



FSEC Advisory Board Meeting

“The Electric Vehicle Market and Drive Electric Florida”

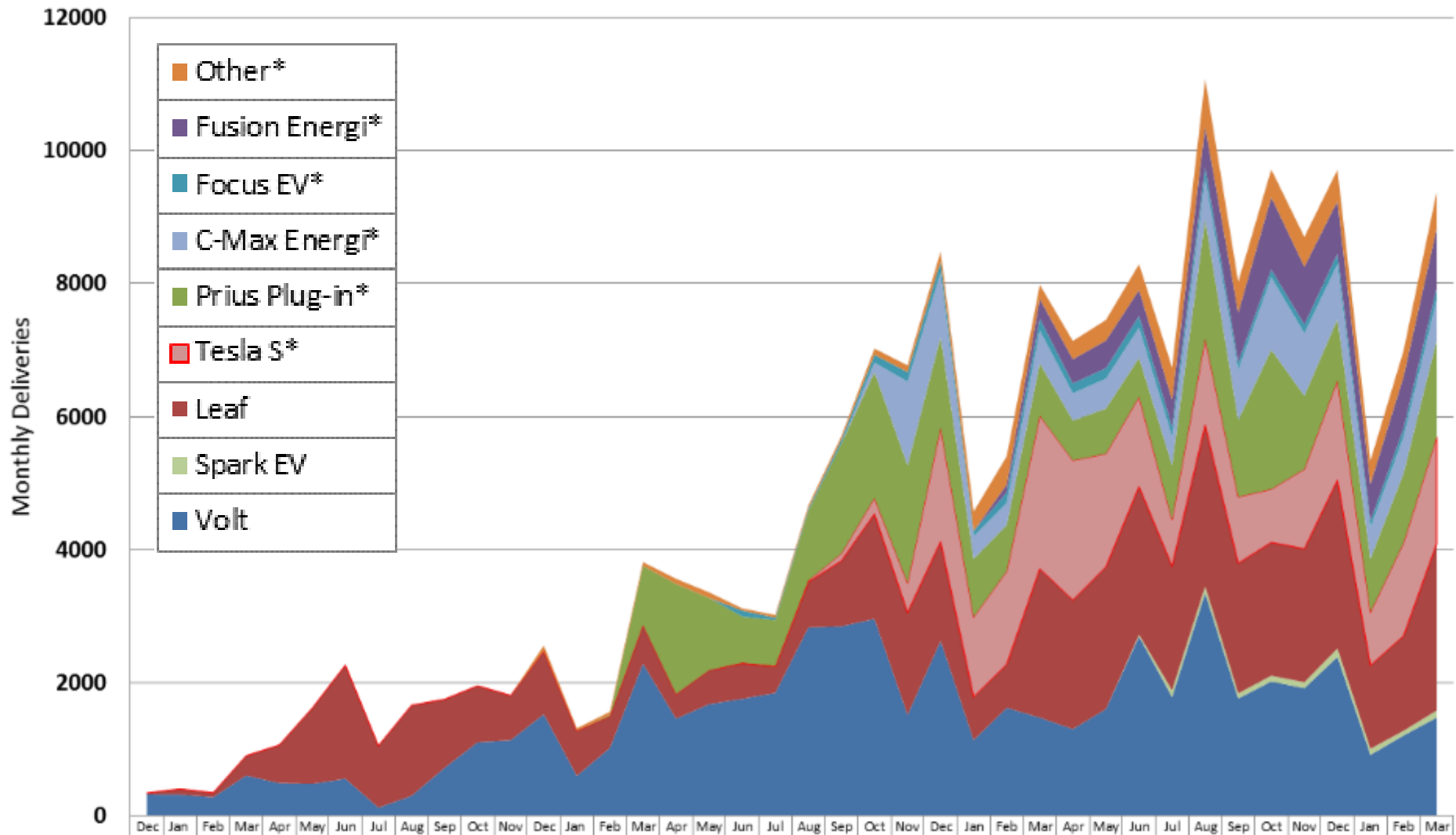
18 April 2014

Britta K. Gross

General Motors

Director, Advanced Vehicle Commercialization Policy

2010-2013 Plug-in Vehicle Sales



PEV Industry sales of almost 190,000 since late 2010



Electrical

Public Fueling Stations

Electric

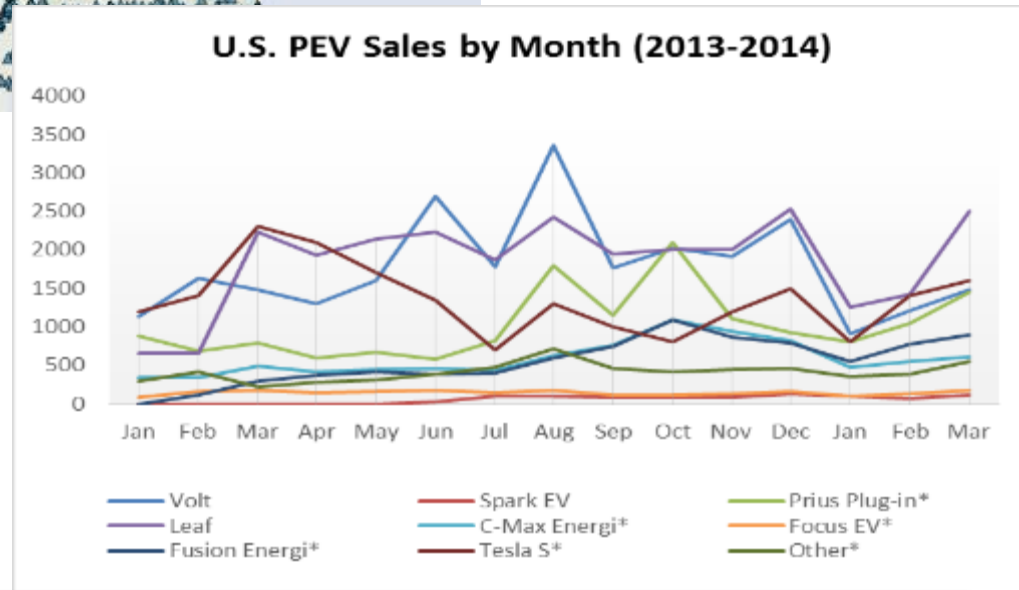
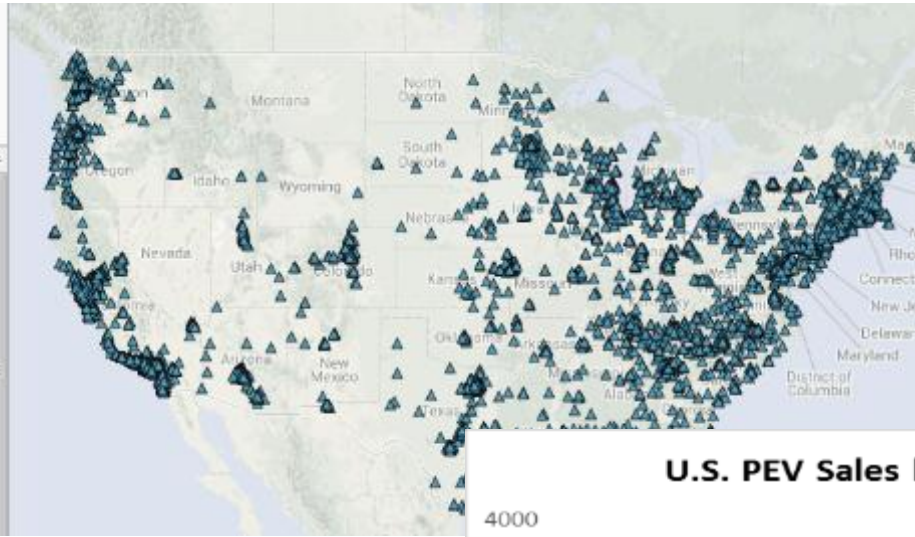
[more search options](#)

7,867
electric stations
with 18,987 charging outlets
in the United States

Excluding private stations

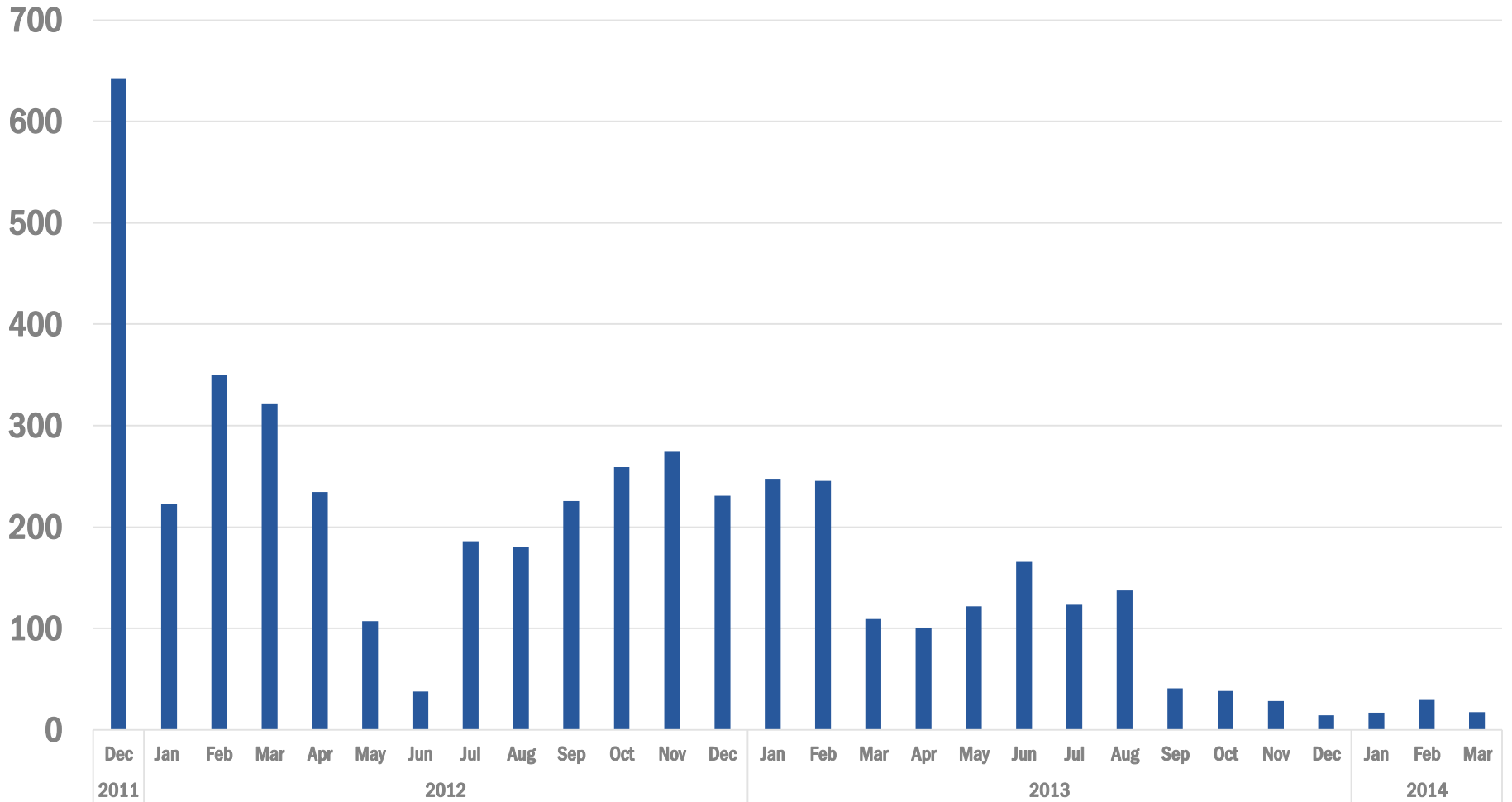
9,404 (incl. private)

Location details are subject to change. We recommend calling the station to confirm location. Hours of operation



PEV Industry sales of almost 190,000 since late 2010, however ...

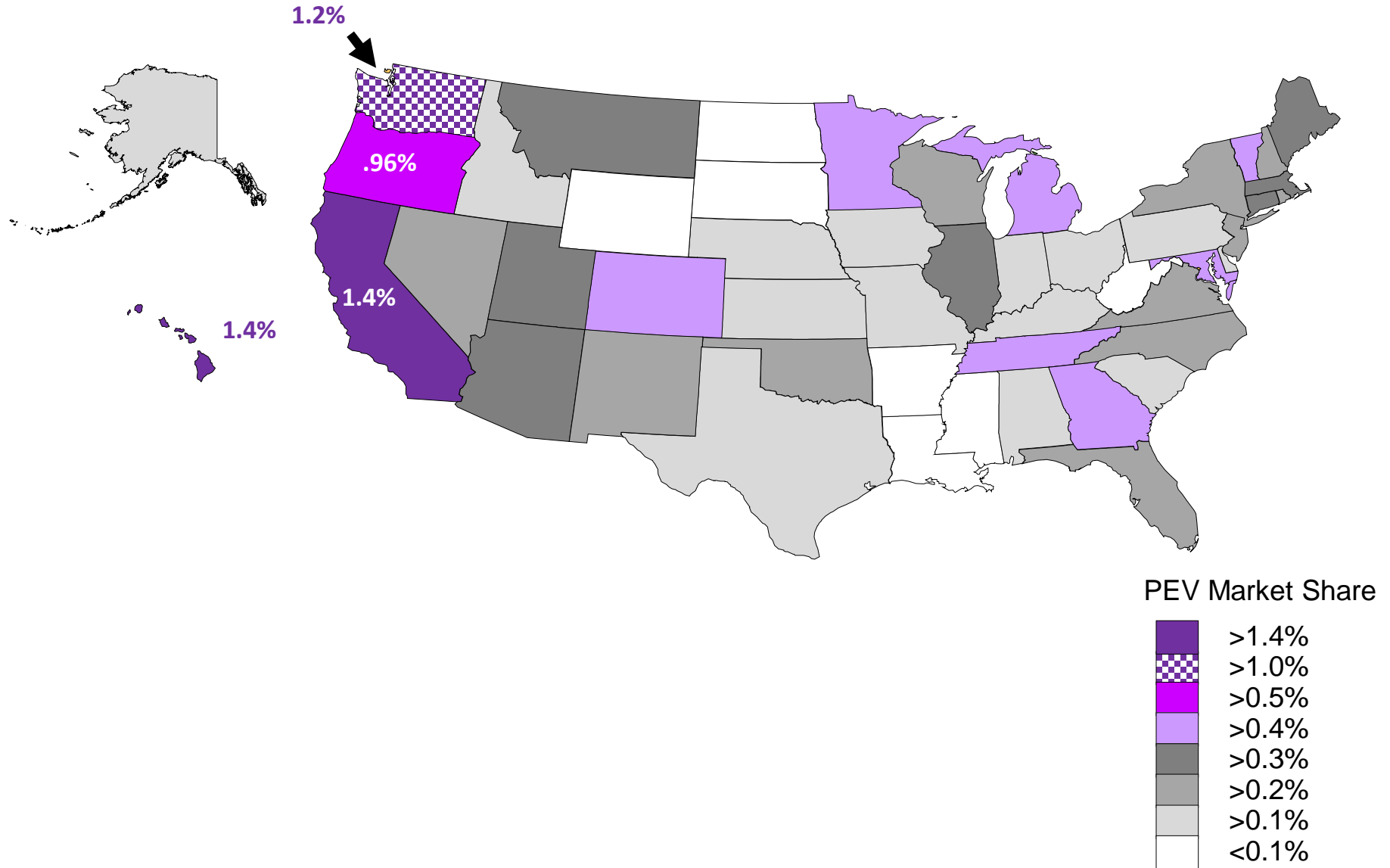
PEV Year-over-Year Sales (U.S.), percent



Recent PEV year-on-year sales are concerning

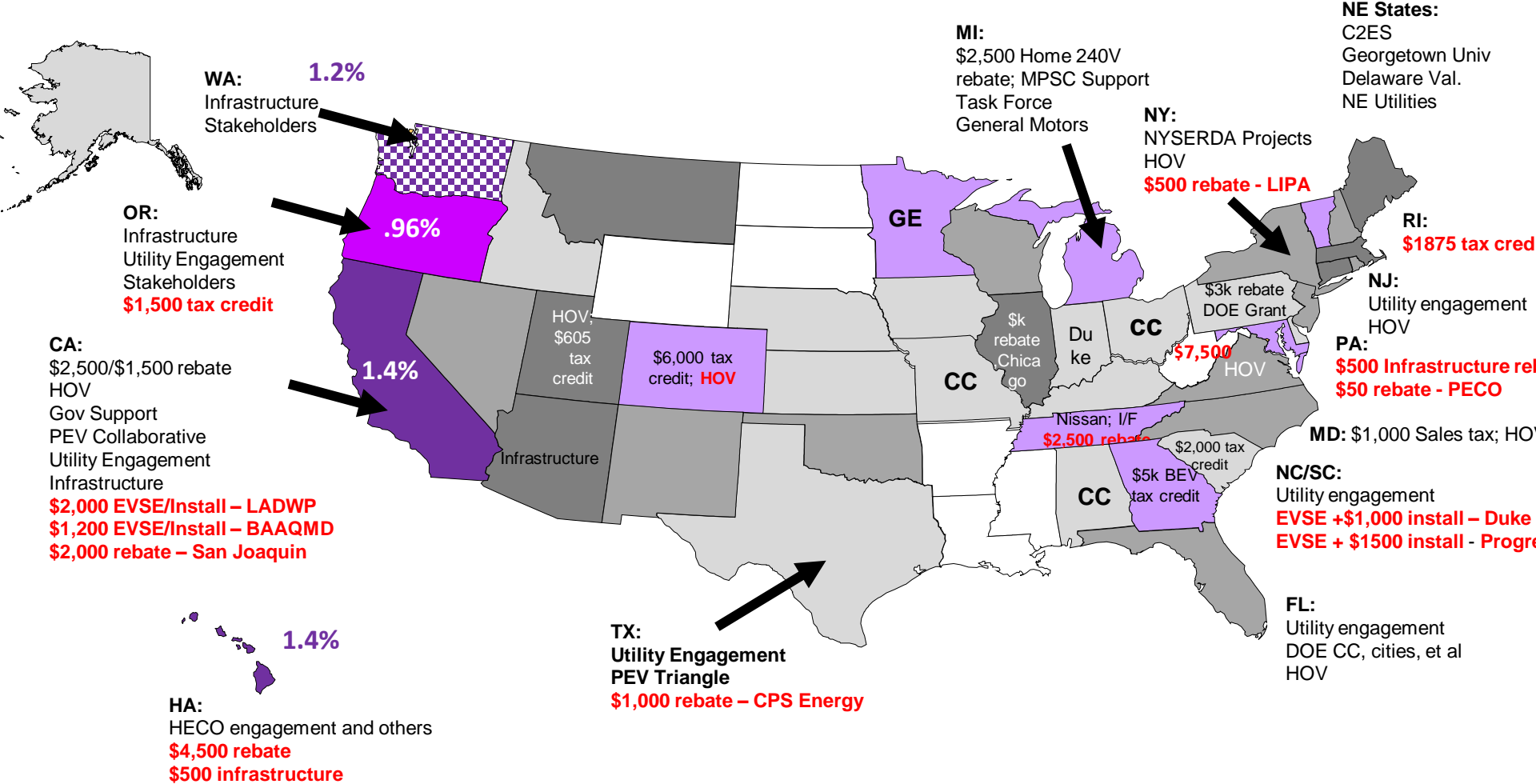
Market Share of PEV Sales relative to Total New LDV Sales

Dec 2010 through August 2013



Market Share of PEV Sales relative to Total New LDV Sales

Dec 2010 through August 2013



Good correlation between states with PEV sales and those states with strong stakeholder engagement efforts.



A statewide multi-stakeholder coalition:

- Auto Manufacturers and Dealers
- Utilities
- Car Charging Manufacturers and Distributors
- Clean Cities Coalitions Throughout Florida
- Environmental Groups
- Local Government
- FSEC

Drive Electric Florida: Nov/Dec 2013 Kickoff Participants

- FPL
- Duke
- OUC
- TECO
- Jacksonville Electric Authority (JEA)
- General Motors
- Nissan
- Ford
- Proterra
- Sutherlin Nissan
- Crown Electric
- NovaCharge
- Car Charging Group
- State of Florida Office of Energy
- Orange County
- Miami-Dade County
- Ft. Lauderdale/Broward County
- Broward County
- City of Orlando
- Clean Cities – Central
- Clean Cities – Southeast
- Clean Cities - Tampa Bay
- Clean Cities - North FL
- Sierra Club
- UCF
- Florida Solar Energy Center (FSEC)
- Electrification Coalition
- Suncoast EV Collaborative
- Tesla Motors Club
- Electric Vehicle Association
- Parquet Group
- RS&H



Drive Electric Florida

Vision:

Drive Electric Florida aims to advance the energy, economic, and environmental security of the State of Florida by promoting the growth of electric vehicle ownership and accompanying infrastructure.

Mission:

To support and accelerate the adoption of plug-in electric vehicles in Florida:

- Engage and educate the public, businesses, and policy-makers
- Facilitate collaboration
- Support EV-friendly policy and programs.



Initial Working Team

Utilities	→	Anne-Louise Seabury, FPL
Environmental	→	Britten Cleveland, Sierra Club
Automakers	→	Britta Gross, GM
Infrastructure	→	Helda Rodriguez, NovaCharge
Clean Cities & Academics	→	Colleen Kettles, CFL Clean Cities & FSEC
Local Government	→	Maribel Feliciano, Broward Co.
Local Government	→	John Parker, Orange Co.



Current Working Team Leads

Organization	→	Colleen Kettles, CFL Clean Cities & FSEC
Education	→	Britta Gross, GM
Policy	→	Jennifer Szaro



Why Drive Electric?

- **Energy**
 - Lessen dependence on oil
 - Increase use of domestic/local electricity
- **Economy**
 - 80% less costly to operate a Plug-in Electric Vehicle
 - New technology drives jobs (infrastructure, education, awareness)
- **Environment**
 - 0 tailpipe emissions
 - Lower overall (well-to-wheel) emissions

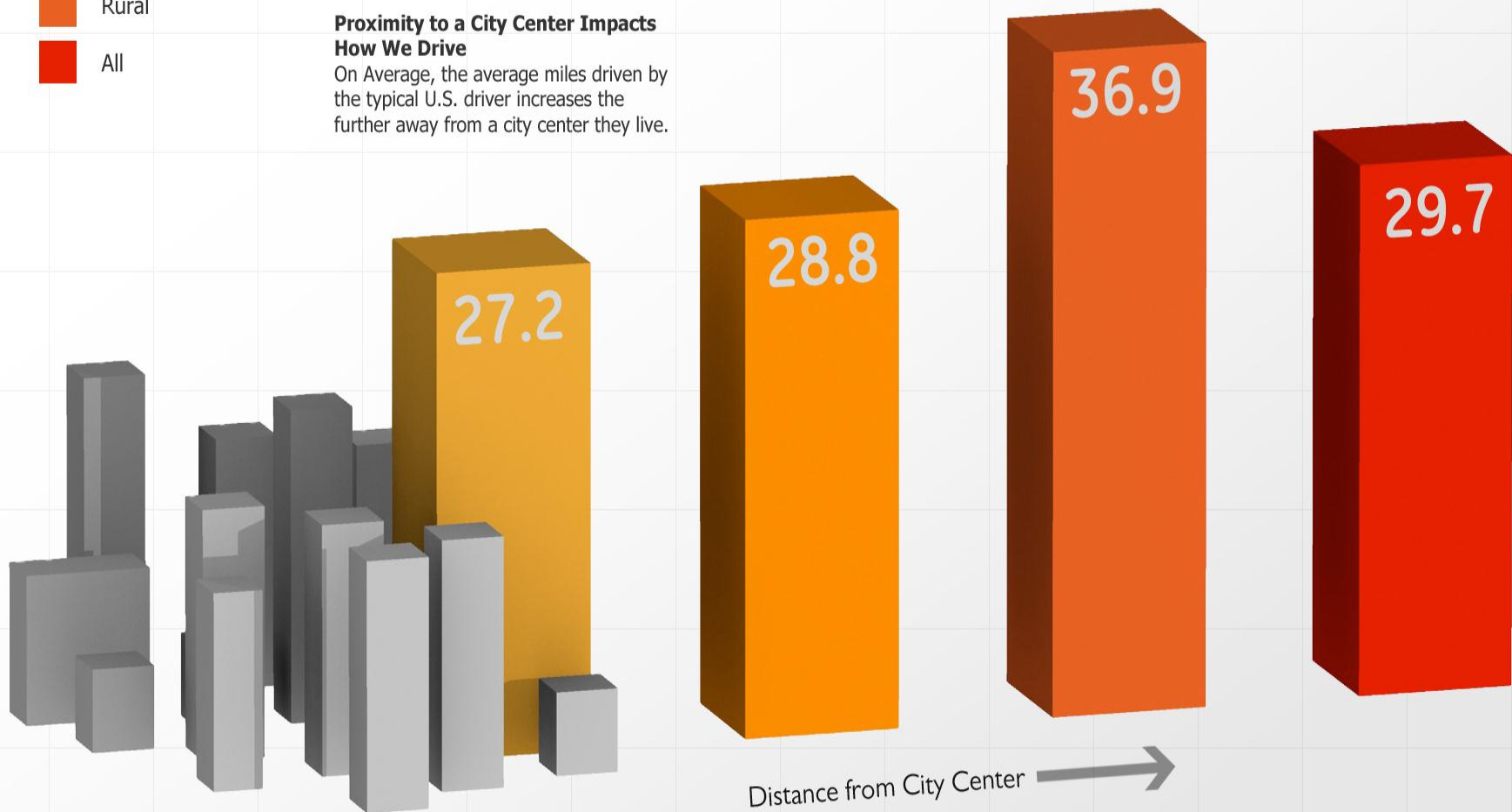


How We Drive: an average day

80% of VMT is less than 40 miles per day

- City Center
- Suburban
- Rural
- All

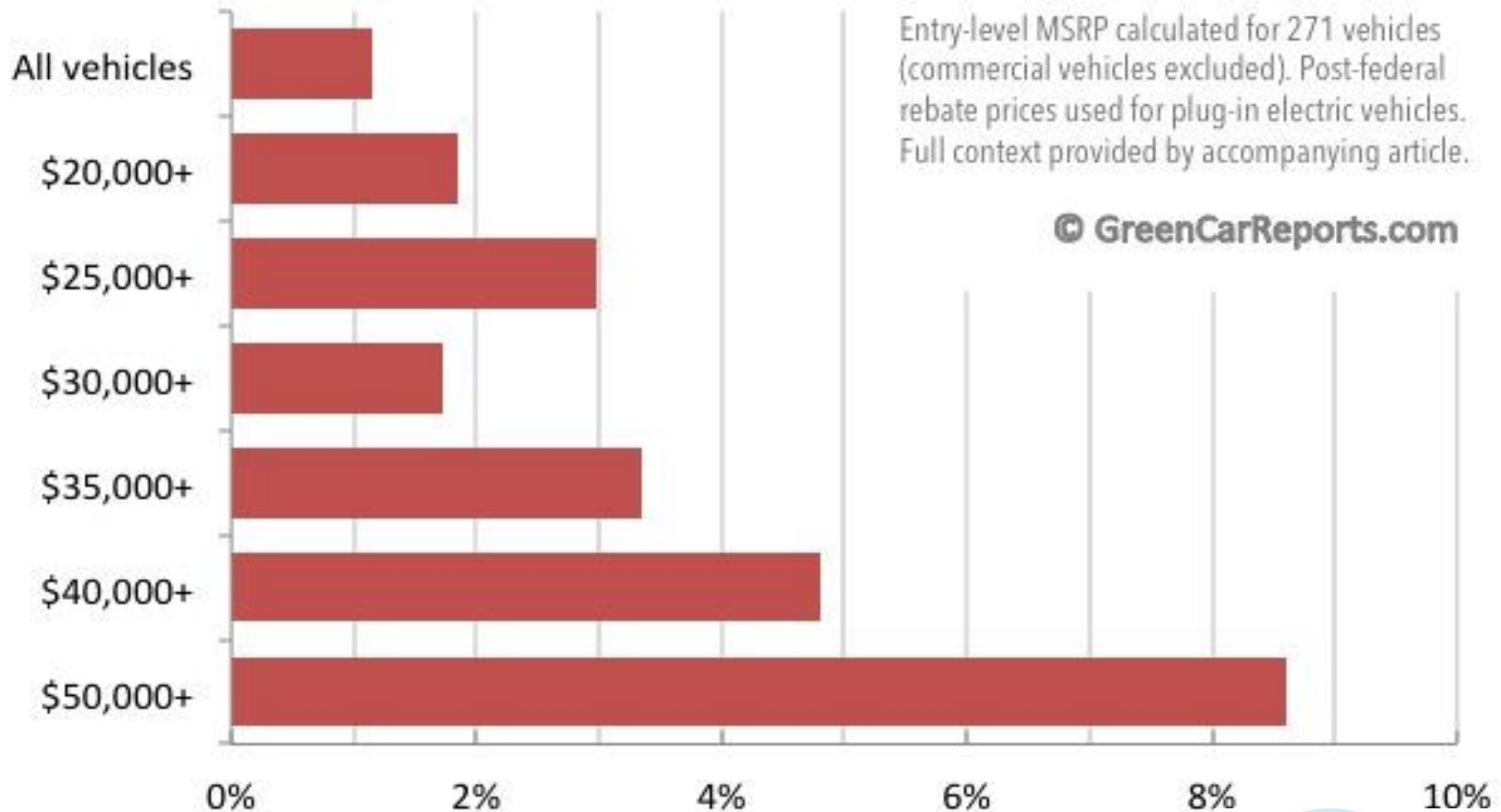
Proximity to a City Center Impacts How We Drive
On Average, the average miles driven by the typical U.S. driver increases the further away from a city center they live.



Transportation Energy Data Book: Edition 29

Image taken from <http://visualization.geblogs.com/visualization/evs/>

U.S. Plug-in Electric Vehicles Market Share by **Approx. Price Point** 2013 (ignoring trucks, SUV's)



Electric-Car Market Share In 2013: Understanding The Numbers Better, [Matthew Klippenstein](http://www.greencarreports.com/news/1089555_electric-car-market-share-in-2013-understanding-the-numbers-better/) Jan 11, 2014; http://www.greencarreports.com/news/1089555_electric-car-market-share-in-2013-understanding-the-numbers-better/



Education & Awareness

Why and What are the highest impact initiatives to grow the PEV market in Florida?

1. Workplace Charging

- Provides daily charging for those without a convenient home charging solution
- Doubles the potential for daily electric miles driven (making PEVs even more attractive)
- Provides a visible showcase of PEVs available in the market to potential new car buyers (employees, fleet managers, execs)

2. Multi-Dwelling Units

- New car-buying consumer opportunity in higher end condos/apartments
- Home charging challenging (complex building ownership, associations, parking restrictions,....)
- Longer term strategy

3. Awareness

- Need to promote (and leverage) what is already being done
- Need to get in front of new faces (especially new-car-buyers)



Awareness

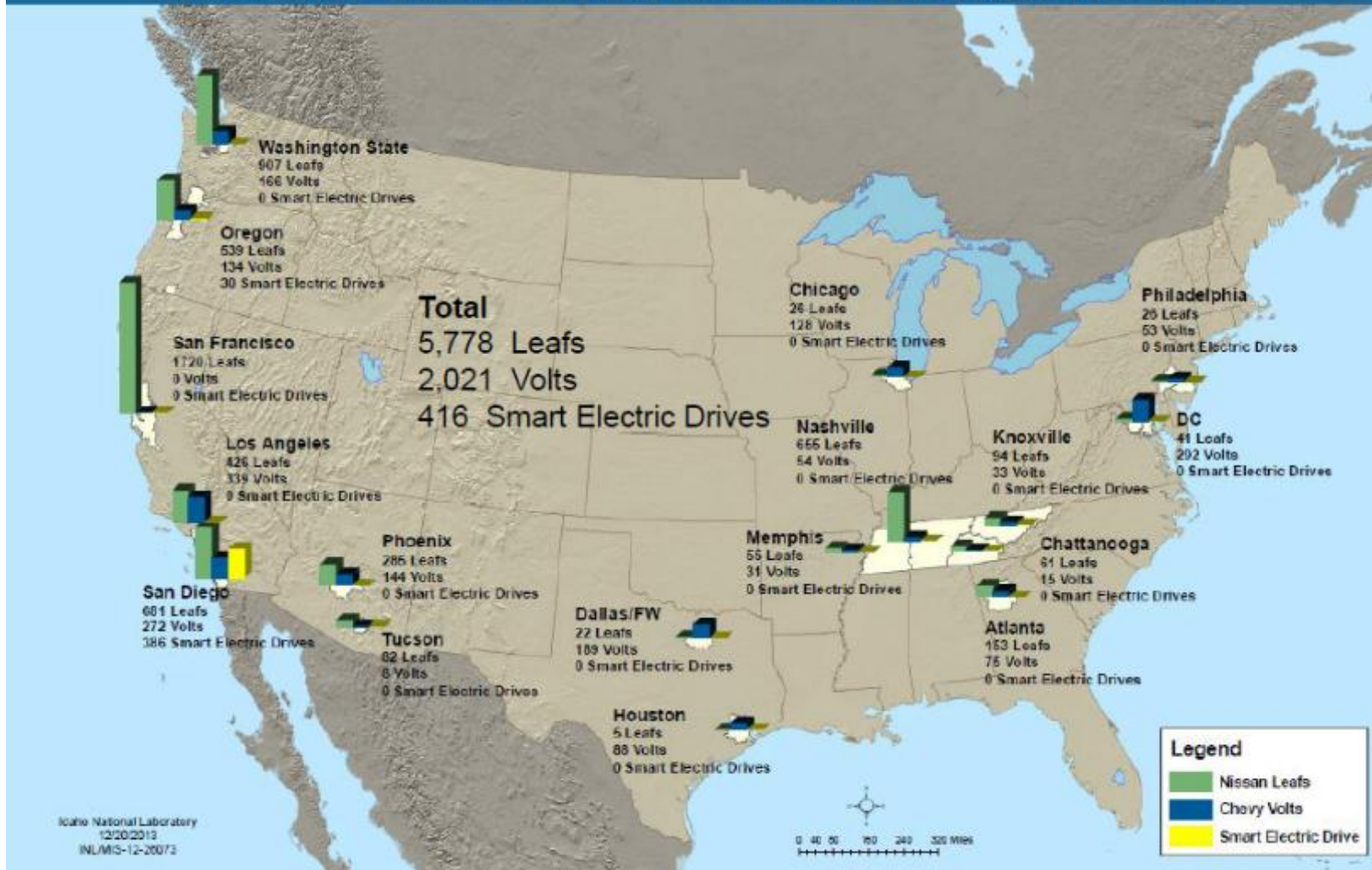
Priorities and Suggested Approach:

1. Prepare formal documentation/brochure for this FL team/effort
2. Plan and prepare press releases for this FL team/effort and major announcements
3. MOU of 15 Mayors to demonstrate PEV leadership and support DEF's goals
4. **MOU of select Corporate Leaders endorsing DEF's goals and committing to do xyz**
5. Identify all Florida event opportunities for EV exposure and ride & drive events
 - a) Ride & Drives – track all Florida events (where, when, # drivers, # new drivers), etc...
 - b) Strategy to offer Ride & Drives to corporations across Florida (maybe in conjunction with Workplace Charging initiative; reward?)
 - c) Website - where to host this data on a website? (user friendly, flexible to changes, professional)
6. Education/Outreach - Consumer awareness – Provide better support and cross-state coordination of all events
 - a) National Plug-in Day – September; Earth Day – April; State Fair – East of Tampa in February



Vehicle Enrollment in The EV Project

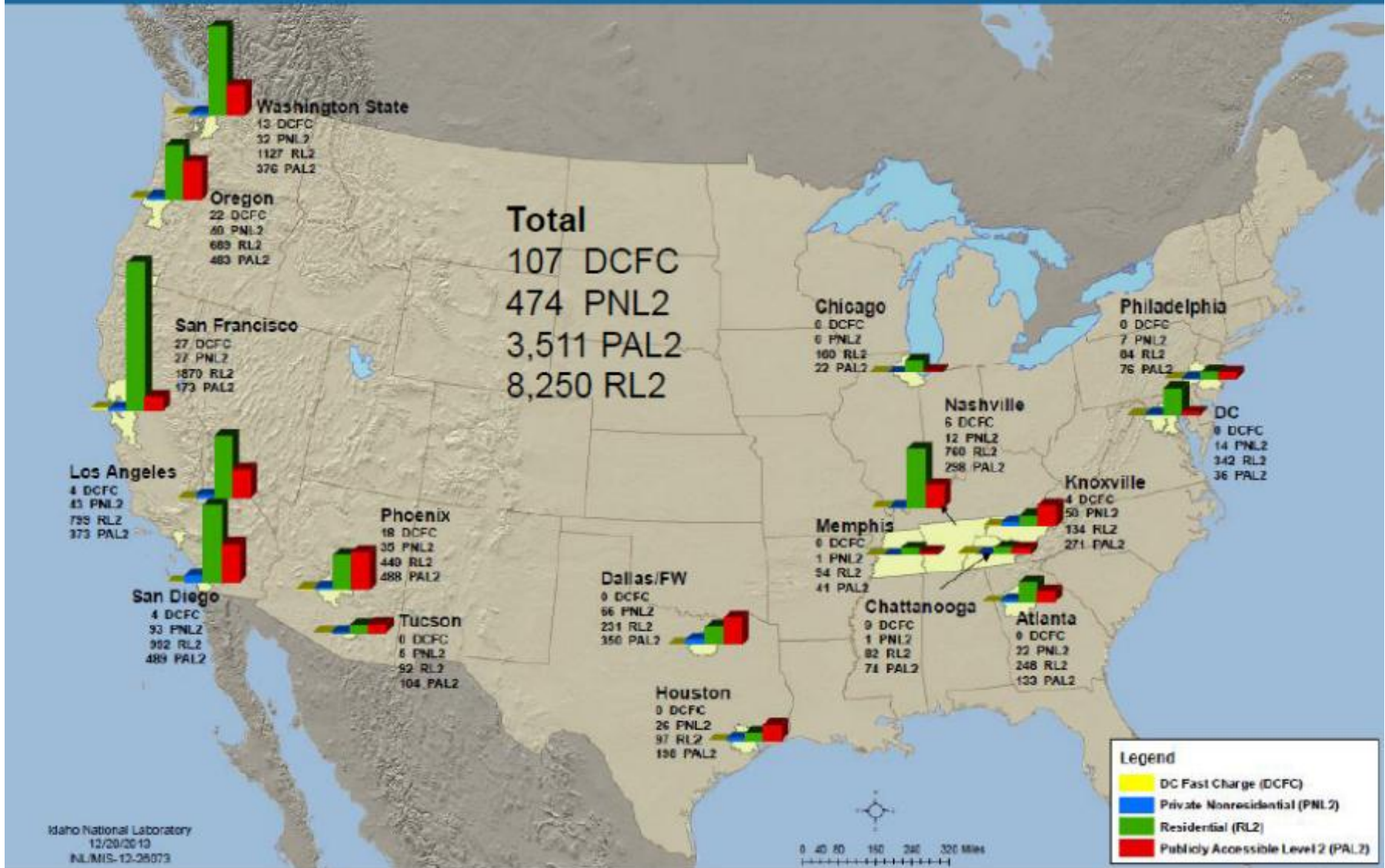
Nissan Leafs and Chevrolet Volts Reporting Data in The EV Project through September 2013



The DOE's *EV Project* provides a valuable source of electrical infrastructure data.

Infrastructure Deployment in The EV Project

Blink Charging Units Reporting Data in The EV Project through September 2013



Home vs. Work vs. Public Charging

Study Period 1/1/2012 – 12/31/2013

- Overall EV drivers:
 - 84% of all charging events are at home
 - 16% not at home
- When workplace charging is available to an EV driver:
(707 Leafs with access to workplace charging from 1/1/2012 – 12/31/2013)
 - 65% of charging events are at home
 - 32% at work
 - 3% at other locations (e.g. public)



Residential and workplace charging provide the vast majority of all charging.

Workplace Charging

- Provides daily charging for those without a convenient home charging solution
- Doubles the potential for daily electric miles driven (making PEVs even more attractive)
- Provides a visible showcase of PEVs available in the market to potential new car buyers (employees, execs, fleet managers)

Actions Needed:

1. Need IRS to clearly state EV charging in the workplace is defined as “de minimus” and not a taxable benefit to employees
 - As are \$125/mo employee-provided transit passes and \$240/mo parking privileges
2. Need Architect of the Capitol to clearly state Government facilities can provide employee/visitor EV charging
 - Define a fee mechanism for employee charger use (credit card, monthly deduction, ...) and give project go-ahead
3. Promote the DOE’s Workplace Charging Challenge Initiative

Arguably the most important infrastructure strategy to accelerate adoption of PEVs.



GM Workplace Charging

401 Workplace Charge Stations (incl. 164 at GM Plants)

(approx. 400 add'l private; 2 ADA friendly; 88 Solar; 65% @ 240V, 35% @ 120V)

New York Sites

Ardley
- 3 Workplace (2@240V)

Pontiac
32 Workplace (16@240V)



Warren Tech Center
121 Workplace (76@240V)
(28 are Solar)

Milford Proving Grounds
22 Workplace (240V)
(18 are Solar)

California Sites

- Palo Alto**
- 1 Workplace (240V)
- N. Hollywood**
- 2 Workplace (120V)
- Thousand Oaks**
- 4 Workplace (240V)
- Glendale**
- 1 Workplace (120V)
- Torrance**
- 17 Workplace (13@240V)
- Santa Fe Springs**
- 1 Workplace (240V)

Hamtramck
10 Workplace (240V)
(all Solar)



Renaissance Center
33 Workplace (30@240V)
2 "showcase" @240V



Michigan Sites



GM Workplace Charging – Assembly Plant Efforts

164 Workplace Charge Spots at 20 Assembly Plants (42 Solar)



Michigan



Bay City Powertrain
11 Workplace (120V)

Brownstown Battery
6 Workplace (3@240V)

Flint Assembly
2 Workplace (240V)

Flint Metal Center
6 Workplace (4@240V)

Grand Rapids (GM Holding)
4 Workplace (240V)

Hamtramck
10 Workplace (240V) - *Solar*

Lake Orion
8 Workplace (2@240V)

Pontiac Stamping
5 Workplace (1@240V)

Saginaw Metal Castings
6 Workplace (120V)

Warren Transmission
3 Workplace (120V)



Ohio



Lordstown
12 Workplace (240V) - East Plant
2 Workplace (240V) - West Plant

Parma Stamping
12 Workplace (240V) - *Solar*

Toledo Transmission
4 Workplace (240V)



Kansas

Fairfax Assembly
2 Workplace (120V)



White Marsh
8 Workplace (4@240V) - *Solar*



New York

Lockport (GM Holding)
6 Workplace (120V)

Rochester
6 Workplace (240V)

Tonawanda
36 Workplace (6 @ 208V)



Maryland



Kentucky

Bowling Green
12 Workplace (240V) – *Solar*



Texas

Arlington
3 Workplace (240V)

DOE's Workplace Charging Challenge Partners

➔ Goal is tenfold increase in 5 years!



Multi-Dwelling Units (condos, apartments, ...)

According to 2011 US Census data, 92mil residences are single-family detached homes (incl mobile homes) out of 132million total residences – the rest are apartments, condos, townhomes, etc...

- New car-buying consumer opportunity in higher end condos/apartments
- Home charging in MDU's is challenging (complex building ownership, associations, parking restrictions,.....)

Actions Needed

Legislation that:

1. Requires building codes support EV charging in new/modified construction
2. Requires MDU's/HOA's to support (do not deny) a resident's request to find an EV charging solution:
 - CA-AB1092 (passed)
 - CO-SB 126 (passed)
 - CT-SB 357 (proposed)
 - HI-SB 2199 (proposed)

**70% of U.S. residences are detached homes, presumably with a 120V outlet solution;
30% are multi-dwelling units needing a supportive charging policy.**

Takeaways

- A thriving Florida PEV market requires more alignment and engagement by leading stakeholders, including thought-leading corporations
 - Need to send a signal and make the PEV market more successful today to ensure it can grow to offer more products
- Incentives and Awareness are critical and make the most difference
- Workplace charging is a powerful, direct, enabler that engages employers and employees (and can start with a simple 120V outlet and a sign)
- Organizing state-wide support for Drive Electric Florida ensures we are collectively more effective -- all pulling in the same direction



VOLT