

EV 101 Workshop Riverside Convention Center

ECOtality North America

Robert Dickens Los Angeles Area Manager <u>rdickens@ecotality.com</u>

February 23, 2011







The leader in clean electric transportation

- Leading EV (Electric Vehicle) Infrastructure Experience
 - Involved in every major N. 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: <u>To build and</u> <u>study</u> mature electric vehicle charging infrastructure in six states plus the District of Columbia
- Product: <u>Lessons</u> <u>learned</u>



blink



Over 50 Project Partners



Geographic Areas

blink

- Washington State (greater Seattle area)
- Oregon (Portland, Eugene, Corvallis, Salem)
- California (San Diego, Los Angeles)
- Arizona (Phoenix, Tucson)
- Tennessee (Chattanooga, Knoxville, Nashville)
- Texas (Dallas, Ft Worth, Houston)
- Washington, DC
- 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

(Vehicle volumes are for The EV Project only and does not represent regional nor national production volumes)

- **5,700** Nissan Leafs in Market Areas included in EV Project
- **2,600** Chevrolet Volts in Market Areas included in EV Project
- 8,300 Level 2 (240 Volt AC, 30 Amp) residential and fleet EVSE
- 6,250 Level 2 Commercial/Public EVSE (Electric Vehicle Supply Equipment) in Market Area
- 125 additional Level 2 in ORNL (Oak Ridge Natl Lab) Solar Project
- **260 DC Fast Chargers (480 Volt AC, 30 60 kW) in Market Areas**
- 50 DC Fast Charger for Corridors between major cities



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
 - ZigBee SEP 1.0 capable
 - AMI Interface Capable
- Connector J1772 compliant
- Color Interactive Touch Screen
- Internal Energy Meter











ECOtality's Blink DC Fast Charger

Input Power

- 480 VAC, Three Phase, 60 kW
- 206 Amp at 208 VAC
- Charge Control
 - Vehicle Battery Management System
- Communications
 - Wireless IEEE 802.11g
 - Cellular

Project

- ZigBee SEP 1.0 capable
- AMI Interface Capable
- **Connector CHAdeMO compliant**





Features of the ECOtality EVSE



ECOtality DC Fast

Charger

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



NORTH AME

An Contality Company

Electric Vehicle Inlets









Micro-Climate Plan Approach



NORTH AMERICA

Level 2 EVSE Deployment

Where should they be installed?

- Micro-Climate© process
- Where people shop
- Where people play
- Where people gather
- Target 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
 - Draws EV customers—they stay longer
 - Advertising Advantages
 - Revenue Collection Systems









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

blink







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?
- EREV/PHEV vs BEV what differences were noted between types?

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

Robert Dickens

- Los Angeles Area Manager
- rdickens@ecotality.com
- **310-601-0493**





