Pepco Holdings, Inc. (PHI)
C&I Energy Savings Program
Commissioning and O&M Incentives
Brooke Smallwood - Lockheed Martin
- Brooke is a Program Specialist for Lockheed Martin. Lockheed Martin is the implementation contractor for the Pepco C&I Energy Savings Program for Pepco Holdings, Inc. Her business development territory includes the District of Columbia, Prince George’s and Montgomery Counties in Maryland. Brooke is the prime marketer for the program in this geographic area. She is also involved in the development efforts for the program as a whole. She has supported the development and implementation of the Enhanced Commissioning for new buildings, Retro-Commissioning for existing buildings and Operations & Maintenance Training incentives.

George Owens - Energy and Engineering Solutions
- With over 40 years of experience in Engineering and Energy Management, George is the President of Energy and Engineering Solutions, Inc, which provides full energy services to the commercial, industrial and governmental clients. George’s history with Commissioning goes back to startup inspections in industry in the 70’s, the issuance of his first Commissioning procedures in the 80’s and presentations of papers at the first and second Commissioning Conferences. Recently, EESI has joined the Lockheed Martin team to support the Pepco Commissioning programs.
Objective & Goals

The primary objective of our presentation is to discuss the development and implementation of PHI’s Commissioning and O&M incentives in Maryland and the District of Columbia.

1. Provide ideas for improving operational efficiency
2. Increase awareness of electrical savings from commissioning
3. Identify trade allies
4. Provide and exchange best practices
PHI Introduction

Pepco Holdings, Inc.
“The Blueprint for the Future” is PHI’s plan to meet the nation's energy and environmental challenges through a combination of energy efficiency programs and new technologies.

It charts a course that will transform the way power is delivered, managed and used.

New technologies offer customers more control over their energy use and our proposed energy efficiency programs will provide additional choices that help customers manage their energy costs.
Services over 1.9 million customers in DE, DC, MD, and NJ.


Owns 3 electric utility companies
  ◦ Atlantic City Electric- NJ
  ◦ Pepco – DC and MD
  ◦ Delmarva Power- MD and DE

The Pepco & Delmarva Power Maryland territories are part of the C&I Energy Savings Program.
PHI Wins Major Environmental Award

Edison Place Case Study

Role of retro-commissioning (RCx) in PHI’s Corporate HQ becoming Washington DC’s first LEED EBOM building
Edison Place - Pepco’s HQ

- Edison Place was built in 2001 and is 100% occupied by PHI.
- 400,000 square foot Class A office building located at 701 Ninth St., NW with ten levels above ground and four levels of parking below.
- The LEED process began in 2007 as part of PHI’s Blueprint for the Future plan.
- Achieved LEED EBOM Silver Rating in 2009.
- The building began with an ENERGY STAR Rating of 66.
- ENERGY STAR Rating after the LEED certification was 83.
- RCx was a priority with a focus on energy and water reductions ensuring a better working environment for employees.
Full building RCx and implementation of select energy conservation measures reduced the building’s energy consumption by 17% and CO$_2$ emissions by over 508 metric tons.

- Thermostat calibrations
- Building Automation System re-programming
- Installation of occupancy sensors
- Reduction of HVAC equipment operating hours by 2 hours per day
- Installation of VFD’s on Chiller
- Lighting upgrades from existing T8 30 watt lamps to 25 Watt lamps with energy efficient ballasts
- Replacement of incandescent bulbs with compact fluorescent lamps (CFLs)
Edison Place received a total of 4 LEED points for:

- **EA Credit 2.1:** Existing Building Commissioning - Investigation and Analysis
- **EA Credit 2.2:** Existing Building Commissioning - Implementation

PHI did not pursue **EA Credit 2.3** Existing Building Commissioning - Ongoing Commissioning due to cost restrictions and time constraints.

Program provides incentives for all 3 Credits of the RCx Process in LEED EBOM, including incentives for other energy savings projects within Energy & Atmosphere.
Findings & Results

- Overall energy reduction was 17%.
- There was a long list of low/no cost measures many of which were addressed in RCx.
- Due to budget constraints most capital projects were not completed.
- Created new overtime HVAC scheduling to reduce off hour usage.
- Savings are still in tact. Why?
  - Edison Place has a Chief Building Engineer who has been on site since the construction stage in 2001.
  - Made permanent changes to operation.
Program Overview

Overview of the C&I Program
C&I Energy Savings Program

- 3 Year Program approved by DC and MD Public Service Commissions
- PHI issued RFP for program implementation for Maryland and the District of Columbia service territories
- Lockheed Martin (LM) was awarded contract to administer the program in June 2009
- LM and PHI worked as a team to develop programs parameters and incentives
- Program began in August 2009 in DC and September 2009 in MD
- PHI commercial and industrial customers in DC and MD are eligible. This includes federal, non-profit, local government etc
1. **Prescriptive Incentives**
   - Lighting, variable frequency drives, motors & vending machine controls

2. **HVAC Incentives**
   - Packaged units, heat pumps, economizers

3. **Custom Incentives**
   - All other measures that result in a reduction of kWh

4. **Commissioning & O&M**
   - Retro-Commissioning (RCx) for Existing Buildings
   - Enhanced Commissioning (ECx) for New Construction
   - O&M Training
Commissioning and O&M

- The DC and MD PSC filings approved incentives for commissioning and O&M
- Evaluated commissioning for new and existing buildings and the potential savings that could be achieved
- Identified best practices from other programs
  - The definition for ECx follows the USGBC program
  - The definition for RCx follows the California’s RCx program
  - O&M Training was originally based upon the New Jersey Program
Developing the Incentives

Retro-Commissioning
Enhanced Commissioning
O&M Training
Incentives in the U.S

- Sample of utilities offering commissioning incentives
  - BG&E - Maryland
  - AVISTA - Northwest US (Washington, Oregon, Idaho, Montana)
  - PSE&G – New Jersey
  - Austin Energy - Texas
  - SMUD - California
  - Seattle City Light - Washington
  - Ameren UE - Missouri
  - Com Ed - Illinois

- Go to [http://dsireusa.org](http://dsireusa.org) for a directory of additional incentive programs
Key Decisions for RCx & ECx

- Customers can enter the program at any phase for RCx
- Pneumatic systems are eligible for the RCx process
- The use of Proactive software or energy management system reports can qualify for Continuous Commissioning in RCx Phase IV
- Customers must make the decision to perform ECx during the design phase only
Retro-Commissioning (RCx) is a systematic process that optimizes energy use and overall energy efficiency in an existing building over a sustained period.

In addition to improving operational efficiencies and yielding energy savings, the RCx process also provides non-energy benefits such as improved thermal comfort, enhanced air quality, and reduced occupant complaints.

RCx Incentive is designed to encourage a comprehensive review and implementation of as many improvements as possible.
RCx Target Building Criteria

- Higher-than-average electrical intensity
- Greater than 2 years old
- Minimum of 75,000 sq. ft. of conditioned space
- The presence of an Energy Management System (EMS) is preferred
- Mechanical equipment in relatively good condition.
- Unusually high number of occupant comfort complaints.
- Senior management commitment – willing to commit at least $15,000 to the RCx activities
The Four Phases of RCX Incentives

- **Phase I - Development of a Retro-Commissioning (RCx) Plan:** ASHRAE Level I Audit

- **Phase II – Executing the Retro-Commissioning Plan - Detailed Investigative Stage:** ASHRAE Level II Audit, ECM’s

- **Phase III - Implementation of Retro-Commissioning Recommended Measures:** low/no cost ECM’s are implemented, capital projects may come out of the process and may be paid by other incentive programs.

- **Phase IV - Continuing Commissioning:** training, additional walk-thrus and/or energy management reports & tracking
## RCx Incentives

<table>
<thead>
<tr>
<th>Phase</th>
<th>$/square foot</th>
<th>% Percentage Match</th>
<th>Maximum Incentive Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>$0.02</td>
<td>50% of Cost</td>
<td>$4,000</td>
</tr>
<tr>
<td>II</td>
<td>$0.06</td>
<td>50% of Cost</td>
<td>$12,000</td>
</tr>
<tr>
<td>III</td>
<td>$0.05</td>
<td>50% of Cost</td>
<td>$10,000</td>
</tr>
<tr>
<td>IV</td>
<td>$0.02</td>
<td>50% of Cost</td>
<td>$4,000</td>
</tr>
</tbody>
</table>
Enhanced Commissioning for New Construction (ECx) or Major Renovation is a type of building commissioning which provides improved energy performance above and beyond basic, or fundamental building commissioning.

The decision to pursue ECx must happen in the building’s design phase because it is a vital element of the design process.

Follows USGBC LEED NC Credit
ECx Requirements

- Fundamental Commissioning (as defined by USGBC) is a prerequisite for achieving an ECx incentive
- New construction or major renovation
- Minimum of 100,000 sq. ft.
## ECx Incentives

<table>
<thead>
<tr>
<th>Activity</th>
<th>$/square foot</th>
<th>% Percentage Match</th>
<th>Maximum Incentive Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamental Commissioning</td>
<td>Prerequisite, no incentive</td>
<td>Prerequisite, no incentive</td>
<td>Prerequisite, no incentive</td>
</tr>
<tr>
<td>Phase I: Design Review and Systems Manual</td>
<td>$0.05</td>
<td>50% of Cost</td>
<td>$10,000</td>
</tr>
<tr>
<td>Phase II: Commissioning Verification, Training and Final Systems Manual</td>
<td>$0.05</td>
<td>50% of Cost</td>
<td>$10,000</td>
</tr>
</tbody>
</table>
Documentation for RCx & ECx

- Technical Manual that includes:
  - Criteria
  - Phases
  - Requirements
  - Incentive Amounts

- A final report for each phase is required for the incentive:
  - Executive summary of the findings
  - Building and energy systems description
  - Energy baseline, ENERGY STAR Rating
  - Operational schedule of major systems
  - Documented evidence of energy use reductions
  - Cost to implement including invoices
Customer Participation

- All DC and Maryland commercial and industrial customers of Pepco and Delmarva Power customers are eligible.

- Customers wishing to use a service provider who is not currently recognized by the program must ensure that the service provider successfully completes the RCx or ECx Trade Ally application and is approved by the program before starting any work.
The program has approved RCx and ECx Trade Allies (aka Service Providers) to assist customers in fulfilling the requirements for Retro-Commissioning (RCx) and Enhanced Commissioning (ECx) Incentives.

Trade Allies can act as the customer’s authorized provider and therefore can submit applications on the customer’s behalf. The customer is ultimately the responsible party to the C&I Energy Savings Program.

Cx Agents need to provide certification from one of five organizations or have 3 Cx references for program approval and to be added to the website listing.
O&M Training

Training is the key to maintaining energy savings
O&M Training

- Started off with the BOC (Building Operators Certification) course but due to the non-availability of local courses, we redesigned the incentive to include other training programs

- Applicants can submit a training course of their choice for evaluation to receive 80% up to $1,000.00

- Trainers can submit courses for pre-qualification
O&M Training Eligibility

- Applicants must:
  - Have influence over a building’s energy performance
  - Be responsible for day-to-day operations
  - Numerous titles and levels of applicants fit this category
Pre-Qualified Courses

- **Association of Energy Engineers (AEE)**
  - Certified Energy Manager (CEM)
  - Certified Energy Manager in Training (CEIT)
  - Certified Building Commissioning Professional (CBCP)
  - Certified Lighting Efficiency Professional (CLEP)
  - Existing Building Commissioning Professional (EBCP)
  - Certified Business Energy Professional (BEP)
  - Certified Energy Auditor (CEA)

- **International Association of Lighting Management Companies (NALMCO)**
  - Certified Apprentice Lighting Technician (CALT)
  - Certified Senior Lighting Technician (CSLT)

- **International Facilities Management Association (IFMA)**
  - Certified Facility Manager (CFM)

- **Leadership in Energy and Environmental Design (LEED)**
  - Green Associate
Best Practices
What we have learned so far…
Best Practices

- Vendors must be properly vetted in order to produce consistent results and high quality of work.
- Customers need to be educated about how commissioning activities such as RCx and ECx can generate savings.
- No incentives for audits, only pay for the implementation of measures which produce energy savings.
- Programs must reduce barriers to participation entry.
- Professional organizations are valuable partners.
- Training is one of the most critical components of O&M.
Thank You!
Questions

For More Information
Visit us online at www.pepco.com/business

Call the Pepco C&I Energy Savings Program
1-866-353-5798 or 301-519-5383
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