshop subsequently explored legislative approaches instead, concluding that, “The workshop participants agreed that legislation pertaining to charging stations adopted by the General Assembly would be the most direct way to determine the extent, if any, of the Commission’s jurisdiction over charging stations.” (pp. 3-4) However there was not a consensus conclusion for seeking such legislation, with one participant believing it was premature to do so.

The Workshop recommended, with the caveat that one party thought that it was premature, “That the Commission coordinate with the Illinois Electric Vehicle Advisory Council to explore recommending new state legislation, promoting uniformity of policies and laws assuring the continued development of an accessible and convenient EVESP¹⁰ charging network throughout Illinois supported by open and competitive markets.” (p. 4) The Workshop further noted that, “If the General Assembly were to take up this issue, consideration should be made for an Electric Vehicle Equipment and Service Providers (EVESPs) exemption under the Public Utilities Act for EVSP companies that simply wish to act as customers of utilities or RESs.” (p. 4) The Commission will review and consider support for legislation that clarifies the legal status of public charging stations. However, support is dependent on the specific provisions and requirements of any such proposal. While the Commission will coordinate where appropriate with the EVAC, as an independent state agency, the Commission has its own legislative review process.

Electric Vehicle Advisory Council

While the PEV Initiative was underway HB 2902, the “Electric Vehicle Act” was passed by the Illinois General Assembly and signed into law as Public Act 97-0089 by Governor Quinn on July 11, 2011.¹¹ This bill established the Electric Vehicle Advisory Council (EVAC) coordinated by DCEO. The Executive Director of the ICC was designated as one of the members of the Council. The Council has the mission to, “investigate and recommend strategies that the Governor and the General Assembly may implement to promote the use of electric vehicles, including, but not limited to, potential infrastructure improvements, State and local regulatory streamlining, and changes to electric utility rates and tariffs.” The EVAC provided a report to the Governor and General Assembly on December 30, 2011.¹² The EVAC continues to meet to monitor the implementation of the report’s recommendations and related matters.

When the Commission launched its Initiative, it was the only state-wide forum for PEV issues. It therefore set out with a fairly broad focus, in contrast to local initiatives such

¹⁰ Electric Vehicle Equipment and Service Providers

¹¹ See: <http://www.ilga.gov/legislation/publicacts/97/PDF/097-0089.pdf> for the full text of this legislation.

¹² The EVAC report is available at: http://www.ildceo.net/dceo/Bureaus/Energy_Recycling/ev.htm.

as those that are being undertaken in cities like Chicago and Normal. Given the creation of the Electric Vehicle Advisory Council and the information the Initiative had received from the utilities and stakeholders, in the fall of 2011 the focus of the Initiative was narrowed to issues that were under Commission jurisdiction. This allowed the ongoing conversations about other related PEV issues to be better handled under the auspices of the EVAC.

EVAC Recommendations

The Electric Vehicle Advisory Council report issued on December 30, 2011 included a wide range of recommendations for promoting PEVs in Illinois. There were a number of those recommendations that were directed in whole, or in part to the ICC. Those recommendations are discussed below, along with the Commission's response to each recommendation.

EVAC Recommendation 3.1:

Electricity providers should offer time-variant electricity rate options that encourage EV charging and use of other electrical loads during off-peak instead of on-peak hours of the day.

- Investor-owned utilities should continue to offer existing real-time pricing (Ameren, ComEd) and time-of-use (MidAmerican) electricity rate options to residential and non-residential customers.
- Other electricity providers (i.e., ARES, municipal utilities, and cooperatives) should also develop and offer time-variant electricity rates that provide off-peak charging incentives to customers.

The Commission notes that the portion of this recommendation directed to regulated investor owned utilities is consistent with the conclusion of the ICC Workshop #4. The ICC does not have jurisdiction over the rates offered by ARES, municipal utilities or cooperatives.

EVAC Recommendation 3.3:

ICC Staff should monitor – and electricity providers, EVSE providers, auto manufacturers, the EVAC, and other stakeholders should study – early EV charging behavior in Illinois to determine whether additional time-variant electricity rate options, metering options (e.g., separate and sub-metering of EV electricity service as currently being explored in other states), load management programs (e.g., demand response), and/or other initiatives are needed to achieve

off-peak vehicle charging (and use of other electrical loads during off-peak hours) or otherwise help manage and monitor charging loads to minimize grid impacts.

ICC Staff is already engaged in monitoring these issues and plans to continue to do so. As noted elsewhere in this report, the Commission will continue the PEV Initiative as an additional forum for monitoring key PEV issues.

EVAC Recommendation 3.6:

The General Assembly, or alternatively the ICC, should ensure that renewable energy temporarily stored in batteries (e.g., EV batteries or stationary batteries in EVSE) can qualify for net-metering:

- Under 220 ILCS 5/16-107.5, the General Assembly should ensure that renewable energy stored in batteries can qualify for net-metering if the stored energy was originally generated by an “eligible renewable generating facility” (as defined in the statute) and is later discharged onto the grid.
- Alternatively, if this issue is raised in an appropriate proceeding, the ICC should ensure that electricity providers’ net-metering programs allow for net-metering of energy stored in batteries if originally generated by an “eligible renewable generating facility.”

The Commission appreciates the intent of this recommendation, but as a quasi-judicial agency it would be impermissible for the Commission to reach a conclusion on the outcome of any such issues that may be presented to it for determination in a docketed proceeding.

EVAC Recommendation 4.2:

The Governor and state agencies should publicize the benefits of EVs, as well as the state’s EV policies, incentives, and other relevant program information:

[References to other state agencies omitted]

- The ICC should provide information on ICC regulations related to EVs and EVSE, and information on the ICC’s Plug-In Electric Vehicle Initiative.

The ICC already maintains a website for the PEV Initiative and is adopting the recommendation of Workshop #2 to include PEV information on the Plug In Illinois website.

Conclusion

Since its formation in September of 2010, the ICC Initiative on Plug-In Electric Vehicles has accomplished a variety of goals. A summary of how the initial goals/objectives of the Initiative have been met is provided below.

Initial Goal/Objective	Status
Determine the impact of the initial deployment of Plug-in Electric Vehicles (PEVs) on the State's electric grid	Utility Assessments and subsequent Workshop investigation indicated that the grid is prepared to handle PEVs and only localized impacts are likely.
Determine potential/future regulatory considerations necessary to accommodate PEVs	The legal status of public charging stations is a key unresolved issue and will require legislation to clarify.
Establish consistent Statewide policies for managing PEV infrastructure and use	Workshops affirmed that existing supply rate options are appropriate, and that changes to distribution rates to accommodate new metering options are not yet necessary.
Generate accelerated interest by auto manufacturers for introduction of PEVs into Illinois markets	Now undertaken under the auspices of the Electric Vehicle Advisory Council.
Craft consumer education and outreach information components	Now undertaken under the auspices of the Electric Vehicle Advisory Council.

The creation of the Electric Vehicle Advisory Council has had an impact on the goals and scope of the Initiative, and has helped the Initiative focus its efforts. Initially the Initiative was broad in scope because of the concern over there being a void in policy formation in Illinois, and it took on issues under ICC jurisdiction as well as some outside of its jurisdiction. The EVAC now has a broad mandate to look at PEV issues in Illinois which has allowed the Initiative to focus on issues more clearly relevant to the regulatory role of the ICC. The joint efforts of the ICC and Electric Vehicle Advisory Council will allow the State, consumers, and utilities to be well prepared for this new mode of transportation. The information exchange that occurred in the ICC Workshop process and the Electric Vehicle Advisory Council will encourage the adoption of electric vehicles and allow all parties involved to benefit from the economic and environmental benefits that they can provide. The PEV Initiative has also largely reaffirmed that many existing policies in Illinois are well suited for the introduction of PEVs, and that the regulatory issues that need to be addressed are either narrowly focused, or longer term in nature.

The Commission appreciates all the hard work that stakeholders have put into participating in the various phases of the Initiative. Their efforts have provided the Commission with valuable information and a clear path by which to proceed. The Commission will continue to actively participate and coordinate with the Electric Vehicle Advisory Council, and the Initiative will periodically reconvene to explore emerging and developing PEV policy issues germane to the Commission's regulatory authority.