

# *The EV Project*

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## *EV 101 Workshop for Local Governments*

*ECOtality North America*

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## *The leader in clean electric transportation*

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- **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: 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

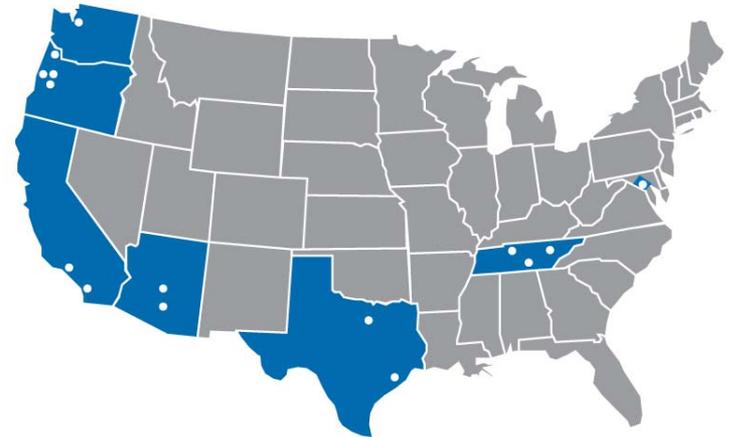


Underwriters  
Laboratories



# Geographic Areas

- 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

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- **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

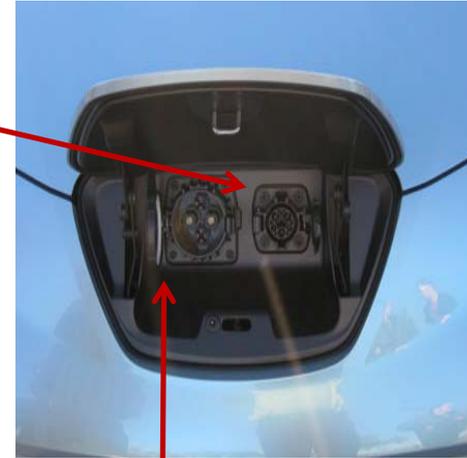
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- **Input Power**
  - 480 VAC, Three Phase, 60 kW
  - 206 Amp at 208 VAC
- **Charge Control**
  - Vehicle Battery Management System
- **Communications**
  - Wireless IEEE 802.11g
  - Cellular
  - ZigBee SEP 1.0 capable
  - AMI Interface Capable
- **Connector – CHAdeMO compliant**

# Electric Vehicle Inlets



**Level 2**

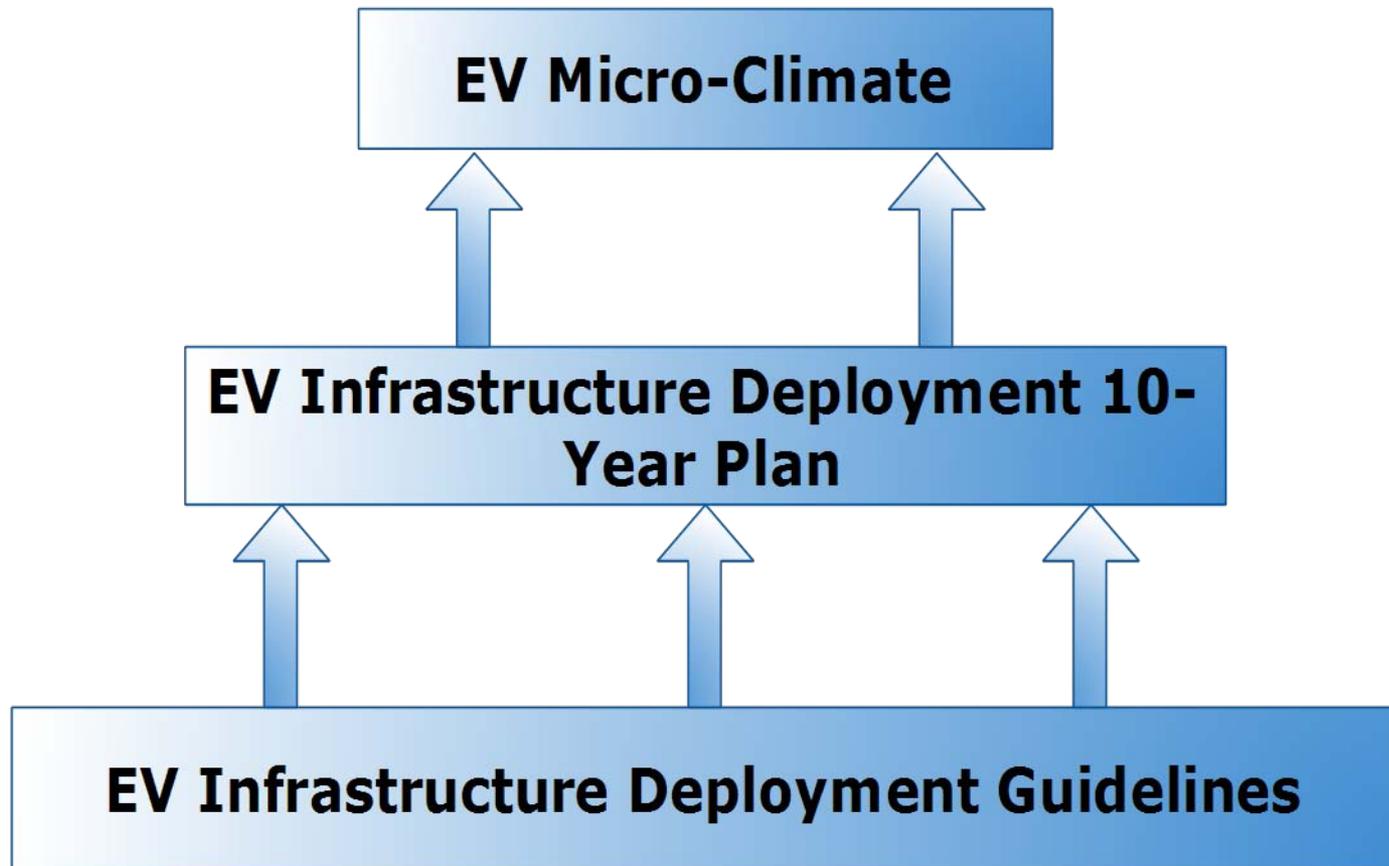


**DC Fast Charge**



# Micro-Climate Plan Approach

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# 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



# Lessons Learned

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## ■ 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?



# Thank You

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## For More Information

- [www.TheEVProject.com](http://www.TheEVProject.com)
- [www.ecotalityna.com](http://www.ecotalityna.com)
- [www.blinknetwork.com](http://www.blinknetwork.com)
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