



Alliance for  
Transportation  
Electrification

## ATE: Interconnection Task Force

March 2024



## Energizing EV Charging Stations: Issue Brief 3 in a Series

### The Pre-Planning Process

*This paper is a product of the ATE Interconnection Task Force, which is co-chaired by Melodee Black of SCE and Kathy Knoop of GM. The Task Force was established in the spring of 2022 to assess the broad range of issues that contribute to the long lead times often needed for energization of public charging stations. The Task Force, through its Energizing EV Charging Stations: Issue Brief 1 - Overview of the Interconnection Process paper published in March 2023, Issue Brief 2: Supply Chain Delays and Utility Best Practices published in October 2023, and this Issue Brief, also intends to share the results of Task Force discussions with a broader audience to offer suggestions on making the process more efficient for the EV ecosystem. The facilitators and principal authors of this consensus-based document are Philip B. Jones, Executive Director, and Bruce Edelston, Senior Advisor of ATE. Please visit our web site for more information – <https://evtransportationalliance.org>, or contact: [phil@evtransportationalliance.org](mailto:phil@evtransportationalliance.org).*

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# Introduction

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This paper is the third in a series of Issue Briefs related to the interconnection and energization of EV charging stations by the Alliance for Transportation Electrification. Previous Briefs have covered *“Energizing EV Charging Stations: An Overview of the Process”* and *“Supply Chain Delays and Utility Best Practices”*. These papers and other related publications of the Alliance are available at [www.evtransportationalliance.org](http://www.evtransportationalliance.org). Interconnecting EV charging stations with the utility grid and energizing these stations is a complex process and can sometimes involve significant delays, often due to reasons beyond the participants’ direct control. The purpose of this series is to try and demystify the process and provide some ideas and best practices that may shorten the time needed to install charging infrastructure. It has become apparent through customer surveys and substantial anecdotal evidence that the lack of reliable public charging stations is one of the barriers to continued growth of the EV market. Accordingly, we believe that it is critical to find ways among all participants to shorten long lead times and to streamline the process for adding new EV charging stations in every region.

This paper has been developed by the Alliance for Transportation Electrification (the “Alliance” or “ATE”) under the auspices of its Interconnection Task Force, which reports to the Policy-Regulatory Committee. The ATE is a 501(c)(6) non-profit corporation established in early 2018 and is active in many state proceedings across 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 about 60 members that include many electric utilities, auto and bus manufacturers, EV charging and service providers (EVSPs), and related trade associations and non-profit organizations.

One of the most critical aspects of the infrastructure development process is what happens before potential charging station developers file a new service application, which is the package of information the utility requires to determine and design the facilities necessary to provide the customer with the requested power. Quite a few activities can occur during this pre-filing period which, when properly carried out can shorten the time needed from the initial idea for developing a station to its final energization. Relevant parties that are all part of the process and can all contribute to pre-planning activities in addition to utilities include charging station developers (hereafter referred to as EVSPs (electric vehicle service providers), site hosts (who may or may not be the owner and operator of the charging station), and local governments that have permitting authority (also known as AHJs or authorities having jurisdiction). State governments, through public utility commissions, also have a role to play in approving utility expenditures and rates for utility service to EVSPs, which hopefully can occur in advance of actual need at least in those cases where future charging station development opportunities are well-proven and obvious. Other state agencies, such as Departments of Transportation, agriculture and consumer service departments, energy offices, and others may also have some jurisdiction over various aspects of the charging station development process. And finally, the federal government, particularly as a source of funding under recent legislation as well as technical assistance, will play a key a role in the transformation of fueling infrastructure across the country.

In this Issues Brief, we discuss the pre-planning, pre-construction process and how each of these entities can work to optimize the development process and hopefully get EV infrastructure built and energized in the shortest amount of time possible. We refer readers to ATE’s first Interconnection Brief, *“An Overview of the Process”* (released in March, 2023) for a discussion of all the

steps needed to develop charging infrastructure. We also refer the reader to a paper developed by the Interstate Renewable Energy Council entitled “*Paving the Way: Emerging Best Practices for Electric Vehicle Charger Interconnection*” which also provides an overview of the interconnection process, pre-planning, and best practices.<sup>1</sup> Another excellent reference is the “*Electric Vehicle Charging Station Permitting Guidebook*” published by the California Governor’s Office of Business and Economic Development.<sup>2</sup> In this paper, we discuss those steps that should or must occur before formal application, which includes developer site selection with utility assistance, utility grid planning for increased loads and utility commission approval of those plans, the study process, the administrative process within utilities and local governments, permitting and easements, and supply chain management. In the Conclusions, we summarize

the best practices for utilities, developers, and local and state governments that are described in the following sections. Utilities have a significant role to play in the pre-planning process, both in planning their own systems to be ready for new loads that will arise from infrastructure development and assisting EVSE developers and site hosts in preparing for the application and approval process. More specifically, utilities can help in the siting process – assisting in determining the best potential location for new charging stations through preliminary system capacity checks which provide a snapshot in time of available capacity for a given area as developers consider projects and potential locations. Also, utilities can provide clarity on high level expected costs, and procure necessary electrical equipment as far in advance as feasible to minimize supply chain delays.

<sup>1</sup> <https://irecusa.org/resources/paving-the-way-emerging-best-practices-for-electric-vehicle-charger-interconnection/>  
<sup>2</sup> <https://business.ca.gov/wp-content/uploads/2019/12/GoBIZ-EVCharging-Guidebook.pdf>



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# Roles and Responsibilities of Utilities

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One of the most important responsibilities of utilities is in preparing the grid for the onslaught of new charging stations that we are likely to see in the next several decades. Of course, utilities are planning for new loads all the time, but planning for public EV charging stations is often difficult because the developers of such stations don't always know where they plan to locate very far in advance, nor do they know the composition of such stations in terms of power and number of ports to provide the utility. With appropriate confidentiality provisions, the utility should receive the necessary data from existing and potential fleet customers, auto and truck OEMs, and EVSPs to carry out this advance planning and load forecasting.

Nonetheless, utilities can do planning in advance to help ensure that the grid will be ready. There are certainly locations that the utility can assume may be likely candidates to host a concentration of stations and new loads – such as airports, warehouse hubs, interstate exits, parking garages, and multi-unit dwellings to name a few. The utility should proactively reach out to local developers, site hosts, and fleet operators to learn their plans (or fleet location and operation when a fleet plan is not yet fully developed) to the extent possible and identify those areas within its system that will be host to significant growth in charging load. A best practice might be for the utility to maintain a single point of contact (called SPOC) or mailbox for potential developers, fleets, and others to provide such information. One potential tool could be the use of surveys for fleets and developers to have a better understanding of future electrification efforts. Another best practice is to schedule regular meetings with potential fleet customers to educate them on the utility process, rate design, and interconnection requirements.

This data must then be incorporated into utility load growth forecasts to gain a better understanding of where upgrades to the grid are likely to be needed. The actual forecasting or modeling of load growth from EV charging will occur in one or more of several places. Some utilities under state law or regulation are required to conduct integrated resource plans (IRPs) – mostly those utilities that still are vertically integrated (own generation, transmission, and distribution). The timing for these IRPs varies from utility to utility but are usually done every two to three years. Utilities that are not required to do a formal IRP (such as utilities in deregulated states with an ISO/RTO) still develop distribution system plans, which is where most changes will be needed because of new charging stations. And grid planning for growth in charging stations may also be a part of Transportation Electrification Plans (or TEPs) that are required in several states. It is also possible to do specific planning studies that drill down on areas of the service territory where upgrades are needed. One example is a study performed by National Grid in New York and Massachusetts that studied the likely location of highway charging stations in the two states.<sup>3</sup> National Grid, CALSTART, RMI, Stable Auto, and Geotab evaluated what an electrified future could mean for highways in the Northeast—using current traffic patterns to estimate future DC fast charging needs for 71 highway sites through the year 2045. No matter the form in which this forecasting and planning occurs, the process will be similar – areas of the service territory that need grid upgrades to accommodate load growth, including from EVs, will be identified.

Once needs are identified, utilities should incorporate those needs in their capital budgets. Because utilities may be building ahead of actual needs, they need to begin to work with their state regulatory commissions to vet those plans

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<sup>3</sup> <https://www.nationalgrid.com/document/148616/download>

and to either seek pre-approval, some type of guidance, or acknowledgement of such capital investments with associated costs. Getting the Commissions on board will be critical to ensuring that utilities can expand their grids in advance of when loads will materialize and thus expedite the energization of new charging stations. Of course, the utility will not be able to forecast all stations that will be added and stations that appear in some areas may require additional work on the grid to accommodate new load. The process may not be perfect – but by incorporating their best estimates into grid planning utilities can go a long way to streamline the identification and construction of system capacity upgrades that may help improve overall process timelines.

A second area where utilities can help to streamline the interconnection process is by providing information to potential developers and site hosts on where in their system capacity is available to host charging stations, to help in the site selection process. Utilities, as a best practice, can provide what are commonly termed hosting capacity maps, or preliminary system capacity checks, or integrated capacity analysis (ICA) that assess distribution feeders' capacities on a granular basis. Such data should be provided to those developers or site hosts showing those areas where capacity is available or limited, based on the analysis and color coding on such maps. Because the use of the grid changes rapidly, such maps must be updated on a regular basis – either monthly, quarterly or annually depending on when utilities normally assess seasonal capacities. It should be noted that such maps or preliminary system capacity checks are a snapshot in time and will not be perfect and should not be the basis for final developer decisions on feeder capacities – they should be used in conjunction with discussions with the utility regarding the developers' specific plans. And whether a specific location can handle a new station in the end will almost always have to be determined by a location study performed by the utility or its contractors. Some utilities are reluctant to offer such maps because they do get outdated quickly, can be mis-interpreted, are costly to maintain, and have the potential to present security risks. Yet with these caveats and appropriate security safeguards, more utilities are beginning to make them available on their public-facing websites.

Other utilities may offer alternatives, such as limited studies of specific locations. Some are also making interactive maps available on-line which can be updated more readily. The Electric Power Research Institute (EPRI) has started an important initiative called “*EVs 2 Scale*” which is attempting to offer interactive maps at the feeder level that may also provide guidance to potential developers on good locations for charging stations.<sup>4</sup>

In any case, the benefits of such maps or information sources and their limitations should be recognized. First, transmission or distribution capacity can change rapidly as new generation sources or loads arise. Second, utilities typically release capacity on a first come, first served basis. Providing information to inform planning years in advance could cause issues if the capacity is claimed in the interim. Finally, hosting capacity maps or ICAs provide general information but may not be sufficiently granular to evaluate capacity at a specific location on a feeder. More detailed engineering studies are almost always needed in the journey through an interconnection process.

It is also the utility's responsibility to have the administrative capabilities to respond to requests for information during the pre-planning process. Potential EVSEs or site hosts should communicate with the single point of contact in the utility or dedicated TE team, contact the utility or use online resources to communicate about their project, and if possible be connected with a dedicated team. The utility's website should have information on how to begin the process and who to contact, and customer service personnel should be trained to direct inquiries to the proper location. The website should also be customer friendly and have enough information to inform potential customers about the process. The process and any forms that must be completed should be understandable and utility personnel should stand ready to help. Self-service options, and greater automation in this process, have become more common and should be encouraged. And it is not just the utility TE team that must be adequately and appropriately staffed. One of the constant concerns and a contributor to delays is that utility legal staffs, for example, may not have adequate staffing to deal with easement issues and to help with permitting. Utilities should work on their internal processes to ensure that they are not the cause of unnecessary delays.

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<sup>4</sup> <https://msites.epri.com/evs2scale2030>

Once a site is proposed by a potential customer, it will be the responsibility of the utility to do an interconnection study to determine if capacity is sufficient to energize the proposed station and if not, what upgrades will be required. If capacity is not sufficient, the utility might suggest alternatives to the customer for temporary solutions until upgrades can be completed. These could include providing lower power during certain periods, on-site storage, an interruptible power supply, or others. The procedure for the study and the costs (which in most cases will be paid for by the developer) should be clear and stated upfront.

Before construction begins, the developer and/or site host must obtain permits and changes to existing easements (or new easements) that may be required. Because construction will require power lines to cross government, utility, or other land easements, or may require new easements if none exist, acquiring the right easement permissions will be a major part of the development process. Much of this work can occur in the pre-application process. While ultimately these activities are the responsibility of the developer or site host, the utility can and should help customers understand what grid-related easements or easement changes will be required. With respect to utility easement agreements, the utility may make easement language publicly available and allow it

to be incorporated into the lease agreement between the developer and the site host where applicable. The utility can and should also facilitate communication between the developer, site host, landowner, and easement owner (where these entities are different). But utilities should not be held responsible for delays due to easement negotiations for which they are not involved. Utilities should know what easements currently exist and have experience with making changes to those easements. And utilities generally have strong familiarity with local government permitting and zoning processes due to their other assets and operations.

Finally, utilities should order equipment that they will need to procure as early in the process as is reasonable. There are often supply chain delays for much of this equipment – particularly distribution transformers, switchgear and even electrical panels. In the second Issue Brief on Interconnection from the Alliance, we discussed supply chain difficulties in more detail.<sup>5</sup> There are some actions that the utility can take to minimize potential supply chain disruptions, but such delays are often beyond the utility's direct control. These include ordering equipment likely to be needed in advance of that need or at a minimum, as soon as the need is known, standardizing equipment needed for charging station service (e.g., distribution transformers) to the extent possible, and developing

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<sup>5</sup> [https://evtransportationalliance.org/wp-content/uploads/2023/10/Interconnection\\_Issue\\_Brief\\_2.pdf](https://evtransportationalliance.org/wp-content/uploads/2023/10/Interconnection_Issue_Brief_2.pdf)

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# Roles and Responsibilities of Customers

## (Site Hosts and Developers)

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contingency plans if supplies are delayed.

The entity that will become the applicant for utility interconnection and energization, be it a third-party developer, the site host, landowner, or other entity, has important roles and responsibilities in the interconnection process as well. Among the most important is to contact the utility as early in the process as possible, even before making a final site selection. The customer should identify the proper contact person at the utility – contact information should be available on the utility’s website or if not, customer service can be contacted. The customer, early in the site selection process, should find out if the utility has hosting capacity maps available or if information on capacity is available to them online. While the customer should discuss potential sites with the utility, it should limit the number of sites to be evaluated by the utility to get timely responses. The utility, to evaluate potential capacity availability at a particular site, will need to know the desired site development timeline, type of charger (i.e., Level 2 or DCFC), the number of ports, expected charging behavior at the site (e.g. types of vehicles charging) and contemplated kWh load per port. While utilities may be able to provide some overall guidance at this stage of the process, a more detailed interconnection study will likely still be needed after a site is selected and application made.

Just as for the utility, the customer should also have a single point of contact with the utility. This will help prevent information from getting lost. Good communication between the customer and utility is essential to a smooth process. The customer should understand that the utility may have multiple applications it is dealing with at the same time and that the process out of necessity – because of all the steps involved – takes time. This is particularly true with respect to supply chain issues and constraints – the time frame for interconnection can be delayed due to reasons beyond the control of utilities – particularly where

new transformers and control panels are needed. Customers may also want to familiarize themselves with the utility process so that they can provide input at the proper times.

A major part of the process for the customer (developer and or site host) will be dealing with easement holders, which could be the landowner, site host, utility, or a governmental entity. These easement holders should be identified as early as possible, an understanding should be gained as to what changes will be needed, and negotiations should be initiated. Easements are basically permission for someone to cross land that they do not own. Easements are necessary both for the construction process where equipment may need to be installed on others’ land and so that equipment can be accessed for repair once the station is operating. Utilities have staff that are familiar with this process and can be helpful to the customer in accomplishing this task.

The customer will also need to be sure that the planned site fits within the local AHJ’s zoning requirements and that the permits that are required are known in advance of a formal request for interconnection. The engineering design of the site that will be needed for permitting will not be done until after the formal application is made, so permits generally cannot be obtained in the pre-planning stage. But understanding the requirements that will be necessary and preparing for them can ease the process. Permits that are required vary with each local jurisdiction. In general, two types are required – a building permit for the physical facilities and an electrical permit for the electrical work. Other permits may be needed for installations or in specific jurisdictions. As discussed below, hopefully the local AHJ will be prepared and willing to help. State permits may also be required in some instances as well. For example, if highways or highway rights-of-way are impacted by construction, permission may be needed from

state Departments of Transportation (DOTs). Or if state lands are involved, state permits will likely be needed. Finally, if a station is to be constructed on federal lands (e.g., Bureau of Land Management, Forest Service, National Parks) federal permits are likely required. Again, the utility is usually familiar with permitting requirements for EV stations within its service territory and may be able to provide guidance.

Another important factor that adds complexity and potential costs to the construction of new EV charging stations is compliance with the Americans with Disabilities Act (ADA). ADA's applicability to EV charging is not implemented or enforced uniformly across the country, although the responsible federal government agencies may start new efforts to increase uniformity and compliance. At this time, only a relatively small number of local jurisdictions have developed ADA rules for EV charging, although some states including California and Texas have their own State Codes specifically requiring EV charging spaces to be accessible, and the 2021 International Building Code (IBC) added a section requiring EV Charging Spaces to be accessible. Developers should familiarize themselves with the requirements of this law as applied in their state. Some of the common requirements that may have to be met include an accessible charging space of certain dimensional requirements, maximum slope of the space, required space between the charging space and the charger, and horizontal and vertical reach to the charging handle. ADA certainly may affect the siting of a station as well as eventual construction.

There are numerous other ADA requirements which are summarized in a Department of Energy document available online.<sup>6</sup>

Customers should also be prepared to pay for the cost of the interconnection

studies that will in most cases be needed to ensure that the grid can accommodate the planned load at the exact location chosen for the charging station. Utility tariffs usually require that these studies be paid, in full or in part, by the requesting party and utilities cannot recover the costs of these studies from their general customer base. And utilities usually want these studies performed either in-house or by contractors with whom they have working knowledge and confidence.

Ensuring a smooth interconnection process places a significant responsibility on the customer, with effective communication being paramount. Regular and early engagement with the utility is crucial in facilitating this process. The more information the utility has early on, (with the understanding that customer needs can change, and capacity availability is dynamic) the greater the likelihood of mitigating supply chain delays by proactively ordering necessary equipment. Customers are encouraged to openly communicate their plans with the utility to assist in grid planning, minimizing unexpected challenges. Additionally, it is essential for customers to maintain reasonable expectations throughout the interconnection process. This proactive and collaborative approach contributes to a more streamlined and efficient experience for all parties involved. Utilities are always interested in accommodating new loads as expeditiously as possible and will do the best they can; however, external factors may cause delays in the process. Again, cooperation and collaboration between customer and utility are key.

Of course, the last step in the pre-planning process is the development and filing of the formal application. The customer should have pre-knowledge of all the information that the utility requires in the formal application. The ability to provide the correct information up front can be a major time saver in the overall process. The customer can and should work with the utility to ensure that the information provided is correct and comprehensive. The utility should be able to answer any questions that the customer may have.

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<sup>6</sup> [https://afdc.energy.gov/fuels/electricity\\_infrastructure\\_ada\\_compliance.html](https://afdc.energy.gov/fuels/electricity_infrastructure_ada_compliance.html)



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# Roles and Responsibilities of Government Agencies

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## Public Utilities Commissions (PUCs)

Investor-owned utilities are comprehensively regulated by state public service commissions (hereafter commissions). Rural electric cooperatives are usually governed by their own Boards accountable to their members, and municipal utilities are governed by their cities usually a City Council or a Mayor. In many states, particularly where investor-owned utilities are vertically integrated, commissions require utilities to file Integrated Resource Plans (IRPs) which lay out their infrastructure needs usually 5-10 years into the future. As noted above, these IRPs should include forecasts of needs for EV stations. Under state law (although they vary) the Commission has the authority to review this long-term plan and offer comments and areas of improvement. These loads and resources are usually assessed in detail at a system level, and not at a granular, distribution level which are necessary to assess “hot spots” or areas of “no regrets” for TE investments. Most Commissions acknowledge such IRPs at a high-level without making specific determinations on the cost and prudence of specific projects, although some analysts interpret this as a form of “pre-approval.” But in any case, the Commission should review and assess the utility’s more granular method of load forecasting and planning for significant EV growth and concentrations of TE-related load.

And even where IRPs are not done (such as in several states in ISO/RTO markets) utilities still do distribution and transmission system planning, as well as load and resource planning to determine system peaks and maintain resource adequacy. Utilities in some states may do EV planning in other ways – sometimes through Transportation Electrification Plans (TEPs) that are currently done separately from an IRP although its load forecasting may be incorporated in an IRP. Others

– particularly in the larger EV markets - may have specific distribution system planning processes tied to EV load growth and charging station development that is more granular than what they consider in broader IRP or distribution system planning that focus primarily on system level needs. With the rapid growth of distributed energy resources (DERs) such as EVs over the past decade, states have initiated a variety of planning processes at the distribution level to assess these growing loads. No matter the process used for planning system needs, the commissions should be assured that utilities are appropriately accounting for EVs in their planning and should be supportive of utility efforts to plan ahead of the projected in-service need of such distribution assets.

One of the regulatory practices in many states that may affect the ability of utilities to adequately upgrade their grids in advance of need is the regulatory principle of “used and useful” which basically says that the costs of utility infrastructure cannot be recovered until the in-service date of the infrastructure (in regulatory parlance, this is called used and useful). We think this is a somewhat outdated principle and we can point to many examples where such a policy strictly enforced would delay beneficial progress in electrification.

We believe that particularly with respect to grid upgrades that the utility is relatively sure will be needed even though customers may have not applied yet, commissions should allow utility investment before the actual use occurs. Of course, such investments must still be prudently incurred. This will allow utilities to upgrade the grid where needed near airports, warehouse distribution hubs, densely populated areas, and other places where the need for charging stations in the future is readily apparent. Utility planning is typically done at least ten years in advance on a rolling basis and planning for EV charging is typically on a time frame of two-three years. Thus, EV load forecasting by its nature will

be shorter-term and may not be reflected in the later years of each individual forecast. That does not mean that there will not be a need in those latter years of the planning horizon. Proactive grid planning and development is essential to ensuring the ability to install new charging stations where needed in an optimal time frame. Absent favorable regulatory treatment of utility requests to upgrade their systems, delays in responding to interconnection and energization requests may significantly increase.

Line extension policies and any make-ready policies or rebates are within the purview of commissions and may significantly affect costs to the charging station customer. Commissions have a responsibility to review applications by utilities for changes to line extension policies or for make-ready programs or rebates that will provide an incentive to potential developers to install charging stations. Such policy changes can have positive benefits to all customers by encouraging growth in the EV market.

Of course, rates charged to EV charging stations are another important aspect of commission authority. With respect to rates for commercial, public charging stations, demand charges in such rates can be an impediment to development of charging stations during these early years of EV markets when utilization may be low, and high demand charges would have to be spread over few kWh sales. The Alliance has addressed demand charges in several papers by its Rate Design Task Force. In particular, “Rate Design for EV Fast Charging: Demand Charges”<sup>7</sup> discusses the need for transitional solutions that will allow charging stations to be profitable during periods of lower utilization. Commissions, on request from utilities, should examine alternative proposals for dealing with these complex demand charge issues. It is best to deal with rate design early in the process to give some regulatory certainty to potential developers and site hosts.

Finally, we believe that Commissions should consider flexibility in reviewing utility requests for providing partial service to charging stations when capacity limitations may prevent full service. This might include load management

solutions that throttle back on full power during peak demand periods or might involve on-site storage or other technology solutions. Providing partial power while the utility works on acquiring what is needed or upgrades the grid, as a temporary fix, may require deviations from strict tariff provisions or commission policies which should be considered by the commissions. In this rapidly changing environment, utilities and customers may need to consider interim solutions to provide adequate power to service the customers’ needs in the short-term (although we believe that these “temporary” power solutions should and can be avoided with better planning, forecasting, and adopting many of the best practices in this Issues Brief). We note again that the fundamental task of a regulated utility is to plan, deploy, and operate its system to provide adequate and reliable service on a permanent basis to the requesting customers and host sites.

## Local Governments

Local governments have a primary role to play in the process in approving zoning requests and providing necessary permits. There are several best practices that have evolved that we recommend for implementation by local governments. These include streamlining zoning and permitting processes to make it easier to obtain these approvals. The process for zoning approval and permit applications should be clear to the potential applicant, contain as few steps as necessary, permits should be consolidated where it makes sense to reduce the number of separate applications, and AHJs should adhere to specific binding timelines for permit review based on a charging project’s size. Local governments and the AHJs within those governments should have sufficient staff to handle the increasing number of applications that will be coming. The local governments will have vital roles to play in reviewing mostly the publicly accessible charging infrastructure which will be located at community centers, libraries, and the like as well as commercial shopping center, grocery stores, and public streets and rights-of-way in high density neighborhoods. These charging needs will be massive and will grow rapidly over the next decade. According to the

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<sup>7</sup> [https://evtransportationalliance.org/wp-content/uploads/2022/06/Rate.Design.TF\\_.Demand-Charge-Paper-Final-5.25.22.pdf](https://evtransportationalliance.org/wp-content/uploads/2022/06/Rate.Design.TF_.Demand-Charge-Paper-Final-5.25.22.pdf)

authoritative national study by NREL of the U.S. Department of Energy issued in June 2023, the estimated national need for EV charging ports will be in the range of 26 to 35 million ports (mid-point of about 30 million), based on about 33 million plug-in EVs in the fleet. NREL estimated the type of chargers needed (for light-duty vehicles only -excludes both MHD vehicles and chargers) to consist of : 182,000 DC fast charging ports along corridors and community centers; about 27 million private ports (residences, workplace, and multi-family); and 1 million public ports (Level 2) for office buildings, high-density neighborhoods, and such).<sup>8</sup> A Fact Sheet developed by the Northeast States for Coordinated Air Use Management (NESCAUM), National Association of State Energy Officials (NASEO), and the American Association of State Highway and Transportation Officials (AASHTO) entitled “*Improving Permitting and Zoning for EV Fast Charging Stations: Strategies for State and Local Action*”<sup>9</sup> provides a good overview of the steps that local governments can take to improve the overall process.

There are many cases where local governments and AHJs do not have rules and regulations that apply specifically to EV charging stations. In these cases, the AHJs will have to interpret how to apply existing laws, codes, and regulations to this new sort of project. This can be especially problematic and may lead to differences between the applicant and the AHJ that can significantly delay a project. We recommend that all local jurisdictions adopt zoning and permitting rules that apply to all charging stations – Level 1, Level 2, and DC Fast Charging. Those rules should be clear and understandable to the applicant.

Cities may also hold easements for property that is used for charging stations. Those easements, like utility easements, may need to be changed to accommodate charging stations. AHJs should be prepared to negotiate such changes in good faith and forego or limit fees necessary to secure easements. AHJs should prioritize timely resolution of these matters and granting easements as they can add complexity, cost, and unnecessary delays to charging infrastructure projects.

Most importantly, the local government zoning and permitting process should

be as customer friendly as possible and easily accessible, perhaps through the local government’s or AHJ’s website. Just as utilities and customers need a single point of contact, a best practice is for local governments to have one as well, or at a minimum, a department that applicants know they can deal with and get the appropriate information.

Again, the zoning and permitting process will probably take place after the customer has filed a formal application or load letter with the utility, but again, the more the customer understands the permitting and zoning processes up front and what information will be needed, the smoother the process can be. And again, utilities can potentially help as resources allow.

## State Governments

State governments have several potential roles to play in the pre-planning process. First, they can and should streamline their own processes for any state permits that might be required by charging station applicants. These may be permits for use of state land, use of highway rights of way, and others. States may also have easements that may require changes and the appropriate state agencies should have a solutions-oriented approach to dealing with these matters. Much of what was recommended for local governments also applies to state governments.

There is also a potential role for state legislatures. At least two states – California and New Jersey have passed legislation that requires or encourages local governments to streamline their permitting processes. In California, AB 1236 (2015) requires local governments to develop an expedited and streamlined permitting process for EV charging stations, including the adoption of a streamlining ordinance and checklist. AB 1236 also limits charging stations project review to health and safety requirements while other legislation – AB 970 (2021) – added binding timelines for the permit review period based on the size of the project and clarified parking requirements. Permit applications

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<sup>8</sup> NREL. “*The 2030 National Charging Network: Estimating U.S. Light-Duty Demand for Electric Vehicle Charging Infrastructure: A Nationwide Assessment*,” <https://www.nrel.gov/docs/fy23osti/85970.pdf>  
<sup>9</sup> [https://www.naseo.org/data/sites/1/documents/publications/EV\\_Fact%20Sheet\\_v3.pdf](https://www.naseo.org/data/sites/1/documents/publications/EV_Fact%20Sheet_v3.pdf)

are deemed complete and approved after a certain number of business days. In New Jersey, a law was enacted in 2021 (P.L. 2021, c. 171) requiring the development of a model statewide municipal EV ordinance which was subsequently developed by the Department of Community Affairs. While ATE does not support state pre-emption of local government’s traditional zoning and permitting authorities, we do support state legislatures looking at how best to encourage streamlining of local requirements by providing sample streamlining ordinances, simplified permitting checklists, and thorough permitting guidebooks as California and New Jersey have done.

## Federal Governments

The process of installing charging stations on federal land can be quite daunting and can require approval from multiple agencies. There has been experience with siting distributed generation and transmission lines on federal lands and we can learn from this experience. Federal agencies should of course also have

streamlined processes. Recently, the Joint Office has developed an initial “Atlas” of hosting capacity maps of utilities across the country, and published these with links on a website, with the assistance of the national laboratories.<sup>10</sup>

Other than permitting on federal land, the federal role is limited. However, the Department of Energy, the Environmental Protection Agency, the Department of Transportation, Housing and Urban Development, and other agencies all can play a significant role in funding studies, disseminating information and coordinating with state and local governments to improve the interconnection and energization process. The Joint Office has engaged significantly with the relevant state agencies and their national associations, such as AASHTO, NASEO, and NARUC, to increase technical assistance and funding for certain activities for the agencies. These agencies are all heavily involved in such activities, which should lead to further optimization of the process. A positive step that has been taken is that DOT and EPA have adopted DOE’s categorical exclusion under NEPA for EV charging stations which should streamline permitting for some projects.

<sup>10</sup> <https://www.energy.gov/eere/us-atlas-electric-distribution-system-hosting-capacity-maps>



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# Conclusions and Summary

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In summary, due to the complexity of the interconnection process and multiple agencies and firms involved, there are many ways in which delays can occur to slow down the overall process. The aim of this Issues Brief was not to identify these obstacles and “pain points” in the interconnection process. Instead, it is to emphasize areas of opportunity for the utility and the customer and host site to engage early and often in a constructive dialogue. Greater use of on-line

technologies as well as single-points-of contact in each organization can help facilitate a more streamlined process as well.

In the following, we attempt to summarize some of these **BEST PRACTICES** for the utilities, developers, and key government actors:

- **Utilities should have sufficient dedicated resources and transparent work processes to support customers. This may require additional resources and related regulatory approvals;**
- **Utilities should have means to communicate capacity availabilities within their systems, through hosting capacity maps or other means to help customers in the site selection process;**
- **Utilities should incorporate EV load growth and charging station development within their planning processes and develop grid infrastructure to meet those needs where feasible;**
- **Utilities and customers should be aware of supply chain constraints and deal with these early in the process;**
- **Utilities and customers should communicate early and often. A proactive and collaborative approach contributes to a more streamlined and efficient experience for all parties involved;**
- **Customers should familiarize themselves with local permitting requirements and easement changes and all legal (including ADA) requirements. Customers should be prepared to meet these requirements after a formal application is filed or load letter provided;**
- **Local governments, state governments, and federal agencies should streamline zoning and permitting processes, and;**
- **State commissions should consider allowing utilities to invest in system upgrades that will most likely be needed to accommodate growth in EV markets and related infrastructure.**

Much of what is required to smooth the interconnection and energization processes is communication and collaboration between the customer (site host or developer), utility, and local and state governments as early as possible. In this Issue Brief, we have referred to some best practices that each of these entities

can adopt to expedite the process. It will not always be smooth, and issues will most likely arise, but it always pays to prepare as much as possible as early as possible to optimize the process.