Presentation to

Maricopa Association of Governments

on

EV Micro-Climates©

eTec An ecotality Company

ecotality™

A leader in clean electric transportation technologies

- **Leading EV infrastructure Experience**
  - Involved in every North American EV initiative to-date.
  - Over 5,100 Charging Stations Installed
- **Premier Battery Fast-Charge Systems**
  - Fortune 500 customer base, utilities, and Government OEMs
- **Advanced Transportation R & D, Engineering & Testing**
- **Primary Contractor to Department of Energy in EV sector**
  - 6+ million miles of vehicle testing on over 200 advanced fuel vehicles

Current Markets
Material Handling
Airport Ground Service Equipment
Neighborhood Electric Vehicles

Emerging Markets
Electric Vehicles (EV)
Plug-in Hybrid Electric Vehicles (PHEV)
Public and Home Charging Stations

ETEC Charger Installations

ETEC's Clients

ecotality

DEPARTMENT OF ENERGY · UNITED STATES OF AMERICA

CHRYSLER

GM

INL Idaho National Laboratory

Ford

NYSERDA

APS

BC hydro FOR GENERATIONS

NISSAN

ROUSH

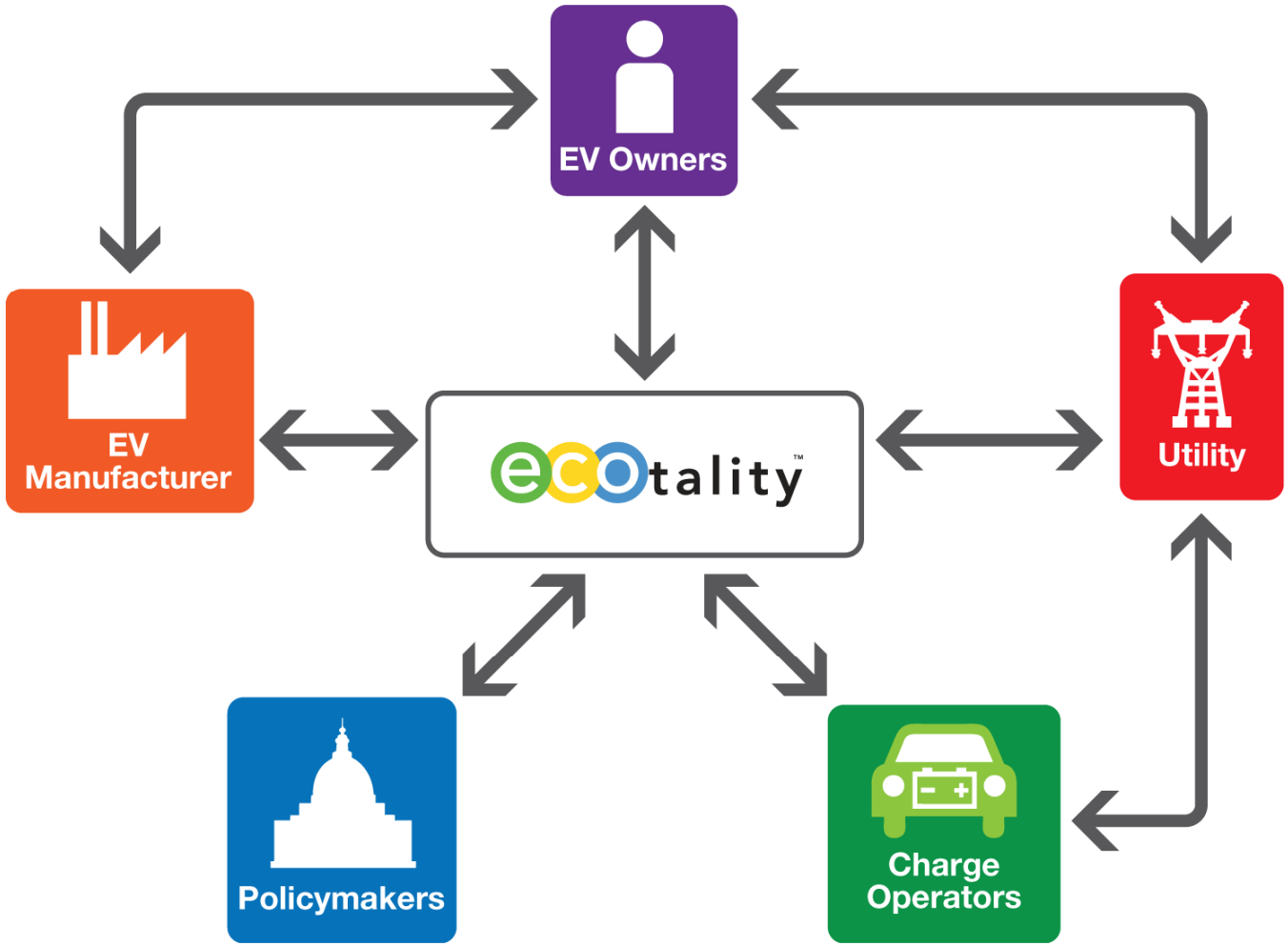
ZERO EMISSION NO NOISE ZENN

EPRI ELECTRIC POWER RESEARCH INSTITUTE

EV Micro-Climates©

- Establishes a rich charging infrastructure
- Feasibility & planning studies provides blueprint & action plans for successful execution and continued maintenance.
- Interface with stakeholders to ensure area is prepared for electric transportation and fosters consumer adoption.
- Implementation includes:
  - Physical installations, Sensible Policies & Strong public awareness campaign
- Assist automotive manufacturers with home installations & provide fast charging systems in strategic locations
- **Create Public and Private alliances** to minimize the cost to taxpayers

EV Micro-Climates



Integrated program to advance areas for the adoption of electric transportation

Different Charging Levels

	Specifications	Time to charge batteries (10-30kWh)	Applications
Level 1 Charger	120VAC, 12Amps	8-24 hours	Emergency Use
Level 2 Charger	240VAC, 40Amp	2-8 hours	Residential, Commercial, Public Areas
Level 3 Charger	480VAC/ 3Phase 30kW to 250kW.	10-30 minutes	Commercial, Fleet use

- EV Micro-Climate primarily uses Level 2 & 3.
- Level 2 applications: residential/garage, commercial & public charging stations
  - i.e. Shopping malls, corporate offices, fleet facilities, parking lots, street charging…
- Level 3 fast-charge stations primarily for commercial locations & fleets
  - i.e. Wal-mart, Starbucks, BP/AMPM, USPS…

Standards

- Standards efforts are underway
  - SAE Connector and Communication Standards
    - J1772 Connector Standard
    - J2847 Communications Standard
  - National Electrical Code (Existing)
    - Article 625

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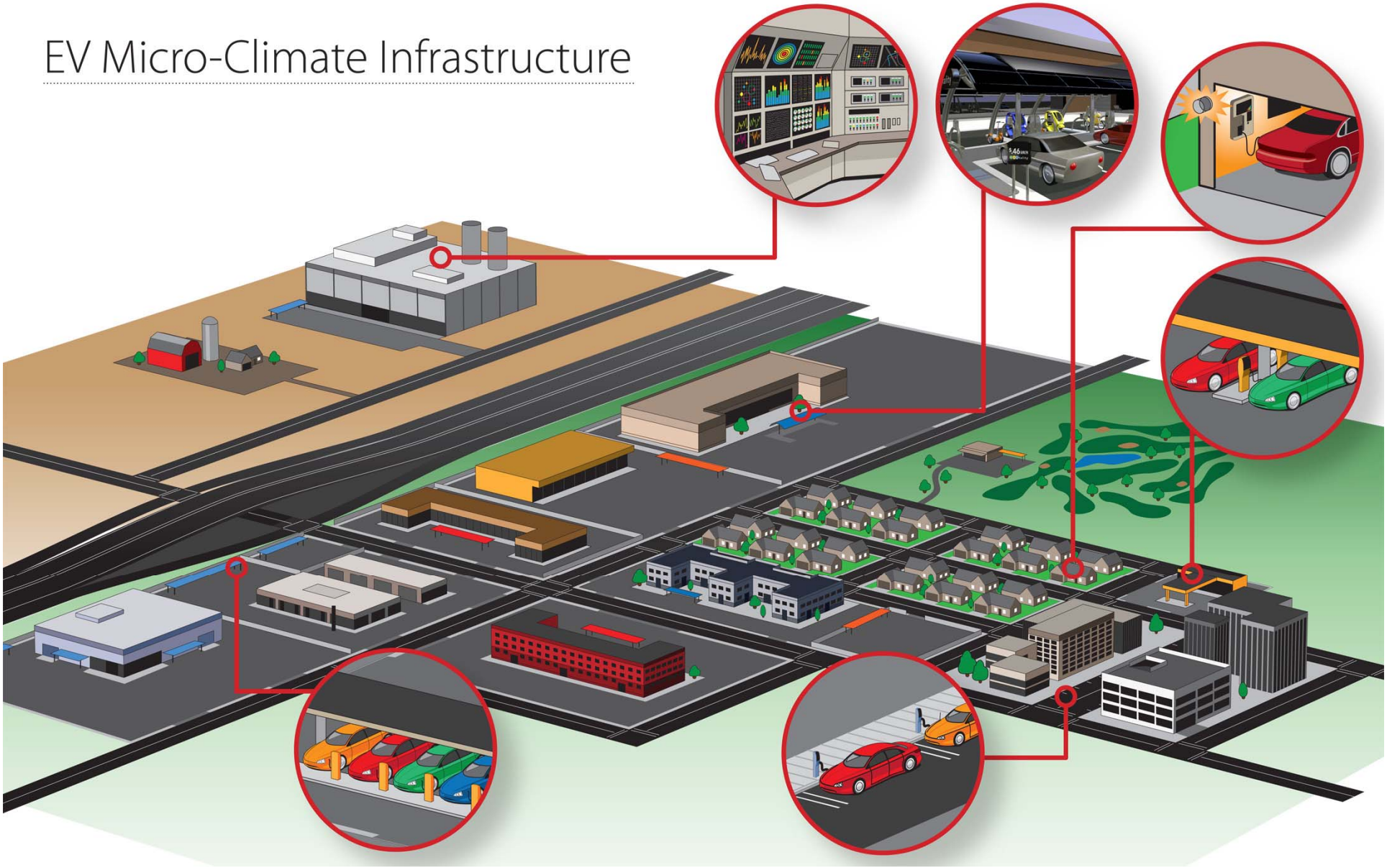
EV Micro-Climate Infrastructure



Conceptual Fast Charge Stations

EV Micro-Climate Overview

- ECOtality is working with major auto OEMs to establish new regions as launch markets for new electric vehicles.
- Goal: solidify OEM EVs successfully launch in region:
  - Work w/ stakeholders to create sustainable business models
  - Launch markets equipped with proper infrastructure & sensible policies to support EVs
  - Establish a universal charge infrastructure
  - Vehicle & battery “agnostic.”
  - Efficiently establish infrastructure.

Arizona's EV Initiative

- March 6, 2009
  - Announced partnership in Pima County/ Tucson
- April 16, 2009
  - Announced Partnership in Maricopa County/ Phoenix
- I-10 "EV Corridor" to utilize fast-charging.
- Establish infrastructure in Summer 2010
- Nissan vehicle launch in Fall 2010

DOE Funding Opportunity

- ECOtality/eTec responded to DOE-FOA 0000028
- 1,000 Nissan BEVs in 5 markets
  - Phoenix / Tucson
  - San Diego (CA)
  - Seattle / Washington
  - Portland / Oregon
  - Tennessee
- ~$20 Million of charge infrastructure in each market
  - Residential Charging
  - Workplace charging
  - Commercial Retail / Fleet
    - Level 2 and Level 3 Charging

Governmental Actions

- Expedite permitting process for home and commercial charging system installations
  - For Battery Electric Vehicles (BEVs) the Level 2 EVSE must be installed within a couple days of the vehicle purchase
  - Pre-Certify qualified installers
    - Conduct “spot” checks
    - Permit Fees remitted on monthly or quarterly basis
- Develop Plug-In Vehicle Infrastructure Guidelines Document
  - Assist builders and policy makers to understand Plug-In vehicle requirements
  - General guidelines on charging stations for residential/multi-dwelling/commercial /public
- Consider modifications to building code requirements
  - New construction could be “EV Ready”
    - Residential
      - Require raceway or Dedicated 240VAC, 40Amp circuit in garage for EV charging
    - Multi-dwelling / Apartments / Condos / Commercial high-rise
      - Require a percentage of EV Ready parking spots or
      - Provide raceway for future dedicated plug-in vehicle circuits
      - Additional capacity considerations for SES and Utility Supply transformer
  - Existing buildings
    - Clarify requirements for EV Charging
  - Public Charging
    - ADA Requirements
    - Signage (ground and post mount)

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