APPENDIX A – PROGRAM GUIDELINES

Fast Charge TN Network Program Guidelines

Tennessee Valley Authority (TVA)

and

Tennessee Department of Environment and Conservation (TDEC)

Version 2 May 2022

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 stations and, if possible, local "wayfinding" signage can direct drivers from the corridor to the charging 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 stations utilize 480 volt three phase power (although single phase options do exist integrating energy storage systems).
- 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 stations 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.
- Charging stations 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 charging stations where cords could create tripping hazards and consider whether nearby landscaping will interfere with the charging stations or parking spaces.

Potential Future Expansion

- Always develop charging sites with future expansion in mind. Electric vehicle adoption is forecastedto 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 charging 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, gas stations, recently graded land, sites situated on fill material, or other similar low impact situations; and associated activities such as installation of signage, construction of new utility distribution poles or underground utilities, etc. are completely within previously disturbed areas, 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 charging site located within the 100-year floodplain as shown on FEMA Flood Insurance Rate Maps?
[ ] Yes [ ] No	Is the proposed charging 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 (ex. new utility poles) outside of existing developments such as parking lots, roadways, buildings, or other impervious surfaces and/or outside of previously disturbed land (ex. greenfield)?
[ ] 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?
[ ] Yes [ ] No	Is the proposed charging site located on the same property as, or adjacent to, a structure 50 years old or greater?
[ ] Yes [ ] No	Is the charging site located within a zoned historic district with the National Register of Historic Places?
[ ] Yes [ ] No	Is the charging site located on property owned by a federally recognized Indian tribe?

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

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

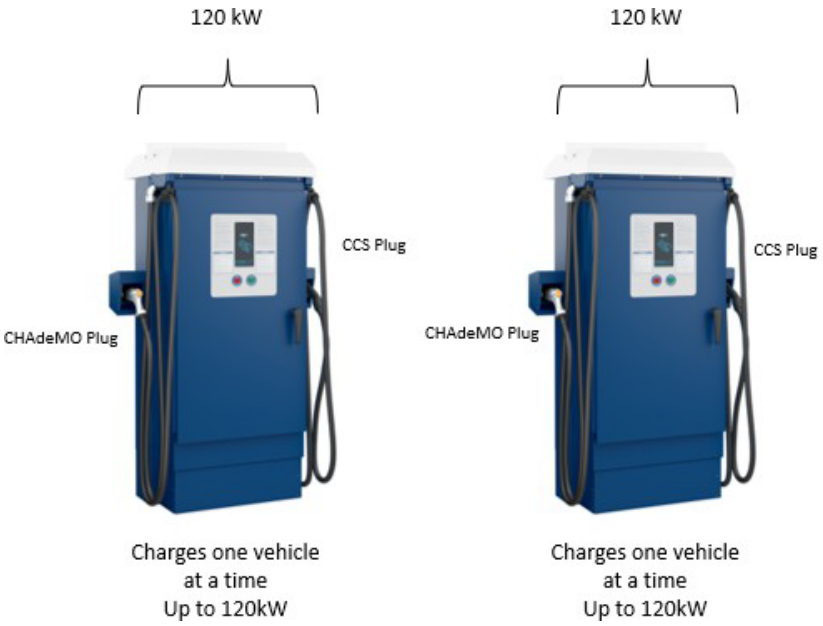
Unless otherwise agreed upon, the following specifications must be met in order to qualify for reimbursement under the Fast Charge Network Program:

- 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.
- Provided that the required minimum of two CCS ports are met, Grantees may propose projects that include additional charging port standards, such as the American Charging Standard (NACS) and CHAdeMO.

- Charging stations 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

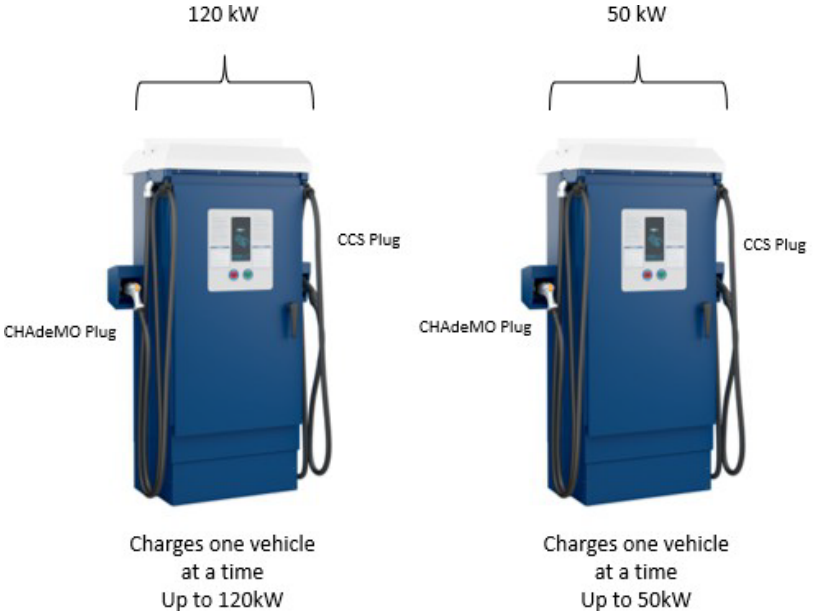
Example: Single vehicle charging stations



- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW possible
- ✓ Min. 50kW to each vehicle
- ✓ Charge two CCS plug vehicles

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

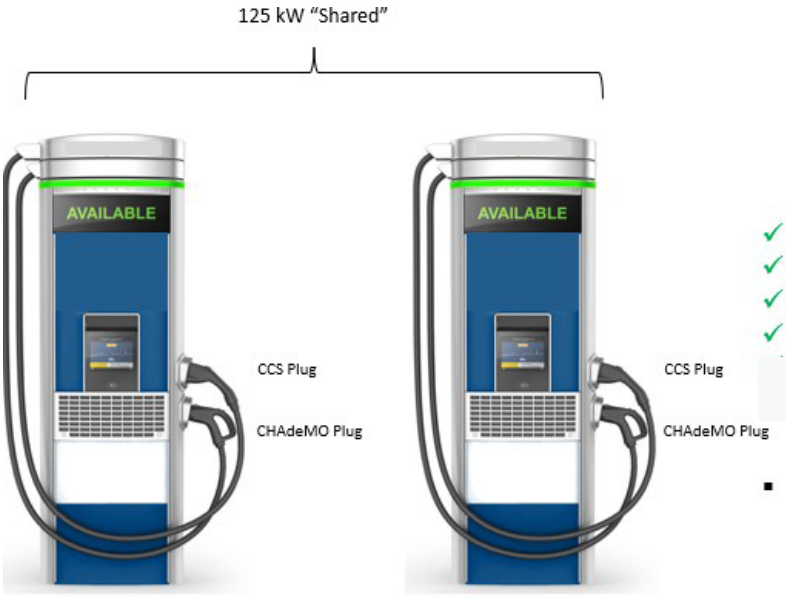
Example: Single vehicle charging stations (different power levels)



- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW possible
- ✓ Min. 50kW to each vehicle
- ✓ Charge two CCS plug vehicles

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

Example: Power sharing between two charging stations



- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW possible
- ✓ Min. 50kW to each vehicle
- ✓ Charge two CCS plug vehicles

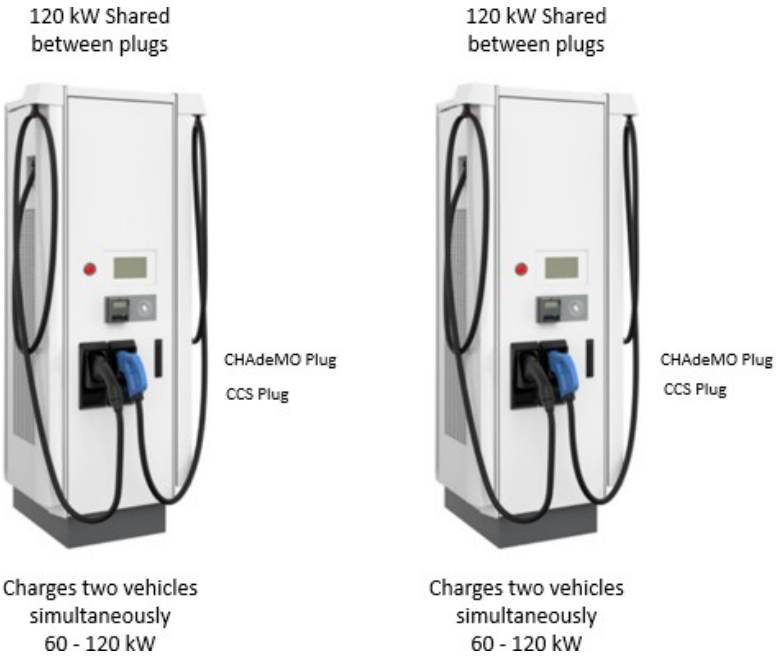
- Counts as "two charging stations" for reimbursement purposes because two vehicles can charge at the same time

Example: Single Dual Charging Station

- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW possible
- ✓ Min. 50kW to each vehicle
- X Charge two CCS plug vehicles

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

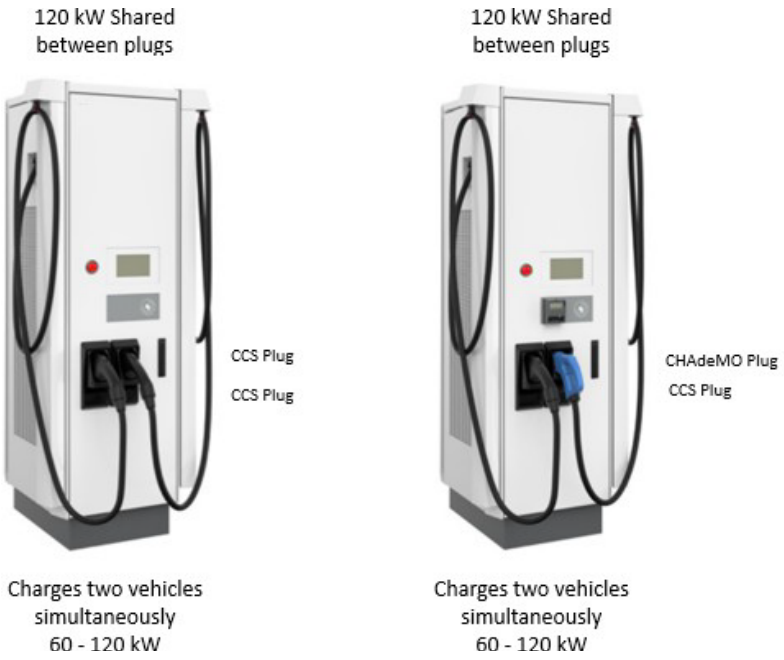
Example: Multiple Dual Charging Stations



- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW possible
- ✓ Min. 50kW to each vehicle
- ✓ Charge two CCS plug vehicles

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

Example: Multiple Dual Charging Stations (CCS/CCS & CCS/CHAdeMO plugs)



- ✓ Min. two vehicles charging at same time
- ✓ Min. 120kW possible
- ✓ Min. 50kW to each vehicle
- ✓ Charge two CCS plug vehicles

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

Enhanced 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 Enhanced Technical Specifications

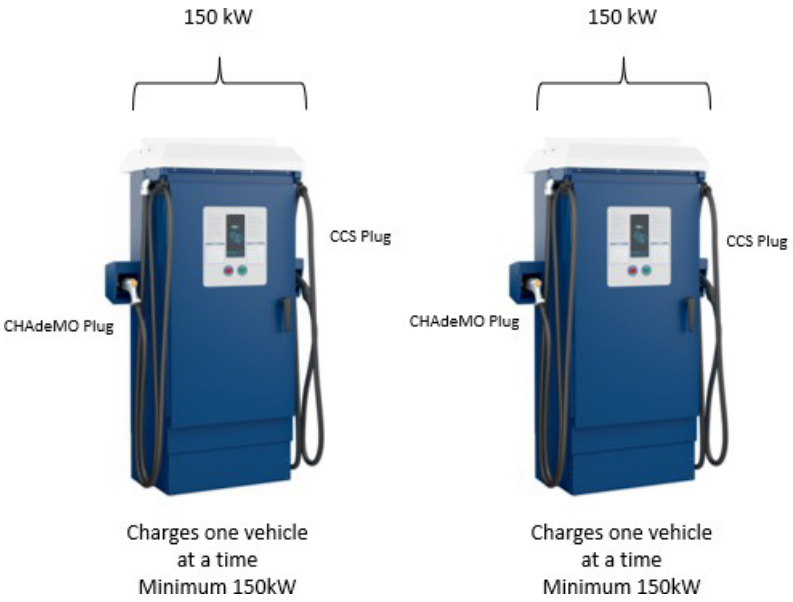
The following specifications must be met in order to qualify for **Enhanced Technical Specifications** under the Fast Charge Network program:

- Each charging site must be **within one mile of the interstate or highway** unless a discretionary exception has been granted.
- Each charging site must have at **minimum two 150kW charging stations** (four 150kW charging stations encouraged).
- Each charging site must have minimum power capability at or above 300kW and supports at least 150kW per port simultaneously across at least two ports for charging.
- Power sharing across ports and/or charging stations is permitted so long as it does not reduce the output per port below 150kW.
- Each charging site must have the ability to charge at least two combined charging standard "CCS" plug vehicles (e.g., two Chevy Bolts) while supplying at least 150kW to each.
- Sites capable of delivering higher power charging ~180-350+kW or upgradability / expansion capabilities to these power levels in the future is highly desirable.
- Charging sites capable of being easily upgraded / expanded to support at least four 150kW charging stations is highly desirable.
- Provided that the required minimum of two CCS ports are met, Grantees may propose projects that include additional charging port standards, such as the American Charging Standard (NACS) and CHAdeMO.

- 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. Enhanced Specifications

Example: Single vehicle charging stations



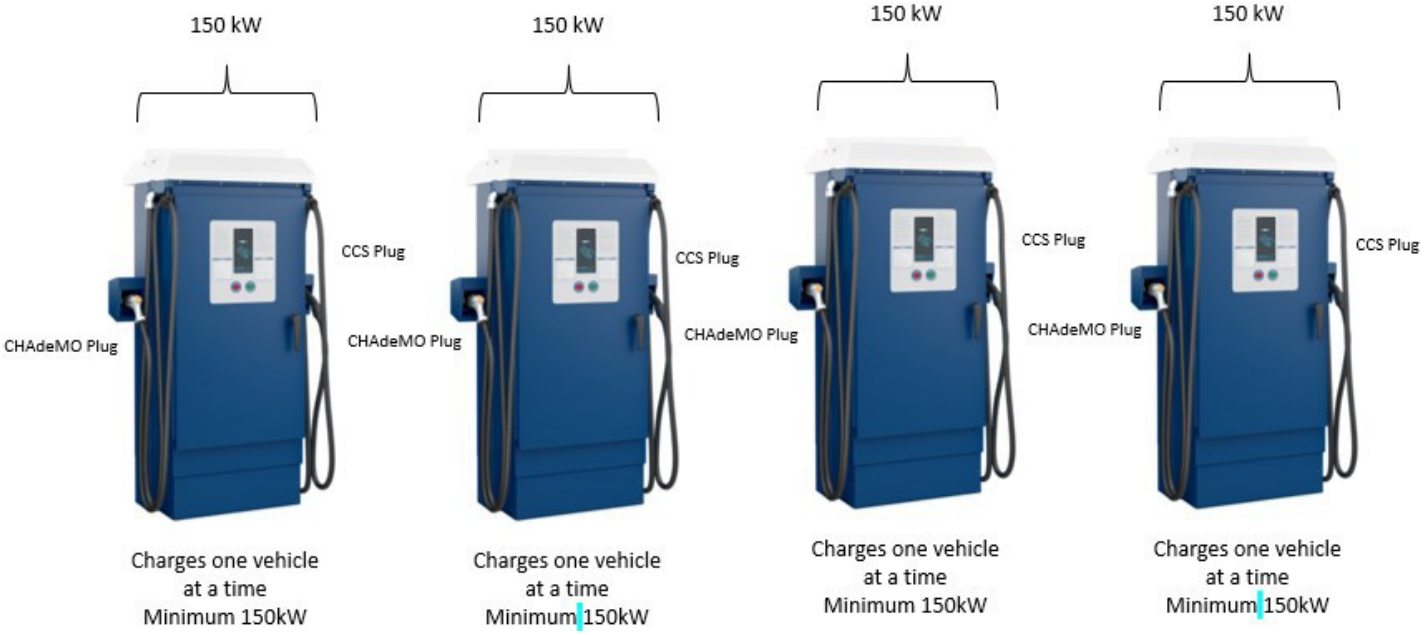
- ✓ Min. two vehicles charging at same time
- ✓ Min. 150kW to each vehicle at the same time
- ✓ Charge two CCS plug vehicles

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

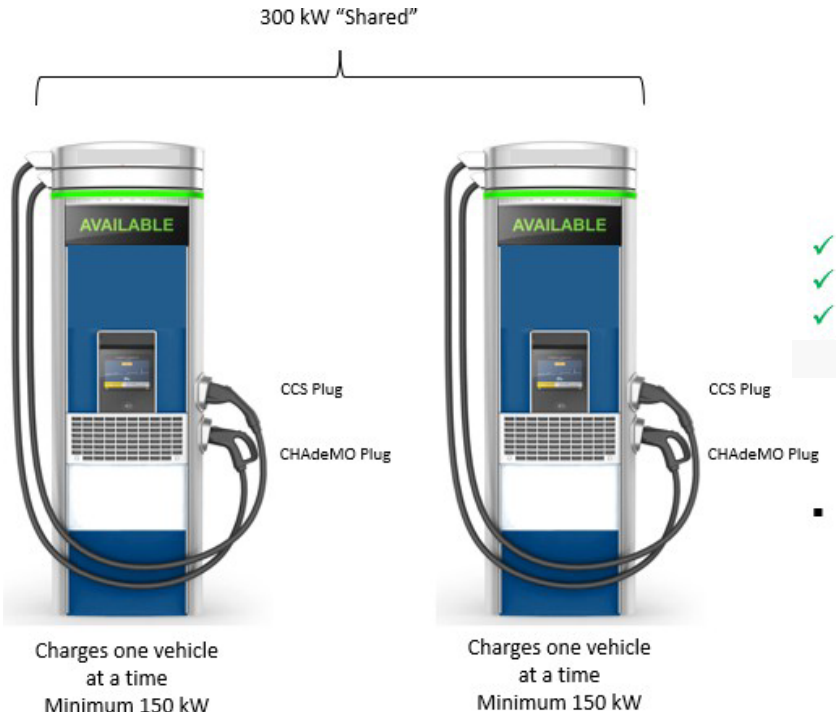
Example: Single vehicle charging stations

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

- ✓ Min. two vehicles charging at same time
- ✓ Min. 150kW to each vehicle at the same time
- ✓ Charge two CCS plug vehicles



Example: Power sharing between two charging stations



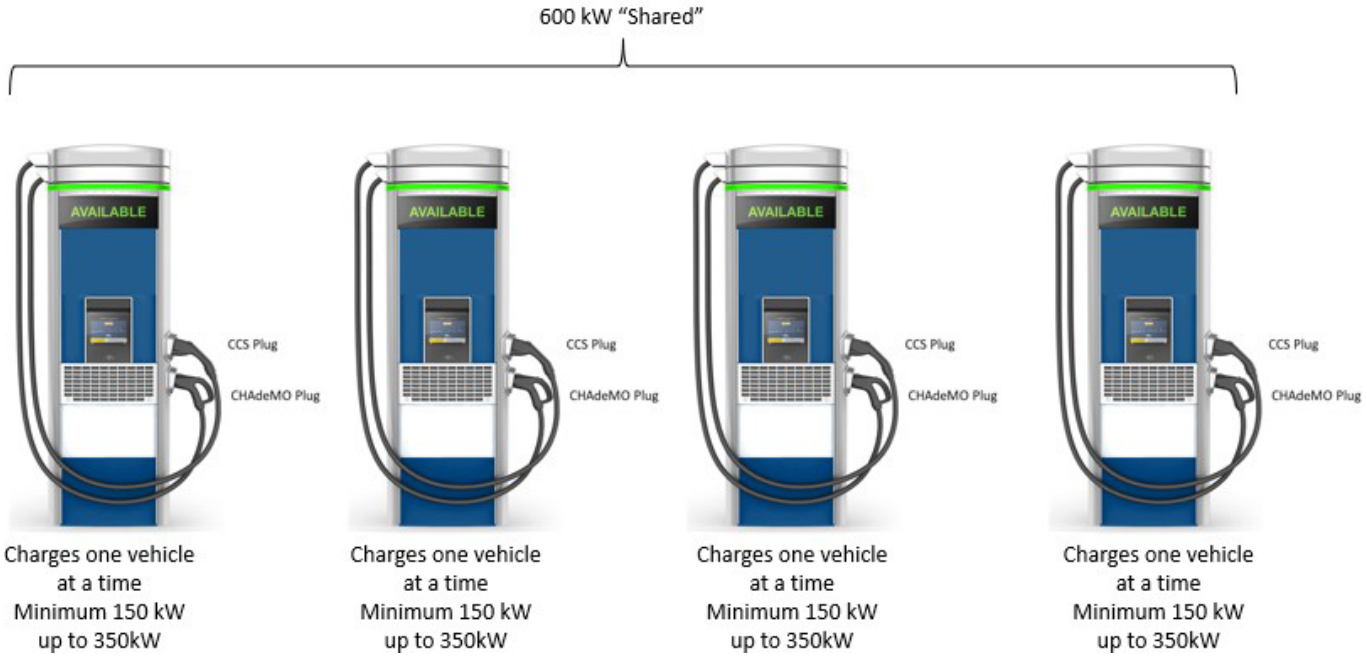
- ✓ Min. two vehicles charging at same time
- ✓ Min. 150kW to each vehicle at the same time
- ✓ Charge two CCS plug vehicles

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

Example: Power sharing between four charging stations

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

- ✓ Min. two vehicles charging at same time
- ✓ Min. 150kW to each vehicle at the same time
- ✓ Charge two CCS plug vehicles

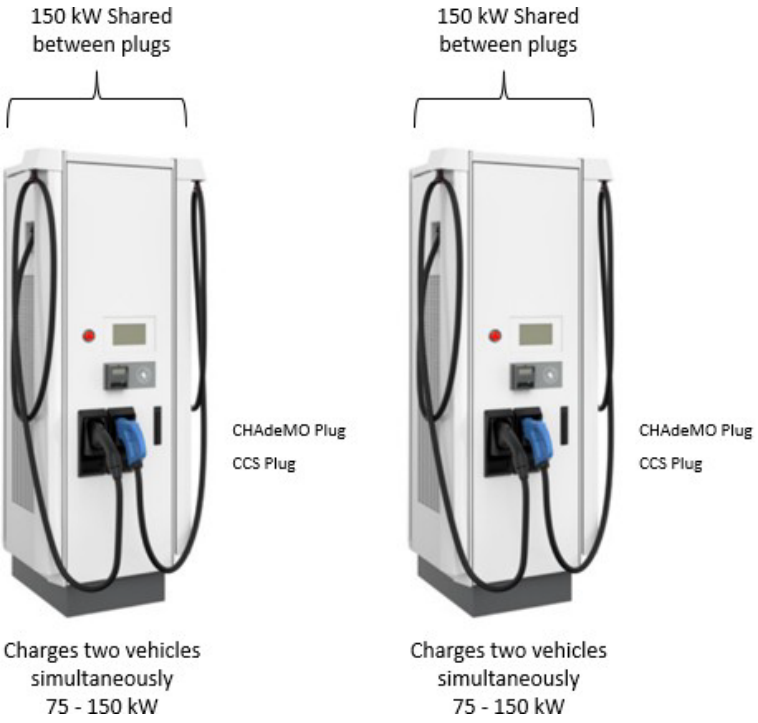


Example: Single Dual Charging Station

✓ Min. two vehicles charging at same time
X Min. 150kW to each vehicle at the same time
X Charge two CCS plug vehicles

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

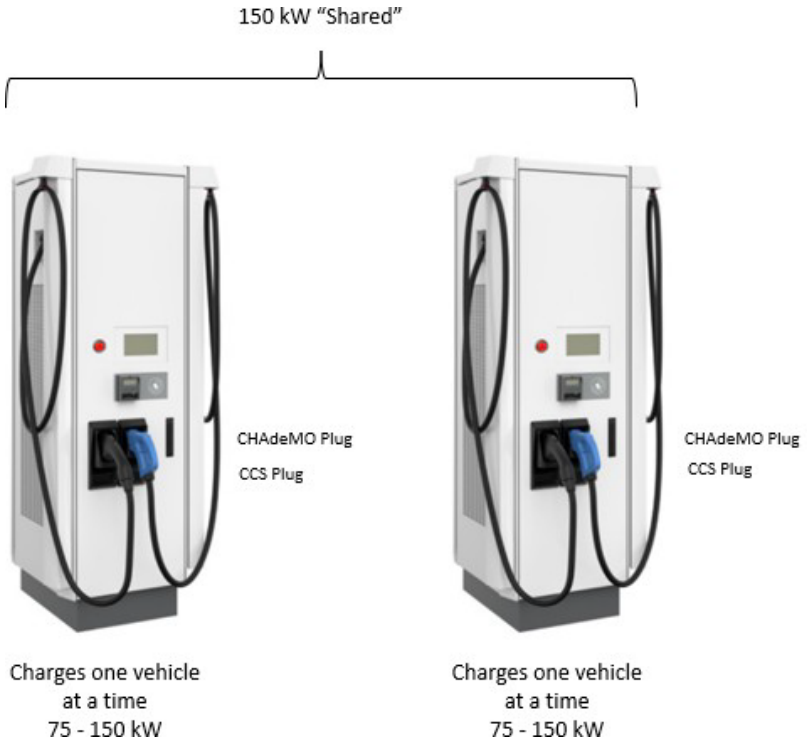
Example: Multiple Dual Charging Station



✓ Min. two vehicles charging at same time
X Min. 150kW to each vehicle at the same time
✓ Charge two CCS plug vehicles

- Counts as "four charging stations" for reimbursement purposes because four vehicles can charge at the same time, but this setup alone does NOT meet site enhanced specifications

Example: Power sharing between two charging stations



✓ Min. two vehicles charging at same time
X Min. 150kW to each vehicle at the same time
✓ Charge two CCS plug vehicles

- Counts as "two charging stations" for reimbursement purposes because four vehicles can charge at the same time, but this setup alone does NOT meet site enhanced specifications

Americans with Disabilities Act (ADA)

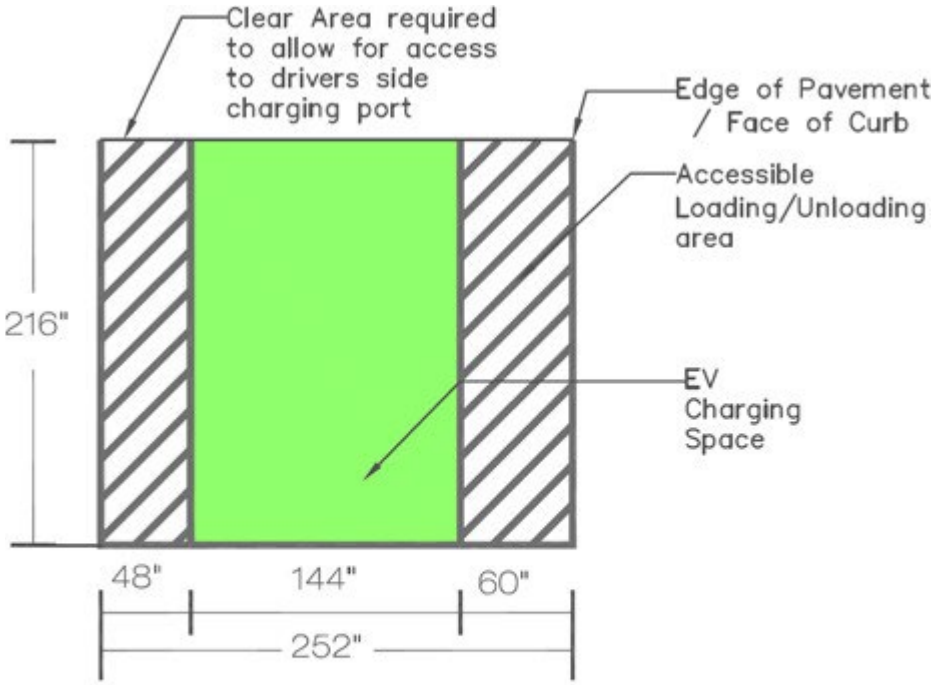
The information contained in this section is for general information purposes only and does not, and is not intended to, constitute legal advice. A signatory to an Electric Vehicle Fast Charger Program Agreement or Grant Contract with responsibility for purchasing and installing the electric vehicle (EV) charging stations (for purposes of this section, "Program Participant") should consult with the Program Participant's legal advisor regarding the applicability of the ADA or any state accessibility requirements to EV charging stations. Each signatory to an Electric Vehicle Fast Charger Program Agreement or Grant Contract with responsibility for reimbursing certain Program Participant project costs (for purposes of this section, "Funding Agency") disclaims any liability for any actions or omissions of Program Participants based on the contents of this section.

It is the responsibility of each Program Participant to consult the Program Participant's legal advisor to determine whether the Program Participant's publicly-accessible EV charging stations may be subject to current requirements of the ADA and any state accessibility requirements and, if so, what steps the Program Participant must take to ensure compliance. While participation in the Fast Charge Network Program requires that the Program Participant meet accessibility requirements, described below, the Funding Agency does not warrant that meeting the Accessibility Requirements required by the Fast Charge Network Program, including any approved Accessibility Deviation Request, satisfies the requirements of the ADA or any state accessibility requirements. The Funding Agency will not be liable for failure of the Program Participant to comply with any ADA or state accessibility requirements. As a reference only, the ADA statutory language can be viewed here and here and a guidance on standards can be viewed here.

Fast Charge Network Program Accessibility Requirements

To provide accessibility, each Program Participant must, as a requirement of the Fast Charge Network Program, include at least one van-accessible EV charging stall (EVCS) at each Fast Charge site 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 charging station. 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 charging station
    - Boundary of the access aisle must be marked
    - Access aisles may have 1:50 maximum slope in all directions
- Accessible path to EV charging station must be provided (wheel stops and curbs cannot be located in a manner that obstructs an accessible path to the charging station)



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 Program Participant must submit an ***Accessibility Deviation Request*** to the Funding Agency 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 Funding Agency to ensure that the proposed deviation will provide sufficient accessibility to persons with disabilities.

Upon receipt of an Accessibility Deviation Request, the Funding Agency will review the proposed alternative and may, at the Funding Agency's discretion, approve the request, deny the request, or request additional information. The Program Participant must provide all additional information requested by the Funding Agency 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 Funding Agency will issue a determination in writing approving the request if the request, in the Funding Agency'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 Program Participant 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.