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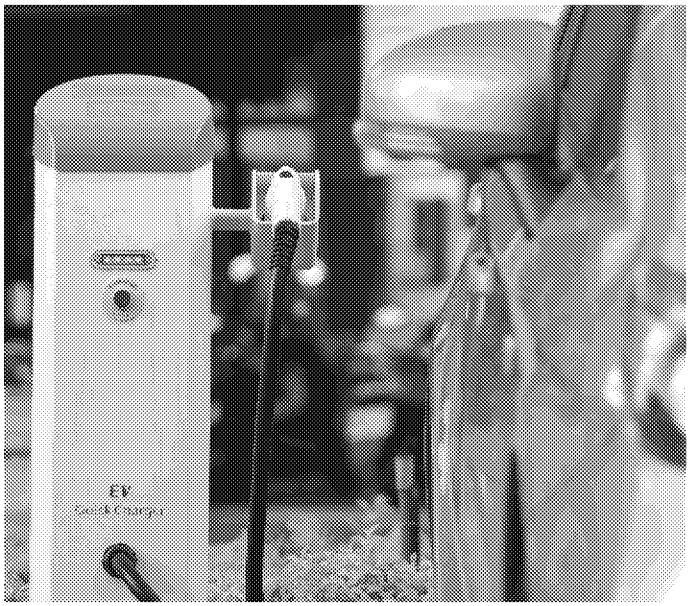

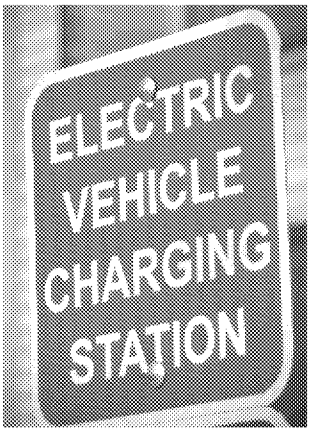

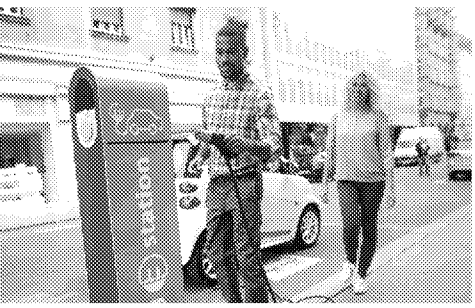

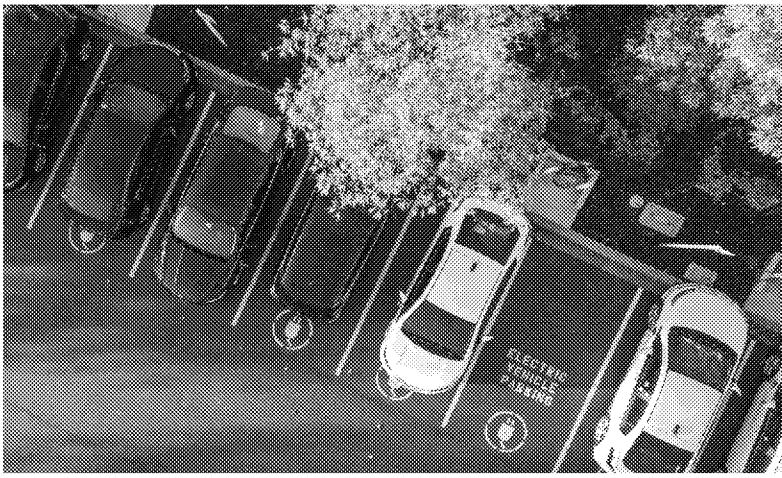

Accelerating Electric Vehicle Adoption

February 2018

Edison Electric
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CUSTOMER SOLUTIONS

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Accelerating Electric Vehicle Adoption

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EEI Customer Solutions

February 2018

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Executive Summary

Electric vehicles (EVs) make sense for customers and for the nation, but the transition to EVs is in its early stages and requires supportive policies to overcome barriers to adoption.

- EVs provide environmental, customer, energy grid, and national security benefits. This is due, in part, to an energy mix that is domestically produced and increasingly clean.
- Transportation electrification has made notable progress, not only in the passenger vehicle market, but also in a wide variety of commercial applications and non-road uses. While the long-term trends point toward increased electrification, policy drivers and industry action in the near-term will determine the nature and speed of widespread adoption.

Electric companies play an integral role in accelerating transportation electrification in a manner that provides customer value and efficient integration into the energy grid.

- Customer value: Electric companies are well-suited to expand electrification across multiple transportation modes and to expand access to EVs for the benefit of customers and communities. Electric companies can help provide a foundational system of charging infrastructure that supports the needs of customers, while also supporting a reliable, consistent, and positive customer experience.
- Grid integration: Electric companies are responsible for integrating transportation load in a manner that benefits the energy grid and the customers who rely upon it. Electric companies are well-suited to help manage the transition to electric transportation in an efficient and cost-effective manner.
- Accelerating the transition: Electric companies can help accelerate the transition to electric transportation and the resulting benefits for customers and society. Electric companies' existing relationships with customers allow them to grow familiarity and interest in electric transportation. Electric companies also can deploy capital to spur the growth of charging infrastructure that is critical to enabling widespread transportation electrification.

Given the value of EVs and the integral role that electric companies play, policies that enable electric company involvement and investment in the EV market will result in value to customers, greater access to EVs for more customers, more efficient use of the energy grid, and an accelerated transition to an electric transportation future.

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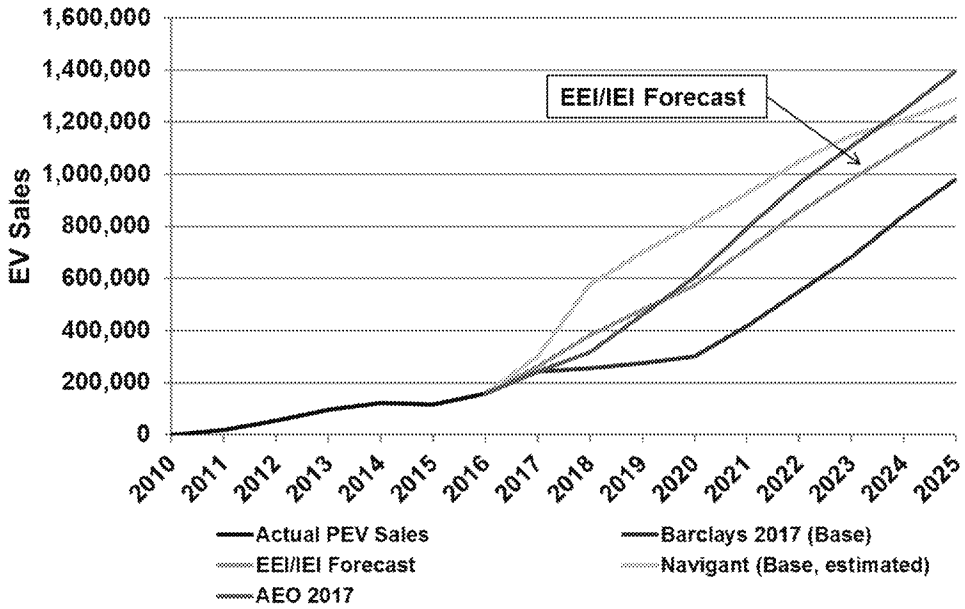
Introduction

The transition to electric vehicles (EVs) is well-underway. As of December 2017, more than 765,000 EVs have been sold in the United States, and robust sales are expected to continue.[1] The Edison Electric Institute (EEI) and the Institute for Electric Innovation (IEI) project annual EV sales to surpass 1.2 million by 2025, reaching more than seven percent of annual U.S. vehicle sales in the U.S. by 2025 (see Figure 1). In total, EEI and IEI project a stock of seven million EVs on the road by 2025.[2]

Recent automaker announcements of forthcoming EV models by BMW, Ford, General Motors, and Volkswagen, among others, and technology investments have resulted in upwardly revised forecasts.[3] Bloomberg New Energy Finance, for example, revised its global EV outlook forecast to 54 percent of new car sales by 2040, up from its previous forecast of 35 percent.[4] The EEI/IEI forecast ends at 2025; after that date, other forecasts project exponential sales in EVs.

Figure 1: Annual EV Sales by Year (2010-2025)



Source: Edison Electric Institute (EEI) and the Institute for Electric Innovation (IEI), *Plug-in Electric Vehicle Sales Forecast Through 2025 and the Charging Infrastructure Required* (June 2017), www.edisonfoundation.net.

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1 Sales data from InsideEVs.com and HybridCars.com.

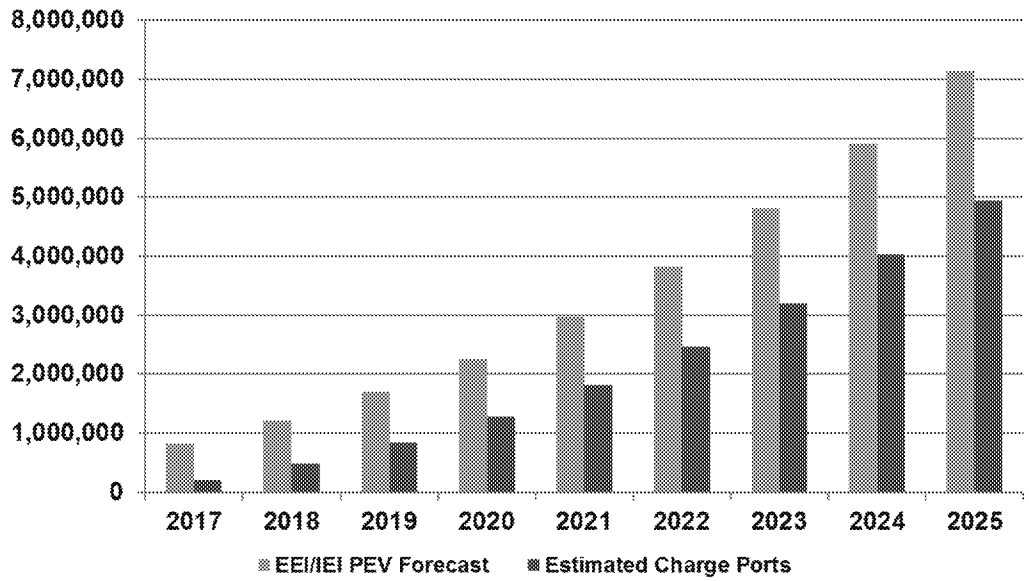
2 Edison Electric Institute (EEI) and the Institute for Electric Innovation (IEI), *Plug-in Electric Vehicle Sales Forecast Through 2025 and the Charging Infrastructure Required* (June 2017), http://www.edisonfoundation.net/iei/publications/Documents/IEI_EEI%20PEV%20Sales%20and%20Infrastructure%20thru%202025_FINAL%20(2).pdf

3 *See, e.g.*, Alex Davies, *General Motors is Going All Electric*, WIRED (Oct. 2, 2017), https://www.wired.com/story/general-motors-electric-cars-plan-gm; Andreas Cremer, *Volkswagen spends billions more on electric cars in search for mass market*, REUTERS (Sept. 17, 2017), https://www.reuters.com/article/us-autoshow-frankfurt-volkswagen-electri/volkswagen-spends-billions-more-on-electric-cars-in-search-for-mass-market-idUSKCN1BM296.

4 Bloomberg New Energy Finance, *Electric Vehicle Outlook 2017* (July 2017), https://about.bnef.com/electric-vehicle-outlook/.

Growing customer demand, Corporate Average Fuel Economy (CAFE) standards, and declining battery costs are all major drivers of EV sales. However, as the number of EVs on the road continues to grow, so does the demand for charging infrastructure. The EEI/IEI report estimates that about five million charge ports will be required to support the seven million EVs on the road in 2025 (see Figure 2).[5] Although the vast majority of EV charging is expected to occur at home or at work, making charging infrastructure available in public settings and on highways allows EV owners to drive more miles on electric, enables longer trips, and reduces range anxiety.

Figure 2. EV Stock and Charging Infrastructure (Charge Ports) Needed (2017 – 2025)



Source: Edison Electric Institute (EEI) and the Institute for Electric Innovation (IEI), *Plug-in Electric Vehicle Sales Forecast Through 2025 and the Charging Infrastructure Required* (June 2017), www.edisonfoundation.net.

EVs are more than just passenger cars. Electric transit buses have become increasingly popular as transit agencies recognize the fuel cost savings of running buses on electric power.[6] Electric-powered medium- and heavy-duty trucks also are coming to market.[7] In addition, autonomous vehicles are expected to become an important part of the EV market. Automakers and technology companies

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[5] *See* n.2, *supra*.

[6] *See, e.g.*, U.S. Department of Transportation, *Race to Zero Emissions: Zero Emissions Bus Operators*, https://www.transportation.gov/r2ze/fleets-zero-emission-buses-us-and-china.

[7] *See, e.g.*, Joann Muller, *Cummins Beats Tesla to The Punch, Unveiling Heavy Duty Electric Truck*, FORBES (Aug. 29 2017), https://www.forbes.com/sites/joannmuller/2017/08/29/take-that-tesla-diesel-engine-giant-cummins-unveils-heavy-duty-truck-powered-by-electricity; Joseph White, *Navistar, VW Will Collaborate on Electric Truck, Connectivity*, REUTERS (Sept. 25, 2017), https://www.reuters.com/article/us-autos-trucks-volkswagen-navistar/navistar-vw-will-collaborate-on-electric-truck-connectivity-idUSKCN1C02HD.

testing autonomous vehicles today are pairing the technology with electric powertrains.[8] Longer-term, autonomous fleets also could benefit from the lower operating costs of electric power.[9]

Benefits of Electric Vehicles

EVs provide major benefits for the environment, for customers, for the nation's energy grid, and for national security.

- **Environmental Benefits**. Electric transportation reduces carbon dioxide (CO_2) emissions.[10] This is due to an increasingly clean energy mix. As of year-end 2016, the electric power industry's CO_2 emissions were nearly 25 percent below 2005 levels. And, for the first time in more than 40 years, CO_2 emissions for the power sector were below CO_2 emissions for transportation (see Figure 3).[11]
- **Customer Benefits**. The number one benefit to customers is fuel-cost savings. EVs are cheaper to operate than gasoline vehicles, primarily due to the lower cost of electricity on an equivalent cost basis, but also due to lower maintenance costs.[12]
- **Energy Grid Benefits**. EVs, coupled with managed charging, result in more efficient utilization of the energy grid, which lowers the average cost to serve for all customers.[13]
- **National Security Benefits.** When EVs plug in, they are 100 percent powered by a domestic mix of energy sources, including natural gas, coal, nuclear, hydropower, wind, and solar. This is in stark contrast to gasoline-fueled vehicles, which depend solely on oil—only 40 percent of which is domestically produced.

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[8] *See, e.g.*, General Motors, *GM Scales Autonomous Vehicle Fleet to 180 Electric Cars* (June 13, 2017), http://www.generalmotors.green/product/public/us/en/GMGreen/greener_vehicles.detail.html/content/Pages/news/us/en/gm_green/2017/0613-autonomous.html.

[9] *See, e.g.*, Charlie Johnson and Jonathan Walker, *Peak Car Ownership: The Market Opportunity of Electric Automated Mobility Services*, Rocky Mountain Institute (2016), https://www.rmi.org/wp-content/uploads/2017/03/Mobility_PeakCarOwnership_Report2017.pdf.

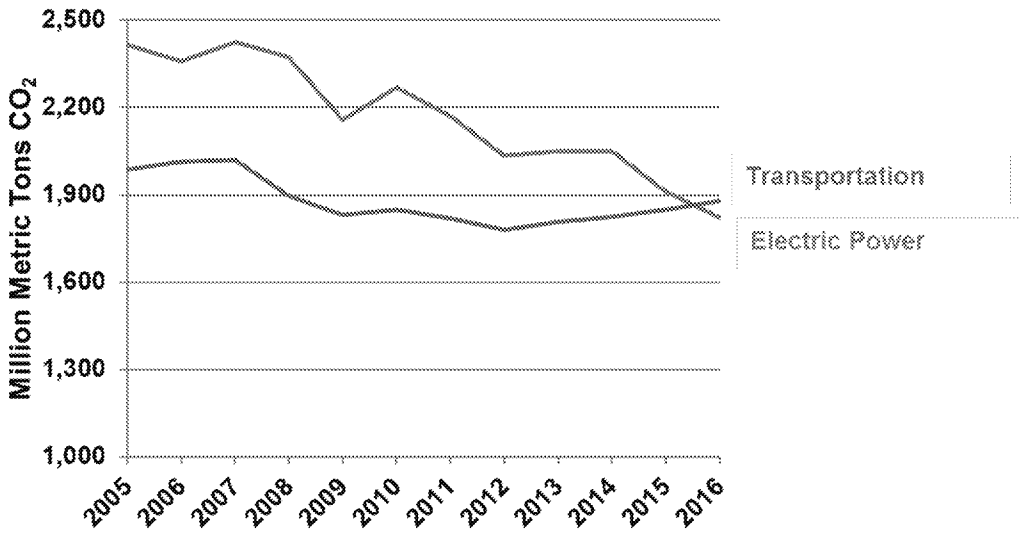
[10] Widespread transportation electrification would result in a 48 percent to 70 percent net reduction in greenhouse gas emissions between 2015 and 2050, as well as widespread air quality benefits. See EPRI, NRDC, *Environmental Assessment of a Full Electric Transportation Portfolio* (September 2015), https://www.epri.com/#/pages/product/3002006881.

[11] *See* U.S. Department of Energy, Energy Information Administration (EIA), *Monthly Energy Review* (Aug. 2017), https://www.eia.gov/totalenergy/data/monthly.

[12] Union of Concerned Scientists, *Going from Pump to Plug (2017)* (November 2017), https://www.ucsusa.org/clean-vehicles/electric-vehicles/ev-fuel-savings.

[13] *See, e.g.*, Energy Environmental Economics (E3), *California Transportation Electrification Assessment, Phase 2: Grid Impacts* (October 2014), http://www.caletc.com/wp-content/uploads/2016/08/CalETC_TEA_Phase_2_Final_10-23-14.pdf.

Figure 3: U.S. CO_2 Emissions from Electric Power and Transportation Sectors



Source: EIA, *Monthly Energy Review* (November 2017), https://www.eia.gov/totalenergy/data/monthly.

While the benefits of electric transportation are clear, more widespread adoption of EVs requires policy support. To date, policy has been an important driver of initial EV market growth, including:

- The Zero Emission Vehicle (ZEV) program. Adopted by California and nine other states (Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, and Vermont), the ZEV program requires automakers to sell an increasing number of qualifying vehicles in those states, driving automaker investment priorities, EV model availability, and deployment.
- Federal fuel economy and greenhouse gas standards. Although not specifically aimed at EVs, these standards influence automaker investments because EVs help automakers comply with them.
- Federal and state purchase incentives. These incentives help lower the up-front cost of EVs, providing a near-term bridge to cost-parity with gasoline-fueled vehicles.

These policies and others are needed to continue EV market growth, but states and communities wishing to further accelerate EV adoption have important strategic partners—electric companies. Electric companies are well-positioned to address some of the primary barriers to adoption, including low customer awareness and the lack of charging infrastructure.

Electric Company Role

Electric companies can expand customer access to EVs, integrate EVs into the energy grid in an efficient and cost-effective manner, and accelerate the transition to widespread EV adoption—all in a way that is beneficial to all customers.

Expand customer access to EVs

Electric companies can help make EVs available to all customers and can address the need for broad access to EV charging. Electric companies also can help expand the use of EVs across multiple modes of transportation, including passenger vehicles, fleets, trucks, and buses, by lowering barriers to charging infrastructure, which is one of the primary barriers to EV adoption.

Electric companies can help bring EVs to communities that may not otherwise have access. Specifically, electric companies are well-positioned to provide access to disadvantaged communities. For example, environmental justice organizations supported electric company investment in California in part because these communities are disproportionately exposed to the negative air quality impacts of transportation.[14] Electric companies also can support the build-out of public charging infrastructure that can be used by car-sharing or ride-hailing programs, providing the benefits of EVs to those who may not even own a car.

Electric companies can support and help develop a system of charging infrastructure that works. Home and workplace charging must be easy and affordable since this is where most charging occurs. While public charging accounts for a relatively small share of overall EV charging, its availability helps to alleviate “range anxiety” concerns. Public charging also can provide a solution for EV drivers who do not have dedicated parking, as well as long-distance travel along major corridors. Electric companies, in partnership with automakers, policymakers, and other stakeholders, can help fill in the gaps based on the unique geographic and market needs of their service territories.

Public charging must be accessible and easy to use and must provide EV drivers with a consistent and positive charging experience. Critical elements include:

- a seamless charging network experience, including a simple payment system, such as a credit card or point-of-purchase option; and
- open network and communication protocols to ensure flexibility and choice.

Interoperability, standardization, and a seamless experience are important to the EV driver, but these become even more important when public funding or electric company customer funding is deployed to protect the interest of all customers. Electric companies have the expertise and the experience to drive the development of industry standards, best practices, and norms.

Integrate EVs into the energy grid in an efficient and cost-effective manner

The flexibility of EVs to charge at different times, locations, and power levels can lead to a more efficient use of the energy grid, providing benefits to all customers. For example, electric companies can send price signals to encourage customers to charge their EVs at night to increase energy grid

[14] *See, e.g.*, Greenlining Institute, *Electric Cars and Trucks: Charging Ahead*, http://greenlining.org/issues-impact/environmental-equity/electric-vehicles.

utilization or to increase wind energy utilization. Or, in states with excess solar energy, electric companies might send price signals to encourage EV charging during hours of peak solar production.

As EV adoption grows, both the energy grid and the electric company, as the integrator of energy resources, become more important. Programs that encourage charging to occur when the energy grid has available capacity will minimize costs and help the grid operate more efficiently—effectively lowering the average system cost for all electric customers.[15]

Electric company investment in EV charging provides an opportunity for "managed" charging solutions that benefit both customers and the energy grid. EV charging can be managed in multiple ways, including customer education, rate design, and "smart charging" that enables communication among the energy grid, the EV, and/or the charging equipment. Electric companies currently are testing multiple charge management strategies, including those that complement approaches used to integrate renewable and distributed energy resources.

Electric companies play an essential role in siting charging infrastructure where the energy grid has the capacity to support it and in helping customers to understand the cost implications for new installations. It is important that charging infrastructure developers and fleet operators work closely with electric companies as partners on charging project implementation. For example, as more high-powered DC fast chargers are deployed, and as fleet owners seek to charge multiple vehicles at single locations, the capacity of the energy grid is an important consideration.

As the EV market grows and the energy grid increasingly powers transportation, electric companies are critical to ensuring that EV charging is integrated with the energy grid in an efficient manner. That means minimizing costs, improving reliability, and meeting customer needs.

Accelerate the transition to widespread EV adoption

Electric companies are well-positioned to help increase customer awareness about the benefits of EVs. Many electric companies have pursued education and awareness activities, including social media campaigns, community events, and ride-and-drives. Electric companies can leverage their existing relationships with customers to provide information about the benefits of EVs.

Electric companies are leading by example. More than 70 electric companies invested more than $120 million in EVs for their own fleets in 2017 alone. In addition, they have increased the number of EVs in their fleets by 43 percent since 2015. Similarly, electric companies also are incenting their employees to purchase EVs and are providing educational activities to increase awareness in the communities where they live.

Electric companies can help address the lack of charging infrastructure, one of the primary barriers to EV adoption.[16] One major challenge facing greater infrastructure deployment is cost. A customer who wants to install charging equipment today typically must bear all the costs associated with installation, including the charging equipment itself and the infrastructure needed to bring the power to the charging station. Electric companies can help to lower the cost of EV charging infrastructure.

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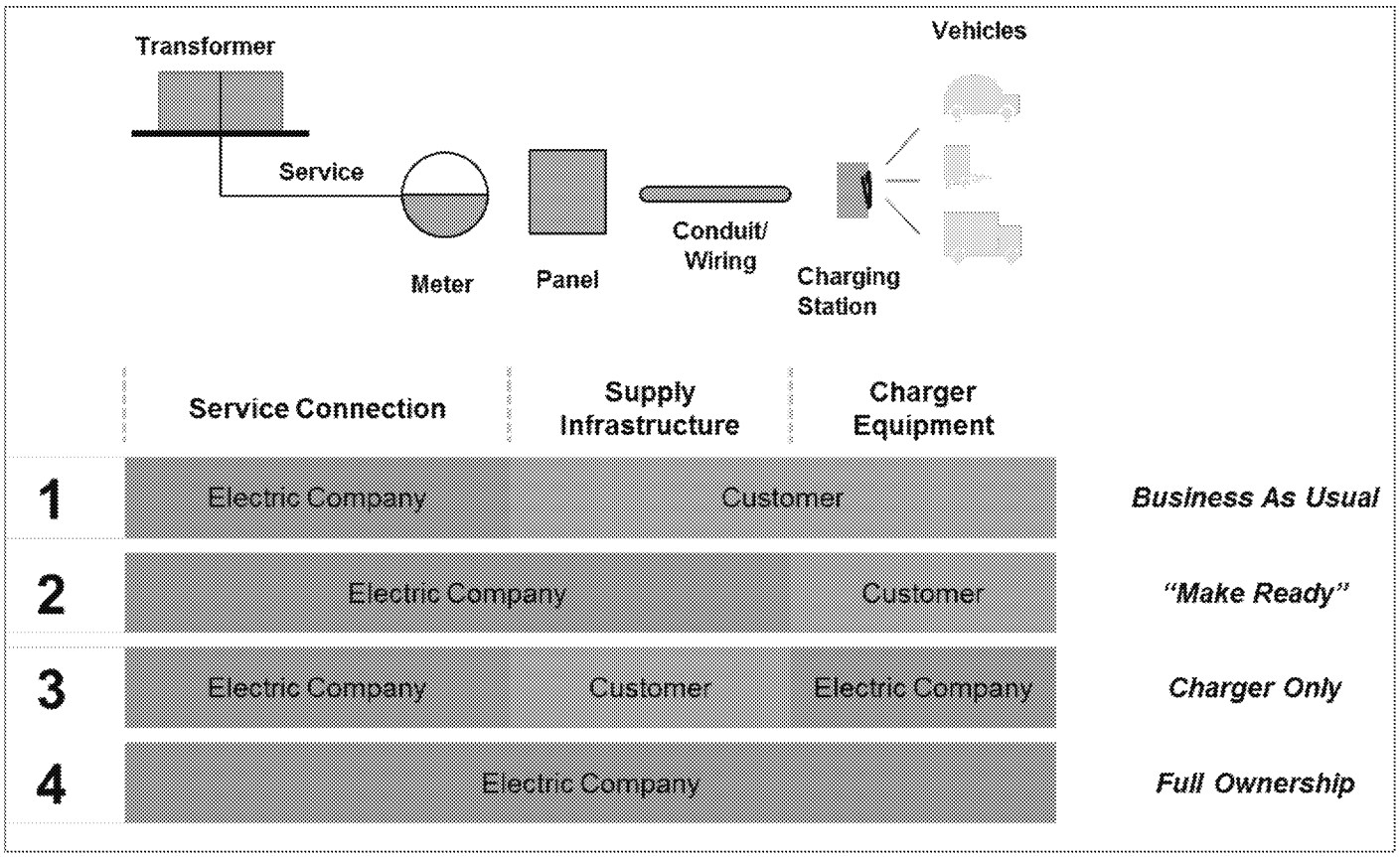
[15] *See, e.g.,* M.J. Bradley & Associates LLC, *Plug-in Electric Vehicle Cost-Benefit Analysis: Maryland* (December 2016), http://mjbradley.com/sites/default/files/MD_PEV_CB_Analysis_FINAL.pdf.

[16] Transportation Research Board and National Research Council, *Overcoming Barriers to Deployment of Plug-in Electric Vehicles* (2015), https://www.nap.edu/catalog/21725/overcoming-barriers-to-deployment-of-plug-in-electric-vehicles.

Electric company charging infrastructure deployment programs can range from providing the basic service connection only (i.e., business as usual) to "full ownership," where the electric company provides the service connection, the supply infrastructure, and the charging equipment (see Figure 4).

1. **Business as Usual.** Electric company funds the distribution upgrades that may be needed to the service connection side.
2. **Make Ready.** Electric company funds the installation and supply infrastructure costs *up to* the charging equipment. The customer procures and pays for the charging equipment.
3. **Charger Only.** Electric company funds and/or owns the charging equipment, utilizing the existing supply infrastructure on the premises and/or offsetting any installation costs.
4. **Full Ownership.** Electric company funds and/or owns the full installation, up to and including the charging equipment.

Figure 4: Electric Company Charging Infrastructure Deployment Options



The flexibility to deploy different approaches is essential because the appropriate approach depends upon the needs of the local market, the type of charging infrastructure, and the customer.

Electric company investments can complement and add to existing activities, such as government- and automaker-funded infrastructure deployment programs and private third-party investment. Electric companies can make investments that are targeted and phased to meet the local market needs. But, electric companies cannot do this alone; multiple market participants will help accelerate the EV market.

In addition to removing barriers to charging infrastructure deployment, the benefits of electric company engagement include:

- **Reliability:** Charging equipment must be maintained. An electric company can maintain equipment that it owns, or it can require regular maintenance of equipment for customers who participate in a program.
- **Affordability:** Electric companies can scale investments, making infrastructure more affordable.
- **Flexible pricing:** Electric companies can provide pricing flexibility for charging station owners, while protecting against unreasonable usage fees.
- **Price signals:** Electric companies can design pricing to encourage specific charging behavior, such as off-peak charging.
- **Customer choice and competition:** Electric companies can provide customers with more options by deploying infrastructure that meets market needs and leverages other investments.
- **Grid integration:** Electric companies can set specification requirements for charging equipment, such as open communication protocols and industry standards that allow the equipment to communicate with the energy grid.

Customers view electric companies as energy experts and expect them to provide information on energy-related technologies and solutions, including EVs. Beyond direct investment in charging infrastructure, electric companies can expand access to charging in a variety of ways, including:

- Electric companies can provide customers with information about their options (as they do today with end-use energy efficiency).
- Electric companies can reduce the costs to customers who install charging equipment by providing unique financing solutions (e.g., on-bill financing) or rebates.

Examples of Electric Company Participation In Charging Infrastructure Deployment

Electric companies are actively engaged in investing in charging infrastructure deployment today. This section provides three examples.

Example #1

Pacific Gas and Electric Company, Southern California Edison, and San Diego Gas & Electric

In 2014, the California Public Utilities Commission (CPUC) overturned its 2011 blanket prohibition on electric company-owned EV charging infrastructure. Instead, the CPUC allowed for an expanded electric company role on a case-by-case basis by applying a balancing test that weighs the benefits of electric company ownership of charging infrastructure against any potential impacts to the competitive market.[17] The CPUC recognized that electric companies have a unique role to play in providing and expanding the availability of EV infrastructure, especially in market segments that are harder for third parties to reach, such as low-income communities or multi-unit dwellings.[18]

In response, the state's three major investor-owned electric companies— Pacific Gas and Electric Company (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E)— proposed pilot programs to install charging infrastructure at multi-unit dwellings, workplaces, and public interest destinations. The three electric company pilots will install the infrastructure to support up to 12,500 charging stations with total budgets of up to $197 million. All three pilots are now in the implementation phase. Each proposal takes a different approach, allowing the state to demonstrate the trade-offs among them.

- PG&E will install "make ready" infrastructure for up to 7,500 Level 2[19] charge ports at multi-unit dwellings and workplaces. Site hosts in multi-unit dwellings and installations in disadvantaged communities can choose to own and maintain the charging equipment themselves or let PG&E own and maintain it (electric company ownership is limited to up to 35 percent of the chargers).
- SCE will install "make ready" infrastructure for up to 1,500 Level 1 and Level 2 charge ports at workplaces, multi-unit dwellings, and other locations where vehicles are parked for extended periods of time.
- SDG&E will install, maintain, and own up to 3,500 Level 1 and Level 2 charge ports at multi-unit dwellings and workplaces, with a special dynamic hourly rate that encourages off-peak charging. SDG&E's ownership and maintenance extend to and include the charging station.

The state legislature took a step further in 2015 with the passage of SB 350, which called upon the CPUC to direct electric companies to propose programs that "accelerate widespread transportation electrification."[20] The subsequent electric company proposals include investing more than $1 billion to

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[17] *See* CPUC Decision 14-12-079, at 5.

[18] Ibid, at 7.

[19] "Level 1" refers to charging on Alternating Current (AC) electricity at 120 volts; "Level 2" refers to charging on AC electricity at 208-240 volts; "DC fast charging" refers to charging on Direct Current (DC) electricity.

[20] *See* California, SB 350, Clean Energy and Pollution Reduction Act of 2015.

support charging infrastructure across a wide range of market segments, including medium- and heavy-duty trucks, DC fast charging, and home-charging solutions, as well as other programs that support transportation electrification.[21]

Example #2

Avista

Washington state passed legislation in 2015 that recognized the need for electric companies to be "fully empowered and incentivized to be engaged in the electrification of our transportation system."[22] In early 2016, Avista filed a proposal for a $3 million pilot program in eastern Washington to install and own 265 Level 2 charging stations at homes, workplaces, fleets, and public locations downstream of the customer meter, as well as seven DC fast charging stations in public locations wholly owned by the electric company from the transformer to the DC fast charger.

Avista's pilot program provides for a comprehensive view of charging behavior utilizing open communications protocols and multiple charging vendors, with remote load management capability. In exchange for the greatly reduced upfront cost of the charging equipment installation and the assurance of the electric company's maintenance and repair of the equipment over its service life, residential and commercial customers agree to allow Avista to collect data and remotely manage EV charging loads, subject to the right to "opt out" of these events without penalty. This will allow the electric company to determine how much peak load from EVs may be shifted to off-peak, while maintaining customer satisfaction and without utilizing a time-of-use rate or other incentives to shift loads.

Avista's filing was debated in open meetings and eventually approved in 2016 by the Washington Utilities and Transportation Commission (WUTC), "recogniz[ing] that the primary purpose of this Pilot Program is to allow Avista to better understand EV charging behavior and the impacts of EV charging on its system, and to promote electric vehicle adoption in Avista's service area consistent with state policy."[23]

Following this, the WUTC initiated further investigation into the policy issues related to electric company investment in charging infrastructure, resulting in policy guidance in 2017 that recognized that electric companies "have a role to play in transforming the market for electric vehicles."[24]

Example #3

Eversource

The Massachusetts Department of Public Utilities (DPU) issued an order in August 2014 that set out the criteria under which an electric company could invest in EV charging infrastructure. Namely, any such proposals must "be in the public interest; meet a need regarding the advancement of EVs in the Commonwealth that is not likely to be met by the competitive EV charging market; and not hinder the development of the competitive EV charging market."[25]

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[21] Fifteen "priority review" projects totaling $43 million were approved in January 2018. See CPUC *Decision on the Transportation Electrification Priority Review Projects* in Application 17-01-020.

[22] *See* Washington, HB 1853, Encouraging utility leadership in electric vehicle charging infrastructure build-out.

[23] *See* UE-160082, *Order Allowing Tariff Revisions to Become Effective Subject to Conditions.*

[24] *See* UE-160799, *Policy and Interpretive Statement Concerning Commission Regulation of Electric Vehicle Charging Services.*

[25] *See* Decision 13-182-A (2014).

In January 2017, Eversource Energy proposed a five-year, $45 million program that would install "make ready" infrastructure to support up to 72 DC fast charging ports at 36 locations along travel corridors, and up to 3,955 Level 2 charging ports at 452 locations, including public locations, workplaces, and multi-unit dwellings. The DPU found that the program met its criteria, namely that the program is in the public interest, by "lower[ing] the investment barriers to ownership of the EVSE (electric vehicle supply equipment) [i.e., charger]" and by helping the state meet its goals by "encouraging EV purchases." In addition, "the program likely will help to boost the market size for the competitive EV charger suppliers," rather than limiting the competitive market.[26]

Policy Considerations

The benefits of EVs only will be realized if the transition continues to grow and if widespread adoption of EVs occurs. Electric companies can play a critical role in accelerating adoption, but the right policies and regulations need to be in place.

Given the customer, environmental, energy grid, and national security benefits that EVs provide and the critical role that electric companies play in advancing EVs, policies and regulations are needed that:

- Allow electric companies to make investments that support EVs in their communities, including deploying, owning, and operating charging infrastructure, and developing strategies that allow electric companies to manage charging effectively to benefit the customer, the energy grid, and the environment.
- Recognize the critical role of electric companies in educating customers about the benefits of EVs.
- Allow electric companies, where appropriate, to recover costs and earn a reasonable return on EV-related investments, similar to any investment that provides benefits to customers.

Given the importance of charging infrastructure to the development of the EV market, policies are needed that:

- Make charging infrastructure widely available to meet customer needs, including public and private charging for EVs and fleets.
- Support a positive and consistent experience for drivers, charging station owners, and network operators. This means developing an interoperable and open-access system with standards that work regardless of the vehicle type, the equipment type, or the ownership/operation model.
- Require proper monitoring and maintenance to maximize equipment availability, reliability, and safety.

[26] See DPU 17-05, Order Establishing Eversource's Revenue Requirement.

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Conclusion

The benefits of EVs are compelling: reduced emissions, lower costs to customers, more efficient use of the nation's energy grid, and enhanced national security through greater dependence on domestic energy sources. As the adoption of EVs continues to grow nationwide, the role of electric companies in effectively integrating EVs into the energy grid becomes even more critical.

Electric companies can help shape the nation's transition to EVs. As discussed in this paper, electric companies are well-suited to:

- Expand access to EVs to all customers;
- Effectively and efficiently integrate EVs into the energy grid; and
- Jumpstart EV adoption by educating customers and deploying needed EV charging infrastructure.

It is important for policymakers and other stakeholders to leverage the strengths of their electric company partners to help deliver the benefits that widespread adoption of EVs will provide.

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The **EDISON ELECTRIC INSTITUTE** (EEI) is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for about 220 million Americans, and operate in all 50 states and the District of Columbia. As a whole, the electric power industry supports more than 7 million jobs in communities across the United States. In addition to our U.S. members, EEI has more than 60 international electric companies with operations in more than 90 countries, as International Members, and hundreds of industry suppliers and related organizations as Associate Members.

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