

# CCIF

CRITICAL CONSUMER  
ISSUES FORUM

## Driving a Customer-Focused Energy Future

Examining Policies for Delivering Smart Mobility and Other Customer Solutions



July 2019





# Driving a Customer-Focused Energy Future

*Examining Policies for Delivering Smart Mobility  
and Other Customer Solutions*

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# Executive Summary

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In today's electric power sector, grid modernization is well underway, and customers are exhibiting interest in a range of energy technologies, services, and applications for their homes and businesses. State commissioners, consumer advocates, and electric companies are embracing customer-focused energy solutions, while addressing challenges related to rapidly advancing technologies and evolving customer expectations. To further explore these opportunities and challenges, the Critical Consumer Issues Forum (CCIF) introduced the topic that became the subject of this report, *Driving a Customer-Focused Energy Future: Examining Policies for Delivering Smart Mobility and Other Customer Solutions*.

## ***Evolving Focus & Growing Importance***

Kicking off the process with the broader topic of customer-driven solutions, CCIF quickly transitioned into more specific discussions about electric transportation. CCIF expects electric transportation issues to become increasingly relevant for the regulatory community and anticipates that the work on electric transportation will prove instructive regarding other customer-driven solutions such as energy storage and microgrids.

While there is significant interest in electric transportation by policymakers, technology providers, auto manufacturers, stakeholders, and the regulatory community, the primary driver of the topic is the increasing interest of customers in plug-in electric vehicles (PEVs or EVs). As of June 30, 2019, more than 1.27 million EVs were on the road in the United States,<sup>1</sup> with sales projected to reach an additional 1 million per year beginning in 2023.<sup>2</sup>

The growth in electric transportation is not limited to light-duty EVs. Electric buses and other medium- and heavy-duty vehicles and equipment offer fuel and maintenance costs that are less than traditional equivalents, as well as immense emissions reduction benefits, improving air quality and public health especially for sensitive populations and communities that may be affected disproportionately.

## ***Objectives & Focus Areas***

As electric companies respond to customer requests and prepare the electric system for greater adoption of EVs, state regulators and consumer advocates serve important roles. However, the topic of electric transportation is still a relatively new area for the regulatory community, and state regulators are at different stages of addressing the topic. CCIF's discussion was focused on facilitating productive dialogue that would encourage participants to:

- Identify key issues and potential roles;
- Recognize the timeliness, relevance, and importance of electric transportation issues to encourage preparation;
- Share perspectives and lessons learned, providing initial guidance for those in beginning stages; and
- Identify and share key takeaways from the dialogue with the regulatory and broader stakeholder communities.

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<sup>1</sup> *Issues & Policy: Electric Transportation*. Edison Electric Institute. <http://www.eei.org/issuesandpolicy/electrictransportation/> (accessed on July 9, 2019).

<sup>2</sup> *Electric Vehicle Sales Forecast and the Charging Infrastructure Required Through 2030*. Edison Electric Institute and Institute for Electric Innovation. November 2018. [http://www.edisonfoundation.net/iei/publications/Documents/IEI\\_EEI%20EV%20Forecast%20Report\\_Nov2018.pdf](http://www.edisonfoundation.net/iei/publications/Documents/IEI_EEI%20EV%20Forecast%20Report_Nov2018.pdf).

With an overall focus on maximizing the potential benefits and minimizing the potential costs of electric transportation for both electric customers and the system, CCIF summit participants collectively addressed the following areas:

- *Stakeholder Engagement.* Electric transportation is especially well-suited to broad stakeholder engagement and collaborative approaches.
- *Infrastructure & Deployment.* Multiple entities, including electric companies, need to be involved in meeting electric transportation infrastructure and deployment needs.
- *Costs & Benefits: Cost Recovery.* To ensure the best outcomes for both electric customers and the system, regulators must consider potential benefits and potential costs.
- *Customer-Focused Rates.* Customer pricing and rates should allow for regional variation and flexibility, but should continue adherence to fundamental pricing principles.
- *Education & Information.* Acknowledging that customers often see electric companies as trusted sources of information on issues pertaining to electric transportation, participants developed a framework for electric company efforts to address gaps in customer awareness and education.

### **Key Takeaways**

The CCIF dialogue resulted in several key takeaways, including:

- Electric transportation issues are becoming increasingly relevant; therefore, state commissioners, consumer advocates, and electric companies need to be prepared and engaged.
- Customers are seeking electric company engagement and assistance in various forms, particularly in the areas of charging infrastructure deployment and customer awareness and education.
- Stakeholder engagement is critical in developing balanced, beneficial programs.
- Electric transportation is still a growing area, and there are multiple entities that need to be involved in EV infrastructure development—third-party service providers; electric companies; transportation authorities; other state and local government agencies; auto manufacturers and dealers; and building associations.
- Commissions, consumer advocates, and electric companies should:
  - look at electric transportation holistically;
  - strive to ensure that all customers have opportunities to participate in electric transportation and to realize benefits, while keeping rates affordable; and
  - seek to maximize the benefits of EV programs while minimizing costs and managing risks for all customers.
- Participants developed a framework for customer education and promotion.

### **Consensus Principles**

Developed by participants during CCIF discussions, the consensus principles on electric transportation are featured in Figure 1. While they do not address all issues with respect to this expansive topic, the principles are meant to serve as a foundation for additional dialogue and collaboration among state commissioners, consumer advocates, electric company representatives, customers, third-party service providers, policymakers, and other stakeholders.

## Figure 1. CCIF 2019 Consensus Principles on Electric Transportation

1. Commissioners, consumer advocates, electric company representatives, and all interested stakeholders should be proactive in efforts to establish the best electric transportation policies for customers, who otherwise will continue to adopt new technologies, including electric transportation, devoid of a set policy, formalized regulatory structure, or business plan.
2. Recognizing that stakeholder engagement is critical in developing balanced, beneficial programs, state commissions are encouraged to:
  - engage stakeholders and other state energy, environmental, and transportation officials on customer-facing technologies, including electric transportation;
  - provide as much guidance as practicable regarding specific objectives, timelines, and deliverables for collaborative stakeholder processes; and
  - take a holistic look at the interrelated issues of grid modernization, renewable energy integration, and electric transportation.
3. Managed charging can help maximize the benefits of electric transportation by improving electric system optimization and can help minimize costs for customers.
4. Transportation electrification programs should be designed to improve system utilization.
5. An effective way to measure usage/load data and to best communicate price signals to EV charging customers through technology is paramount to maximizing the potential benefits and minimizing the potential costs of electric transportation.
6. Charging infrastructure should be deployed in a manner that provides access to electric transportation for all customers.
7. When commissioners, consumer advocates, and electric company representatives are considering potential policies or evaluating proposed programs on electric transportation, they should pursue policies and programs that have the potential to maximize the benefits for the broadest range of customers while minimizing costs and managing risks for all customers.
8. Electric transportation has the potential to benefit customers through emissions reductions, increased utilization of existing assets, and lower average system costs (assuming efficient charging behavior).
9. Customer pricing and rates should allow for regional variation and flexibility.
10. The fundamental pricing principles (i.e., Bonbright) have not changed and must be maintained with respect to new technologies, such as electric transportation.
11. New rate designs will help maximize the benefit of managed charging.
12. Any mechanism designed to spur market adoption should be transparent and should phase out as the market continues to grow.
13. Customer education should be considered as an important component of electric company electric transportation-related programs.
14. Commissioners, consumer advocates, and electric company representatives should collaborate on electric transportation-related awareness and education efforts to provide a credible, reliable source of information for customers.

## Introduction

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In today's electric power sector, grid modernization is well underway, and customers are exhibiting interest in a range of energy technologies, services, and applications for their homes and businesses. State commissioners, consumer advocates, and electric companies (referred to as the three core groups or three core communities throughout this report) are embracing customer-focused energy solutions, while addressing challenges related to rapidly advancing technologies, a growing number of market entrants and choices, and changing customer expectations. The Critical Consumer Issues Forum (CCIF) leadership recognized that CCIF's annual process offered the opportunity for further exploration of these opportunities and challenges and introduced the topic, *Driving a Customer-Focused Energy Future: Examining Policies for Delivering Smart Mobility and Other Customer Solutions*.

### ***Evolving Focus***

At the annual Kickoff Forum in November 2018, CCIF featured perspectives on issues concerning delivery of customer-driven solutions. With the guidance of featured experts, CCIF reviewed foundational issues, such as grid modernization deployment to date, how it is helping with customer-centricity, and how to address gaps in order to take advantage of technologies in the future. Customer representatives shared their vision for a customer-focused energy future; what they are seeking from electric companies, policymakers, and the regulatory arena to accomplish that vision; and how to achieve shared objectives in a creative, balanced manner. Participants also explored actions that could be taken by regulators, policymakers, electric companies, and other stakeholders to enable a customer-focused energy future.

During the summit series that followed, CCIF continued the dialogue, specifically drilling down into issues concerning electric transportation. CCIF expects electric transportation issues to become more relevant for the regulatory community, given the rapid rise in electric vehicle (EV) sales in the United States and greater attention to EV-related issues by state policymakers. Also, CCIF participants anticipate that the work on electric transportation will prove instructive regarding other customer-driven solutions such as energy storage and microgrids.

### ***Look Back at Grid Modernization and Other Relevant CCIF Topics***

Underlying themes of changing customer expectations and customer-driven solutions are evident throughout CCIF's past work, starting with our first topic, grid modernization. Grid modernization has facilitated the ability for electric companies to meet evolving customer expectations on issues including reliability, clean energy and sustainability, and access to a range of new applications and services. In fact, as highlighted in the following principle from the 2011 report, CCIF participants contemplated the importance of grid modernization with respect to electric transportation:

Grid modernization has the potential to provide new opportunities for innovative technologies and other direct and indirect benefits to consumers. . . . Such benefits may include, but are not limited to . . . facilitation of electric vehicles into the electric grid.<sup>3</sup>

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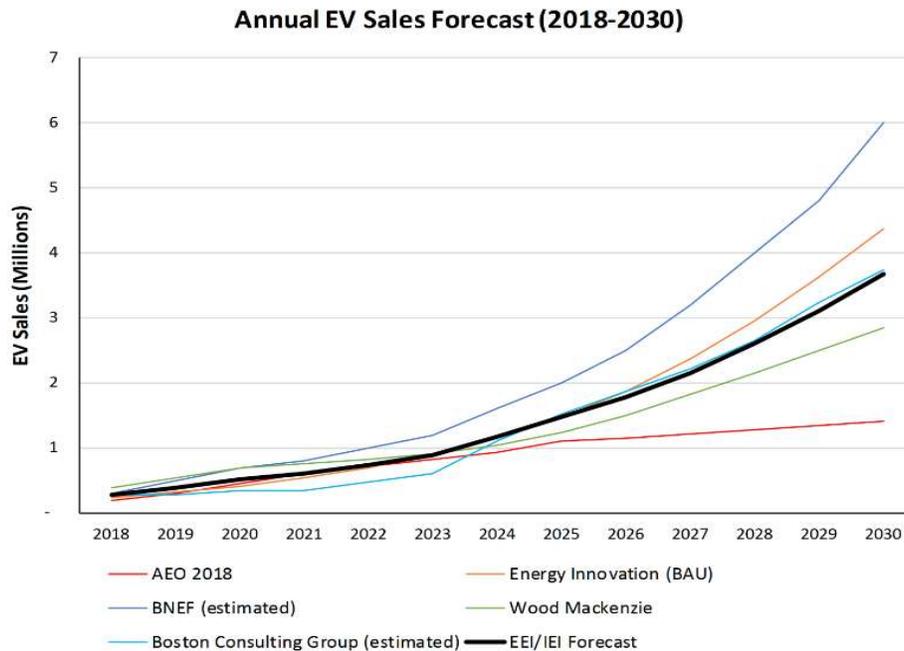
<sup>3</sup> *Grid Modernization Issues with a Focus on Consumers*. Critical Consumer Issues Forum. July 2011. p. 3. [www.CCIForum.com/wp-content/uploads/2011/09/CCIF-Grid-Modernization-Report-July2011-Final.pdf](http://www.CCIForum.com/wp-content/uploads/2011/09/CCIF-Grid-Modernization-Report-July2011-Final.pdf).

## Why Electric Transportation Now

The topic of electric transportation is timely given the growing interest of policymakers, technology providers, auto manufacturers, stakeholders, and the regulatory community. However, the primary driver continues to be the customer.

Customers are showing increasing interest in EVs. As of June 30, 2019, more than 1.27 million EVs were on the road in the United States.<sup>4</sup> As shown in Figure 2, Edison Electric Institute (EEI) and the Institute for Electric Innovation (IEI) project that EV sales will reach 1 million per year beginning in 2023.<sup>5</sup>

**Figure 2. EEI/IEI Annual EV Sales Forecast Compared to Selected Forecasts**



The growth is not limited to light-duty EVs. We heard from representatives of Foothill Transit, a public transit provider, about its current investment in electric buses and its plans for significant expansion, offering greater accessibility to cleaner transit options in Southern California. Electric buses and other medium- and heavy-duty sector electrified vehicles and equipment—ranging from delivery fleets to port and airport handling equipment—offer fuel and maintenance costs that are less than traditional equivalents, as well as immense emissions reduction benefits, improving air quality and public health especially for sensitive populations and communities that may be affected disproportionately. Based on recent announcements by Volvo, Daimler, UPS, Volkswagen, and Cummins, it appears that electrification in the medium- and heavy-duty truck sector also will experience significant growth.<sup>6</sup>

<sup>4</sup> *Issues & Policy: Electric Transportation*. Edison Electric Institute.

<http://www.eei.org/issuesandpolicy/electrictransportation/> (accessed on July 9, 2019).

<sup>5</sup> *Electric Vehicle Sales Forecast and the Charging Infrastructure Required Through 2030*. Edison Electric Institute and Institute for Electric Innovation. November 2018.

[http://www.edisonfoundation.net/iei/publications/Documents/IEI\\_EEI%20EV%20Forecast%20Report\\_Nov2018.pdf](http://www.edisonfoundation.net/iei/publications/Documents/IEI_EEI%20EV%20Forecast%20Report_Nov2018.pdf).

<sup>6</sup> *Electric Vehicle Trends & Key Issues*. Edison Electric Institute. June 2018.

[https://www.eei.org/issuesandpolicy/electrictransportation/Documents/EV\\_Trends\\_and\\_Key\\_Issues\\_June2018.pdf](https://www.eei.org/issuesandpolicy/electrictransportation/Documents/EV_Trends_and_Key_Issues_June2018.pdf).

In line with these trends, a variety of customers—residential, commercial, and communities—have shown significant interest in EVs and other customer-driven solutions. When dealing with matters such as their sustainability goals, data access needs, technology investments in distributed generation, and, now, goals with respect to electric transportation, customers often turn to their electric companies for help. In fact, in the latest summit series, CCIF participants heard from commercial customers, community leaders, and fleet operators that they trust electric companies to help them navigate this game-changing space of electric transportation.

In addition to customers, a number of other drivers for examining electric transportation were identified. First, policymakers in many states have taken actions that support EV adoption. These include clean energy goals, zero-emission vehicle (ZEV) policies, and purchase incentives. Second, investment in the EV sector by technology providers and auto manufacturers appears to be growing. Experts shared reports of expected battery improvements as well as announcements about a host of new EV models coming to market. Third, a multitude of influential stakeholder groups, including many in the environmental community, appear to be aligned generally on advancing electric transportation.

Finally, as electric companies respond to customer requests and prepare the electric system for the projected adoption of EVs, state regulators and consumer advocates also serve important roles that underscore the need for CCIF to explore this topic further.

### ***Objectives & Takeaways from the CCIF Process***

Recognizing that electric transportation is still a relatively new area for the regulatory community, and that state regulators are at different stages of addressing the topic, the CCIF discussion focused on facilitating productive dialogue that would encourage participants to:

- Identify key issues and potential roles;
- Recognize the timeliness, relevance, and importance of electric transportation issues to encourage preparation for addressing specific issues in their states and service areas;
- Share perspectives and lessons learned, providing initial guidance for those in beginning stages; and
- Identify and share key takeaways from the dialogue with the regulatory and broader stakeholder communities.

The following consensus principle underscores the purpose of CCIF's work on electric transportation, calling upon those from all three core communities and other stakeholders to show leadership:

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✓ ***Commissioners, consumer advocates, electric company representatives, and all interested stakeholders should be proactive in efforts to establish the best electric transportation policies for customers, who otherwise will continue to adopt new technologies, including electric transportation, devoid of a set policy, formalized regulatory structure, or business plan.***

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The dialogue resulted in the following takeaways:

- Electric transportation issues are becoming increasingly relevant; therefore, state commissioners, consumer advocates, and electric companies need to be prepared and engaged.
- Customers are seeking electric company engagement and assistance in various forms, particularly in the areas of charging infrastructure deployment and customer awareness and education.

- Stakeholder engagement is critical in developing balanced, beneficial programs.
- Electric transportation is still a growing area, and there are multiple entities that need to be involved in EV infrastructure development—third-party service providers; electric companies; transportation authorities; other state and local government agencies; auto manufacturers and dealers; and building associations.
- Commissions, consumer advocates, and electric companies should:
  - look at electric transportation holistically;
  - strive to ensure that all customers have opportunities to participate in electric transportation and to realize benefits, while keeping rates affordable; and
  - seek to maximize the benefits of EV programs while minimizing costs and managing risks for all customers.
- Customer pricing and rates should allow for regional variation and flexibility, but should continue adherence to fundamental pricing principles (i.e., Bonbright<sup>7</sup>).
- Participants developed a framework for determining the types of acceptable customer education and promotion.

These takeaways reflect a small part of the robust dialogue beginning last fall and continuing through the summit series.



At the CCIF 2018 Kickoff Forum, American Electric Power’s Phil Dion poses a question to fellow panelists—Illinois Citizens Utility Board’s David Kolata and Vermont Public Utility Commissioner Sarah Hofmann—about enabling a customer-focused energy future with innovative energy products and services, such as electric transportation.

<sup>7</sup> James C. Bonbright, Albert L. Danielsen, and David R. Kamerschen. *Principles of Public Utility Rates*. Public Utilities Reports; 2nd. ed. edition (March 1, 1988).

## Stakeholder Engagement

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Issues involving electric transportation and other customer-facing technologies are well-suited to broad stakeholder engagement and collaborative approaches. Participants expressed interest in collaborative processes—particularly in the early stages of exploring EVs—that provide information exchanges with public and private stakeholders, many of whom may be new to the regulatory arena. However, different states have varying rules and procedures that must be recognized and respected in setting up or engaging in any collaborative stakeholder process.

Taking these factors into account, CCIF participants identified the following consensus statement with respect to stakeholder engagement:

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- ✓ ***Recognizing that stakeholder engagement is critical in developing balanced, beneficial programs, state commissions are encouraged to:***
    - ***engage stakeholders and other state energy, environmental, and transportation officials on customer-facing technologies, including electric transportation;***
    - ***provide as much guidance as practicable regarding specific objectives, timelines, and deliverables for collaborative stakeholder processes; and***
    - ***take a holistic look at the interrelated issues of grid modernization, renewable energy integration, and electric transportation.***
- 

### ***Considerations in Establishing a Collaborative Stakeholder Process***

As states engage stakeholders on electric transportation issues, as well as the interrelated issues of grid modernization and renewable energy integration, they may consider the following:

- ***Proceedings that allow for more discussions.*** State commissions employ different processes and methods for gathering information and facilitating stakeholder collaboration. Less formal processes that state commissions use to carry out quasi-legislative duties (e.g., rulemaking) are often preferable for achieving open dialogue without the ex parte restrictions that apply to more quasi-judicial duties (e.g., contested rate reviews). Working groups or issues forums that are not managed by state commissions and instead are led by non-governmental organizations, think tanks, or other state agencies also could be helpful. If initiating a process to gather information from a variety of sources on newer topics with broad policy implications (e.g., EVs), participants seemed to prefer processes that afforded more flexibility and robust exchange of ideas.
- ***Optimal level of commissioner and commission staff involvement and guidance.*** While some participants expressed concerns with state commission initiation of, or participation in, EV-focused stakeholder processes, most participants encouraged regulatory engagement and guidance to the extent feasible. Commission guidance on specific objectives, timelines, and deliverables are helpful to keep a stakeholder process on track, and participants encouraged commissions to communicate expectations clearly up front. Finally, a commission may consider sharing substantive perspectives—even if those perspectives are preliminary in nature and may need to be adjudicated more formally later—to further guide and inform all stakeholders.

- *Effective coordination with other state agencies, officials, and task forces.* Especially with respect to EVs, there are other agencies that overlap the interest and responsibilities of electric company regulators. Participants highlighted those agencies and officials focused on environmental protection, transportation, energy, consumer protection, state purchasing, and land use planning as those who may be valuable participants in any collaborative process on EVs. Active engagement by the relevant experts adds value to the collaborative stakeholder discussion.
- *Effective engagement with non-traditional entities.* Electric transportation issues are likely to attract a number of stakeholders who traditionally have not practiced in the regulatory arena and may need additional assistance navigating the regulatory process and understanding the roles of electric companies, regulators, and other stakeholders.
- *Use of a professional facilitator or mediator.* Depending on the objectives that the commission has in mind for the process and the level of commissioner and commission staff involvement, outside assistance may be helpful in ensuring that stakeholders focus on the key issues for which their input is needed.

### ***Concerns About Collaborative Stakeholder Processes***

While acknowledging the need to prepare for electric transportation issues, some participants were reluctant to call for commission-initiated actions, including collaborative stakeholder processes, on electric transportation that may be construed as: (1) getting ahead of state legislatures or governors on policy matters, especially if there is uncertainty regarding a state commission's jurisdiction; (2) unduly influencing or prejudging EV-related proposals that may follow such a stakeholder process; or (3) picking winners and losers versus allowing the market to guide outcomes.

Recognizing that no one approach will work in all states and jurisdictions, these concerns could be addressed in ways that allow for stakeholder collaboration and for commissions to gather appropriate information upon which to base guidance on key issues. For example, state commissions need to weigh in on potential energy grid impacts and options to mitigate them, and a stakeholder process can be used to identify and inform all participants with respect to key considerations. Generally, participants view such processes on electric transportation as opportunities for valuable discussion without binding any party and, thus, encourage regulatory engagement and guidance to the extent feasible.

### ***Examples of Stakeholder Processes on Electric Transportation***

There are many lessons to learn from different approaches used by state commissions for engaging stakeholders on EV-related issues. As commissions consider designing their own stakeholder processes to meet specific needs and circumstances, it would be worthwhile to examine other state approaches. Figure 3 features one example of a stakeholder process on electric transportation issues from Maryland.<sup>8</sup>

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<sup>8</sup> Chris Budzynski, Director, Utility Policy, Exelon Corporation. *Implementing Electric Vehicle Charging Infrastructure*. PowerPoint presentation to CCIF Summit 1 Participants. February 2019.

### Figure 3. Maryland PSC EV Working Group Formation, Objectives, Activities & Outcomes

The Working Group dedicated to EV charging:

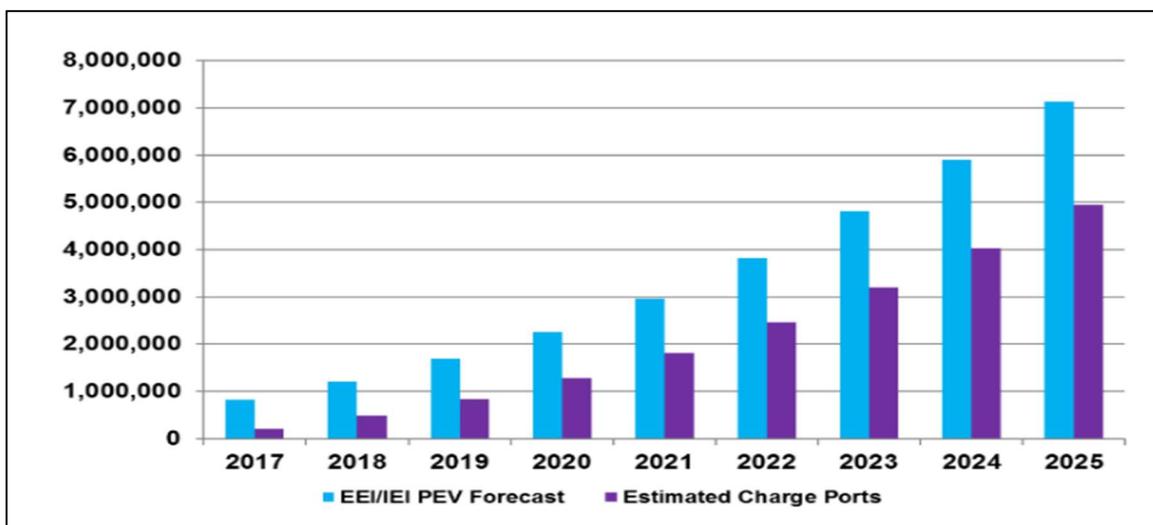
- Formed by the Maryland Public Service Commission (PSC) as part of its PC44 grid modernization proceeding in January 2017.
- Tasked by the Commission with, at a minimum, pursuing outcomes that corresponded to the following goals:
  - Increasing and diversifying EV tariffs across multiple service territories and customer classes.
  - Planning for a limited utility infrastructure investment in electric vehicle supply equipment (EVSE).
  - Developing a strategy to address grid-related costs associated with vehicle fleet electrification.
  - Facilitating and encouraging equitable access to benefits derived from vehicle fleet electrification, especially in underserved markets.
  - Developing a customer education, outreach and engagement strategy in coordination with other state agencies to promote the outcomes of the PC44 EV working group.
- Guided by certain principles, established by the Commission, intended to develop potential solutions consistent with the vision for the future of Maryland's electric distribution system:
  - Competitive markets
  - Seamless integration of new technologies
  - Universal access to reliable, cost-effective and environmentally sustainable electric service
  - Collaboration between stakeholders
  - Appropriate role of electric distribution companies moving forward
- Held its first meeting in March 2017.
  - More than 80 stakeholders attended
  - Overview of the PC44 Notice
  - Recap of existing EV-related activities in Maryland
  - Clarify or expand on goals and objectives to be pursued by working group
- Held several in-person meetings throughout the year featuring presentations from industry experts to establish a common baseline of understanding and timelines for deliverables.
- Held smaller working group meetings of similarly situated stakeholders throughout the summer.
- Received utility presentations of initial conceptual ideals for programs and pilots in September 2017.
- Held its last meeting in December 2017.
  - Stakeholders provided final input and feedback
  - Outline of proposal was presented
- Submitted a petition outlining EV proposals from several electric companies in January 2018.
  - 14 parties as joint signatories but not a consensus document from all parties
  - Initiated an adjudicatory process before the Maryland PSC with decision issued in January 2019

For more information, go to: <https://www.psc.state.md.us/transforming-marylands-electric-grid-pc44/>.

## Infrastructure & Deployment

Investment in plug-in electric vehicle (PEV or EV) charging infrastructure will be necessary to support forecasted EV demand and to address a substantial barrier to EV adoption. Figure 4 illustrates the estimated charge ports needed to support the estimated EVs on the road over the next few years.<sup>9</sup> Based on its forecast, EEI/IEI estimates that about 9.6 million charge ports will be needed to support the 18.7 million EVs projected to be on U.S. roads in 2030.<sup>10</sup>

**Figure 4. Charging Infrastructure Needed By 2025 Based on EEI/IEI Forecast**



Meeting these charging infrastructure needs is a task that will necessitate investment by several entities. Multiple market participants, including electric companies, are engaged in expanding access to EV charging for current and future EV owners in the light-, medium-, and heavy-duty segments.

Given their roles of regulatory oversight, state commissioners and consumer advocates discussed to what extent electric company investment in EV charging infrastructure is appropriate. Participants narrowed in on a few key takeaways:

- Electric transportation is still a growing area, and there are multiple entities that need to be involved in EV infrastructure.
- In addition to their fundamental role of ensuring safe, reliable, and affordable electric service to all customers, there are various roles for electric companies with respect to EV infrastructure planning and deployment.
- Customers trust and expect electric companies to serve as partners in meeting their EV-related needs.

<sup>9</sup> *Plug-in Electric Vehicles Sales Forecast Through 2025 and the Charging Infrastructure Required*. Edison Electric Institute and Institute for Electric Innovation. June 2017.  
[http://www.edisonfoundation.net/iei/publications/Documents/IEI\\_EEI%20PEV%20Sales%20and%20Infrastructure%20t%202025\\_FINAL%20\(2\).pdf](http://www.edisonfoundation.net/iei/publications/Documents/IEI_EEI%20PEV%20Sales%20and%20Infrastructure%20t%202025_FINAL%20(2).pdf).

<sup>10</sup> *Electric Vehicle Sales Forecast and the Charging Infrastructure Required Through 2030*. Edison Electric Institute and Institute for Electric Innovation. November 2018.  
[http://www.edisonfoundation.net/iei/publications/Documents/IEI\\_EEI%20EV%20Forecast%20Report\\_Nov2018.pdf](http://www.edisonfoundation.net/iei/publications/Documents/IEI_EEI%20EV%20Forecast%20Report_Nov2018.pdf).

## EV Infrastructure Models

In addition to traditional line extension policies, electric companies are participating in the buildout of EV charging infrastructure in multiple ways, including:

- *Make-Ready or Charge-Ready.* The electric company funds the installation and supply infrastructure costs up to the point of interconnection of the charging equipment. While rebates may be applied, the customer generally procures and pays for the charging equipment.
- *Charger Only.* The electric company funds and/or owns the charging equipment, utilizing the existing supply infrastructure on the premises and/or offsetting any installation costs.
- *Full Ownership and Operation.* The electric company funds and/or owns the full installation, up to and including the charging equipment.

See Figure 5 for an illustration of EV charging infrastructure models.<sup>11</sup> Several electric company representatives reported that their companies engage in many or all of the models.

**Figure 5. EV Charging Infrastructure Illustration**

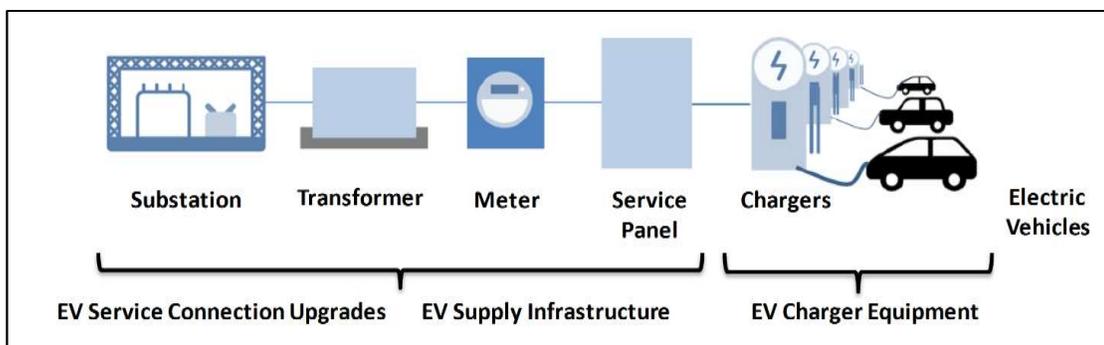


Figure 6 shows EV charging equipment by location (or customer segment).<sup>12</sup> The various approaches to electric company involvement in the buildout of EV charging infrastructure can apply to each customer segment; however, the type of charging infrastructure changes to align best with the needs of that customer segment.

**Figure 6. EV Charging Infrastructure Illustration**

Location	Charging Type Considered	Charge Time
Home (single family homes and multi-family dwellings)	Level 1, Level 2	Overnight (approx. 12 hours)
Workplaces	Level 2	Work day (approx. 8 hours)
Public Level 2	Level 2	Approx. 2+ hours
Public DC Fast Charging	DCFC	Approx. 30 minutes

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

Notably, there are other approaches that can be used in conjunction with the above-mentioned charging infrastructure models. First, rebates often cover some portion (or all) of the charging equipment costs, installation costs, or both. These and other rate incentives can be used to effectuate the various models. Second, electric companies may use demonstration or pilot projects as an effective way to gather data about customer behavior and energy grid impacts associated with EVs. For example, pilots allow the electric company to test and demonstrate the performance of technological innovations in charging equipment components (e.g., battery integration) before a more significant commitment is made.

### ***Electric Company Role in EV Infrastructure***

Several participants shared perspectives on electric company efforts to invest in EV charging infrastructure, including mitigating any impacts on competition. Other questions focused on efforts to recover costs of such investment from the general body of electric customers.

However, participants did see a clear connection to the existing statutory requirements of electric companies—notably, the obligation to serve. They recognized that electric companies must plan, build, and operate the energy grid to accept and absorb changes associated with EVs (and other customer-facing technologies). Participants recognized that a greater electric company role in EV infrastructure deployment could be necessary for various policy reasons, including facilitating sustainability goals or more specific EV targets, increasing access beyond what the competitive market may provide on its own, and addressing customer preferences for working with their electric companies on EV-related needs.

Some participants opined that customers view electric companies as trusted partners and expect them to provide infrastructure to meet their EV-related needs. We heard firsthand from commercial customers, community leaders, and transit company representatives currently working with their electric companies, that they expect and encourage the electric company's involvement in meeting EV infrastructure needs.

Finally, electric companies may invest in areas where third-party service providers are not investing. With a history of serving all communities in their service areas, as well as having access to lower-cost capital, electric companies are well-suited for helping ensure access to low- to moderate-income and underserved populations.

Key takeaways from the discussion include the following:

- *Electric transportation is still a growing area, and there are multiple entities that need to be involved in EV infrastructure planning and deployment.* These include third-party service providers; electric companies; transportation authorities; other state and local government agencies and officials; charging companies; auto manufacturers and dealers; and building associations.
- *There are various roles for electric companies with respect to EV infrastructure.* Whether electric companies invest in EV infrastructure, work with third-party service providers to enable charging, or simply serve EV owners with electricity, they clearly play a role with respect to EVs and EV charging infrastructure. At a minimum, however, all regulated electric companies are expected to (1) meet the electric needs of their customers reliably, including residential EV owners and businesses that operate electric fleets or provide EV charging to their own customers; and (2) be prepared for the projected EV market in terms of system planning and minimizing any negative energy grid impacts.
- *Customers expect electric companies to serve as partners or facilitators in meeting their EV-related needs.* This aligns with input from commercial customers, smart community representatives, fleet operators, and even consumer advocates referring to residential customers.

## ***Planning, Operations, and Coordination Issues***

Participants identified EV-related issues related to planning, operations, and coordination.

- ***Planning for EVs.*** As they carry out their system planning functions, electric companies should:
  - Lead a planning process at the outset to help determine infrastructure needs and energy grid impacts for light-, medium-, and heavy-duty segments; transit; corridors; multi-unit dwellings; etc.
  - Consider the roles of third-party service providers in addressing infrastructure needs.
  - Manage the load from EVs.
  - Consider current or anticipated smart meter deployments, how to facilitate managed charging with or without smart meters, and managed charging strategies where smart meters are unavailable.
- ***Interoperability.*** Questions remain regarding the challenges associated with disparate systems, but several participants highlighted that:
  - Interoperability is needed, especially if public/customer money is invested in charging infrastructure.
- ***Coordination.*** Participants recommended that electric companies:
  - Coordinate with third-party service providers, customers, and key stakeholders on EV planning, operations, and infrastructure deployment issues.
  - Avoid unnecessary duplication of infrastructure, except in the case of proprietary systems that prevent universal access.
  - Engage in longer-term planning or “future-proofing” approaches that minimize inconvenience and cost (e.g., avoiding digging up streets multiple times).
  - Have proper visibility of EVs to ensure no negative impacts to the energy grid.

## ***Managed Charging & Metering Issues***

Managed charging allows electric companies or third-party service providers “to remotely control vehicle charging by turning it up, down, or even off to better correspond to the needs of the grid, much like traditional demand response (DR) programs.”<sup>13</sup> The Illinois Citizens Utility Board (CUB) refers to the concept as optimized charging and finds that it “can put downward pressure on the statewide costs of energy, capacity, and delivery of electricity.”<sup>14</sup>

Figure 7 further demonstrates the potential added value of managed charging. Using North Carolina data, it shows that net benefits are increased over baseline when using managed charging.<sup>15</sup>

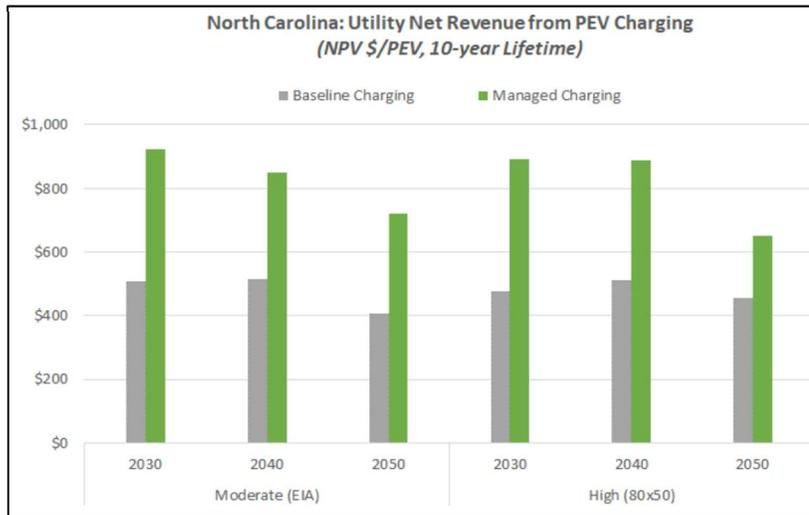
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<sup>13</sup> Erika H. Myers. *Utilities and Electric Vehicles: The Case for Managed Charging*. Smart Electric Power Alliance (SEPA). June 2017. p. 4. <https://sepapower.org/resource/ev-managed-charging/>.

<sup>14</sup> *Charging Ahead: Deriving Value from Electric Vehicles for All Electricity Customers: The ABCs of EVs Series, Volume 2*. Citizens Utility Board (CUB) of Illinois. March 2019. p. 2. <https://www.citizensutilityboard.org/wp-content/uploads/2019/03/Charging-Ahead-Deriving-Value-from-Electric-Vehicles-for-All-Electricity-Customers-v6-031419.pdf>.

<sup>15</sup> Lang Reynolds, Director of Electric Transportation, Duke Energy. *Managing charging increases net benefits*. (Source Data: MJ Bradley – NC PEV Cost-Benefit Analysis). PowerPoint presentation to CCIF Summit 3 Participants. April 2019.

**Figure 7. Managing Charging Increases Net Benefits**



Accordingly, CCIF participants identified the following consensus statements with respect to managed charging and metering:

- ✓ ***Managed charging can help maximize the benefits of electric transportation by improving electric system optimization and can help minimize costs for customers.***
- ✓ ***Transportation electrification programs should be designed to improve system utilization.***
- ✓ ***An effective way to measure usage/load data and to best communicate price signals to EV charging customers through technology is paramount to maximizing the potential benefits and minimizing the potential costs of electric transportation.***

### ***Access & Equity Issues***

Participants discussed the importance of ensuring that low- to moderate-income, rural, and underserved communities have opportunities to participate in, and benefit from, electric transportation. When electric customer funds are used for EV infrastructure buildout, some participants argue that charging stations should be in areas that provide the most access to the most EV drivers. However, that could result in unintended consequences, contributing to less access in underserved areas.

It is also important to note that participants took a broader view of the terms “access” and “equity.” These concepts may be achieved via methods other than distributing charging stations across a service territory. In fact, there was substantial discussion about electrified mass transit options, particularly electric buses, to help ensure access to electric transportation in areas that may not be as cost-effective for placement of charging stations in earlier stages of deployment.

Given that context, participants were able to agree on the following consensus statement regarding access and equity issues:

- 
- ✓ ***Charging infrastructure should be deployed in a manner that provides access to electric transportation for all customers.***
- 

### ***Sale for Resale Issues***

Several states have addressed the policy question of whether electricity made available for EV charging by EV supply equipment companies at commercial or public charging stations constitutes the sale for resale of electricity. Either by legislative or regulatory action, several states have determined that charging offered by EV supply equipment companies is not a resale of electricity. For example, in recent decisions in Iowa and Kentucky, state regulators determined that such commercial or public EV charging stations are not subject to regulation by the respective state commissions.<sup>16</sup>



Featured presenters at CCIF Summit 3 in Philadelphia share perspectives to set the stage for the collaborative dialogue. Pictured from left to right are Maryland Public Service Commissioner Odogwu Obi Linton, EEl’s Phil Moeller, EPRI’s Dr. Arshad Mansoor, Foothill Transit’s Kevin Parks McDonald, Walmart’s Steve Chris, Alliant Energy’s Jason Nielsen, and New Jersey Board of Public Utilities Commissioner Dianne Solomon.

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<sup>16</sup> See the Iowa Utilities Board’s April 2019 *Order Commencing Rule Making In Re Electric Vehicle Infrastructure*, Docket No. RMU-2018-0100 (<https://efs.iowa.gov/cs/groups/external/documents/docket/mdax/odq0/~edisp/1844955.pdf>) and the Kentucky Public Service Commission’s June 2019 *Order In Re Electronic Investigation of Commission Jurisdiction Over Electric Vehicle Charging Stations*, Case No. 2018-00372 ([https://psc.ky.gov/pscscf/2018%20Cases/2018-00372//20190614\\_PSC\\_ORDER.pdf](https://psc.ky.gov/pscscf/2018%20Cases/2018-00372//20190614_PSC_ORDER.pdf)).

## Costs & Benefits: Cost Recovery

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The cost-benefit analysis is a key component of regulatory review of electric company requests for cost recovery. Given the potential benefits of electric transportation, participants discussed how customers—both EV owners and non-EV owners—are expected to fare if the electric company recovers costs of EV programs from its customer base.

Participants raised questions regarding cost recovery, including the idea of assigning costs related to electric transportation to the general body of electric customers. Some expressed caution about the general exuberance over EVs and benefits that may not be easily quantifiable.

There was discussion as to how the regulatory community might take actions to help drive the best outcomes—what types of things should be considered; what type of information would be necessary for a reliable cost-benefit analysis; and how to maximize and capture benefits for electric customers and the energy grid. The following consensus statement underscores that focus and provides an important backdrop to this section on cost-recovery issues:

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✓ ***When commissioners, consumer advocates, and electric company representatives are considering potential policies or evaluating proposed programs on electric transportation, they should pursue policies and programs that have the potential to maximize the benefits for the broadest range of customers while minimizing costs and managing risks for all customers.***

---

### Potential Benefits

Participants discussed several potential benefits related to electric transportation:

- *Lower average system cost for all customers with increased electric sales from EVs.* A February 2019 report by Synapse on its analysis of the experiences of two electric companies showed that “from 2012 through 2017, EVs in California have increased utility revenues more than they have increased utility costs, leading to downward pressure on electric rates for EV-owners and non-EV owners alike.”<sup>17</sup>
- *Storage and use of excess capacity (in particular from renewable sources).* EVs could help address excess capacity issues by charging at times when there are large amounts of renewable generation on the system.
- *Societal benefits, including environmental and health benefits.* While there was general agreement among participants regarding the environmental benefits (i.e., reduced carbon

### Figure 8. Key Statistics Regarding EV Benefits

#### Did You Know?

- Driving on electricity emits 54% fewer carbon dioxide emissions per mile than the average new gasoline car.
- EV drivers spend the equivalent of approximately \$1.20 per gallon, based on average residential electric rates.

Source: EEI *Issues & Policy: Electric Transportation*. <http://www.eei.org/issuesandpolicy/electrictransportation/> (accessed on July 9, 2019).

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<sup>17</sup> Jason Frost, Melissa Whited, Avi Allison. *Electric Vehicles are Driving Electric Rates Down*. Synapse Energy Economics, Inc. February 2019. p. 4. <https://www.synapse-energy.com/sites/default/files/EVs-Driving-Rates-Down-8-122.pdf>.

dioxide emissions and improved air quality) and health benefits, some participants highlighted long-standing concerns about quantification of such societal benefits in the regulatory process.

- *Lower overall energy costs for EV owners.* As shared by featured speakers from the Electric Power Research Institute (EPRI), EV owners spend less money on their overall energy (electricity, heating, and transportation “fueling”) expenses than those who drive internal combustion engine (ICE) vehicles. According to EEI data, EV drivers spend the equivalent of about \$1.20 per gallon, based on average residential electric rates.<sup>18</sup>

Participants were most interested in quantifiable benefits that can be realized by most customers, including those customers who do not purchase an EV. Participants also noted that electric companies can play a role in driving those benefits.

CCIF participants identified the following consensus statement with respect to potential benefits of electric transportation:

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**✓ *Electric transportation has the potential to benefit customers through emissions reductions, increased utilization of existing assets, and lower average system costs (assuming efficient charging behavior).***

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### ***Potential Costs & Other Considerations***

Participants also discussed the obstacles associated with electric company investments and within the regulatory sphere. The following were identified as key components to be assessed when exploring EV infrastructure and EV-related programs:

- *Assumptions embedded in analyses.* Participants noted the need to examine key assumptions (e.g., number of EVs anticipated, timing and location of charging, etc.) that are embedded in analyses by electric companies and other parties.
- *Incremental costs.* Regulators should consider the incremental costs of any necessary transmission and distribution (T&D) system upgrades, as well as overall costs and/or incentives that are associated with charging stations.
- *Risks of increased usage on-peak, resulting in the need for additional generation.* Increased EV adoption, without proper planning, could result in the need for electric companies to invest in, or procure, additional electric generation, which can increase overall costs to customers.
- *Obsolescence and stranded costs.* Regulators should consider potential obsolescence associated with electric company investments in newer, customer-driven technologies, such as EVs, as well as any stranded costs associated with the full life cycle of the replaced asset.
- *Regulatory treatment.* Participants noted the need to examine the impacts on customer bills of the proposed regulatory treatment (e.g., creation of a regulatory asset) and key inputs (e.g., amortization period).
- *Other funding and incentives already available.* Regulators may want to consider other available funding and incentives when reviewing EV programs.
- *Accessibility to underserved/low- and moderate-income/rural communities.* Consideration should be given to the placement of EV infrastructure, with the understanding that access to electric transportation for all customers, including certain underserved communities, is imperative.

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<sup>18</sup> *Electric Transportation Benefits Customers, Communities, and the Environment.* Edison Electric Institute. April 2019. [http://www.eei.org/issuesandpolicy/electrictransportation/Documents/Electric\\_Transportation\\_Benefits\\_Customers\\_and\\_Communities.pdf](http://www.eei.org/issuesandpolicy/electrictransportation/Documents/Electric_Transportation_Benefits_Customers_and_Communities.pdf).

## Customer-Focused Rates

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As new technologies like EVs capture the interest of customers, the prospect of designing customer-focused electric rates may seem challenging. Summit participants addressed several questions, including designing rates that do not serve as a barrier to EV adoption while recovering the appropriate amount from EV owners; protecting customers who do not own EVs; and avoiding rate design mistakes of the past.

Despite the rapid pace of change, several core tenets of rate design still hold up in the era of customer-facing technologies like EVs. Designing rates for customers interested in electric transportation should keep the following time-tested principles in mind:

- Customer pricing and rates should allow for regional variation and flexibility.
- The fundamental pricing principles (i.e., Bonbright) should continue to be maintained with respect to new technologies such as EVs.

### ***EV Rate Design Options & Principles***

Participants discussed potential rate design options that may be used to account for the specific characteristics of EVs, spur EV adoption, affect the charging behavior of EV owners, or align customer behavior with the need to minimize the energy grid impacts and system and customer costs. As discussed previously, managed charging can be an important tie-in with different rate designs.

- *Time-of-Use (TOU) rates.* Rates varying by time period, allowing for potential cost savings by shifting usage to lower-cost periods.
- *Separate rate class for EV customers.* Separate tariff for EV customers that reflects their usage characteristics.
- *Demand charge “holidays.”* Removal of the demand charge component for a limited time.

Rate design can be used as an effective tool to maximize the benefits of EV programs. Customer pricing and rates should balance the needs of customers and the energy grid, and should benefit both. CCIF participants identified the following consensus principles regarding rate design:

- 
- ✓ ***Customer pricing and rates should allow for regional variation and flexibility.***
  - ✓ ***The fundamental pricing principles (i.e., Bonbright) have not changed and must be maintained with respect to new technologies, such as electric transportation.***
  - ✓ ***New rate designs will help maximize the benefit of managed charging.***
  - ✓ ***Any mechanism designed to spur market adoption should be transparent and should phase out as the market continues to grow.***
-

### ***Other Considerations in Designing Customer-Focused Rates***

As state regulators endeavor to develop customer-focused rates that will send proper signals to EV owners about best times to charge, they also may consider the following:

- *Who benefits and who pays?* Regulators may analyze rate design options to identify whether the benefits would accrue to those customers paying the costs of the electric company's investment in electric transportation infrastructure or other EV-related programs.
- *Balancing the needs of customers and the energy grid.* Regulators may consider whether rate design options provide benefits to certain customers at the expense of the energy grid (i.e., rate design options that serve as incentives for customer EV use but that may not recover fully the costs of that customer's use of the energy grid).
- *Data in exchange for incentives.* Several programs require EV owners to share data in exchange for rebates and other incentives. Electric companies can use this valuable data to gain a better understanding of customer behavior and impact of EV charging patterns on the energy grid; improve the EV owner experience for their customers; and improve EV-related customer incentives in the future.
- *Metering options for tracking time, location, and usage.*
- *Customers who have opted out of smart meters.*
- *Default rates for EV owners.* Default rates may allow for customers to benefit from being placed in a more advantageous rate class by default, instead of requiring the customer to take action.

## Education & Information

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Participants agreed that having electric companies in a position to provide more information to customers on the availability of new customer-facing technologies, including electric company programs that provide cost savings or other customer benefits, can help maximize program benefits. This includes electric transportation. However, participants did raise questions about how better to define the role of the electric company.

### ***Electric Company Role in Education***

Participants recognized that there are considerable gaps in customer awareness of EVs and that more customer education is needed, particularly for those customers who already own or are looking to buy an EV. Acknowledging that customers often see electric companies as trusted sources of information on issues pertaining to electric transportation, participants identified the following consensus statement:

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✓ ***Customer education should be considered as an important component of electric company electric transportation-related programs.***

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### ***Awareness & Education Versus Promotion & Advocacy—A Framework***

Recognizing a difference between customer awareness, education, promotion, and advocacy, and depending on a state’s approach or mandates, participants agreed that electric companies should provide certain information to customers in various stages of program deployment and approval. Figure 9 features a framework developed by participants to provide initial guidance for electric companies considering how and when to provide information to customers about electric transportation.

**Figure 9. Proposed Framework for Informing Customers About Electric Transportation**

- In the **pre-program deployment** stage and ongoing, electric companies should provide the following information to customers:
  - basics about electric transportation (differences of internal combustion engine, hybrid, and all-electric; general benefits and challenges of EVs for customers and the energy grid; and system impacts of charging at various periods of the day);
  - basics about EVs and EV charging/fueling for EV owners and potential owners (fuel type, charging levels, charging time); and
  - support of EV technologies (not a particular brand) and adoption when state policy sets targets or mandates.
- In the stage **following program approval**, electric companies should provide the following information to customers:
  - marketing, communications, and education to customers on an electric company’s specific program (rate program, charging incentives, etc.), including notice about the temporal nature of rates and how customers without EVs will benefit; and
  - support and advocacy designed to encourage managed charging to shift charging to optimal times.

### ***Collaboration to Provide Customer Education***

Participants identified the following consensus statement regarding collaboration on customer education:

- 
- ✓ ***Commissioners, consumer advocates, and electric company representatives should collaborate on electric transportation-related awareness and education efforts to provide a credible, reliable source of information for customers.***
- 

Similar to collaboration on energy efficiency programs, state commissions could collaborate with electric companies to ensure customers are informed about EV ownership and operation—up front versus daily costs; total energy bills; how mileage is affected by weather; etc.

### **Figure 10. Tampa Electric Company EV and Energy Education Program**

In partnership with the University of South Florida, the Center for Urban Transportation Research and Tampa area high schools, Tampa Electric Company (TECO) offers select high school students within its service area an opportunity to learn about owning, operating, and maintaining EVs as part of the driver's education program. Following the [Florida Public Service Commission's 2017 approval](#) of the innovative program for recovery through the Energy Conservation Cost Recovery (ECCR) clause, TECO became the first electric company in the country to offer an energy education program that teaches students about EV technology. Each student who participates in the program receives a [Plug-in Electric Vehicle Student Readiness Guide](#).

Source: TECO *Education, Awareness and Agency Outreach*.

<https://www.tampaelectric.com/residential/saveenergy/educationandoutreach> (accessed on July 9, 2019).

## Conclusion

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### ***Objective Met***

CCIF's objectives with respect to the topic of electric transportation were not aimed at resolving all issues, but instead at offering practical approaches for commissioners, consumer advocates, and electric company representatives when addressing the issues. Participants were encouraged to:

- Identify key issues and potential roles;
- Recognize the timeliness, relevance, and importance of electric transportation issues to encourage preparation for addressing specific issues in their states and service areas;
- Share perspectives and lessons learned, providing guidance for those in beginning stages; and
- Identify and share key takeaways from the dialogue with the regulatory and broader stakeholder communities.

The following previously featured consensus principle highlights CCIF's achievement of its objectives, particularly with respect to participants' recognition of the importance in preparing for—and leading on—electric transportation issues:

- 
- ✓ ***Commissioners, consumer advocates, electric company representatives, and all interested stakeholders should be proactive in efforts to establish the best electric transportation policies for customers, who otherwise will continue to adopt new technologies, including electric transportation, devoid of a set policy, formalized regulatory structure, or business plan.***
- 

CCIF trusts that this report will serve as a good foundation for additional dialogue and collaboration among state utility regulators, consumer advocates, electric company representatives, customers, third-party service providers, policymakers, and other stakeholders.

### ***Special Recognition***

The CCIF Executive and Advisory Committees would like to acknowledge the following individuals and organizations whose valuable contributions resulted in this report:

- The National Association of Regulatory Utility Commissioners (NARUC), the National Association of State Utility Consumer Advocates (NASUCA), and the Edison Electric Institute (EEI), particularly the guidance of their respective leaders and the valuable input and hard work of their respective teams;
- Participating commissioners, consumer advocates, and electric company representatives; and
- Speakers at the 2018 Kickoff Forum, 2019 Summits, and 2019 Breakfast & Report Release.

### ***Disclaimer***

The principles developed within the 2019 summit process—or other featured information within this report—are not intended to override any individual or collective policies or positions developed by state commissioners, consumer advocates, electric companies, or by NARUC, NASUCA, EEI, or other organizations represented by certain participants. Instead, CCIF work products are meant to complement such policies or positions and to provide a framework for additional discussion and policy development.

## Appendix

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### Acknowledgment of 2019 Summit Participants

Due to the nature of the collaborative process and the extensive degree of participation, specific principles developed within the 2019 summit process or other featured information within this report should not be attributed to specific individuals or to the organizations that he or she represents. With that understanding, CCIF acknowledges the following individuals\* who participated in CCIF events focused on the topic of *Driving a Customer-Focused Energy Future: Examining Policies for Delivering Smart Mobility and Other Customer Solutions*:

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**Steve Wills**

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**Kimberly Winslow**

Kansas City Power &  
Light Company

**Lincoln Wood**

Southern Company

\*List represents individuals and their organizations at the time of participation in the summits.

## **Resources Regarding Electric Transportation**

The following list contains notable resources on electric transportation. Please note that inclusion herein should not be considered endorsement by CCIF or participants and that, because the electric transportation landscape is evolving rapidly, information within these resources may be out-of-date.

### ***Policy Resolutions***

- [\*Resolution on Alternative Fuel Vehicle Development and Deployment\*](#). National Association of Regulatory Utility Commissioners (NARUC). Adopted July 20, 2011.
- [\*Resolution Urging the Adoption of Policies and Regulations to Protect Ratepayers as Electric Vehicle Adoption Rates Increase\*](#). National Association of State Utility Consumer Advocates (NASUCA). Adopted June 24, 2018.

### ***Reports & Other Resources***

- [\*The ABCs of EVs: A Guide for Policy Makers and Consumer Advocates\*](#). Citizens Utility Board (CUB) of Illinois. March 2019.
- [\*Accelerating Electric Vehicle Adoption\*](#). Kellen Schefter and Becky Knox. Edison Electric Institute. February 2018.
- [\*Beneficial Electrification of Transportation\*](#). David Farnsworth, Jessica Shipley, Joni Sliger, and Jim Lazar. Regulatory Assistance Project. January 2019.
- [\*California Transportation Electrification Assessment, Phase 2: Grid Impacts\*](#). Energy and Environmental Economics, Inc. October 23, 2014.
- [\*Charging Ahead: Deriving Value from Electric Vehicles for All Electricity Customers: The ABCs of EVs Series, Volume 2\*](#). Citizens Utility Board (CUB) of Illinois. March 2019.
- [\*Electric Transportation Benefits Customers, Communities, and the Environment\*](#). Edison Electric Institute. April 2019.
- [\*Electric Transportation Biannual State Regulatory Update \(Thru May31, 2019\)\*](#). Edison Electric Institute. April 2019.
- [\*Electric Vehicle Sales Forecast and the Charging Infrastructure Required Through 2030\*](#). Adam Cooper (IEI) and Kellen Schefter (EEI). Edison Electric Institute and Institute for Electric Innovation. November 2018.
- [\*Electric Vehicle Trends & Key Issues\*](#). Edison Electric Institute. June 2019.
- [\*Electric Vehicles are Driving Electric Rates Down\*](#). Jason Frost, Melissa Whited, Avi Allison. Synapse Energy Economics, Inc. February 2019.
- [\*EVs 101: A Regulatory Plan for America's Electric Transportation Future: What Utility Commissioners Need to Know About the Accelerating Electric Vehicle Market\*](#). Advanced Energy Economy (AEE). September 2018.
- [\*From Gas to Grid: Building Charging Infrastructure to Power Electric Vehicle Demand\*](#). Garrett Fitzgerald and Chris Nelder. Rocky Mountain Institute. 2017.

- [\*The Future of Transportation Electrification: Utility, Industry and Consumer Perspectives\*](#). Future Electric Utility Regulation Report No. 10. Philip B. Jones, Alliance for Transportation Electrification; Jonathan Levy, EVgo/Vision Ridge; Jenifer Bosco, John Howat and John W. Van Alst, National Consumer Law Center. Lawrence Berkeley National Laboratory. August 2018.
- [\*Governors Staying Ahead of the Energy Innovation Curve: A Policy Roadmap for States\*](#). National Governors Association. July 2018.
- [\*A U.S. Consumer's Guide to Electric Vehicle Charging\*](#). Electric Power Research Institute (EPRI). Oct 31, 2016.
- [\*Utilities and Electric Vehicles: The Case for Managed Charging\*](#). Erika H. Myers. Smart Electric Power Alliance (SEPA). June 2017.

## **CCIF Events on Driving a Customer-Focused Energy Future**

### **Fall Kickoff Forum**

November 10, 2018  
Loews Royal Pacific Orlando  
Orlando, FL

### **Spring Summit 1**

February 28 – March 1, 2019  
Sheraton Grand Phoenix  
Phoenix, AZ

### **Spring Summit 2**

March 19 –20, 2019  
Hyatt Regency New Orleans  
New Orleans, LA

### **Spring Summit 3**

April 24 –25, 2019  
Hilton Philadelphia City Avenue  
Philadelphia, PA

### **Breakfast & Report Release**

July 23, 2019  
JW Marriott Indianapolis  
Indianapolis, IN



CCIF 2018 Kickoff Forum panelists enjoy discussing their respective visions for a customer-focused energy future. Pictured from left to right are Kroger Senior Leader Denis George, Babcock Ranch President Rick Severance, North Carolina consumer advocate Chris Ayers, Indiana Utility Regulatory Commissioner Sarah Freeman, and Madison Gas & Electric Company's Greg Bollom.

## **CCIF Overview**

### ***CCIF Formation, Leadership, and Process***

Formed in 2010, the Critical Consumer Issues Forum (CCIF) brings together state commissioners, consumer advocates, and electric company representatives to tackle consumer-focused energy issues through interactive discourse and debate, to find consensus when possible, and, at a minimum, to achieve a clearer understanding of—and appreciation for—each other’s perspectives and positions.

To provide leadership, CCIF organized Executive and Advisory Committees, each with balanced representation from the three core communities. Committee members guide CCIF initiatives at each of the following steps in the process:

1. Kickoff forum, typically collocated with the NARUC & NASUCA Annual Meetings, to introduce a topic and initiate discussion among CCIF’s three core communities and other stakeholders;
2. Series of invitation-only summits in which the three groups engage in facilitated dialogue; and
3. Report issued in the summer to share key takeaways with the broader stakeholder community and serve as a foundation for additional dialogue on numerous fronts.

### ***CCIF Value & Successful Track Record***

By providing a non-adversarial, collaborative environment in which participants from the three core groups candidly can discuss and proactively can address a variety of energy issues with potentially broad impacts on electric customers, CCIF consistently has produced credible reports that:

- Demonstrate support for key concepts to the broader stakeholder community;
- Demonstrate leadership of the three core groups on a range of energy topics;
- Initiate, inform, or focus dialogue at the state level (regulatory and broader policy dialogue); and
- Focus on consumer aspects of energy topics and facilitate proactive consumer education and protection.

Specifically, the following CCIF reports have contributed to energy policy debate in a constructive way:

- [\*Grid Modernization Issues with a Focus on Consumers\*](#), July 2011
- [\*Focus on The Regulatory Process\*](#), July 2012
- [\*Policy Considerations Related to Distributed Energy Resources\*](#), July 2013
- [\*DG: A Balanced Path Forward: Providing Customer Choice While Ensuring Reliability\*](#), July 2014
- [\*The Evolving Distribution System: Helping Consumers Navigate Access to Products, Services and Technologies\*](#), July 2015
- [\*Consumer Solutions: Meeting Consumer Needs on All Levels\*](#), July 2016
- [\*Connecting Communities: Smart Cities, Enabling Technologies, and the Grid\*](#), July 2017
- [\*Security & Resilience at the Distribution Level: Integrating Technologies at the Grid Edge\*](#), July 2018

All CCIF reports are available for download at [www.CCIForum.com](http://www.CCIForum.com).

## CCIF Leadership

### Executive Committee



**Nick Wagner**  
*Iowa Utilities Board Member &  
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**Elin Swanson Katz**  
*Connecticut Consumer Counsel &  
NASUCA President  
(through July 5, 2019)*



**Philip D. Moeller**  
*EEl Executive VP of Business  
Operations Group and Regulatory  
Affairs*

### Advisory Committee



**Maida J. Coleman**  
*Commissioner  
Missouri Public Service Commission*



**David W. Danner**  
*Chairman  
Washington Utilities and  
Transportation Commission*



**Jason M. Stanek**  
*Chairman  
Maryland Public Service Commission*



**Christopher J. Ayers**  
*Executive Director  
North Carolina Utilities Commission  
Public Staff*



**J.R. Kelly**  
*Public Counsel  
Florida Office of Public Counsel*



**Mark R. Schuling**  
*Consumer Advocate  
Iowa Office of Consumer Advocate*



**Gregory A. Bollom**  
*Asst. VP & Regulatory Consultant  
Madison Gas & Electric Company*



**Robert S. Kenney**  
*Vice President, Regulatory Affairs  
Pacific Gas & Electric Company*



**Barbara Lockwood**  
*Vice President of Regulation  
Arizona Public Service*

## **CCIF Executive Director**



**Katrina McMurrian**

*Executive Director*

Critical Consumer Issues Forum

### **Contact Information:**

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A former Florida Public Service Commissioner (2006–2009), Katrina McMurrian draws upon extensive regulatory experience to organize and facilitate relevant policy forums and to advise an array of entities on key regulatory and policy issues in the energy arena.

McMurrian currently serves as the Executive Director of the Critical Consumer Issues Forum (CCIF), a unique national forum in which state utility regulators, consumer advocates, and electric companies—via a series of facilitated, interactive dialogues—engage in productive debate and often develop consensus on key issues of importance to consumers and policymakers. CCIF has produced reports on a range of energy topics including grid modernization, distributed generation, consumer solutions, and smart communities.

McMurrian also serves as the Executive Director of the Nuclear Waste Strategy Coalition (NWSC), an ad hoc organization representing the collective interests of member state utility regulators, state consumer advocates, other state officials, tribal governments, local governments, electric companies with operating and shutdown nuclear reactors, and other public and private sector experts on nuclear waste policy matters.

In these roles, McMurrian frequently interacts with Congress; Administration officials; state and federal utility regulators; state and national consumer organizations; industry representatives; and numerous other public and private stakeholders.

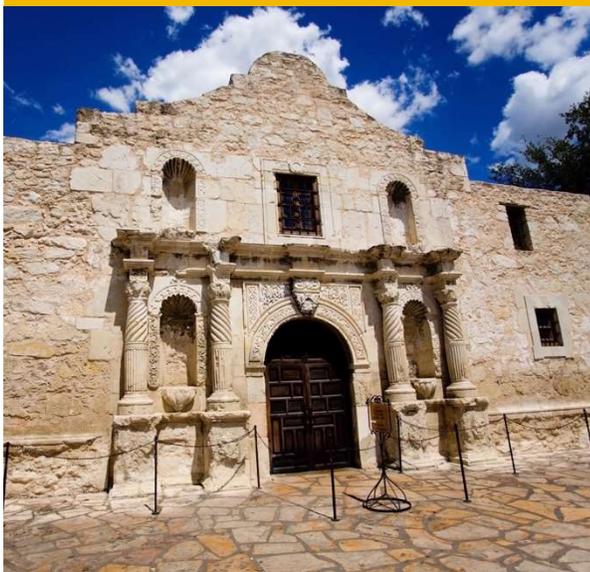
McMurrian serves on the Southwest Research Institute Board of Advisory Trustees, as an associate member of the Financial Research Institute (FRI), and as a member of the American Nuclear Society (ANS), the Institute for Nuclear Materials Management (INMM), and U.S. Women in Nuclear (U.S. WIN).

A Northwest Florida native, McMurrian received a Bachelor's degree in finance and an MBA from Florida State University. She and her husband currently reside near Nashville, Tennessee.

# CCIF

CRITICAL CONSUMER  
ISSUES FORUM

## Save the Date for 10<sup>th</sup> Annual CCIF Kickoff Forum



**Saturday,  
November 16, 2019**

**2:00–5:00 pm**

*(Reception to follow)*

**Grand Hyatt San Antonio**

**San Antonio, TX**

### **Registration**

Registration will open at [www.CCIForum.com](http://www.CCIForum.com) in late August. There is no charge to participate, but a separate registration with CCIF is required. Please make your hotel reservations accordingly. Commissioners and consumer advocates will be eligible for 1-night hotel stipends but are responsible for making their own hotel reservations, including any additional nights to attend the forum.

### **For More Info**

Information about the forum will be posted at [www.CCIForum.com](http://www.CCIForum.com). You may also contact Katrina McMurrin, CCIF Executive Director, by e-mail at: [katrina@CCIForum.com](mailto:katrina@CCIForum.com) or by phone at [615-905-1375](tel:615-905-1375).

This event is funded by the Edison Electric Institute. It is not sponsored by NARUC or NASUCA and is not a part of the agendas of the 2019 NARUC Annual Meeting or 2019 NASUCA Annual Meeting.





# CCIF

CRITICAL CONSUMER  
ISSUES FORUM

**For more information about CCIF or this report:**

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