NJ Sustainable Business Initiative & Clean Air Council

November 14, 2014

Chuck Feinberg, Executive Vice President, Greener by Design
Chairman and Coordinator, NJ Clean Cities Coalition

NJ Clean Cities Coalition

The New Jersey Clean Cities Coalition is a NJ registered IRS 501(c)3 non-profit corporation, and is formally designated by the US Dept of Energy as a Clean Cities Coalition.

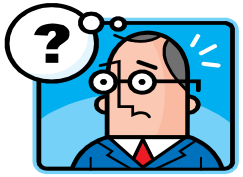
We are the only state-wide entity dedicated to the establishment of Public/Private Partnerships for the reduction of petroleum in transportation, and the advancement of alternative transportation fuels and advanced vehicle technologies.

Clean Cities - *A voluntary, locally-based government/industry partnership*

DOE CC Mission: To advance the energy, economic, and environmental security of the U.S. by supporting local decisions to adopt practices that contribute to the reduction of petroleum use in the transportation sector.

Local Coalition Support & Partnership Development:
A nation-wide backbone of direct support for Clean Cities coalitions & community leaders, strategic planning assistance

Consumer Information, Outreach, and Education: *Fuel Economy Guide, Alternative Fuel and Advance Vehicles Data Center, and other web based tools, publications, workshops.*



Technical & Problem Solving Assistance: *Access to National Labs to address Market Barriers, Safety Issues, Technology shortfalls*

Financial Assistance: *Funding to Facilitate Infrastructure Development and Vehicle Deployment projects (Competitive Awards)*

New Jersey Clean Cities Coalition

- DOE designation in 1997, as a BPU program
- Incorporated as a NJ Non-Profit and IRS 501(c)3 tax exempt entity in 2009
- Stakeholders represent the spectrum of public and private interests
- Activities funded by:
  - Member dues (various levels)
  - Sponsorships
  - grants & contracts
- Secured more than $18 million in grants for stakeholders in the past 5 years
- Outreach to more than 3000 through: LinkedIn Group, Facebook, Twitter, e-newsletter, www.njcleancities.org
- "Re-designation" due in 2015

Platinum & Gold members 2014

REG Renewable Energy Group

Clean Energy

Eastern Propane Today's Best Energy

South Jersey Gas

New Jersey Natural Gas

New Jersey Propane Gas Association

ATA Driven fleet professionals. Driving results.™

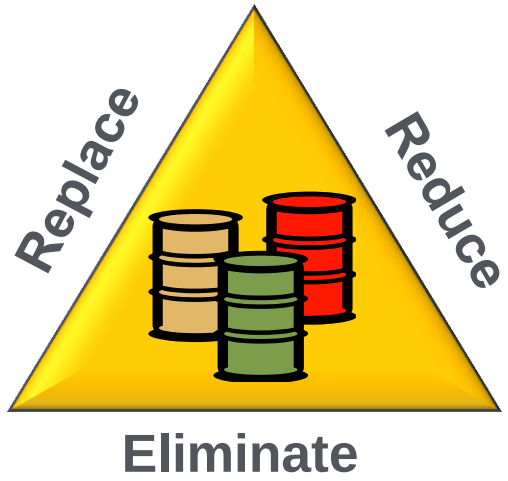
Clean Cities Portfolio of Technologies

Alternative Fuels

Electric Vehicles
Biodiesel
Ethanol
Hydrogen
Propane
Natural Gas

Idle Reduction

Heavy-Duty Trucks
School & Transit Buses
Light-Duty Vehicles



Fuel Economy

More Fuel efficient vehicles, adopting smarter driving and vehicle purchasing habits

Hybrids

Light- and heavy-duty
Electric hybrids
Plug-In hybrids
Hydraulic hybrids

Post Sandy Theme = FUEL DIVERSIFICATION!

Not just about Alternative Fuels - Idle Reduction Is the Low-Hanging Fruit of Fuel Economy

NJCCC Public/Private Partnership Projects

- DOE Clean Cities Program Support
- EPA Diesel Emission Reduction Program
  - Marine Vessel Engine Replacements
- CNG Fleet & Infrastructure Program
- Regional Electric Vehicle Network Planning, with NYSERDA/TCI

NJ CNG Vehicle & Infrastructure Project

- NJCCC led a **public/private team** to implement the first statewide deployment of AFVs and infrastructure in NJ.
- Effectively leveraged federal investment of $15mil with an additional $34 mil of non-federal for $49mil total project cost.
- Transitioned 305 highly visible vehicles to CNG from 15 fleets statewide (trash collection trucks and shuttle buses). Installed 6 CNG fueling stations.
- “Stimulated” the market for all alternative fuels by providing outreach & education to fleets, regulators and the public.
- Base program **displaces more than 2,000,000 gallons of petroleum** and avoids more than 900,000 pounds of identified criteria pollutants and greenhouse gas emissions **per year**.

Vessel Engine Replacements

- NJCCC is leading a **public/private team** to repower unregulated engines in vessels operating in NY Harbor & Vicinity with new Tier 2 and Tier 3 compliant engines.
- Many of the existing engines date back to the 1970's, with no emission controls.
- EPA-assisted project provides significant emission benefits, petroleum reduction through increased efficiency, and public education. A 3rd round of funding for more vessels is pending.

CC Program Support Contract

This is the “bread & butter” of the CC Program

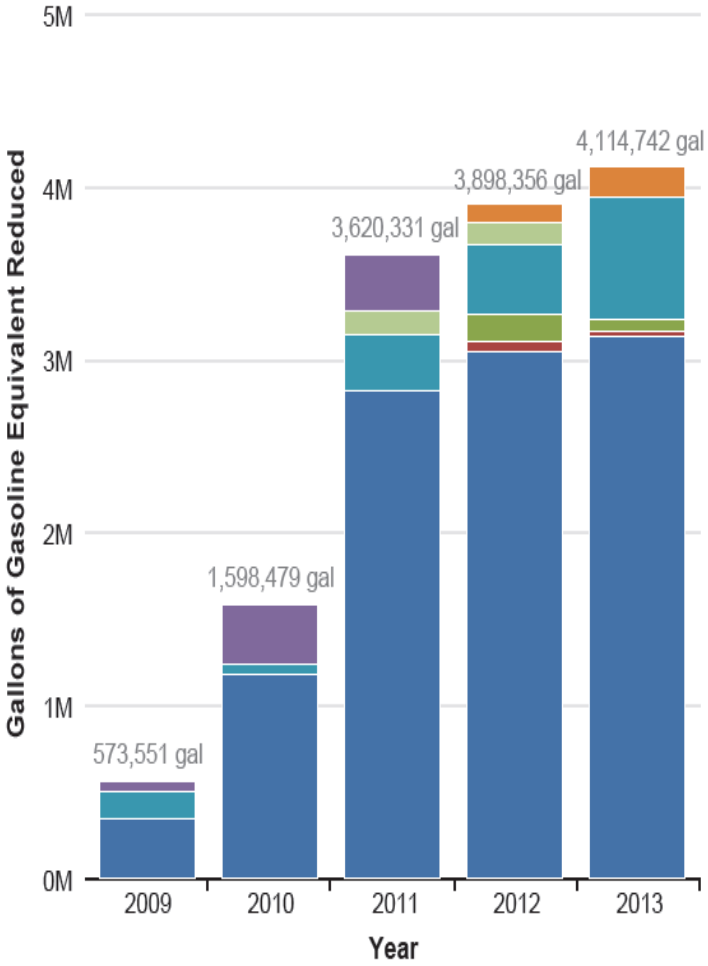
Major tasks:

- Stakeholder education and outreach
- Annual Report of Petroleum Displacement
- Quarterly Alternative Fuel Price Reports
- Maintain data for Alternative Fuel Station Locator

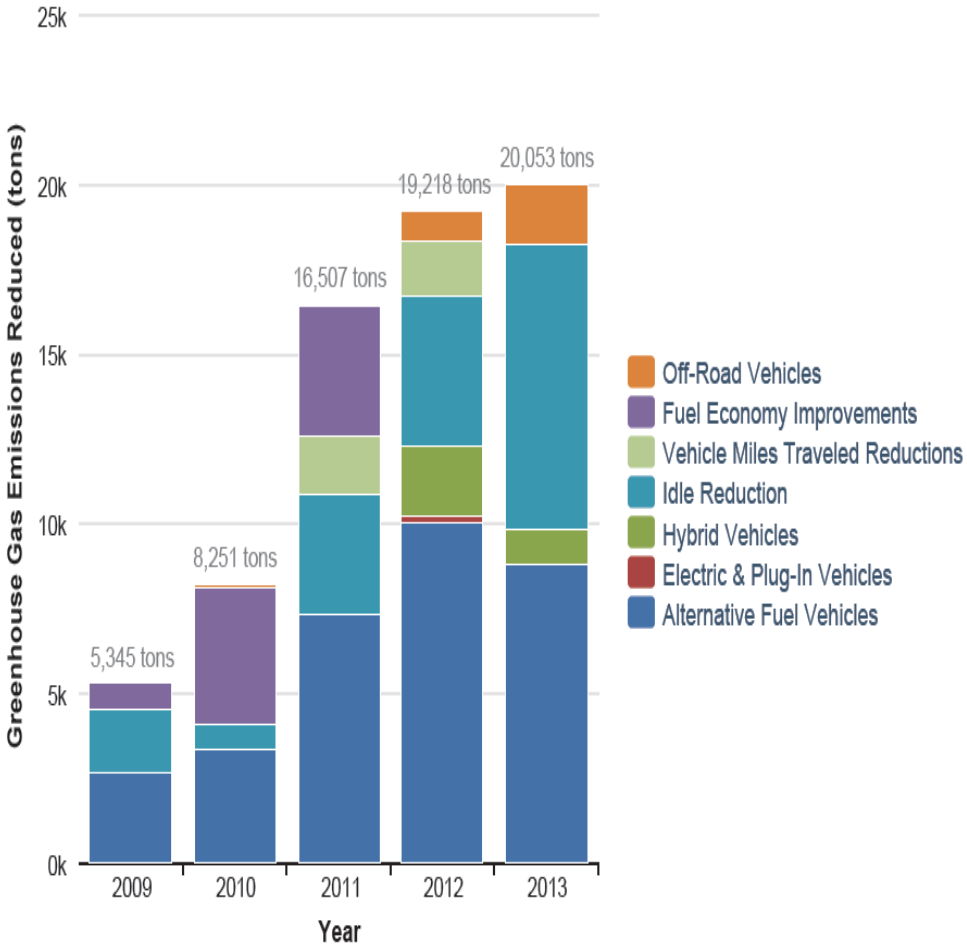
U. S. Department of Energy

Annual Report of the Impact of NJCCC-Stakeholder Activities

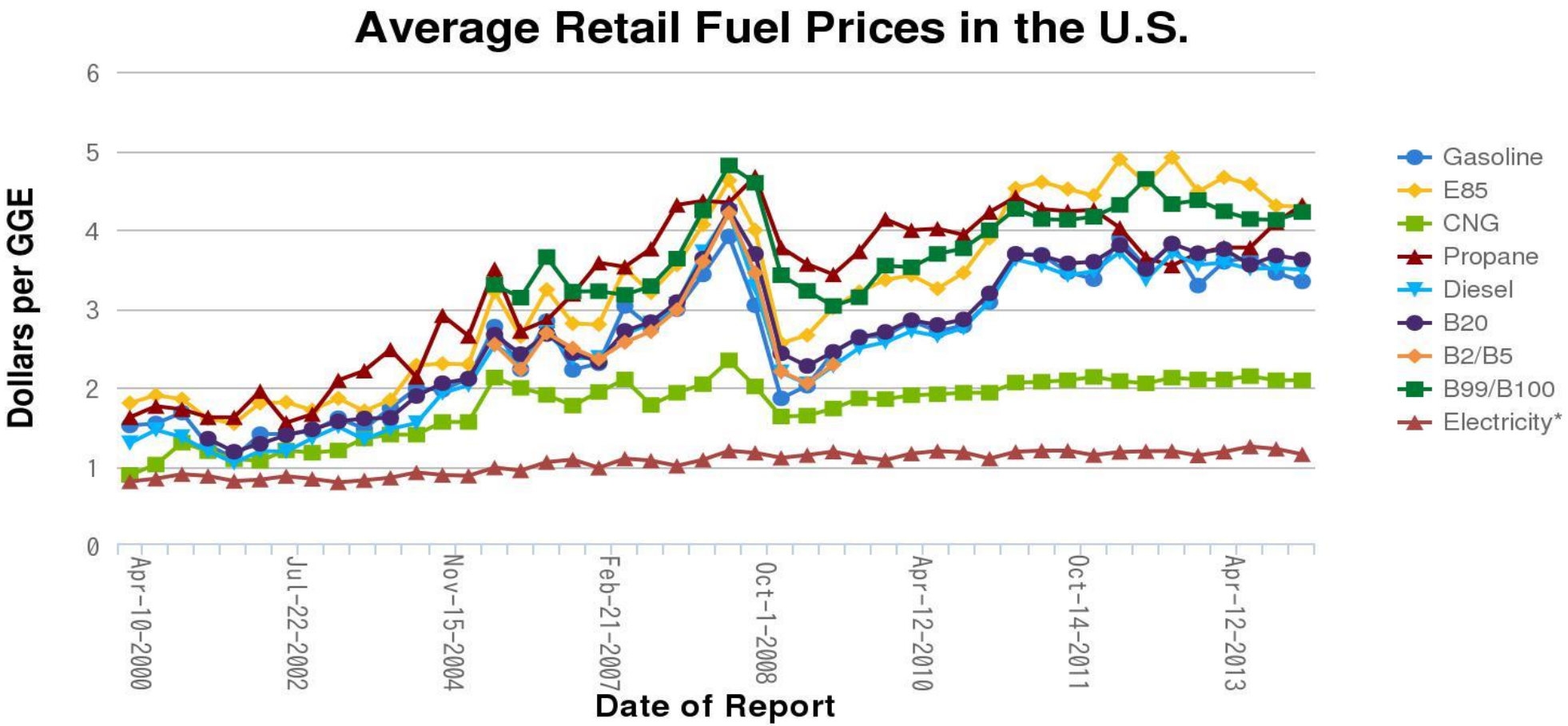
Historical Gallons of Gasoline Equivalent Reduced



Historical Greenhouse Gas Emissions Reduced

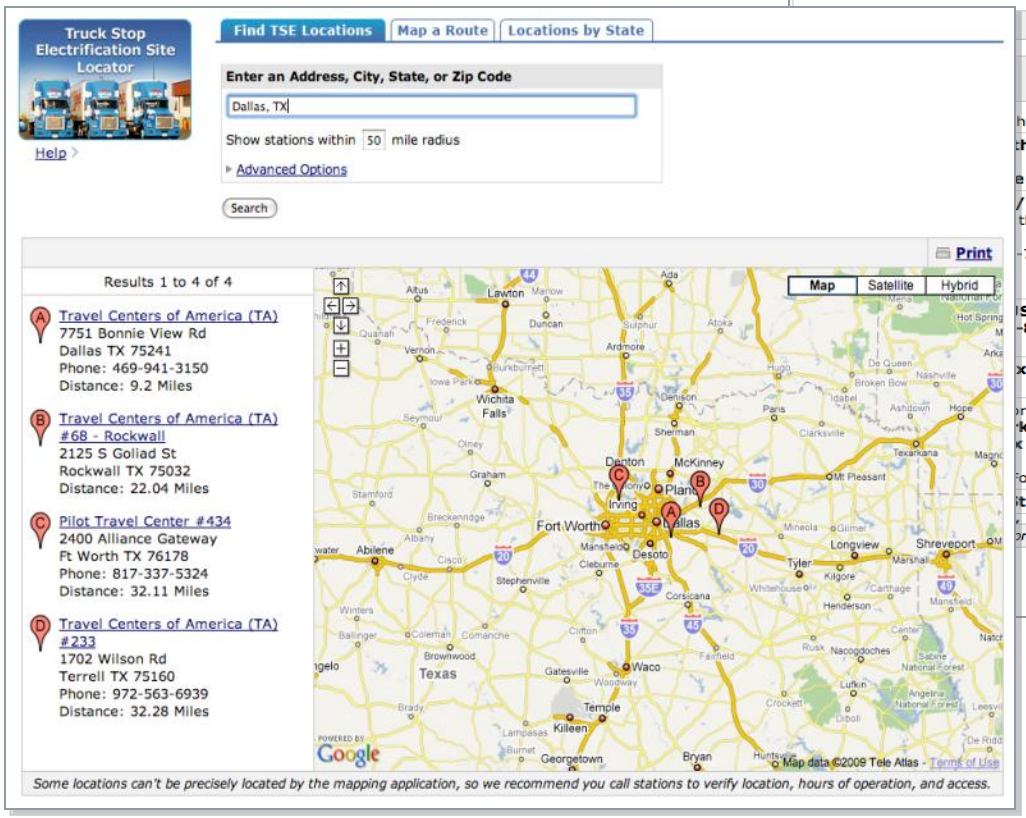


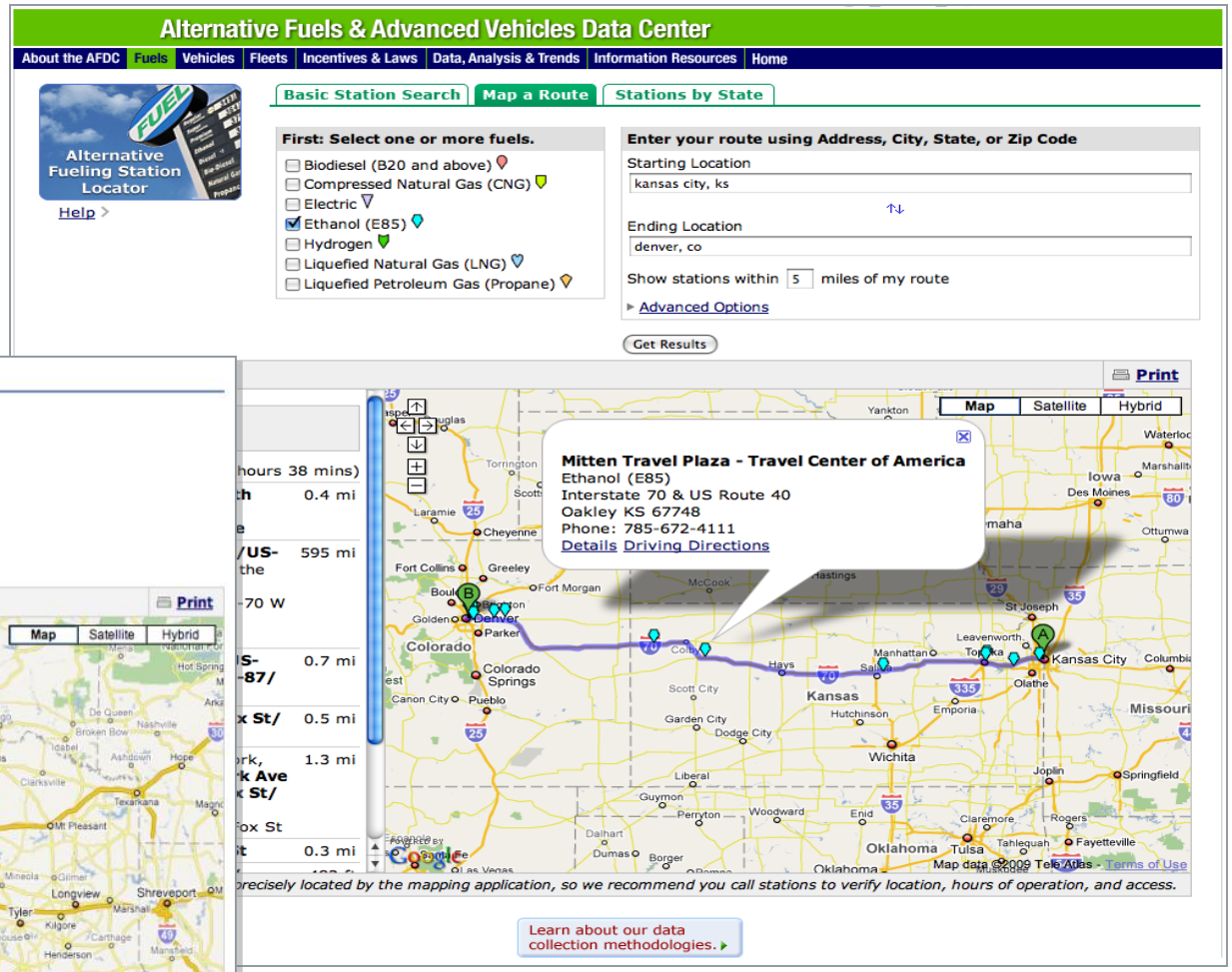
Clean Cities Quarterly Price Report



We need your help in collecting and maintaining price and station accurate data!

AFDC Alternative Fueling Station Locator





AFDC Station Locator – NJ Stations

	Public	Private
CNG	8	16
LNG	0	0
Electric – Level 2 and DC Fast	103	38
Propane Autogas	0	9
Hydrogen	0	0
Biodiesel (B20+)	1	4
Ethanol (E85)	3	2

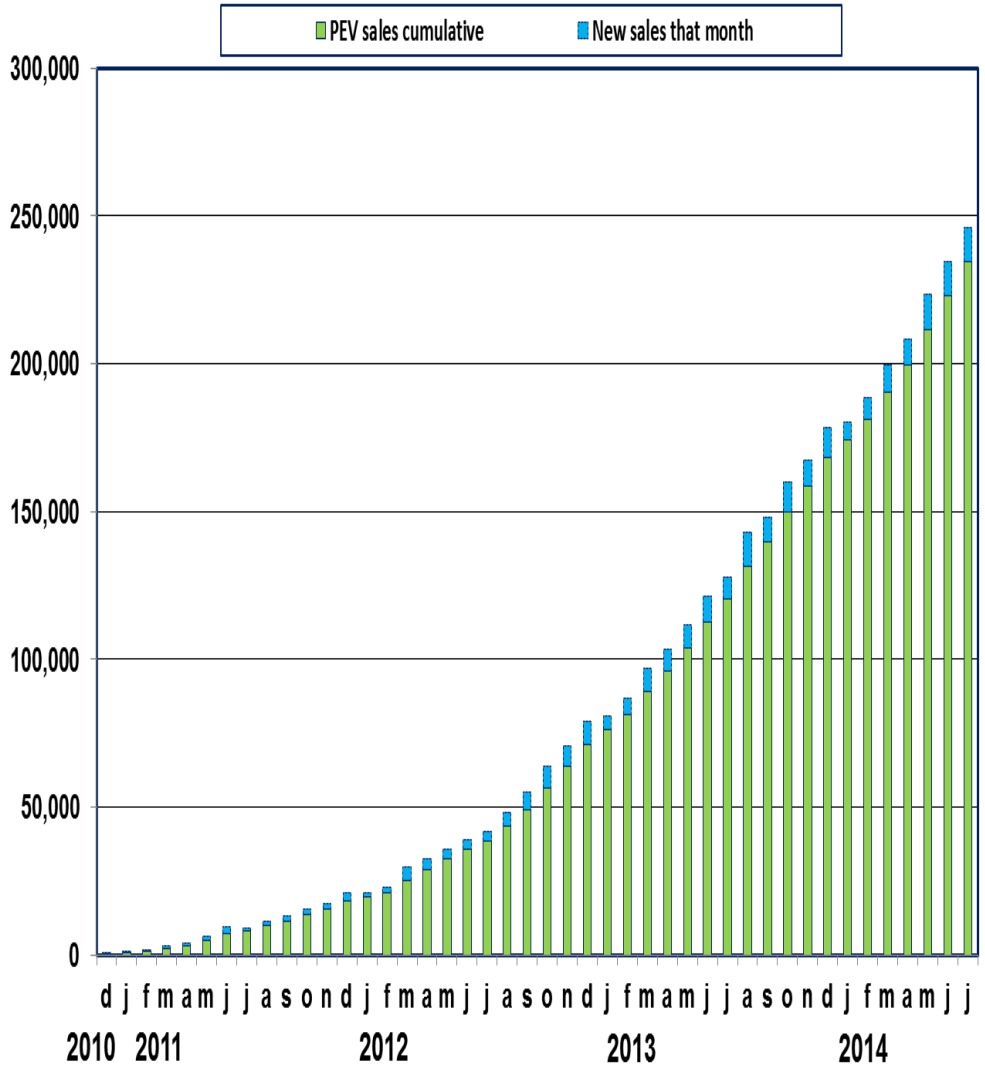
We need your help in assuring and maintaining the accuracy of this data!

Industry/Peer Recognition

- USDOE Mid-Atlantic Region's nominee for "Coalition of the Year"
- NGV America, Industry Advocate Award for advancement of Natural Gas Vehicles and Infrastructure
- Northeast Diesel Collaborative's "Breathe Easy" award in recognition of contributions to reduction of diesel emissions
- Bayshore Recycling Corporation's "Environmental Hero" award
- US Green Building Council-NJ "Emerald Award" for outstanding achievement and best practices in promoting sustainability
- Appointed by Governor Christie to NJ DCA's Propane Safety & Education Commission

U.S. PEV Sales Rising

- With more than 260,000 sold, EVs are being adopted roughly 3 times as fast as hybrid vehicles during their first three years on the market.
- The market is evolving quickly as more automakers embrace the technology.
- Zero PEV models were available three years ago, and more than 22 models are available today from 14 different brands.

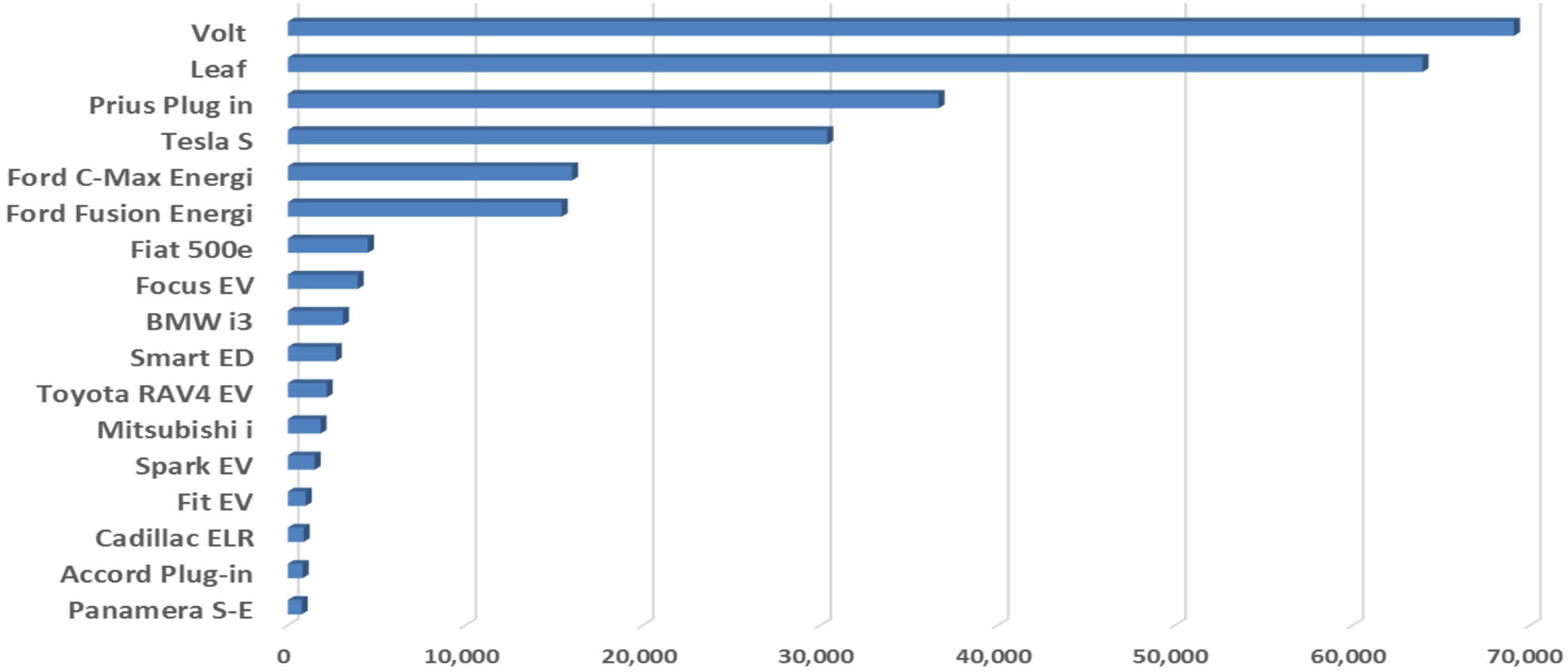


Source: Argonne National Laboratory for US Department of Energy, revised August 2014

As of: End of Sept 2014

Total PEV Sales: Launch to Date

(Source: www.insideevs.com)



Total Industry Sales of PEVs currently 266,000 – 40% of total is in CA

Chevrolet Volt Impact

- Total Miles Driven = 1 billion miles
- EV Miles Driven = 634 million miles
- Fuel Saved = 33 million gallons

Source: www.chevrolet.com/volt-electric-car.html running ticker on Feb 09, 2014

NJ Has A History of Leadership with EVs

Circa 1914, Mrs. Edison's Electric Vehicle and Home Charging Station

More Recent NJ State Efforts

- ✓ Zero Emission Vehicle Sales Tax Exemption
- ✓ Streamlined Permitting for Home Charging Station (NJDCA/NJDEP/NJCCC)
- ✓ EVs on State Vehicle Purchasing Contract
- ✓ Sustainable Jersey grants and Action Items
- ✓ Planning Efforts: NJ is a member of the Transportation and Climate Initiative. Under a Clean Cities grant, TCI developed:
  - ❖ Recharging Design & Siting Guidance
  - ❖ Model Codes, Permits, & Ordinances
  - ❖ Stakeholder engagement, education & outreach

TRANSPORTATION & CLIMATE INITIATIVE
Of the Northeast and Mid-Atlantic States

NORTHEAST ELECTRIC VEHICLE NETWORK

Plenty of Interest in NJ!

October 2014

EV Barriers and Opportunities

Consumer demand is the key barrier to market growth

- Overcoming this barrier requires major education and awareness efforts
  - At all levels - from personal and local, to state, regional, and national.
  - Direct experience with these vehicle technologies ("**butts-in-seats**") is the surest path to growing awareness and adoption.
- Consumers need to sense a compelling value proposition
  - Early Adopters vs. Traditional buyers (i.e. what's in it for me?)
  - Clear advantages and messaging

Charging infrastructure can be a key enabler

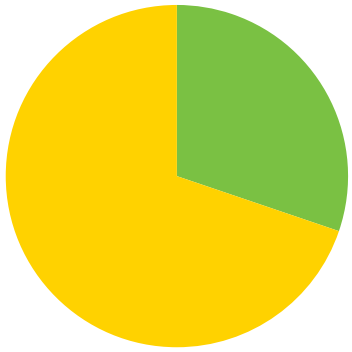
- Consumers must feel that the fueling infrastructure is more than adequate to meet their daily/routine driving needs.
- Hype is all about public and fast charging, but:
  - Home charging provides the critical backbone of all EV charging.
  - Workplace charging - **the single-most valuable solution -** directly engages corporations, executives, employees, and fleet managers, which in turn directly impacts market awareness and growth.

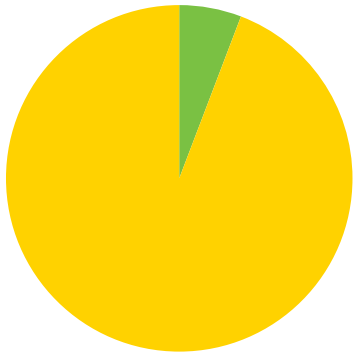
Workplace Charging

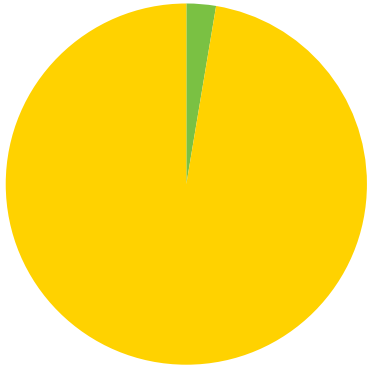
- Workplace charging fills a key role in PEV charging – it demonstrates the largest infrastructure gap, it is also provides the greatest opportunity
- Cars are parked for long periods of time
- Workplace charging can benefit both employers and employees
- Many PEV drivers will require workplace or public charging to increase electric-miles on their daily commute.
- Workplace charging may be the only option for individuals who live in multi-unit or urban dwellings where they may lack access to home charging.

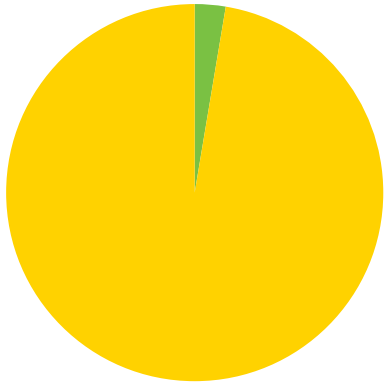
Workplace = Prime Charging Opportunity

	Workplace	Leisure Destination	Shopping Centers	Travel Stops
Day in the life of an average car	6.5-8+ hours	47 min-2 hours	28-48 min	15-53 min









Home vs. Work vs. Public Charging

Study Period 1/1/2012 – 12/31/2013

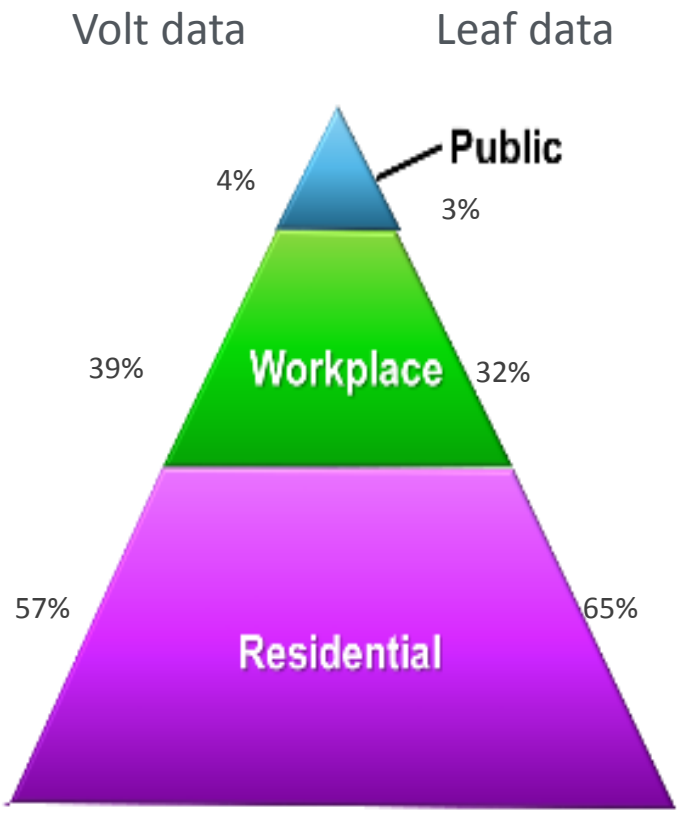
When workplace charging is available to an EV driver:

Volts:

- 57% of charging events are at home
- 39% at work
- 4% at other locations (e.g. public)

Leafs

- 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.

Source: John Smart, INL, EV Project; http://avt.inel.gov/librarybydate.shtml

Workplace Charging is Valuable to Employees

Peer Effect

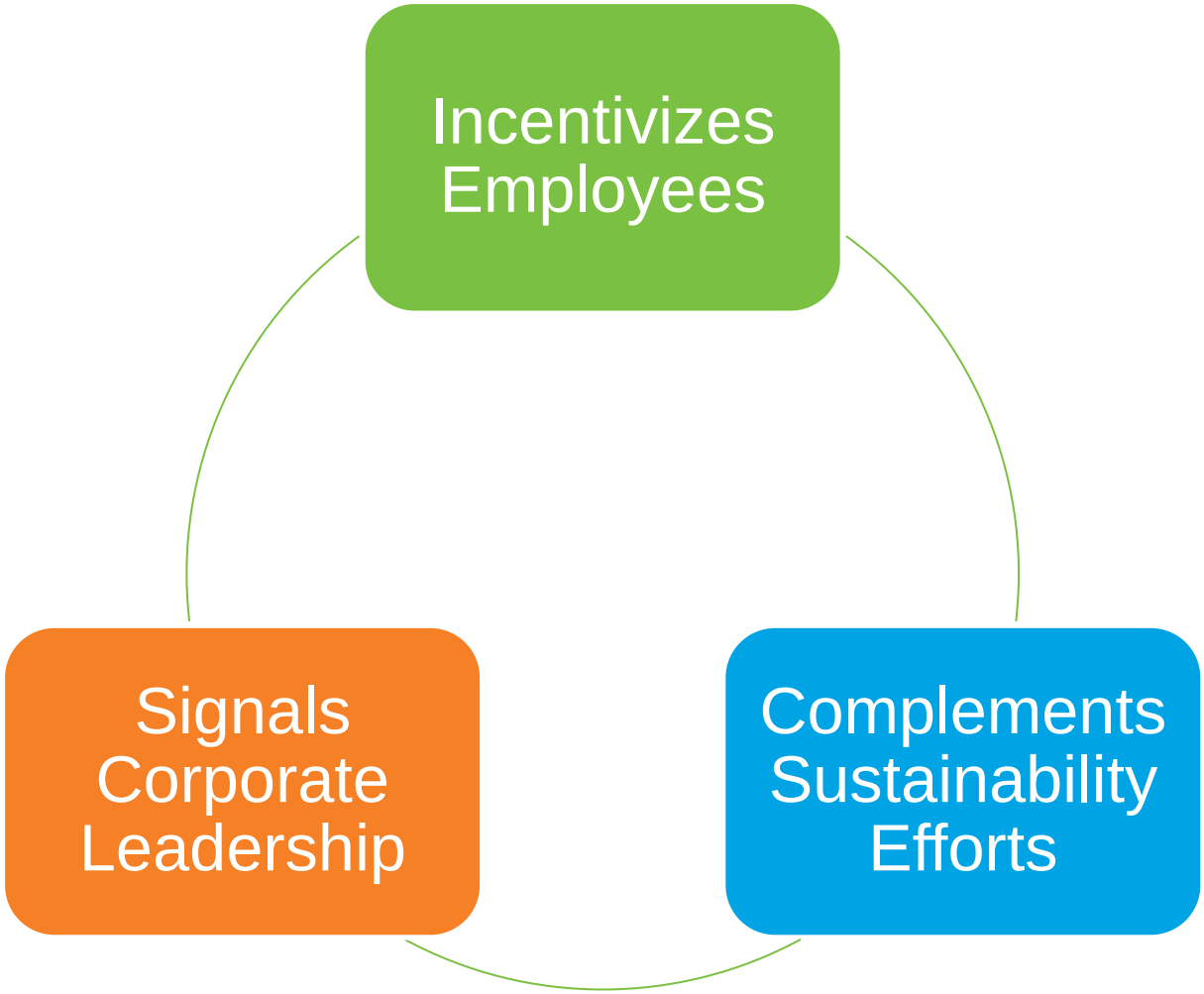
Current PEV Drivers

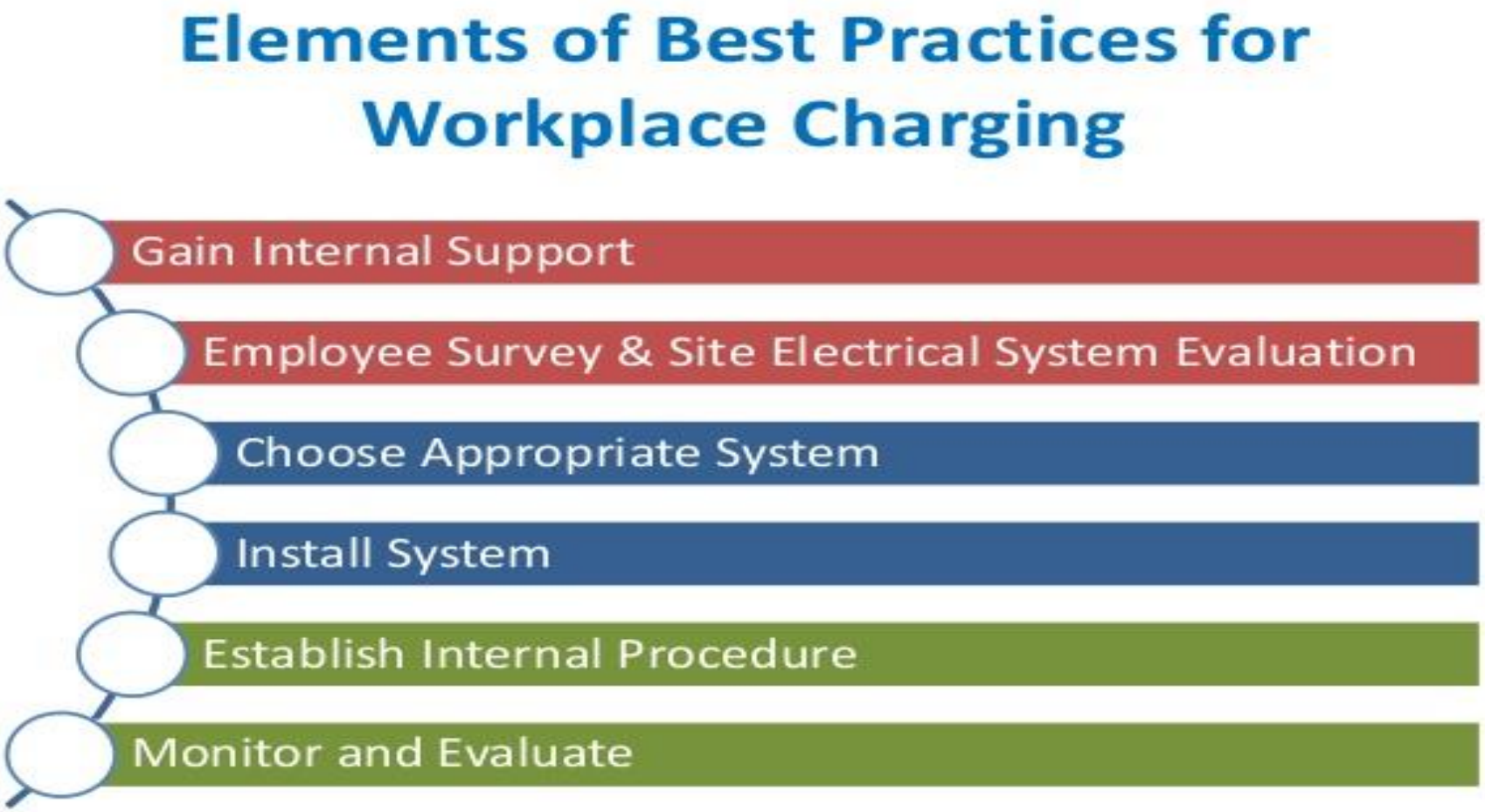
- Increased range confidence
- Increased electric vehicle miles traveled

Potential PEV Drivers

- Increased PEV awareness and education

Workplace Charging Value Proposition




Elements of Best Practices for Workplace Charging
Gain Internal Support
Employee Survey & Site Electrical System Evaluation
Choose Appropriate System
Install System
Establish Internal Procedure
Monitor and Evaluate
10

EV Everywhere and DOE Workplace Challenge

- The national EV Everywhere Grand Challenge aims to make American-made PEVs that are as affordable and convenient as today's gasoline-powered vehicles.
- Efforts in support of EV Everywhere consist of:
  - A technology push of research and development to reduce the cost of PEVs
  - Charging infrastructure development to enable the convenience of fueling PEVs
  - PEV education to help consumer acceptance of PEVs
- The Workplace Charging Challenge seeks to grow the non-residential PEV charging infrastructure and increase consumer awareness by supporting employers in their efforts to establish workplace charging programs.
- The goal is to achieve a tenfold increase in the number of employers offering workplace charging by 2018.

workplace chargingchallenge
U.S. DEPARTMENT OF ENERGY

DOE Workplace Charging Pledge

Employers who sign the Workplace Charging Pledge will:

- **Commit** to assessing employee charging demand and developing a plan to install charging stations.
- **Take action** by implementing a plan to install charging stations for employees.
- **Share progress** on achieving plan milestones over time, as well as best practices.

In support of employers who undertake the Pledge, DOE will: provide technical assistance, informational resources, an information-sharing forum; will recognize employers and will disseminate best practices.

Participants in Workplace Charging Challenge

As of Sept 3, 2014

Key Takeaways

- All of the major auto makers in the world are either selling or leasing PEV's right now in NJ.
- Electricity is a clean, domestic fuel and is a less expensive way to operate a vehicle over conventional fossil fuels.
- Costs of EV's are coming down.
- EV's are reliable, easy to operate, and fun to drive!
- The majority of EV charging will occur at home, however the workplace represents a prime opportunity.

Post-Sandy, Transportation Fuels in Limited Availability

- Limited Gasoline and diesel supplies
  - Some reported no power to run station
  - Some had no fuel due to disruptions to supply chain
- Gasoline rationing instituted
- 21% of stations still had no fuel 11 days after the storm

Importance of alternative fuel vehicles

- Sandy recovery efforts showed the value of alternative fuel vehicles/advanced technology vehicles
  - Able to provide critical services when conventional fuel supplies were interrupted
  - Alternative fuel supplies remained available post-storm
  - Points to need for **FUEL DIVERSIFICATION**
- An inventory of these resources is needed so they can be integrated into contingency planning efforts and energy assurance planning.
- Clean Cities Coalitions
  - Informed about local alternative fuel landscape
  - Connected to key stakeholders

No gas? – No problem!

Note the license plate! (EF-OPEC)

Loading Relief Supplies via Propane Hummer

“Natural Gas Minibuses Help NJ Recover From Hurricane Sandy”

PBS show highlights the Atlantic City Jitneys that run on compressed natural gas and were able to assist with evacuation and relief efforts prior to and after Hurricane Sandy

Clean Cities TV – YouTube

Alternative Fuels Data Center
Case Studies
http://www.afdc.energy.gov/case/1323

We Need Your Help

- Encourage public and private entities to lead by example
  - Bid preferences for contractors that use alternative fuel vehicles, further preference for those that make fueling available to the public
  - Transition your own fleets to use alternative fuels
  - Leverage private capital by encouraging Public/Private Partnerships to build alternative fuel infrastructure.
- Respond to Clean Cities data requests
  - New station openings
  - Quarterly price reports
  - Annual reports of petroleum reduction
- Support your local Clean Cities Coalition (financially & otherwise)!!

Contact Information

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