Northeast Corridor Regional Strategy for Electric Vehicle Charging Infrastructure 2018 – 2021

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NESCAUM

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Executive Summary

The Northeast Corridor, from the Washington, DC metro area to Maine, is a heavily populated area that is poised to become one of the world's leading electric vehicle (EV) markets. However, to make EV market penetration goals a reality in the Northeast Corridor, consumer concerns about charging must be addressed. According to a recent survey of prospective car buyers in Northeast, two of the top concerns about EVs are the availability of charging locations and the time to recharge.[1]

To support the expanding EV market, the Northeast Corridor states have made substantial early investments in public charging infrastructure, financial incentive programs for both vehicles and charging stations, and a range of other complementary policies and programs designed to accelerate EV adoption. Recent developments have set the stage for significant new public and private infrastructure investment in the region from utilities, Electrify America, and states using environmental mitigation funds from the VW settlement. While these investments will be significant, additional investments from employers, businesses, automakers, and other private sector electric vehicle supply equipment (EVSE) providers will be needed to build out a charging network with the capacity to serve the millions of EVs the states envision on their roads in the next decade.

Given how common travel for work and pleasure between and through the Northeast Corridor states is by both residents and Canadians visiting the region, a joint vision for building an expansive charging network throughout the region is needed to inform public and private funding decisions and ensure investments are coordinated and aligned with regional goals. Facilitated by NESCAUM, the Northeast Corridor states worked collaboratively to develop a set of recommendations that would inform regional infrastructure development. This *Northeast Corridor Regional Strategy for Electric Vehicle Charging Infrastructure*[2] (Regional Strategy) for the years 2018 through 2021 provides guidance and recommendations to ensure strategic integration of public and private infrastructure investments to buildout a charging network that will meet the region's emerging needs.

The establishment of a robust and reliable charging network depends on resolution of important overarching issues that could be determinative of consumer acceptance and the near-term economic viability of public charging. Recommendations to address key overarching issues are summarized in the table below and discussed in more detail in Section 1 of this document.

[1] Edelman Intelligence, Electric Vehicle Audience and Benchmark Survey, January 2017.

[2] While the Northeast Corridor is a cohesive region, at the same time, among the individual Northeast Corridor states, there is considerable diversity in the economic base, population density, level of urbanization and other key characteristics that shape the unique EV charging infrastructure needs of each state. Accordingly, this document is not intended to impose a mandate or obligation on any participating jurisdiction with respect to implementation of the recommendations contained herein. Maine, in particular, because of its rural nature and other unique circumstances, concurs only with the recommendations in Sections 1, 2.4, 2.5 and 3.

Table 1: Recommendations on Overarching Issues

Overarching Issues	
Interoperability	• Equip EVSE to enable payment options without restriction based on network membership or subscription* • Form multi-state workgroup to consider network interoperability requirements
Regulation of EVSE Providers	• Exempt EVSE providers from regulation as public service companies
Residential TOU Rates	• Open PUC proceedings to consider residential variable EV rates, or alternatives with similar benefits
Demand Charges	• Open PUC proceedings to consider options to reduce demand charges
Future Proofing	• Ensure electrical infrastructure supports ≥ 150kW DC fast charging stations for long distance travel • Design sites to allow for additional charging capacity and stations
Data Collection	• Establish data collection and reporting requirements*
Uptime	• Establish station maintenance and repair requirements • Provide real-time info on operational status • Consider installing multiple stations to ensure service
Pricing Transparency	• Display real time pricing and fee info on device or payment screen
Signage	• Use alternative EV charging symbol for wayfinding signs • Use regulatory signs to restrict parking and optimize use of EVSE
Building Codes	• Amend residential and commercial building codes to mandate make-ready charging infrastructure • Enact local EV ordinances requiring EV-ready parking spaces
ADA Compliance	• Amend building codes or adopt state guidelines* to require ADA accessibility for EVSE
Streamlined EVSE Permitting	• Convene workgroup to develop recommendations for streamlined EVSE permitting
Low-Income & Disadvantaged Communities	• Form workgroups to identify and address barriers to clean mobility

*For publicly funded EVSE only

This Regional Strategy also makes recommendations for infrastructure investment and key stakeholder actions for five use cases, including charging at home, at work, around town, on the road, and at destination locations. The highest priority recommendations for each use case are summarized in the table below and discussed in more detail in Section 2 of this document.

Table 2: Recommendations for Charging Use Cases

Charging at Home

States	• Enact laws to provide MUD residents with conditional rights to install EVSE • Provide information about the benefits of home charging
Utilities	• Assist with electrical service upgrades and deployment of EVSE at MUDs • Provide incentives to defray EVSE installation costs at MUDs • Guide customers through process of selecting and installing home charging • Consider offering turnkey programs and other incentives for Level 2 EVSE at single family homes • Offer variable (e.g., TOU) rates for residential customers • Conduct outreach aimed at increasing residential EVSE
EVSE Providers / Automakers	• Pilot innovative solutions to increase access to EVs at MUDs

Charging at Work

States	• Prioritize workplace charging incentives among other EVSE incentives • Establish state workplace charging and fleet electrification mandates or goals and complementary reporting requirements • Conduct outreach to large employers to promote workplace charging • Organize events to secure and give high level recognition for corporate commitments for workplace charging and fleet electrification
EVSE Providers	• Partner with states and sponsor corporate commitment events
Utilities	• Provide workplace charging incentives, conduct outreach, install chargers and make-ready infrastructure, and optimize commercial customer load energy management plans
Sustainable Business Networks	• Promote workplace charging and fleet electrification through outreach, recognition, award, and employer commitment programs
Workplace Charging Experts	• Offer workshops, webinars and other educational materials

Charging Around Town

States	• Fund or incentivize deployment of Level 2 EVSE at publicly-owned lots • Share lessons learned, data and business cases for deploying EVSE at privately-owned lots • Fund or incentivize deployment of Level 1 and 2 EVSE at airports, train stations and transit centers
Local Governments	• Incentivize private EVSE investment at publicly-owned lots
EVSE Providers / Utilities	• Deploy charging hubs near commuting travel corridors in metropolitan areas • Install DCFC at airports and train stations and strategically located charging hubs

Charging on the Road

States	• Target any funding for DCFC along corridors to fill gaps that may not attract near-term private or utility investment • Help identify sites or site owners to host DCFC along travel corridors
Utilities	• Assist with DCFC site selection process • Install, at a minimum, make-ready infrastructure to support EVSE deployment, especially where needed to fill gaps in travel corridors
EVSE Providers	• Expand investment in DCFC network along heavily traveled corridors

Charging at Destination Locations

States	• Identify key destination locations to encourage EVSE investment in these areas • Fund or incentivize Level 2 EVSE in publicly-owned lots at popular destinations
Local Governments	• Incentivize deployment of EVSE at publicly-owned lots in popular destinations
EVSE Providers	• Install DCFC along highly traveled destination corridors and charging hubs at popular destinations • Consider site design that includes battery storage where beneficial

Finally, in Section 3, this Regional Strategy recommends exploring the development of a Northeast Corridor branding initiative to promote the region's charging network and to increase EV awareness, utilization and satisfaction.

NORTHEAST CORRIDOR REGIONAL STRATEGY FOR ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

INTRODUCTION:

The Northeast Corridor, from the Washington, DC metro area to Maine, is poised to become one of the world's leading electric vehicle (EV) markets. Recognizing that electrification of the transportation sector is essential to achieve ambitious mid- and long-term greenhouse gas emission reduction goals, eight Northeast Corridor states have adopted California's Zero Emission Vehicle Program, which, beginning in 2018, requires automakers to sell increasing numbers of EVs in those states. As a result, consumers throughout the Northeast can expect improved availability and access to a wider range of EV models in the coming years. The Northeast Corridor states have made substantial early investments in public charging infrastructure and a range of complementary policies and programs designed to accelerate EV adoption, including the development and implementation of a multi-state zero emission vehicle action plan, the implementation of financial incentive programs to offset the higher purchase price of EVs and the installation costs of charging stations, and a first-ever jointly funded state/automaker brand neutral communications campaign, *Drive Change. Drive Electric*,[3] to increase consumer awareness, interest, and acceptance of EVs in the Northeast.[4]

The Northeast Corridor is now primed for significant new public and private infrastructure investment. With public utility commission EV proceedings now underway or anticipated in a growing number of Northeast Corridor states, the stage is set for utilities to play a prominent role in infrastructure buildout and other regional transportation electrification programs. Significant infrastructure investments by Electrify America over the next decade will also play a central role at this formative stage of market development in the Northeast Corridor. Finally, states are developing plans to invest a portion of their Environmental Mitigation Trust allocations from the Volkswagen settlement in charging infrastructure. While significant, these investments will not be enough to build out a charging network with the capacity to serve the millions of EVs the states envision on their roads in the next decade. Additional investments will be required from employers, businesses, automakers and other private sector electric vehicle supply equipment (EVSE) providers to make residential, workplace and public charging the norm.

In this regard, a regional strategy to drive strategic infrastructure investments is particularly important to accelerating EV market penetration in the densely populated Northeast Corridor, where travel between and through states is common due to the geographic proximity and relatively small size of the states. On the East Coast, people frequently live in one state and work in another, spend time with family and friends in nearby states, and visit other states for day trips, weekends and longer vacations. Likewise, Canadians frequently travel by passenger vehicle throughout the Northeast for business and pleasure. Thus, perhaps more than any other

[3] https://driveelectricus.com/

[4] There have been many other state efforts to accelerate EV adoption, such as the early development of regional EV readiness plans and guidance documents through the Transportation & Climate Initiative, the convening of educational workshops for utilities and public utility commissioners to promote utility investment in transportation electrification programs and participation as founding members in the International Zero Emission Vehicle Alliance, to name just a few.

region in the United States, EV adoption in the Northeast Corridor will require robust and reliable charging networks, not only where EV drivers live or work, but also in nearby states where they travel regularly. Providing a consistent and convenient user experience will bolster consumer confidence in charging networks.

Building out charging networks to meet the increasing demands of an electrified transportation sector in the Northeast Corridor will require on-going public-private partnerships and a regional strategy to drive coordinated and complementary infrastructure investments. A key goal of this document is to provide guidance and recommendations to help direct investments by states, utilities, automakers, EV charging companies, and others to promote the buildout of a Northeast Corridor charging network that will meet emerging needs. Importantly, this strategy can inform public and private funding decisions to ensure strategic integration with other investments and alignment with regional goals.

This regional strategy for the Northeast Corridor focuses on charging infrastructure for light-duty EVs in the 2018-2021 timeframe and includes three main sections. The first section identifies several overarching issues, such as electricity rate structures, interoperability, signage, and pricing transparency that should be considered when planning infrastructure investments. To guide and direct light-duty EV charging infrastructure investments in the Northeast Corridor, the second section identifies specific roles and priorities for charging use cases – charging at home, at work, around town, on the road, and at destination locations. The last section recommends exploring the development of a Northeast Corridor branding initiative to promote the region's charging network and to increase EV awareness, utilization and satisfaction.

While there is an acknowledged need to promote electrification of public transit and infrastructure for electric medium- and heavy-duty vehicles, these topics are beyond the scope of this strategy. Still, it is worth noting that a number of states in the region are taking steps to promote medium- and heavy-duty vehicle electrification, for instance through opportunities made possible by the Environmental Mitigation Trust Fund established under the Volkswagen settlement.

SECTION 1: OVERARCHING ISSUES

Building consumer range confidence to drive increased EV adoption in the Northeast Corridor is about much more than simply installing thousands of charging stations. Rather, the long-term success of the effort to provide a robust Northeast Corridor charging network also depends on other important factors that could be determinative of consumer acceptance and the near-term economic viability of public charging. It is essential, for example, that public charging stations be broadly accessible to consumers regardless of membership in a specific network, and that the consumer's charging experience is consistent and convenient – a concept known as interoperability. Pricing needs to be transparent and understandable. Existing electricity rate structures and other regulatory barriers that could act as a disincentive to growth of the private EVSE sector and the willingness of site hosts to invest in fast charging must be addressed by utilities and public utility commissions (PUCs). Charging stations must be accessible to disabled drivers in much the same way as parking spaces are today. These are just a few examples. In

this section, we identify thirteen overarching infrastructure issues that regulators, transportation policy leaders and investors should consider when planning infrastructure investments.

1.1 Interoperability

The term "interoperability" can refer to physical connectors used for charging; EVSE payment options; communication between EVSE and its network; and communication between EVSE and the vehicle to facilitate vehicle-grid integration. While physical connectors have been standardized for Level 2 charging, there remain competing standards for DC fast charging (DCFC). With respect to payment options, some jurisdictions are requiring that all publicly funded EVSE be accessible to all customers regardless of membership in a network.[5]

In addition, the question of whether EVSE should be required to use "open source" protocols (Open Charge Point Protocol (OCPP) or some other protocol) for communication between EVSE and its network as a condition of receiving public funding is still unresolved. The main argument in favor is to prevent EVSE owners from being "locked in" to a specific network. Requiring open access would make it easy for the owner to switch networks without switching hardware; it would also ensure that the EVSE could remain in use with minimal modification in the event that the network provider went out of business. However, some EVSE network providers insist that open standards impede their business case, and thus profitability. These providers maintain that EVSE should be allowed to use proprietary communications protocols in order to optimize service to the customer and thus maximize revenue to the site owner.

The California Air Resources Board has opened a rulemaking proceeding to develop interoperability billing standards as authorized by state legislation enacted in 2013. Separately, the California Public Utilities Commission convened a Working Group to decide whether to proceed with rulemaking. In December 2017 this Working Group released its draft recommendations, which specify certain hardware requirements, but do not call for development of a single communications protocol at this time.[6]

Recommendations:

- ***States should require that publicly funded EVSE intended for public use be equipped to enable payment options by all drivers without restriction based on network membership or subscription.***

- ***States should convene a multi-state workgroup to agree on network interoperability requirements for publicly funded EVSE intended for public use and consider the establishment of regulatory frameworks for broader standardization of EVSE interoperability.***

[5]For example, Maryland includes grant provisions that prohibit limiting access to fuel network cards and require winning vendors to install payment infrastructure that allows customers to use commonly accepted credit cards.

[6] http://www.cpuc.ca.gov/vgi/

1.2 Exempting EVSE Providers from Regulation as Utilities

State public utility laws often define a "public service company"[7] in broad terms, which can result in uncertainty about whether owners or operators of EVSE are subject to regulation as a supplier of retail electricity. Public service companies are subject to comprehensive regulation and face a high regulatory burden to enter the market. Compliance with the regulatory requirements applicable to electricity suppliers could be prohibitively expensive for EVSE providers and has been identified as a potentially significant barrier to expansion of charging infrastructure. Therefore, a growing number of states have exempted EVSE providers from regulation as public service companies.[8]

Recommendation: State legislators or PUCs, as appropriate, should unambiguously exempt EVSE providers from regulation as public service companies to eliminate regulatory uncertainty, remove regulatory barriers to the expansion of the EVSE sector, and facilitate accelerated deployment of charging stations.

1.3 Variable Electric Rates for Residential Charging

Variable electric rates (e.g., time of use or TOU rates) reflect the higher cost of providing electricity during periods of peak demand, and conversely, the lower cost of service during off-peak periods. Off-peak charging of EVs not only saves EV owners money, but it also has the potential to largely mitigate the impact of EVs on the grid by shifting load to off-peak hours. All ratepayers benefit from EV rate structures that encourage off-peak charging because increased demand for electricity during peak hours drives up the cost of electricity for everyone. Shifting load to off-peak hours can reduce the need for peak-demand related capital expenditures, and thus spreads capital costs more evenly across the grid. This may reduce peak charges for everyone. A number of utilities, including several in Northeast Corridor states, now offer EV TOU rates[9] or alternatives that are potentially easier to implement and provide similar benefits.[10]

Recommendation: State PUCs should open appropriate proceedings to consider adoption of variable electric rates or similar alternatives to provide clear grid-benefit focused price signals for residential customers.

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[7] In defining terms, some statutes refer to "public service companies," others to utilities, or "electric corporations," etc. We use the term "public service company" to encompass that cross-jurisdictional variation.

[8] See, *Regulation of Electric Vehicle Charging Equipment: Recommended Practices*, Multi-State Zero Emission Vehicle Task Force, October 2015, for a partial list of states that have exempted EVSE providers from utility regulations by enactment of legislation or through public utility commission (PUC) proceedings. See also Conn. Gen. Stat. section 16-1(c).

[9] See, for example, https://www.fleetcarma.com/utility-time-of-use-plug-in-vehicles/; http://www.swenergy.org/data/sites/1/media/documents/publications/documents/How_Leading_Utilities_Are_Embracing_EVs_Feb-2016.pdf, Appendix A.

[10] https://www.coned.com/en/save-money/rebates-incentives-tax-credits/rebates-incentives-tax-credits-for-residential-customers/electric-vehicle-rewards

1.4 Demand Charges for Use of DCFCs

The widespread utility practice of assessing separate peak demand charges on commercial and industrial electricity usage presents a significant barrier to the deployment of DCFC stations at a point in time when EV market penetration and charger utilization are still relatively low. Demand charges, which are in addition to energy charges that appear on an electricity bill for actual electricity consumption, are calculated based on the highest electricity load – or rate of consumption – during a monthly billing cycle, typically over a 15-minute period.[11] Demand charges recover the utility costs associated with providing the capacity to meet electricity needs during periods of peak demand, regardless of how infrequently peak demand events occur. They add significantly to the energy bill for DCFCs, and can account for more than 50 percent of the total bill in some areas of the country.

To address this barrier for EVSE site hosts, utilities in a number of states are testing, or proposing to test, different options to reduce the impact of demand charges on the operational costs of DCFCs, including reducing the demand charge and increasing the energy charge, waiving demand charges while offering DCFC time-of-use rates to promote charging during off peak periods, and aggregating peak demand from multiple DCFCs in a utility service area to reduce overall peak demand. Installing battery storage could also be a cost-effective solution in areas with higher demand charges.[12]

***Recommendation**: State environment and energy agencies and PUCs should identify the need to address DCFC demand charges and state PUCs should open appropriate regulatory proceedings to consider alternative rate designs, demand charge waivers or other options to ensure that any demand charges are appropriately designed to provide the most equitable, and least burdensome, price signal to EVSE hosts and end users, and do not serve as a de facto impediment to DCFC station installation.*

1.5 Future Proofing Charging Investments

Although 50 kilowatt (kW) stations have been the norm for fast charging networks, the trend is moving toward higher-powered stations. In anticipation of longer range battery electric vehicles with faster charging capabilities, 350kW stations are now being installed in both Europe and the United States. These ultra-fast stations are capable of providing an estimated charging rate of 20 miles per minute, compared to 3 miles per minute with a 50kW station. To minimize the potential for stranded assets as technology advances, new investments in DC fast charging stations should take into account both future battery technologies (longer range batteries able to accept a faster charge), and also plan for increased demand for DCFC and L2 charging as the number of EVs on the road increases.

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[11] For an easily understood explanation of demand charges, see National Grid's *Understanding Electric Demand, What you need to know to make cost-saving energy-use decisions, accessible at* https://www9.nationalgridus.com/niagaramohawk/non_html/eff_elec-demand.pdf.

[12] *See, Identifying Potential Markets for Behind-the-Meter Battery Storage: A Survey of U.S. Demand Charges*, National Renewable Energy Laboratory, August 2017, accessible at https://www.nrel.gov/solar/demand-charge-battery-storage.html.

Recommendations:

- ***States and others funding or installing DCFC stations in longer distance travel corridors should ensure that installed electrical infrastructure is capable of supporting at least 150kW charging stations.***

- ***States and others funding or installing charging stations should use a modular platform that is capable of scaling up both in terms of charging capacity and number of DCFC stations and plan for expansion of L2 stations. This will allow the site to add faster charging capabilities without the need to replace existing hardware, and in the case of both DCFC and Level 2 stations, to expand as demand for charging grows.***

1.6 Data Collection

Data collection, sharing and analysis are critical to planning and deploying a charging network that will most effectively support the projected increase in EV market penetration. Data on EVSE location, type, use case, energy consumption, pricing, down time, and utilization rates can provide valuable insights to inform decisions about where additional charging infrastructure is most needed and help to improve operation and management of EVSE. This network function also monitors station availability and functionality in near real time to provide helpful information to potential users. Network capability can be integrated into the station or through external devices.

Recommendation: States should: (1) encourage the installation of equipment capable of collecting and reporting utilization data; (2) require reporting of EVSE utilization data that is collected from publicly funded EVSE (Level 2 and DCFC); (3) establish methods for data sharing and analysis; and (4) ensure that any personally identifiable information is encrypted using secure industry standard techniques to protect confidentiality.

1.7 Uptime

Uptime refers to the amount of time that a charging station is functioning properly and available for use by EV drivers. Conversely, downtime is the time when a station is not operating due to regular maintenance or because it is broken and needs to be repaired. Maximizing uptime is critical to establishing a reliable charging network and building consumer confidence. Therefore, it is important to identify who is responsible for station maintenance and repair and ensure that adequate resources are available to conduct regular inspections, diagnose problems, and service stations in a timely manner. In addition to minimizing downtime, effectively communicating to EV drivers when a station is not working, for example, through a mobile app, is also important to instill confidence in the EVSE network and prevent stranding drivers in need of a charge.

Recommendations:

- ***States and others funding or installing EVSE should: (1) clearly identify who will be responsible for maintaining and repairing the EVSE, the frequency of maintenance***

intervals, the response time for repairs, the duration of these requirements, and how such requirements will be enforced; (2) require the party responsible for repairs and maintenance to conspicuously post contact information for service needs or to resolve problems with use of the EVSE; and (3) consider requiring real-time information about charging station operational status, for example, through a smartphone app.

- ***States and others funding or installing EVSE should consider installing multiple stations at each site, especially in remote locations, to increase uptime through station redundancy.***

1.8 Pricing Transparency

Most drivers know how much it costs to fuel a car with gasoline, but for a number of reasons the same is not true when it comes to the cost of charging an EV. First, pricing information is not always clearly disclosed at charging stations. Second, pricing for charging varies from station to station, depending on factors such as the cost of electricity and parking and whether the EV driver is a member of the charging network. Third, the unit of sale may vary. For example, pricing may be based on kilowatt-hours (kWh) of electricity consumed, by some unit of time (i.e., minutes attached to the charger), on a flat fee for the charging session, or by membership in the charging network. Regardless of these variable factors, public policy must support and require transparent pricing so that EV drivers know up front exactly what they are paying for and how much it will cost.

Recommendations:

- ***States and others funding or installing EVSE should conspicuously display or post pricing information on the face of the device or screen used for payment. Pricing information should be provided to customers prior to initiating the charging session and include the unit of sale (kWh, time, etc.), the price per unit, and any additional fees that may be assessed. In addition to the pricing information, DC fast charging station owners and operators should display the station's power in kilowatts or equivalent units and clearly indicate power levels for stations that share power.***

- ***EVSE providers should provide real-time pricing information for charging networks online, for example, through a smartphone app, so that EV drivers can view pricing information for specific stations.***

- ***States should consider requiring pricing transparency for point of sale charging stations to ensure fair and consistent pricing, including adoption of the final NIST Handbook 44 Device Code Requirements for Electric Vehicle Fueling.***

1.9 Signage

While a number of apps are available to help EV drivers locate charging stations, clear roadside signage is still needed. Directional or wayfinding signs for EV charging stations used on highways, exits, and streets can assist drivers in locating EV charging stations. These signs also provide visibility, increasing range confidence for EV drivers and raising awareness about

charging infrastructure for prospective EV drivers.

In addition to wayfinding signs, regulatory signs are needed to convey restrictions related to charging and associated parking. In 2015, the Multi-State Zero Emission Vehicle Task Force developed recommended practices on EV charging signs, which remain important today.[13] A brief summary of these recommendations is provided below.

Recommendations:

- ***State transportation agencies should seek approval from the U.S. Federal Highway Administration (FHWA) to use the alternative EV charging general service symbol[14] and establish appropriate guidance documents. The alternative service symbol should be used by state and local governments on highways, exits, and streets to direct EV drivers to charging stations. To clearly identify EV charging stations that include DC fast charging, use an all-word "FAST" plaque in conjunction with the alternative EV charging station general service symbol.***

- ***Public charging station site hosts should: (1) install additional wayfinding signs on site to help drivers pinpoint the exact location of charging stations, especially at large parking lots and multi-level garages; and (2) use signs that restrict parking at charging stations to EVs, or EVs that are actively charging,[15] to optimize use of the charging equipment and facilitate enforcement of any parking restrictions.***

1.10 Building Codes

Retrofitting existing residential and commercial buildings with charging equipment is often more costly than equipping buildings with the necessary electrical circuitry and other charging infrastructure at the time of construction. Requiring new construction to be EVSE-ready is a proactive measure states can take that can have far-reaching long-term positive impacts on growth of the EV market. Accomplishing this goal will generally require, as a first step, revisions to state building or electrical codes.

The International Energy Conservation Code (IECC) and the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 90.1 are the baseline building energy codes adopted by states for residential and commercial buildings, respectively.[16] Whenever a baseline model code is revised and the U.S. Department of Energy determines that

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[13] For more details and figures of recommended signs, see https://www.zevstates.us/wp-content/uploads/2015/09/EV-Charging-Signing-Recommended-Practices.pdf.

[14] This symbol has been approved by the FHWA on an interim basis until the Manual on Uniform Traffic Control Devices for Streets and Highways is revised to incorporate this symbol. FHWA, Interim Approval for Optional Use of an Alternative Electric Vehicle Charging General Service Symbol Sign (Apr. 1, 2011), accessible at: http://mutcd.fhwa.dot.gov/resources/interim_approval/ia13/

[15] FHWA, Regulatory Signs for Electric Vehicle Charging and Parking Facilities (June 17, 2013), accessible at: http://mutcd.fhwa.dot.gov/resources/policy/rsevcpfmemo/

[16] See 42 U.S.C. § 6833.

the new edition is more stringent than its predecessor, states update their codes, as required, to meet or exceed the latest edition of the model code.[17] In addition, states often make changes to the baseline codes "to reflect regional building practices, or state-specific energy-efficiency goals."[18]

Each state has the ability to adopt code amendments to facilitate EVSE readiness in new construction, as well as during renovation or alteration of existing structures. Code provisions can require a very basic level of readiness, as in construction of a "raceway" to accommodate future installation of a dedicated circuit for EV charging, or a more advanced level, which might include installation of a minimum number of ready-to-use charging stations, along with conductors, circuit breakers and additional panel capacity to support projected future demand for charging.

Recommendations:

- ***States should revise residential and commercial building codes to require supporting electric infrastructure for EV charging stations in new construction, major renovations, and electric infrastructure upgrades.***

- ***Local governments should enact EV ordinances requiring a minimum percentage of EVSE-ready parking spaces in new or re-constructed residential and commercial structures and incorporate goals for expanding charging capacity into local plans.***

1.11 ADA Compliance

Electric vehicle charging stations must be designed and installed in compliance with the Americans with Disabilities Act (ADA). The ADA does not currently provide specific design requirements for EVSE, as it does for other public facilities, leaving the law's application to EVSE open to interpretation. The absence of explicit accessibility standards does not excuse ADA compliance. Unfortunately, however, it leaves site hosts, EVSE providers, designers, and code enforcement officials in states and local governments to attempt to apply the law's general requirements and accessibility regulations for other facilities to charging stations.

One option for states is to amend state building codes to include ADA requirements for EVSE. California elected to pursue this option, and in 2016 amended its building code to incorporate specific ADA requirements for EVSE.[19] The California building code provisions could serve as a model for states interested in adopting their own standards, or as guidance for the design and

[17] Maps showing the current status of building energy code adoption are available at: https://www.energycodes.gov/status-state-energy-code-adoption.

[18] US DOE, Building Energy Codes 101, An Introduction, available at https://www.energycodes.gov/sites/default/files/documents/BECP_Building%20Energy%20Codes%20101_February2010_v00.pdf (visited on Jan. 21, 2015).

[19] https://cdn-web.iccsafe.org/wp-content/uploads/errata_central/2016CA-IBC-Vol1-070118.pdf

installation of ADA compliant EVSE. In addition, there are a number of guidance documents available to assist with the design and installation of ADA compliant EVSE.[20]

Recommendation: States should consider amending building codes to include ADA accessibility requirements for EVSE, and, in the interim, adopt ADA guidelines for state grants and contracts to ensure that publicly funded EVSE installations are ADA compliant.

1.12 Streamlining EVSE Permitting Processes

Lack of streamlined permitting processes has been identified as a barrier to installation of EVSE, particularly for non-residential deployment, which typically involves more documentation (e.g., compliance with accessibility requirements) and a more complex review process by multiple municipal or other local government divisions. Both EVSE providers and site hosts would benefit from clear permitting guidance and an efficient and streamlined permitting process.

Recommendation: States should convene a multi-state workgroup to develop recommendations for streamlined EVSE permitting processes.

1.13 Bringing Clean Transportation Options to Low-Income and Disadvantaged Communities

Limited transportation options and high levels of air pollution disproportionately impact many low-income neighborhoods across the nation. Expanding access to clean transportation through deployment of charging infrastructure in low-income and disadvantaged communities is an important goal of the states in the Northeast Corridor, but first more must be done to address a number of barriers to providing clean mobility in these communities. For example, the purchase price of new EVs remains too high for many low-income consumers, and the secondary market for used EVs is just now starting to develop as the first generation of battery and plug-in electric hybrid vehicles are coming off leases. Enhanced purchase incentives for new EVs and incentives for used EVs are needed for lower income consumers. Consumers in low-income and disadvantaged communities might benefit from vehicle retirement and replacement programs, electric ride- and car-sharing services, and electric public transit and school buses.

Recommendation: States should consider establishing work groups comprised of Metropolitan Planning Organizations (MPOs), environmental justice advocates, community and transportation thought leaders, utilities and state and local government transportation policy leaders to develop action plans to address charging infrastructure, electrification of taxis and ride sharing/hailing fleets, and other barriers to clean mobility in densely populated low-income and disadvantaged communities.

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[20] For example, U.S. DOE has published guidelines for ADA compliant workplace charging, accessible at: http://driveelectricnoco.org/wp content/uploads/2015/01/ADAGuidance_DOE.pdf; Connecticut has published design guidelines for installation of EVSE at state facilities that include ADA accessibility requirements, accessible at: http://www.ct.gov/deep/lib/deep/air/electric_vehicle/guidelines_for_the_installation_of_electric_vehicle_charging_stations_at_state_facilities.pdf

SECTION 2: RECOMMENDATIONS FOR CHARGING USE CASES[21]

2.1 Charging At Home

For single family homes, most charging occurs at home because it provides unparalleled convenience and installation of chargers is relatively straightforward. When vehicles charge overnight at home, drivers can spend virtually no time on charging most days. Charging at home, especially when there are TOU rates or similar available alternatives, can make owning an EV even more affordable. EV drivers without the option to charge at home must rely on workplace charging and other charging options around town, which are addressed in the subsequent sections for these use cases.

While installing EVSE at single family homes with off-street parking is relatively straight forward, installing charging stations at multi-unit dwellings (MUDs) often presents a number of challenges.[22] High up-front costs such as upgrades to electrical infrastructure, wiring, and trenching can be a substantial barrier to installing EVSE at MUDs.[23] In addition, charging solutions vary from location to location depending on factors such as the parking layout, design, and ownership model (e.g., garden apartments with assigned parking in adjacent surface parking lots; high rise condos with deeded spaces in multi-level garages; sprawling mid-rise apartments with shared parking open to all; etc.). Questions such as who pays for the costs of EVSE installation, operation and maintenance at MUDs must also be addressed.[24] For all these reasons, getting approval from home owner associations or property managers to install EVSE can be difficult and time consuming.

Given the large percentage of residents that live in MUDs, especially in urban areas, tackling the barriers to EV charging at MUDs is extremely important to advancing transportation electrification.

Recommended Roles and Strategies:

For States:

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[21] The order of these recommendations follows established consumer charging preferences and is not intended to set priorities amongst the different use cases.

[22] For a compilation of resources on EV charging at MUDs, including guidelines, case studies, and tools for advocating for EV charging at MUDs, see: http://pevcollaborative.org/MuD

[23] A number of workgroups have explored the barriers and potential solutions to EV charging at MUDs: State of Hawaii**, Act 164: Final Report for EV Charging Station Multi-Unit Dwelling Working Group (Dec. 2015),** accessible **at:** http://energy.hawaii.gov/wp-content/uploads/2013/07/Act-164_EV-Working-Group-Report_FINAL.pdf; Enabling Electric Vehicle Charging in Condominiums (2017), accessible at: http://www.plugndrive.ca/wp-content/uploads/2017/05/Enabling-EV-Charging-in-Condominiums.pdf; City of Denver, Opportunities for Vehicle Electrification in the Denver Metro Area and Across Colorado (Dec. 2017), accessible at: http://www.denvergov.org/content/dam/denvergov/Portals/771/documents/EQ/EV/EVFinalReport.pdf

[24] Kevin Hirzel, Electric Vehicle Charging: Keep Your Condo Association Current! (June 5, 2017), available at: https://micondolaw.com/2017/06/05/electric-vehicle-charging-stations-keep-your-condominium-association-current/

- States should enact “right to charge” laws that provide MUD owners and residents with conditional rights to install home charging.

- **States** should work with partners, particularly electric utilities, to educate consumers about the ease and convenience of charging at home, incentives for installation of home chargers, available variable charging rates, and the total cost of ownership of EVs versus conventional vehicles.

For Other Stakeholders:

- Utilities authorized to rate-base infrastructure investment should play a key role in deploying EVSE at MUDs, upgrading electrical service at MUDs, and offering a utility ownership option or providing incentives to defray the costs of installing EVSE at MUDs, which are often higher than at single family homes due to costs associated with panel upgrades, wiring, and trenching. In the absence of approval to rate-base EVSE investments, utilities can help property owners assess the need for electrical service upgrades.

- Utilities should develop educational materials on the convenience and benefits of home charging for dissemination by the states.

- Utilities should provide information to guide customers through the process of selecting and installing home chargers, such as information on types of chargers, available purchase incentives, local licensed electricians with EVSE expertise, “smart charging” through vehicle or EVSE for demand response applications, and the benefits of renewable integration.

- Utilities should consider offering options for deploying Level 2 EVSE at single family homes, including turnkey programs, and rebates or other incentives as a way to defray the costs and to collect data on where EVSE is being installed to help plan for any needed service upgrades.

- Utility transportation electrification programs should offer EV variable rates and other customer incentives to promote off-peak charging and participation in demand response programs, and utilize technologies that enable EV-only variable rates without the need for installation of additional utility meters.

- Automakers and dealers should offer turnkey solutions and/or information about charging options, licensed electricians for charging station installation, and utility or other EVSE incentive programs as part of the purchase process for new and used EVs.

- To increase access to EVs for MUD residents, EVSE providers and automakers should pilot innovative solutions for MUDs, such as valet or mobile charging, preferential pricing at charging hubs, community-based electric car sharing, etc.

- State EV coalitions, NGOs, utilities, and others should conduct education and outreach to MUD property owners/managers, home owner associations, and MUD residents.

Other Actions for Consideration:

- States with NEPA-based environmental policy acts could incorporate EVSE requirements into their findings for relevant projects, such as those with on-site parking.

- Local governments that incorporate discretionary reviews into permitting process, for example, to achieve energy savings or reduce GHGs, should consider including installation of charging stations at MUDs as an allowable option.

- EVSE providers can help MUD residents and property managers/owners to develop cost effective EVSE installation and billing solutions.

- To address capacity issues and avoid expensive upgrades in conjunction with EVSE installation, MUD property managers/owners should simultaneously install energy efficiency measures when possible (e.g., installing LED lighting and controls in parking garages, which can free up capacity and save money).

- Solar companies (particularly those with battery storage) and EVSE providers should consider partnering and co-marketing.

2.2 Charging At Work

After home, the workplace – where vehicles routinely spend many hours parked – is the next logical place for EV drivers to charge their vehicles. In addition to providing charging opportunities for employees, installing EVSE at workplaces is critical for fleet electrification and useful for business visitors/customers as well.

Notwithstanding recent advances in battery capacity and significantly increased electric range, workplace charging continues to fill an important gap by providing charging opportunities during work hours for employees without access to home charging and additional range to those with home charging. Even for those with home charging, access to workplace charging builds range confidence by effectively doubling the electric range and e-miles of battery electric and plug-in hybrid electric vehicles.

For employers, providing employee access to charging and electrifying business fleets demonstrates environmental leadership and helps businesses build a “green” corporate image. Workplace charging can improve workforce satisfaction, recruitment and retention, and attract employees who value employer commitment to sustainability. Fleet electrification can reduce fleet costs by saving money on fuel and maintenance, and lowering business risk associated with fuel price volatility.

Workplace charging and fleet electrification also promote EV adoption by increasing exposure to EVs and building consumer awareness on a peer-to-peer basis. Consumer surveys confirm that employees with workplace charging are more likely to purchase an EV. Workplace charging creates virtual “EV showrooms” where employees can see and ask each other questions about EVs. Finally, electrifying fleets gets more drivers behind the wheels of EVs, essentially creating an on-going test drive program.

Recommended Roles and Strategies:

For States:

- The capital and operational costs associated with deployment of workplace charging are key barriers to expansion of charging access for employees and fleet owners. To help reduce costs, states should make workplace charging incentives for employers and fleet owners a top priority among other EVSE incentives.

- States should lead-by-example and set state workplace charging/fleet electrification mandates or goals for public sector employers. Mandatory fleet-specific reporting (e.g., annual frequency) should complement state EVSE and/or fleet purchasing mandates or goals.

- In collaboration with sustainable business networks, utilities, and commuter option programs, states should conduct outreach to large employers, particularly sectors likely to be supportive of transportation electrification (e.g., technology and health care), to spark interest in and commitment to providing access to workplace charging.

- In collaboration with partners and stakeholders, such as Electrify America and other EVSE providers, sustainable business networks, MPOs, clean air and EV coalitions, automakers and business leaders, states should organize events to give high level recognition of business leaders, similar to the "Drive the Dream" events held by the California PEV Collaborative and Drive Electric Vermont.

For Other Stakeholders:

- Electrify America, other EVSE providers, automakers and utilities should partner with Northeast Corridor states on "Drive the Dream" type events, contributing financial support for these events. To help reduce costs associated with deployment and operation of workplace charging, utility infrastructure investment programs should make expanding workplace charging a key priority, for example by deploying charging stations or providing make-ready infrastructure; by implementing programs that catalyze/leverage private investment in charging infrastructure; by offering information and training to commercial and institutional customers to encourage investment; and by working with commercial customers to develop and optimize building load energy management plans.

- Sustainable business networks should: (1) conduct employer outreach to promote workplace charging and fleet electrification, especially in business sectors likely to be supportive of transportation electrification (e.g., technology and health care); (2) cultivate an employer leadership network to act as ambassadors and provide peer-to-peer mentoring and support to other employers; (3) implement an awards program to recognize leading employers; (4) work with states and other partners to secure new employer workplace charging/fleet electrification commitments for "Drive the Dream" type events; and (5) in collaboration with states and other partners, conduct workplace ride-and-drive events.

- Organizations with expertise in workplace charging should offer workshops, webinars and educational materials for employers to support decision making on workplace charging and promote efficient and high utilization of charging stations.

Other Actions for Consideration:

- States should consider synchronizing implementation of intra-state programs providing EVSE subsidies, assistance on workplace ride-and-drives and consumer subsidies for maximum impact (e.g., Mass EVIP, MASS DRIVE CLEAN and MOR-EV).

- States should consider sending information on workplace charging incentives to EV rebate recipients.

- States could leverage communication networks to promote workplace charging through organizations such as Transportation Management Associations and Municipal Associations, and engage state and local government economic development officials and/or regional transportation planning organizations to make connections with large employers.

- States could consider establishing workplace charging/fleet electrification goals for private sector employers.

- Utilities investing in workplace charging infrastructure should conduct outreach to employers and sponsor ride-and-drive events at workplaces.

- EVSE providers should provide technical assistance to employers through the EVSE deployment process to reduce the incremental costs of time and money associated with installation of charging.

- State and local Chambers of Commerce could promote workplace charging to members through workshops, webinars and educational materials, and explore opportunities to reduce EVSE purchase prices through aggregate purchasing.

- To promote workplace charging and fleet electrification, automakers should work with dealerships to establish EV executive loaner programs that would give senior business managers direct experience with driving electric.

2.3 Charging Around Town

Although most charging occurs at home, followed by the workplace, EVSE at public locations such as parking lots and garages, airports, train stations, transit centers, retail sites, restaurants and urban charging hubs will be an increasingly important part of the charging ecosystem as EV market penetration continues to grow. Studies show a strong correlation between the amount of public charging and greater EV uptake.[25] Public charging allows EV drivers to "top off,"

[25] ICCT, Emerging Best Practices for Electric Vehicle Charging Infrastructure (Oct. 2017) accessible at: https://www.theicct.org/sites/default/files/publications/EV-charging-best-practices_ICCT-white-paper_04102017_vF.pdf

providing extended range for battery electric vehicles and additional electric-miles for plug-in hybrid electric vehicles. In addition, public charging is critical for local EV drivers and tourists without overnight charging options. Moreover, when placed in highly visible locations, public charging raises awareness about EVs and charging stations and increases consumer confidence.[26]

States in the Northeast Corridor have offered a variety of incentives and grant programs for public charging, and there has been significant private investment as well. However, early public charging investments have not always been optimally placed and sometimes suffer from fragmentation. Although various models have been developed to estimate the number of public charge points that will be needed, assumptions about technology and consumer preferences are certain to evolve given the nascent market and rapidly improving EV technology.[27] Therefore, moving forward it will be important for public and private investors to share information and coordinate efforts.

Recommended Roles and Strategies:

For States:

- States should provide incentives for private investment at publicly-owned lots by offering either low-cost, long-term leases or no-cost use permits for EVSE, or by funding highly visible Level 2 chargers in popular public parking areas with longer dwell times in downtowns and other activity centers.

- States should help build interest in deployment of charging stations at privately-owned parking structures by sharing lessons learned, data and business cases, and where possible, actively recruiting private sector site hosts.

- At airports, train stations and transit centers, states, local governments, and transit authorities should support deployment of Level 1 and Level 2 charging at publicly-owned lots and garages, either by encouraging private investment with long-term, low-cost leases or no-cost use permits for EVSE, or by making strategic public investments. Level 1 charging can be a cost-effective option for long-term parking at these venues, and reservation systems can provide EV drivers with assurance that a parking space with charging will be available. Other charging options, such as Level 2, valet or mobile charging, will also be needed at these venues for EVs that will be parked there for shorter periods of time.

For Other Stakeholders:

- Local governments and regional transit authorities should provide incentives for private investment at publicly-owned parking infrastructure by offering low-cost, long-term leases or

[26] Idaho National Laboratory, Considerations Corridor and Community DC Fast Charging Complex System Design (May 2017), available at: https://avt.inl.gov/sites/default/files/pdf/reports/DCFCChargingComplexSystemDesign.pdf

[27] ICCT, Emerging Best Practices for Electric Vehicle Charging Infrastructure (Oct. 2017) accessible at: https://www.theicct.org/sites/default/files/publications/EV-charging-best-practices_ICCT-white-paper_04102017_vF.pdf

no-cost use permits for EVSE in popular public parking areas with longer dwell times in downtowns and other activity centers.

- Charging hubs offering DCFC and Level 2 should be sited near commuting travel corridors within metropolitan areas to serve both long distance and local EV drivers. In the near term, utilities, EVSE providers, particularly Electrify America, are well suited to serve this need.

- In addition to reducing pollution and noise, electric taxis and ride sharing/hailing services present another good opportunity to introduce consumers to EVs. However, efforts to electrify these fleets must be coordinated closely with plans to install fast chargers, especially at airports and train stations and at strategically located charging hubs in and around metropolitan areas. EVSE providers, utilities, and automakers investing in ride sharing/hailing are well suited to serve this need.

Other Actions for Consideration:

- States and local governments should consider developing plans to identify and replace or retire publicly-owned outdated/broken chargers (depending on location and utilization).

- Automobile manufacturers that invest in, or partner with taxi or ride-sharing/hailing companies should also invest in charging to serve these fleet needs.

- States should consider encouraging private investment in EVSE at longer dwell time retail and other commercial locations – such as hotels, restaurants, movie theaters and shopping malls – by offering EVSE tax credits or matching grants.

- Business cases for potential site hosts, such as retail sites, restaurants, private garage owners, municipalities, etc. should be developed, clearly communicated, and made widely available.

2.4 Charging On The Road

Due to the interconnected geography and population density in the Northeast Corridor, a well-developed network of reliable and convenient EV charging corridors is critical to widespread adoption of electric vehicles. Recent developments in vehicle and charging technology, such as extended-range EV models and higher-capacity charging infrastructure, are changing EV usage parameters and facilitating longer-distance, regional travel. States in the region have collaborated with each other and through regional partnerships, like the Transportation and Climate Initiative, to identify priority FHWA EV charging corridors and to develop a tool to support analysis of the status of charging infrastructure along these corridors.[28] States, automakers, charging providers and utilities are making infrastructure investments on interstate corridors. Given the expected growth of EV adoption over the next decade, significant additional charging infrastructure is needed now to build out a charging network that will fully support convenient interstate travel throughout the region and avoid the potential challenge of increasing wait times at interstate DCFC stations.

[28] EV Corridor Analysis Tool for Northeast and Mid-Atlantic States, Georgetown Climate Center, http://www.georgetownclimate.org/articles/new-ev-corridor-analysis-tool-for-northeast-and-mid-atlantic-states.html

Recommended Roles and Strategies:

For States:

- To the extent that states are providing funding for DC fast charging along corridors, state efforts should complement planned investments by private entities, local governments, and electric utilities to target locations that are necessary for seamless interstate travel, but which may not attract private or utility investment in the near-term.

- States should explore ways to support expanded DCFC investments by EVSE providers, automakers, utilities and others in travel corridors, for example, by assisting with identification of sites or site owners with possible interest in hosting stations.

For Other Stakeholders:

- Utilities should support efficient and effective expansion of DC fast chargers along travel corridors, for example, by assisting with site selection and installing make-ready infrastructure, at a minimum, to support deployment of charging infrastructure, particularly in areas of low projected demand where additional charging infrastructure is needed to fill gaps in travel corridors.

- EVSE providers, and Electrify America in particular, should expand investment in a network of DCFC stations, including deployment of state-of-the-art charging equipment, along heavily traveled interstate and state highway corridors.

Other Actions for Consideration:

- Regional chains of convenience stores have installed DC fast chargers in several northeast states and may be good locations for installation of additional fast chargers.

- Automakers should consider large-scale, coordinated investment in fast charging corridor networks, similar to automaker plans that have been announced for corridors in Europe.

- The U.S. Department of Energy, U.S. National Laboratories, and charging station manufacturers and operators should continue important research on fast charging station design, the future of charging technology, and other critical issues to inform efficient and effective build-out of charging stations.

- The FHWA should actively support deployment of charging infrastructure by providing funding for EVSE deployment, technical resources through regional workshops to support alternative fuel corridor development, and continued work with states, local and regional governments, and Clean Cities Coalitions to designate additional electric vehicle corridors.

2.5 Charging At Destination Locations

Millions of tourists visit mountain resorts, beaches, state parks, historic locations and other destinations in the Northeast Corridor states each year. Providing EV charging at popular recreation and other destination locations, as well as along travel corridors from major metropolitan areas to destination locations, will serve an important charging need and help to build consumer range confidence. A recent consumer survey conducted by the city of Denver, in which EV owners identified recreation destinations as a priority for DCFC stations,[29] confirms the importance of providing destination charging to accelerate EV adoption.[30] Locating charging at tourist destinations also offers an excellent opportunity to promote awareness and interest in electric vehicle technology.

Recommended Roles and Strategies:

For States:

- To identify key destinations in their jurisdiction, states should confer with tourism boards, regional planning commissions and MPOs, analyze travel data and tourism statistics, and make their findings and data public to encourage EVSE investment in these areas.

- States should fund highly visible Level 2 chargers at popular destination locations with priority given to those locations with accessible, year-round parking. Alternatively, with respect to publicly-owned lots at popular destinations, states could provide incentives for private investment by offering low-cost, long-term leases or no-cost use permits for EVSE.

For Other Stakeholders:

- Local governments should provide incentives for private investment at publicly-owned parking infrastructure at popular destinations by offering low-cost, long-term leases or no-cost use permits for EVSE.

- EVSE providers, and in particular Electrify America, should install DCFC stations along highly traveled destination corridors and charging hubs offering DCFC and Level 2 at popular destination locations. These stations could serve multiple uses when installed in smaller metropolitan areas that are in close proximity to a corridor.

- EVSE providers should consider a site design that includes battery storage for priority destination locations that may not have electrical capacity or face high demand charges.

Other Actions for Consideration:

- States should explore opportunities to partner with tourism bureaus on marketing and outreach campaigns.

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[29] https://www.denvergov.org/content/dam/denvergov/Portals/771/documents/EQ/EV/EVFinalReport.pdf

[30] In recognition of the need for charging at destination locations, Tesla has strategically placed DCFC stations near popular destinations. See, https://www.tesla.com/destination-charging.

- Whenever possible, chargers should be positioned in preferential and prominent locations at popular destinations and accompanied by informational materials to raise consumer awareness and increase interest in EVs.

- Business cases for potential site hosts at destination locations, such as hotels, retail, and other businesses, should be developed and disseminated to local chambers of commerce, tourism boards, and other business associations.

SECTION 3: BRANDING

A branding initiative to promote the Northeast Corridor's expanding charging network will help attract the political and financial support needed to make the region one of the world's leading markets for EVs. Creating an effective brand will provide the focus, attention and resources needed to support transportation electrification at scale. Strategic identity and branding can: increase EV awareness, purchases, utilization and satisfaction; attract investments; and ultimately improve social welfare and provide regional economic benefits. Key goals of the branding initiative are to build consumer confidence in the reliability of the region's charging network and attract further infrastructure investment.

Recommended Actions:

For States:

- In consultation with key partners, states should explore the development of an effective branding campaign for EVSE in the Northeast Corridor that:
    - Builds off the *Drive Change. Drive Electric.* consumer awareness campaign;
    - Showcases the growing market for EVs and infrastructure investment across the Northeast; and
    - Builds demand for EVs by fostering consumer confidence in charging capacity and performance.

- States should solicit participation of key partners to develop and ultimately fund, adopt, and promote the brand.

For Other Stakeholders:

- Electrify America should support the development of a regional branding campaign for EVSE in the Northeast Corridor as part of its zero-emission vehicle outreach and education requirements.

- Automobile manufacturers, EVSE owners and operators, utilities and tourism boards should participate in the branding effort.