Fast Charge TN Network Program Guidelines

Tennessee Valley Authority (TVA)

and

Tennessee Department of Environment and Conservation (TDEC)

Guidelines contained herein are subject to change. Final guidelines will be provided at time of contracting.

Contents

Site Selection Guidelines

Proximity to Corridor

- Fast charging sites should be located within one driving mile of the corridor they support (e.g., at an interstate exit or directly off the highway). At a maximum, sites must be no further than five driving miles from the corridor.

Signage and Site Visibility

- As the electric vehicle driver may be unfamiliar with the area, charging sites should be visible and easy to find. Signage on the host property can help draw attention to the charging equipment and, if possible, local "wayfinding" signage can direct drivers from the corridor to the site.
- The host site should offer ample space for vehicle traffic so that drivers can comfortably enter the lot and locate the charging station.

Access to Power

- Locating the charging site near an existing power supply is a key step in limiting the overall cost of the installation. Most fast charging equipment uses 480 volt three phase power.
- Assessing the location and capacity of electrical distribution equipment, including transformers, located near desirable corridor exits is also a key step in the site selection process.
- To keep trenching costs low, minimize the distance from electrical distribution equipment to the charging station.
- If utilizing the TVA wholesale electric vehicle rate, charging stations must be separately metered from the host business in order to isolate energy utilized for charging). Consider accessibility of the electrical equipment as well as the charging site electrical meter.

Site Amenities and Safety Features

- Charging stations must be located at a host site that supports 24 hours / 7 days a week public access at no cost for entry. Basic safety features such as ample lighting, on-site personnel, and other features that make the electric vehicle driver feel secure are also critical considerations.
- A fast charging experience is distinguished from a typical retail gas station stop by the length of time required. Some fast charging sessions will require 20 to 30+ minutes to complete. Given the charging time involved, on-site access or "walking distance" access to bathrooms, retail shopping, food and dining options, local attractions, and other amenities is highly desired.
- Reliable cellular network access is important. Most charging stations use cellular modems to connect to network management systems for various functions such as payment processing and monitoring. Identifying cellular signal strength at a potential site and which carrier serves that particular location can help charging station companies ensure the appropriate equipment is included.

Environmental Impact

- In general, ideal charging sites with access to amenities and other features will be located in previously developed areas (e.g., existing parking lots). Therefore, the potential impact to the surrounding environment should be minimal. However, during site selection, pay attention to the potential impacts of removing trees, impacting stormwater run-off / drains, or altering nearby wetlands and animal habitats. A completed **Environmental Review Checklist** must be reviewed and approved before construction can begin.

Host Site

- The site host (property owner) will serve as a business partner in operating the fast charging station. Local power company owner/operators of charging equipment may rely on the site host for various operating needs, such as a limited degree of customer service. Look for site owners and businesses that are professionally operated, well-established, and interested in partnering to serve electric vehicle drivers.

Charging Station Site Layout and Accessibility

- A site with two charging stations could require a "footprint" up to approximately 36' x 20' (approximately four normal size parking spots) depending on layout design and incorporation of Fast Charge Network Program **Accessibility Requirements**. It is important that sites have enough space now and can accommodate future expansion. The site should also be appropriately zoned for commercial activities.
- Chargers should be located away from potential hazards including excessive traffic and industrial activity. Local authorities may have minimum distance requirements for electrical equipment like electric vehicle charging stations, requiring such to be located a safe distance away from ignition sources such as gas pumps or underground storage tanks.
- If possible and practical, consider site layouts that allow "pull through" access much like gas pump setups. This allows larger vehicles and vehicles with trailers to charge without backing-in or having to disconnect trailers.
- Charging sites must be accessible to people with limited mobility, such as individuals who utilize wheelchairs. Avoid locations with steep grades, stairs, and tall curbs. Refer to the Fast Charge Network Program **Accessibility Requirements** for exact specifications.
- Avoid placement of chargers where cords could create tripping hazards and consider whether nearby landscaping will interfere with the chargers or parking spaces.

Potential Future Expansion

- Always develop charging sites with future expansion in mind. Electric vehicle adoption is forecast to grow substantially in the coming years as is the need for fast charging stations.
- In addition to the available site area, future expansion applies to sizing of electrical distribution equipment including transformers, concrete pads, electric panels, disconnects, size and number of conduit installed, etc.

Environmental Review

Grantees will be required to complete an **Environmental Review Checklist** of their chosen site, to be provided by their respective funding partner. As an example, TVA's environmental review checklist is included in this document. TDEC will share its environmental review checklist once grantees are selected (following submission of the Notice of Intent form). The completed checklist must be reviewed and approved by the grantee's funding partner before construction can begin.

TVA Environmental Review Checklist

The goal of this program is to develop electric vehicle charging stations with minimal impact to the surrounding environment. TVA will review this environmental checklist and follow up with the Program Participant as appropriate, in accordance with TVA's legal and policy requirements associated with this program. Please provide the following information to TVA program management staff via email (agfrye@tva.gov and copy dcarter6@tva.gov) before any construction activities begin, for final environmental review and site approval.

Local Power Company (Program Participant): _____

Proposed Charging Site Address (or lat/long): _____

In general, if the proposed electric vehicle charging site is *located within previously developed areas, such as: parking lots, recently graded land, sites situated on fill material, or other similar low impact situations*; and associated activities such as installation of signage, parking and road maintenance, construction of utility distribution poles or underground utilities are completely within previously disturbed area additional review is not likely required.

If the answer to any question below is *YES*, further review of environmental impacts by TVA or by the Program Participant, as directed by TVA, may be required. If the answer to any question is *YES*, consider locating another site that avoids these potential impacts and reach out to TVA to understand additional review responsibilities and costs.

☐ Yes ☐ No	Is the proposed site located within the 100-year floodplain as shown on FEMA Flood Insurance Rate Maps?
☐ Yes ☐ No	Is the proposed site located within the 500-year floodplain of a TVA reservoir, or where TVA owns property or a flowage easement?
☐ Yes ☐ No	Will development of the charging site require the removal of trees greater than three inches in diameter measured at breast height or any forest clearing?
☐ Yes ☐ No	Will development of the charging site require filling in of wetlands or streams, or filling in streamside management zones?
☐ Yes ☐ No	Will development of the charging site require ground disturbances outside of existing developments such as roadways, parking lots, buildings, or other impervious surfaces?
☐ Yes ☐ No	Will development of the charging site result in impacts to caves, sinkholes, streams, or wetlands?
☐ Yes ☐ No	Will development of the charging site require demolition of an existing structure?

*Please attach pictures showing the proposed charging location and surrounding environment; including the top of nearby utility poles, lights, or other tall structures adjacent to the proposed site.

This form must be completed and signed by an authorized representative or agent for the Program Participant, an individual who can certify, under penalty of law, and based on information and belief formed after reasonable inquiry and appropriate training or licensing, that the statements and information contained in this Environmental Review Checklist are true, accurate and complete.

Program Participant Representative (Signature): _____ Date: _____
(or Designated Agent)

Approved:

TVA Site Approval (Name): _____ Date: _____

Minimum Technical Specifications

With regard to the use of terminology (charging station, charger, site, location, plug, and port), please reference Figure 1 below.

Figure 1

Charging Station and Charging Site Minimum Technical Specifications

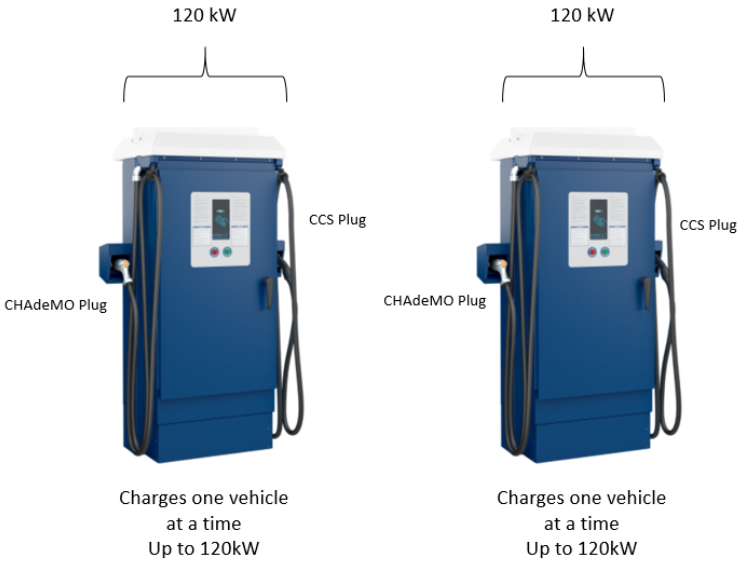
Unless otherwise agreed upon, the following specifications must be met in order to qualify for reimbursement under the Fast Charge Network Program:

- Each charging site must have at minimum two charging stations; up to four charging stations is allowable under this program if authorized by the authorizing agency.
    - If only two charging stations are installed initially, the site should be easily expandable to accommodate four charging stations in the future.
    - For program reimbursement purposes, a "charging station" is defined as an electrical device capable of charging a single electric vehicle. If a device is capable of charging two electric vehicles simultaneously, it will be considered two charging stations; however, the ability to charge two vehicles alone may not meet all charging site specifications (see plug type specifications and illustrative examples below).
- At the very minimum, each charging site must be capable of delivering at least 120kW to a single vehicle (assuming the vehicle is capable of accepting such power input). Power sharing equipment is acceptable.
- Each charging site must have the ability to charge at least two combined charging standard "CCS" plug vehicles (e.g., two Chevy Bolts) simultaneously while supplying at least 50kW to each.
- Each charging site must have the ability to charge at least one CHAdeMO plug vehicle (e.g., one Nissan LEAF) with at least 50kW supply.

- Sites capable of delivering higher power charging ~150-180+kW or upgradability / expansion capabilities to these power levels in the future is highly desirable.
- Charging stations should support electric vehicles with nominal 400Vdc up to 900+Vdc battery architectures.
- Charging stations must meet relevant technical and/or safety standards, including but not limited to UL 2202, and Code of Federal Regulations, Title 47, Part 15 (47 CFR 15), and must have valid certification(s) from a Nationally Recognized Testing Laboratory (NRTL).
- It is desirable that charging stations include or be able to be upgraded in the future to support ISO 15118 "Plug & Charge" capabilities.
- Charging stations must be capable of utilizing Open Charge Point Protocol (OCPP) V1.6 or newer for communications to various network back-ends (i.e., the system must be able to "default" to OCPP for basic functionality).
- Charging stations must be connected to an operating network and must have the ability to switch between OCPP networks.
- Charging stations must support continuous operations even when network connectivity is not available or consumer cell phone service is not available (i.e., "default on" with loss of network).
- Charging stations must be accessible to "walk up" consumers. This means that consumers must be able to initiate a charge session without a prior membership or network interaction in a simple, straightforward process.
- Charging stations and network system must include multiple payment options for drivers (including the ability to pay with a credit card, at a minimum).
- Charging stations and network system must follow cyber security and data privacy best practices, including but not limited to:
    - Payment methods must follow the Payment Card Industry Data Security Standard (PCI DSS);
    - Ability to furnish SOC II Type II report or ISO 27001 certificate;
    - End-to-end encryption with all data encrypted in transit and at rest; and
    - GDPR/CCPA for data protection and privacy.
- Charging stations and network system must provide 24/7 customer service and support.
- Any operating network system for a charging station must follow network "roaming" best practices established by the Open Charge Point Interface (OCPI) protocol.
- Any operating network system must be capable of network uptime of 98% or greater.
- Any operating network system must proactively monitor charging stations for maintenance needs and notify/dispatch for corrective action as issues are identified.

Illustrative Examples vs. Minimum Specifications

Example: Single vehicle chargers



- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW to a single vehicle possible
- ✓ Min. 50kW to two vehicles charging simultaneously
- ✓ Charge two CCS plug vehicles
- ✓ Charge at least one CHAdeMO plug vehicle

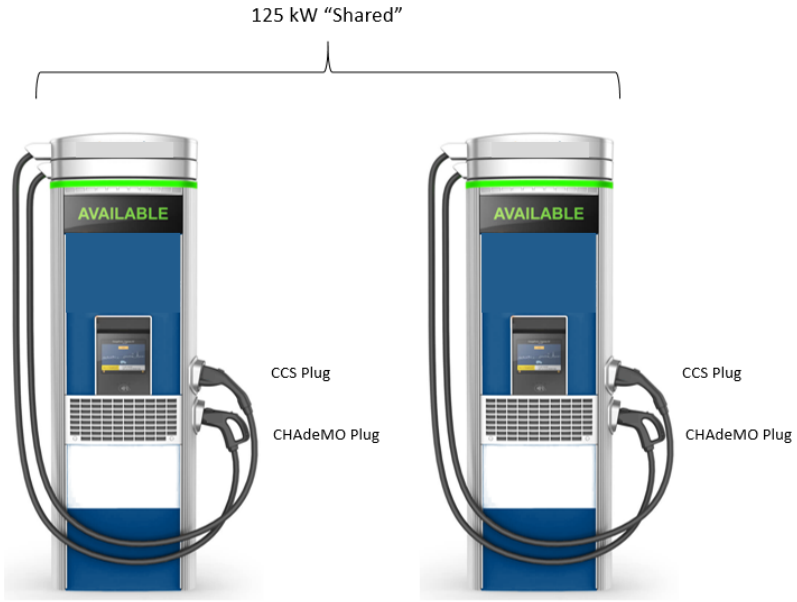
- Counts as "two chargers" for reimbursement purposes because two vehicles can charge at the same time

Example: Single vehicle chargers (different power levels)

- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW to a single vehicle possible
- ✓ Min. 50kW to two vehicles charging simultaneously
- ✓ Charge two CCS plug vehicles
- ✓ Charge at least one CHAdeMO plug vehicle

- Counts as "two chargers" for reimbursement purposes because two vehicles can charge at the same time

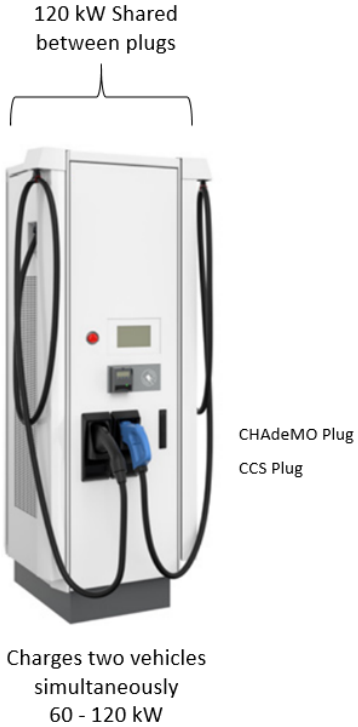
Example: Power sharing between two chargers



- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW to a single vehicle possible
- ✓ Min. 50kW to two vehicles charging simultaneously
- ✓ Charge two CCS plug vehicles
- ✓ Charge at least one CHAdeMO plug vehicle

- Counts as "two chargers" for reimbursement purposes because two vehicles can charge at the same time

Example: Single Dual Charger



- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW to a single vehicle possible
- ✓ Min. 50kW to two vehicles charging simultaneously
- X Charge two CCS plug vehicles
- ✓ Charge at least one CHAdeMO plug vehicle

- Counts as "two chargers" for reimbursement purposes because two vehicles can charge at the same time, but unit alone does NOT meet site minimum specifications

Example: Multiple Dual Chargers

120 kW Shared between plugs

Charges two vehicles simultaneously
60 - 120 kW

120 kW Shared between plugs

Charges two vehicles simultaneously
60 - 120 kW

- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW to a single vehicle possible
- ✓ Min. 50kW to two vehicles charging simultaneously
- ✓ Charge two CCS plug vehicles
- ✓ Charge one at least CHAdeMO plug vehicle

- Counts as "four chargers" for reimbursement purposes because four vehicles can charge at the same time

Example: Multiple Dual Chargers (CCS/CCS & CCS/CHAdeMO plugs)

120 kW Shared between plugs

Charges two vehicles simultaneously
60 - 120 kW

120 kW Shared between plugs

Charges two vehicles simultaneously
60 - 120 kW

- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW to a single vehicle possible
- ✓ Min. 50kW to two vehicles charging simultaneously
- ✓ Charge two CCS plug vehicles
- ✓ Charge one at least CHAdeMO plug vehicle

- Counts as "four chargers" for reimbursement purposes because four vehicles can charge at the same time

Accessibility Requirements

Americans with Disabilities Act (ADA)

Title II of the Americans with Disabilities Act (ADA), which applies to State and local government entities, states that "Subject to the provisions of this subchapter, no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity, or be subjected to discrimination by any such entity". 42 U.S.C. § 12132.

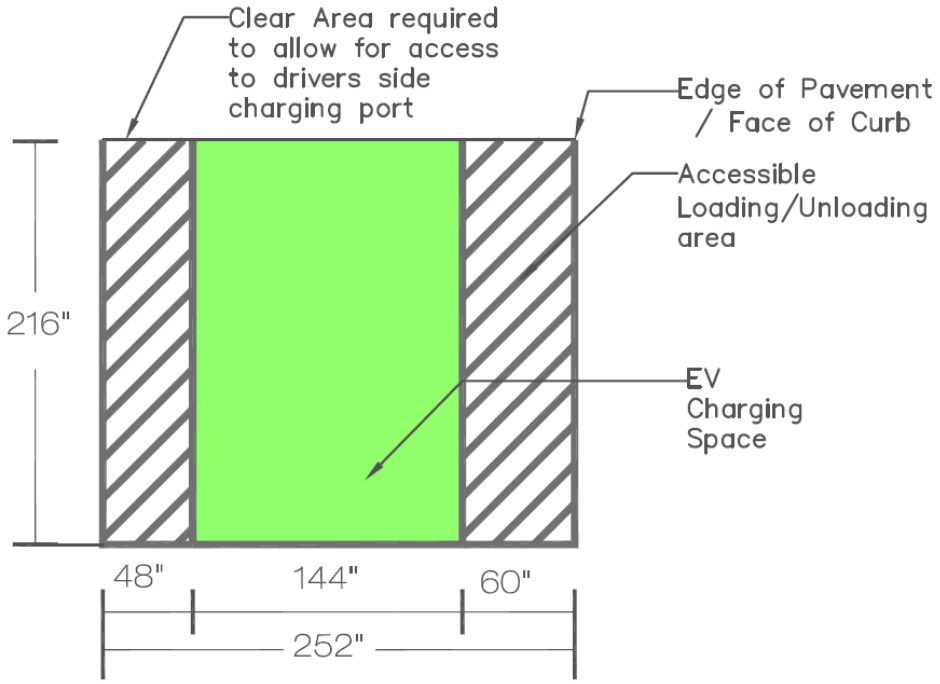
Title III of the ADA, which applies to "place[s] of public accommodation," states that "No individual shall be discriminated against on the basis of disability in the full and equal enjoyment of the goods, services, facilities, privileges, advantages, or accommodations of any place of public accommodation by any person who owns, leases (or leases to), or operates a place of public accommodation." 42 U.S.C. § 12182(a).

While no formal requirements regarding ADA applicability to EV charging stations have been issued by the federal government as of July 2021, it is the responsibility of each Grantee to consult their legal counsel to determine whether their publicly accessible EV chargers may be subject to the requirements of the ADA and, if so, what steps the Grantee must take to ensure compliance. While participation in this program requires that the Grantee meet accessibility requirements, described below, neither TVA nor TDEC warrant that meeting the Accessibility Requirements required by the Fast Charge Program, including any approved Accessibility Deviation Request, satisfies the requirements of the ADA.

Fast Charge Network Program Accessibility Requirements

To provide accessibility, each Grantee must, as a requirement of the Fast Charge Program, include at least one van - accessible EV charging stall (EVCS) at each Fast Charge location that meets the following requirements ("Accessibility Requirements"). These requirements were developed in consultation with the Tennessee Department of Transportation's (TDOT) Roadway Design Division.

- Total stall width, including both access aisles, shall be a minimum of 252"
- Parking stall min. width: 96"
- Stall min. length: 216"
- Access aisles:
    - Access aisle with 60" min. width must be located along one side of EV charging stall, be the same length as the stall(s) it serves, and connect to an accessible route to the charger. It is preferable, but not required, to locate this 60" aisle adjacent other EV charging stalls.
    - Access aisle with 48" min. width must be located along opposite side of EV charging stall, be the same length as the stall(s) it serves, and connect to an accessible route to the charger
    - Boundary of the access aisle must be marked
    - Access aisles may have 1:50 maximum slope in all directions
- Accessible path to EV charger must be provided (wheel stops and curbs cannot be located in a manner that obstructs an accessible path to the charger)



Van Accessible
EV Charging Space

Refer to the example drawing of a van accessible EV charging stall. Should site or other constraints prohibit the inclusion of at least one van accessible EV charging stall meeting the Accessibility Requirements, the grantee may submit an ***Accessibility Deviation Request*** to their funding partner before proceeding with site installation. The Accessibility Deviation Request must include:

1. A written description of the site and reason for deviation from the requirement (pictures and drawings of the existing site are encouraged);
2. A proposed alternative which provides accessibility to persons with disabilities. A drawing or rendering of the proposed alternative, which includes stall dimensions, striping, and charging station location, is required; and
3. Any other information required by the Department to ensure that the proposed deviation will provide sufficient accessibility to persons with disabilities.

Upon receipt of an Accessibility Deviation Request, the Department will review the proposed alternative and may, in the Department's discretion, approve the request, deny the request, or request additional information. Grantee must provide all additional information requested by the Department regarding an Accessibility Deviation Request and failure to provide such information may result in denial of the request. Upon completing its review of an Accessibility Deviation Request, the Department will issue a determination in writing approving the request if the request, in the Department's sole discretion, provides an alternative for sufficient accessibility to persons with disabilities or, otherwise, denying the request. Upon approval of an Accessibility Deviation Request, the Grantee is required to comply with the terms of the approved request instead of providing at least one van-accessible parking stall meeting the Accessibility Requirements.