

The IBM Smarter Cities Virtual Leadership Forum's General Session will begin at 11:15 EST. Please take this opportunity to tour the Information Center, join the discussions in the Networking Lounge, and visit TheSmarterCity interactive tool.

We look forward to discussing how we can build a Smarter Planet, city by city.

**SmarterCities**

Let's build a  
smarter planet  
city by city.



# SmarterCities

Let's build a  
smarter planet  
city by city.



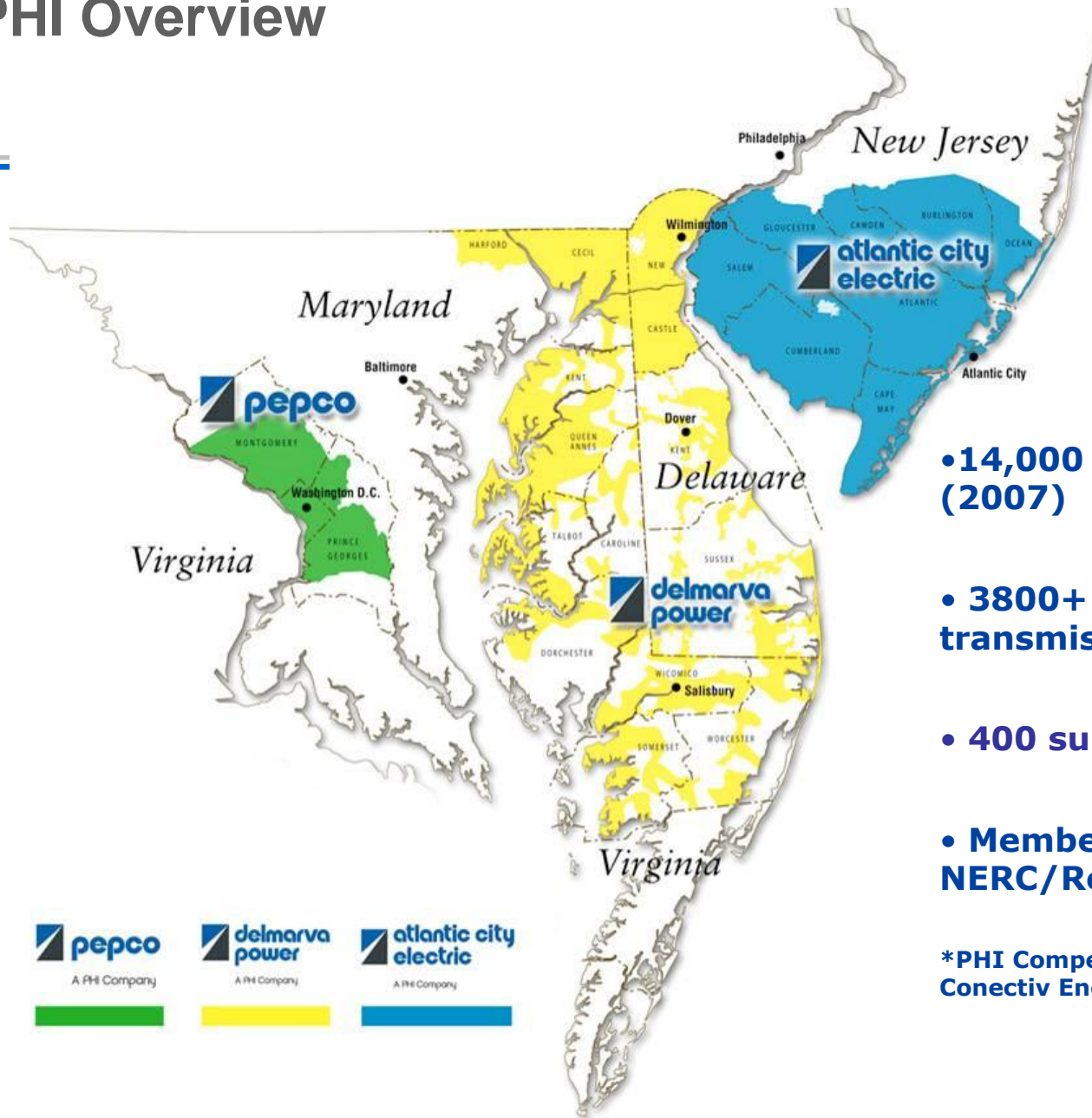
# PHI's Plans - Smart Grid/Smart City



IBM Smarter Cities  
Virtual Leadership Forum  
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JOSEPH RIGBY  
Chairman, President & CEO  
PEPCO HOLDINGS, INC

# PHI Overview



- **14,000 MW electric peak (2007)**

- **3800+ miles electric transmission**

- **400 substations**




- **Members of PJM and NERC/ReliabilityFirst (RFC)**

**\*PHI Competitive Energy Businesses include Conectiv Energy and Pepco Energy Services**

  
A PHI Company

  
A PHI Company

  
A PHI Company

	Power Delivery			
				
	<i>Electric</i>	<i>Electric</i>	<i>Gas</i>	<i>Electric</i>
Customers	767,000	498,000	122,000	547,000
GWh	26,863	13,015	N/A	10,089
Mcf (000's)	N/A	N/A	20,300	N/A
Service Area (square miles) & Geography	640 District of Columbia, major portions of Prince George's and Montgomery Counties	5,000 Major portions of Delmarva Peninsula	275 Northern Delaware	2,700 Southern New Jersey
Population	2.1 million	1.3 million	.5 million	1.1 million

Note: Based on 2008 annual data



## PHI's Smart Grid Vision...

*“Through the ‘**Smart Grid**’, customers will be empowered to make choices regarding their use and cost of energy.*

*It will create opportunities for **innovation** for the customer and PHI.*

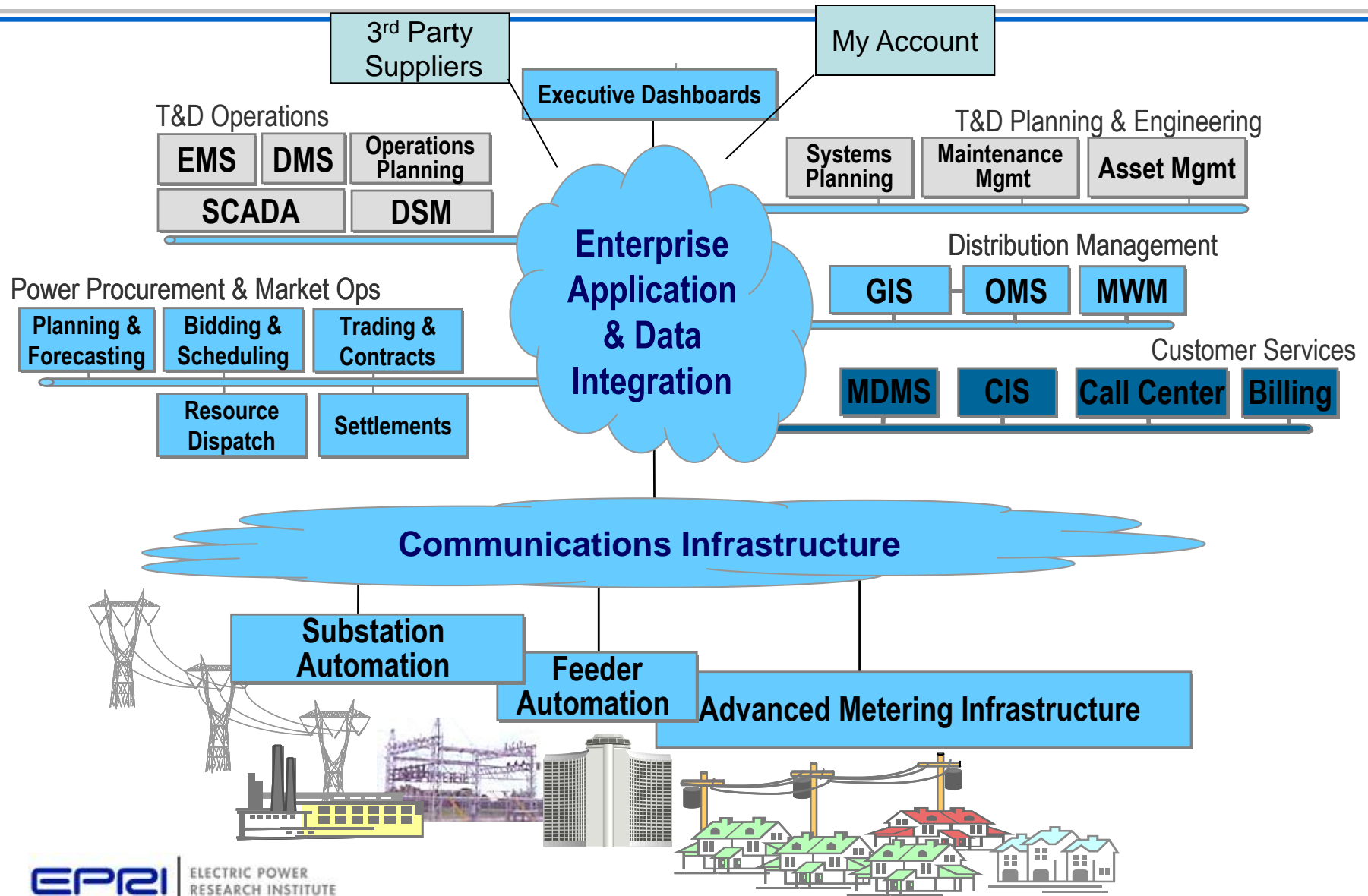
*It will provide the ability for PHI and its customers to take advantage of energy alternatives and **efficiencies**. It will allow the industry and customers to take advantage of **green alternatives**.*

*PHI's Smart Grid strategy will improve **reliability**, while ensuring data security.*

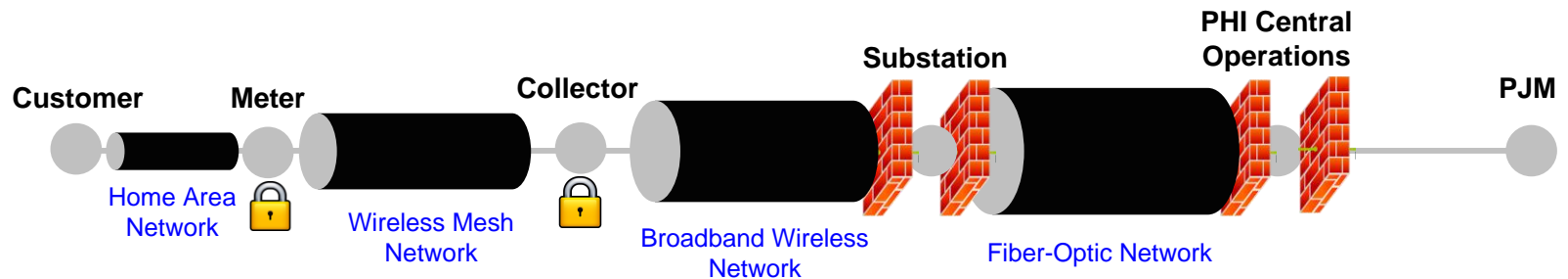
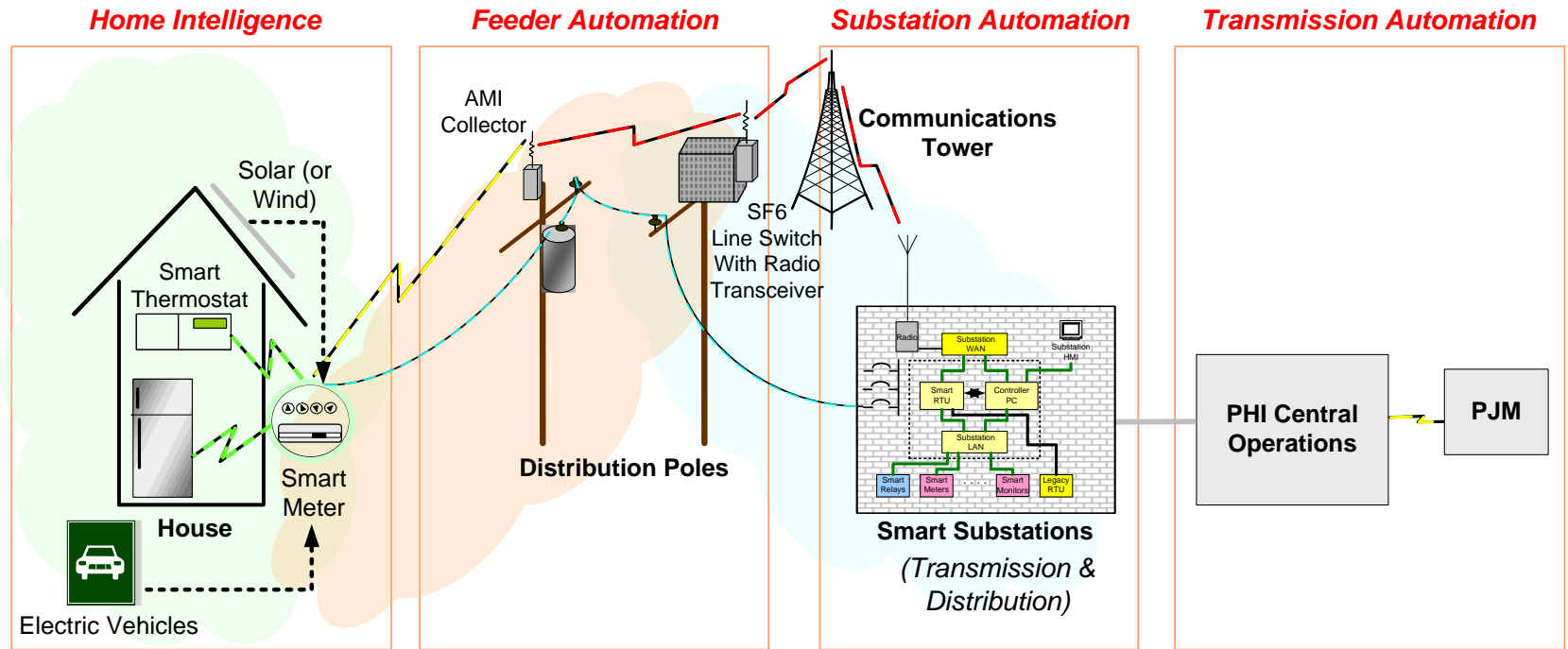
*PHI will enhance our Asset Management and Infrastructure strategies enabling us to upgrade, operate and maintain the grid assets in a **more cost effective manner**.*

*It is incumbent on PHI and the industry to ensure the achievement of this vision through complete engagement with the industry and commitment to share our joint learnings....*

# Smart Grid builds on the Communication and Information Infrastructure



# PHI's Smart Grid Domains and Integrated Communications Infrastructure



Growing volume of data...



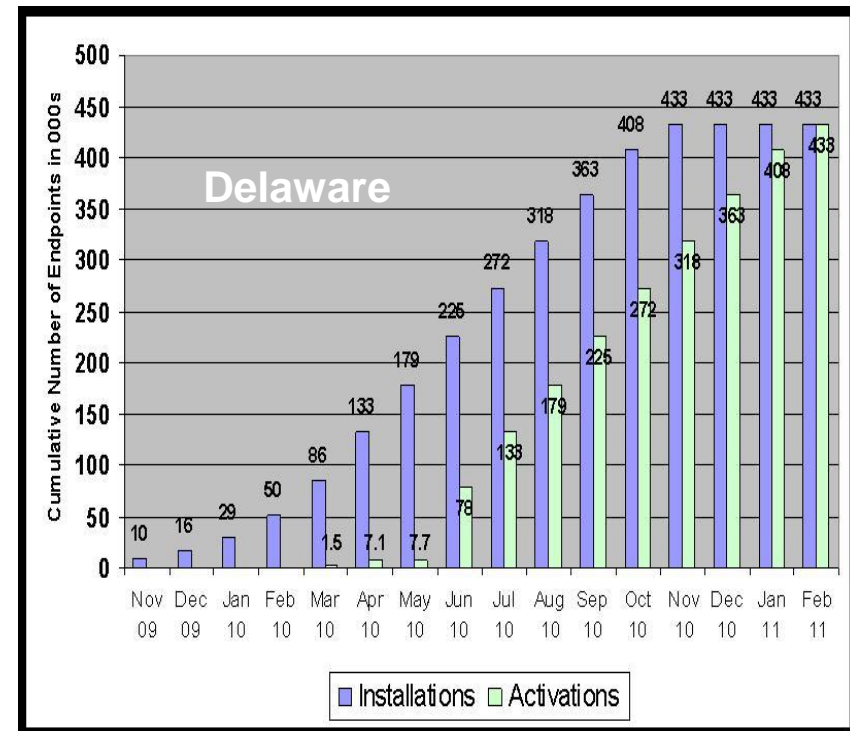
## Vendor Selections

- Silver Spring Networks – AMI communication network & head end system
- IBM – system integrator
- GE and Landis + Gyr – electric meter manufacturers
- Scope Services – meter installation contractor



## Deployment Schedule

- Q4 2009 - Commenced AMI meter deployment in Delaware
- Q1 2010 – Begin activation of customer functionality in Delaware
- Q4 2010 – Commence AMI meter deployment at Pepco – DC & Maryland
- Q2 2011 – Begin activation of customer functionality at Pepco – DC & Maryland



## Delaware Deployment – Initial Functionality

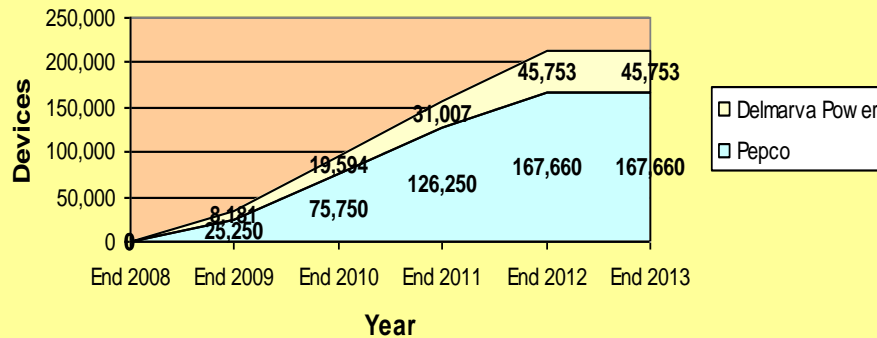
*Initiatives focus on enabling the following operational and customer functionality which are necessary to meet the expectations set by the Blueprint & AMI Business Case filings*

- **Automated Deployment** – Includes the integration of PHI's legacy systems with Scope Services and Silver Spring Networks' (SSN) Utility Head End System to support the procurement, receipt, installation and provisioning of LAN equipment and AMI devices
- **Meter to Bill** – Includes the integration of Silver Spring Networks' Utility Head End System, Itron's Enterprise Edition Meter Data Management System and PHI's Billing System to support the transfer of and billing based on monthly register reads collected "over the air" in addition to remote turn-on and turn-off of a customer's electricity via a switch in the electric AMI meter
- **Outage** – Includes the integration between, PHI's Oracle SPL Outage Management System (SPL), PHI's Outage Notification Engine, and C3 to transfer and process outage messages received from AMI meters for use in both proactive customer outage and restoration of service notifications sent via the customer's mechanism of choice (e.g. email and text)
- **Web Presentation** – Includes the implementation, configuration and integration of Aclara's Load Analysis Module to support presentation electric and gas consumption profiles to customers in addition to the presentation of daily usage on the customer's bill
- **AMI Portal** – Includes the creation of a PHI AMI Portal which allows CSRs and other designated departments to communicate directly with SSN to request and receive on-demand information stored by AMI electric meters, verify AMI electric meter status, obtain outage information and view customer's interval usage data

## MD DLC

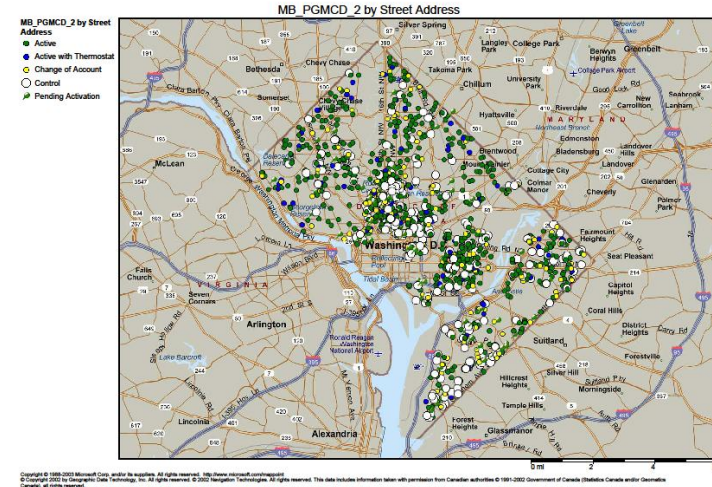
### Direct Load Control

Minimum devices required to meet energy reduction goals  
(Cumulative)



- Smart Thermostats and Outdoor switches
- Program Currently Underway
- 222,000 Devices by 2013
- Compatible with AMI

## PowerCents DC



- 780 Participants
- Pilot Designed to Test Market Receptivity to Three Pricing Alternatives (Supply Portion Only)
  1. Hourly Pricing
  2. Critical Peak Pricing
  3. Critical Peak Rebate

# Blueprint initiatives are accelerated through DOE funding...

	Pepco-DC	Pepco-MD	ACE-NJ
	-280,000 smart meters -20,000 DLC devices -17 ASR schemes -Dynamic pricing -Enabling comms	-570,000 smart meters -168,000 DLC devices -62 ASR schemes -Dynamic pricing -Enabling comms	-25,000 DLC devices -20 ASR schemes -158 Capacitor banks -Enabling comms
<b>Total Cost</b>	<b>\$89.2M</b>	<b>\$209.6M</b>	<b>\$37.4M</b>
<b>DOE Funded</b>	<b>\$44.6M</b>	<b>\$104.8M</b>	<b>\$18.7M</b>

*Impacts on PHI*

- Acceleration of installation of meter and thermostats
- Acceleration of benefit for customer to manage their energy use
- Modernization of the electric system to reduce outages, better manage the operation of the system and reduce losses

# PHI Cyber Security Guiding Principles

In PHI's Smart Grid solution, the following guiding principles for protection against attacks always apply:



- **Prevent it**, by blocking the attack or closing the vulnerabilities.
- **Deter it**, by making the attack harder using a layered security defense.
- **Detect it**, by monitoring traffic and traffic anomalies.
- **Defend it**, by encapsulating systems in ways that offer walls between networks and applications.
- **Minimize it**, by taking automatic actions to shut down portions of the network where intrusions have been detected.
- **Recover from it**, by providing network configuration and data backups to ensure recovery.
- **Control it**, through the use of strong policies and procedures.
- **Track it**, through the use of system log files, with alarm functionality if any unauthorized connection occurs.
- **Verify it**, through 3rd party assessments.
- **Assign accountability for it**, by establishing a Network Operating Center (NOC), which monitors ongoing operation of PHI Smart Grid communication performance and manages any abnormal performance.



# Electric Vehicles and the Electric System

PHI partnership with GM to purchase ten Volt electric vehicles to evaluate:

- Impact of charging on the electric grid
- Communication between vehicles and grid
- Integration with smart meters to respond to price signals and time of day charging
- Customer acceptance to price responsive signals





# Customer Education Strategy

**Customer Education Strategy**  
is one component of the  
company's efforts to achieve  
our vision as a *Trusted  
Energy Advisor*

**Trusted Energy  
Advisor**

**Customer  
Education**



Strategic plans for informing,  
motivating and enabling customers to  
embrace PHI's smart grid and energy  
management customer programs

**Technology**  
Blueprint for the  
Future

**Operational  
Excellence**

- Near-term tactics
- Longer-term strategy

**Employee Engagement**



**Change Management**  
• Educate employees  
• Maximize benefits

**Sustainability  
Vision**

**Customer  
Experience Vision**

**Regulation / Business Model**

- The smart grid will only work to the extent that customers win
- Smart Grid will move at the *Speed of Value*
  - Utilities will still need Regulatory approval for large projects related to Smart Grid
  - Standards and Interoperability are key to preventing stranded assets
- Interoperability and Standardization are not spectator activities.
  - Utilities need to get involved and make their voices heard and be engaged as individual companies and as an industry
- Through the Smart Grid, Utilities will become “Technology” Companies
  - No longer the “best solutions” but rather iterations of “Better Solutions”
  - Similar to Electric System Operations, Communication Network Operations and enhanced Cyber Security will become part of our future DNA
- Introduction of electric vehicles will not only change the transportation industry but will also require a smart grid that can be responsive to when vehicles are charging and track who is charging anywhere across the system
- Legislation should be applied judiciously
  - Standards are hard to change, laws are nearly impossible.

Please submit your  
questions now.



Joseph M. Rigby

Chairman of the Board,  
President and CEO of  
Pepco Holdings, Inc.



Bridget van Kralingen

General Manager,  
IBM Americas

