

Contents

Introduction and Background	2
Multi-Vendor Responses	3
Reviews of Vendor Responses	3
Attachment of Brochures and Specification Sheets.....	3
Submittal Schedule.....	3
DC Fast Charging Network System Requirements	4
DC Fast Charging Equipment (Charging Stations).....	4
Operating Networks	5
Support Services	6
Respondent Profile	7
Company Information	7
Company Biography.....	7
Key Experience	8
Example Project 1.....	8
Example Project 2.....	8
DC Fast Charging Equipment Information	9
General Information	9
Functional Description	9
Additional Hardware Information	12
Operating Network Information	13
General Information	13
Program Support Services Information	14
Site Acquisition & Contracting	14
Site Design & Engineering Support	14
Installation & Commissioning	14
Monitoring and Management.....	15
Operations and Maintenance	15
Other Applicable Services.....	15
Pricing.....	15

Introduction and Background

On February 3, 2021, TVA and the Tennessee Department of Environment and Conservation (TDEC) [announced a collaborative partnership](#) to develop a statewide electric vehicle (EV) fast charging network to power the growth of EVs across Tennessee and reduce barriers to transportation electrification. Specifically, the two organizations have signed an agreement to collaborate and fund a network of fast charging stations every 50 miles along Tennessee's interstates and major highways.



Figure 1

TVA intends to extend this initiative across state borders throughout its seven state Tennessee Valley service territory with additional partners and the Local Power Companies (LPCs) that provide retail electric service throughout the region.

The full program scope anticipates deployment of as many as 60 DC fast charging locations, with up to 200 individual charging stations across Tennessee and parts of Alabama, Mississippi, Kentucky, Georgia, Virginia, and North Carolina.

Through this Request for Information (RFI), TVA seeks to gather relevant information to establish minimum technical specifications and subsequently create a list of qualified providers of:

- 1) EV DC fast charging (DCFC) supply equipment,
- 2) Operating network back-end options, and
- 3) Related program support services

for potential program Grantees (DCFC owners/operators) across the state of Tennessee and the southeast to utilize in building a fast charging network along major travel corridors over the next several years.

Forthcoming funding solicitations will establish criteria for determining eligible applicants, which may include TVA Local Power Companies (LPCs), other local utilities, municipalities, and/or third-parties. Grantees will ultimately be responsible for the purchase, installation, operation, and maintenance of this charging network.

TVA Request for Information DC Fast Charging Equipment, Network, and Support Services

Submittal Schedule

- RFI responses should be submitted through email to David N. Bratcher at dnbratcher@tva.gov
- All responses to the RFI must be received no later than **May 7, 2020: 5:00 PM EDT** (email)

Multi-Vendor Responses

A single vendor (or teams of vendors collectively) may submit information for any or all of the questions related to *equipment, network and support services*, but for any multi-vendor responses that are submitted, pricing information must be separate and, if applicable, the responsible party must be defined (e.g., Vendor A provides these support services at a rate of \$X/hr and Vendor B will provide equipment at \$Y/charger).

If a team of multiple vendors submit a single, collective response to this RFI, one organization must be listed as a lead or prime for the response. Additionally, information and qualifications of partner organizations must be provided.

Reviews of Vendor Responses

Both TVA and TDEC representatives will review information submitted through this process. Based on the information received, minimum technical specifications for funding programs will be established. Also, a list of respondents that meet the minimum technical specifications will be provided as a resource to future Grantees along with information regarding responses. Therefore, information provided should not be considered confidential.

Attachment of Brochures and Specification Sheets

It is critical that respondents fully address the relevant portions of the RFI. In addition, respondents may attach brochures, cut sheets, and other pre-prepared collateral.

Corridor DC Fast Charging Program Requirements

TVA seeks feedback on DCFC equipment and operating networks for inclusion in future funding solicitation guidelines. With regard to terminology, TVA uses the terms charging station, charger, site, location, plug, and port according to Figure 2. Below, items of interest related to the three program categories (i.e., equipment, network, and support services) are identified.



Figure 2

DCFC Equipment (Charging Stations)

TVA seeks information from vendors on EV DCFC supply equipment that can meet or exceed the following proposed specifications:

- Charging equipment should support nominal 400Vdc to ~1,000Vdc battery architectures (including a nominal 1,000Vdc maximum output voltage rating);
- Each charging site should have the ability to **charge at least two vehicles** simultaneously while supplying **at least 50kW** to each vehicle at any voltage within the charger's output voltage range. In addition, each site should be expandable to accommodate simultaneous charging of four vehicles while supplying at least 50kW to each vehicle;
- At the very minimum, each charging site should be capable of delivering **at least 100kW to single vehicles** (assuming vehicle is capable) at any voltage within the charger's output voltage range;
- Higher power charging of **~125-200kW** (or upgradability / expansion capabilities to these power levels) for any voltage within the charger's output voltage range is **highly desirable**, but will be evaluated on the tradeoffs of cost, complexity, and maintenance;
- Higher power charging up to 350kW (or upgradability / expansion capabilities to this power level) is **desirable**, but will be evaluated on the tradeoffs of cost, complexity, and maintenance;

TVA Request for Information DC Fast Charging Equipment, Network, and Support Services

- Each charging site **must support both CCS and CHAdeMO** cords/plugs and it is **highly desirable** for equipment to also directly support a **Tesla connector**;
- Charging equipment **must meet all relevant safety specifications including UL 2202**, Federal Communications Commission (FCC) Part 15, Code of Federal Regulations, Title 47, Part 15 (47 CFR 15), and must have valid certification(s) from a Nationally Recognized Testing Laboratory (NRTL);
- Funding sources being considered for this program may require **FHWA Buy America Act Compliant equipment**. (Note that Buy America requirements apply to any steel or iron component of a manufactured product regardless of the overall composition of the manufactured product (e.g. Buy America applies to the steel wire mesh or steel reinforcing components of a precast reinforced concrete pipe)). Please familiarize yourself with the differences between Buy American, FHWA Buy America, FTA Buy America, etc., using this reference: https://www.transportation.gov/sites/dot.gov/files/docs/buy_america_provisions_side_by_side.pdf. Specific information on FHWA Buy America requirements, including related FAQs, can be found here: https://www.fhwa.dot.gov/construction/contracts/buyam_qa.cfm. All responses submitted must clearly delineate whether hardware is FHWA Buy America compliant, provide supporting documentation to demonstrate compliance and also denote pricing or lead-time differences for such equipment.
- Charging equipment **should 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 equipment **should have the ability to switch between OCPP networks**;
- Charging equipment should support continuous operations even when network connectivity is not available or consumer cell phone service is not available (i.e., “default on”);
- Charging equipment must be **accessible to “walk up” consumers** meaning that consumers must be able to initiate a charge session without a prior membership or network interaction in a simple, straightforward process;
- Charging equipment must include **multiple payment options** for drivers (including the ability to pay with a credit card, at a minimum);
- It is **desirable** that equipment include or be able to be upgraded in the future to support ISO 15118 “Plug n’ Charge” capabilities
- Charging equipment should follow cyber security and data privacy best practices; and
- Charging equipment Service and Maintenance agreements with a minimum 5 year term must be available.

Operating Networks

TVA seeks information from vendors on operating networks for EV DCFC supply equipment that can meet or exceed the following specifications:

- Capable of utilizing OCPP V1.6 (or newer);
- Ability to connect to, monitor, and operate charging equipment from multiple vendors;
- Provide 24/7 customer service and support;
- Ability to support continuous charging operations even when network connectivity is not available or consumer cell phone service is not available (i.e., chargers “default on”);

TVA Request for Information DC Fast Charging Equipment, Network, and Support Services

- Is **accessible to “walk up” consumers** meaning that consumers must be able to initiate a charge session without a prior membership or network interaction in a simple and straightforward process;
- Follow Network **“roaming” best practices established by the Open Charge Point Interface (OCPI) protocol**;
- Ensure a network uptime of 98+% or greater;
- Proactively monitor charging supply equipment for maintenance needs and dispatch/coordinate maintenance support to ensure maximum supply equipment uptime;
- Have an easy-to-use consumer interface, including a mobile application capable of initiating a charge session;
- Support multiple payment methods including, but not limited to the use of a credit card and mobile payments; and
- Follow cyber security and data privacy best practices; and
- Payment methods must follow the Payment Card Industry Data Security Standard (PCI DSS).

Support Services

Support services are services from vendors who have experience successfully executing EV infrastructure projects that could assist Grantees on an as-needed basis with the following tasks:

- Project and/or construction management
- Site identification and acquisition (negotiations and contracting)
- Site design and engineering support; and
- Other applicable services.

Respondent Profile

All RFI respondents are required to complete the Respondent Profile section.

Company Information

Please provide the following.

Company Information	
Company name	
Company headquarters address	
Company main phone number	
Company website	
Year founded	

Business/Sales Point of Contact	
Full Name	
Title	
Phone number	
Email address	

Technical Point of Contact	
Full Name	
Title	
Phone number	
Email address	

Company Biography

Please provide a succinct history of the company.

If you qualify as a Disadvantaged Business Enterprise, Minority Business Enterprise, Woman Business Enterprise, Persons with Disabilities / Disabled Business Enterprise, Service Disabled Veteran Business Enterprise, or Small Business Enterprise, please note that below.

**TVA Request for Information
DC Fast Charging Equipment, Network, and Support Services**

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Key Experience

Please provide details on projects or programs that the company has completed, which are relevant given the scope, schedule, and technical requirements of this RFI.

Example Project 1

Project customer	
Project completion date	
Project description	
Key project results	
Project budget	
Project duration	

Example Project 2

Project customer	
Project completion date	
Project description	
Key project results	
Project budget	
Project duration	

DCFC Equipment Information

Section applicable if providing information on charging equipment.

Based on the desirable specifications outlined in the DCFC Equipment Requirements section of this document, please provide information on DCFC supply equipment that your company provides (multiple submissions possible).

General Information

General Information	Response
Manufacturer	
Model name	
Model number(s)	
Manufacturing location	
Configuration description (single enclosure, separate power enclosure)	
Port count (single/dual, single/simultaneous use)	
Various OCPP Network(s) compatible	

Functional Description

Functional Description	Response
Product Specifications	
FHWA Buy America Compliant (Yes or No)	
Input voltage	
Input current	
Capable of charging 400V battery architectures (Yes or No)	
Capable of charging 800V battery architectures (Yes or No)	
Equipment output maximum voltage rating (*If charger is not capable of operating at maximum voltage and current simultaneously, please note this and/or provide a safe operating area curve showing the voltage/current relationship)	
Maximum output power at 400V on CHAdeMO cable	

TVA Request for Information
DC Fast Charging Equipment, Network, and Support Services

Maximum output power at 400V on CCS cable	
Maximum output power at 800V on CHAdeMO cable	
Maximum output power at 800V on CCS cable	
Efficiency rating at average and maximum output	
Ground fault protection	
Surge protection	
Operating temperature range	
Humidity ratings	
Noise (dBA)	
Dimensions (H x W x D)	
Shipping weight	
Installed weight	
Cable management	
Connector compliant with SAE CCS Combo standard (Yes or No)	
Cable length (CCS)	
Connector compliant with CHAdeMO standard (Yes or No)	
Cable length (CHAdeMO)	
Options for direct Tesla Connector support (integrated)	
Options for Tesla adaptor support	
Listed by a nationally recognized test lab to the requirements of UL 2202 (standard for EV charging supply equipment)	
Enclosure rating – minimum rating of NEMA 3R for outdoor installations	
Capable of installation in compliance with the Americans with Disabilities Act (ADA)	
Electromagnetic compatibility (EMC) compliance according to FCC Part 15 Class B for general public safety	
Remote monitoring/diagnostic/upgrade capabilities and connectivity services	
Equipment serviceability features	
Future-proofing features	
Power sharing capabilities	

TVA Request for Information
DC Fast Charging Equipment, Network, and Support Services

Vehicle side interoperability testing procedures	
Special siting considerations	
Consumer Experience and Branding	
Screen performance (daylight readable) and consumer features	
Multiple payment options available	
Consumer access without prior membership or interaction	
Approach to branding/customization of physical hardware	
Additional Hardware	
Radio Frequency Identification (RFID) card reader compliant with ISO/IEC 14443 and/or ISO 15693	
Credit card acceptance type (e.g., contactless, mag swipe, mobile app, phone)	
Do you accept common Fleet refueling purchasing cards? If so which ones, if not, would you be willing to accept in the future?	
Cellular modem type (3G or 4G)	
Capable of storing authentication keys and other requirements for ISO 15118 “plug n’ charge”	
Charge Station Network Communications	
Capable of utilizing OCPP V1.6 or newer	
Remotely upgradeable to support future versions of OCPP	
Will equipment be capable of supporting multiple OCPP networks	
List the OCPP networks this equipment has been integrated with	
How many units using OCPP V1.6 integration have been deployed	
Can equipment switch OCPP networks with over-the-air software updates	
Remotely upgradeable to support ISO 15118 “plug n’ charge”	
Long Term Maintenance and Service	
Long term maintenance and service program options	

TVA Request for Information
DC Fast Charging Equipment, Network, and Support Services

Program pricing (5 year maintenance and service)	
Warranty	
Standard parts warranty information	
Extended parts warranty information	
Labor warranty information	
Pricing & Availability	
Equipment pricing (FWHA Buy America compliant, if available)	
Equipment pricing (non-Buy America compliant)	
Do you offer bulk ordering or preferred pricing programs? Provide pricing for 10, 50, and 100 units.	
Delivery timeline (FHWA Buy America compliant, if available)	
Delivery timeline (non-Buy America compliant)	

[Additional Hardware Information](#)

Additional details that may be relevant to the hardware specification questions above:

Operating Network Information

This section is applicable if respondents have information to provide on operating network back-end services.

General Information

General Information	Response
Network name	
Number of charging stations and charging ports currently on the network	
Network up-time metrics	
Network Protocols	
Network communication protocols used	
OCPP V1.6 certification	
List equipment providers (DCFC stations) currently integrated with the network	
Roaming Practices	
Network roaming practices	
List other network providers that are integrated with the network (cross functionality with authentication and billing)	
List of other networks with current roaming agreements (or detail a timeline on their development)	
Consumer Experience	
Consumer interface features	
Driver support features, including mobile application availability, customer support phone number (24/7), etc.	
Process for proactively monitoring charging supply equipment for maintenance needs and the process for dispatching and coordinating maintenance	
Payment options supported	
Do you accept common Fleet refueling purchasing cards? If so which ones, if not, would you be willing to accept in the future?	

TVA Request for Information
DC Fast Charging Equipment, Network, and Support Services

Ability for station owner to set local pricing	
Privacy, security, data processing, payment data security (PCI DSS)	
Consumer access without prior membership or interaction	
Pricing	
Network pricing	
Additional fees (e.g., credit card processing fees)	

Program Support Services Information

This section is applicable if respondents have information to provide on program support services.

Respondent information from this section of the RFI will be provided to Grantees as a resource to assist with deployment of charging infrastructure as needed.

Site Acquisition & Contracting

Please describe your methodology for site acquisition, including methodology and preferred strategies for solicitation/marketing, site identification, site qualification, site assessment, and site contracting. (Detail your organization’s experience and qualifications related to site acquisition and contracting for DCFC, as opposed to Level 2 charging infrastructure)

Site Design & Engineering Support

Please describe your process for designing DCFC sites.

Installation & Commissioning

Please describe your experience and process for managing the installation, commissioning, and network provisioning of DCFC stations. This may include:

- A standard project template and schedule
- A description of methods for integration of 3rd party installation service providers as necessary

**TVA Request for Information
DC Fast Charging Equipment, Network, and Support Services**

Monitoring and Management

Please describe monitoring and management services. These may include:

- Uptime monitoring
- Site host notifications
- Site host onboarding
- Driver onboarding

Operations and Maintenance

Please describe Operations and Maintenance (O&M) services. These may include:

- Warranty– parts and labor process, extended options and exclusions
- Annual check-ups and tests (Routine maintenance)
- Break/fix services (Corrective maintenance)
- Service Level Agreements (SLA) (Preventive or comprehensive maintenance)

Other Applicable Services

Please describe other applicable support services your company can provide.

Pricing

Please describe pricing structures and rates for the various support services (e.g., hourly rates for a design engineer, site acquisition specialist, project manager, etc.)