U.S. Department of Transportation

Federal Highway Administration

Docket No. FHWA–2021–0022

Development of Guidance for Electric Vehicle (EV) Charging Infrastructure Deployment

Comments in Response to RFI by The Alliance for Transportation Electrification

January 21, 2022

Introduction

The Alliance for Transportation Electrification ("ATE" or the "Alliance") is pleased to offer these comments in response to the Request for Information posted by the Federal Highway Administration on November 29, 2021 (Federal Register, Vol. 86, No. 226, Page 67783) opening Docket No. FHWA-2021-0022. This proceeding results from passage by Congress of the Infrastructure Investment and Jobs Act (IIJA), or Public Law 117-58 on November 15, 2021, and in particular, the National Electric Vehicle Formula Program (EV Charging Program), providing funding to States to strategically deploy EV charging infrastructure and to establish an interconnected network to facilitate data collection, access, and reliability. The law also establishes a discretionary grant program for Charging and Fueling Infrastructure (Charging and Fueling Infrastructure Program) to strategically deploy publicly accessible EV charging infrastructure and hydrogen, propane, and natural gas fueling infrastructure along designated alternative fuel corridors or in certain other locations that are accessible to all drivers of such vehicles. These provisions of the law are of course of great interest to the Alliance as they have the potential to substantially move the country forward in developing electric transportation markets. They represent a unique, perhaps once in a decade, opportunity to make a major Federal investment in the country's emerging infrastructure to support the burgeoning electric vehicle market which will be so vital to achieving our nation's environmental objectives, contributing to our global competitiveness and national security as well as benefits to EV owners.

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 primarily 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 over 50 members that include many electric utilities, auto and bus manufacturers, EV charging and service providers (EVSPs), and non-profit affiliates. The Alliance has a strong interest in these programs and thus provides these comments based on our experience in state programs because most of this infrastructure will be deployed at the state level and will require close coordination with the Public Utility Commissions (PUCs) and state agencies.

More specifically, the Alliance wishes to ensure that existing and emerging efforts, including state, local government and utility planning, coordination, programs, and incentives, are all

recognized in developing federal policy guidance. We also believe that the new Federal programs – as well as any state programs that result – should adopt as broad an umbrella of inclusion as possible, because the EV market is in its early stages of development and all hands are needed. No party should be excluded from being eligible for Federal funds or grants, from partnering with another entity – either public or private, or from offering creative solutions that meet the statutory goal of building out EV infrastructure in a rational, cost-effective, and equitable manner.

The Alliance also believes that Federal funds should rightly focus on, as the RFI implicitly suggests, where the infrastructure gaps are, or the so-called "charging deserts". States should develop plans to first identify and then address these gaps using available federal funds matched with state, utility, and private funds where available. And just as these programs should be inclusive, they should not prefer or favor any particular EVSE business model (Electric Vehicle Supply Equipment) or charging type (Level 2 versus DC Fast Charging) at this time. Much of the market is still nascent and not at a profitable scale. This is exactly why Federal funds are needed – as sort of a kick-starter to ensure that public charging is available at the scale needed to encourage consumers to get over range anxiety and enter the EV ecosphere. By enabling infrastructure, federally funded programs should and will allow different types of market development models, in different geographies, and for different EV use cases which meet specific state and community needs. In this regard, innovative and creative approaches by vendors, host sites, and customers should be encouraged. As the market develops and successful business models emerge, private funding can take over.

This is a rare opportunity to fund projects that would be hard to justify either by the private sector alone or by using utility funds approved by state public utility commissions. More specifically, by sharing in the capital expenditures, federal funding encourages private and other public funding to be spread across more locations and help America reach a critical mass of electric vehicle charging. To that end, today's infrastructure should be constructed with future proofing a core facet to ensure that the gains achieved are permanent. Past experience, such as those under the American Recovery and Reinvestment Act (ARRA) has shown that not taking future operations and maintenance requirements into account up front will lead to poor outcomes.

One important technical consideration that we urge the Department to carefully assess is that of open standards and interoperability of EV charging infrastructure. In short, open standards and interoperability are essential to the prudent investment of public funds because only true interoperability enables consumers, whether individuals, small business, or large entities, to avoid vendor-lock. Vendor lock is a technological walled garden; in the context of electric vehicle charging infrastructure, a useful comparison is the early days of cell phones that were locked to individual carriers; just as switching carriers required purchasing a new cell phone, electric vehicle chargers that are locked to a single network cannot be ported to competing networks offering better service and/or pricing. Vendor lock runs counter to the principles of robust market competition and consumer protection. Such competition-limiting practices also fail the statutory requirements to be responsive to technology advancements and to provide an opportunity to cure a failure to operate and maintain. For these reasons, only EV charging infrastructure that is both technically and contractually capable of operating on multiple software

networks should be eligible for funding. Simply stated, chargers locked to a single network should be ineligible.

Finally, the Alliance recognizes that each State is going to take a different approach because they have different needs and characteristics. And we should proceed with the recognition that in almost every State, public utility commissions will have a strong role to play in ensuring that utility distribution infrastructure grows to meet the needs created by increasing EV charging infrastructure, as well as regulating the rates, terms and conditions of electric service provided to EVSEs. At the same time, we believe that States can and are willing to share best practices across jurisdictional boundaries, especially if the Department can facilitate such sharing through its investments and technical assistance. We also strongly believe that state DOTs or other agencies developing the plans for use of the newly available Federal funds should work closely with the public utility commissions and utilities (who have a strong role to play) to develop program plans that are realistic and forward-looking.

Below, we provide comments on the specific subjects for which FHWA seeks information. At the end, we will provide specific recommendations on interoperability - requirements that these systems be open and non-proprietary both for hardware and software.

Specific Comments on Statutory Considerations

1. The distance between publicly available EV charging infrastructure:

The first question that needs to be answered is what the RFI means by "publicly available" charging infrastructure. The definition is important because it requires some balancing between the needs of EV users and those of the site hosts. And there are non-trivial issues involved in developing a definition. For example, are chargers located in paid parking spots or parking garages publicly available? Does it make a difference if it is a public parking facility versus privately-owned property? Does the charging station need to be compatible with all vehicle types? We encourage a broad definition of the term publicly available so that the most challenging use-cases, such as workplaces, apartment buildings and townhouse communities, and paid garages, can share the benefits of transportation electrification.

The scenarios described above, and more, have been debated in state proceedings across the country, usually in proceedings where utilities seek or are granted the ability to provide incentives only to publicly accessible chargers. Three states that have developed working definitions are New York, New Jersey, and California.[1]

[1]In New York, "publicly available" for the purposes of receiving a full make-ready incentive was defined as "… must be accessible to the public without any fee or restricted access." But some exceptions (e.g., for municipal parking) or partial incentives were allowed. (New York PSC Case 18-E-0138) In New Jersey "[P]ublicly- accessible chargers and Make-Ready investments funded through utility investment must be accessible to all mass-market EV users." (New Jersey Board of Public Utilities Order Adopting the Minimum Filing Requirements for Light-Duty, Publicly

The IIJA does give some guidance in Section 11401(E) on the meaning of publicly available where it states that publicly available locations may include "… parking facilities at public buildings, public schools, and public parks, or in publicly accessible parking facilities owned or managed by a private entity." Section 11129 also provides that stations eligible for funding have:

> (A) non-proprietary charging connectors that meet applicable industry safety standards; and ''(B) open access to payment methods that are available to all members of the public to ensure secure, convenient, and equal access to the electric vehicle charging infrastructure that shall not be limited by membership to a particular payment provider.

These definitions are helpful but do not answer all questions that might arise, such as whether EV charging at paid parking spaces is eligible and what charging facilities must offer to be declared publicly available. We urge the Department to develop more refined definitions so the guidance is clear. Questions will also arise as to whether states that have developed their own definitions may continue to rely on those definitions for the federal programs.

Secondly, before adopting any specific distance measure, we believe it is important to identify those areas within the states and along eligible alternative fuel corridors that are currently lacking any meaningful charging infrastructure – so-called "charging deserts." These areas may be rural in nature or in disadvantaged communities, and equity demands that these areas receive prompt attention. Needs in these charging deserts need to be identified first, and then plans developed to address those needs. These considerations should be made independent of any measure of distance between stations.

Only then should states address the issue of distance between charging stations. But it is not the only issue. The eight other factors for the Charging Program discussed in the RFI also need to be considered (such as, for example, utility distribution system capability – especially important with respect to medium- and heavy-duty and DC fast charging loads). Other factors might

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Accessible Electric Vehicle Charging, Docket NO. QO20050357, October 20, 2020. In California, the California Air Resources Board defines "publicly available" as follows:

> Publicly available Electric Vehicle Supply Equipment (publicly available EVSE, publicly available DCFC EVSE, or publicly available Level 2 EVSE)" means an EVSE and associated parking space or spaces designated by a property owner or lessee to be available to, and accessible by, the public for any period of time. An EVSE designated by a lessee or a property owner to be available only to customers or visitors of the business is a publicly available EVSE for purposes of this chapter. EVSE and associated parking spaces located in parking garages or gated facilities are considered publicly available for purposes of this chapter if any member of the public can obtain vehicular access to the facility for free or through payment of a fee. If an EVSE and associated parking space is made available to the public for only limited time periods, that EVSE and associated parking space is considered a publicly available EVSE during those limited time periods only, and must comply with this chapter during those limited time periods.

(California Code of Regulations, Title 13, Div. 3, Chapter 8.3 § 2360.)

include amenities for the EV driver (W/C, food and beverage), and topography and geography (for example mountainous or hilly terrain may require closer distances than flat land). Of course, the number of ports available at each station should be a consideration because if all chargers are in use at any one station, the driver would have to move on to the next. Clearly there is not a "one size fits all" solution that applies to every situation.

Planning at the State level is in fact critical to successful programs implementing the IIJA funding programs. The optimal locations for charging should be the result of collaborative planning among agencies, utilities and infrastructure developers that will be identifying and developing these locations. Utilities are particularly important because it is they who will be responsible for ensuring that local distribution infrastructure at selected sites is either available or can be upgraded in the desired timeframe. Lack of utility infrastructure may make certain locations nonviable, yet this crucial information is challenging to determine independently; early coordination with utilities saves time and money and will produce great efficiencies in developing new infrastructure.

With respect to appropriate distance between stations, as a general matter, many planning studies (see for example the HDR study on the West Coast I-5 corridor[2]) use a 50-mile distance between stations as a benchmark. We believe that 50 miles between stations should be considered a maximum, but we also recognize that it will not always be possible. And in dense urban areas, the distance between stations should be considerably less – perhaps 10-25 miles. And distance of the station from a highway exit is also important – drivers will not want to venture far from the exit. While there probably shouldn't be a hard and fast rule, because land availability may vary, we think about two miles is a reasonable maximum. The closer the better. Again, we emphasize that there is not a one size fits all solution. And as more and more EVs come to market, there will be a strong need to place stations closer together to be able to accommodate the much higher demands for public charging that will result.

While the Alliance recognizes that for the following to occur a statutory change is required, but we would note that the current prohibition on commercial activities at interstate rest areas, a prohibition which encompasses EV charging, is an impediment in many areas of the country particularly where there is no or little commercial activity and long distances between highway exits. We think this prohibition should be revisited, at least on a limited basis to allow exceptions for EV charging where commercial options don't exist.

Finally, hours of access are also critical. For stations on or near interstate highways, we believe 24/7 hour access is vital and should be required in the application process.

In summary, first it is important to fill in areas where there is no or little charging capability at all. Then, when focusing on highway corridors, it is important to have an EVSE at least every 50 miles to ensure adequate charging infrastructure in the near term, but closer in denser areas. As the market grows, and medium and heavy-duty vehicles become a larger part of the mix, we may need to rethink these metrics.

[2] West Coast Clean Transit Corridor Initiative: A Roadmap to Reduce Emissions by Electrifying the I-5 Corridor (2020), available at https://westcoastcleantransit.com.

2. Connections to the electric grid, including electric distribution upgrades; vehicle-to-grid integration, including smart charge management or other protocols that can minimize impacts to the grid; alignment with electric distribution interconnection processes, and plans for the use of renewable energy sources to power charging and energy storage.

Utilities must play the key role here, working in collaboration with the vendors, site hosts, permitting authorities, and others to ensure that the electric distribution system is upgraded to accommodate new EV charging loads. Utilities also should be eligible entities for funding of charging stations and make-ready (the upgrading of wiring and other infrastructure between the utility point of interconnection and the pad where the charger is to be installed). Utilities may do this as owners and operators, or in partnership with third party EV charging networks. Utilities are already one of the major developers of EV infrastructure and can contribute significant expertise and financing capacity for such investment. As we stated earlier, no market model should be excluded for use of program funds as an all-hands-on deck approach is needed.

The key to successful integration of EVSEs, especially at the scale contemplated by the IIJA, is advanced planning and coordination, and should be required. State plans submitted to secure funding, as well as requirements of the state for funding of charging stations should require that the EVSE vendor, site host and utility work together to ensure adequate reliability of the station installation.

The need for distribution infrastructure expansion can be avoided in some cases if additional loads can be directed to off-peak periods when there is excess capacity. This is fairly straightforward for residential charging (which makes up about 80% of overall EV charging) where consumers can easily charge in overnight hours. It is harder, however, for publicly available charging stations, where drivers want to charge when they arrive, and not have to wait for a lower price period. There may be some limited measures public charger operators can take, however, such as offering discounts to drivers who charge at certain times – which could be off-peak hours or hours in which the system has an excess of renewables available. This would also make more efficient use of renewable energy on the system. To date, we do not know of national charging networks offering such pricing, but states (which generally don't regulate the pricing of non-utility EVSE) might encourage non-utility EVSEs to offer off-peak "discounts" or higher "on-peak pricing" when developing their grant programs. State Commissions can require (and have been requiring) time-of-use pricing for charging stations owned by utilities (often contracted out to third party vendors which operate the chargers and the network) which are funded with ratepayer dollars. But we do not believe that time differentiated pricing should be a requirement for charging stations to receive grants under the IIJA programs.

On-site battery storage is another option to reduce potential grid impacts. Batteries could draw from the grid in off-peak periods and then discharge to vehicle batteries during on-peak periods. Again, rate design could be used to encourage such systems. Batteries can also add resiliency to charging stations in the case of disasters when the grid may not be available. But they add considerable cost to charging stations, which would have to be reflected in higher user charges. Nonetheless, it is an option that states can consider, but should not be a requirement.

Renewable energy use at charging stations is also a possibility, but may add considerably to land requirements. And renewable generation may logically be pared with battery storage systems to

minimize reliance on the grid or need for grid upgrades. The economics of such combinations should improve over time. We don't believe renewable generation or combined renewable/storage systems should be required as a condition of funding, but should be a consideration where it may be an economic alternative.

VGI (Vehicle Grid Integration) refers to a suite of technologies and incentives to provide incentives to the EV owner to move the EV charging load to a time that is both more beneficial to the grid and to the EV owner. Some of these benefits include peak shaving, load balancing, dynamic energy storage and grid-scale renewable integration. VGI can include some of the following: TOU or dynamic or real-time rates (rate design offered by the utilities) to shift charging to off-peak; credits or monetary incentives to customers for participation in such programs; managed/smart charging through V1G (unidirectional) techniques, or demand response, that can be done either through the EVSE itself, or the OEMs using vehicle-based telematics, as well as demand-side aggregators of such services; and finally V2G (bidirectional power flows) where the utility or grid operator can pull power from the vehicle battery (which must be plugged in) at times when the grid may be stressed or reaching capacities. The Alliance co-authored an introductory paper on VGI with Atlas Public Policy that may be helpful to the FHWA.[3]

Unfortunately, VGI applications are in most cases not directly relevant to publicly accessible charging along highway corridors. These technologies are more oriented towards use cases where the vehicle is parked in the same location for a minimum dwell time. Their use for public charging stations with transient vehicle use is less apparent.[4] But States might want to allow and encourage creative applications where VGI could be used in this context. In addition, it is important to note that V2G in particular adds another level of complexity to integration with utilities and has multiple technical issues yet to be resolved.

In summary, while there may be some viable applications for VGI for publicly accessible charging that will be eligible for funding – for example in parking garages where vehicles may dwell for a longer period of time, there are still a lot of questions that need to be addressed, and it is not clear at this time that EV drivers will be accepting of use of their batteries for VGI – particularly in public charging applications. VGI should not be a requirement for funding of charging stations under the IIJA.

3. The proximity of existing off highway travel centers, fuel retailers, and small businesses to EV charging infrastructure acquired or funded under the Program:

The Alliance believes that existing off-highway truck stops, fuel retailers, convenience stores and other retailers will be key providers of EV charging services and certainly should be a recipient of federal funding and grants. Again, the federal grants should not prefer one market model over

[3] Available at https://evtransportationalliance.org/wp-content/uploads/2021/11/2019-Vehicle-Grid-Integration-Fact-Sheet.pdf.

[4] There may be opportunities for provision of ancillary services but there are technical issues that need to be worked out.

another, and the criteria developed should be agnostic in this regard. Where EVSE is needed should be the primary consideration, not who the site host is.

4. The need for publicly available EV charging infrastructure in rural corridors and underserved or disadvantaged communities.

The availability of EVSE in disadvantaged communities has been a key component of almost every transportation electrification plan that has been developed and approved to date – whether by the state, local government, or by a utility. We believe any criteria for equity investment that is developed as part of FHWA's and the state's application process for grants should equally apply to rural and metropolitan areas, and applicants should address how they intend to deal with upfront capital costs, low utilization in the early years, and how to maintain the investment over the long-term.

We note that mistakes were made during implementation of the American Recovery and Reinvestment Act (ARRA) that resulted in charging stations being deployed that were not kept up – many are sitting idle today. We should not make these same mistakes that were made in siting and deploying infrastructure during the ARRA. A partnership (between vendor, and the local government, or the utility) should be encouraged, and a long-term perspective required.

Again, the utility role could be critical to serving the needs of disadvantaged communities. The concept of universal service, which is imposed on the regulated utility by the State, is essential here, which means that the transportation electrification (TE) infrastructure should be extended to all geographies, neighborhoods, and citizens. Many utilities already have programs in place to address the needs of the disadvantaged or underserved communities. The applicants should be encouraged to develop programs and ideas which can supplement or fill in the gaps for these programs (some of these utility programs have goals or requirements that 30 to 50 percent of the total ratepayer funding will go to these use cases).

For underserved rural areas, applicants should be required to demonstrate the funding and operation of the chargers over a five to twenty year time horizon. The Statute only allows funds for operating costs for up to five years. Applicants for funds should provide information on how they will provide for operations and maintenance beyond five years – particularly if low utilization persists. Perhaps electric distribution utilities, states and the local governments, could develop programs to mitigate a portion of these potential deficits.

5. Long-term operation of chargers; risk of stranded assets.

As stated above, we believe that the Department should require the applicant to set forth detailed plans for the development and deployment of the charging stations, as well as operations and maintenance, with a long-term perspective in mind (by long-term, we are referring to an outlook of five to twenty years that is similar to other plant assets at the utility distribution level). Since this market is nascent and new business models are being developed with privately sourced

capital, the outlook for some of these ventures is more short-term. A strong partnership with another organization such as a city, county, utility, or metropolitan planning organizations could help enhance a long-term perspective.

In reviewing applications under the EV Charging Program, the IIJA requires the DOT to:

> consider whether, to the maximum extent practicable, the eligible entity and the private entity that the eligible entity contracts with . . . enter into an agreement (i) to operate and maintain publicly available electric vehicle charging infrastructure . . . and (ii) that provides a remedy and an opportunity to cure if the requirements . . . are not met.[5]

Operating and maintaining charging infrastructure is extremely important to safeguard public investment and also to enhance customer experiences as EV charging moves from early adopters to mainstream consumers who will expect a high level of service.

The host site or asset owner normally have some type of service level agreement (SLA) provided by the EV service provider, or another third party that specializes more in maintenance and troubleshooting when issues arise. As stated later in our response to Topic 8, we believe that the Department should encourage applicants to develop specific plans for enhancing uptime and long-term maintenance of the chargers, and require regular and robust reporting of these this data by location and charger that receive federal funds. Moreover, the Department may want to consider some type of requirements for the maintenance of these publicly funded assets, such as an escrow account or bond, that would ensure some measure of accountability over the longer term.

It is important to recognize, however, that the issues of relatively low utilization of the chargers will persist with some of these charging stations for some time, especially in some of historically underserved areas, the less populated rural areas, and so forth. Accordingly, some level of oversight or assurance will be necessary to ensure some modicum of accountability for these deployments as well as a forum to discuss potential additional measures to encourage use of this infrastructure.

Finally, consideration should be given to the risk of stranded assets when considering applications and deploying infrastructure. By way of background, the term "stranded assets" is very familiar in the utility industry, but the concept applies across all industries (as well as for consumers). A stranded asset is one that has suffered from an unanticipated or premature write-down, devaluation, or conversion to a liability. Assets can become stranded for many reasons. Sometimes technology or regulatory changes cause an asset to no longer be useful or even legal. In other cases, a parts or service provider may go out of business, or the service provider may simply stop supporting products; when the product relies on a data connection to operate, the operator's decision to cut the lifeline creates a stranded asset.

Regulated utilities have had to deal with the risk of stranded assets for decades with the Commissions that oversee their investments, rates, and operations, and it is an outcome they ardently wish to avoid. Utility assets can be stranded for several reasons, such as technology

[5] IIJA at § 11401(b)(5) (to be codified at 23 U.S.C. § 151(f)(5)(D)).

changes, changes in codes or permitting for the equipment, prudency reviews, or changes in public policy. Commissions have developed mechanisms to allow regulated utilities to recover the costs of such investments over time although with less favorable conditions and regulatory lag. But the federal investments in TE infrastructure will likely have no such mechanisms for regulatory relief. Therefore, careful planning should be required by the applicant both for the type of infrastructure, the possible future proofing of a site, and the ability of an applicant to manage the EV charging equipment with a long-term perspective.

Finally, we believe strongly that open standards and interoperability are essential to reliable, long-term operation of charging assets because only true interoperability enables infrastructure owners to avoid vendor-lock by changing software providers. We provide more detailed arguments on these issues at the end of these comments under Topic No. 9, "any other factors as determined by the Secretary."

6. Existing private (including utility), State, Tribal programs and incentives.

We urge the Department not to duplicate either the planning or the infrastructure build-out plans of multiple entities at the State and local government levels, including utilities, EV service providers, host sites, city and county governments, and others. Much progress has been made in building out charging infrastructure in the past several years, so it is important not to "overbuild" or duplicate the deployment of assets in certain highway corridors, metropolitan areas, and other geographies.

For example, many utilities regulated at the State level have been building out infrastructure, either on a pilot basis or currently in development for larger scale, with programs approved by their Commissions, or with assistance from State Legislatures or other state agencies. Accordingly, we urge the Department to require any applicant to reference such approved plans and programs and incorporate those existing resources in their applications. In other words, the federal investment funding can serve as critical leverage, with utilities, vendors, and other partners, in putting certain programs in a more favorable position from a cost-benefit analysis.

Since many States, including vendors, charging networks, utilities, and others, have been pushing forward with pilot-scale programs for public EV charging over the past few years, the federal investment sources can be viewed as critical resources to help move such pilot programs to larger scale. Certainly, the applicant should be required to address "lessons learned" from these early pilot programs at the State level and correct and remedy any deficiencies as we move toward greater scale in building out this critical infrastructure. But again, the Department should be cognizant of the reality that the EV charging industry is still in a nascent phase of development.

We will cite to some excellent examples of statewide planning for EV infrastructure. Colorado has been hard at work for several years, led by the Colorado State Energy Office (SEO), to develop comprehensive statewide plans with a robust stakeholder process. At the same time, Xcel Energy (Public Service of Colorado) has developed an excellent TE Plan approved by the Public Utilities Commission that has been implemented well with a robust stakeholder process.

The utility plans to begin discussion with stakeholders about its next TE Plan later in 2022, so this is an opportune time for the federal funding to be leveraged with such planning. Oregon has developed another great statewide TE Plan (TEINA) that was released in June 2021 that focuses on gaps in infrastructure funding for EV chargers in the state. At the same time, Portland General developed one of the earliest and most comprehensive TE Plans in the country and will be updating its plan in 2022 as well, based on guidance from the Oregon PUC. Other states that have developed comprehensive statewide plans for TE infrastructure include Alabama, Florida (EV Master Plan), and Virginia. Many other regulated utilities have developed excellent TE Plans for their service territories, including Exelon Utilities, Avista, Puget Sound Energy (PSE), Xcel/Northern State Power (MN), Evergy for KS and MO, and many others. Finally, responding to a new bill passed by the Illinois Legislature last fall and signed into law by Governor Pritzker, the two large Illinois investor-owned utilities – Commonwealth Edison and Ameren Illinois – have to develop comprehensive Beneficial Electrification Plans (BEPs, which include building electrification as well as TE), to submit to the Illinois Commerce Commission by July 1, 2022. Therefore, any applicant for funding in Illinois should be required to address how its plans and funding would interact with such plans. Finally, there are many other examples of best practices in the states, both by utilities and state agencies, in which the Alliance has been engaged, and we would be happy to provide both these best practices, and key lessons learned, to the Department as it examines state and local activities in TE infrastructure.

7. Public-private partnerships (PPPs) and the role of private capital.

We have already cited to the importance of an "all-hands-on-deck approach" in our comments above. Private capital markets have been responding to the market opportunities that EV adoption and charging infrastructure may create for the market in the future. Wall Street investors, including private equity, SPACs, traditional IPOs and other means, have provided a substantial amount of capital to EV service providers and other entities over the past couple of years. These sources of capital, if effectively targeted and mobilized, can provide a critical source of funding of EV charging stations.

Federal funding can be an important source of leverage here as well. As the Department considers applications, however, care should be taken to assess how such applications are consistent with the existing and future plans of the private sector in building out charging stations. As with the deregulation of the telecommunications industry with the 1996 Act along with the creation of the CLECs (competitive providers), the Department should assess carefully how to target its resources toward the most critical gaps in infrastructure, avoid overbuilding or duplication, and spread the benefits of transportation electrification to all sectors of society.

Again, as stated above, we believe that a long-term perspective for both the deployment of these charging stations and especially the sustainable operations and maintenance of these assets should be required by the Department. While very helpful to accelerate movement in the overall charging ecosystem, the private capital resources may not be truly impactful in addressing the charging needs of historically underserved communities, multi-family dwellings, and less populated rural communities.

Therefore, we believe the Department should ask for proposals that address more creative ways in reaching such communities, through mechanisms such as PPPs involving both local governments, non-government organizations, regulated utilities, and other groups, that could help address some of these "charging deserts" and gaps in infrastructure. Again, we would urge the Department to refer to many of the existing TE Plans (of utilities), or state TE infrastructure plans developed by state agencies, as a first step of reference in the federal funding opportunities.

These are challenging areas to address in charging infrastructure deployment, and none of us should minimize these as we develop programs and the federal leverage to help move these along. For example, from a cost-effectiveness methodology standpoint, many utilities are bound by the traditional cost-benefit analyses (CBAs) developed by their Commissions over the years based on traditional cost-of-service ratemaking. In order to address these multiple challenges in getting infrastructure out to all communities and citizens, including underserved, rural, and communities of color, such methodologies may have to be adjusted in light of the injection of federal funding, and the priorities of the Department in assessing and evaluating project proposals.

8. Meeting projected market demands, such as power levels, dwell times.

As with other aspects of EV charging, there is no one size fits all when it comes to power levels. Corridor charging generally demands power ratings of at least 150 to 180 kW, and we expect 350 kW to soon become the new standard. But there are other use cases away from corridors where dwell times are longer, and where slower charging may be appropriate. As discussed elsewhere, future proofing is an effective means of ensuring prudent investment of public funds. One example is by ensuring that conduit is large enough to support more powerful chargers when they are upgraded. We also note that DC fast charging is moving toward modularity, meaning that today's 180 kW chargers may be able to be reconfigured to offer 360 kW. Entities receiving federal funds should be encouraged to look at both current and future market demand holistically across use cases and geographies. Utilities can help plan for this future market demand by future proofing these sites, as mentioned below.

While consumer surveys (from OEMs and other third parties) demonstrate that time-starved and busy consumers/EV owners want to charge in as little time as possible, they also indicate that both competitive pricing for DCFCs and reliability/uptime of the infrastructure is equally important; some station operators may be able to offer lower prices only with lower-powered charging. Another reason to retain flexibility and not establish a bright-line test is that one needs to distinguish between the needs of light-duty vehicles and medium- and heavy-duty vehicles with their needs for both overnight depot and publicly accessible charging during their daily delivery schedules.

Therefore, we are not advocating for any specific power level at this time for the Department to require for all applicants who may be eligible for funding. The projects must be based on specific use cases which involve several specific considerations and trade-offs between factors of dwell times, prices, geographies, equity, type and location for the customer such as multi-family

dwelling or rural underserved, and so on. The ultimate pricing of these charging services is usually not regulated by a government authority, such as a State Commission, although if owned and operated by the utility will usually reference a "market average price" for that region. But, in general, we think for end use cases such as corridor charging and metropolitan charging which services multi-family, TNCs, and other EV use cases, a power level of at least 120kW per plug would be preferable.

Future proofing is also critically important given this evolution to higher capacity batteries and the desire for shorter charging sessions along corridors. The Department should require the applicant to consider future proofing requirements in its applications, including those who wish to start at lower power levels or fewer chargers for either cost, affordability, or other considerations. Namely, it is important to recognize the adage that if you are going to break concrete or asphalt to install underground conduit for EV infrastructure, one should only do this once. However, the Department should also be aware of the regulatory principle of "used and useful" that most Commissions recognize and put in practice, namely that the capital investment in electrical infrastructure should be demonstrated to be "useful" to the ratepayer temporally. Many Commissions are modifying such principles for specific use cases such as these for TE infrastructure which will move toward higher power levels in the near future, and the Department should be aware of these challenges at the state level.

Trying to predict what the exact power level that an EV owner/consumer will experience at a public charging station is an uncertain endeavor in today's environment. Many factors appear to be involved in this experience, including the actual power level delivered by the EVSE, the BMS or battery management system of the vehicle, the capabilities of the grid of that particular time, and the demand imposed by other vehicles plugged in and charging at that location at the same time. While we do not have consensus in the Alliance today on a specific uptime metric along with the many assumptions and data inputs, we believe that at a minimum robust and regular reporting of data on utilization and uptime by location and charger should be required of each successful applicant. Moreover, we would hope that the Department would keep the focus on the EV owner and consumer in considering all of these factors and developing requirements that allow the consumer to choose the most reliable and resilient charging infrastructure at that time.

At the same time, depending on the particular use case and type of vehicle, a lower power level may be desirable and may be cheaper for the consumer if a longer dwelling time is acceptable. Moreover, if the host site or utility has already deployed infrastructure at lower power levels recently, it would be efficient to get as much use out of those assets as possible in the future. Therefore, the Department should keep an open mind to eligible applicants as they submit applications for charging infrastructure to serve both light-duty and medium- and heavy-duty vehicles, and choose those use cases that make the most sense from both a high-level practical approach and a cost-benefit analysis. In any case, however, we urge the Department to take a holistic view toward the TE infrastructure over a long-term time horizon and build in flexibility in its approved programs to make mid-course corrections.

9. The importance of open standards and interoperability requirements in EV deployments ("any other factors, as determined by the Secretary").

Open Standards and Interoperability are Essential to Reliable Long-Term Operation Because Only True Interoperability Enables Infrastructure Owners to Avoid Vendor-Lock.

An ecosystem of networked EV chargers consists of various components including the charging hardware manufacturer, the cloud network service provider, and the charger owner. In some cases, these roles overlap, while in others they are distinct.

Networked EV chargers communicate via modems or the internet with a cloud-based service in order to perform functions such as recognizing customer credentials, sending pricing information, and monitoring the status of the charger. Some charging networks are household names, while others are white labeled, which means they operate in the background behind a different public-facing name. Consumers typically are not familiar with who performs which function, and most of the time this is not important. But for the same reason consumers care if their cell phone is locked to a specific carrier, they should know the same about their EV charger. This is because some chargers are locked and cannot be moved to other networks. Just like in the early days of cell phones, when consumers who wanted to switch carriers had to purchase new phones, today some EV chargers are locked to single networks which prevent the owner from switching to a different network. The ramifications are significant because EV chargers are not inexpensive, and today most EV charger buyers, including those who are otherwise highly sophisticated, are completely unaware that certain charger brands are totally locked.

To promote competition and consumer protection, EV charger manufacturers and network providers utilize a common and open-source platform called Open Charge Point Protocol (OCPP).[6] OCPP enables chargers and various cloud networks to communicate. Independent third-party testing and certification is available to facilitate this interoperability. Not using OCPP results in the charger not being interoperable, which reduces competition and harms consumers.

To facilitate interoperability and ensure an ecosystem of hardware and software in which customers have choices both in their initial purchase as well as during the assets' useful life, an international organization called the Open Charge Alliance (OCA) sponsors events at which hardware and software providers from around the globe convene (virtually and in person) to test their interoperability. Interoperability is desirable for all parties because the more various hardware and software vendors can work with, the more options customers will have to mix and match. This optionality is healthy for the growth of the industry. Innovators who support interoperability are precisely those who should be rewarded through inclusion in the Department's funding opportunities, while companies seeking to build walled gardens and lock in customers for life should be excluded.

[6] OCPP is an open-source protocol developed and maintained by the Netherlands-based Open Charge Alliance (OCA). Information on its activities, and the development of versions of these protocols can be accessed at its web site: https://www.openchargealliance.org/

Stranded Assets Can Be Avoided. Only Chargers Technically and Contractually Capable of Operating on Multiple Software Networks Should Be Eligible For Funding; Chargers Locked to a Single Network Should Be Ineligible.

It is critical to understand that some charger manufacturers also build and operate the software that runs their chargers. Some of this software is completely proprietary and not interoperable, which is a clear-cut case that should be excluded from funding. But other companies use (or claim to use) OCPP as the basis for their own software, and then impose contractual or technical barriers to the charger operating on a different OCPP network. The result is that the charger is locked to a single network and the customer has no ability to change networks. This illustrates a situation in which the asset is constructively stranded. When the customer is captive and has no options, the service provider can raise prices or provide bad or no service at all. Conversely, when a product can be used with multiple service providers, the market provides competition and the product's owner has options.

EV Charging Infrastructure Locked to a Single Network Fails the Statutory Requirement to be Responsive to Technology Advancements and Fails the Statutory Requirement to Provide an Opportunity to Cure A Failure to Operate and Maintain.

The Grant Program in Section (4)(A)(iv) specifically requires applicants to describe how they have considered "infrastructure installation that can be responsive to technology advancements." Readers of these comments likely have experienced owning a product that fails to last as long as expected due to reasons having nothing to do with the product's core functionality. For example, you might purchase a printer and toner cartridges become unavailable or prohibitively expensive. Or an older cell phone may not run the latest apps. Such instances are typically inconvenient or annoying at worst, and hopefully the device in question isn't too expensive. But EV chargers are generally expected to last at least 10 to 12 years and represent sizable investments. (Level 2 chargers can cost up to $10,000 for a dual-port unit, while DC fast chargers can cost $100,000 or more, depending on the power level.) If a charger for some reason fails to satisfy the owner's future needs and cannot be adapted, there is a risk of significant loss. To be clear, this is not a hypothetical situation. For example:

- As building energy management systems become sophisticated and capable of controlling EV charging, the chargers will need to communicate with the energy management systems. We are aware of situations in which the charger manufacturer did not provide this capability, preventing the chargers from moving to an alternative network that offers enhanced connectivity. Because EV chargers draw significant amounts of power, they are important to comprehensive energy management systems, and we are aware of customers disposing of otherwise operable chargers for the sole reason that they were on a closed network.

- In 2020, a charging station company that sells chargers with tightly integrated software stopped supporting its chargers in Australia; while many chargers are capable of operating on multiple networks, the chargers at issue were not. All of this company's chargers in the entire country were left stranded, with no opportunity for the chargers' owners to manage access or charge customers for charging. This is a real risk with

> hardware that operates only on a single network, but the risk can be mitigated by favoring hardware that is software agnostic.

We believe that the best practice should be to invest public funds only in chargers that are both technically and contractually capable of operating on more than one network to protect against scenarios illustrated above.

Chargers Locked to a Single Network Fail Best Practices in Procurement and the Grant Program's Requirement to Offer a Cure.

Section (5)(C)(ii) of the Grant Program requires the Secretary to consider whether the private entity that the eligible entity contracts with offers the ability to cure a failure to operate and maintain infrastructure. When chargers are locked to a single network operator, the eligible entity has essentially no leverage to force a cure. When chargers can be moved to an alternate network, however, the eligible entity can seek such redress if the private entity is not upholding its obligations.

The Federal Acquisition Regulations recognize the importance of non-proprietary standards, and according require a justification and approval to use specifications and standards that are proprietary.[7]

And the Department of Transportation itself recognizes this important condition in procurement. When the Federal Transit Administration (FTA) was developing the Intelligent Transportation Infrastructure Initiative under Operation TimeSaver, for example, the FTA stated to the industry the following:

> ITS integration can only be achieved by purchasing open architecture, non-proprietary, standard equipment. Common standards ensure equipment interoperability and interchangeability, and reduce production, development, procurement, maintenance, training, and operating costs. Furthermore, common standards ensure that ITS system upgrades and additions can be easily accomplished. More importantly, common standards permit the integration of ITS systems. Once integrated, ITS systems can communicate with other systems and share data among departments and agencies and across local, state, and regional jurisdictions. Integrated ITS systems create a more powerful system and provide a much higher level of information capabilities.[8]

We believe the same applies to federal investments in EV charging infrastructure including both hardware and software systems today.

For the reasons discussed herein, we urge the Department to limit funding to chargers that are undeniably portable between multiple network service providers.

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[7] 48 C.F.R. 211.170 (2021).
[8] U.S. Department of Transportation, Federal Transit Administration, Letter No. C-96-18 (July 8, 1996) (available at 1996 WL 33674322 (FTRAN-FTAGC)).

Finally, as stated earlier, the Alliance is a strong believer in open standards and protocols, and promoting as much interoperability in the EV ecosystem as possible, both for hardware and software. We are working diligently in the States to promote these concepts with state PUCs, state energy offices, Governor's Offices, and other key decision-makers at the state level. Accordingly, we support strongly the section of the bill (IIJA), in Section 11129 on "Standards" that requires the use of federal funding, "at a minimum," to use non-proprietary charging connectors that meet applicable industry safety standards. We urge the Department to adopt a plain reading of this direct and concise language. In a practical sense, the Alliance believes the market is moving in any case towards the streamlining of the plug or connector for the CCS Combo plug, or the J-1772 plug, developed over many years by SAE and other groups. We think the adoption of a "universal plug or connector", without any adapter or additional auxiliary equipment, a much better and convenient experience for the EV user and host sites. The same concepts should apply to the statutory language in subsection (b) requiring "open access to payment methods that are available to all members of the public." The Department should be aware that several states have already adopted, or are in the process of adopting rules such as California and Washington, on these issues as well.

Sincerely,

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