

# *EV Infrastructure*

## *“The EV Project”*

*Presented at  
Maricopa Association of Governments*

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# eTec Background

## Company Background

- Established in 1996 (Phoenix Arizona)
- Subsidiary of ECOtality (OTCBB:ETLY)

## Markets

- On-Road EVs/PHEVs
  - Charge Stations
  - Turn-key Infrastructure Service
- Airline eGSE Charging Infrastructure
  - 12 Years Experience
  - System Design & Consulting
  - Fast Chargers
  - Turn-key System Deployment and Service
- Industrial Applications
  - Warehousing/Distribution Center Material Handling Equipment
- Low Speed Vehicles (LSV)
  - Neighborhood electric vehicles (NEV)
  - Utility electric vehicles
- Consulting/Engineering Services
  - Battery Cycling and Development
  - Product Development Programs
  - U.S DOE AVTA Primary Contractor
- Hydrogen Infrastructure and HICE Vehicle Development & Conversions



# EV Charging Infrastructure Experience

## Complete "Turn-key" Infrastructure Services

- Over 400 EV chargers installed
  - Residential / Commercial / Public
- Recently awarded 99.8 million dollar DOE Award to install and analyze EV infrastructure in five market launch areas



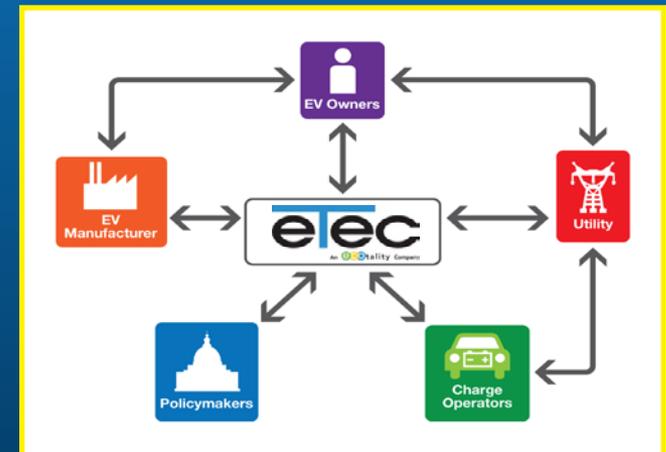
# FOA-28 EV Infrastructure Deployment

- ETEC, USDOE & Nissan will collaborate to build and study a mature charge infrastructure
- A total of \$200 million will be expended to develop mature charge infrastructures
  - 5 market areas
    - Seattle, Portland/Salem, San Diego, Phoenix/Tucson, Nashville/Knoxville/Chattanooga
  - 10,950 Level 2 EVSE
  - 260 Level 3 DC Fast Chargers
- Infrastructure studies and modeling
  - Data collection
  - Lessons learned
  - Grid interaction



# Infrastructure Planning

- Implement EV Micro-Climate process
- Bring together stakeholders
  - EV Manufacturers
  - Government
  - Industry
  - Utilities
  - Project Partners
- Develop infrastructure roadmap
  - Deployment area
  - Target locations
  - Communications planning



# ***Residential Infrastructure Deployment***

- **900 Nissan Leafs in Phoenix/Tucson area**
  - ~70% Private/30% Fleet
  - Program sign up at Nissan Dealer
  - Participant qualification required
  - Vehicle data collection
- **900 Level 2 Residential/Fleet EVSE in Phoenix/Tucson**
  - Revenue grade demand & energy metering
  - Internet based user interface
  - Internet based data collection - wired interface



# Commercial Infrastructure Deployment

- ~ 1,000 Level 2 Commercial EVSE in Phoenix/Tucson
  - Revenue grade demand & energy metering
  - Revenue system pilot(s)
  - Internet based data collection - cellular interface
  - Mix of Fleet, Employer and Commercial EVSE
- Initial installations tied to retail locations
- Employer locations tied to vehicle sales



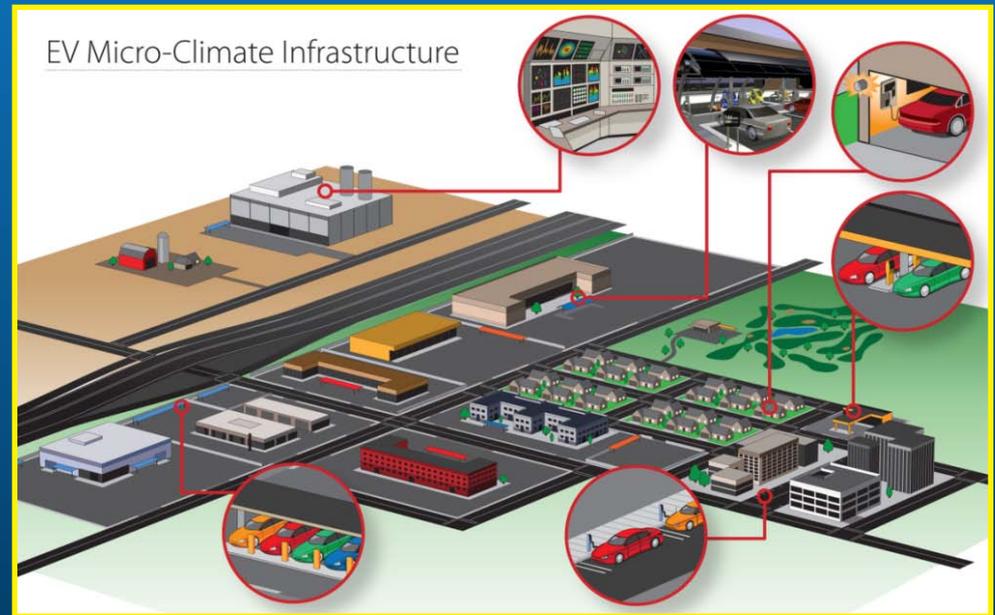
# Commercial Infrastructure Deployment

- **Where should they be installed?**
  - Micro-Climate© process
  - Where people shop
  - Where people play
  - Where people gather
- **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
  - Adds green 'halo' to the business



# Public Infrastructure Deployment

- ~ 150 Level 2 Public EVSE in each market area
- Locations coordinated with local government
- Revenue system pilot(s)
- Stakeholders
  - City governments
  - Electric Utilities



# Fast Charge Infrastructure

- 50 Level 3 DC Fast Chargers in Arizona
- Municipal Fast Charge Grid & Corridors between major cities



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# *Fast Charge Infrastructure*

- Where do they go?
  - Where energy is needed fast
    - Near highways or cross-town roads
    - Highway corridors between towns
    - Busy fleet locations
  - Where people already go for energy
    - Gasoline stations
    - Rest stops
    - Fleet fueling
- What will it do?
  - Fast energy return—50% fill in 30 minutes
  - Opportunity charging

# ***Soft Infrastructure Development***

- First responder training
- Code inspection officials coordination
- Roadside assistance development
- Installation contractor training & certification
- Dealer training
- Public awareness



# *Data Management & Analysis*

- Vehicle and Charger utilization
- Smart Grid Integration
- Utility Impacts
- Demand reduction pilots
- Lessons Learned

GRIDPOINT



UCDAVIS

# Schedule

- Contract with USDOE 10/1/09 ✓
- Soft Infrastructure Q1 2010
- Initial Infrastructure Q3 2010
- Vehicle Launch Q4 2010
- Final Infrastructure Q2 2011
- Evaluation Q4 2010  
thru Q3 2012
- Reporting Quarterly
- Completion Q2 2013

## *More Information*

- [www.theevproject.com](http://www.theevproject.com)
- [www.nissanusa.com](http://www.nissanusa.com)