Florida Public Service Commission

"The Chevrolet Volt and Plugging In"

Britta K. Gross
Director, Advanced Vehicle Commercialization Policy

VOLT

Electric Vehicle (with a Range-Extender)

Designed for 40 miles

BATTERY

Electric Drive

(typically 25-50 mile EV range)

+

Designed for over 300 miles

EXTENDED RANGE

Driving on Gasoline

EPA label: EV @ 98mpge (38 miles) + Gas @ 37mpg comb (344 miles) = Overall 60mpg (382 miles)

Chevrolet Volt Sales (U.S.)

Note: August ‘12 sales are estimated

Chevrolet Volt by the Numbers

- Since introduction Volt/Ampera retail sales exceed **21,500** (June 2011)
- **2,600 dealers** nationwide providing Volt sales/service
- On average, Volt owners visit a gas station **once a month**
- Owners typically drive about **900 miles** before re-filling
- GE has ordered **12,000 Volts** (over 1,500 deployed) - leading the way in corporate commitment
- Need to increase awareness and step up collaboration between plug-in ready communities, state and municipal leaders, and corporate stakeholders

Already > 78 million Volt EV miles
(> 4 mil gallons gas saved)

Chevrolet Volt Awards

North American Car of the Year

2011 Motor Trend Car of the Year

2011 Edison Awards – Innovations & Innovators

Popular Mechanics
TOP 10 VEHICLES AWARD
TECHNOLOGY

"Best Engineered Vehicle of 2011" by SAE International's Automotive Engineering International (AEI)

Consumer Reports Best Products of the Year

OnStar RemoteLink
Volt Mobile App

Car of the Year 2012

2011 Green Car of the Year – Green Car

Car and Driver 10 Best

2011 World Green Car

Ampera - Rallye Monte-Carlo Des Énergies Nouvelles

Ward's 10 Best Engines 2010

Popular Science Best of What's New Winner 2010

CEA Consumer Electronics Show
"TOP PRODUCTS" Award

Popular Mechanics
EDITOR'S CHOICE AWARD

Popular Mechanics
Breakthrough Technology Award

cnet Tech Car of the Year

VOLT

Energy Star Award 2012
Partner of the Year

Strategic Vision Total Value Award

2012 Kelley Blue Book Total Cost of Ownership Awards

NHTSA
www.nhtsa.gov

Insurance Institute for Highway Safety
TOP SAFETY PICK

Automobile of the Year 2011

FIRST CUSTOMERS DESCRIBE THE VOLT…

innovative
great
love it
american
green
exciting
acceleration
fantastic
technology
smooth
high-tech
high quality
handling
agile
new technology
electric
high tech
well designed
well engineered
user friendly
good acceleration
fun to drive
efficient
awesome
future
handles well
no gas
fun
excellent
sleek
beautiful
well built
stylish
sporty
environmentally responsible
revolutionary
environmentally friendly
comfortable
fuel efficient
luxury
perfect
extended range
great looking
good looking
amazing
quiet

What Do Volt Customers Value Most?

Lower Fuel Costs	Avg. U.S. rate is 11¢/kWh = avg. $1.50 full charge
Fewer Gas Stations Stops	Volt drivers 850-1,000 miles/tank (median)
Great Fuel Economy	98 MPGe on the battery, 37 MPG on the gas (EPA)
Zero Tailpipe Emissions	Volt drivers ~60% battery miles (median)
Quiet	Electric drive lowers “stress”
Smooth Driving	No transmission or shifting
Connected	OnStar, cell phone, computer
No Compromises	Electric for most driving, gas when you need it
“In Control” of Gasoline Use	“Gas Anxiety”

Oh, and…

FUN TO DRIVE!

- **Elegant ride and handling** – *low center of gravity, tight steering*
- **Exciting torque** – *electric drive*
- **Attractive** – *Vehicle design both exterior and interior*

So What does a 40-mile EV range get you?

Some Volt Customers…

Lifetime MPG

Joseph & NylaVae Westlake
Orlando, FL
Total miles = 12,122
Total electric = 9,537 (79%)
Lifetime = 178 MPG
(Savings = $172/month in gas)

James Brazell
Asheville, NC
Total miles = 11,347
Total electric = 9,984 (88%)
Lifetime = 292 MPG

Bob Graham
Manhattan Beach, CA
Total miles = 18,371
Lifetime = 250+ MPG

Ted Ellyatt
Fort Myers Shores, FL
Total miles = 34,296
Total electric = 22,397 (65%)
Lifetime = 111 MPG

Jill Sorensen
Baltimore, MD
Total miles = 6,285
Lifetime = 120 MPG

Across all Volt Customers:

- Almost two-thirds of all driven Volt miles (121 million) are battery-electric (78 million)
- Volt drivers stop for gas once a month
- Volt drivers travel 850-1,000 miles between gas fill-ups

New Ad Campaign:

Volt Customer Testimonials

(ChevroletVoltage.com)

Consumer Reports:
Highest ever recorded
Customer Satisfaction Scores
(Volt = 93%)

Priya

Adam

The Kassar's

GM / EPRI / Utility Collaboration:

- Largest existing auto-utility collaborative effort -- formed in 2007
- Over 50 utility members and the Electric Power Research Institute (EPRI)
- Focus areas: Vehicle-to-Grid Technology, Aligned Messaging and Policy Priorities, New Business Opportunities (EV-to-Grid)

Unprecedented Power Industry Engagement!

EEI with the Volt at the Congressional Ballgame at Nationals Stadium

PJM CEO Terry Boston - with his Volt

Texas PUC Chairman Barry Smitherman charging his Volt

Pres. EEI Tom Kuhn with his Volt

TVA's Volt license tag

TECO Outreach Event 2011 Tampa, FL

EPRI with Volt at Plug-in 2011

NV Energy Volt charging

CHARGING AND INFRASTRUCTURE

Volt Charging Power Levels

- **120V (1.2 kW) Charging (Level 1)**
  - Plugs into standard household outlet
  - Full charge in about 10 hours (cost ~$1.50 for full charge)
  - No additional equipment or installation typically required (however, dedicated circuits are preferred)
  - 120V portable charge cord included as standard equipment with the vehicle

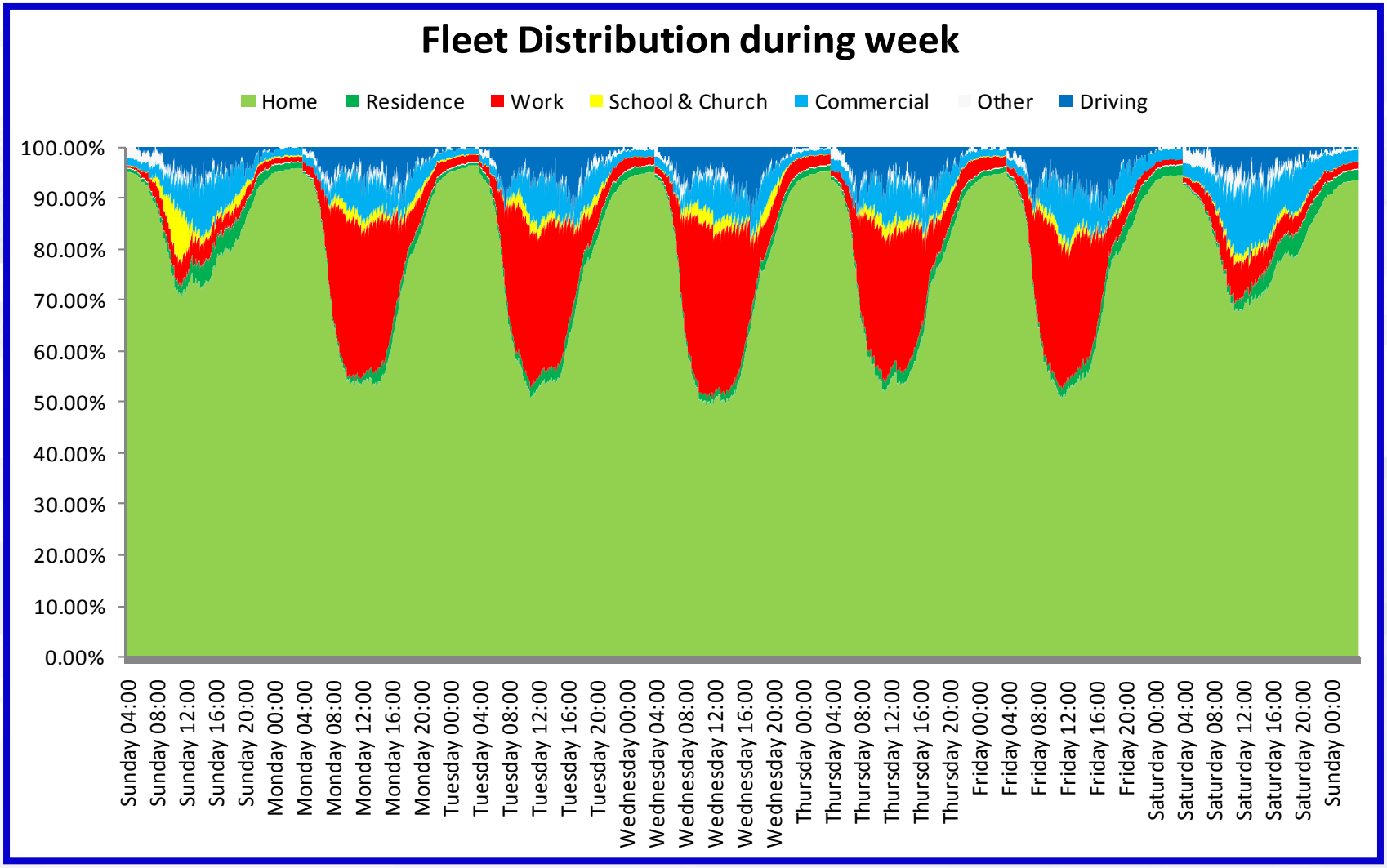
120V Portable Charge Cord

- **240V (3.3 kW) Charging (Level 2)**
  - Full charge in about 4 hours
  - Efficient and enables more opportunity to drive electrically
  - Requires a one-time investment to upgrade garage with dedicated 240V circuit

240V Charge Station

- Charger & control logic onboard the vehicle

Where are the Cars?



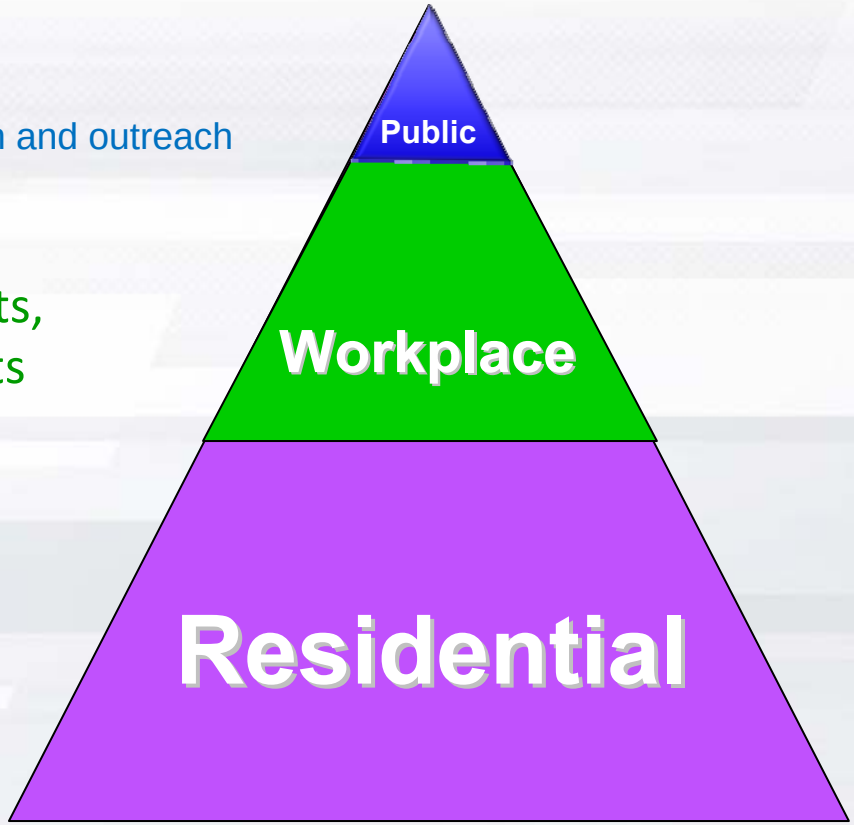
Source of Data - 2001 National Household Travel Survey ; GM Data Analysis (Tate/Savagian) - SAE paper 2009-01-1311

Charging Infrastructure: Home … Work … Public

- Public charging
  - High Visibility
  - Destination
  - Public education and outreach

¶ Workplace
- Corporate Parking Lots, Municipal Parking Lots

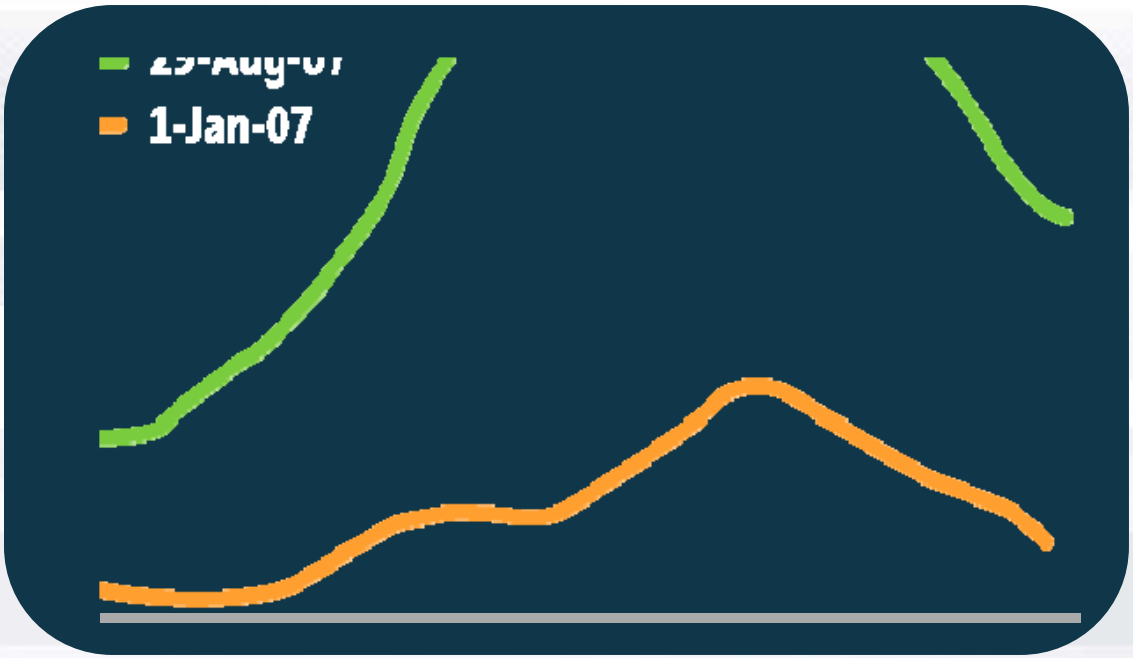
- Residential (majority)
  - Satisfying consumer-driven home installation process
  - Permits, electricians, inspections, meters, rates



Electric Grid is Designed for Peak Demand:

Consumers encouraged to Charge Off-Peak to form correct charging habits

The Volt has a “smart” delayed charge feature that shifts charging to the load “valley”



Volt's Smart Charging Today with Customer Control

Volt's Smart Charging Today with Customer Control

Volt's Smart Charging Today with Customer Control

Volt Infrastructure Learnings:

- **Roughly 50% of Volt customers charge at 120V ($0)**
- **240V grant programs likely driving some 240V demand**
- **240V installation costs range from $500 to $6,000**
  - Average installation cost is ~$1500 (plus hardware)
- **2nd Meters (to access preferred time-of-use rates) are installed in 20% of home EVSE installs**
  - Average 2nd meter installation adds $900 to the cost (CA, MI,…)
- **85% of 240V installs are in Single Family Homes**
  - Multi-family residences more complex
- **Little evidence of local grid issues with 3.3kW**
  - Some concern, but no data, for >3.3kW charging
- **DOE/INL data**
  - Average distance traveled per day = 30.8 miles
  - Home @ 240V = 10 hrs connected; 2 hrs drawing power
  - Public @ 240V = 7 hrs parked; 2 hrs drawing power

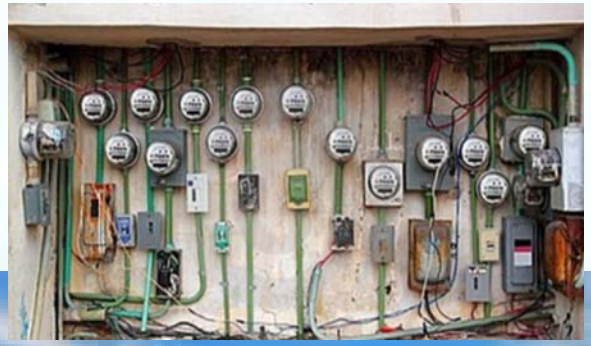
Opportunities for both more use of 120V charging and possibly for DC fast charging (though cost will be an issue)

DC Charging Opportunities

DC charging may provide better access to electricity for customers living in MDU's.

- Corner "fast" Stations to Expand Customer Base
  1. Congested residential areas with curbside parking (e.g. brownstones)
  2. Apartments, condos (e.g. Miami, Manhattan)
- Improve charge spot "throughput" at destinations (INL)
- Still don't see DC enabling long-distance BEV driving

15-30 minute stops every 100 miles?



PEV Rollout: Nat'l Education/Outreach, Sales/Service, First Responders

Education and Outreach

Electrician Outreach/EVITP
- 150+ instructors
- 750+ certified electricians

Public Outreach/EDTA
GoElectricDrive.com
- Industry-led education website
- 4,000 hits/week

Regional Outreach/DOE's Clean Cities Program

Dealer & Service Training

Sales Training
250 sessions & 2,600 dealers & 15,000 attendees

Service Training
3,200 technicians & 3,100 parts consultants & 3,500 service consultants

www.chevrolet.com
- Volt technology-to-SPX service
- Customer experience

First Responder Training

National Safety Training Program with NFPA
- 10,000+ first responders have completed EV safety training

- **GM FirstResponder Website** *https://www.gmstc.com*
- **GM and NFPA partnership for training/education** *www.evsafetytraining.org*

Outreach and Education: Resources

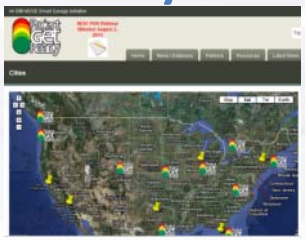
Chevrolet Volt Websites

Chevrolet.com/volt **ChevroletVoltage.com**

Electrician Training/EVITP

NECAnet.org
(Multi-day certification training)

EV-Ready Cities!



ProjectGetReady.org
(EV-readiness guidelines)

EDTA

Electric Drive Transportation Association

GoElectricDrive.com
(collaborative industry website)

First Responder Training with NFPA

GMstc.com
(GM First Responder website)

EVSafetyTraining.org
(GM and NFPA partnership)

State Task Force

PluginMichigan.org
(State task force website)

MSRP[1] as low as
$31,465

Price after tax savings. Net price shown includes the full $7,500 tax credit1,2. $39,145 MSRP1 with federal tax savings from $0 up to $7,500.

Lease Starting At
$279mo
24 mo, $2,419 due at signing[†]

Tax, title, license and dealer fees extra. Your payments may vary. Mileage charge of $.20/mile over 24,000 miles.

Search Inventory
Enter Zip

KBB Consumer Rating
9.5 *out of* **10**
overall rating

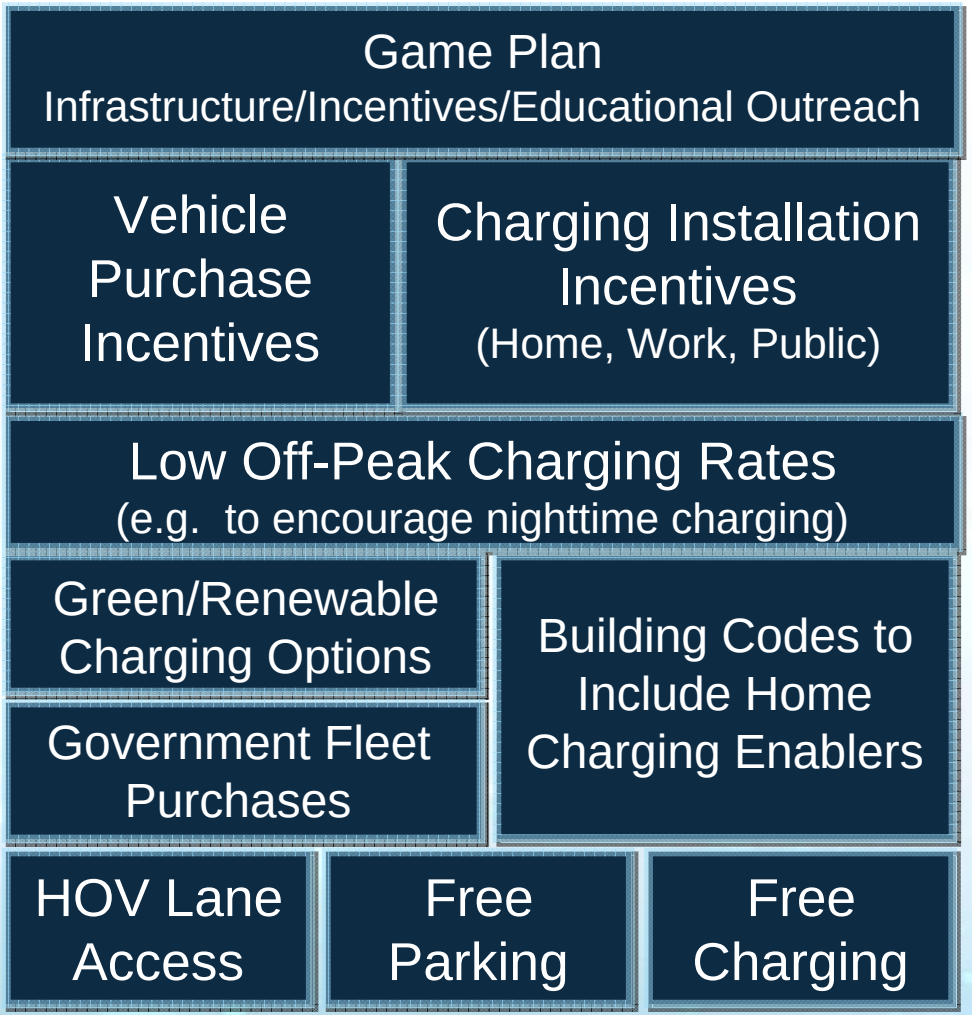
Chevrolet Spark EV

Plug-in Ready Communities

Required Stakeholders

- Dedicated project leader
- State, city, county
- Clean Cities Orgs/AQMD
- DOT
- Utilities (municipal and regional)
- Regulators/public utility commissions
- Permitting and code officials
- Local employers
- Local universities

Desired Enablers



BOTTOM LINE

What can we do to accelerate plug-in vehicles in the market?

DO EVERYTHING POSSIBLE


VOLT