FAIRFAX COUNTY PLANNING COMMISSION
ENVIRONMENT COMMITTEE
THURSDAY, MAY 9, 2013

PRESENT: Frank A. de la Fe, Hunter Mill District
Jay P. Donahue, Dranesville District
James R. Hart, At-Large, Chairman
Janyce N. Hedetniemi, At-Large
Kenneth A. Lawrence, Providence District
Timothy J. Sargeant, At-Large

ABSENT: Ellen J. Hurley, Braddock District

OTHERS: Earl L. Flanagan, Mount Vernon District
Noel H. Kaplan, Senior Environmental Planner, Environment and Development Review Branch, Planning Division, Department of Planning and Zoning (DPZ)
Lorrie Kirst, Zoning Administration Division (ZAD), DPZ
Catherine Belgin, ZAD, DPZ
Michelle Stalhut, Planning Division, DPZ
Lisa Feibelman, Zoning Evaluation Division, DPZ
Ellen N. Eggerton, Green Building Ombudsman, Land Development Services (LDS), Department of Public Works and Environmental Services (DPWES)
William Marsh, Tysons Coordinator, DPWES
Jeffrey Saxe, Senior Project Manager, Kimley-Horn and Associates
Michael Krauthamer, Director, Mid-Atlantic Region, NRG Energy
Scott Miller, Vice President, ChargePoint, Inc., North America East
Barbara Lippa, Executive Director, Planning Commission Office
Jeanette Nord, Deputy Clerk to the Planning Commission

ATTACHMENTS:
A. eVgo Presentation - May 9, 2013
B. ChargePoint Presentation - May 9, 2013

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Chairman James R. Hart called the meeting to order at 7:04 p.m., in the Board Conference Room, 12000 Government Center Parkway, Fairfax, Virginia 22035.

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Michael Krauthamer, Director, Mid-Atlantic Region, NRG Energy, delivered a PowerPoint presentation regarding eVgo electric vehicle (EV) charging solutions, as provided in Attachment A.

Jeff Saxe, Senior Project Manager, Kimley-Horn and Associates, noted that his firm had received the first permit to install an electrical vehicle charger in Fairfax County and said that zoning

issues arose almost immediately as to whether the use should be considered accessory and permitted by-right, or should require submission of a Special Exception (SE) application. Scott Miller, Vice President, ChargePoint, Inc., North America East, delivered a PowerPoint presentation regarding ChargePoint's EV charging network, as provided in Attachment B.

Commissioner Hedetniemi asked Mr. Krauthamer about the low number of eVgo chargers available in the Washington, DC Metropolitan Area. Mr. Krauthamer noted that NRG Energy was also installing chargers in other areas.

When Commissioner Sargeant asked whether the Volt would need to be modified in order to use the DC fast charger, Mr. Krauthamer explained that no modification would be necessary since the Volt could use an AC Level 2 charger.

Mr. Krauthamer pointed out that DC Fast Chargers were very expensive to deploy because they were much more expense to purchase and install than other chargers. He stated that the best uses for the DC Fast Charger would be for use on long trips along the highway as well as fleet delivery vehicles in use all day and could charge midday during lunch.

Commissioner Donahue asked what challenges might arise as a result of standardizing charge station facilities. Mr. Miller explained that drivers using an EV charge card provided by one company would be unable to use it at another proprietor's facilities because of incompatibility. He added that ChargePoint was partnering with ECOtality to allow their EV customers to use both systems interchangeably.

Mr. Krauthamer noted that eVgo also provided its customers with EV charge cards, but noted that customers were given a choice of different charging plans.

Commissioner Lawrence suggested that EV charging suppliers provide engineering advice to building designers and County planning staff regarding materials like fiber requirements, equipment installation, and functionality. Mr. Krauthamer stated that eVgo representatives were working with developers in the region to provide sufficient electrical capacity to ensure that the equipment could be readily installed should the need arise. He added that developers who had equipped buildings to be ready for EV installation, or agreed to provide it, would be certified by eVgo as "Ready for EV."

Mr. Miller pointed out that ChargePoint did not require fiber because it used cellular technology for its own network as well as its DC Fast Charge and Level 2 charging partners.

Commissioner Flanagan expressed concern about submitting an SE application for EV chargers and asked if the vehicles stayed at the station longer than gasoline-fueled vehicles. Mr. Krauthamer noted that visits to EV charging stations typically correlated with visits to nearby retail establishments. Mr. Saxe added that EV charging stations had little impact on their surroundings; however, the number of chargers installed on a site could become large enough to impact the surrounding neighborhood. He said that might be the point where the SE application would be the appropriate route to take.

Commissioner Hart noted that the Zoning Ordinance did not currently address EV charging facilities, and therefore might be approved quickly. He pointed out, however, that the canopies and signs shown in the presentations might not gain quick approval because of existing zoning regulations.

Commissioner Sargeant noted that he worked for an electric utility, and encouraged the presenters to review the information on overnight wind power and consider looking at other energy options that might be more efficient. In addition, he noted that Mr. Saxe had addressed charging stations as additional installations, rather than facilities that would be fully integrated into the design of the development, with retail nearby to attract customers.

Chairman Hart announced that the Committee would soon have an increase in workload and meetings and said that additional or follow-up questions regarding Ordinance and/or policy issues should be pursued via email.

Noel H. Kaplan, Environment and Development Review Branch, Planning Division, Department of Planning and Zoning, noted that he would assemble a set of questions for members to review to reach a policy recommendation prior to the committee's meeting on Thursday, July 11, 2013.

When Commissioner Hart asked if County staff needed the committee to do anything in terms of scheduling for upcoming cases, Lorrie Kirst, Zoning Administration Division (ZAD), DPZ, said that general discussions could wait; however one site needed attention with regard to the current policy and should be addressed soon.

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The meeting was adjourned at 8:15 p.m.
James R. Hart, Chairman

An audio recording of this meeting is available in the Planning Commission Office, 12000 Government Center Parkway, Suite 330, Fairfax, Virginia 22035.

Minutes by: Jeanette Nord

Approved: October 18, 2013

John W. Cooper, Clerk to the
Fairfax County Planning Commission

eVgo

The complete electric vehicle charging solution

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www.eVgoNetwork.com

@eVgoNetwork

Safe Harbor Statement

This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. Forward-looking statements are subject to certain risks, uncertainties and assumptions and typically can be identified by the use of words such as “expect,” “estimate,” “should,” “anticipate,” “forecast,” “plan,” “guidance,” “believe” and similar terms. Such forward-looking statements include NRG’s electric vehicle ecosystem developments. Although NRG believes that its expectations are reasonable, it can give no assurance that these expectations will prove to have been correct, and actual results may vary materially. Factors that could cause actual results to differ materially from those contemplated above include, among others, general economic conditions, hazards customary in the power industry, receipt of federal loan guarantees, additional partnering relationships, competition electric vehicle markets, the volatility of energy and fuel prices, failure of customers to perform under contracts, changes in the wholesale power markets, changes in government regulation of markets and of environmental emissions, the condition of capital markets generally, and our ability to access capital markets.

NRG undertakes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. The foregoing review of factors that could cause NRG’s actual results to differ materially from those contemplated in the forward-looking statements included in this Investor Presentation should be considered in connection with information regarding risks and uncertainties that may affect NRG's future results included in NRG's filings with the Securities and Exchange Commission at www.sec.gov.

NRG Overview

- A Fortune 250 company, NRG Energy (NYSE: NRG) is the nation's largest wholesale competitive power generator.
- eVgo is a wholly-owned subsidiary of NRG Energy.
- We have built the nation's largest privately-funded comprehensive car charging network.

eVgo's Value Proposition

SUSTAINABLE.

Privately funded. Not dependent on public financing or DOE grants.

SMART.

We support all major auto manufacturers.

TURNKEY.

We typically fund all equipment, installation, maintenance, and electricity at retail sites. We also employ first-in-class IT, marketing and promotion.

PRACTICAL.

Complete solution with fixed monthly prices.

The eVgo Ecosystem

The EV Opportunity

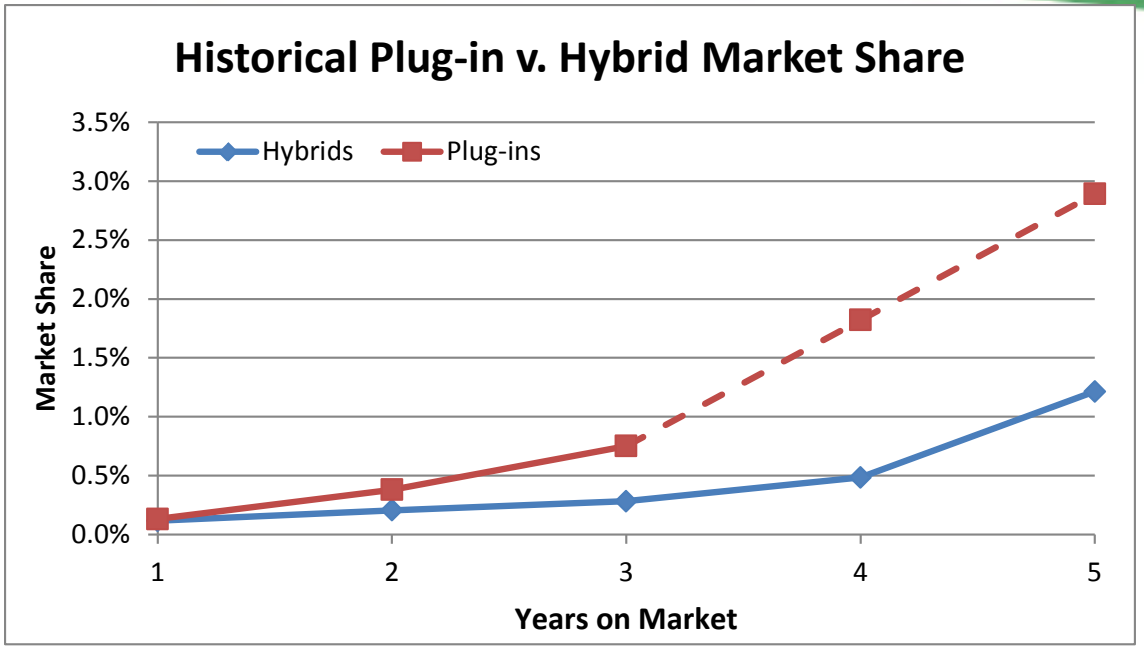
Nissan Leaf
21,000+ on US roads

Chevrolet Volt
35,000+ on US roads

Toyota Prius Plug-in
15,000+ on US roads

Ford Focus Electric
1,000+ on US roads

Mitsubishi i
1,200+ on US roads



30+ EV models on the road by 2014

Tesla Model S
5,000+ on US roads

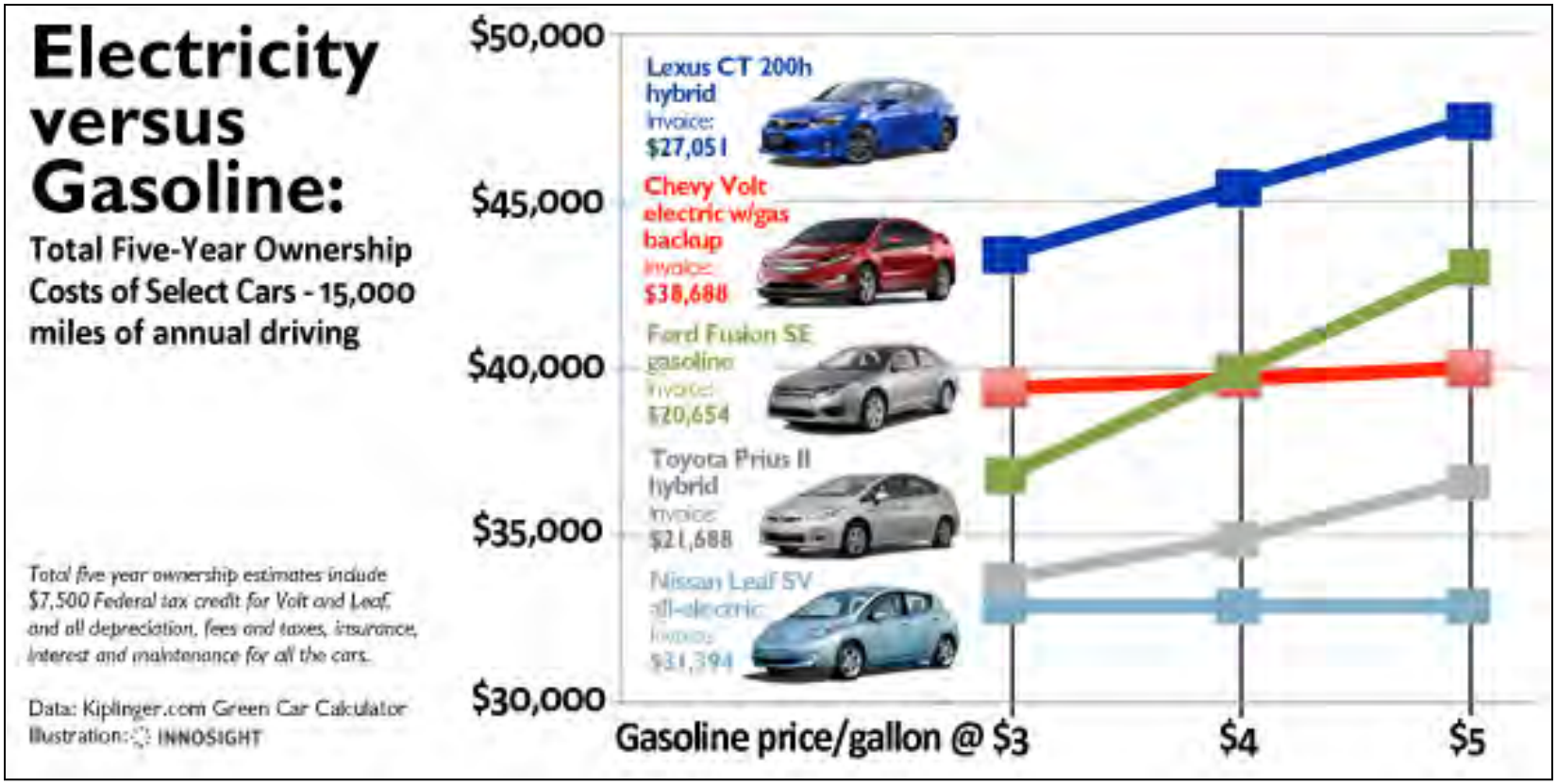
Tesla Roadster
2,500+ delivered

Toyota RAV4 EV
275+ on US roads

EVs have already achieved a level of market share it took hybrids 4.5 years to reach

Source: Automaker data, National Auto Dealer Association

EVs Already Have the Lowest Total Cost of Ownership



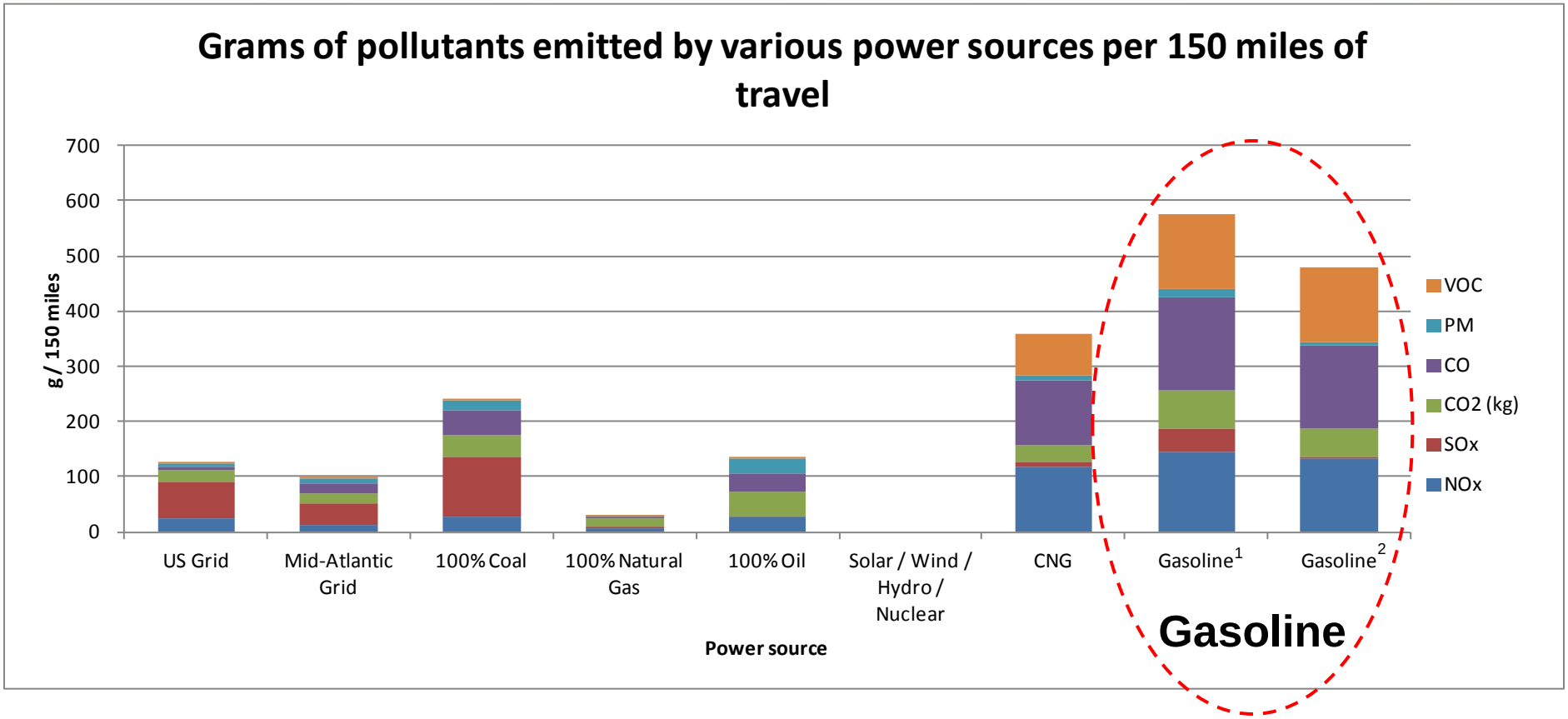
Cost of Driving 1000 Miles

Gasoline ($/gal.)	30 mpg	20 mpg
$3.75	$125.00	$187.50
$4.00	$133.30	$200.00
$4.25	$141.70	$212.50
$4.50	$150.00	$225.00
$4.75	$158.30	$237.50

Electricity at today's price (4 miles/kWh @ $0.12/kWh)

$30.00

150 Miles in an EV: Cleaner Air, No Matter the Generation Source



[1] Includes emissions from upstream processes (refining, E&P, transportation, etc.)

[2] Excludes emissions from upstream processes (refining, E&P, transportation, etc.)

Sources: EPA National Emissions Inventory 2008, Federal Highway Administration, Bureau of Transportation Statistics

Who Drives an Electric Car?

- Average HHI:
  - Volt owner ~ $150,000
  - Leaf owner ~ $125,000
- Well-educated and technologically savvy
- Environmentally focused, yet pragmatic
- Analytical decision makers
- Enjoy role as early adopter and promoting electric vehicles as viable alternatives to internal combustion engines
- Number-one traded in vehicle is the Prius

Consumers' EV Concerns

Possible concern	eVgo Solution
Range Anxiety	Fast-charging Freedom Station network.
Upfront Cost of Charging Station	Home plan includes equipment, installation, and maintenance.
Uncertainty of Electricity Cost	Unlimited Freedom Station access for a flat monthly rate.

Our Regional Fast-Charging Network

Non-eVgo Charging Today

eVgo Texas Freedom Station

New Freedom Station Prototype

Now Under Construction!

Charging Options and Levels

Level 1

Voltage: 120V AC

Slow; not practical for daily usage.

Charging rate:

3-6 miles / hour

Level 2

Voltage: 240V AC

Recommended home charger

Charging rate:

12-24 miles / hour

4 times as fast as a Level 1 charger

Level 3
DC Fast Charger

Voltage: 480V DC

Available at all eVgo Freedom Stations

Charging rate:

150 miles / hour

Requires a DC port

Multifamily / Workplaces

← Before

After →

- ✓ Low-cost, no-risk
- ✓ Scalable
- ✓ Attractive
- ✓ Ready-to-deploy
- ✓ Appealing clientele

REV CERTIFIED READY FOR ELECTRIC VEHICLE

- Each EV gets its own dedicated charger (activated via key fob)
- Host need not own, install, maintain, or support the chargers
- Energy consumed by subscribing drivers is fully reimbursed
- Chargers are installed as-needed, so spaces do not go unused
- eVgo markets property as being “Ready for EVs”

Regulation of EV Service Providers

Unnecessary regulation will constrain innovation

- **EV charging is simply the use of an electrical product, not the sale of electricity**. Electricity sold for charging electric vehicles should not be required to be sold by the kWh.
- Electricity sold for transportation is not a monopoly service, so electric vehicle service providers (EVSPs) should not be treated as traditional regulated energy suppliers.
- To the extent new metering and distribution assets are eventually required for EVs, **there's no reason to treat this differently from other infrastructure** required to reliably serve customers, the cost for which is spread across the system because of the broad-based benefits.

Public Sector and Utility Roles

Keep it simple, let the market develop

- **Government role should be standard and simple.** Though well-intentioned, subsidized public charging will distort the market and could chase away private investors.
- **Utilities and government possess non-competitive advantages**, so they should not own or offer EV-related services or EV-only rates. Subsidized cost-of-capital and other advantages will drive innovative business models out of the market.
- **Vehicle reporting requirements** have uncertain value and may inconvenience and intimidate EV buyers.

Regulators' Role in the EV Industry

Support the market

- Streamlined permitting helps.
- Support public awareness campaigns.
- Promote incentives from a variety of sources. Assistance for building retrofitting and wiring is needed.
- Encourage utilities to develop the necessary metering, distribution, and back-office infrastructure to enable a robust and competitive EV services market.

There is no substitute for private capital and a competitive market.

eVgo®

Be free

ChargePoint

The largest network of independently owned charging stations in the world

Scott Miller

V.P. North America East

May 9, 2013

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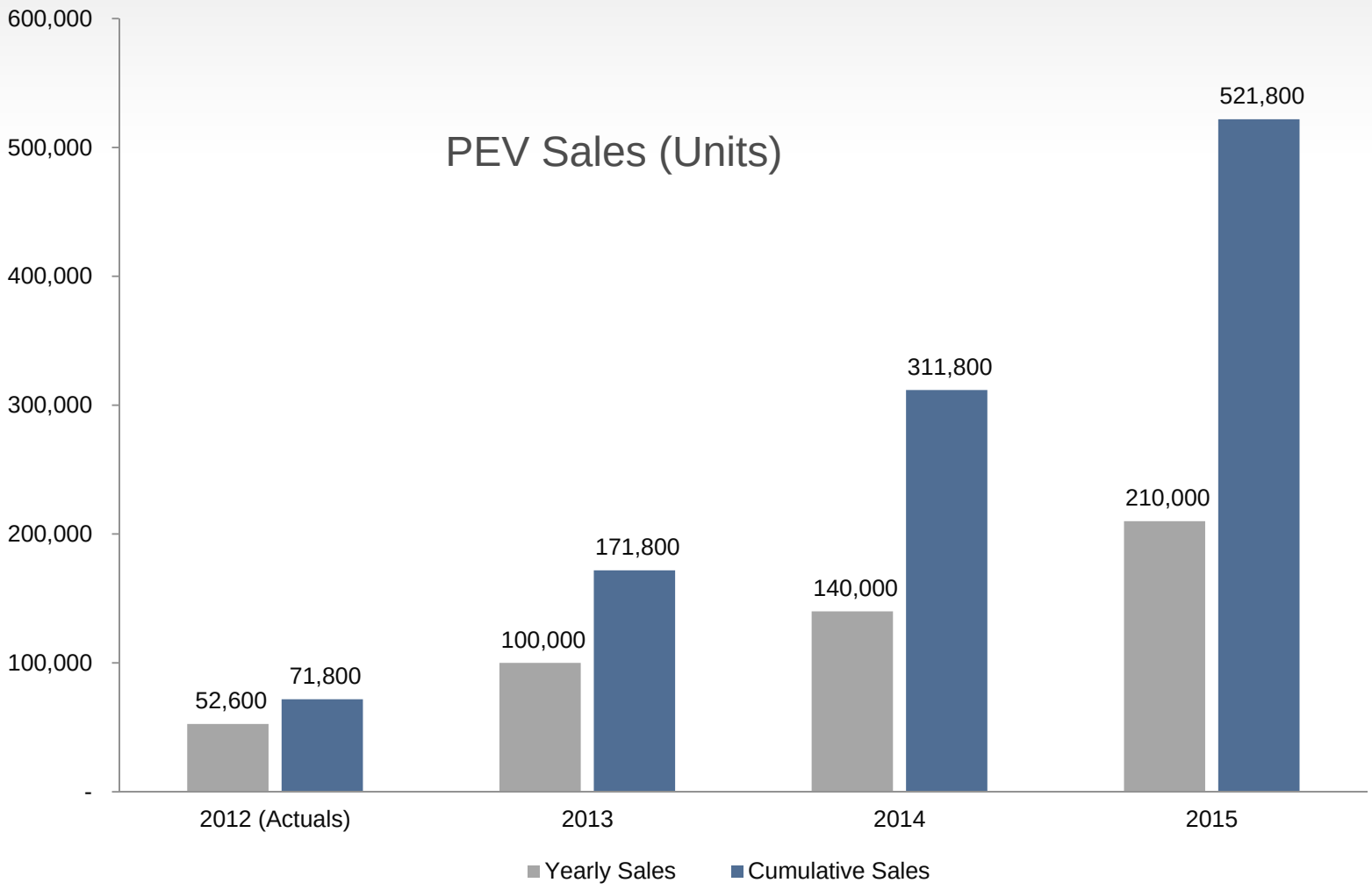
Car Volume: US



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Car Volume – Fairfax County

- According to Polk, Research Fairfax County has the most registered EVs in the State of Virginia (Jan 2013).
  - Fairfax 330
  - Loudon 108
  - Prince William 80
  - Arlington 49
- In the DC Metropolitan area, only two counties had more registered EVs
  - Montgomery, MD 478
  - Baltimore, MD 421
- Top counties in the US are:
  - Los Angeles, CA 5,873
  - Santa Clara, CA 3,246
  - Orange, CA 3,226
  - San Diego, CA 1,944
  - King, WA 1,634

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ChargePoint: The Leader in EV Charging

+ Strong balance sheet: $83M in Venture Funding

+ Top Investors
  - Kleiner Perkins
  - Braemar Energy
  - Rho Capital Partners
  - Voyager Capital
  - Siemens
  - Toyota
  - BMW

+ Most Experience
  - Shipping since 2008
  - Over 11,700 ChargePoints Installed
  - Market leader in Public Stations (68% market share)
  - Focused Exclusively on Charging Services
  - Based in Campbell, CA. All Manufacturing done in the US.

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1,700+ ChargePoint Customers

Major Employers

Google, Microsoft, 3M, Adobe, Dell, GM, SAP, Netflix, Johnson & Johnson, MasterCard, eBay, and more

Utilities & EV Service Providers

LA Dept of Water & Power, San Diego Gas & Electric, Austin Energy, Toronto Hydro, Hydro Quebec, and more

Government & Fleet

New York, San Francisco, LA, Boston, Orlando, Washington DC, Connect by Hertz, Google, and more

MDUs/Apartments

Equity Residential, The Keller Group, TGI, The Tower Companies, Alliance Residential, and more

Retail, Hotels & Shopping Centers

Kohl's, Whole Foods, Meijer, Ritz-Carlton, Hyatt, Best Western, Bellevue Square (WA), Fashion Island (CA), and more

Regional & National Parking Services

Edison Properties, Sylvan Parking, Priority Parking, InterPark, and more

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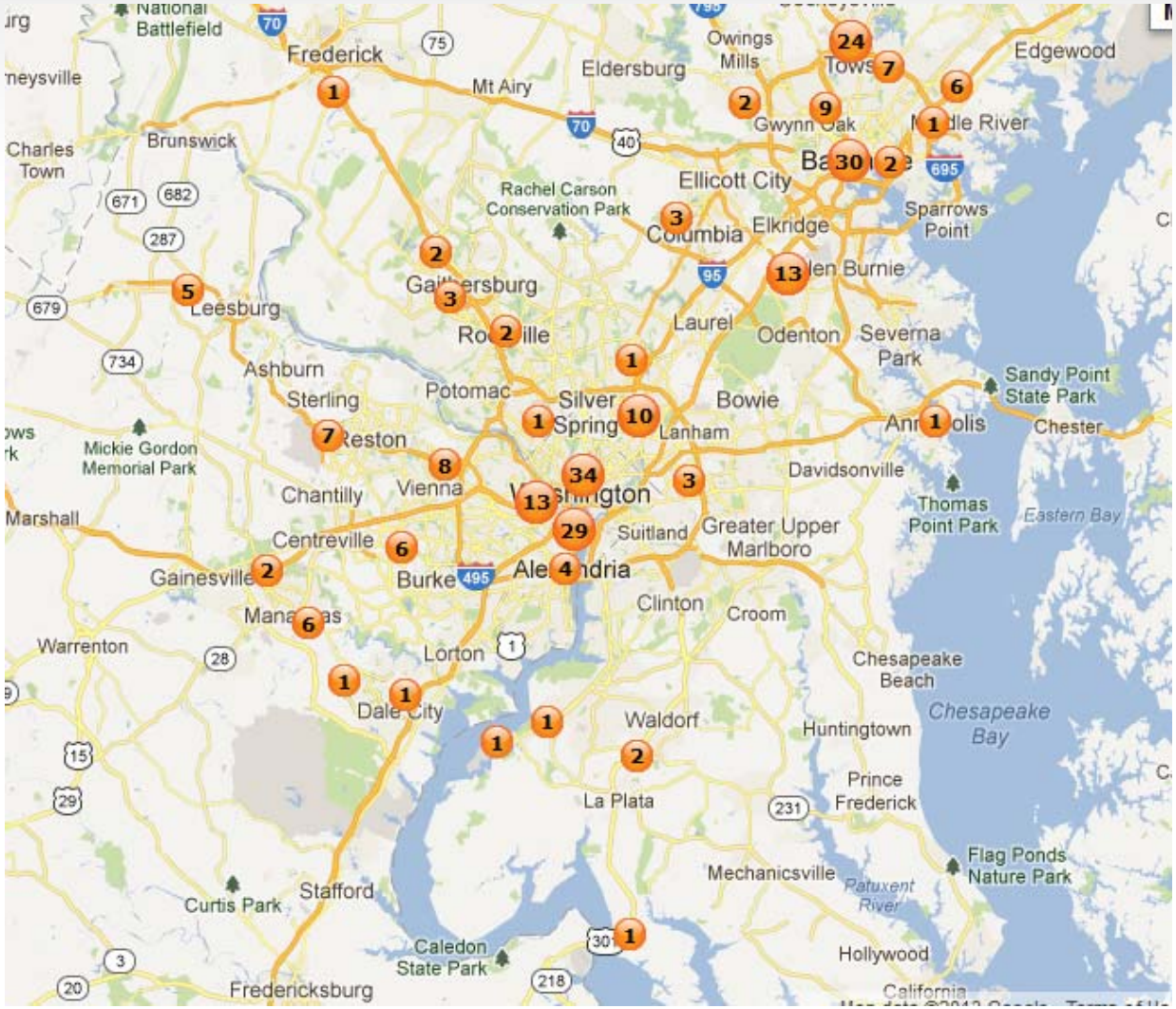
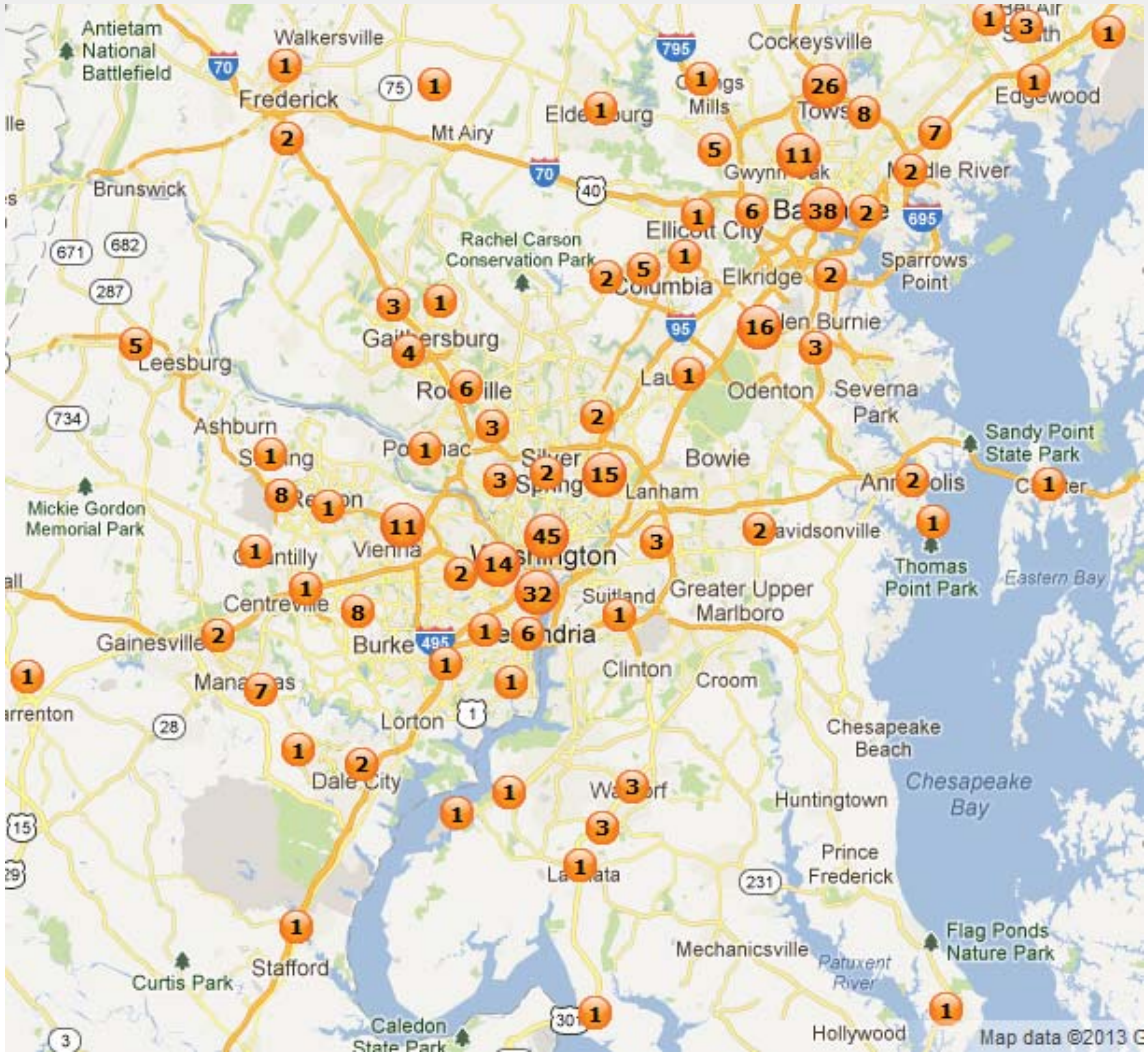
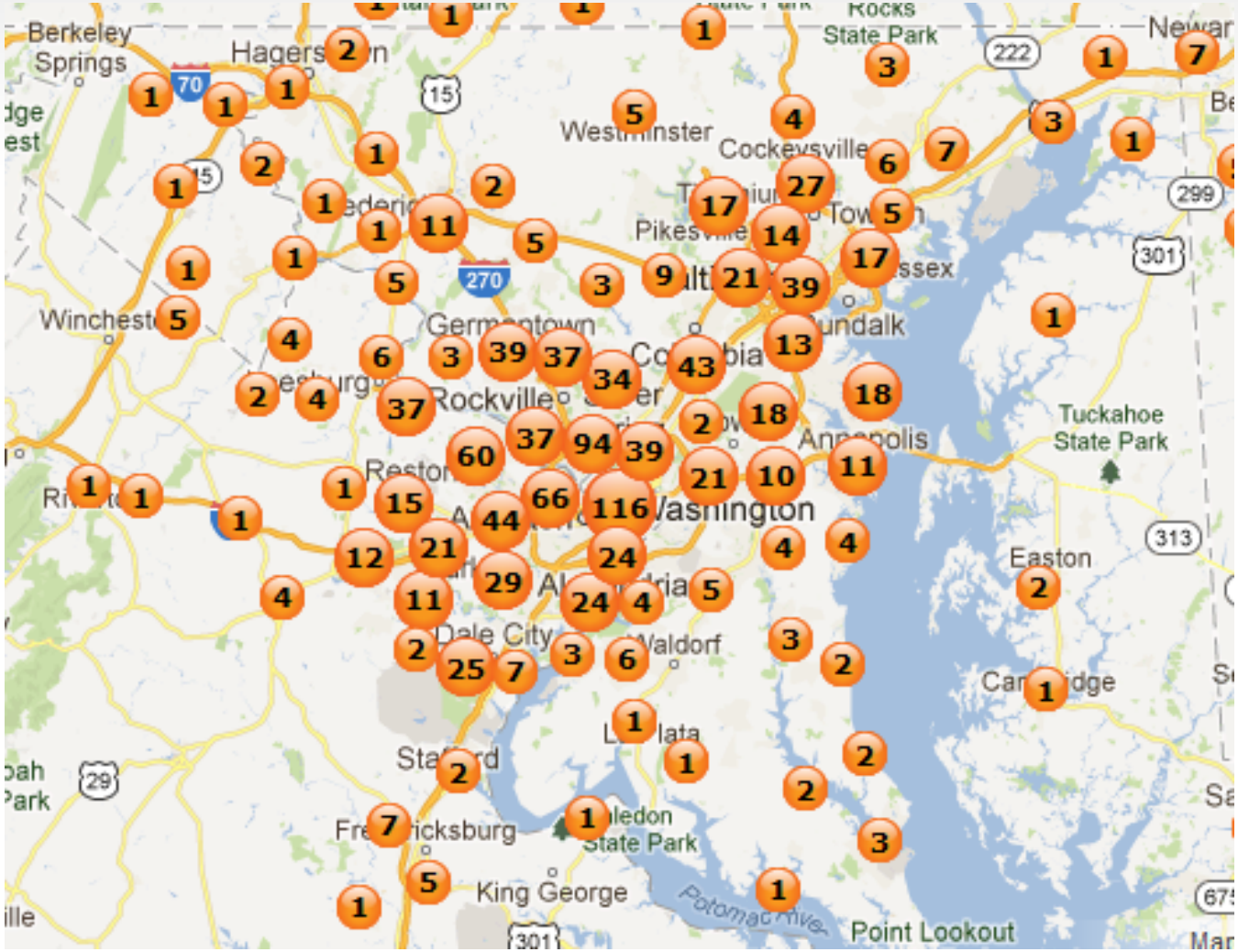
ChargePoint Network Stations in DC Metro



All Stations in DC Metro



ChargePoint Card Holders in DC Metropolitan Area



ChargePoint Open Network Solution

Services for Station Owners

ChargePoint Service Plans
Cloud-based solutions for managing EV charging

Services for Drivers

Driver Applications & Services
Web, mobile, in-car apps from ChargePoint & ecosystem providers

ChargePoint and OnRamp Stations

ChargePoint Charging Station

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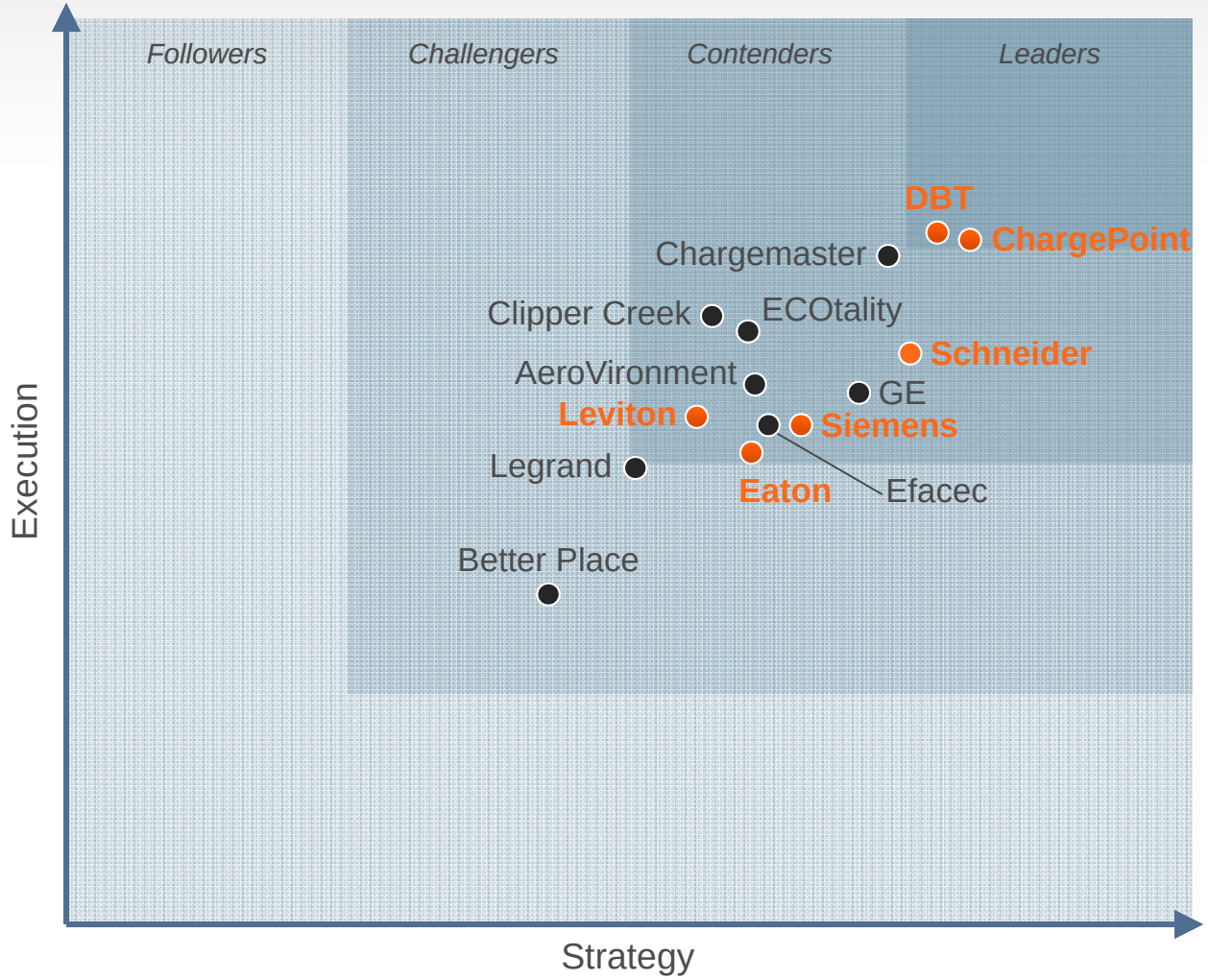
Global Players - Pike Research 2012



1. **ChargePoint**
2. **DBT**
3. Chargemaster*
4. **Schneider Electric**
5. GE
6. ECOtality
7. ClipperCreek
8. AeroVironment
9. **Siemens**
10. Efacec
11. **Eaton**
12. **Leviton**
13. Legrand
14. Better Place

● **ChargePoint OnRamp Partner**

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ChargePoint OnRamp Program

- Enables hardware manufacturers to engineer their chargers to operate on the ChargePoint network
- Includes resale agreement of ChargePoint SaaS service plans
- More unannounced partners in the pipeline
- The only program of its kind in the industry

*Siemens recently exited EV charging

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Charging Stations

- UL Listed
- Utility grade power meter
- Wireless communications subsystem
- Standards-based RFID reader
- Customizable display
- Over the air firmware upgrades
- Remote real-time alarm monitoring and diagnostics and servicing
- Durable, weather-proof, and graffiti resistant

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Auto Manufacturer Partnerships

- Driver ecosystem programs
  - Part of the EV buyer new-car experience
  - ChargePoint signup kits
- Navigation system and mobile application integration (real-time)
  - Nissan CarWings
  - BMW Connect
  - VW/Audi
  - Mercedes Benz Mbrace
  - Fiat
  - Car mobile applications

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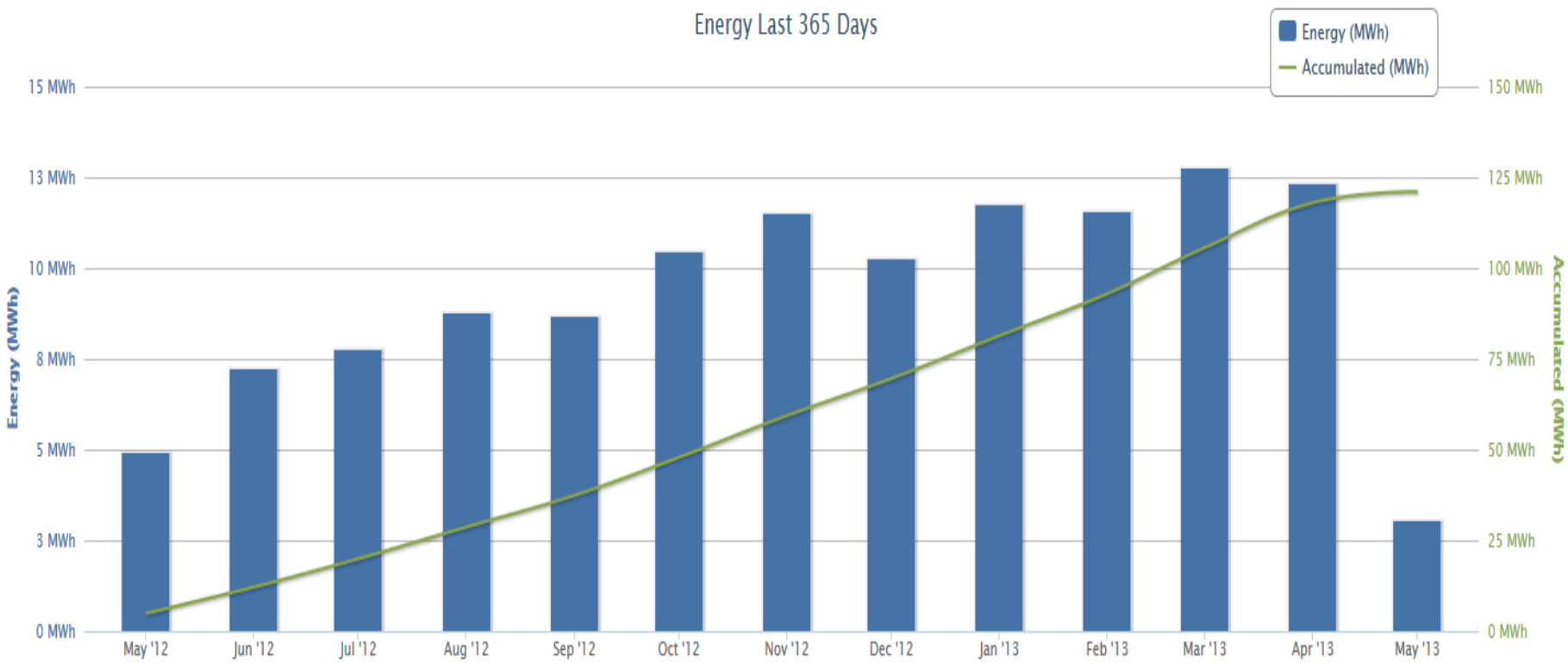
Energy Usage at Virginia Stations



121 MWh of electricity used over the past year

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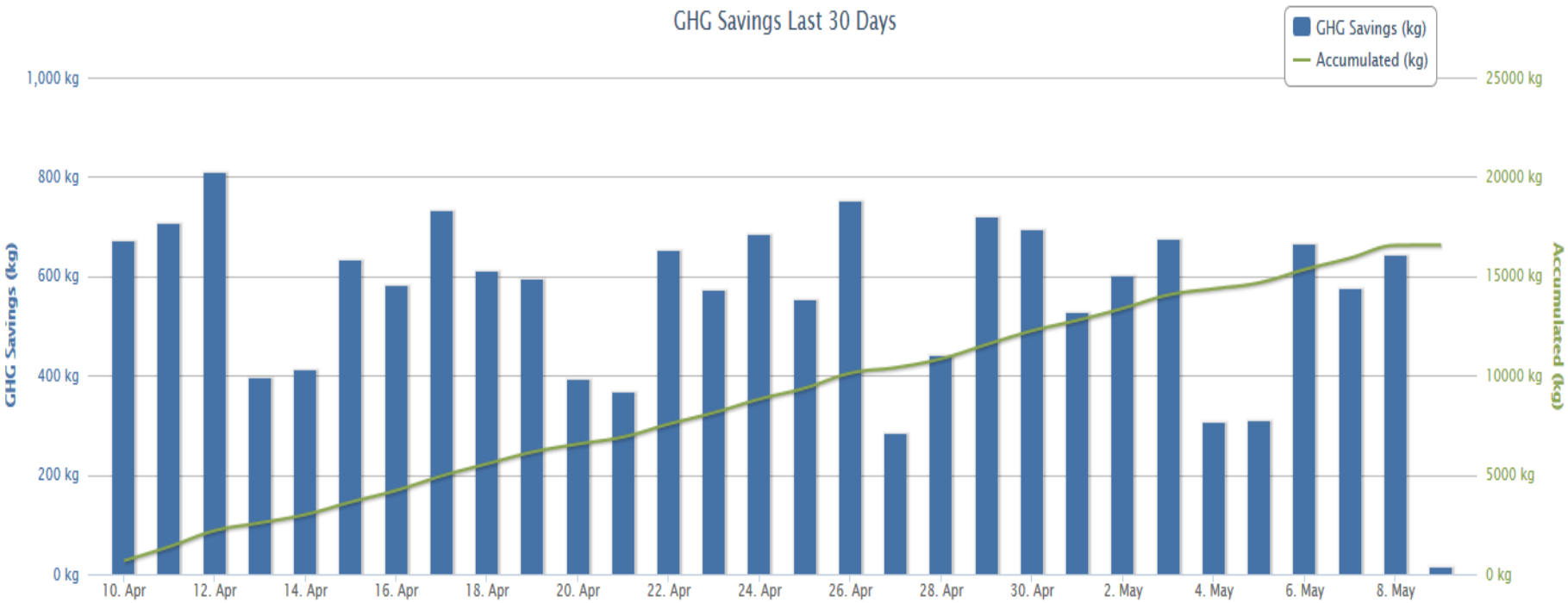
Greenhouse Gas Savings Usage at Virginia Stations



16,000 kg of green house gas savings over last month

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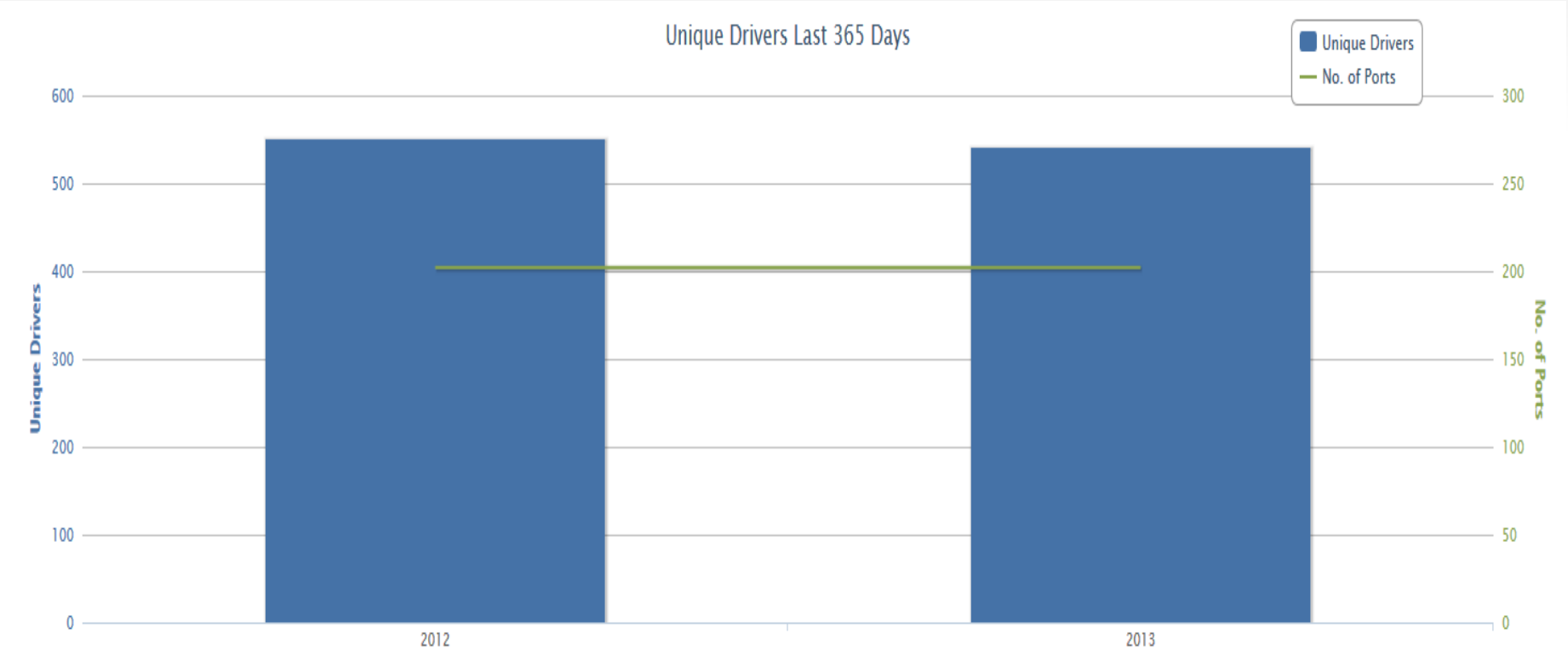
Unique Drivers Charging in VA



- 541 in the first 4 months of 2013 compared to 551 in the last 8 months of 2012
- As of Dec 31, 2012 there were 1,000 EVs registered in Virginia

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Session Length Histogram for VA Stations

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Charging for Charging

- Needed for a full deployment of charging infrastructure. Costs to amortize are: hardware, installation, networking fees, ongoing maintenance, and energy used.
- Need flexibility – kWh, per hour, per session with the ability to change pricing based on the time of day, day of the week or duration of stay.
- VA allows charging by kWh.
- kWh is the best approach to charging for charging. Different vehicles charge at different rates (Tesla vs. Volt). kWh charge is the only way to charge fairly but …..
- How do you incentivize someone whose vehicle is fully charged to move the vehicle?

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Demand for Charging

- About 80% of all charging today is done at home (primarily overnight).
- Workplace is the #2 application and growing rapidly (primarily during the day)
- Universities and Hospitals are great locations (both day and night)
- Retail chargers attract high income customers and have them stay longer
- MDUs (Apartments, Condos, Townhouses) represents a challenge for EV adoption

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Considerations for MDUs (Apartments, Condos)

- Usage: Shared vs. Private
- Who can use?/Who pays?/How?
  - Up Front: Charging Station/installation
  - Ongoing: Maintenance, capital reserves, energy costs (tracking this by driver)
  - Fees: How much? Per hour, Per Session, Subscription?
  - Utility rate implications (EV rates? Peak demand charges)
- Metering
- Zoning/code implications
- Preventing energy theft
- ADA compliance
- Managing the load

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Mitre Report Recommendations

- The County should encourage developers to include the conduit infrastructure – space, conduit banks, conduit, and access points in any new construction
- The fraction of parking slots for which the infrastructure should be included should represent a fully plug-in fleet for the groups of users that would use charging infrastructure at the facility.
- The County can most appropriately seed charging station supply by negotiating for the installation of full charging stations at the lowest expected adoption rate in the near future.
- The County should coordinate with its peer jurisdictions to encourage charging station manufacturers to form a standard defining the connection of the charging station to the facility in which it is installed.

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ChargePoint Network

The world's largest network of independently owned charging stations with over 11,000 charging spots in 14 countries

- 70%+ of the North American public charging station market
- 1,900+ organizations providing charging via ChargePoint
- 1,141+ Megawatt hours (MWh) dispensed each month—the annual equivalent of 2,800,000 gallons of gas avoided and 42 million lbs of CO_2 emissions prevented
- Over 5,000 times every day, drivers plug into a ChargePoint station
- 62,000+ mobile app downloads
- Nearly 50% of all EV drivers carry a ChargePoint card

2013 **World Economic Forum** Technology Pioneer Winner

2012 & 2011 Top ranking and top overall score, **Pike Research** report

2012, 2011, 2010 **Global Cleantech** 100

2010 **Business Week** 20 Small Businesses of the Future

2010 **Time Magazine** 50 Best Inventions

Did you know?

In the last 12 months $1.3B worth of plug-in vehicles have been sold (up 244% from the previous year)

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Thank You

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