EV Infrastructure Needs

Clean Fuels Outlet Workshop Craig Childers May 26, 2010

EV Infrastructure Needs

Time-frame dependant:

- Near term focus:
 - Eliminate barriers to home charging station installations
 - Encourage deployment of workplace charging stations

Long term:

- Finalize DC fast charging connection standard
- Develop vehicle/station- grid communication standards

EV Infrastructure Challenges

- Home charging stations:
 - Reduce consumer cost (can be ~\$2-3k)
 - Reduce time necessary to have home charge station installed
 - Retain consumer options
- Counter mis-information/ Educate consumers:
 - Basic charge station is a "smart outlet", and any SAE compliant station will work with any CA ZEV Program EV

EV Infrastructure Connection Standards: Past Experience

- At one time, there were 5 incompatible EV charging connection types!
- This was reduced to 2 basic types:
 - "Inductive" (paddle)
 - "Conductive" (SAE J1772, formerly with Avcon connector)
- ARB ZEV regulation now requires onboard charger and SAE J1772compliant inlet

EV Infrastructure Connection Standard: Present

- Latest version of SAE J1772 adopted on January 14, 2010
- Either 120 VAC (16 A peak) or 240 VAC (80 A max, usually 16-32A)
- Use of this connector is required in California for an automaker to earn ZEV credit



EV Infrastructure Connection Standards: Future

- SAE currently developing high power DC charging connection standard
- Several demonstration programs already underway
 - ...these are using
 JARI (Japan Auto
 Research Institute)
 connection standard



EV Infrastructure Connection Standards: Future

- Communications protocol
 - SAE J2836/ J2847
 - Not needed for near term "basic" charging, but critically needed to enable future "smart charging" option.

Current EV Deployments

- Legacy '90's EVs
- BMW: Mini-e program
- Tesla: Roadster >
- Mitsubishi: iMiev



Coming Soon: "The EV Project"

- Largest deployment of EV charge infrastructure in history
- Approximately 5,000 Nissan Leaf EVs
- 5 States/ 13 Cities, Including San Diego, CA
- Project Lead: ECOtality
 - 10,950 Level 2 (220V) Stations
 - 260 Level 3 Fast-Chargers
- DOE funding: \$98M



DOE: EV Project

- Objective: collect and analyze data to characterize EV use in diverse conditions,
 - evaluate the effectiveness of
 - charge infrastructure,
 - conduct trials of various revenue systems for public charging (including fast charging)



Current California E-Infrastructure Activity

- PUC (CA Public Utility Commission)
 - Rulemaking to consider AFV tariffs, infrastructure, and policies
- CEC (CA Energy Commission)
 - Administration of AB-118 funds
- ARB
 - Looking at including charging in Clean Fuels Outlet regulation
 - ZEV Regulation will be updated to reference the latest SAE connection standard