

Best Practices for Deploying Electric Vehicle (EV) Charging Stations at Commercial Buildings

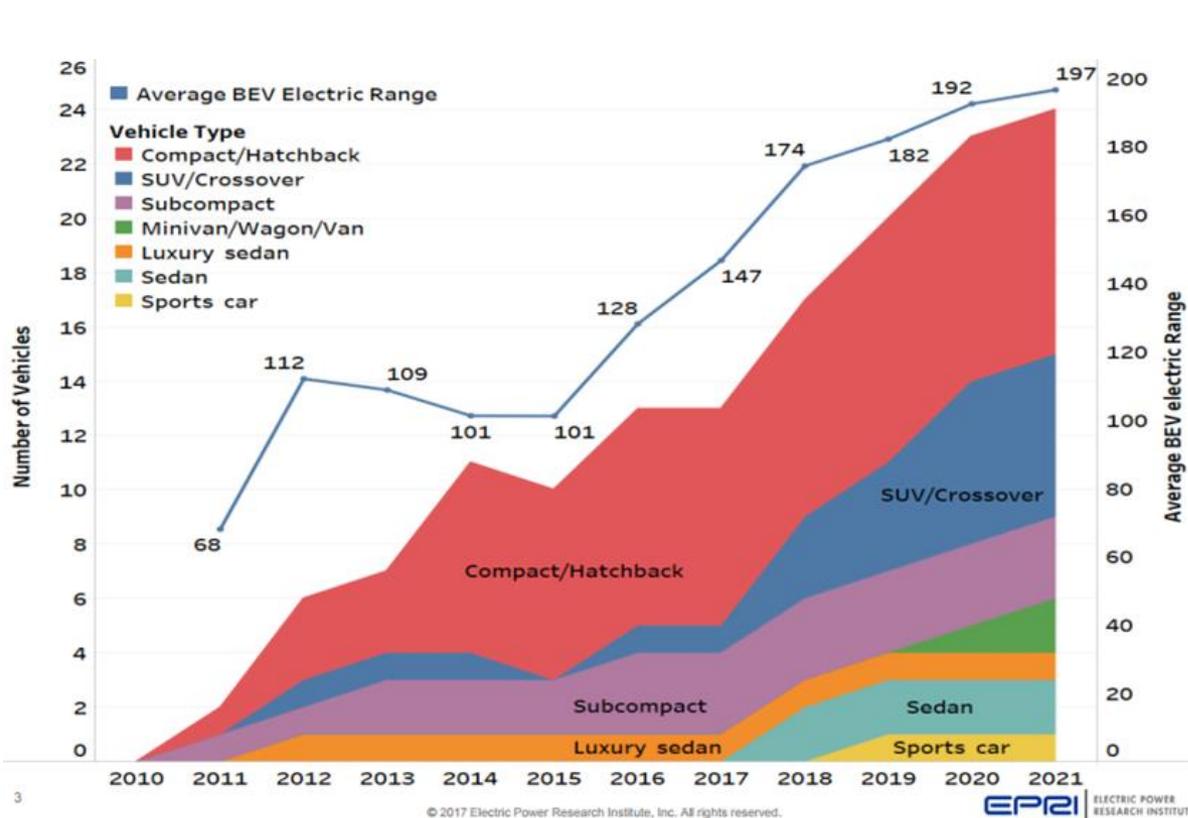
Peter Banwell, *U.S. EPA*

Gustavo Collantes, Ph.D., *ICF*

Pamela McKay, *Verizon Wireless*



Electric Vehicle Market Overview



680,000

Electric vehicles sold in the U.S since 2010

45,000

Non-residential charging outlets

4,400

Workplace charging outlets—and growing!

Source: EPRI

Source: U.S Department of Energy



ENERGY STAR Version 1.0 EVSE Specification Overview

- Version 1.0 published on December 27, 2016
- In scope,
 - Level 1 AC
 - Level 2 AC

Criteria for:

- No Vehicle Mode,
- Partial On Mode,
- Idle Mode, and
- Optional Connected Functionality

Version 1.0

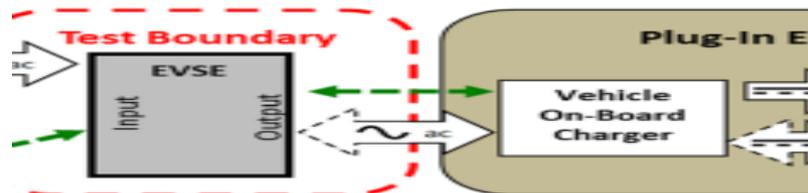
ENERGY STAR product specification for Electric Vehicle Supply Equipment (EVSE) that identifies the criteria it must meet to earn the ENERGY STAR label.

Equipment (EVSE): The conductors, including the charging conductors, the electric vehicle connectors, outlets, or apparatuses installed specifically for the charging of the electric vehicle. Charging cords and cables are considered EVSEs. Excludes conductors, cables, and connectors that are not specifically installed for the charging of the electric vehicle.

Level 1 EVSE: A non-galvanically-connected EVSE with a single-phase input voltage and an output current less than or equal to 16 amperes ac.²

Level 2 EVSE: A non-galvanically-connected EVSE with a single-phase input voltage and an output current less than or equal to 80 amperes ac, or a galvanically-connected EVSE that includes an off-board charger with an output current less than or equal to 80 amperes dc.

Galvanically-connected EVSE: A non-galvanically-connected EVSE.



Overall Plug-In Vehicle Charging System Detail

Providing current to a connected load.

Function: Function that enables, supplements or enhances the primary function of the EVSE.

Secondary Functions are: Functions that are not required for the primary function of the EVSE (e.g., ground fault protection, missing ground detection).

Compliance: The EVSE must be consistent with the requirements in SAE J1772.

Requirements for Electric Vehicle Supply Equipment – Eligibility Criteria

Key Features

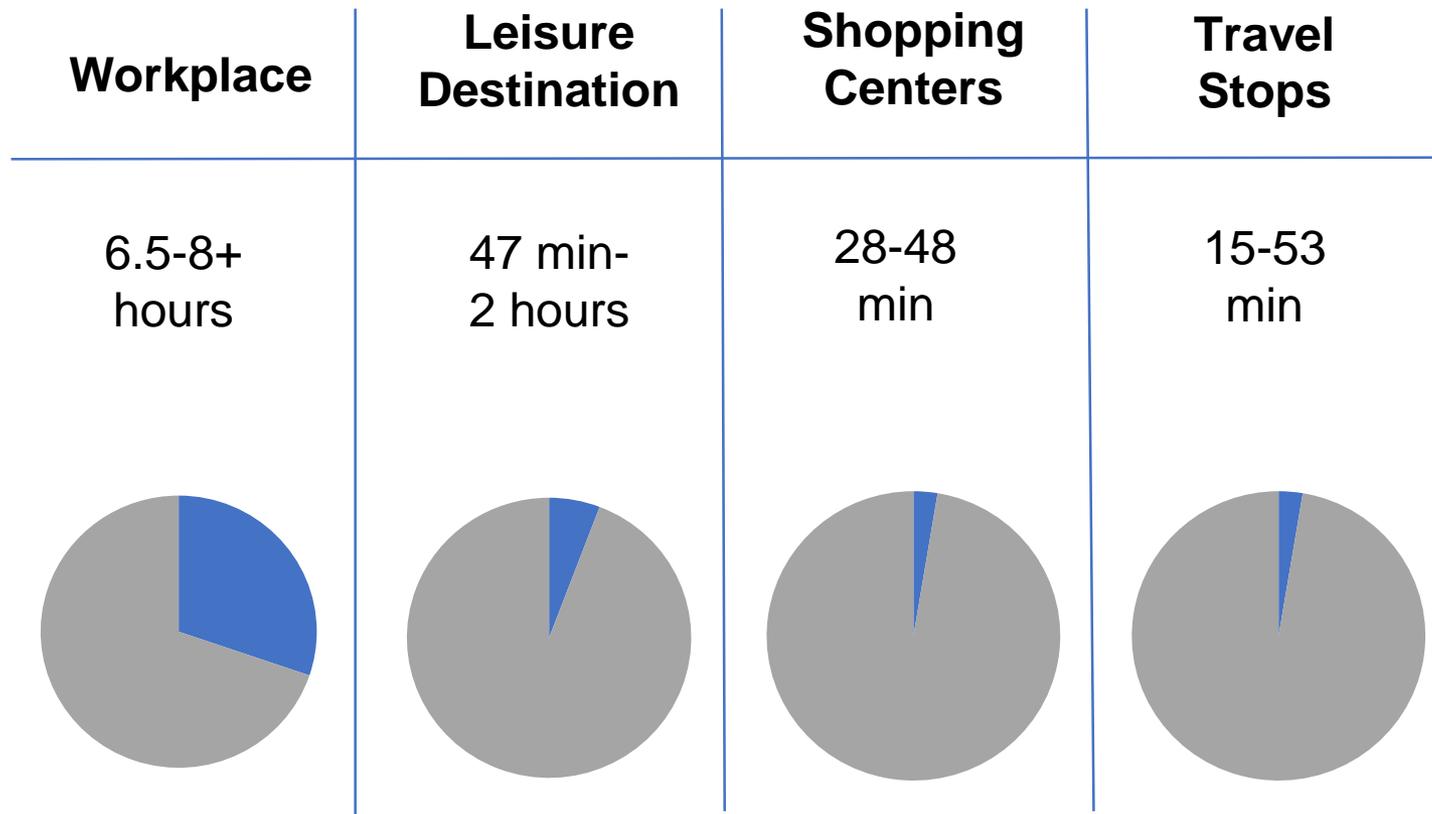
1. Energy Savings
2. Safety
3. Open Communications

Communications details:

- Grid Communications
- Open Access
- Consumer Override



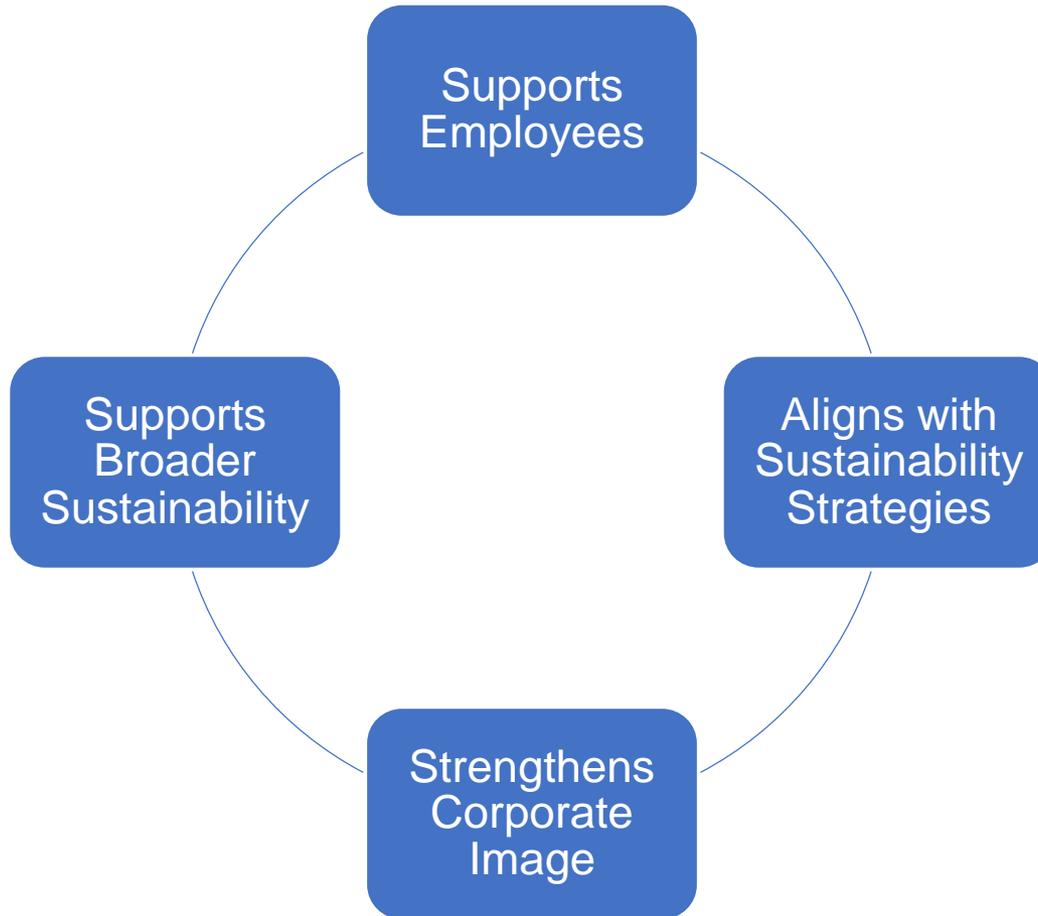
A Day in the Life of an Average Car



Source: U.S Department of Energy



The Value of Workplace Charging



Workplace Charging and Employees



Peer Effect



Current EV Drivers

- Increased range confidence
- Increased electric vehicle miles traveled

Potential EV Drivers

- Increased EV awareness and education



Getting Started!

Select site

- To turnkey or not to turnkey?
- Role of your building manager?

...ing it operational?

• Adopt a usage protocol

- Important
- Building code state
- Consult with your
- Visibility? Encouragement

• Sol

- Site preparation
- Permitting & inspection
- May contact utility
- PR opportunity

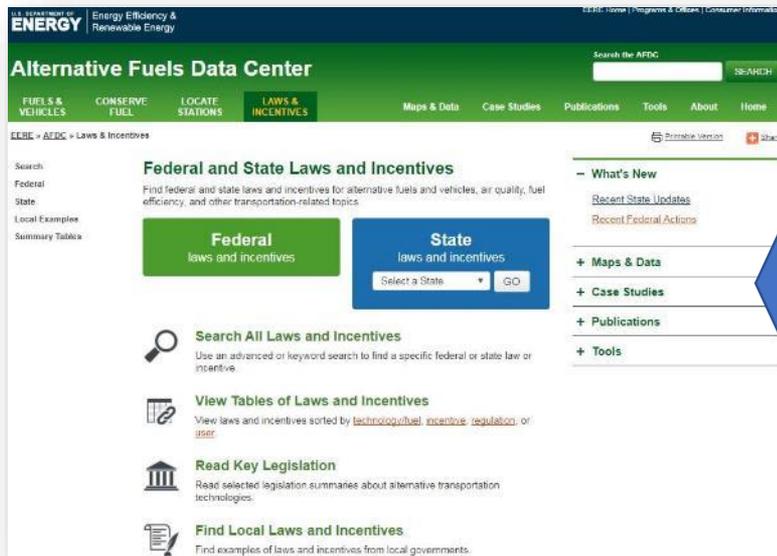
... benefits does your local utility offer?

... install it?

Do your research!

Getting Started: Incentives

Over 50 different charging station financial incentives in the U.S.!



Helpful Resource

The Alternative Fuels Data Center

Laws & Incentives database

afdc.energy.gov/laws

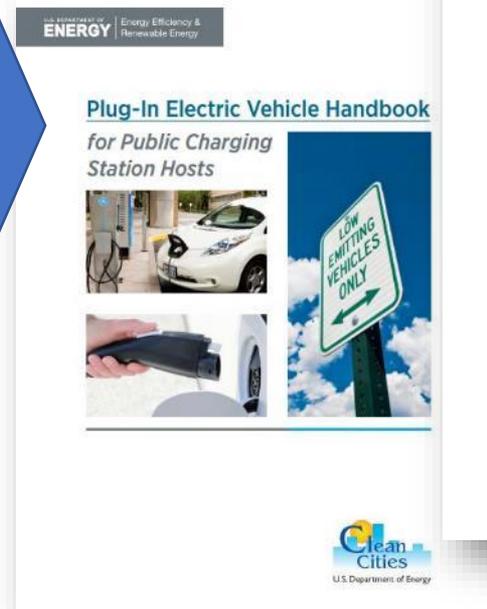


Getting Started: Technical Resources

Helpful Reference

Clean Cities PEV Handbooks

afdc.energy.gov/publications



More Information

AFDC

www.afdc.energy.gov



The screenshot shows the AFDC website interface. The header includes the U.S. Department of Energy logo and navigation links. The main content area is titled 'Alternative Fuels Data Center' and features a search bar. The left sidebar contains navigation menus for 'Electricity Basics', 'Benefits & Considerations', 'Stations', 'Locations', 'Infrastructure Development', 'Vehicles', and 'Laws & Incentives'. The main content area displays the article 'Workplace Charging for Plug-In Electric Vehicles', which discusses the benefits of workplace charging and provides links to related resources such as the 'Clean Cities Plug-In Electric Vehicle Handbook for Workplace Charging Hosts' and 'Clean Cities Workplace Charging Toolkit'. A right sidebar offers additional resources like 'Maps & Data', 'Case Studies', and 'Publications'.

AFDC's Workplace Charging for Plug-In Electric Vehicles

www.afdc.energy.gov/fuels/electricity_charging_workplace.html

AFDC Case Studies

www.afdc.energy.gov/case

Clean Cities

www.cleancities.energy.gov

Thank you!

For more information on the specification or to see the products that qualify, go to: energystar.gov/products/other/evse

Please see the contact information below for questions on:

- DOE's Alternative Fuels Data Center (AFDC) resources and general questions, contact technicalresponse@icf.com
- The ENERGY STAR Buildings program, contact www.energystar.gov/buildingshelp
- The ENERGY STAR-certified EV Chargers, contact Peter Banwell (Banwell.Peter@epa.gov), Gustavo Collantes (Gustavo.Collantes@icf.com), or Emmy Feldman (Emmy.Feldman@icf.com)





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