ENERGY STAR Certified Electric Vehicle Charging Stations

Energy Efficiency Program Sponsors Webinar

Peter Banwell, U.S. EPA

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Agenda

- Why Electric Vehicles
- Electric Vehicle Market Indicators
- What are the Energy Efficiency Opportunities
- What is the ENERGY STAR Specification Today
- What is Next for the ENERGY STAR Specification
- How can EEPS Benefit and Get Involved
- **Partner Highlight:** EVBox
Why Electric Vehicles

Atmospheric CO₂ continues to climb

Transportation is now the largest GHG source in the U.S.

Source: NOAA

Electric Vehicle Market Indicators

Participant Question
Q: Approximately how many plug-in passenger vehicles are on the road in the United States today?
   A. 250,000
   B. 500,000
   C. 855,000
   D. 1,000,000
Electric Vehicle Market Indicators

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Electric Vehicle Market Indicators

Top States by EV Sales

Top States by EV Market Share

Source: Auto Alliance, Advanced Technology Vehicle Sales Dashboard, accessed 8/1/2018
Electric Vehicle Market Indicators

Plug-in hybrid-electric vehicle  Battery-electric vehicle

Global electric-vehicle sales, 2010–17, thousands, CAGR

Source: McKinsey, “The global electric-vehicle market is amped up and on the rise,” May 2018
Electric Vehicle Market Indicators

The 4 stages of a disruptive trend—focus on electric-vehicle market adoption

Source: Chris Bradley, Martin Hirt, and Sven Smit, *Strategy Beyond the Hockey Stick*, McKinsey, 2018

Source: McKinsey, “The global electric-vehicle market is amped up and on the rise,” May 2018
Electric Vehicle Market Indicators

EEI and IEI say 7 million EVs on the road by 2025…

…and 5 million charge ports needed to support them.

Source: EEI and IEI, Plug-in Electric Vehicle Sales Forecast Through 2025 and the Charging Infrastructure Required, June 2017
The Utility Risks of Waiting to Take Control of the Load

Source: California Energy Commission and NREL, California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025, March 2018
What are the Efficiency Opportunities in AC Charging

- Level 2 EV chargers are 98%+ efficient during steady state charge

What are the Efficiency Opportunities in AC Charging

![Diagram showing different power models with various allowances and no vehicle mode power.]

- Base Allowance
- Wi-Fi Allowance
- Cellular Allowance
- High-Res Display Allowance
- No Vehicle Mode Power
What is the ENERGY STAR Specification Today

Key Features:
1. Energy Savings, 40% in Standby Modes
2. Safety
3. Open Communications

Communications Details:
• Grid Communications
• Open Access
• Consumer Override

Photo by: Dennis Schroeder, NREL 39251
Which EV Chargers are Qualified Products

See the latest:
www.energystar.gov/productfinder/product/certified-evse/results

16 products
What is Next for the ENERGY STAR Specification

Efficiency Opportunity:
• Active Charging % Efficiency
• Minimizing heating and cooling
• Standby Losses – display, lighting, network
How Can EEPS Benefit

• **Save Energy**
  – incentivize consumer ENERGY STAR purchases
  – procure ENERGY STAR EV chargers (e.g., workplace charging)

• **Inform Program Developments**
  – Version 1.1 stakeholder process

• **Educate Consumers**
  – energy efficient product options
  – EV-related best practices
How Can EEPS Benefit

• **Leverage Resources**
  – [www.energystar.gov/products/other/evse](http://www.energystar.gov/products/other/evse)
    • buying guidance, links to tools, incentives search
    • best practices for home builders, building managers (*coming soon*)

• **Learn from Others**
  – incentive program elements
    • *Example: Indiana Michigan Power*
  – electricity rate design
    • *Example: Tucson Electric Power*
Partner Highlight: EVBox
Meet EVBox
EVBox in North America

- North America HQ New York
- North America SF Office
- North America LA Office

- +60K charging points worldwide
- +45 Countries equipped
- +36M kWh charged in 2017
- +35 Distribution partners in North America
Our charging solutions
Our portfolio
Modular, smart & future-proof.

NETWORK SERVICES

NA CHARGING STATIONS FOR HOME AND BUSINESS

INSTALLATION & MAINTENANCE PUBLIC CHARGING & OCPP

CHARGING MANAGEMENT

CHARGING STATIONS

E-MOBILITY SERVICES
BusinessLine

- Up to 7.4kW
- Wall or pole mount
- 1 or 2 ports
- 3G
- Fixed cable
- Smart Charging
- RFID reader
- Open Charge Point Protocol (OCPP)
- NEMA 3R rated

32A /7.4kW output / OCPP 1.2-1.5-1.6 compliant, Open ADR-enabled
What is OCPP?
and why you should care

• The Open Charge Point Protocol (OCPP) is an open application protocol which allows EV charging stations and central management systems from different vendors to communicate with each other.

• Charging station owners, or hosts, are less vulnerable to vendor lock-in. This allows you to choose the network option that works best for you.

• **OCPP makes sure that you can switch between hardware and software providers without your investment becoming obsolete.**

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**You’re flexible**

• Choose between any hardware and software provider

**You’re in charge**

• Switch between service providers at any time

**You’re smart**

• Competition between service providers drives down prices while promoting innovation
Smart Charging

EVBox Smart Charging services optimize our charging stations by creating and distributing the available power in an energy-efficient and flexible manner.

Our Smart Charging services include many top technologies such as Load Balancing, Smart Queue, and Hub / Satellite.
Full future product family
Pacific Gas and Electric (PG&E) released an EVSE incentive program called the EV Charge Network in 2017, and EVBox was selected to provide 2760 EVSEs for the program in which the utility retains ownership of the stations.

A few reasons why:

• Years of experience working with utilities
• Hardware approved for major utility programs
• Hardware is open standard
• Smart Charging features = Low operational cost
• Open ADR compliant
• Strong financial backing (acquired by Engie)
• Feature rich product at a mid-market price
EVBox and ENERGY STAR®

• What ENERGY STAR® means to end users
  • Proven efficiency standard – educated purchase
  • Use available energy responsibly – saves money
  • Enhance brand image – bolsters public perception

• What ENERGY STAR® means to EVBox
  • Recognized as energy efficient – brand alignment
  • Improves image as a sustainable partner – competitive advantage
  • Widely recognized product certification – builds customer trust
Acronyms

- **BEV**: Battery Electric Vehicle
- **EV**: Electric Vehicle
- **EVSE**: Electric Vehicle Supply Equipment
- **EVCS**: Electric Vehicle Charging Station
- **ICE**: Internal Combustion Engine
- **kWh**: Kilowatt-Hour
- **PEV**: Plug-in Electric Vehicle
- **PHEV**: Plug-in Hybrid Electric Vehicle
- **Port**: Plug
- **ZEV**: Zero-Emission Vehicle
- **OCPP**: Open Charge Point Protocol
- **ADR**: Automated Demand Response
Contact EVBox

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Drive electric, charge everywhere.
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 information and contacts below for:

- ENERGY STAR-certified EV chargers, contact Peter Banwell (Banwell.Peter@epa.gov, 202-343-9408)
- EVBox, contact Megha Lakhchura (megha.lakhchaura@ev-box.com, 310-309-7775)