

ECOtality and the EV Project

Western Riverside County Clean Cities Coalition PEV Workshop

September 28, 2011

*Diana S. Gould
Los Angeles Area Manager
dgould@ecotality.com*

Overview

- **ECOtality – Who We Are**
- **The EV Project**
- **Products**
- **Micro-Climate Planning**
- **Questions/Follow-up**

The leader in clean electric transportation

- **Leading EV (Electric Vehicle) Infrastructure Experience**
 - Involved in every major North American EV initiative since 1990's
- **Largest Deployment of EV Infrastructure in the World**
 - ECOtality ranks #33 in the White House report on 100 Recovery Act projects changing America
 - Named one of the most Innovative and Effective projects nationwide
- **Premier Battery Fast-Charge Systems , Minit-Charger**
 - Industrial applications for forklifts and airport ground support equipment
 - 50+ US & International patents since 1990
 - Fortune 500 customer base
 - NASDAQ listed ECTY
- **Advanced Transportation R & D, Engineering & Testing**
 - Primary Contractor to U.S. Dept. of Energy in EV sector
 - 10+ million miles of testing on 200+ advanced fuel vehicles



- **\$230 million project**
 - \$115 million grant from US Dept. of Energy
 - \$115 million match
- **Purpose: To build and study mature electric vehicle charging infrastructure in six states plus the District of Columbia**
- **Product: Lessons learned**

Over 50 Project Partners



NISSAN



Chevrolet Volt

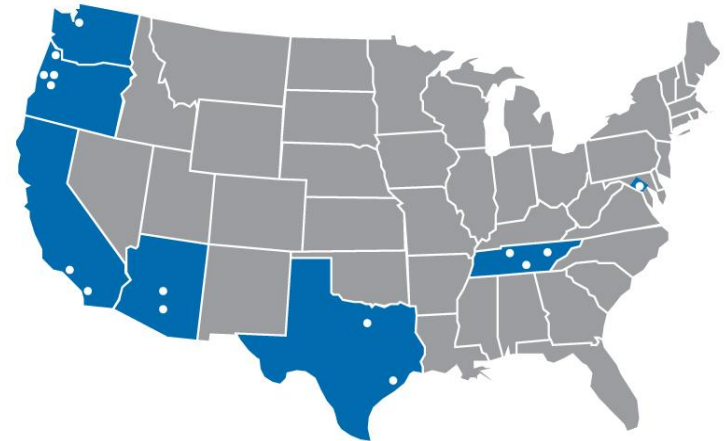


City of Tucson



Geographic Areas

- Washington State (greater Seattle area)
- Oregon (Portland, Eugene, Corvallis, Salem)
- California (San Diego, Los Angeles, Bay Area)
- Arizona (Phoenix, Tucson)
- Tennessee (Chattanooga, Knoxville, Nashville)
- Texas (Dallas, Ft Worth, Houston)
- Transportation Corridors
 - I-5 Corridor Eugene to Canadian border
 - I-5 San Diego to Los Angeles
 - I-10 Phoenix to Tucson
 - I-75 Chattanooga to Knoxville
 - I-40 Knoxville to Nashville
 - I-24 Nashville to Chattanooga



ECOtality's EV Project Overview

- **Plan Infrastructure Placement**
 - **EV Residential Customer Level 2 Equipment**
 - **Level 2 Publicly Available**
 - **DC Fast Charge**
- **Install Infrastructure**
 - **Develop Installation Processes**
 - **Identify Infrastructure Requirements**
- **Collect and Analyze Usage Data**
 - **ECOtality**
 - **Idaho National Lab, UC Davis, The Ohio State University**
- **Report Lessons Learned**

Equipment Deployment for the EV Project

- 18 major metropolitan areas
- \$230 Million value for the project (\$115 from DOE)
- 8,300 Grid-connected vehicles (Nissan Leaf and Chevrolet Volt)
- 14,000 Level 2 (240 Volt AC, 30 Amp) EVSE
- 200 DC Fast Chargers (480 Volt AC, 30 – 60 kW) in Market Areas and on major corridors



ECotality's Blink Level 2 EVSE

- **Power**
 - 240 VAC, Single Phase, 40 Amp Circuit
 - 30 Amp Max current
- **Charge Control**
 - Vehicle Battery Management System
- **Communications**
 - Wireless IEEE 802.11g
 - Cellular
 - AMI Interface Capable
- **Connector – J1772 compliant**
- **Color Interactive Touch Screen**
- **Internal Energy Meter**



Features of the ECOTality DCFC



ECOTality DC Fast Charger

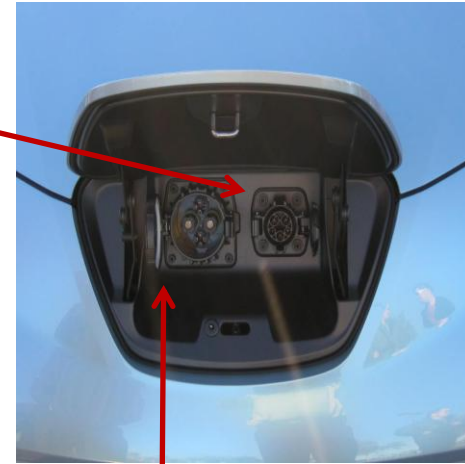
- 480 Volt AC, 40 – 60 kW
- Touch Screen Display
- Internal Energy Meter
- Smart Phone Applications
- Access Control
- Heavy Cable Support



Electric Vehicle Inlets



Level 2



DC Fast Charge



Micro-Climate Planning

Major Steps

- **Stakeholder Involvement**
- **EV Infrastructure Deployment Guidelines**
- **Long Range Planning**
- **Utility Distribution Planning**
- **Data Collection and Evaluation**

Stakeholder Involvement

- Stakeholder advisory groups have been formed in all markets to ascertain local input to ensure a community driven initiative.
- ECOtality sought out the leaders and visionaries in EV deployment in each of the market areas of The EV Project.
- These leaders focused on developing an action plan for EV deployment.

EV Infrastructure Deployment Guidelines

- Developed for each of the initial EV Project market areas
- Includes permitting processes for both residential and commercial scenarios, signage, ADA requirements, parking ordinances, lighting, National Electric Code requirements, and several other factors
- Other items relevant to the given market areas

Long Range Planning

- Determine community infrastructure needed to support the expected penetration of EVs into the market over the next several years
- Considers a variety of demographic and local factors to develop mapping of projected locations where the EVSE will be most effective
- Resultant density maps help determine EVSE placement

Data Collection and Evaluation

- Energy consumption interval data along with critical event timestamps and vehicle/user authentication information is captured and analyzed.
- Real-time data available to consumer and ECOtality.

Planning with Local Utilities

- Necessary to support the long term health of the utility distribution system
- Analysis of peak demand periods to ensure adequate utility performance
- Partnered with ABB to gain specific expertise in evaluating the local grid impacts caused by the adoption of EVs

Level 2 EVSE Deployment

- **Where should they be installed?**
 - Determined in utilizing Micro-Climate© process
 - Where people shop, play, gather for various activities
 - Target time is 1 – 3 hours
- **Expand effective operating range of the EV**
 - Allows for unscheduled trips
 - Provides ‘comfort’ to new EV users: ‘Range Anxiety’
- **Businesses want to install EVSE**
 - Customer amenity to draw EV drivers
 - Advertising Advantages



DC Fast Charger Deployment

■ Where do they go?

■ Where energy is needed fast

- Near highways or cross-town roads
- Highway corridors between towns
- Busy fleet locations



■ Where people stay a short time

- Gasoline stations
- Rest stops
- Convenience Stores
- 10 – 15 minute charge



■ What will it do?

- Fast energy return— significant fill in 15 minutes

Lessons Learned

■ Charging Stations

- Location - did we select the correct locations?
- Utilization - when and how long are they being used?
- Electric Utility Impact - home use vs. publicly available

■ Vehicles

- Utilization – how did vehicle use change over time?
- Behavior Change – how did the behavior of drivers change?

■ Planning

- Effectiveness – how did the process work in diverse locations?
- Structure – did the program deviate significantly between sites?
- Transferability – how transferable is the process to markets?

For More Information

- www.TheEVProject.com
- www.ecotalityna.com
- www.blinknetwork.com

Diana Gould, Los Angeles Area Manager

dgould@ecotality.com

323-559-9467