Driving for Benefits: The Utility Role in Transportation Electrification

A White Paper of the Alliance for Transportation Electrification (ATE)

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Alliance for Transportation Electrification

Executive Summary

One of the great economic and environmental stories of the last few years has been the exponential growth of electric vehicles (EVs) on the highways and byways of America and worldwide. This growth has many causes and many benefits, which are discussed below. But one of the major catalysts of growth in electrification of the transportation sector has been the involvement of the electric utility sector in paving the way for this growth. Utilities have a significant role to play in planning to ensure the grid can handle the accompanying growth in electric use, making its customers aware of the benefits of EVs, providing incentives for the development of the infrastructure needed to charge the vehicles on the road, and in many cases directly investing in this infrastructure. Utilities have substantial experience in providing reliable infrastructure for electricity delivery and can put this expertise to work.

The purpose of this white paper by the Alliance for Transportation Electrification (ATE) is to outline the utility role in transportation electrification and discuss why it is so key to ensuring that benefits will be created both for the consumer and for the electric grid. Utility involvement in transportation electrification (TE) is focused primarily in three areas: (1) investment in the grid (primarily in distribution systems but additional generation and transmission may be needed as well) that is needed to ensure that there is sufficient capacity to serve EV charging needs; (2) make-ready investment which encompasses the wiring and equipment needed between the connection with the utility's distribution system and the stub at which the charging ports will be installed; and, (3) possible ownership and operation of charging stations, often in partnership with private third-parties. The needs for investment in all three areas, as outlined below, are so great that utilities have a critical role to play either in kick-starting the market, complementing third-party investment, or providing services to fill in gaps that will not be served by private third-parties.

Utility investment in the grid in advance of the significant demands that growth in EVs will place on the system is the most obvious area for a robust utility role. Given that upgrading the grid and particularly distribution systems can take years, it is imperative that utilities plan for and invest in these upgrades early. Utilities must work with state Public Utility Commissions ("commissions") to provide detailed, long-term forecasts of needs and justify cost recovery for these investments, a process often referred to as integrated resource planning. Utilities should also work with Electric Vehicle Service Equipment owners and operators (called "EVSPs", or EV service providers), site hosts, fleets, large work-centers, multi-unit dwellings, and other potential charging station developers and users to understand their future needs to the extent possible. All this information should be used, along with forecasts of growth in other technologies and normal customer growth, to provide commissions with the information needed to get approvals for these critical investments.

Make-ready investments – which includes stepdown transformers, electric service panels, conduit, conductors (wire), switch gear and power conditioning units (for DCFC), mounting pads or brackets, and other elements – is one common option for utility investment. Many stakeholders in the

EV ecosystem believe that - particularly at this early stage of market development when public chargers are needed to induce consumers to buy EVs but the profitability to potential EVSE providers may be lacking - utilities should directly invest in make-ready infrastructure or offer rebates for these costs and/or the costs of the chargers themselves. These stakeholders believe make-ready investments placed in a regulatory asset or rate base approved by commissions will have broad public policy benefits. Others, particularly consumer groups or advocates and some potential charging station developers believe that ratepayers should not be burdened with the costs of equipment from which they receive no direct benefit (unless they own an EV). These arguments play out before state commissions in general rate cases or in evaluation of proposed utility EV programs.

Utility ownership and operation of EV stations, the third primary category of utility involvement in the EV ecosystem, has become a credible option for many utilities across different use cases. Yet some third-party EVSPs (not all) believe it is unfair competition for utilities to use rate-based funds to invest in chargers which will unfairly "compete" with them. They argue that utilities can build chargers and because they purportedly don't have to recover costs or earn a profit, they can undercut third-party chargers. Consumer groups and advocates usually make arguments like those they make when opposing certain use cases for utility make-ready investments, often arguing that non-participants will not benefit. Significant public policy questions arise and the role of utility investments beyond the normal distribution grid are at stake.

This paper discusses in detail the arguments made by some third-party developers and some consumer advocates against either make-ready or ownership and operation (O&O) investment, and why the Alliance believes these arguments fail to win the day. There is little opposition to investment in the grid as commissions have normally allowed recovery of investments made by utilities to meet growth in demand of all kinds. We point out at the outset that there are many supporters of a utility role in EV charging beyond the grid, and in every state that has addressed the issue, utilities have been allowed to make investments in either make-ready or O&O, or both. There are multiple reasons such investments have been supported – one of the strongest is that the need for public charging is so great relative to the scale of potential utility investment, there is little if any chance that utilities would crowd third-parties out of the market. Utilities also tend to focus their investments in areas that private third-parties are unlikely to invest such as disadvantaged communities, rural areas, multi-unit dwellings, and others.

Another important reminder that critics of utility investment seem to ignore is that utilities do not give away charging services for free either for DC fast charging stations or public Level 2 chargers. Utilities charge drivers for charging at rates that must be approved by state commissions. These rates either are high enough to recover the utility's cost of service – which is the traditional method for ratemaking – or in some cases may be based on a range of market prices in the area where the utility station is located. Market prices have been commonly used because in this nascent stage of development of the market, the utility cost of service for chargers is not well known. In either case, utilities do not have the ability to set prices at whatever level they want to undercut third-party competitors.

There are many benefits to a robust utility investment role in EV charging. These benefits include:

- **Increasing the pace and scale of infrastructure development by opening the market to utility capital, expertise, and other resources.**
- **Utilities can fill immediate market needs which may take longer for third-parties to fill.**
- **Maintaining reliability, minimizing negative grid impacts, and optimizing required distribution and transmission system upgrades by coordinating with existing utility investment and planning processes.**
- **Utilities are more likely than others to place value on off-peak charging and achieving system benefits.**
- **Utilities are well positioned to smooth a key pain point in operating charging stations, namely ensuring reliability. Utilities have an obligation to reliably serve all customers and are accountable to regulators creating strong incentives to maintain reliability.**
- **Utilities have a proven ability to communicate with and educate customers through existing channels and creating incentives to promote vehicle charging at times that provide grid benefits.**
- **Providing more equitable access to charging infrastructure for all ratepayers and communities and increasing mobility for all through utility partnerships with transportation programs focused on serving disadvantaged and rural communities.**

In summary, the Alliance believes that the EV charging infrastructure is developing too slowly, which creates market gaps and a hesitance by potential consumers to purchase an EV. A robust utility role is key to addressing these challenges in comprehensive infrastructure development, along with the federal and state governments, and private EV service providers.

Introduction: Benefits of overall market growth

Electric vehicles are coming to the market rapidly. It has become unusual to read one's news feeds or the major newspapers without coming across an article on new electric vehicles, changes in taxes or incentives for EVs, how to promote charging infrastructure, new EV models, range anxiety, types of batteries, critical minerals, and so on.

In the last decade the auto industry, battery firms, and EVSPs have changed the landscape dramatically. The question of the EV transformation is no longer "if", but "when" and "how fast" can this transformation be accelerated in a fair and cost-effective way. We now sit on the cusp of an inflection point in the market poised for very rapid growth. Certainly, technology has advanced by leaps and bounds – EVs with over 240 miles of range are common with today's vehicles. For public charging at higher power levels, the times for charging battery electric vehicles have been reduced from 50 minutes down to 15 minutes or less using high-powered DC fast charging (DCFC). Initial purchase costs, while today still generally higher

than equivalent internal combustion engine (ICE) equipped vehicles, have come down considerably – with battery costs about ten times less per kWh of output than they were a decade ago. And the total cost of ownership of EVs over a typical vehicle life of twelve years is now below that of ICE vehicles even with the higher initial purchase price.

The improved economics and technology of these vehicles only tell part of the story. The early growth of the market is being driven in large part by the recognition of the benefits that electrification of transportation provides to society. First, and perhaps foremost, transportation has become the largest emitting sector of greenhouse gases in the country. And while of course EVs are powered by electricity which is still generated in most instances by some proportion of fossil fuels, the efficiency of converting electricity to vehicle motion relative to gasoline and diesel means that all across the country, EVs result in reduced greenhouse gas emissions. And as the electric sector continues to increasingly move to non-emitting generation sources, those benefits will only improve. And there are other environmental benefits as well, such as reduced particulate matter emissions and smog related air pollutants, reductions especially important to historically disadvantaged communities.

There are also benefits to the electric grid. If EV owners charge their vehicles during off-peak periods, community grids can be better utilized, and their efficiency improved. In fact, one of the greatest benefits of electrifying transportation is that utilities can deliver more energy during off-peak periods without having to make major additions to the grid, at least in the near-term. **Since customer rates are determined (in simplified form) by total costs divided by total usage, as usage increases without an equally concomitant increase in costs, customers should see downward pressure on rates.**

This effect has been confirmed by a study by Synapse Economics using data from California utility EV programs[1]. The study demonstrated that PEVs benefit all utility customers and not just the EV owners themselves. The 2019 study states 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. …[t]he Ratepayer Impact Measure (RIM) shows that the utility bills PEV owners pay more than offset the costs incurred by the utility to deliver the electricity to charge the vehicles. Under each of four rates and charging load- shape scenarios studied, additional revenue from PEV charging exceeds the marginal costs to deliver electricity to the customer, providing positive net revenues that put downward pressure on rates." **The opportunity to reduce rates for all customers – not just the EV owners but other non-participating ratepayers – is one of the major benefits of transportation electrification.**

Finally, there are economic and national security benefits to relying more on domestically produced energy for our transportation sector and less on oil which may be imported. Using electricity for a greater portion of our transportation needs will reduce pressure significantly on gasoline and diesel prices and have significant beneficial effects to the national economy[2].

1 : Frost, Jason, Whited, Melissa, and Allison, Avi. "Electric Vehicles Are Driving Electric Rates Down." Synapse Energy Economics White Paper, February 2019.

2 : For a more comprehensive description of all the benefits of transportation electrification, see Electric Power Research Institute, "Systemic Challenges and Barriers to Consumer EV Adoption: Introduction to the Root Cause Analysis".

How to define the problem

Even with all these benefits, and vehicles that are becoming more attractive to consumers, adoption rates while increasing are still a small proportion of total auto sales. The EV market has been growing rapidly over the past year, in the range of 40 percent, and the latest sales number from Q1 of 2023 indicates a market share among all makes of about 7.5 percent. There are hurdles to overcome to increase the availability and adoption of these vehicles, which is where public policy comes into play. Some of the problems currently inhibiting market growth are (1) supply chain issues for vehicles and charging infrastructure that limit the number of vehicles for sale (and the ability to deploy charging infrastructure quickly); (2) the higher initial cost of EVs relative to ICE vehicles; (3) consumers are not well aware of the benefits of EVs and their capabilities to offer comfortable, fun and efficient transportation; and last, but arguably most importantly; (4) while the range of vehicles has been rapidly increasing, consumers still have a concern about running out of battery power on the road – otherwise known as range anxiety. In fact, this range anxiety has been listed as the number one concern of potential EV drivers in survey after survey.

Progress is being made to address the first three constraints, but the critical issue of range anxiety and ensuring that consumers will be able to charge their vehicles where and when they need remains a problem that is listed at the top of all surveys of consumer concerns. To a large degree, range anxiety is a problem of perception and not of reality. For passenger vehicles, on average over 80 percent of charging is done at the driver's residence – usually within the garage of a single-family home. Some of this charging is done with a normal 120-volt electrical outlet (also called "trickle charging" or Level 1 charging) which may suffice for smaller battery sizes and drivers with shorter daily drives in-town. Consumers also often install Level 2 charging (at a voltage equivalent to that used by electric dryers at 240-volts) in their garages which provides faster charging. For the many consumers that have these options, they may not need to use public DC fast charging stations as much, except perhaps when they take longer trips. But even for these consumers, having charging stations available in the community provides important reassurance; anecdotal and other evidence indicates that such public charging is being used irrespective of the availability of Level 2 charges at home. And of course, there are many EV drivers (such as those that may have no garage or live in multi-family dwellings) that don't have the option to charge at home. Therefore, building publicly available charging at workplaces, motels and hotels, in neighborhoods, along streets, and along highway corridors is vital to address "range anxiety" and provide a needed service.

Building charging infrastructure to meet both current and future demands is one of the greatest needs facing emerging EV markets and is vital to driving for the benefits that transportation electrification can provide. The Infrastructure Investment and Jobs Act of 2021 provided a major boost to getting infrastructure built by authorizing the National Electric Vehicle Infrastructure (NEVI) program which provides $7.5 billion dollars over five years in two categories of programs: $5 billion in formula funding through the Federal Highway Administration (FHWA) for the nation's interstate corridors, and $2.5 billion for a competitive grant program for charging and other alternative fuel infrastructure (CFI) at least half of which will be in communities and underserved areas. The IIJA provided significant additional funding for electric school buses through the EPA.

In addition to stations that have already been installed around the country, this infusion of federal investment is a good start. But it is only a start. With current projections of higher and higher EV market penetration, the need for public charging is immense. The International Council for Clean Transportation (ICCT) has estimated that to meet modest EV sales growth, we will need to increase the number of chargers in the U.S. from 216,000 chargers in 2020 to 2.4 million by 2030, including 1.3 million workplace, 900,000 public Level 2, and 180,000 direct current fast chargers. The costs would be about $28 billion.[3] Atlas Public Policy Research shows that to put the nation on the path to full electrification, over $87 billion in investments in charging infrastructure would be needed, including $39 billion for public charging.[4] And these numbers are just for charging infrastructure and don't take into account the costs of associated grid upgrades.

Therefore, we need a holistic and ambitious framework to provide the capital and operating investments to meet the challenges. Federal funding greatly helps and acts as an impetus for additional investments, but by itself it is not enough. Given the magnitude of the need, we must rely on an all-hands-on deck approach including utilities and many other organizations --government, private sector EVSPs in the business of building, owning and operating charging stations, private employers, transit and bus companies, landlords, real estate developers, fleet owners and operators.

A Quick Primer on Charging and EVSE (electrical vehicle supply equipment)

When charging stations are designed, there are several infrastructure components that need to be analyzed and planned. First the utility distribution system (part of the utility grid) must be assessed to ensure that there is sufficient capacity to accommodate the additional load that the planned charger will add to the distribution system including substations and circuits. (Hopefully the utility had enough prior notice of a potential load point that it made the upgrades prior to the energization of the charging station). This analysis will be heavily dependent on the type of charger being contemplated, the power to be drawn by each charging port, and the number of charging ports contemplated (which of course depends on the level of charging, the power level, speed, and other factors).

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3 : Gordon Bauer, Chih-Wei Hsu, Mike Nicholas, and Nic Lutsey. "Charging Up America: Assessing the Growing Need for U.S. Charging Infrastructure Through 2030." International Council on Clean Transportation, July 28, 2021.

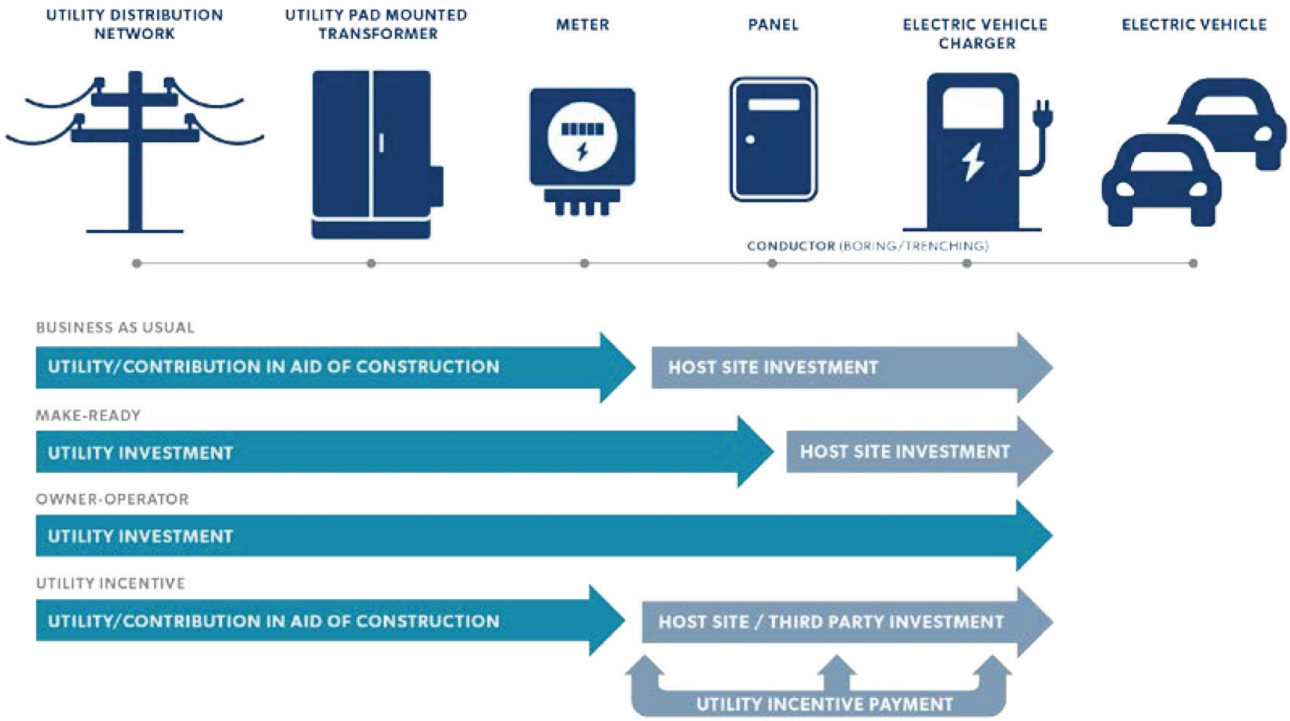
4 : Atlas Public Policy. "U.S. Passenger Vehicle Electrification Infrastructure Assessment." April 2021.

The second major component of charging infrastructure is the wiring and equipment needed between the utility's distribution system and the stub-out or pedestal (usually a post or pole) where the charger itself is to be located. This will include stepdown transformers, electric service panels, conduit, conductors (wire), switch gear and power conditioning units (for DCFC), mounting pads or brackets, and other elements. This component has become known as "make-ready".

Then, finally is the charger itself, which can either have one port or dual ports with a cable and a connector or plug that directly connects electrically to the charging port on the vehicle. Consideration for charger layout and accessibility depend on charger specifications/size and are considered in site planning and design.

Figure 1 below shows the various models of how a utility can invest in EVSE.

Figure 1. Utility Investment Options in EV Charging Infrastructure [5]



Without explicit guidance from regulators, the utility would be responsible only for needed distribution system upgrades which would be part of normal business to meet customer loads. Utilities would provide connections up to a meter that would measure service to the charging installation but would often require contributions in aid of construction from the EVSE developer or operator or the host site for such

5 : Paul Allen and Grace Van Horn, M.J. Bradley & Associates Matthew Goetz, James Bradbury, and Kathryn Zyla, Georgetown Climate Center "Utility Investment in Electric Vehicle Charging Infrastructure: Key Regulatory Considerations." November 2017.

construction. Other expenses would be covered by the developer, operator or host site. More recently, utilities in many states (with approval of public service commissions) have been offering to cover "make-ready" investments which cover all or part of the expenses of everything required between the utility system and the charger itself. Such investments are offered primarily to incentivize the development of charging stations by private third parties. In some cases, the utility will contract for the work – in other cases they will offer make-ready incentives or rebates paid to the third-party or host site who will then be responsible for the work. In most all such cases, the third-party or host site will be responsible for owning, operating and maintaining the charger itself.

And finally, there is the utility own and operate (O&O) model where the utility builds all of the infrastructure and owns, operates and maintains the charging station. In most such cases, the utility will rely on private contractors to do the infrastructure work, and the charger will be provided by a third-party and branded or "white-labeled" as a utility station. Accordingly, even within this O&O model, the utility can design options under the regulated tariffs that can accommodate the involvement of innovative private sector parties to help design, build, and operate programs integrated into the utility systems of ownership. Utilities are testing different O&O models across the country.

The Utility Role: Addressing the Controversy

The Alliance believes that the benefits are clear for a robust utility involvement in transportation electrification (TE) infrastructure. Yet some companies and organizations continue to voice concerns to Commissions and state Legislatures about whether utilities should invest in helping to accelerate the EV revolution, particularly with respect to utility ownership and operation of infrastructure but also in some cases with respect to make-ready investments, pricing, and cost recovery. Many of these parties, who often participate in commission proceedings perceive the utility as an adversary who enjoys a monopoly with its exclusive franchise, resulting in an unfair competitive advantage, rather than a potential partner. Despite the large and growing size of this potential market, they fear that utilities will push them out of the market entirely.

In this white paper, however, the Alliances will demonstrate the benefits of a strong utility role. Utility investment can and will complement, not supplant, third-party private investment and grow the overall size of the market. Utility involvement in EV infrastructure is not unlike previous models of utilities integrating new technologies into the distribution grid such as energy efficiency, energy storage, smart thermostats - even going back to the AC (air conditioning) transformation several decades ago - and home energy management systems more recently. Utilities have played a role with respect to all these technologies, and EVs are another grid-edge technology on the demand side to be integrated into the grid, although the electrification potential is very significant.

Of the three categories of possible infrastructure investment (utility distribution upgrades, make-ready investments, and O&O of charging stations) improvements to the grid and utility distribution systems are the least controversial. Most stakeholders agree it is appropriate and imperative that utilities, in the normal course of meeting forecasted load, should make investments in distribution to accommodate

increased charging loads. Even here, however, there is some argument over whether all ratepayers should be charged for such investment, and what level of investment is needed. But commissions have regularly recognized the appropriateness of distribution investments to modernize (called "grid modernization") and upgrade the distribution grids to maintain reliability in the face of increased loads, independent of the cause of such load increases.

Utilities investing in – whether directly or through incentives – the construction of make-ready infrastructure is more controversial but is supported generally by third-party EVSE developers and operators. But there is still some opposition. The idea that make-ready investment benefits all ratepayers and thus should be included as an asset in rate base is not intuitive. One reason for opposition to make-ready investments is that it is less evidently obvious how make-ready infrastructure benefits all ratepayers and merits inclusion as an asset in rate base. Opponents of such investments include consumer groups who object to potential rate increases and who do not see overall benefits in the longer term. There is a second group of opponents that just object to any customer subsidies to advance the EV market through investment in infrastructure. This includes some petroleum marketers, convenience stores and gas station owners who purport to argue for a "level playing field" in vague terms. Many of these traditional gasoline retailers have been slow to recognize the business opportunities for deploying EV charging stations, and simply oppose any actions that will lead to more EVs on the road and lower gasoline sales in the longer-term.

The arguments for make-ready investments by utilities are largely the same as those for ownership and operation investments and are discussed below.

Utility Ownership and Operation (O&O)

Utility O&O is often the most contentious of the potential utility investment options among organizations who litigate at state commissions. The primary opponents of utility ownership are consumer groups and advocates who view it as an unwarranted subsidy and certain third-party EVSP developers[6], convenience store and gas station operators, and gasoline wholesalers and marketers. The primary argument of these third-party EVSEs is that utility O&O amounts to unfair competition – that being able to place costs in rate base gives utilities an economic advantage in building charging stations and additionally the ability to undercut the prices that may be charged by non-utility EVSE owners. Some suggest that they will not invest in chargers if even the threat of utility competition exists and thus, they seek regulatory or legislative prohibitions on utility ownership of charging stations (and sometimes even prohibitions on make-ready investments or the ability of the regulated utility to recover its capital costs with a return). These arguments are usually couched in free market rhetoric – that competition among private "unsubsidized" entities will provide needed levels of charging stations at the lowest cost to consumers.

6 : It should be noted, however, that many non-utility EVSEs support utility ownership and recognize that utilities will use their technology and equipment in station development. They also believe that utility ownership will help kickstart the market. These EVSEs regard generally the utility as a partner and are willing to work with them on a turnkey basis to create programs and rates that benefit both the utility and its ratepayers, and the EVSEs.

At this nascent stage of market development, the Alliance believes that the competitive markets are not meeting all the nation's infrastructure needs. In other words, significant market gaps have developed and continue to persist and grow with the higher levels of EV adoption. The needs for charging station development over the next decade are so significant relative to current deployment levels that action is needed now and the overall market size should allow many firms – both utilities and third-parties in the private sector as well as others - to invest. In many cases, state laws require utilities to engage in planning for transportation electrification (called TE Plans) or building out infrastructure in a comprehensive way – whether it be by deploying make-ready infrastructure in front of and/or behind the meter, own and operate, or a partnership model. This requirement means serving all customers in all neighborhoods, income classes, and geography as much as possible.

More importantly from a public policy perspective, there are potentially many use cases – rural areas, underserved communities, multi-unit dwellings, on-street charging, etc., where private investment is difficult, and deployment is lagging. Utilities are uniquely well positioned to fill those gaps in these challenging market segments. Utilities can also work with private entities to help them get stations built – it is not in any way an either-or situation. **Both utilities and non-utility entities have key roles to play. Indeed, early utility investment can help kickstart the market leading to more EVs on the road and better economics for private investment. A rising tide lifts all boats.**

Moreover, some of the arguments by opponents of utility make-ready and O&O investments tend to misunderstand how utility investment works and the regulatory protections in place that preclude utilities from taking anti-competitive actions. The following is a brief summary, although not all-inclusive, of the regulated utility paradigm and how programs are approved, and rates are set.

First, while utilities do place the costs of make-ready or charger investments in rate base once approved by commissions, customers do receive substantial benefits in return. **There is likely no subsidy, or cost shift, required from other customers to pay for charging stations, particularly in the long term.**

- Utilities do not and cannot give away charging service for free. They are required by long-standing rules of ratemaking to recover the cost of service from such investments. So, when utilities charge EV drivers for charging at utility-owned stations, those revenues go to offset the costs, both fixed and variable, that utilities have invested on behalf of ratepayers. These costs, including cost allocation, are accounted for in voluminous cost-of-service studies (called COSS) and litigated in general rate cases among the parties. Over the long term, customer costs are reduced by the amount of utility charging service revenues at a level that could equal or exceed the original investment.

- As noted earlier, utilities will make every effort to ensure that the bulk of EV charging takes place in off-peak hours when there is excess capacity in the system. Increased revenues from such sales will be greater than any incremental costs, meaning average rates for all customers should see downward pressure. While most of this effect occurs from home charging (not necessarily public EV charging), where more than 80 percent of light duty EV charging occurs, the presence and availability of significant public charging remains necessary for consumers to be willing to buy EVs in the first place. In this way, utility investment in public charging leads to more EVs on the road and a subsequent increase in off-peak charging, which ultimately means rates to all customers could be reduced.

- There are other substantial benefits to the development of the EV market which can be driven in part by utility investment. These benefits, also cited earlier, include environmental, local economic development, public health, and national security (geostrategic) benefits.

Second, at this early stage of market development, the potential utilization of public charging stations is often insufficient to provide an attractive return to private investors, particularly for DC fast charging with high upfront costs. This is especially true in areas that may not currently have much EV market penetration. Utilities can bring benefits simply owing to quite different time horizons for capital investments in EVSE as a grid-edge asset: namely, while third-parties often take a shorter term (less than five years) to achieve the return on investment required by their equity investors, the regulated utility takes a much longer view toward investments in utility assets in the distribution grid (often in the 10 to 40 year timeframe).

Third, proposed utility investments are so small relative to the total need that any arguments that utility investment will overwhelm the market or push out competition reflects a disregard for the sheer scale of the need, or a tendency by vendors and certain advocates to want to "lock in" certain business models and proprietary systems. There are numerous examples around the country where even a proposal to build small numbers of new charging stations receives opposition from private companies when the identified needs for clean transportation and net zero carbon goals by 2035 or 2040 are usually estimated to be in the tens of thousands of chargers for each state. In other words, the Commissions need not worry that utility-make-ready or O&O programs, which are properly scoped and overseen by the commissions with a viable stakeholder process, result in a zero-sum outcome.

Fourth, experience has shown that involvement by a trusted utility as a complement to the private sector is important because the electric vehicle charging landscape is challenging to most of the population. While certain residential consumers and commercial landlords invest the time and resources to learn and execute on the options, unfortunately a more common outcome is the "do nothing" approach. Many landlords and property owners simply lack the time, resources, and motivation needed to move forward with installing, owning, and operating charging infrastructure. One way to jump-start the market is for the utility to complement private third-party investment in this early phase of market development by providing, installing, operating, and maintaining infrastructure, both public and private. Direct utility investment in developing charging stations (make-ready and O&O) may not be as broadly needed further down the road as the market reaches maturity, but still may be needed where the private sector does not venture, such as in multifamily units, low- and moderate-income neighborhoods, rural areas, on-street charging and for publicly accessible DC fast charging where there is no third-party EVSE offering charging.

Finally, the Alliance emphasizes that there are a variety of ownership, or joint venture possibilities that are currently being explored in EV infrastructure where a private EVSP can bring technology, software, and network management experience to the table, while the utility can bring its scale, engineering experience and detailed knowledge of the grid. The utility may want to put its brand on certain charging stations it rolls out, and a vendor may prefer to supply the solutions on a turnkey basis including all back-office and network management systems. A variety of business structures are possible to develop the EVSE market.

The optimal solution will differ from state to state, utility to utility, and case to case. That is why the Alliance supports a portfolio approach where all options for expanding infrastructure are examined and deployed where investment is feasible. Moreover, we do not think it is a good idea for Legislatures to attempt to dictate in statute in granular detail how certain business models should develop or prevail. Instead, we encourage the Governors and Legislatures to provide broad, high-level guidelines to the utilities and EV market players in terms of vision, goals, and outcomes, and then let the Commissions, regulated utilities, and private market do the detailed implementation.

Response to Competitive Concerns

Another argument made by opponents of utility O&O relates to the electricity sold by the utility to the EV driver rather than the capital investment. The argument is that utilities will price charging services in a manner that will undercut charging services by third-party charging stations. Again, this argument represents a misunderstanding of the utility ownership model and regulatory protections. Utility retail service – including charging services provided at utility-owned charging stations – are fully regulated by commissions (unlike prices charged by non-regulated EVSPs). Under all states' current regulatory practices, utilities can recover their costs of service from their investments – no more and no less. This includes both the direct costs of investment plus the costs of associated debt and equity. When utilities are required to recover their cost of service, they are unlikely to be able to undercut prices of third-party charging stations. Furthermore, in many states, because the cost of service for charging stations is not very well known at this nascent stage of market development, state commissions are using an average of market prices as the price at which utilities are allowed to charge. So, in this case as well, it is simply not possible for a utility to undercut the price of non-utility charging stations. And in any event, those worried about unfair competition may intervene in these utility rate proceedings. We provide more details in a summary fashion below.

Other Advantages of Utility Investment

There are other advantages of utility investment (MAKE-READY and O&O) in the market that should be considered. These include:

- Accelerating the pace and scale of infrastructure development by opening the market to utility capital, expertise, and other resources. Restricting either through legislation or commission actions impedes rapid market transformation;
- Utilities can fill immediate market needs which may take longer for third parties to fill;
- Maintaining reliability, minimizing negative grid impacts, and optimizing required distribution and transmission system upgrades by coordinating with existing utility investment and planning processes;
- Utilities are more likely than others to place value on off-peak charging in order to optimize system benefits for all served by distribution network;
- Lowering the cost of infrastructure development through coordination with the distribution grid and building on utility experience with infrastructure development;

- Experience in working with fleets, transit systems, and school buses in assessing their energy/transportation needs. These are called Fleet Advisory Services (FAS) by the utilities, and ATE recently published a paper on these highlighting best practices;[7]
- Utilities are well positioned to smooth a key pain point in operating charging stations, namely ensuring reliability. Utilities have an obligation to reliably serve all customers and are accountable to regulators creating strong incentives to maintain reliability;
- Proven ability to communicate with and educate customers through existing channels and creating incentives to promote vehicle charging at times that provide grid benefits—including load balancing and integration of renewable energy sources; and
- Providing more equitable access to charging infrastructure for all ratepayers and communities and increasing mobility for all through utility partnerships with transportation programs focused on serving disadvantaged and rural communities. For example, many best practice utility programs will double or expand the rebates for both the chargers and the installation costs in these neighborhoods to promote this infrastructure.

Utility investment and proposed ET programs of course must be (and will be) carefully considered by Commissions to ensure that the benefits to customers outweigh the costs, that competition in the market will not be significantly affected, and that rates associated with utility programs are just and reasonable. **Utility TE investments have been proposed in many states around the country. In all states where it has been considered, either make-ready or the utility own and operate model or both have been approved.** To date, according to Atlas Public Policy, there has been over $5 billion approved in investor-owned utility investments for all use cases for transportation electrification, including nearly $2 billion for public charging stations, with about $1.9 billion in pending filings.[8] Clearly, state commissions have recognized that utilities have an important role to play in developing the EV markets through strategic and beneficial infrastructure investments.

Other Important Utility Roles

While clearly important, infrastructure investment is only one of the roles that utilities have to play in ensuring the effective development of transportation electrification. In this section, we outline some of the other important roles that utilities play.

Transportation Electrification (TE) Planning

In many states, utilities are required, either by statute or Commission Order, to develop TE plans (called "TEPs") that lay out how transportation electrification will play out in the utility's service area. These plans often include distribution system planning elements, utility investment needs, ensuring a smooth customer experience in getting and using an EV, how service to underserved communities will be addressed, and other elements. These plans, which the Alliance views as a best practice, can be used by

7 : Alliance for Transportation Electrification. "Fleet Advisory Services (FAS) for Fleet Electrification: Meet Customer Needs and Provide Grid Benefits." February 2023, https://evtransportationalliance.org/wp-content/uploads/2023/02/PRESS-ATE-EC-White-Paper.pdf

8 : https://www.atlasevhub.com/materials/electric-utility-filings/

Commissions to ensure that proposed investments and programs meet state goals and consumer needs. Load forecasting, of course, is a critical element of such planning, and increasingly utilities are seeking ways, working together with OEMs and fleets, to improve such forecasting at the "hyper-local" distribution level so that infrastructure can be sited more proactively and accurately.

Education and Outreach (E&O)

Despite having purchase incentives and other supportive policies for EVs, unless consumers understand EVs, adoption will not advance from the early adopter phase in which a limited number of buyers are willing to try out this new technology quickly, to an EV mass market in which EVs are owned by a majority of consumers. A report published in October 2020 by Resources for the Future showed that while 57% of future car buyers are willing to consider buying an EV, they have significant misperceptions about charging, the maintenance on an EV, battery issues, acceleration of the EV and EV mechanics.[9] Utilities are well positioned to respond to this challenge and correcting the many misperceptions and myths, given their expertise, direct access to consumers and their role as a respected voice in their communities on matters pertaining to energy.

The Alliance along with Plug In America have published a paper that details the need and rationale for a strong utility role in Education and Outreach, and discusses what those programs might look like.[10] That report points to eight key reasons why utilities should engage in education and outreach programs. They are:

- Electric utility investment in E&O can help accelerate transportation electrification, to the benefit of all customers.
- Electric utility investment in E&O can help accelerate transportation electrification, to the benefit of the grid.
- Precedent for electric utility investment in E&O for EVs has been established by E&O investment in energy efficiency technologies.
- Customers view their electric utility as a trusted resource for information and expect electric companies to provide information about EVs.
- Electric utility investment in E&O can complement other E&O efforts, but at the appropriate scale needed.
- Regulators are establishing precedent for approving electric company investment in E&O for EVs.
- Electric utility investment in E&O can influence both general awareness of EVs and increase program enrollment.
- Electric utility investment in E&O can target specific gaps in the marketplace.

Of course, utilities should not undertake E&O programs in a vacuum. They should work with other stakeholders who have an interest in promoting the development of TE. The auto manufacturers, dealers, EVSEs and governmental and non-governmental non-profits can all play key roles.

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9 : https://www.rff.org/publications/reports/climateinsights2020-electric-vehicles/

10 : Alliance for Transportation Electrification and Plug In America. "The Missing Piece on Meeting Transportation Electrification Goals: Utility Education and Outreach Programs." Published in December 2020 and available at www.evtransportationalliance.org.

Workforce Development

Utilities have and will continue to play an important role in developing the workforce needed for expansion of transportation electrification. Utilities work with and fund programs at technical schools, community colleges and universities to train workers to install and maintain charging infrastructure and for building and maintaining electric vehicles. Such investment is critical to ensuring that the workforce is available to meet the needs of a rapidly expanding industry.

EV and Charging Incentives

While not as common as the other programs discussed in this report, some utilities provide incentives (usually rebates) for the purchase of electric vehicles, or more commonly for the accompanying needed charging stations. In many cases, such incentive payment schemes can be tied to public policy requirements, such as the ability to gather data, or a requirement that the station be ready for interoperability. Incentives may take the form of direct payments, rebates, special tariffs (such as a waiver of demand charges) or other options. Such incentives, along with state or federal tax incentives are proven to be an effective means of encouraging early development of the EV market and should be considered as part of a portfolio of utility programs.

Rate Design and Pricing Issues

In July 2021, ATE published our initial rate design paper developed by our Rate Design Task Force, which included both tariffed residential pricing as well as commercial pricing in an overview[11]. In that paper, we included a short summary of the retail pricing practices of the utility (i.e., the price which the utility-owned charging station imposes for selling electricity to EV drivers) who chooses to own and operate chargers, along with the non-utility EVSPs offering such services to drivers. In general, we stated that most utilities to date have been offering what could be called "market-based prices" which are calculated based on the retail pricing guidelines of the commercial EVSPs either nationally or in that particular jurisdiction (these are often complex with member based and non-member-based pricing, rates reflecting off-peak and on-peak, renewable generation and so on). Here we cite some of the key findings in that paper which still stand true today:

- For non-utility EVSPs, we believe that states should not consider sales by the EVSP to EVs exclusively for vehicle battery charging as utility retail services or sales. Either by statute or by regulation, such EVSPs should not be considered as a legal matter to be a "public utility" subject to full regulation of prices and conditions of service by the State solely as a result of such sales. Thus, prices for sales of kilowatt hours by such a third-party EVSP provider to EV drivers should be deregulated. The EVSP should still be subject to all consumer protection, weights and measures, and safety requirements of the jurisdiction within which it is located as well as interconnection requirements of the local utility.
- Non-utility EVSPs should still receive price signals that reflect utility costs, but whether they choose to pass those price signals on to their EV customers is a matter for them to decide.
- For charging stations owned by utilities, concerns are sometimes raised that utilities will set rates below their Cost of Service ("CoS") or undercut rates of third-party charging companies based on

11 : https://evtransportationalliance.org/wp-content/uploads/2022/06/Phase-1-Rate-Design-paper-July-2021.pdf

cross-subsidies from utility customers, resulting in claims of "unfair competition". As noted above, however, such rates will be based on tariffs filed and approved by state regulatory commissions.

- One common practice to assure that rates for sales by utilities to EVs are not anti-competitive, in the absence of sufficient cost of service data, is to conduct a quarterly survey of the charging fees charged by the EVSPs in the region, and set prices based on an average of such rates (which could be called a "market average"). This practice should likely serve only as a temporary departure from CoS principles until sufficient CoS data is developed. Such rates should be filed either separately or in the context of a general rate case to determine base rates, and reviewed by parties and intervenors, and approved by commissions.
- Besides "market-based pricing," most utilities are also required to ensure that pricing services reflect the actual incremental costs (both fixed and variable) for designing and building out both AC Level 2 chargers as well as DC fast chargers..
- Again, this paper will not provide an exhaustive list of such pricing by investor-owned, municipal, and rural electric cooperative utilities.). Suffice it to say that the prices charged under the approved commission tariff for all types of charging attempt to reflect this cost-of-service.
- Some utilities have established, on a pilot basis, optional monthly subscription fees for EV owners using utility-owned charging stations as a means of recovering costs and encouraging EV adoption. Such rates may provide convenience and certainty to customers and should continue to be explored.

Internal utility cost and revenues:

- We will not attempt to give an overview of each utility practice regarding its O&O charging infrastructure in this paper. The practices vary widely among utilities across jurisdictions, based on the cost-of-service studies and cost allocation principles, as well as the type of meters that are used to measure consumption (customer meters or company use meters).
- In any case, it is important to point out that the assets associated with EV charging – including not only the EVSE but all the make-ready infrastructure as well – will be included in the assets of the utilities as it accounts for assets, costs, allocation of costs, and incremental revenue to be submitted to the Commission.
- Any increased revenue generated by the utility O&O chargers (incremental kWh, based on the electricity price at the time) will be used as an offset to the costs associated with the charging infrastructure. This is a long-standing cost-of-service principle that is applied to all types of activities that generate incremental revenues (per kWh sales).
- Hence the internal transfer of costs and revenues should net out to zero. (In practice this depends on a number of factors, including the actual utilization and revenue generation of the charger.)
- In other words, the increased revenues from the utility-owned chargers, after offsetting certain utility costs, will go into the general revenues of the utility that will accrue to the benefit of all ratepayers, and be examined and set in the context of a general rate case with participation by all parties.
- The Commission and its staff retain full oversight over the accounting of these costs and revenues and ensures that costs are accounted for in the proper manner in both the reporting on EV programs, as well as in the general rate case.

Summary

The Alliance believes it is indisputable that charging hardware is being installed too slowly in relation to the imminent introduction of a wide array of electric vehicles. While, as stated above, the private sector of EVSPs is an important part of the solution, utilities are well suited to complement and indeed spur private market investment by addressing multiple market challenges through a "portfolio approach." Thus, the Alliance fully supports the involvement of investor-owned, municipal and cooperative utilities with infrastructure, including ownership, operation, leasing, maintenance and other business models. Of course, the utility must justify its cases to own and operate this infrastructure to the commission or its governing body with good arguments and evidence.

The Alliance also emphasizes that the market should not and will not be developed in a black and white or binary manner with utility ownership crowding out the private sector. To the contrary, utilities are likely to constitute a relatively smaller part of the overall market over time, but can serve as key catalysts in the early days of market development. In many cases utility involvement will mean contracting infrastructure development to third-parties or providing incentives to third-party market participants for charging station development, installation, and or operation.

The arguments made by opponents of utility investment in infrastructure, when held to closer scrutiny fail to convince. Regrettably, the Alliance believes that these opponents misunderstand the value of utility investment to the overall market. Consumers need assurances that charging stations will be available when they need them. Even small levels of utility investment relative to total needs can go a long way toward meeting this goal – resulting in a larger EV market which will benefit private non-utility EVSEs. Again, a rising tide lifts all boats. Moreover, many of the opponents who express concern about utility competition do not appear to be filling the current voids. Utility investment, at this stage of market development, is critical to promote the further development of the market. Over time, as there are more EVs on the road, utility investment may be less widely needed. But now is not that time.

About the Alliance for Transportation Electrification

ATE is a 501(c)(6) non-profit corporation established in early 2018 and is active in over 20 state proceedings in the country. We engage with policymakers at the State and local government level to remove barriers to EV adoption and to encourage the acceleration of EV infrastructure deployment with a particular emphasis on open standards and interoperability. We currently have nearly 60 members that include many electric utilities, auto and bus manufacturers (OEMs), EV charging and service providers (EVSPs), and related trade associations and non-profit organizations.

Reference and Contact Information:

This White Paper was developed from multiple filings before state Commissions and other state agencies over the past several years made by ATE, the Alliance for Transportation Electrification. The two standing Committees of the Alliance involved in the development of regulatory and policy issues are: the Policy-Regulatory Committee and the Technical-Open Standards Committee. Several task forces are active and operate under the aegis of these Committees for ATE members.

The primary authors of this white paper are Philip Jones, Executive Director, and Bruce Edelston, Senior Advisor of ATE. Any questions or comments regarding this white paper should be directed to Mr. Jones, Executive Director at: **phil@evtransportationalliance.org.**

Additional white papers and task force reports of ATE along with its mission statement and purpose can be found at its web site: **https://evtransportationalliance.org.**