Clean Cities and Communities

EV Charging Station Placement For Employers

Wisconsin Clean Cities, Pieper Power, WEC Energy Group and Zef Energy

Introduction:

Fred Schnook
Executive Director

WISCONSIN CLEAN CITIES

Jim Bruette
National Sales Manager

ZEF ENERGY

Brian Lambert
Manager, Customer Programs & Customer Experience Operations

WEC Energy Group

Evan Mansfield
Business Development Manager

PIEPERPOWER

Cynthia Farr
Senior Customer Program Manager

Tom Kennedy
Electrical Design Engineer

AGENDA

Introduction to Electric Vehicle (EV) Infrastructure

1. The Role of Employers in EV Infrastructure
2. Overview of Electric Vehicles (EVs)
3. Understanding EV Charging Stations

Planning for EV Charging Station Installation

1. Site Assessment for EV Charging Stations
2. Power Requirements and Electrical Planning
3. Charging Station Placement and Layout Design

Regulatory and Compliance Requirements

1. Local, State, and Federal Regulations
2. Incentives and Rebates for Employers

Installation and Maintenance of EV Charging Stations

1. Installation Process
2. Charging Station Maintenance
3. Ongoing Support and Troubleshooting

EV Charging Station Operations and Management

1. User Experience and Access Control
2. Monitoring and Data Management

Case Studies and Best Practices

1. Success Stories of EV Charging Implementation
2. Best Practices for Ongoing EV Charging Operations

The Need for Workplace Charging

- EVs and HEV sales and use are growing rapidly.
- In 2024, there were 95k registered in Wisconsin
- In 2019, 10k were registered in Wisconsin
- Workplace charging can help attract and retain a cutting-edge workforce
- Introducing charging stations at the workplace gives employees convenience and productivity.
- It demonstrates leadership in adopting advanced technologies and sustainable practices
- What may be considered an amenity now will eventually be a necessity, as more employees need to charge their vehicles during work hours.

Overview - EV/PHEV Differences

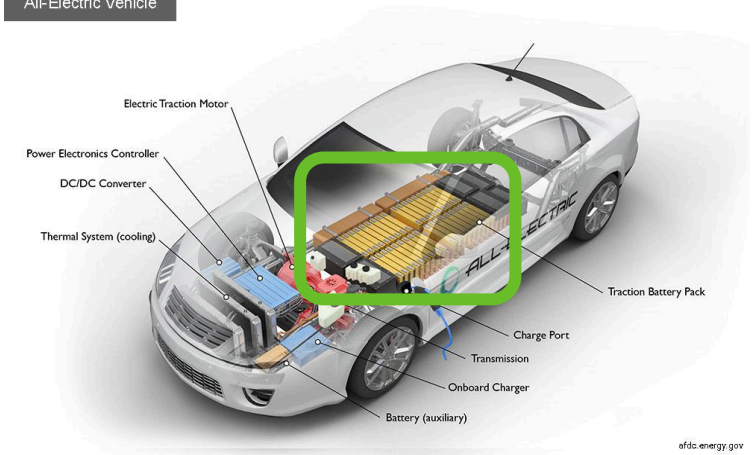
Electric Vehicles (EVs)

- Fully electric
- Battery located underneath

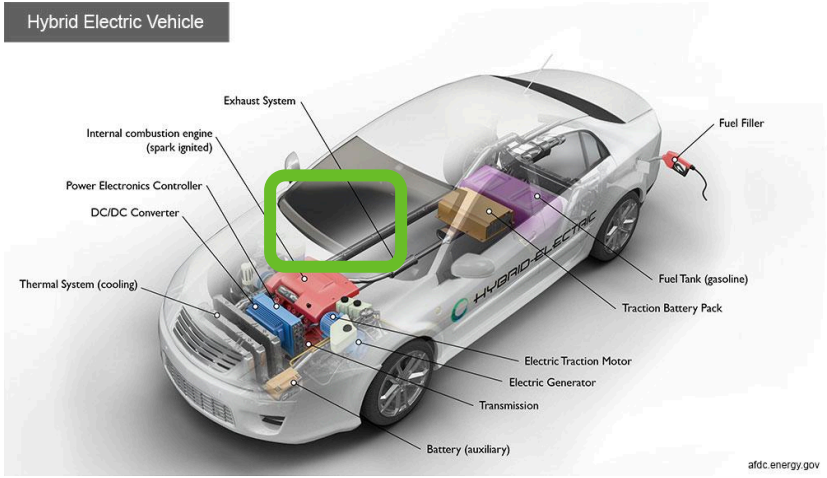
Hybrid Electric Vehicles (HEVs)

- Use both gasoline and electricity
- Battery typically located near the trunk

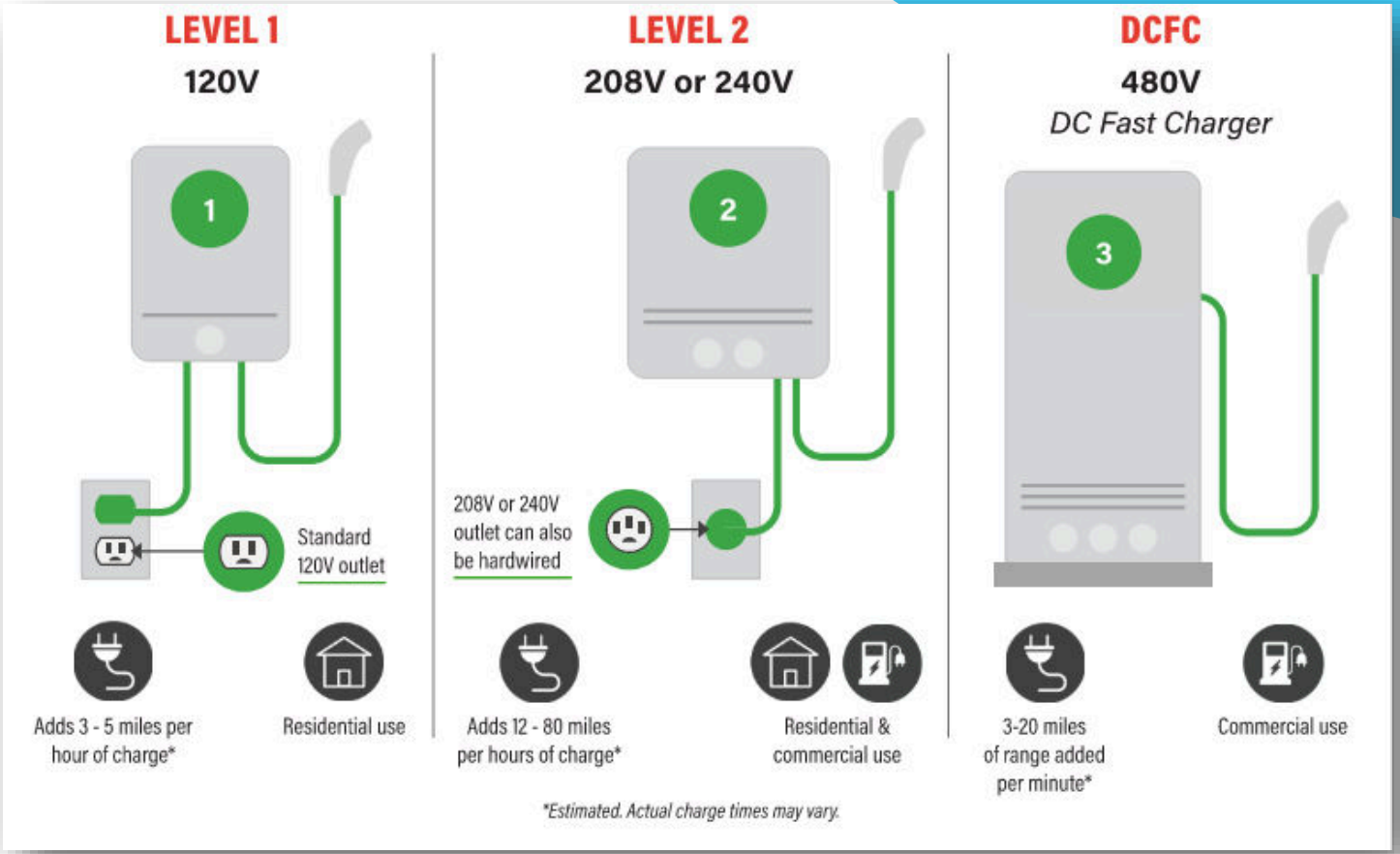
All-Electric Vehicle



Hybrid Electric Vehicle

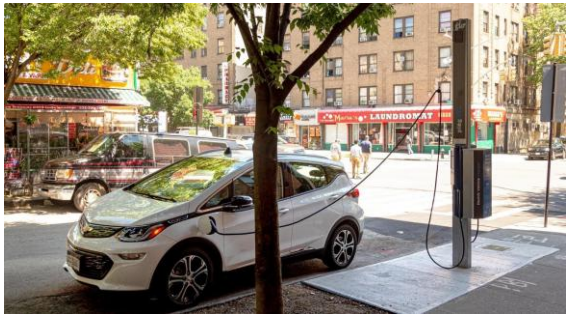


Understanding EV Charging Stations



Where EV Chargers May be Found

- Parking garages
- Personal garages
- Gas stations
- City streets



Module 2: Planning for EV Charging Station Installation

Site Assessment for EV Charging Stations

Planning is key!

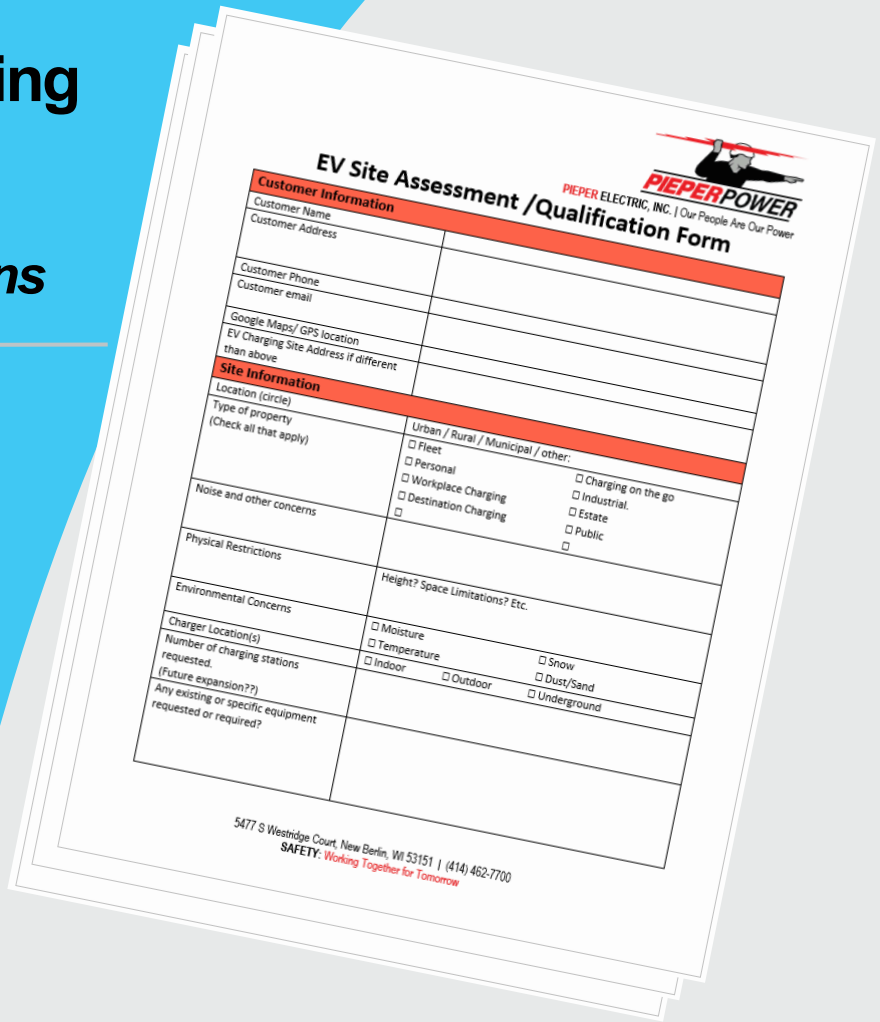
Evaluate existing infrastructure (electrical capacity, parking layout, etc.). Work closely with your utility and your electrical contractor. Walk the building and the parking site to determine the best location for the EV Charging station by balancing installation cost with parking accessibility.

Higher-level coordination can help integrate EV infrastructure into your electrical system and parking system.

Module 2: Planning for EV Charging Station Installation

Site Assessment for EV Charging Stations

Evaluating existing infrastructure (i.e. electrical capacity, parking layout, etc).



EV Site Assessment /Qualification Form

PIEPER ELECTRIC, INC. | Our People Are Our Power

Customer Information	
Customer Name	
Customer Address	
Customer Phone	
Customer email	
Google Maps/ GPS location	
EV Charging Site Address if different than above	
Site Information	
Location (circle)	Urban / Rural / Municipal / other:
Type of property (Check all that apply)	☐ Fleet ☐ Charging on the go ☐ Personal ☐ Industrial. ☐ Workplace Charging ☐ Estate ☐ Destination Charging ☐ Public ☐
Noise and other concerns	
Physical Restrictions	Height? Space Limitations? Etc.
Environmental Concerns	☐ Moisture ☐ Temperature ☐ Snow ☐ Dust/Sand
Charger Location(s)	☐ Indoor ☐ Outdoor ☐ Underground
Number of charging stations requested. (Future expansion??)	
Any existing or specific equipment requested or required?	

5477 S Westridge Court, New Berlin, WI 53151 | (414) 462-7700

SAFETY: Working Together for Tomorrow

Module 2: Planning for EV Charging Station Installation

Site Assessment for EV Charging Stations

Available space and location considerations (Indoors vs. Outdoors) and nighttime safety.

Module 2: Planning for EV Charging Station Installation

Site Assessment for EV Charging Stations

Accessibility for all employees (ADA compliance)

Module 2: Planning for EV Charging Station Installation

Charging Station Placement and Layout Design

- Optimal placement for high usage and accessibility.
- Parking lot design considerations (e.g., number of chargers, parking spaces, etc.)
- Placement of signage and user guidance.

Module 2: Planning for EV Charging Station Installation

Power Requirements and Electrical Planning

Demand management and grid integration.

- Consideration: electric rates and potential charges (demand, on-peak demand)
- In addition to consumption (kWh) controlling high power draw at short intervals can limit these costs by reducing on-peak charging during the day.

Module 2: Planning for EV Charging Station Installation

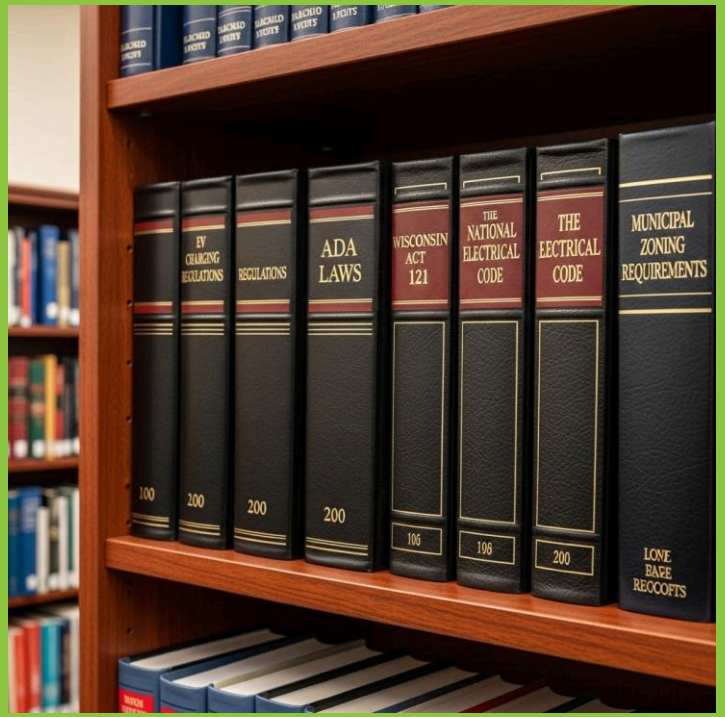
Power Requirements and Electrical Planning

- Contact electric utility during planning phase
  - Provide preliminary site plans, estimated load addition, etc.
  - Discuss if a new service is needed, if existing service should be upgraded, or if existing infrastructure has room for the EV charging load
  - Request information on available incentive programs or new service credits

Module 2: Planning for EV Charging Station Installation

Power Requirements and Electrical Planning

- Understanding the electrical infrastructure of the workplace.
- Electrical panel upgrades, transformer and meters.
- Wiring and conduit installation.
- Utility coordination.



Module 3: Regulatory and Compliance Requirements

Local, State, and Federal Regulations

- Key EV charging station regulations and codes:
- Wisconsin Act 121
- Compliance with the National Electric Code (NEC).
- ADA guidelines for accessible charging.
- Local zoning and permitting requirements.

Module 3: Regulatory and Compliance Requirements

Local, State, and Federal Regulations

EV Charging Tax

- Excise tax of $0.03/kWh
- Taxes required to be filed/paid on EV charging regardless of whether the station owner is billing consumers for electricity used
- Review WI Department of Revenue Website
  - Charging stations must be registered with DOR
  - DOR Electric Vehicle Charging Tax

Module 3: Regulatory and Compliance Requirements

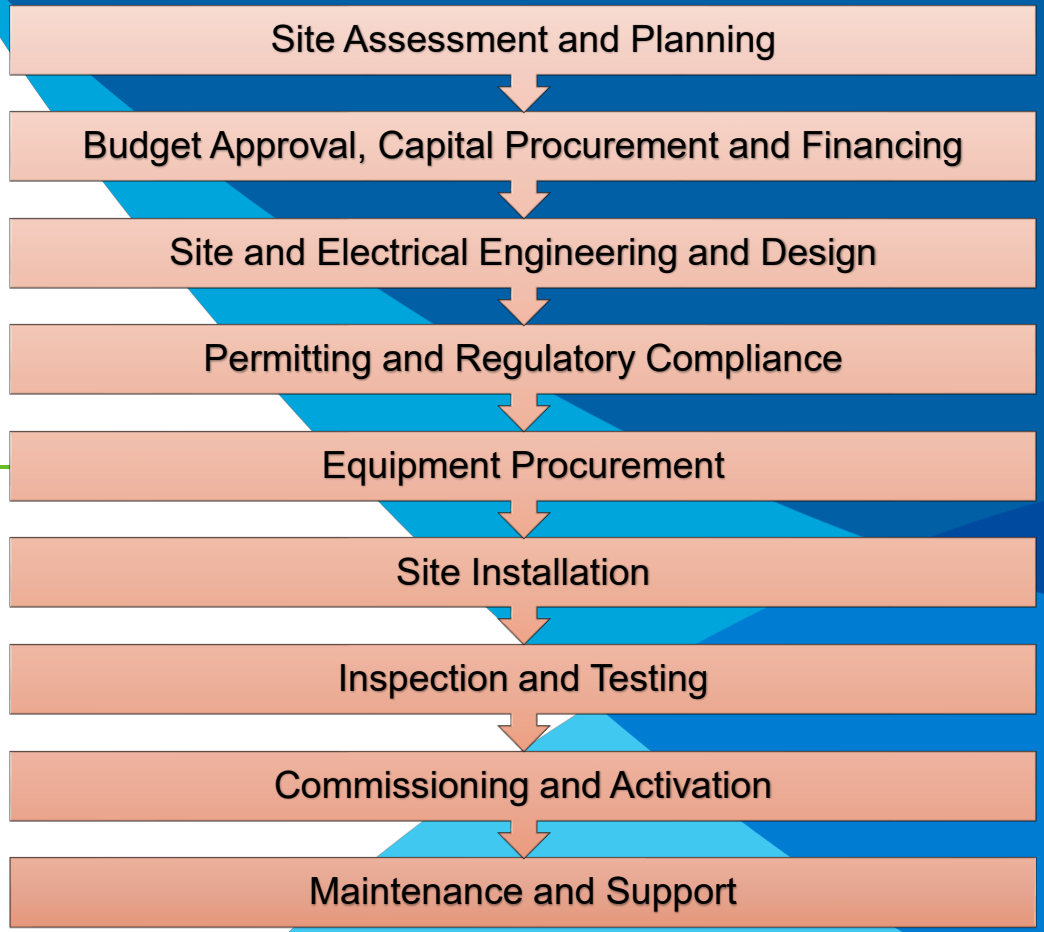
Incentives and Rebates for Employers

Research Utility programs for business owners installing EV chargers

- We Energies and Wisconsin Public Service offer a business EV pilot program
  - Provides credits to help pay for customer costs of utility upgrades as well as possible rebates for customer facility electrical work
  - Application must be submitted in planning phase
  - Business EV Pilot Program | We Energies
  - Business EV Pilot Program | Wisconsin Public Service

Module 4: Installation and Maintenance of EV Charging Stations

Installation Process



Site Assessment and Planning

- **Identify the location**: Ensure accessibility, safety, and proximity to electrical infrastructure.
- **Evaluate power availability**: Assess existing electrical capacity and potential upgrade needs.
- **Select charger type**: Choose between Level 1, Level 2, or DC Fast Charging based on use case.

Budget Approval, Capital Procurement, and Financing

- **Develop a budget and solicit cost estimates**: Include charging equipment, electrical utility costs, electrical infrastructure equipment, installation, permits, network connections, management software and maintenance.
- **Secure funding**: Through internal budgeting, rebates, grants, incentives, or external financing.
- **Procure project approval**: From stakeholders or governing bodies if applicable. Zoning boards and planning commissions may need additional approval for permitted uses of property types.

Site and Electrical Design and Engineering

- **Hire a licensed professional**: Hire qualified people to design the electrical system and layout. Additional civil engineering and architects may need to be consulted depending on how complex the site is.
- **Conduct load analysis**: Ensure the infrastructure can support the new load.
- **Create a plan and process for the installation:** Site excavating, planned electrical outages, traffic interruptions and other elements of installations that may impact facility operations.

Permitting and Regulatory Compliance

- **Check local codes and zoning laws**: Ensure compliance with all regulations.
- **Verify compliance with ADA access, DNR erosion control, Building and Electrical Codes:**
- **Apply for necessary permits**: Electrical, construction, and zoning.
- **Coordinate with utility provider**: Utility designs for upgrades and new services need to be approved and paid for prior to the utility starting construction. Contact the utility for grid impact assessments and metering requirements.

Equipment Procurement

- **Select charging equipment**: Based on power needs, features, and compatibility.
- **Order long lead time items:** Transformers, switchboards, panels and metering are in high demand and some of these items can have very long lead times.
- **Order accessories**: Mounting hardware, signage, cable management, etc.

Installation

- **Coordinate site work:** Create a site work schedule and plan.
- **Prepare the site**: Trenching, excavating for foundations or possible repaving for ADA accommodations .
- **Install underground and site concrete work:** coordinate this work with inspection.
- **Install electrical components**: Wiring, conduit, and other electrical balance of systems components.
- **Coordinate or install network connections**: Cellular, WLAN or Ethernet
- **Mount and connect the EVSE or DC fast charger(s)**: Secure the unit and ensure proper electrical connection.
- **Complete all signage and pavement markings**

Inspection and Testing

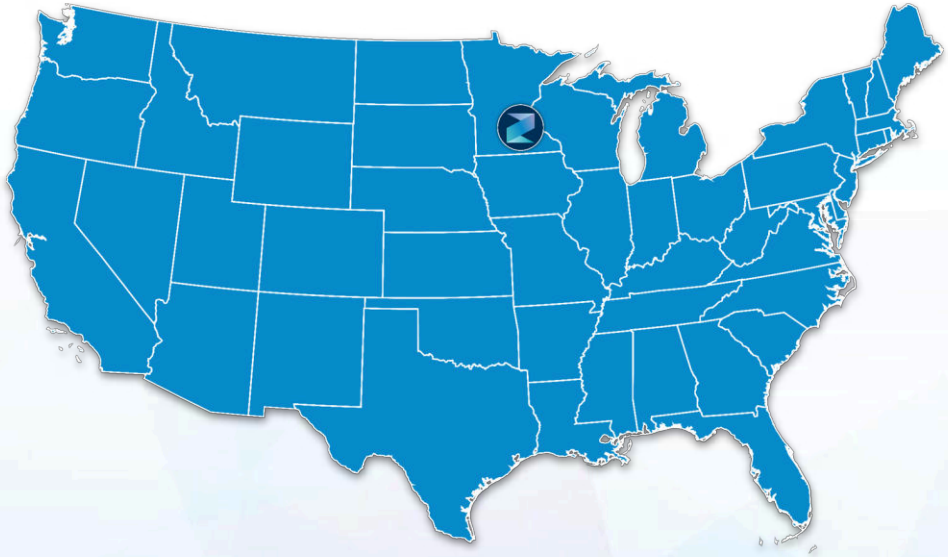
- **Schedule inspections**: With local authorities to verify code compliance with codes and standards.
- **Test the electrical and data systems**: Ensure the charger functions correctly and safely.

Commissioning and Activation

- **Configure software/network**: Set up user access, billing, and monitoring for smart chargers.
- **Provide user training**: If necessary, especially for commercial or fleet use.
- **Fleet integration software**: Uses telematic data from fleet vehicles to plan charging power levels at off peak times and complete charging by shift starting times. This reduces the higher demand charges from utilities if everyone plugs in at the end of the day.

ZEF Experience

Since 2014 | Minneapolis HQ



>> Driven by Quality, Reliability, Support & Customized Solutions

>> Success Built Through Trust and Long Term Partnership

- Employee & Utility Owned
- U.S. Manufacturing & Support
- Nationwide Network of Installation Partners & Developers

160+
Utility and Local Government Customers Nationwide

6,000+
Reported Installations

Charging Station Maintenance and Support

To avoid warranty and safety concerns utilize service technicians who are licensed electricians and have received factory training

Regular Inspections

Inspection and maintenance of charging stations varies by manufacturer. Make sure to refer to the specific manufacturer's recommendations. An example checklist is as follows.

Task	C-Series	C-Station	S-Series	1 yr.	3 yr.	5 yr.	7 yr.	10.000*	15.000**
Do general visual inspection and cleaning	√	√	√	•					
Inspect condition of charging cable and plug		√	√	•					
Clean or replace air filters	√	√		•					
Clean power module(s)	√	√		•					
Clean power distribution module	√	√		•					
Clean control module	√	√		•					
Test functioning of RCD device (unit with AC charging output)		√	√	•					
Inspect tightness of terminal blocks	√	√	√	•					
Replace fans of power module(s)	√	√			•				
Replace fans of power distribution module	√	√			•				
Replace relay of X- satellite***			√			•			
Replace power distribution module	√	√					•		
Replace charging plug		√	√					•	
Replace AC charging socket (unit with AC charging output)		√	√					•	
Replace power module	√	√							•

Common Troubleshooting Issues

Common troubleshooting issues depends on the issue being faced. Of course, power cycling is always the first step, but after that there's a pretty significant divergence.

- Comms issues point to things like interference/antenna placement/Firmware updates
- HMI (Human Machine Interface) screen issues could be connection/Firmware/config based
- Some manufacturers have up to 500 error codes which is why factory training is essential
- Software/firmware issues are automatically rolled out via the network provider and or manufacturer

Service Level Agreements

ZEF ENERGY

Full Service SLA

PM + Warranty Field Labor

- Annual Preventative Maintenance (PM)
- 48 Hour onsite response Monday - Friday (technician on-site within 48 hours)
- All field labor/time in transit and dispatch costs for warranty repairs
- Priority ticket escalation for reported issues (first in queue for service dispatch)
- Remote monitoring

PM Only SLA

Annual on-site PM

- Annual Preventative Maintenance (PM)
- Remote Monitoring
- Onsite labor for troubleshooting and repairs billed at current labor rate

ZEF ENERGY

What happens if my charger stops working?

Charger Error

ZEFNET™ Detected

Service Ticket Sent

Service Pro Dispatched

Module 5: EV Charging Station Operations and Management

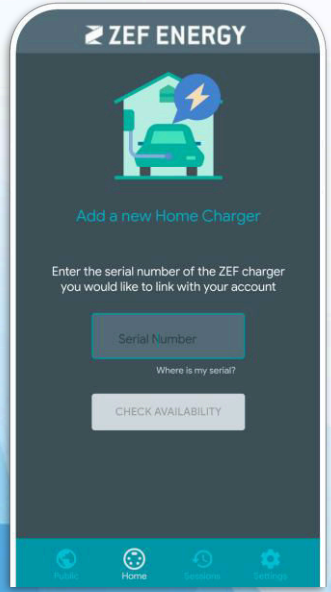
User Experience and Access Control

- Setting up a payment system (if applicable).
- EV Charging Station Operations and Management
- Payments Options may include: Network App, Credit Card, Google/Apple Pay, & RFID

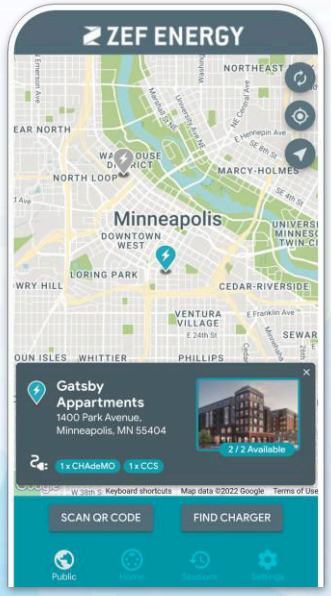
ZEF ENERGY

ZEFNET™ Driver App

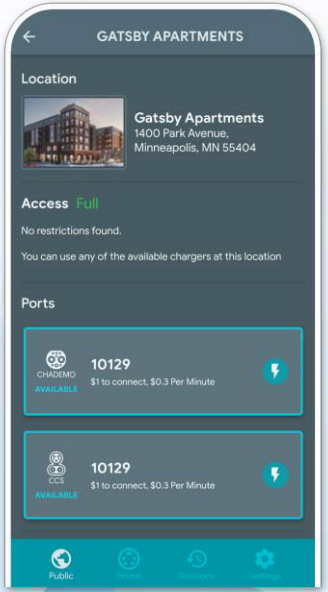
Add a Charger



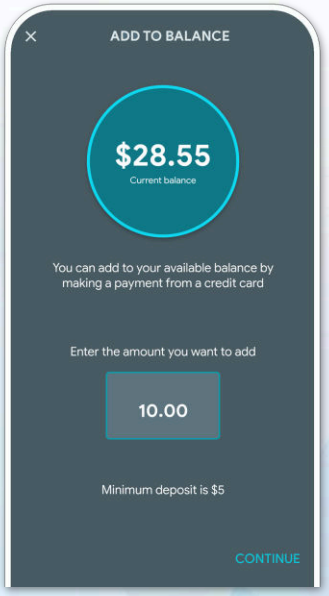
Find a Charger



Access a Charger



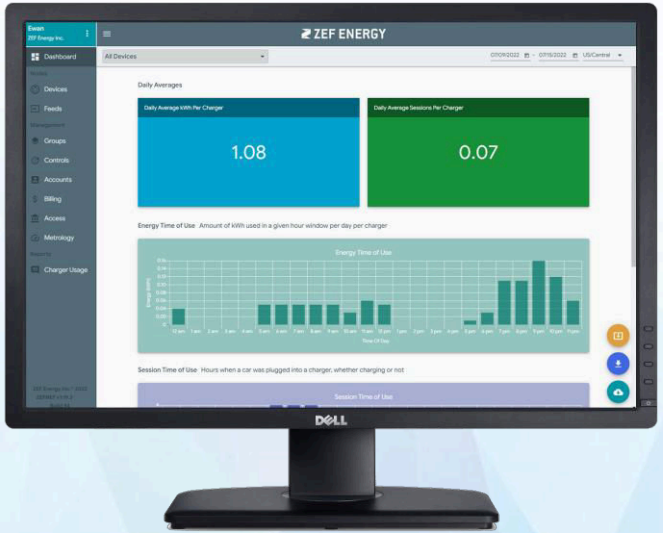
Add a Payment



Charging Status

ZEFNET™ Software

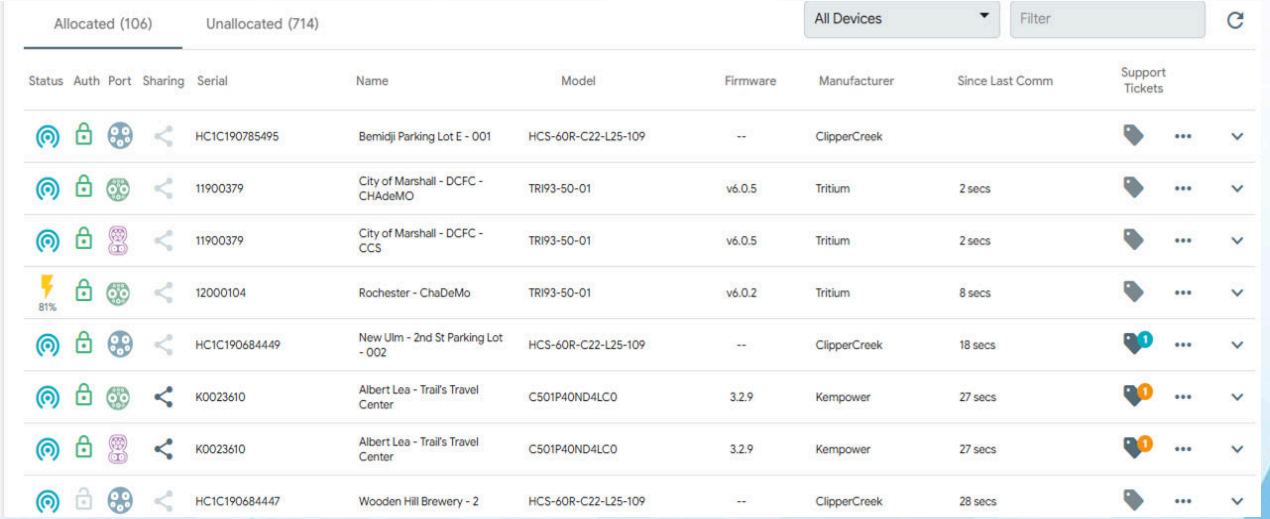
- Asset Management
  - Submit Service Tickets
  - Instant Quote Generation
- Power Management / Power Sharing
  - Plan for future installations
  - Maximize the # of Plugs
- Dynamic Charging
  - Share breakers with existing infrastructure
  - Chargers automatically adjust output levels
- Billing Profiles
  - Match with utility schedule to cover costs
  - Flexible pay structure (per kwh, hr, flat fee)
- Driver Grouping
  - Set exclusive permissions for different users
  - Provide as amenity or pay for use



ZEFNET™ Software - Asset Management

ZEF ENERGY

- Real-time Activity and Status Reports
  - View connectivity across all chargers and by the individual plug
- Service Ticket Submission Transparency
  - Submit requests and track the process at every stage
- Instant Quote Generation
  - Place spare parts order in minutes



Module 6: Case Studies and Best Practices

Success Stories of EV Charging Implementation

Case studies of businesses that have successfully integrated EV charging stations.

- Hollywood Woodwork
- Posty Cards
- Mom's Organic Market

Project at a Glance

Hollywood Woodwork: Cans for Kilowatts pays for six new charging stations

Mom's Organic Market: Green Benefits program supports employee charging with subsidies for PEVs and access to workplace charging

Posty Cards: Partnership with Kansas City Power and Light leads to six new chargers

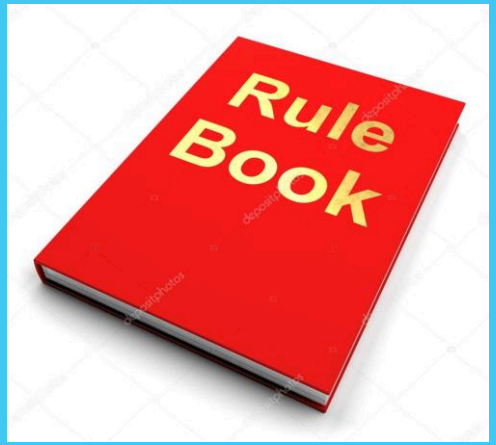
Module 6: Case Studies and Best Practices

Success Stories of EV Charging Implementation

Key learnings from their experiences.

- Survey and engage your staff
- Gather data
- Coordinate with others (utility, contractors)
- Research and Plan prior to installation
- Assign a “go to” person for charging problems

Module 6: Case Studies and Best Practices



Best Practices for Ongoing EV Charging Operations

Policies for workplace charging. An Employee EV Charging policy should outline rules, procedures, and etiquette for using workplace charging stations. This includes information on access, time limits, charging etiquette, and potential fees. A comprehensive guide also covers safety precautions, maintenance, and how to report any issues with the charging stations.

Clean Cities and Communities

WEC Energy Group

WISCONSIN CLEAN CITIES
Established 1994

Thank you for coming!

ZEF ENERGY

PIEPERPOWER

fschnook@wicleancities.org

jim.bruette@zefenergy.com

evan.mansfield@pieperpower.com

tom.kennedy@pieperpower.com

brian.lambert@wecenergygroup.com

cynthia.farr@wecenergygroup.com