Metropolitan Washington Council of Governments

ECOtality and EV Project Overview

MWCOG

THE EV Project

blink

ECOtality Background

- Company Background
  - Established in 1996 (Phoenix Arizona)
  - aka eTec
- Markets
  - On-Road EVs/PHEVs
    - Turn-key Infrastructure Service
    - Plug-In Vehicle Testing
    - OEM Engineering/Testing
  - Airline eGSE Charging Infrastructure
    - 12 Years Experience / 13 Airports
  - Industrial Applications
    - Minit-Charger Brand
  - 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

The EV Project

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

Some EV Project Partners

The EV Project

The EV Project at a glance:

- 14,775 Level 2 (240V) Chargers
- 310 DC Fast Charger (480V) ports
- 5,700 Nissan LEAF cars
- 2,600 Chevrolet Volt cars

- 1,200 new jobs by 2012
- 5,500 new jobs by 2017
- 60+ project partners
- 18 major cities

- Six states & the District of Columbia: Washington, Oregon, California, Arizona, Texas, Tennessee, and Washington, D.C.

EV Micro-Climate Plan

Structured program to make regions “plug-in ready”

1) Community Planning

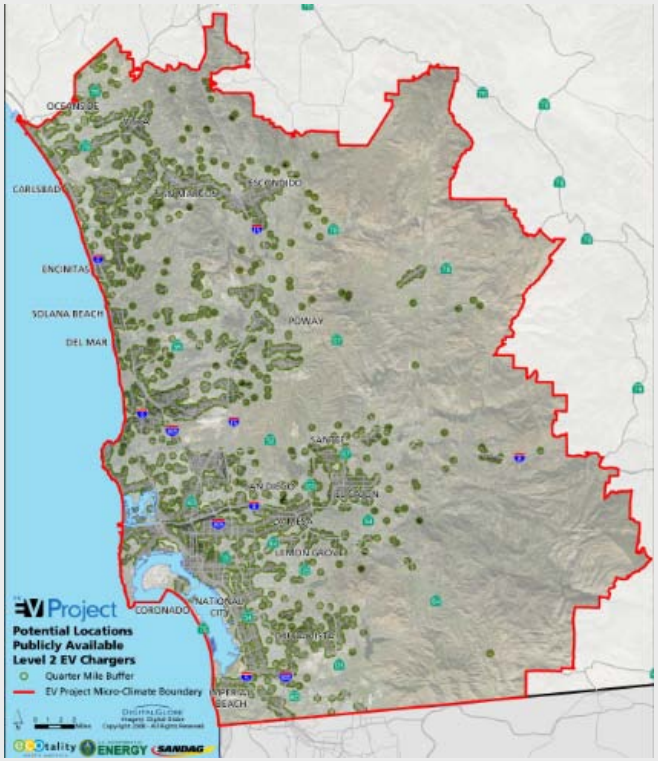
- Deployment Guidelines & Stakeholder Organization
- Long Range Plan (10 years)
- Micro-Climate Plan (1-3 years)

2) Road Mapping

- 1-3 year action plan
- Systematic GIS mapping

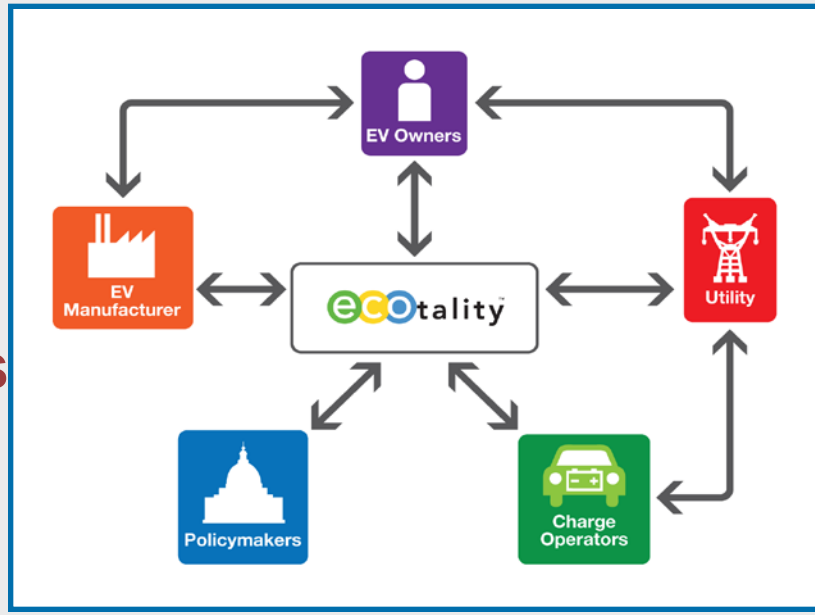
3) Infrastructure Implementation

- Deployment of EV charge stations
- Targets scalable national accounts
- Implement sustainable business models



Infrastructure Planning 1

- Organize Regional Stakeholders
  - Government
  - Utilities
  - Enthusiasts
  - Others
- Develop Deployment Guidelines
  - Develop Installation Processes
  - Identify Infrastructure Reqmts
  - Address Issues
- Develop Cooperation
  - Build teamwork, credibility



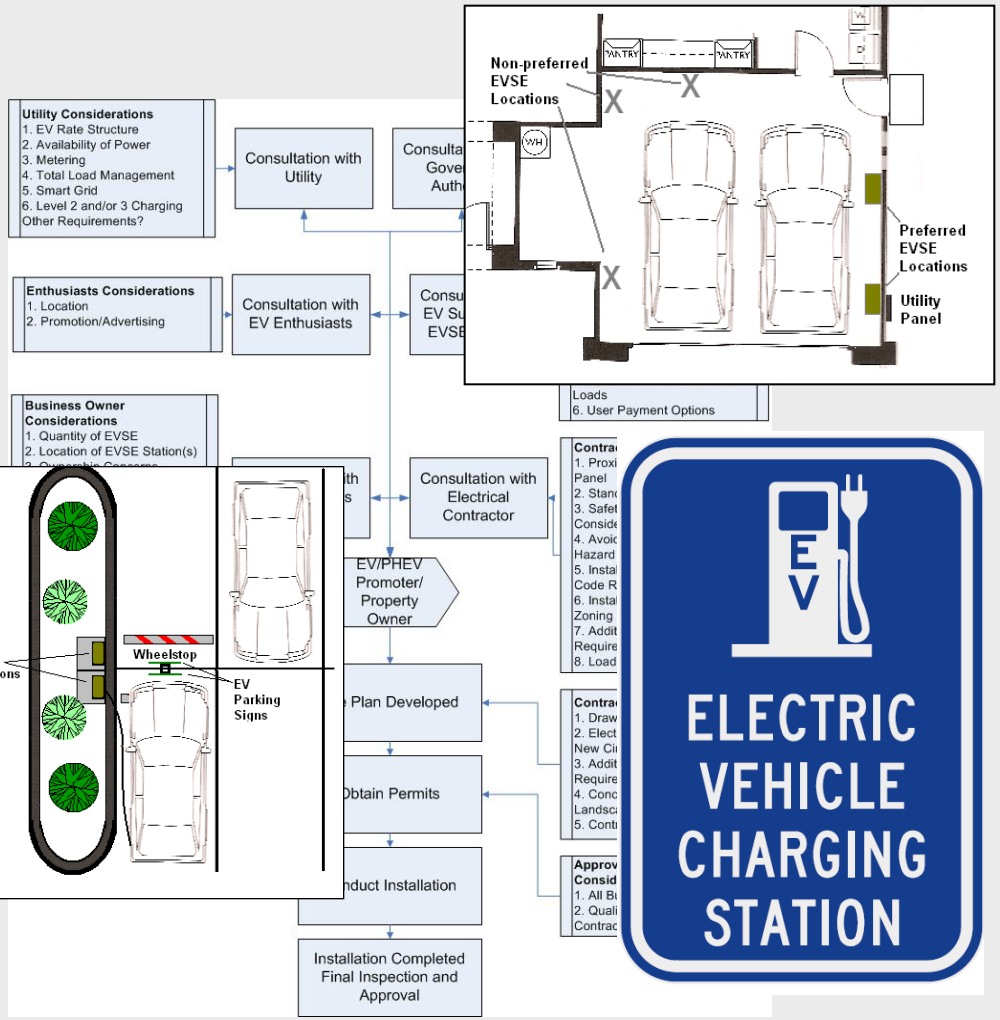
Infrastructure Planning 1

Electric Vehicle
Charging Infrastructure
Deployment Guidelines
for
the Oregon I-5 Metro Areas of
Portland, Salem, Corvallis and Eugene

April 2010
Final Version 3.1

ecotality

ELECTRIC TRANSPORTATION ENGINEERING CORPORATION

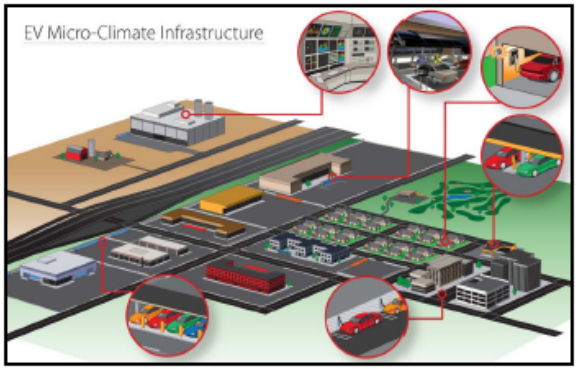


THE EV Project

blink

Infrastructure Planning 2

Long-Range
EV Charging Infrastructure Plan
for
Arizona



November 2010

Version 4

ecotality NORTH AMERICA

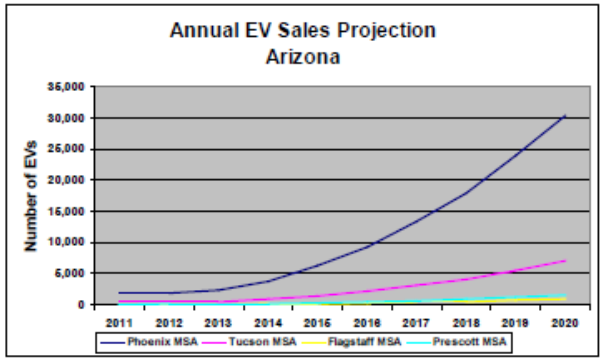


Figure 5-9: Annual EV Sales Projections - Arizona

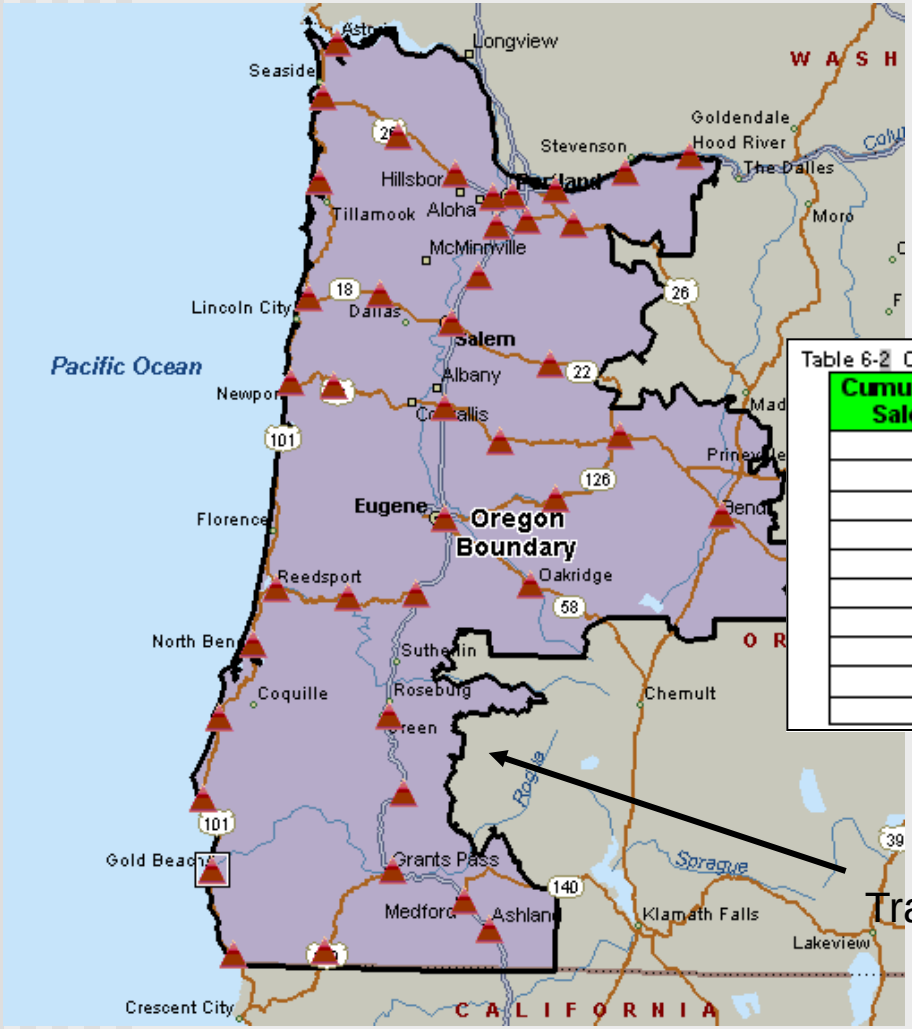
Table 5-4 Cumulative EV Sales Projection Arizona

Cum. Sales	Phoenix MSA	Tucson MSA	Flagstaff MSA	Prescott MSA	Total
2011	1,870	440	0	0	2,310
2012	3,730	870	60	100	4,760
2013	6,070	1,410	130	210	7,820
2014	9,840	2,280	240	400	12,760
2015	16,180	3,750	440	730	21,100
2016	25,370	5,880	720	1,200	33,170
2017	38,690	8,960	1,120	1,870	50,640
2018	56,570	13,100	1,670	2,780	74,120
2019	80,380	18,610	2,390	3,990	105,370
2020	110,630	25,610	3,320	5,530	145,090

THE EV Project

blink

Infrastructure Planning 2



- Western Oregon

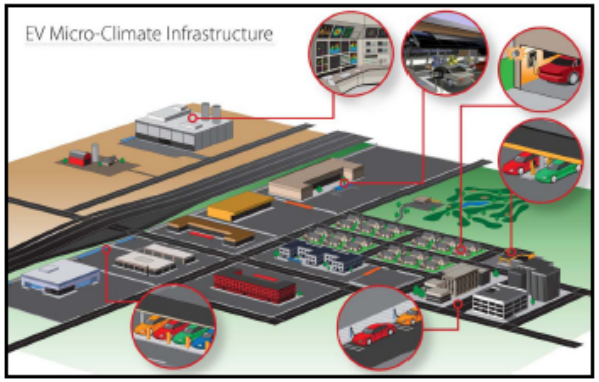
Table 6-2 Cumulative Deployment of DC Fast Charging per Metropolitan Area

Cumulative Sales	Portland MSA	Salem	Corvallis Albany	Eugene Springfield	Bend	Medford	Total
2011	21	4	1	4	1	1	31
2012	42	8	2	7	2	2	62
2013	65	13	3	11	3	3	96
2014	96	19	4	17	4	4	142
2015	142	28	6	25	5	5	211
2016	201	39	8	35	8	7	298
2017	279	54	11	48	11	10	414
2018	376	73	15	65	14	14	558
2019	501	98	20	86	19	18	743
2020	660	129	27	114	25	24	979

Transportation Corridors

Infrastructure Planning 3

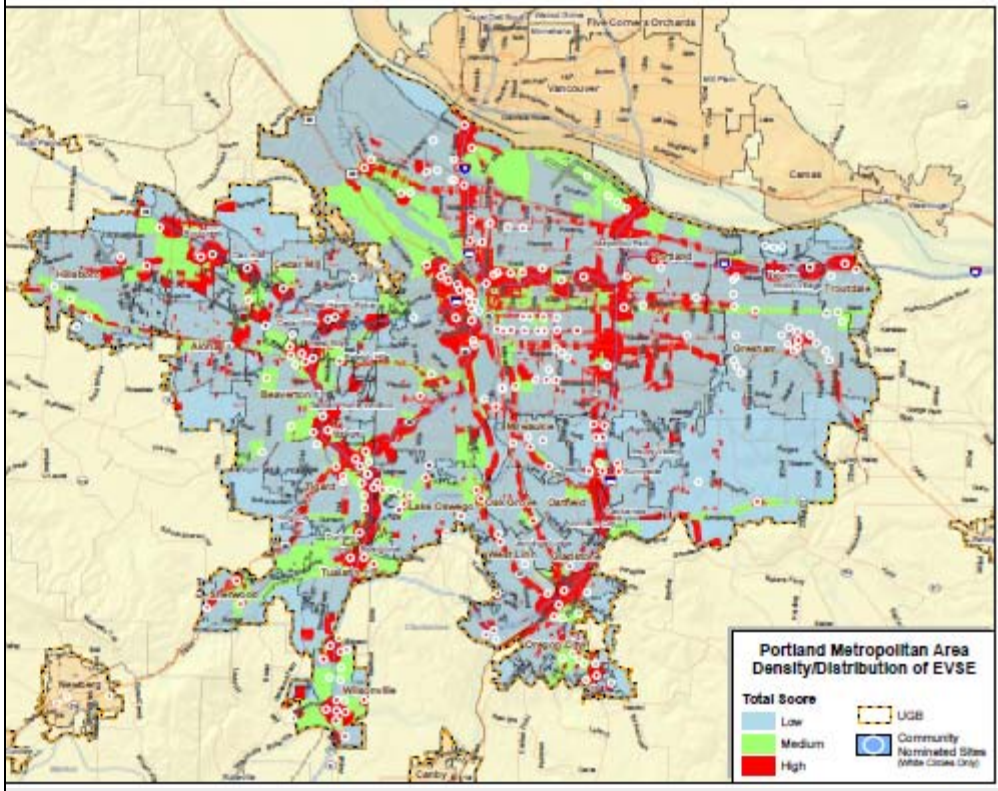
EV Micro-Climate™ Plan
for
Northwestern Oregon



November 2010

Version 4.0

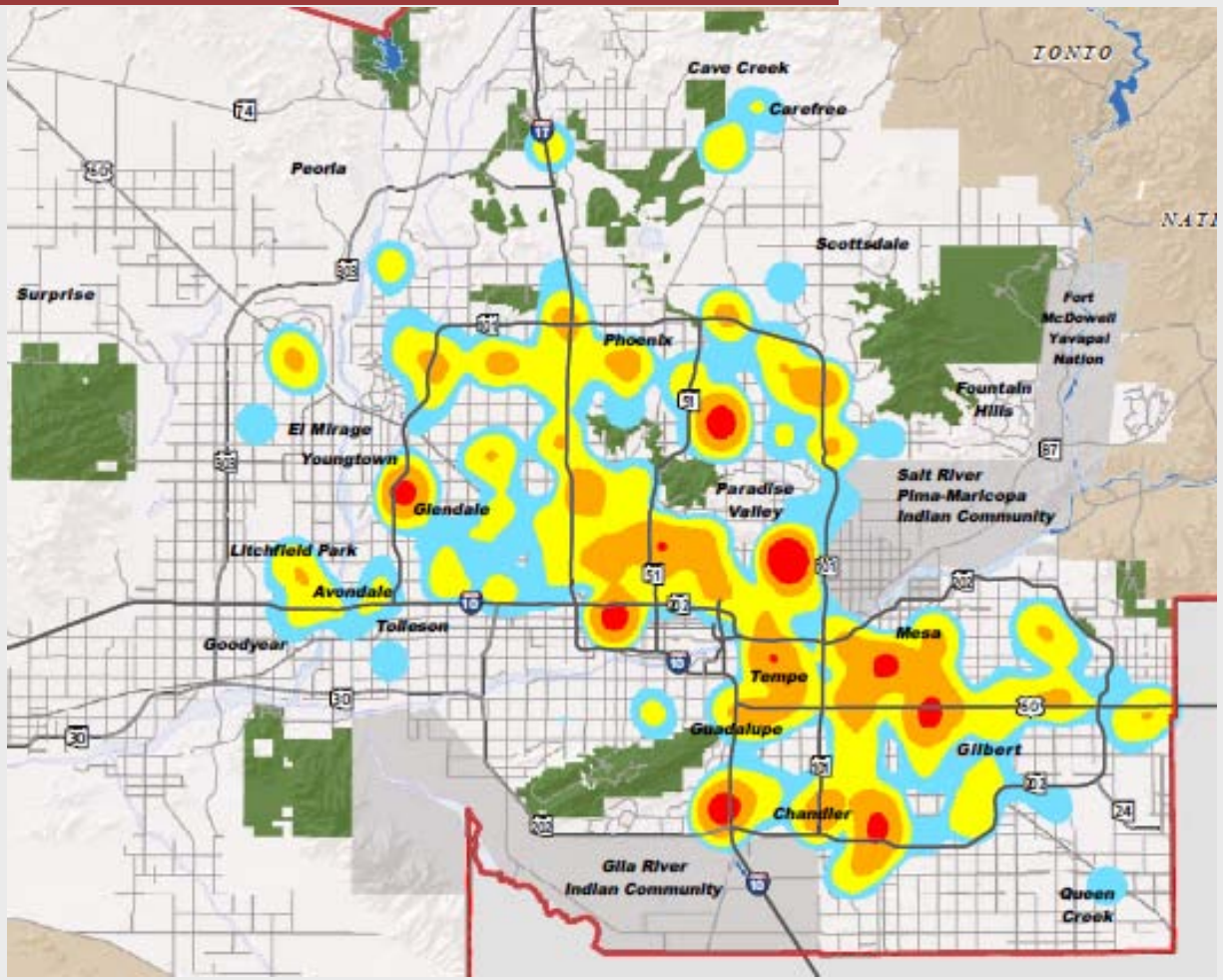
ecotality
NORTH AMERICA



THE EV Project

blink

EV Micro-Climates – Greater Phoenix

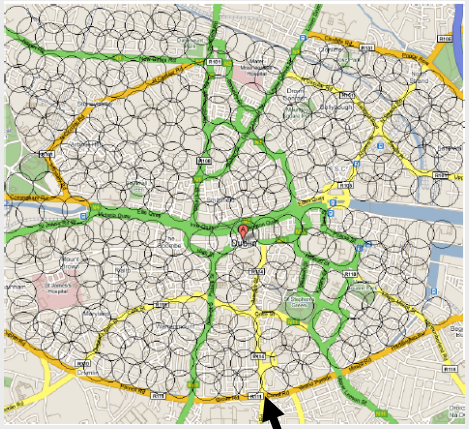


Legend

Potential for Publicly Available Level 2 EV Chargers

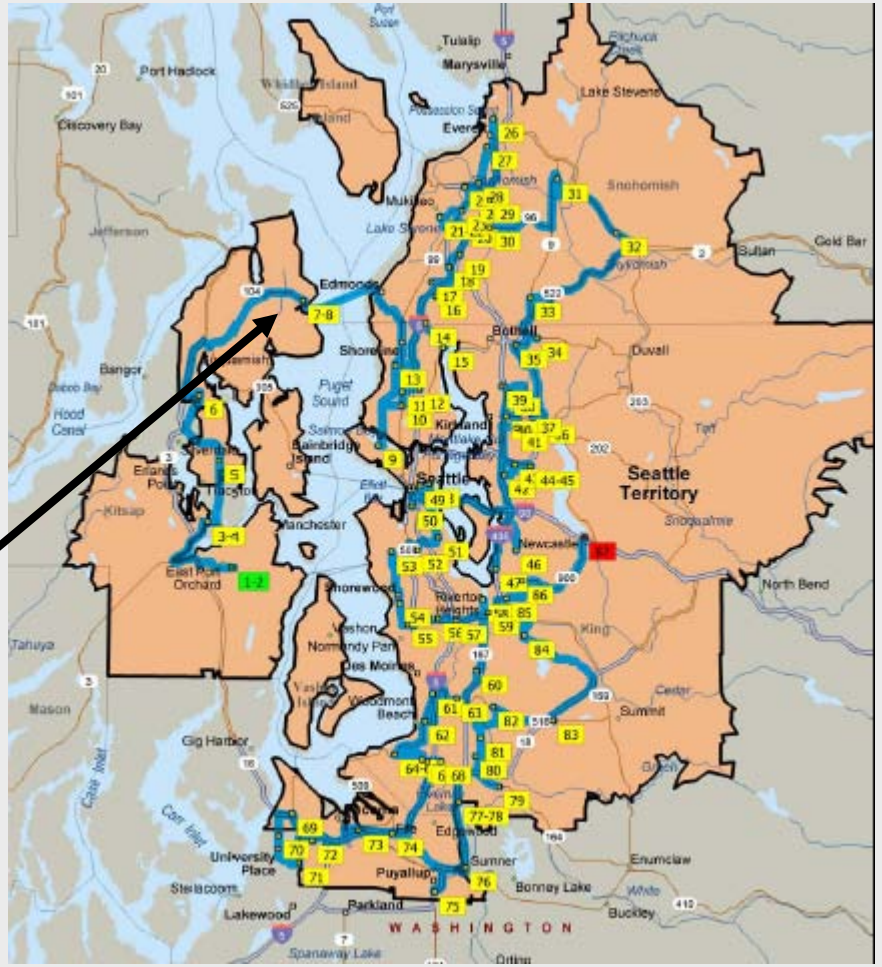
Low — Medium — High

EV Micro-Climates Roadmap



¼ Mile radius circles

Refine from general locations to specific retailers



Data Collection & Reporting

Vehicle Data

EV

Nissan GDC
GM OnStar

INL

EVSE Data

EVSE

ECOtality Data Center

INL

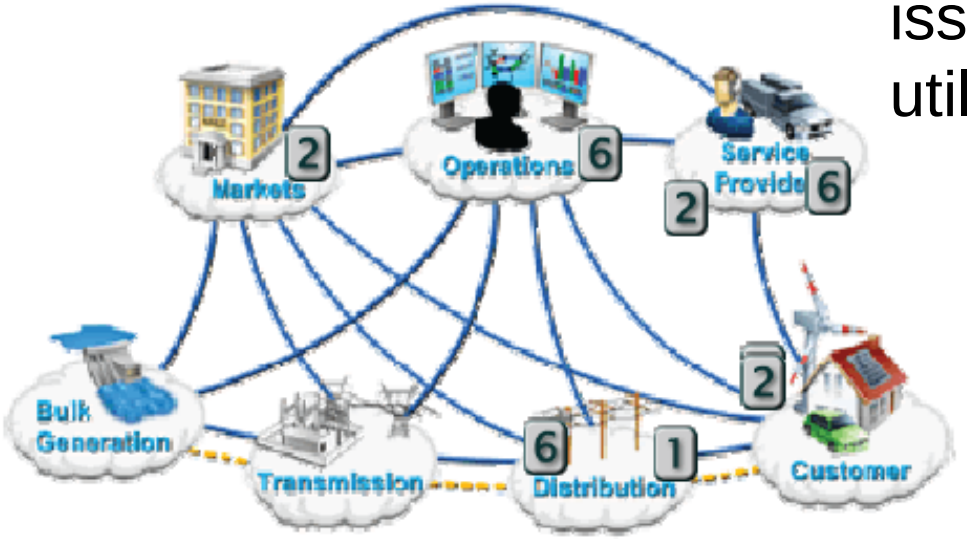
MATCH

- EV Project Participant
- EV Project Participant
- Non EV Project Participant

- Non EV Project EVSE
- EV Project EVSE
- EV Project EVSE

Utility Interface Discussions

1. **Local Grid Reliability -** clustering, etc.
2. **Peak Shaving Strategies** - Time of Use and Demand Response
3. **Regulatory Activities for EVSE Penetration**
4. **Carbon Mitigation and Revenue Strategies**
5. **Public Perceptions and Jobs**
6. **Grid Support Services**
7. **Informed Customer Relations - including real time pricing**

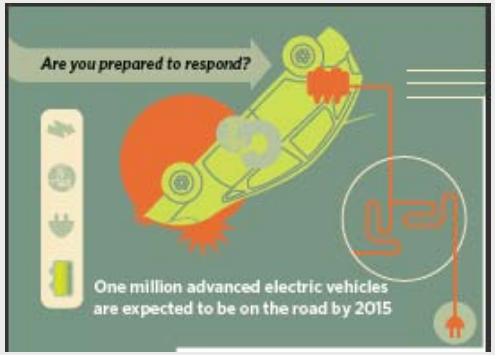


FUSE (Forum for Utility Stakeholders in EV Project) – bi-weekly conference call discussing issues common to utilities

EV Project – Lessons Learned

Lessons Learned Topics:

- EV Parking Signs
- Accessibility
- First Responder Training
- Micro-Climate Planning Process
- Infrastructure Guidelines
- Permitting Process
- Utility Rates/Rate Design
- Peak Demand Charges
- Commercial/Municipal Agreements
- Advertising



Washington DC Deployment Area

EV Project Scope

- Approximately 35 mile radius from central DC
- Chevrolet Volt owners only
- Must take delivery before Dec 31, 2011
- No publicly available infrastructure
- No infrastructure planning

Chevrolet Volt

EV Project Scope

- Electric drive unit with 150 hp, 273 lb-ft of torque Quiet, on-board generator/engine, 1.4L Internal Combustion Engine (80 hp)
- Extended range electric vehicle
- Approximately 40 miles on battery power only
- 16-kWh Lithium-ion battery
- Battery warranty 8 years/100,000 miles
- **www.chevrolet.com/volt**

Chevrolet Volt EV Project Process

SPX Home Charging Installation 

- **Start at SPX or Chevrolet dealer**
  - **www.homecharging.spx.com/volt/**
  - Phone: 877-805-EVSE (877-805-3873)
- SPX verifies zip code and completes short questionnaire
- SPX provides Participant info to ECOtality
- ECOtality accepts into EV Project
- Participant signs Residential Participation Agreement
- SPX installs residential EVSE

Blink Residential 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

Blink Pedestal Level 2 EVSE

- **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
  - Enhance “Range Confidence”
- **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
    - Near Multi-Family Dwellings
  - **Where people stay a short time**
    - Gasoline stations
    - Rest stops
    - Convenience Stores
    - 10 – 15 minute charge
  - **What will it do?**
    - Fast energy return—50% fill in 30 minutes

Electric Vehicle Inlets

Level 2

DC Fast Charge

Thank You

- Stephen Schey
  - Director, ECOtality Stakeholder Services
  - sschey@ecotality.com
- www.theevproject.com
- www.blinknetwork.com
- www.ecotalityna.com