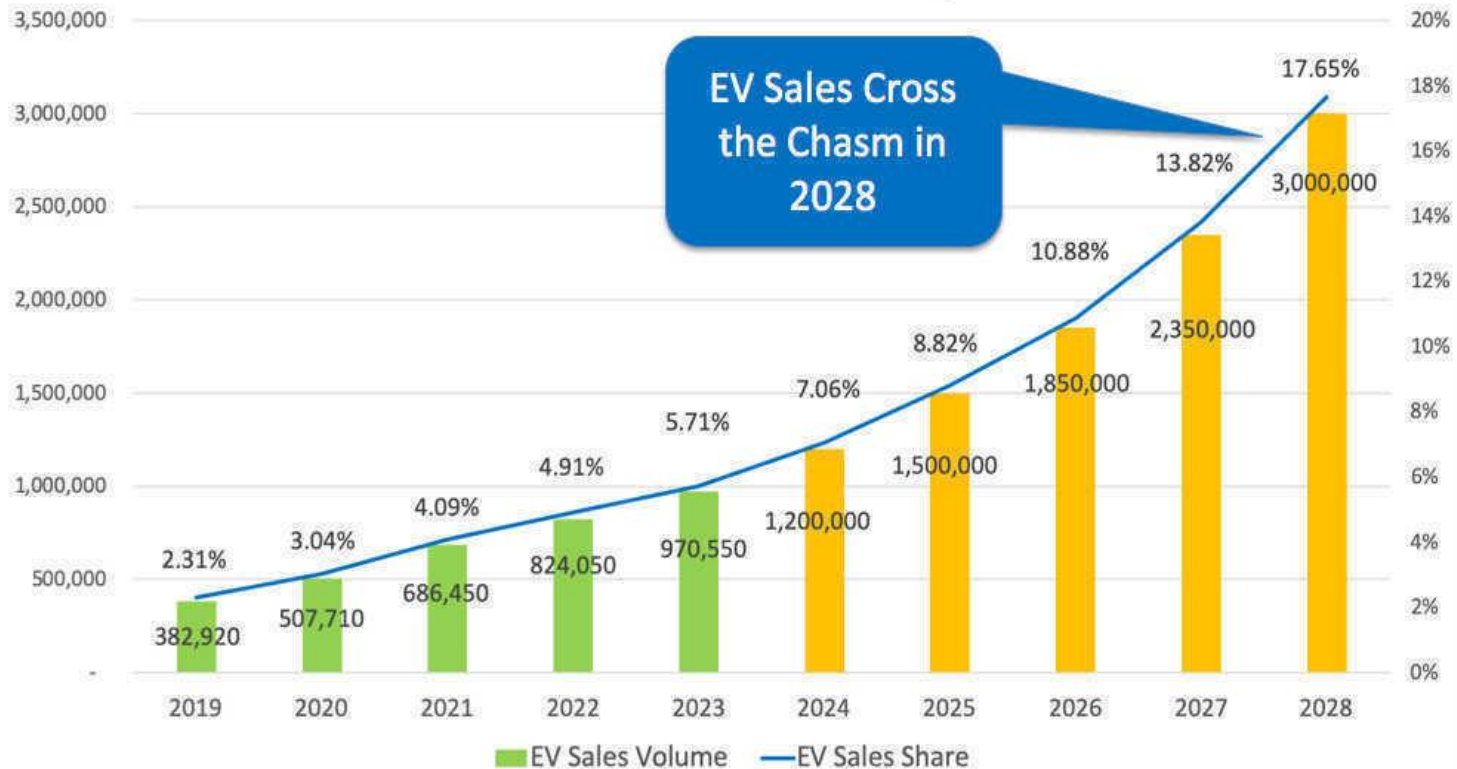


EVITP 4.0



US Electric Vehicle Sales Forecast: 2019-2028

Forecast & Chart: Loren McDonald/EVAdoption.com



Compared to the prior forecast released in 2017, EV sales are estimated to be 1.4 million in 2025 versus 1.2 million. About 9.6 million charge ports (3.8 million locations) will be required to support **18.7 million** EVs in 2030. This represents a significant investment in EV charging infrastructure.



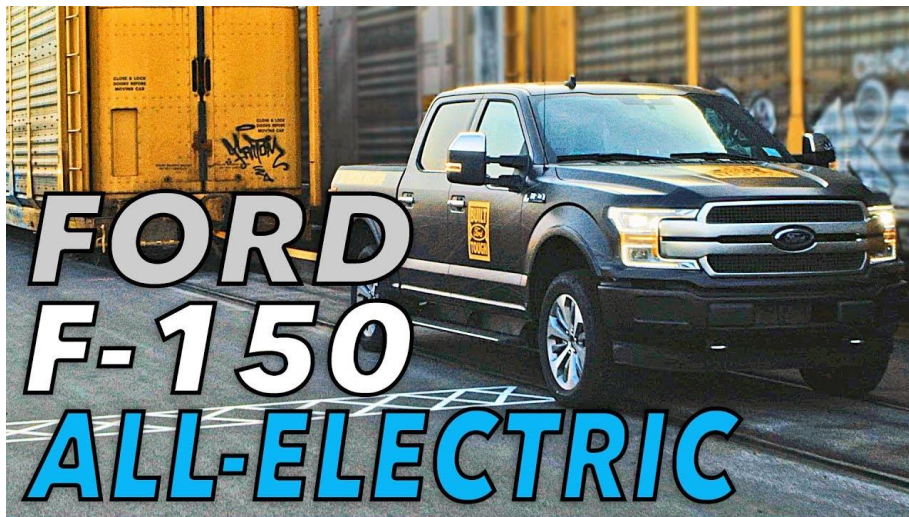
Plant Conversions

Battery Manufacturing Facilities

Charging Infrastructure



Ford plans \$30 billion investment, 40 electrified vehicles by 2025





37+ Vehicles available today
Dozens more coming in 2023



On route ABB pantograph chargers installed by Laketran at a Park-n-Ride location.

First wireless EV-charging road in U.S. to be built near Michigan Central Station

KURT NAGL [Twitter](#) [LinkedIn](#) [Email](#)

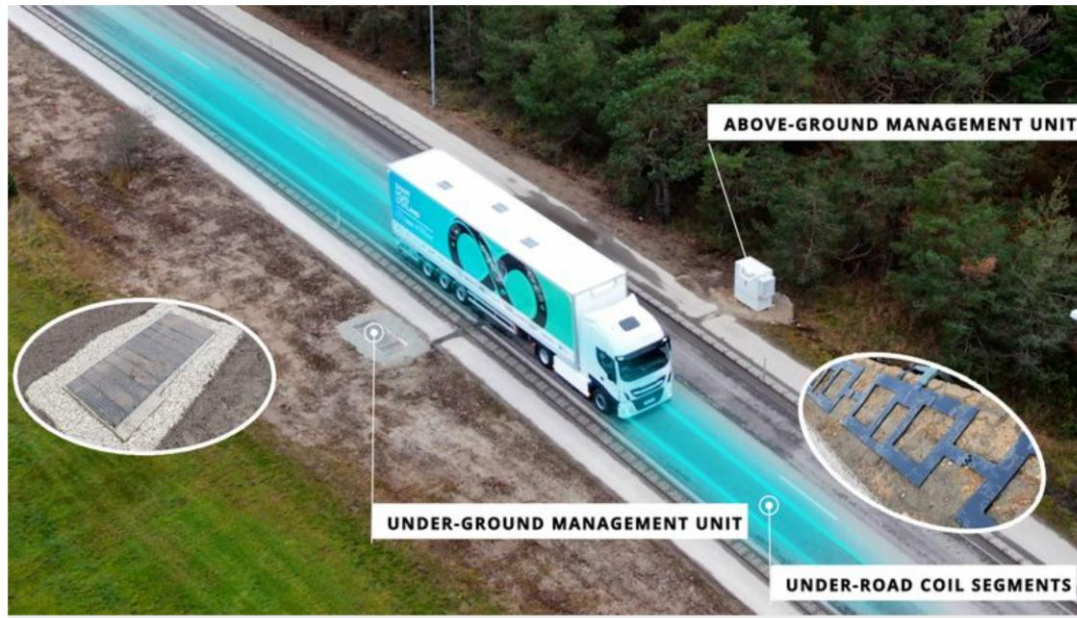
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[REPRINTS](#) [PRINT](#)



ELECTRICAL
CONTRACTOR

Battery technology
powers vehicle

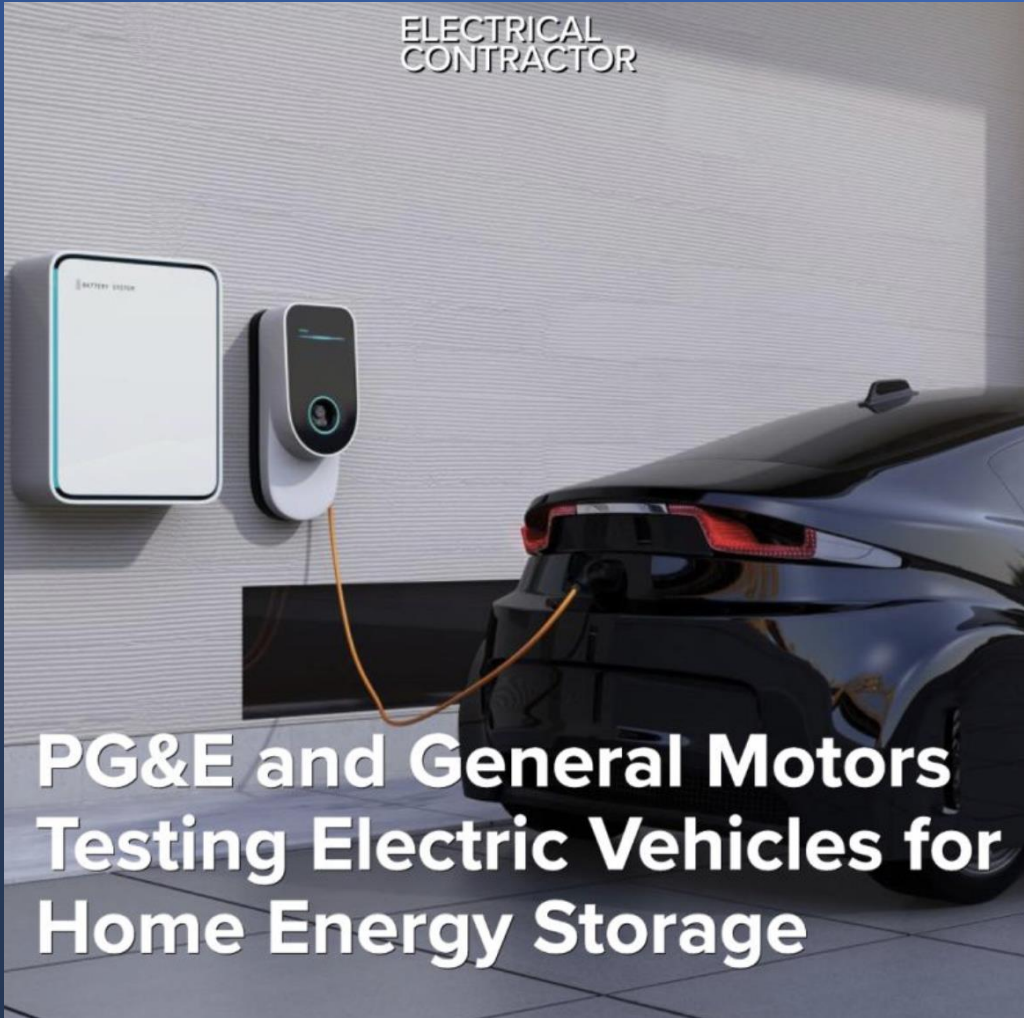
Storage Asset

Deploying Power
Back to the Grid

Or Powering the
Home

Bidirectional
Charging

**PG&E and General Motors
Testing Electric Vehicles for
Home Energy Storage**







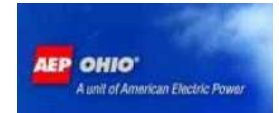


What is the Electric Vehicle Infrastructure Training Program (EVITP)?

A non-profit, volunteer, brand neutral, national EV industry collaborative training program launched at the University of Michigan in 2012. EVITP addresses the technical requirements, safety imperatives, and performance integrity of industry partners and stakeholders including:

- Automobile Manufacturers, and Battery Makers
- Investor-Owned and Municipal Utilities
- Electric Vehicle Supply Equipment/EVSE (“Charging Station”) Manufacturers
- State and Local Electrical Inspectors
- Electrical Contractors and Electrical Workers
- First Responders

EVITP Partner Advisors





EVITP 4.0 Curriculum *(Updated 2020)*

Comprehensive Residential, Commercial, Industrial Charging Infrastructure Training

- Level 2 (220V) Residential Charging
- Commercial / Institutional Level 2 Charging
- DC Fast Charging
- Medium Duty (MD) Commercial / Institutional
- Heavy Duty (MD) Commercial & Industrial
- Site assessment and load calculations (*Core*)
- Maintenance, Troubleshooting and Repair
- Wireless Inductive Energy Transfer



Heavy, Medium, & Light Duty Charging Infrastructure Training

- EVITP curriculum addresses these electric vehicle types and the equipment used in charging them. (Typical voltage levels of equipment)
- **Light-duty and medium-duty Passenger Vehicles**
(120/208/240VAC)
- **Light, medium, and heavy Light-duty Trucks**
(120/208/240/480VAC)
- **Heavy Duty vehicles (480VAC, up to and over 1,000VDC)**



DCFC





How EVITP is Different

Objectives, approach, and content

- Non-proprietary and brand neutral vs. brand focused
- Comprehensive vs. specific
- Electricians often take some training from the brand of equipment they will install. That's helpful.
- EVITP is much more in depth at 20 hours
- Heavy emphasis on code, standards, site assessment and load calculations + demanding 2 hour exam



Conductor Calculation Formulas

$$V_d = \frac{2 * K * I * L}{cm a}$$

$$cm a = \frac{2 * K * I * L}{V_d}$$

$$V_d = \frac{1.732 * K * I * L}{cm a}$$

$$cm a = \frac{1.732 * K * I * L}{V_d}$$

$$V_d \% = \frac{V_d}{V_{source}} * 100$$

- cma = conductor size from Chapter 9, T8
- K = 12.9 for Cu, K = 21.2 for Al
- L = length from supply to load

(One of 6 Pages of Load Calc. Formulas)



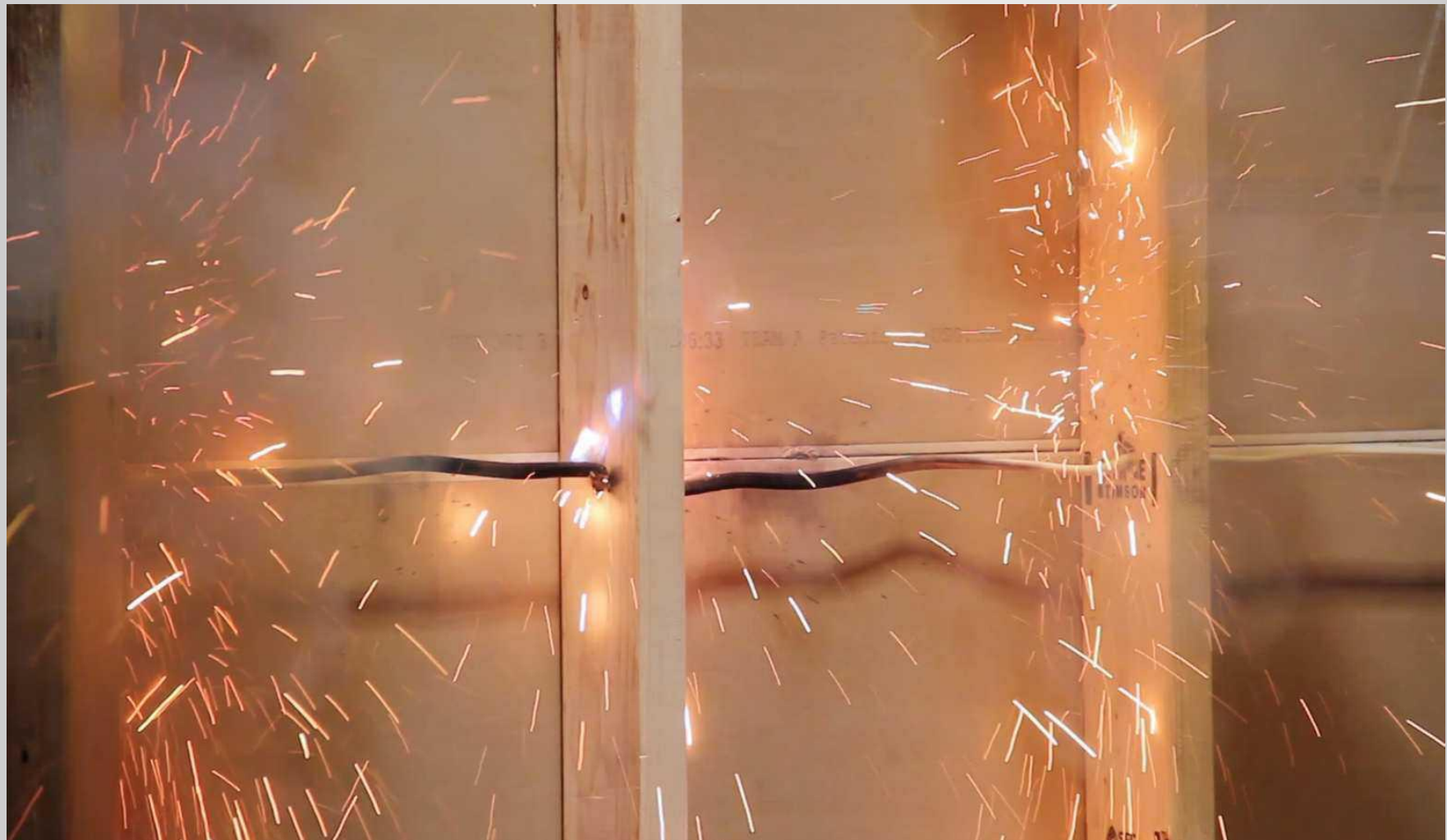
Electric Vehicle
EVITP[™]
Infrastructure Training Program

Safety is not an accident





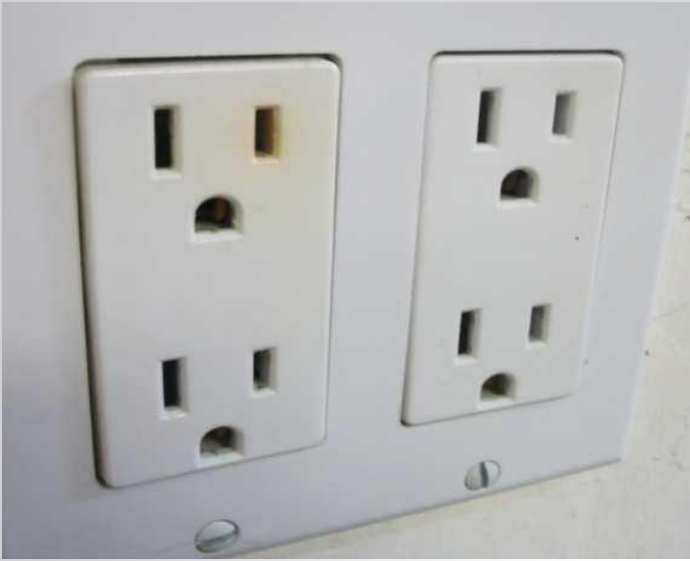
Overloaded Wiring Can Cause ...





Fires







Example: Garage Fire, Connecticut, 2011



Fire Started in Garage Wiring, Not Chevy Volt



Eligibility: Qualified Electricians

Minimum Requirement for EVITP Certification:

- In states or local jurisdictions where required, electricians must be licensed or certified.
- In other states or local jurisdictions, electricians must have completed at least 8,000 hours of documented on-the-job training.

A key to EVITP success is that the training builds on the platform of qualified electricians' extensive knowledge, skills, and experience.



EVITP

Apply for Training:

Choose State:

Submit

www.EVITP.org



EVITP Online Training Information for States with Electrical Licensing

EVITP Training Format: EVITP is now accepting applications for online training. Note: The course is best experienced on a computer/laptop or tablet.

EVITP Certification Exam: The online proctored exam length is approximately 90 minutes. Upon successful completion of the online EVITP Training Course, participants will be scheduled for the next available online proctored exam session.

Eligibility: Electricians must have a State Electrical License and provide their license number. EVITP will verify this information with the State.

Fee: \$275.00 includes online training course, online proctored exam and certification. Payment via credit or debit card through online pay portal once credentials provided have been verified.

To Begin: To apply, please complete and submit the form below. Processing of your application and verification of your credentials may take up to 3-5 business days. Once your credentials are verified, you will receive more information via email for payment and course access.

First Name



<https://evitp.org/>

Electrician Certification Check



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Training

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Contact Us

Certification Check



Training

Comprehensive classroom and hand-ons training for EVSE Installers.

[Learn More](#)





EVITP's Diversity Reflects the Trade

- Outreach and training starts with pre-apprenticeship
- This is where real career opportunities begin
- Prepares candidates for apprenticeship entry and success with math and communication skills
- It's a very different electrical trade





Apprenticeship

- Met Bloomberg scholarship goal: 50% WBIPOC
- 24 U.S. Cities
- Apprentices work on EVITP projects, too





Workforce

U.S. Electric Vehicle Infrastructure Workforce Needs

(6/29/21)

Substantial investments in electric vehicle infrastructure are a tremendous economic engine leading to a growing demand for the highly-skilled electrical construction workforce needed to build a nationwide network of 500,000 charging stations or EVSE.

How many EVITP certified electricians will it take to get the job done?

Scenario A: These calculations are based on the following assumptions:

1. The 500,000 EVSE will be installed in a 3 year / 36 month period
2. 250,000 EVSE will be Level 2
3. 250,000 EVSE will be DC fast chargers
4. Each EVITP certified electrician will work with one apprentice (1:1 ratio)
5. Electrical worker years are comprised of 48 work weeks



Workforce

Multi-family residential and commercial, Level 2: Four person crews will consist of two (2) EVITP certified electricians and two (2) apprentices. Each team of four installs, conservatively, two commercial chargers per week, or 288 in three years. To install 250,000 EVSE in three years, 868 teams will be needed, or 1,736 EVITP certified electricians. (If some crews are two persons, even fewer EVITP electricians will be required to install the 250,000 units.)

Heavy commercial/industrial and DC fast chargers: Four person crews will consist of two (2) EVITP certified electricians and two (2) apprentices. Each team of four installs, conservatively, one charger per week, or 144 in three years. To install 250,000 EVSE in three years, 1,736 teams will be needed, or 3,472 EVITP certified electricians.

**Scenario A: 5,208 EVITP certified electricians will install 500,000 EVSE in three years.
10,416 EVITP certified electricians will install 1,000,000 EVSE in three years.**



Why EVITP?

EV Charging Infrastructure

- Training
- Education
- Safety, Safety, Safety
- Performance and Reliability
- Risk and Liability Reduction & Safety. Reduces Risk First and Foremost for People and Property, also Governments, Financial Institutions, Insurers, and the EV Industry



Community & Workforce Benefits of EVITP

Social and Market Impact of EVITP

- EVITP requirements help create a dedicated, skilled and trained labor force for transportation electrification
- EVITP helps prevent a race to the bottom in the electric vehicle charging station market and supports the formation of high-road careers
- EVITP can provide governments and other socially responsible procurement investors an avenue to prioritize projects utilizing a skilled, trained, and licensed workforce



<https://evitp.org/>



EVITP

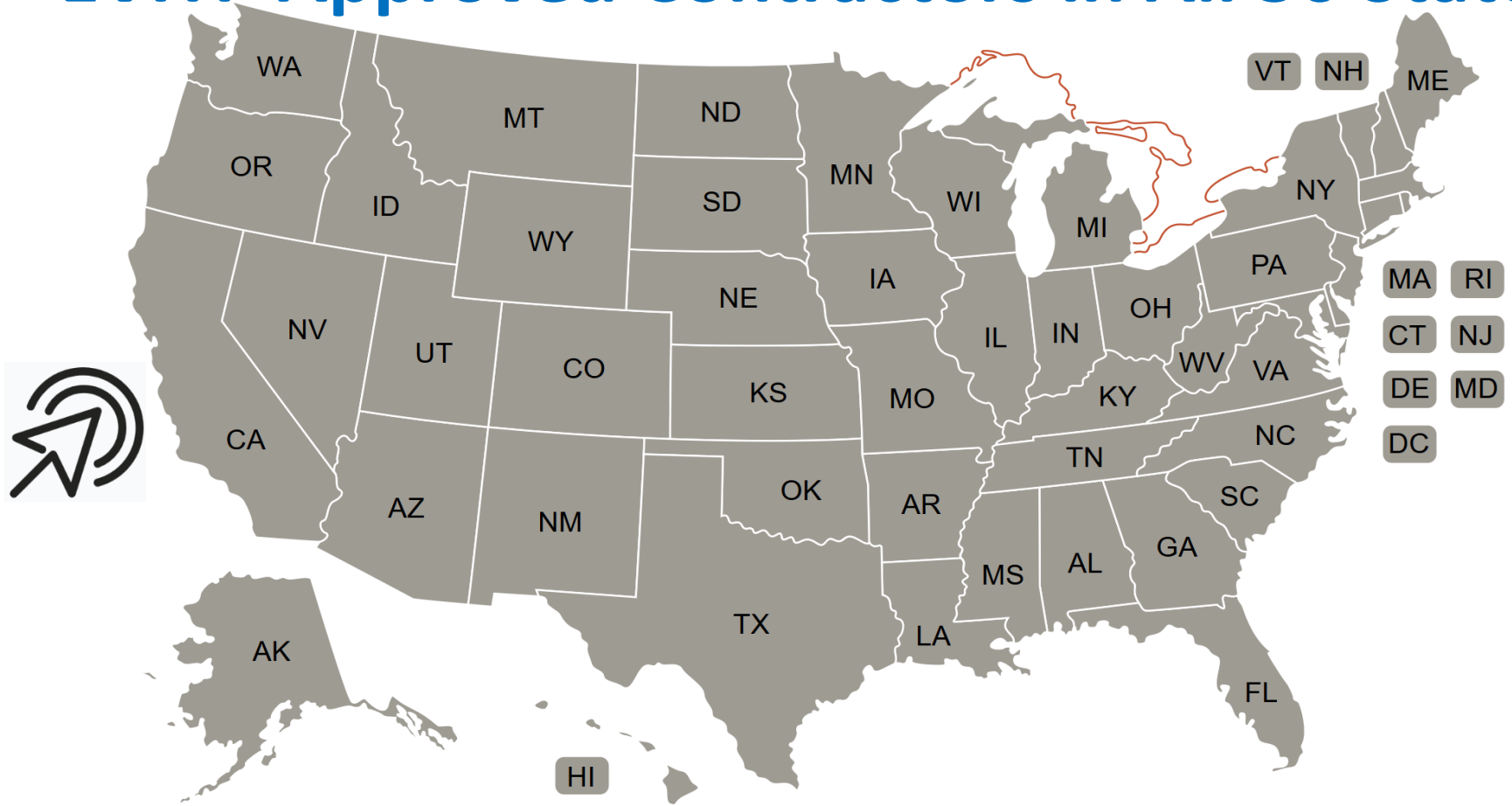


  <https://evitp.org/find-a-contractor/>

Find A Contractor

Find a contractor in your area that utilizes EVITP certified installers for your next Residential, Commercial, Public or Fleet project.

EVITP Approved Contractors in All 50 States



National Electric Vehicle Infrastructure Formula Program

Bipartisan Infrastructure Law



Program Guidance

Federal Highway Administration
February 10, 2022

