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Pepco Holdings Inc

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T&D USERS GROUP 2014
The **Power** of **Data**

ALBANY
SEP
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DECISION READY IN REAL-TIME

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Agenda

- Pepco Holdings, Inc. Overview
- Asset Framework Design and Importance
- PI Notifications
- EMS Event Storage and Retrieval
- PI Coresight Usage
- PI Web Parts with PI Data Services
- EMS Display Conversion
- Future Plans

About Pepco Holdings, Inc.

- Approximately 2 million customers in Delaware, the District of Columbia, Maryland and New Jersey
  - Atlantic City Electric, Delmarva Power and Pepco provide regulated electricity service
    - Delmarva Power also provides natural gas service
  - Pepco Energy Services is a non-regulated subsidiary that provides energy efficiency and renewable energy services

Pepco Holdings, Inc. Quick Facts

- Incorporated in 2002
- Service territory:
  8,340 square miles
- Customers served
  - Atlantic City Electric:
    - 545,000 – electric
  - Delmarva Power:
    - 503,000 – electric
    - 125,000 – natural gas
  - Pepco:
    - 793,000 – electric
- Total population served:
  5.6 million
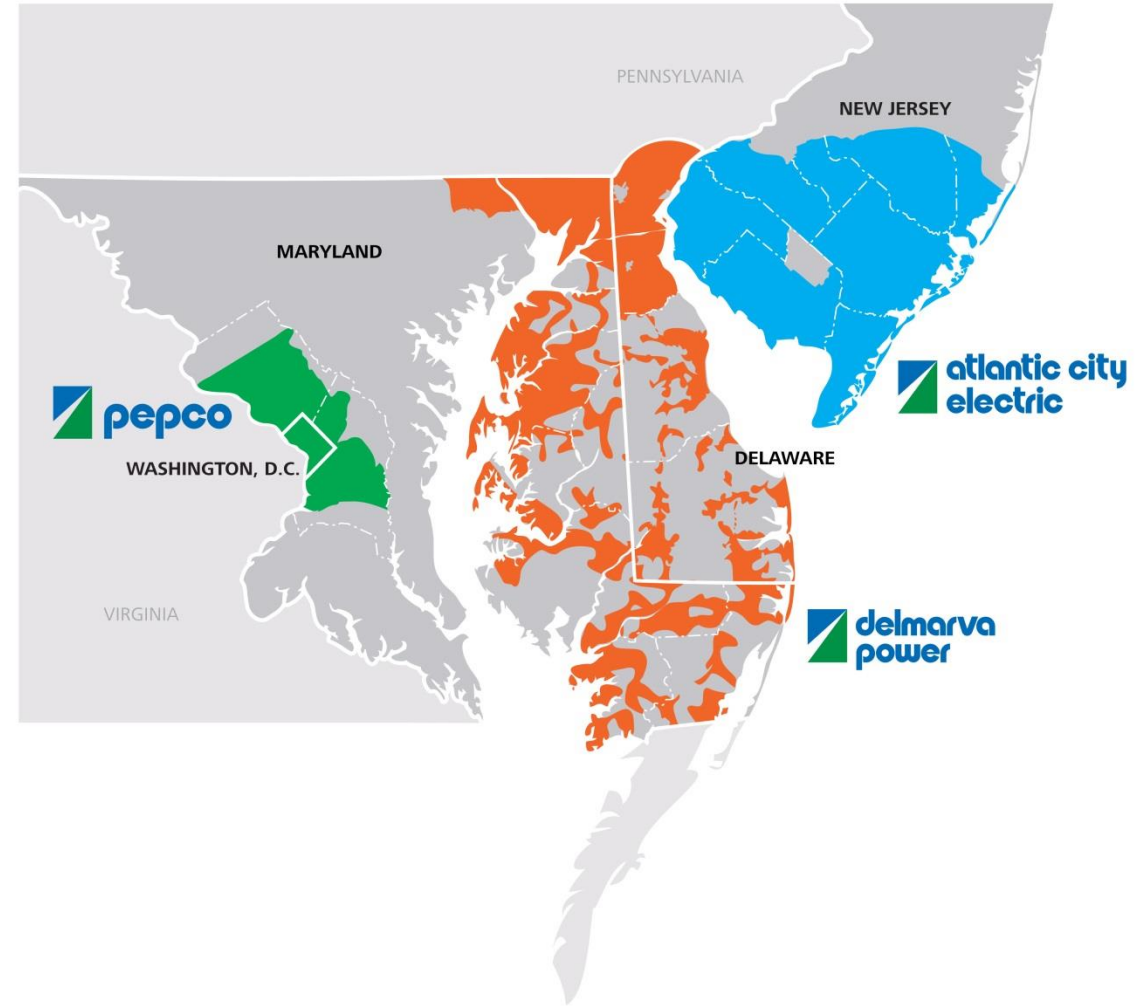
Asset Framework

- AF is the basis for viewing and analyzing PI data
- Detailed queries and reporting tools utilize either the AF SDK or OLEDB
- Initial burden of building out AF primarily done through use of college interns
- Current counts as of 8/25/14 in our EMS AF Database
  - 27417 Elements
  - 58 Element Templates

Asset Framework

- Pepco Holdings, Inc. is split into the three operating companies
- There are varying differences among templates and attributes
- Mostly follow the same design from a hierarchical perspective
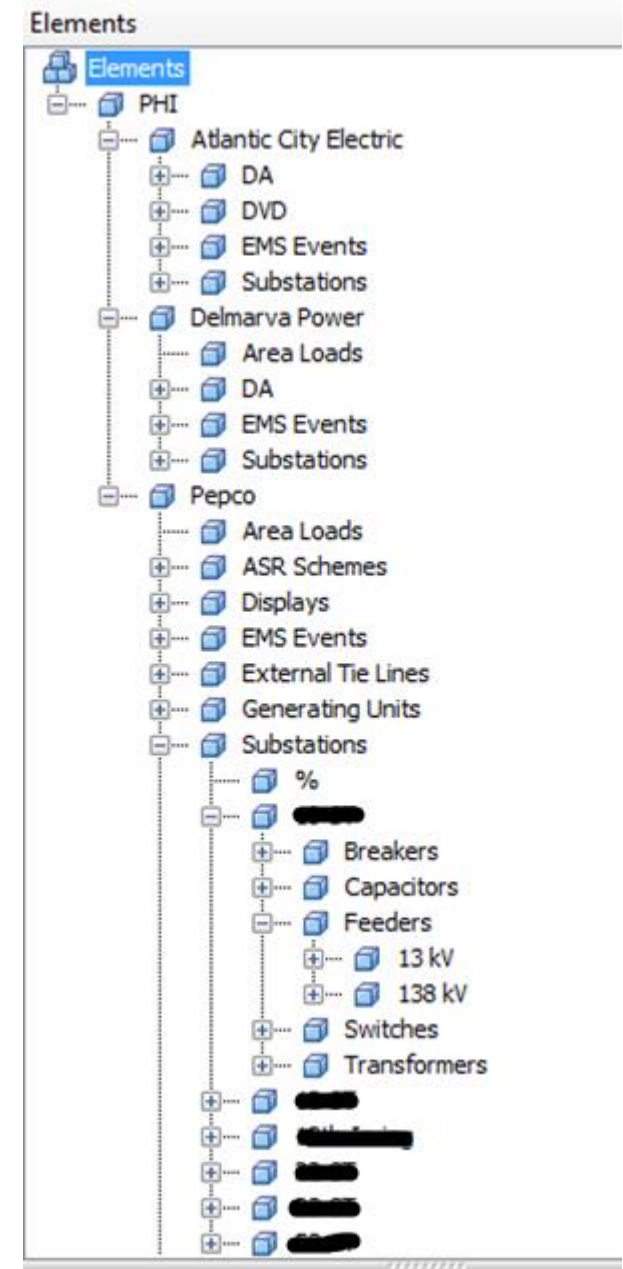
PI Notifications

- Having AF is a requirement for generating PI notifications
- Creating these notifications can eliminate phone calls from system operators and alert on certain conditions
- PHI is still in early stages of rolling out notifications
- Notifications are built for State Estimator and Contingency Analysis failures for System Operations Engineering
- Distribution Automation schemes have notifications that get sent out to a wide audience on activation
- Future plans would be to send more notifications to the field based on alarms coming into EMS

EMS Events

- The three PHI companies combined receive around 60k-70k EMS events on a daily basis

- Previously, this data has been stored in an Oracle database very inefficiently with one giant table containing all the records

- SQL queries against this database take a minimum of 10 minutes due to the large number of records with data going back to 2011

EMS Events

- The data is stored in PI by using a PI tag for each EMS Station
- The event data such as Station Name, Point Name, Event Description, SCADA Time Stamp, etc. is extracted from the EMS and concatenated together into a string
- Specific delimiters are used to distinguish the individual fields
- Program runs every five minutes to pull the data from the EMS and build the input files for PI
- Batch FL loads the input files into the PI system
- Each EMS station has an AF element with one AF attribute for the event

EMS Events

- Queries are done through a custom website utilizing AF SDK code to extract the data

- The string value stored in PI is parsed for viewing

- Data can be downloaded to a .csv file for detailed analysis in excel

- Time required to pull 50k events only a few seconds

PI Coresight

- Has helped users create ad hoc displays for viewing data

- Allow more exposure to navigating AF

- Sharing displays by making it public

- Has brought in users that have never used PI before
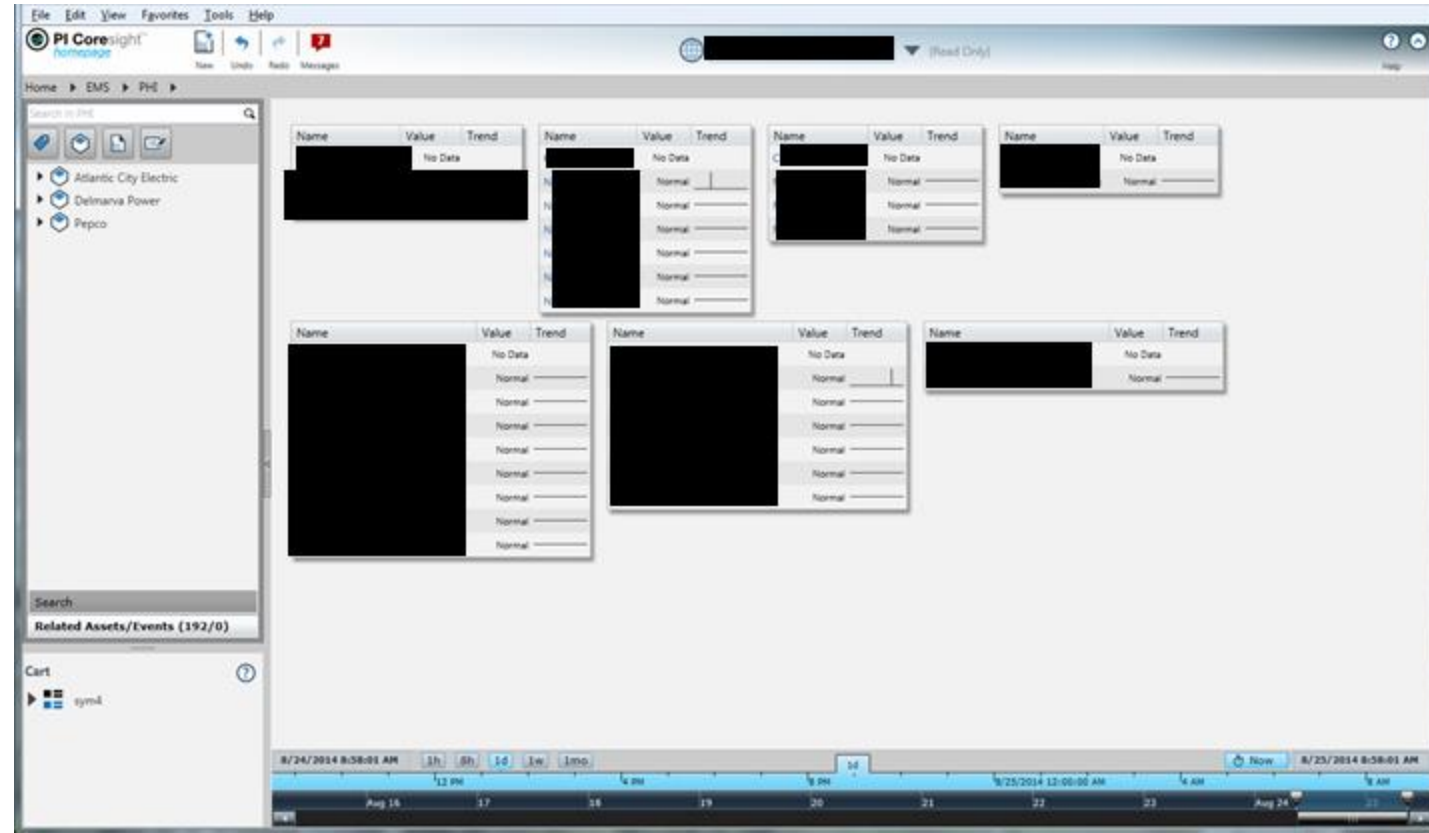
PI Coresight Mobile

- PHI IT has set up a mobile VPN that allows employees to access certain resources through mobile devices like iPad/iPhone
- Having 24x7 access to this data enhances off hours support

PI Web Parts

- SharePoint Web Parts have allowed PHI to build custom reports for users
- By utilizing SQL and Relational Datasets, we can query the AF database and extract data

PI Web Parts

- Example custom report that runs two SQL queries
- The queries are driven by other web parts on the site to allow the user to filter and refine the results without having to modify the SQL

EMS Displays

- EMS single line displays were previously built by hand and maintained manually in PI ProcessBook

- Very tedious and could result in errors or have a delay showing new equipment/data
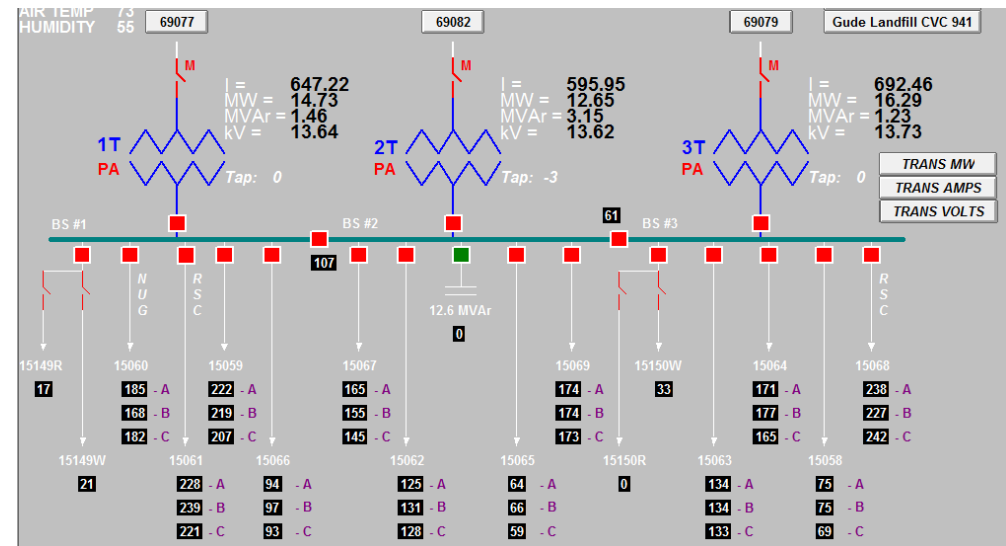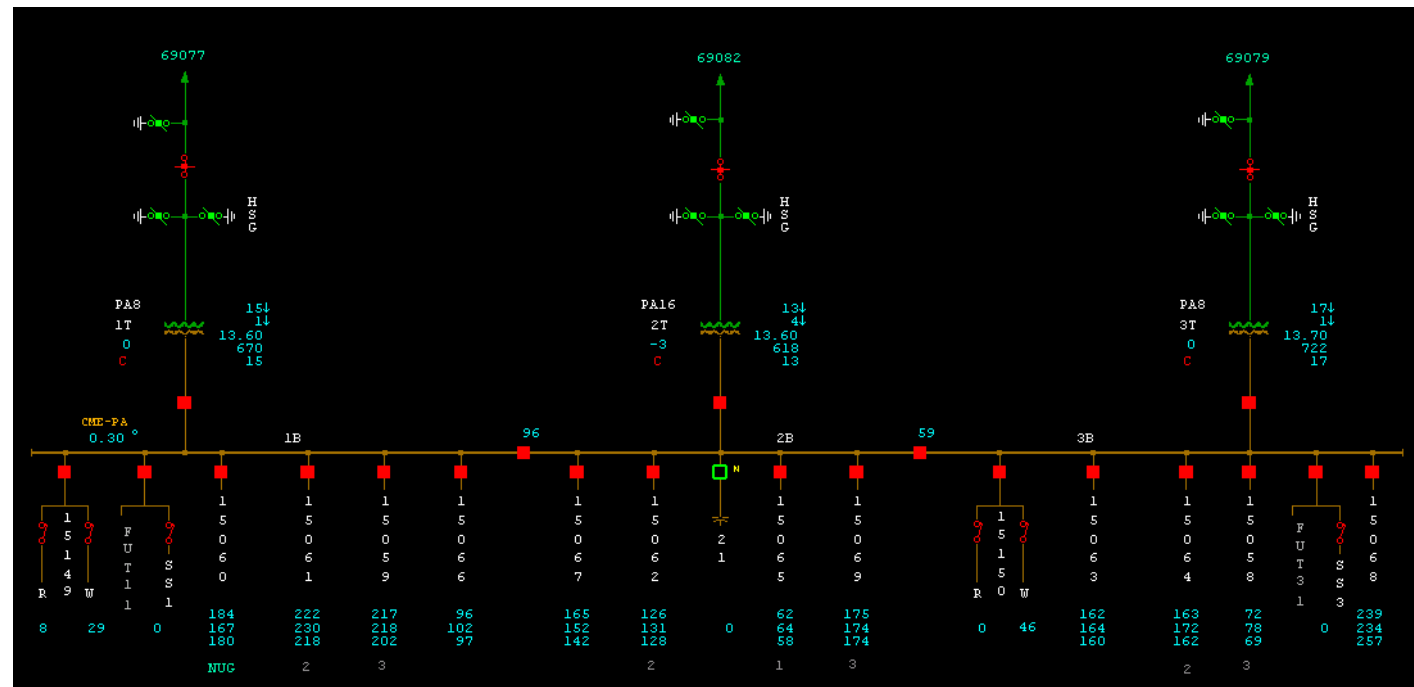
EMS Displays

- Wrote custom script to convert EMS display to PI .svg display

- Convert and store displays automatically every week to SharePoint

- Look and feel is the same as EMS displays

Future Plans Coresight 2014

- Beta testing Coresight 2014 that now allows the upload of ProcessBook displays
- Coresight mobile site and HTML5 allow for viewing on mobile devices
- Looking to expand this capability to other users potentially in the field