



ADVANCING INDUSTRY COLLABORATION IN THE EV MARKET

KEY FOCUS AREAS FOR THE LEADING COMPANIES IN THE EV INDUSTRY

by

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ABOUT THE EV INDUSTRY DIALOGUE

The EV Industry Dialogue brings together key private-sector stakeholders, including automakers, electric utilities, and charging service providers to identify and advocate for the priorities of the EV industry. Beginning in mid-2015, the group began developing a state-based strategy to identify the policy priorities of stakeholders in key state and local markets. Through face-to-face dialogues and other coordinated activities, the group aims to ensure consistent messages are delivered to state and local decision-makers.

Atlas Public Policy convenes the group and creates all the materials it uses.

This brief is a direct result of the ongoing collaboration of the companies who actively participate in the dialogue. Atlas Public Policy is solely responsible for the material in this document; dialogue participants do not explicitly endorse or otherwise support its contents.

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PARTICIPANTS IN THE EV INDUSTRY DIALOGUE

- California Electric Transportation Coalition
- Edison Electric Institute
- EVgo
- General Motors
- Greenlots
- National Grid
- Southern Company

The EV Industry Dialogue is currently being supported by the Energy Foundation.

BACKGROUND

The deployment of electric vehicles and infrastructure powered by a low-carbon electrical grid is a key opportunity to address many environmental, energy, and economic challenges facing society today. Automakers are engineering more affordable vehicles with longer electric range and EV charging providers are developing innovative tools and competitive services to help lower the cost of deploying and operating charging stations. Meanwhile, electric utilities nationwide are working to build the next generation electrical grid and increase the share of generation from renewable energy sources [1].

Collaboration among key industry participants—automakers, electric utilities, and charging service providers— to develop regional EV markets has been disjointed at times resulting in technology deployment delays and potentially higher costs, and inconsistent customer experiences in the vehicle and charging purchase process.

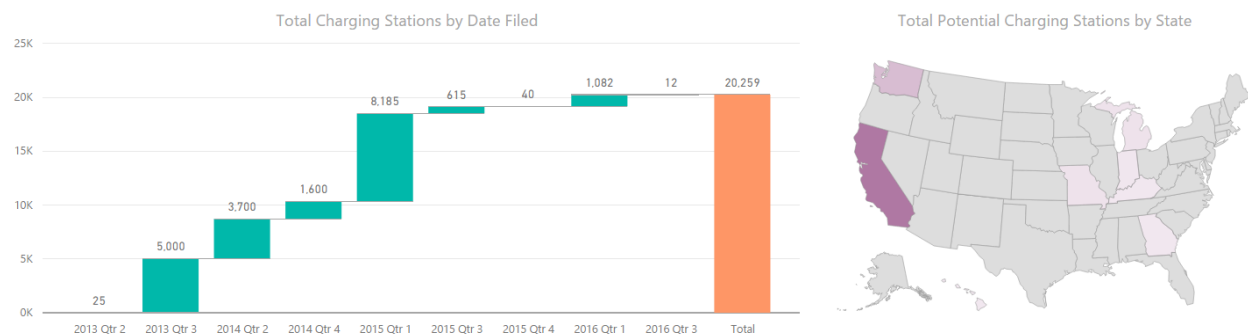
In order to capitalize on the potential economic and social value of planned investments by electric utilities and automakers, the EV industry must actively partner together in the development of infrastructure and awareness-building for EVs.

To date, the private sector has worked closely with government to construct a sustainable market for EVs by prioritizing research and investment in battery technology, electric drivetrains, and charging infrastructure [2]. Investments in technology and pilot programs for infrastructure development have enabled the EV industry to gain a better understanding of the benefits of EV-grid integration, resulting in a diverse range of vehicle product offerings and the investment of tens of millions in various charging service business models. Continued near-term support for EVs through government incentives, subsidies, and thoughtful regulation is necessary to address society's energy challenges and meet ambitious greenhouse gas reduction targets [2]; however, government action alone cannot guarantee a successful and sustainable EV market.

Electric utilities, in particular, can play a key role in supporting EV market growth. Utilities have a strong presence in regions nationwide and have the technical expertise necessary to assist in integrating EVs with the grid. Their existing relationships with customers and policymakers at the state and local level can be an asset for accelerating EV adoption. Utilities can educate consumers and raise awareness by promoting the benefits of electricity as a transportation fuel. Electric utilities could also be an active participant in lowering the costs of charging technology deployment. In collaboration with automakers, charging service providers, infrastructure site hosts, and government, electric utilities can help reduce barriers and accelerate EV adoption.

A number of utilities have been investing in electrifying company fleets, employee workplace charging and outreach and education initiatives. Several investor-owned utilities have submitted ratepayer-funded proposals for transportation electrification initiatives to state regulatory commissions as over the last few years (see Figure 1) [3]. If these utility proposals are approved by their state commissions, nearly 20,000 additional charging stations could be deployed through these programs, including 250 DC fast charging stations. For comparison, as of July 2016, the United States had a total of around 32,000 publicly available Level 2 charging ports and 3,800 DC fast charging ports [4]. Through greater collaboration with other industry participants and government, further engagement by utilities could address market barriers to charging access and help the private sector accelerate EV adoption by reducing the cost of installing and operating charging infrastructure.

FIGURE 1: POTENTIAL EV CHARGING STATIONS DEPLOYED FOR UTILITY PROGRAMS



Potential charging stations to be installed by investor-owned utilities if proposals are approved.

Source: Atlas Public Policy analysis

THE VALUE OF INDUSTRY COLLABORATION TO THE EV MARKET

Collaboration among industry stakeholders, particularly automakers, charging service providers, and electric utilities offer the opportunity to optimize private investments, leverage experience, and reduce the cost of deploying EVs and charging infrastructure.

In order to reach mainstream car buyers in the near term, automakers must continue to drive down EV technology and manufacturing costs while increasing electric range. Infrastructure providers must continue to deploy charging equipment for current and near-term EVs in a consumer-friendly manner. Providers should anticipate and adapt to changing technologies and business conditions by employing open communication standards and future-proofing charging locations with excess electrical capacity for expansion. While the majority of charging may well still take place at the home and workplace, longer range EVs will require more use of publicly available quick charging as EVs become a competitive alternative to conventional vehicles. For drivers who live in multi-unit buildings without access to home charging, public quick charging stations may also be a viable home charging alternative. This opportunity becomes more acute as urbanization increases the share of multi-unit dwellings in metropolitan regions nationwide [5].

Charging service providers have responded to this opportunity with the buildout of charging infrastructure. Providers have installed over 35 percent of total DC fast charging ports since January 2015 [4]. The raising of tens of millions of dollars by these companies in recent years sends a strong signal to financial markets that EV charging services have a high potential value [6].

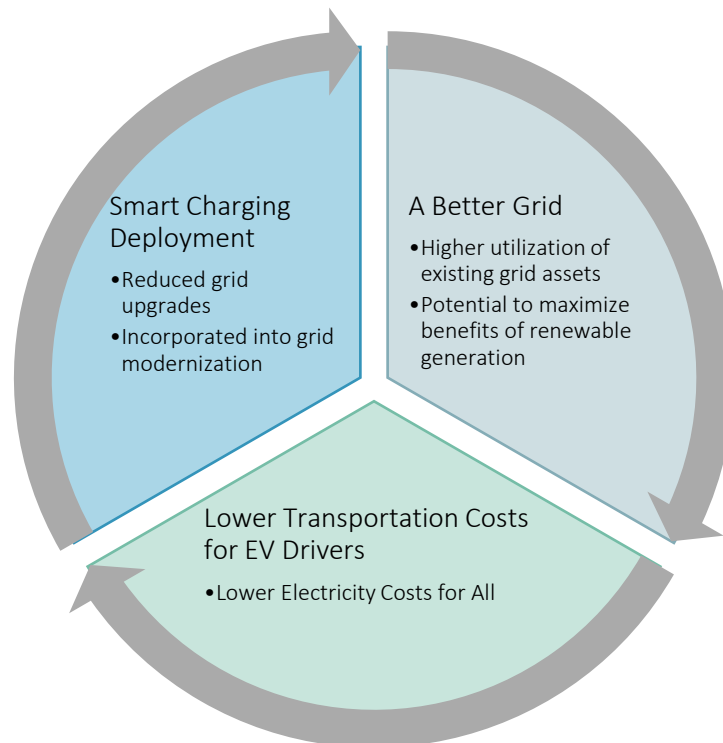
The high costs of installation, operation, and maintenance for site hosts, however, have to date limited the prolific growth of dense, regional charging networks, which is necessary to accommodate a vibrant EV market [2]. Some market participants have also hesitated to build out charging infrastructure due to uncertainty over the return on investment; the risk of stranding government and private sector investments remains a concern [2]. Lastly, the development of island networks that are available only to select groups of EV drivers stands to create fragmented networks that could hurt widespread EV adoption.

Any EV industry collaboration should be grounded in the inherent goal of accelerating widespread EV adoption. Collaboration among companies can facilitate an open dialogue addressing the effective methods, program designs, and objectives for fostering a robust and competitive EV market. Open communication channels can improve mutual access to market information, which is essential for compelling investment from industry peers not already engaged in EVs. The public promotion of the societal benefits of EVs and general consumer education amongst all demographics is critical for leveraging public funding and any planned investments in the electrical grid. For example, utility engagement with other private sector partners can streamline infrastructure installation processes, lower operating costs, and encourage EV market development in a way that benefits all electricity ratepayers.

EV MARKET OPPORTUNITIES WITH UTILITY ENGAGEMENT

All participants in the EV market stand to benefit from expanded utility engagement in some way, although the level of engagement by utilities in the EV market depends on local market needs, planned and existing private sector activity, and regulatory conditions. For existing companies operating in the EV market, utility involvement presents the potential to accelerate EV adoption through lower vehicle ownership costs, possible new approaches to electricity rates, and greater and more rapid infrastructure deployment.

FIGURE 2: UTILITY ENGAGEMENT CAN CREATE VIRTUOUS CYCLE FOR ALL EV MARKET PARTICIPANTS



Utility engagement in the EV market can create a virtuous cycle that benefits all electricity ratepayers.

Source: Atlas Public Policy

Engagement by utilities in the EV market should be based on achieving the primary objective of an electric utility: ensuring a safe, environmentally sustainable, reliable, efficient, and affordable electrical grid for all customers.

By servicing an entirely new market segment, and reducing risk of engagement, more EVs offer the opportunity to utilities to better utilize existing electrical distribution assets and more easily integrate increasing levels of renewable generation on the grid. All utility customers benefit from electricity cost reductions resulting from a more efficient grid and better utilization of renewable resources. As a result, utility engagement in the EV market has the potential to create a virtuous cycle for all market participants as detailed in Figure 2.

By leveraging their unique experience managing the electrical grid through energy efficiency and demand response programs, electric utilities can develop EV programs that can help the private sector drive down the costs of installing and operating charging stations. Under present market conditions, the cost of providing sufficient power access to a charging station is generally larger than the cost of equipment or operational services (e.g., network management).

Utilities and their regulators can help to assess the economic viability of infrastructure and develop programs that balance the potential benefits to ratepayers with the desire to accelerate a “competitive EV charging market and encourage innovation” [7]. The role of the utility could vary greatly depending on this assessment. To date, utility proposals to regulatory commissions have covered a wide array of infrastructure engagement models ranging from installation-only to full ownership and operation of the charging station network. Stakeholders have stressed the need to balance the potential benefits of any utility involvement with the need to protect the competitive market for EV infrastructure and related services [8].

Through effective program design and execution, utilities can monitor changes in electric load from EVs in order to enhance distribution system planning and resiliency. Utilities can also proactively streamline processes when electricity service for EV charging infrastructure may require new transformers and related equipment and/or electricity service upgrades, as well as identify optimal sites in their territory for high-speed charging infrastructure.

Utilities can work to lower the cost of EV-grid integration for the benefit of all ratepayers. Ultimately, increased electricity demand from EVs during off-peak hours can improve the utilization of existing grid assets, lower the average cost of delivering electricity, and put downward pressure on rates for all customers. When utilities engage their customer base with EV rates and time-of-use (TOU) tariffs, they can encourage customers to charge off-peak, potentially reducing the total cost of ownership of their EVs. TOU rates alone, however, are not a one-size-fits-all solution to managing load distribution and decreasing charging costs. Utilities could explore new rate structures and technology integrations that are designed to better accommodate higher-powered EV charging loads. Utilities can also encourage site hosts to deploy innovative charging technologies to manage the EV load, such as operating the stations at a lower power level or using in-vehicle software or apps to encourage users to charge at certain times of day based on grid conditions.

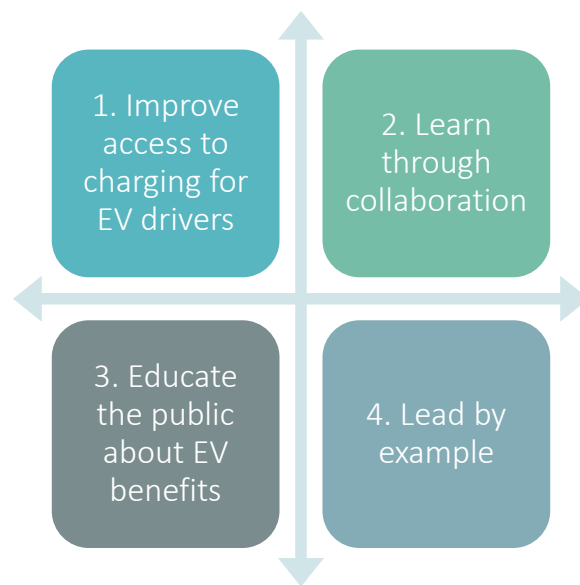
Leveraging existing efforts to decarbonize the electric power sector, utilities can help significantly reduce the cost of mitigating greenhouse gas emissions from the transportation sector. Increases in EV deployment will increase zero emission miles traveled, compounding the societal benefits associated with de-carbonization of the power sector. Generation from renewable energy sources is intermittent, however; utilities can work to ensure more of the new demand for EVs is met by new load from grid-based renewables by encouraging connected and smart charging infrastructure.

Finally, in its role as fuel and service provider, the utility industry can leverage preexisting customer relationships by providing educational materials and infrastructure incentives to encourage more home charging. Utilities can help educate existing and potential EV drivers on the benefits of driving EVs. Utilities also have existing relationships with many major employers and multi-unit dwelling managers that can be leveraged to encourage workplace charging and charging access in multi-unit dwellings. Finally, utilities can offer programs to site host customers to lower costs of deployment and encourage grid benefits with program requirements.

FOCUS AREAS FOR INDUSTRY COLLABORATION IN THE EV MARKET

Through greater collaboration among automakers, electric utilities, and charging service providers, the focus areas in Figure 3 aim to reduce barriers to EV adoption for consumers and improve the visibility and availability of EVs and infrastructure.

FIGURE 3: FOCUS AREAS OF INDUSTRY COLLABORATION



Collaboration among automakers, electric utilities, and charging service providers should focus on four areas with objective of accelerating EV adoption.

Source: Atlas Public Policy

FOCUS AREA 1: IMPROVE ACCESS TO CHARGING FOR EV DRIVERS

- Install charging stations for employees at workplace locations.
- Assist customers with common hurdles related to EV charging installations and share methods to lower installation costs such as assistance with siting and offering rebates as regulatory assets.

- For electric utilities, evaluate EV charging infrastructure programs that address gaps in the market without distorting private sector competition.
- For electric utilities, reduce the total cost of ownership of EVs and charging infrastructure by offering electricity rates that reward charging behavior that benefits the grid.
- Advocate for regulations that support competitive technology development and the deployment of nationally integrated EV charging networks; avoid developing island networks with restricted access.
- Develop safeguards for grid network security and strengthen cyber-security defenses through federal and EV stakeholder coordination.
- For electric utilities, consider implementing programs that lower the cost of home charging station installation.

FOCUS AREA 2: LEARN THROUGH COLLABORATION

- Be an active participant in coalitions of utilities, automakers, charging service providers, and/or other stakeholders to streamline and accelerate EV adoption by identifying good practices for consumer engagement.
- Collaborate with innovating companies to track progress on battery, charging station, and electric drivetrain technologies and tools.
- Consider innovative rate and technology integrations that are designed to better accommodate high-powered EV charging loads.
- Conduct pilot projects demonstrating demand response services and electrical grid storage solutions in locations conducive to validating the grid benefits of these technologies and their support in grid modernization efforts.
- Conduct pilot programs that demonstrate the societal benefits of charging infrastructure deployment in diverse communities.
- Work with public transit agencies to deploy electric transit buses to increase public exposure to EV technologies.

FOCUS AREA 3: EDUCATE PUBLIC ABOUT TRANSPORTATION ELECTRIFICATION VALUE

- Develop internal programs that provide outreach and increase access to EV technology for employees and key customers, such as retail outlets and fleets.
- Educate employees and customers on the ease of charging and benefits of EVs to the environment, to the electrical grid, and to personal finances.

FOCUS AREA 4: LEAD BY EXAMPLE

- Establish workplace charging programs at company offices to accommodate EV drivers and to incentivize new purchases.

- For relevant companies, implement outreach programs targeted at key fleet accounts to encourage workplace charging programs.
- Replace gasoline-powered vehicles with EVs for use in company fleets to further promote EV adoption and to advance grid de-carbonization efforts.

CONCLUSION

A healthy national market for EVs is competitive, widespread, and innovative. Automakers, charging service providers, and electric utilities can work together to educate the public to accelerate the national adoption of EVs and help the technology reach mainstream consumers. By implementing the actions associated with the four focus areas outlined in this document, the EV industry can seize the opportunity to collaboratively create a robust EV market while reducing its risk of engagement. The industry should focus on reducing market barriers for consumers, increasing public exposure to the technology, promoting a vibrant EV industry, and supporting secure and open access to publicly available EV charging.

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