ABB E-MOBILITY

# Federal EV Charging Infrastructure Funding

## NEVI Program Selection Guide

ABB E-mobility is the global leader in EV infrastructure with the widest range of reliable charging technology, smartest connectivity for flexible business integration, and a scaled service organization that delivers high uptime for customers and users around the world. ABB has the technology and experience to enable successful NEVI deployment programs.

**Infrastructure investment background**
The 2021 Bipartisan Infrastructure Law (BIL) makes the single largest investment in electric transportation in US history – including historic investments in public charging infrastructure ($7.5b).

The public charging infrastructure funding is broken down into three discrete programs: (1) $5b for the National Electric Vehicle Infrastructure (NEVI) Program; (2) $1.25b for the Rural and Disadvantaged Communities Grants Program; and (3) $1.25b for the Highway Corridor Grant Program.

Each of these public charging infrastructure programs are administered by the Federal Highway Administration (FHWA). The BIL established the "Joint Office" between the US Department of Transportation (USDOT) and the US Department of Energy (USDOE) to help provide technical guidance and assistance to state and local governments who will implement EV charging programs.

ABB's EV chargers will comply with the technical requirements of the USDOT and USDOE.

**National EV Infrastructure (NEVI) Program**
The NEVI program allocates $5b over five years to all US States based on set "formulas" which are published by the FHWA. By September 30th, its expected that the USDOT will begin approving state implementation plans.

**Preliminary requirements for each charging site**
1. Minimum of 4 x 150 kW ports per location
2. Minimum power capacity of 600 kW per location
3. Charging ports must be CCS1
4. 97% uptime and maintained in compliance... with manufacturer requirements.

**Technical requirements**
1. Installation, Operations, and Maintenance
2. Connectivity and Payment
3. Accessibility

**Note on technical requirements**
The Joint Office recently issued proposed minimum standards and accepted comments until August 22nd. ABB will be prepared to meet the minimum standards, once they are finalized.

**840,000**
chargers sold globally including 40,000 DC fast chargers

**85+**
countries with ABB E-mobility chargers installed

**1500+**
talented employees supporting our zero-emission future

**13**
years' experience deploying EV charging technology

**450**
kW max power in a full range of products and use cases

# NEVI program requirements

## Preliminary site and technical scope


Minimum of 4 x 150 kW charging ports per location


Minimum power capacity of 600 kW per location


Charging ports must be CCS1


97% uptime and maintained in compliance with manufacturer requirements


Installation, operations and maintenance


Connectivity and payments


Accessibility

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ABB E-mobility is working closely with all relevant agencies to ensure that ABB E-mobility chargers meet all NEVI Program technical standards and requirements

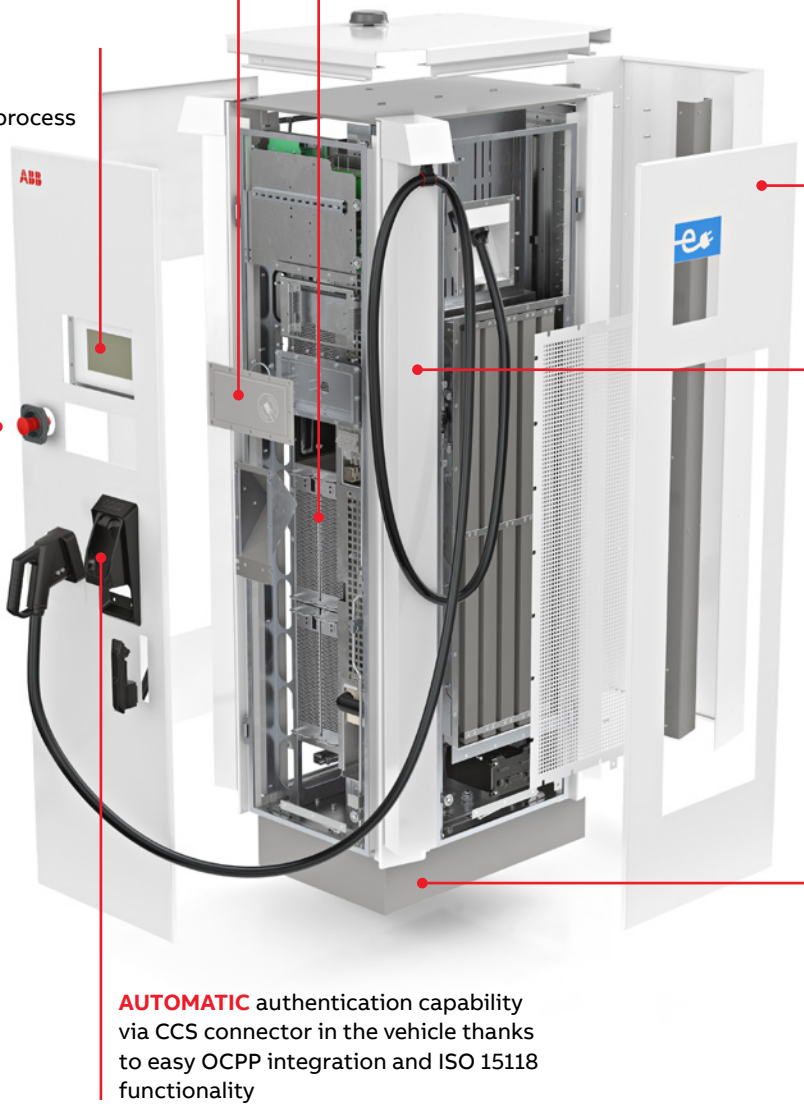
# E-mobility charging solutions
## Terra 184 all-in-one DC fast charger

The Terra 184 can deliver up to 180kW of power and is available in multiple configurations. The compact size makes it perfect for every public or fleet site, while its modularity allows for reliability and flexibility - including intelligent managed charging.

**CONNECTED** by cellular modem for 24/7 remote services, receiving updates over-the-air to support every new EV on the road - plus easy remote OCPP integration

**COMPACT** power modules to support increasing demand from more EVs with bigger batteries - in a very easy to service package

**LCD** touchscreen with high brightness and graphical visualization of the charging process



**ROBUST** all-weather powder-coated stainless steel enclosure

**SAFETY** enhanced by emergency stop push button to immediately stop charging operation

**CONVENIENT** and hassle-free reach for users – with retractable cable management option

**OPEN STANDARDS**
Interoperablity tested and validated to be fully compatible with all CCS1 vehicles

**HIGH CURRENT CCS**
Connector option can deliver 400 A peak power and 300 A continuously

**EASY** installation design with fast remote commissioning and start-up

**AUTOMATIC** authentication capability via CCS connector in the vehicle thanks to easy OCPP integration and ISO 15118 functionality

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Link to the Terra "All in One" Product Guide for detailed information.

# E-mobility charging solutions

## Terra 184 all-in-one DC fast charger

**Advanced, high power design**
- A compact, all-in-one charger up to 180 kW
- Paralleled power modules with automatic fail-over offers high uptime through redundancy
- Delivers output power continuously and reliably over its lifetime
- Up to 920 VDC serving every EV
- Robust all-weather powder-coated stainless steel enclosure

**Safety features**
- UL certified
- High short circuit current rating
- EMC Class B certified for safest use at public-facing and residential-adjacent sites

**User experience**
- Interoperable connectors tested and validated with all EV makes
- Bright, daylight readable touchscreen display with graphic visualization of charging session
- Customizable user interface
- Reliable cable management system
- Integrated payment terminal
- RFID authorization modes
- Design enables ADA compliant installations

**Connectivity features**
- Always connected, enabling remote services, updates and upgrades
- ISO 15118 enabled
- Designed for quick installation and fast serviceability
- Pre-integrated with OCPP networks, payment platforms and energy management APIs

**Power level**
- 180 kW DC fast charging
- High current cable option for 400 A peak charging

**Charging standards**
- CCS-only
- CCS+CHAdeMO

**Cables & management**
- Long cable length
- Reliable cable management system

**User access & payment**
- OCPP integration
- Credit card reader
- ISO 15118

**Connectivity & services**
- Interoperability validation
- 24/7 remote services
- Service level agreements

Terra 184 C
Single outlet CCS with credit card reader

Terra 184 CJ
Dual outlet CCS and CHAdeMO with credit card reader

**Terra 184 charging times**

| Vehicle type | Battery profile | Charging time (min) |
|---|---|---|
| Light-duty | 60 kWh BEV / 400 VDC | 13 |
| | 80 kWh BEV / 400 VDC | 17 |
| | 100 kWh BEV / 800 VDC | 22 |
| Medium-duty | 150 kWh BEV / 800 VDC | 33 |
| | 200 kWh BEV / 800 VDC | 44 |
| Heavy-duty | 300 kWh BEV / 800 VDC | 66 |

Charge times shown are based on vehicle battery management system (BMS) requesting charging power from 20% to 80% under mild environmental conditions. Data assumes vehicles capable of charging at rated power.

Link to the Terra "All in One" Data Sheet for detailed information.

# Service and maintenance

## Supported by smart connectivity and field services

Charging infrastructure must always operate with the highest utilization and lowest downtime. ABB E-mobility's connectivity and services meet that demand, incorporating more than a decade of experience and thousands of fast chargers deployed across the globe.

### Remote services

- 24/7 connectivity
- Remote services
- Remote diagnostics
- Firmware upgrades
- Web tools

### Service and parts availability

- Standard & extended warranty execution
- Service level agreements
- Preventive service and maintenance
- Corrective service and maintenance
- Spare parts stocking programs

### OCPP and interoperability

- OCPP pre-integrated with all major networks
- Interoperability testing and validation completed with major OEMs
- Customized integration support

### Training

- Standardized online training
- Product and service classroom training
- Customized service training programs
- Third-party service training programs

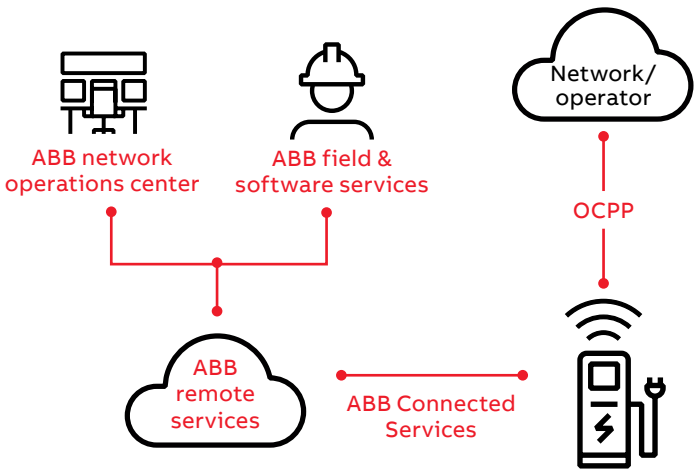
90% of ABB E-mobility service cases are diagnosed remotely and over 75% of the cases are repaired without an on-site visit.

**Services support life-cycle uptime**
Operational excellence starts with reliable chargers designed to withstand heavy operation under rugged conditions. ABB E-mobility's DC fast chargers are not only reliable, they are the easiest in the market to service, with 24/7 connectivity for remote diagnostics, and accessible designs that expedite maintenance and field service.

**Network communications**
ABB E-mobility is integrated with every major charging network around the world for Open Charge Point Protocol (OCPP) support. ABB chargers can be operated using a direct OCPP connection while linking to ABB's advanced diagnostics and firmware update services for additional intelligence, technical support as well as reduced maintenance.

With OCPP, ABB E-mobility can support a broad set of messages with a wide range of functionality, making it easy to connect to a back-end system for processing payments and managing charging session data.

### OCPP enablement backed by smart services




**Connected Services**
ABB E-mobility connectivity solutions link EV chargers to back-end systems as well as remote service tools. Connected services are essential to networked charging, upholding warranty and optimizing operational lifetime.

# ABB brings the full solution from grid to charger

Grid | **Switchgear** | **Switchboards** | **Smart breakers** | **Chargers** | EVs

**1,000+ sites**
EV charging locations electrified by ABB across the U.S.

**Partnership**
ABB partners with multiple U.S. charging operators

**100+ years**
Experience building electric gear in the U.S.

**All 50 states**
Deep experience with utilities in all 50 states and D.C.

**Adaptable**
Easy customization of equipment for each EV install or utility

**Buy America option for NEVI program**


## ReliaGear™ SB Switchboards

- ABB switchboards safely and reliably distribute power at EV charging sites
- For small to large charging sites, rated 600A-6000A
- Connect multiple energy sources simultaneously – utility, battery energy storage, microgrid, solar, etc.
- Footprints as small as 40” wide by 30” deep
- Future proof – option for expansion
- Additional convenience power outlets
- NEMA 3R rated for outdoor use and weather protection
- All openings covered by brass pest screen
- Sloped roof built for water dispersion and heat mitigation/venting – extending life of equipment
- Fully rated up to 6,500 feet (2000m) above sea level
- Integrated surge protective device – can be remotely monitored and easy to replace if a surge event occurs
- Internal cabinet lighting
- Fast and easy installation, including multiple-section switchboards

## SACE® Emax 2 and SACE® Tmax® XT Breakers

- ABB breakers are the intelligence inside switchboards, maximizing ease of use, integration and connectivity
- World-class breaker technology – compact, advanced capability, high quality, connects to networks or other IoT devices
- Highly capable – no need to purchase additional relays or other external devices
- Remote monitoring both main breaker and feeder data
- Option to remotely control or reset circuit breakers if needed – saving cost and time for service
- Fast install – Spring-loaded plug-in connectors allow ABB breakers to be installed/replaced in less than 20 seconds
- Option to upgrade with software updates

**Meets or exceeds applicable UL/NEC codes**

# Ask our experts

## A decade of experience to support best practices



### Charging technology selection support

- Choosing the right charging solution for any site
- Optimizing real estate with charger footprint
- Hardware and software standards and interoperability
- Relevant safety standards and certifications
- Optimal cable lengths and cable management
- High current cable options
- Modular power architectures
- High voltage charging needs for trucks, buses and high performance EVs
- Charger housing and performance (stainless steel v. aluminum or plastic)



### Operations and maintenance planning

- Meeting “up time” requirements
- How to enhance reliability
- Remote monitoring, diagnosis, and repair
- Field service teams to complete repairs
- Spare part inventory
- Service level agreements
- Extended warranties



### Business enablement

- Connectivity and remote monitoring
- Customization and branding options
- OCPP network integration
- Authentication and payment options
- ISO 15118 Plug & Charge implementation



### Deployment requirements and best practices

- Deployment requirements and best practices
- Impacts of harsh environments and high altitudes
- Future-proof site planning
- Installation guidance and best practices
- Training needs for scaled deployments
- Enabling ADA compliance and accessibility
- Electromagnetic compatibility and FCC requirements
- EnergyStar compliance
- DC metering and accuracy requirements

ABB E-mobility has the technology and experience to enable successful NEVI programs.

## SUPERIOR CHARGERS

**The highest quality and widest range of charging technology**

- High quality: components, materials and designs in the widest power range
- Field tested: Built on more than decade of experience in all conditions and use cases
- Safety first: Third party certifications; company-wide health, safety and sustainability mandates.

## SMARTEST SERVICES

**The most flexible provider of smart, networked and remotely serviced chargers**

- Business model enablement, technology integration teams and 24/7 connectivity
- High uptime: Remote and field service support team for maximum charger availability
- Future-proof: Always up to date with latest standards and software

## RELIABLE PARTNER

**Vast experience designing and deploying EV charging technology**

- Project and service excellence: Dedicated teams to support charger deployment and maintenance
- Human talent: unrivalled engineering and service organization
- Committed: Electrifying transportation for more than a decade

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