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REQUEST FOR QUOTATION

“Charge Data Analyzer for EV-EVSE Charging Interoperability Testing”

Issued April 23rd, 2025

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# REVISIONS

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# RESPONSE INSTRUCTIONS

**American Center for Mobility (ACM)**

Bipartisan Infrastructure Law (BIL) An Electric Vehicle (EV) Charging and Interoperability Test Bed for Scaling Electric Vehicles (EV's)

**Contact Information:**

Primary Contact: Sushanta Das

Direct Phone: (972) 602-5258

Email: Sushanta.Das@acmwillowrun.org

**This is a Request for Quotation (RFQ) for:**

An EV/EVSE Charge Data Analyzer (i.e. Man-in-the-Middle) or equivalent with emulation capability for testing and data capture between EVs and EVSEs

# RFQ TIMELINE

|  |  |  |
| --- | --- | --- |
| Event | Time | Date |
| **RFQ issue date** | 8:00 a.m. Eastern | April 25th, 2025 |
| **Submission Deadline** | 5:00 p.m. Eastern | May 23rd, 2025 |

**\*A vendor’s late response to these dates and times will be considered on a case-by-case basis.**

This RFQ is subject to change. Updates will be posted on ACM’s website as in Section 6 Modifications.

1. CONTACT INFORMATION FOR ACM.The sole point of contact for ACM concerning this RFQ is listed on the Cover Page. Contacting any other personnel, agent, consultant, or representative about this RFQ will not guarantee a response or consideration for any material submitted.
2. OPTIONAL PRE-RESPONSE MEETINGS.There will be no Q&A held. Email all questions directly to the point of contact on cover page. The email subject line must contain “RFQ Q&A: Charge Data Analyzer for EV-EVSE Charging Interoperability Testing”.
3. MODIFICATIONS**.** ACM may modify this RFQ at any time. Modifications will be posted on <https://acmwillowrun.org/offerings-services/#technology> This is the only method by which the RFQ may be modified.
4. QUESTIONS.All questions regarding this Request for Quotation (RFQ) shall be submitted via e-mail. Questions will be accepted and answered in accordance with the terms and conditions of this RFQ. Vendor questionsabout this RFQ must be emailed to the Point of Contact no later than the time and date specified on the Cover Page. The email subject line must contain “RFQ Q&A: Charge Data Analyzer for EV-EVSE Charging Interoperability Testing”. Should any prospective bidder be in doubt as to the true meaning of any portion of this RFQ, or should the prospective bidder find any ambiguity, inconsistency, or omission therein, the prospective bidder shall make a written request for an official interpretation or correction by the due date for questions above. All interpretations, corrections, or additions to this RFQ will be made only as an official revision that will be posted to https://acmwillowrun.org/offerings-services/#technology and it shall be the prospective bidder’s responsibility to ensure they have received all revisions before submitting a quotation. Any revisions issued by ACM shall become part of the RFQ and must be incorporated in the quotation where applicable.
5. DELIVERY OF RESPONSE. The vendor must submit its response, all attachments, and any modifications or withdrawals by email to the Point of Contact. The email subject line must contain “RFQ Response: Charge Data Analyzer for EV-EVSE Charging Interoperability Testing”. The attachment file size is limited to 20 MB per document. The response and attachments must be submitted prior to the response deadline. An official authorized to bind the bidder to its provisions must sign the quotation. Each quotation must remain valid for at least one hundred and twenty (120) days from the due date of this RFQ. Quotations should be prepared simply and economically providing a straightforward, concise description of the bidder’s ability to meet the requirements of the RFQ.
6. ORAL PRESENTATION.ACM reserves the right to invite some vendors for oral presentations.
7. SELECTION CRITERIA.If interviews are desired by the American Center for Mobility, the selected firms will be given the opportunity to discuss their quotation, qualifications, past experience, and their quotation in more detail. All quotations submitted may be subject to clarifications and further negotiation. All agreements resulting from negotiations that differ from what is represented within the RFQ or in the quotation response shall be documented and included as part of the final contract.
8. CONTRACT.The American Center for Mobility reserves the right to award the total quotation, to reject any or all quotations in whole or in part, and to waive any informality or technical defects if, in the American Center for Mobility’s sole judgment, the best interests of the American Center for Mobility will be so served. This RFQ and the selected bidder’s response thereto, shall constitute the basis of the scope of work in the contract by reference.

Any contract awarded resulting from this RFQ will be subject to ACM’s standard terms and conditions and vendor contract (to be provided). Furthermore, this project is funded through a Federal Assistance Agreement DE-EE0011260, through the Office of National Energy Technology Lab, an office within the United States Department of Energy and will be subject to any federal pass-through requirements (Reference Attachment A).

1. COST LIABILITY. The American Center for Mobility assumes no responsibility or liability for costs incurred by the bidder prior to the execution of an Agreement. The liability of the American Center for Mobility is limited to the terms and conditions outlined in the Agreement. By submitting a quotation, bidder agrees to bear all costs incurred or related to the preparation, submission, and selection process for the quotation.
2. DEBARMENT.Submission of a quotation in response to this RFQ is certification that the Respondent is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the American Center for Mobility will be notified of any changes in this status.
3. IRS FORM W-9. The selected bidder will be required to provide an IRS form W-9.
4. GENERAL CONDITIONS.
5. This Request for Quotation (RFQ) does not constitute a commitment by ACM to award a contract, or pay any costs incurred in the preparation of a response. ACM will not be liable for any costs, expenses, or damages incurred by vendors participating in this RFQ.
6. The American Center for Mobility reserves the right in its sole and absolute discretion to accept or reject any or all quotations, or alternative quotations, in whole or in part, with or without cause.
7. The American Center for Mobility reserves the right to waive, or not waive, informalities or irregularities in terms or conditions of any quotation if determined by the American Center for Mobility to be in its best interest.
8. The American Center for Mobility reserves the right to request additional information from any or all bidders.
9. The American Center for Mobility reserves the right to reject any quotation that it determines to be unresponsive and deficient in any of the information requested within RFQ.
10. The American Center for Mobility reserves the right to determine whether the scope of the project will be entirely as described in the RFQ, a portion of the scope, or a revised scope be implemented.
11. The American Center for Mobility reserves the right to select one or more contractors or service providers to perform services.
12. The American Center for Mobility reserves the right to retain all quotations submitted and to use any ideas in a quotation regardless of whether that quotation is selected. Submission of a quotation indicates acceptance by the firm of the conditions contained in this RFQ, unless clearly and specifically noted in the quotation submitted.
13. The American Center for Mobility reserves the right to disqualify quotations that fail to respond to any requirements outlined in the RFQ, or failure to enclose copies of the required documents outlined within the RFQ.
14. MAJOR SUBCONTRACTORS. The Bidder shall identify each major subcontractor it expects to engage for this Contract if the work to be subcontracted is 15% or more of the bid sum or over $50,000, whichever is less. The Bidder also shall identify the work to be subcontracted to each major subcontractor. The Bidder shall not change or replace a subcontractor without approval by the American Center for Mobility.
15. CONFIDENTIALITY. While information gathered through this RFQ is primarily for internal use and may be shared with project partners, ACM recognizes the need for confidentiality in certain cases. Vendors who wish to keep their responses confidential should:
    1. Inform the Point of Contact of their intent to submit a confidential response.
    2. Complete and execute ACM's standard Mutual Non-Disclosure Agreement (MNDA) [Provided Upon Request]. Only the vendor's contact and signatory information may be modified. ACM will not be responsible for maintaining the confidentiality of any materials submitted without a fully executed MNDA in place prior to submission.
16. ATTACHMENTS.

* Attachment A – Bipartisan Infrastructure Law - Special Terms and Conditions Attachment

1. PROGRAM DESCRIPTION

***Company Overview***

The American Center for Mobility (ACM) is a non-profit innovation and global development center transforming the way industries advance safe, sustainable, and secure mobility technologies. Located in Southeast Michigan on over 500-acres at the historic Willow Run site in Ypsilanti. ACM offers an Advanced Mobility Proving Ground with test environments featuring specialized infrastructure, equipment, facilities and resources; An innovation and technology campus with an industrial tech park for the co-location of mobility companies; Event and demonstration areas for showcasing mobility technologies and convening industry activities. ACM is designed to enable research, testing and validation of safe, sustainable, and secure mobility technologies including advanced driver assistance systems (ADAS), connected and automated vehicles (CAV), EV charging, for light, medium, and heavy-duty vehicles. ACM is also home to a large power station that can support high power EV charging testing. There are also plans to bring hydrogen production to the site through this and other projects. ACM is open to private industry, start-ups, government, standards bodies, and academia.

***Program Overview***

The objective of this project is to increase industrial capacity, competition, redundancy, and  broad access to validation testing and certification of Direct Current (DC) fast chargers with rated power capacity between 150 kilowatt (kW) and 1 Megawatt (MW) in the United States. This will be accomplished by deploying a well-equipped and resourced electric vehicle (EV) Charging Interoperability Test Bed that provides access to a market representative set of DC Fast Chargers for auto original equipment manufacturers (OEMs), electric vehicle supply equipment (EVSEs), and charge point operators (CPOs) to test against.

The scope of this project is to deploy a well-equipped and resourced EV Charging Interoperability Test Bed that provides access to a market representative set of DC Fast Chargers and test equipment for auto OEMs, EVSEs, and CPOs to test against. Further, the test environment will provide participants with the opportunity to work collaboratively to improve EV charger performance.

# PURPOSE OF RFQ.

The purpose for this Request for Quotation (RFQ) is to procure a charge data analyzer (i.e. man-in-the-middle) or equivalent equipment with EV/EVSE emulation capabilities for testing and data capture between EVs and EVSEs.

1. RESPONSE SECTION **(Include this information in your response)**

Respondents must submit the following information in their quotation response.

**General Information\* (**Please respond to all questions in this section)

1. Respondent Name\*
2. Respondent Website\*
3. Provide a brief overview of the Respondent (250 words maximum)\*
4. Provide a brief description of the Respondent’s experience and capabilities related to the RFQ.

**RFQ Deliverable(s):** Vendor should submit a costed Quotation with supporting documentation for the following scope of work and technical requirements.

# SCOPE OF WORK / TECHNICAL REQUIREMENTS

**Introduction:**

The American Center for Mobility (ACM) has established an EV Charging & Interoperability Testbed designed to address critical needs in EV charging interoperability and conformance testing and validation. ACM is moving forward with a phased development of this EV charging interoperability and conformance test bed to work with OEMs, EVSEs and CPOs to provide an open and neutral space for industry collaboration, knowledge sharing, interoperability and conformance testing for EV and EVSE. ACM EV test bed is open to a multitude of different electrical vehicle charger types from various EVSE manufacturers to original equipment automobile manufacturers and others involved in EV research and development for collaboration, testing and development.  To enhance the range of services and capabilities, ACM is issuing this RFQ with the intention to procure an EV/EVSE charge data analyzer to conduct comprehensive testing of electric vehicle (EV) and electric vehicle supply equipment (EVSE) charging communication.

**Objective**:

The objective of this procurement is to acquire advanced and reliable test equipment that supports the testing, validation, emulation, and conformance verification of EV-EVSE communication protocols and interfaces. The tools must be compatible with globally accepted standards including ISO 15118, DIN 70121, CCS (Combined Charging System) and NACS (North American Charging Standard) protocols. The acquired systems will be used in various environments such as laboratories, R&D setups, and field locations to enable development, protocol debugging, interoperability, conformance, diagnostic measurements, and certification preparation.

**Requirements**:

**A. Charge Data Analyzer**

**Function**: To monitor, capture, and log communication between EV and EVSE either passively or by acting as a transparent Man-in-the-Middle (MITM) for diagnostic and analysis purposes preferably to be connected between two real devices to capture all electrical signals and digital communication between an EVSE and EV and should support test capabilities with power flow.

**Technical Specifications:**

* The analyzer must support decoding and visualization of global accepted communication protocols including ISO 15118-2, ISO 15118-20, DIN 70121, CHAdeMO, GB/T 27930, GB/T 18487.1 (PWM), SAE J1772 (PWM) and IEC 61851-1 (PWM).
* It must be capable of monitoring both AC and DC charging sessions and should identify protocol state changes, message timing, and session transitions.
* Support DCFC (CCS, NACS, CHAdeMO) for high power charging systems  ex: 500 KW or higher (<1 MW).
* The tool must include support for monitoring Powerline Communication (PLC) that underpins the HLC layer and SLAC protocol and CAN communication.
* It should offer real-time decoding and visualization of the communication exchange with the ability to export raw and parsed data in formats such as CSV, JSON, or PCAP.
* The device should provide high-resolution timestamping with at least sub-millisecond accuracy to assist with precise time-based analysis.
* It must operate in a non-intrusive passive mode and optionally support active MITM testing capabilities for simulation or fault injection.
* The hardware interface must be portable and connect via USB, Ethernet, or other standard PC interfaces.
* The analyzer should be ruggedized or include a protective enclosure to enable reliable operation in field testing conditions.

**B. Conformance Test Suites**

**Function**: To perform automated and standardized conformance testing of EV or EVSE communication stacks, ensuring that implementations comply with the relevant protocols.

**Technical Specifications:**

* The system must use a TTCN-3 based test execution environment, consistent with industry standards for communication protocol conformance testing.
* It should include complete test case coverage for ISO 15118-2, ISO 15118-3, ISO 15118-4, ISO 15118-5, ISO 15118-20, and DIN 70121 protocols supporting OCPP 1.6 and OCPP 2.0.1
* It must offer a comprehensive library of predefined test cases along with the ability to modify or develop custom test cases.
* The software should be able to automatically run predefined set or a subset of tests and generate test reports in user-friendly formats such as PDF, HTML, and XML, highlighting passed/failed test items and any non-conformances.
* Access to PWM, V2G and SLAC parameters,
* The tool should be capable of injecting protocol errors, invalid messages, or timing violations to assess the robustness and standard compliance of the DUT (Device Under Test).
* The conformance system must support Plug & Charge and V2G (Vehicle-to-Grid) test scenarios as defined in ISO 15118-20.
* Interoperability testing of ISO 15118-20 communication for bidirectional charging between a vehicle and charger, setup involving a charging station management system, a charger, and a vehicle that demonstrates bidirectional charging in response to grid signals
* It should offer compatibility or seamless integration with external Hardware-in-the-Loop (HiL) or Software-in-the-Loop (SiL) test setups.
* The system must provide certification-grade measurement accuracy and include documentation that supports traceability to regulatory standards.

**C. EV/EVSE Emulator**

**Function**: To emulate the behavior of either an electric vehicle (EV) or a charging station (EVSE) in a controlled environment for use in development, testing, and verification.

**Technical Specifications:**

* The emulator must have the ability to simulate both the EV and EVSE roles, with software control to switch between modes easily.
* It must support communication protocols relevant to both AC and DC charging, supporting ISO 15118-2, ISO 15118-20, DIN 70121, and CCS & NACS.
* The tool should allow user-configurable communication parameters such as timing delays, EVCCID, and state machine transitions.
* The emulator must support scripting or automation through GUI-based scenarios or external APIs (e.g., Python, or similar).
* It must be capable of injecting faults or simulating non-standard behavior such as invalid handshakes, premature message termination, or missing service discovery.
* The system should support integration with the Charge Data Analyzer and Conformance Test Suite to create end-to-end validation setups.
* A fully functional PLC interface must be included with capabilities for SLAC (Signal Level Attenuation Characterization) and HLC (High-Level Communication) support.
* The software must display real-time protocol state machine transitions, message content, session status, and error codes to aid debugging and test reporting.
* Optionally, the emulator should support real power and voltage signal generation to simulate physical behavior of charging sessions for HiL integration or waveform analysis.

**D. Deliverables Required**

The vendor is expected to supply the following deliverables as part of the quotation and order fulfillment:

* Complete hardware and software packages for each of the listed tools.
* Licensed versions of all necessary software modules, including conformance libraries and scenario editors.
* Physical hardware interfaces, including required cables, accessories, and protective cases if applicable.
* Comprehensive user manuals, documentation, installation guides, and training material.
* Initial setup and commissioning support either remotely or on-site based on the customer's location.
* Product warranty including hardware replacement and software bug fixes.
* Post-sales technical support and options for future software upgrades or hardware extensions.
* Clearly stated delivery timeline including lead time, shipping method, and expected delivery date.

# ATTACHMENTS.