NESEA
Co-Presented By
Timothy Lynch, PEPCO and Chris Allen, Inovonics
TIM LYNCH --- EXPERIENCE

- 30 years in the Energy Management Business
- President of PEPCO Controls
- Installations in over 1,100 Building in NYC
- Over 25,000 Wireless devices in use in NYC
- Type clients we service
  - Multifamily Residential
  - Commercial
  - Industrial
  - Schools
26 years in the Security Communications and Wireless Energy Management Business

Regional Sales Manager  Inovonics Wireless Corporation

10 Million Wireless Sensors Deployed
SHORT BRIEF HISTORY OF WIRELESS

1. Power Line Carrier
2. Zigbee More devices equal a lower response
3. EnOcean Cheaper but range issues
4. 802.11 Wired access points and security issues
5. Spread Spectrum 902-928 MHz
WIRELESS INDUSTRY
MAJOR PLAYERS

BACnet

CauZway LLC.

Delta

Cisco

Inovonics

Echoflex

ZigBee

Honeywell

Green. Smart. Wireless.

enocean

PEPCO

Peconic Energy Products Company
WIRELESS END DEVICES

- WIRELESS INPUTS / SOLAR POWERED
  - TEMPERATURE / HUMIDITY
  - ELECTRIC METER
  - WATER METER
  - MOTION SENSORS
  - LIGHT LEVEL SENSORS
  - DOOR / WINDOW

- WIRELESS OUTPUTS
  - CONTROL VALVES
    - Zone Valves
  - LIGHT SWITCHES
  - PLUG IN LAMP SWITCHES
Batteryless-Wireless Sensors
Batteryless Wireless Switches
Batteryless - Wireless Relays

[Image of a batteryless relay system]

[Image of a 4 Channel LV Relay Output Controller by Echoflex]

- Energy conservation - home and office
- 4 Channel LV Relay Output Controller
- For wirefree, self powered switches and sensors
- 4 Isolated form A outputs
- 24VAC Power
- L Clear Learn Power
Batteryless-Wireless Meter and Actuators
Wi-Zone

- Temperature and Humidity Monitoring
- Indoor/Outdoor

Meters

- Routes around obstacles
- Extends range of network
- Displays zone temperature
- Optional local control

Wi-Site

- Interface between system and web
- Monitors data links, devices, network status
- Provides remote monitoring, trending, reporting, and control

Obstacle, but system reroutes automatically

Gateway or

Web-based remote monitoring, reporting and control app
RISER DIAGRAM
A PICTURE IS WORTH A 1,000 WORDS

DEMAND RESPONSE

Order Sent

Signal Sent

Equipment

Wireless Outlet Relay

INTERNET

conEdison

the power of green

PEPCO

Peconic Energy Products Company

PEPCO
Wireless cuts downtime & invasiveness

Outdated method

Controller networking

Hybrid Wireless

Maximum labor costs & downtime

Reduced labor costs & downtime

Bottom line: Less wires = Less labor = Less downtime
Wireless ups scalability, cuts point limits

Starting with HVAC control

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Adding

A. occupancy sensors

B. light control

C. CO2 sensors

D. light sensors

Outdated method

Wireless makes installing everything else easier

Bottom line = Wireless = Shorter payback = More efficiency upgrades
Annex: Embedded web interface

Bottom line: Flexible local and remote access
Reduced Labor = More $ for More Power and Analytics

Building Management like you’ve never seen before:

Power Diagnostics

Reports
New Construction: The Claremont

$35,000 in savings on labor and materials

40% less time on the job
Car Dealership: Van Buren Auto

$35,000 in savings on labor and materials

22% less time on the job

Controls from Smart Phone
Multi-Family Residential

- $60,000 savings in Materials and Labor
- Completed Sub Metering of 60 Units in less 1 week
- Tenants see usage from Web including History
- Utility Rebate
- Integrated with Access Control
  - Open doors from SMART PHONE
We secure CON-ED or NYSERDA rebates to pay for up to 75% of the systems we design.

Return on investment typically 2 years or less.

Over $3,000,000 in utility rebates.

PEPCO is presented with First Place Trophy for most gas saved 2012.
In summary, the pilot project has resulted in more comfort to tenants as evidenced by a reduction in complaints, and fewer maintenance calls. The project has also resulted in approximately a 29% reduction in steam use for heating. Morningside could potentially save about 29% of its total fuel costs used for heating once all the buildings on site have this system installed. Based on the 2009 operational season the savings would be about $435,000.

In addition to the performance analysis of the system Schuyler was also reviewing the cost proposal from Pepco to install the system in the rest of the buildings onsite. Pepco provided a cost proposal for each building, for a total of $___. Excluded from this proposal is the work necessary to install the new steam control valve, although the costs of the valves are included in the proposal. Based on previous projects and consultations with other BMS suppliers Pepco's cost of approximately $___ per point monitored or controlled is reasonable for work performed in New York City using trade wage rates.

The cost to install the valves has been excluded from Pepco's cost proposal. Schuyler is currently finalizing the documents so that Morningside can competitively bid this portion of the project. It is estimated that this work would cost about $57,000 per building, for a total of $285,000.

It is estimated that duplicating the pilot project to the remaining 5 buildings would cost about $___.

Included in Pepco's proposal is the option to provide and install wireless temperature transmitter. The existing building temperature sensors are part of the older INTECH21 system. The temperature transmitters do not provide an accurate representation of the space temperature due to the location of some of these devices. This option would permit the installation of new temperature devices in locations that produce faulty readings. The price addition for this option is $89,160.

The total budget would be revised to $___ including the wireless temperature sensor option.

If you have any questions concerning this information, please call me directly.

Sincerely,

Robert Foley, P.E.
Project Engineer

Mr. Michael McMahon
January 14, 2010
Page 2
THE CENTURY
25 Central Park West, NY

MODEL: ENERGUARD™

THE CENTURY The sister of the Majestic apartment building several blocks to the north on Central Park West, the Century is one of the masterpieces of developer Irwin S. Chanin, who also built the great 56-story Chanin Building on East 42nd Street and many famous theaters around Times Square such as the Roxy, the Biltmore and the Majestic.

The building heating plant was converted from city steam to a central boiler plant in 1997. The plant consists of (3) 500 HP Federal Boilers and is Dual Fuel. The ENERGUARD™ was installed in May 2009 and controls the automatic Start Stop, Lead Lag and Fuel/Air Modulation of the boilers. Six (6) Zone Valves regulate the heat through out different parts of the building. The ENERGUARD™ controls the valve modulation to each zone using feedback from wireless temperature sensors placed inside tenant apartments. The Resident Manager sets the zone temperature from a PC and monitors the temperature through out the day and night via a web browser. A weather station on the roof of the building tracks wind speed, wind direction, RH% and Outdoor Air Temperature. On high windy cold days the Resident Manager increases space temperature settings in the zone most impacted by severe weather conditions. This has reduced tenant complaints and reduced fuel consumption.

Further expansion of the system includes Card Access and Lighting Control.

User Name: 25cpw
Password: DEMO

HIGHLIGHTS:
- Fuel Savings: 20%
- Control (6) 8" Steam Valves
- Control MEPCO Vari-Vac System
- Import Apartment Temperatures
- Control (3) 500 HP Boilers
- Domestic Hot Water Monitored
- Weather Station installed on Roof
- Web Based Color Graphics
- Password Protected
- Alarms/Exception Reports
- P.C. Color Graphics
- Historical Trending
- XY Trend Plot Of All Variables

Engineer: J. K. Blum
Contact: Call PEPCO for contact info

Phone 631-940-1030 * www.pepcocontrols.com
CAS Study

Hofstra University was founded in 1935 and is located in Long Island, New York, about 25 miles east of Manhattan, offers excellent undergraduate and graduate programs on a beautiful suburban campus.

Graduate Residence  In fall of 2009 PECONIC was awarded a contract to install a DELTA Control system in the new Graduate Residence Dormitory. This building is a new building built on the North Campus and is occupied 24/7 for most of the year. The building houses both faculty and students.

Low Pressure Steam is supplied to the building from the Central Power Plant. Control of the Steam Station consisting of 1/3, 2/3 Steam Valves, two Steam to Hot Water Heat-Exchange Units and Two Heating Distribution Pumps configured with Variable Speed Drives and Differential Pressure Sensors. Individual rooms are configured with PTAC units equipped with 2 way hot water valves. As system water pressure builds from the closing of the two way valves the Variable Speed Drives throttle down to maintain a constant system pressure.

Common areas and hallways are heated and cooled from AHU’s and RTU’s that are equipped with Hot Water Heating Coils and Two Stages of Cooling. DELTA DAC-T305’s with individual LCD Displays are used to control the space temperatures and with proper password allows the maintenance staff to view and adjust set points locally. Entrance lobbies, and stairwells are equipped with Hot Water Fan Coil Units that are active only when the Outdoor Air Temperature fall below 55 degs. Freezestats are installed in the AHU’s and RTU’s that shut down the systems to prevent freeze ups.

The project required systems integration using MODBUS to connect (2) AAON Roof Top Units furnished with factory controls to the DELTA system for monitoring and control.

The building is connected to the campus LAN and is monitored and controlled using ORCAweb. PECONIC is under a multiple year service contract to maintain and upgrade the system with new factory releases of software.

Further expansion of the system is underway and includes Card Access, Lighting Control and software upgrades to ORCAweb 3.33, which includes the ENERGY DASHBOARD.

System Features:
* ORCAweb and ORCAview (Graphical User Interface)
* Password Protected
* Alarms and Exception Reports
* P.C. Color Graphics
* Historical Trending
* XY Trend Plot Of All Variables

M E P Engineer: Cosentini Associates
Contact: Tom Masciolo
516-463-6058
MORNINGSIDE HEIGHTS HOUSING CORPORATION

CASE STUDY

MORNINGSIDE HEIGHTS HOUSING CORPORATION ("Morningside Gardens") is a residential cooperative apartment complex with more than 980 units and is located on the upper west side of Manhattan. Opened in 1934, the eight-acre, beautifully landscaped campus borders on Broadway and Amsterdam Avenue and comprises six high-rise buildings, twenty-four floors each. The buildings are heated by a central plant consisting of (4) 500 hp boilers that supplies 5 lbs steam pressure to each building. Steam flow to each building is regulated by a single MEPCO Var-Vac Steam valve.

PEPCO furnished and installed the ENERGUARD in building 70 as a pilot project to demonstrate to the board that overheating could be controlled and the upgrade could be paid for thru fuel saving in under 3 years. Before the ENERGUARD was installed the studio line apartment temperatures averaged 85 degrees to get the 2 bedroom line to be a comfortable 72 degrees. To achieve even heat distribution the ENERGUARD controls the modulation of (13) new 4" riser steam valves. The system went on-line in March 2009 and the fuel savings as of January, 2010 are averaging 40% to 60% daily. The savings are measured by comparing metered condensate return gallons from building 70 vs the 501 building. The buildings are identical. As the space temperature in the studio line reaches set point the steam valve modulates to the closed position to restrict steam flow and reducing usage. Heat distribution is even throughout each line in the building.

In July 2010 the Board approved a budget of $1,100,000 to expand the ENERGUARD System in the remaining buildings. PEPCO furnished and installed 57 new 4" Steam valves, and over 400 monitoring and control points.

Further expansion of the system includes Card Access and Lighting Control.

DELTA PRODUCTS:
- 21 DELTA DSC-1616E
- 12 DELTA DAC-1212E
- 3 DAC-T305
- 18 DAC-633
- 6 DSM-WRL
- 2 ASM
- ORCAweb
- 60 Wireless Temperature Sensors

Morningside Heights Housing Corp.
New York, NY

HIGHLIGHTS:
- Fuel Savings 40% to 60% Daily
- Control (13) 4" Steam Valves
- Control MEPCO Var-Vac System
- DELTA to INTECH 21 via MODEUS
- 31 Condensate lines monitored
- Domestic Hot Water Monitored
- Weather Station installed on Roof
- Web based Color Graphics
- Password Protected
- Alarm/Exception Reports
- P.C. Color Graphics
- Historical Trending
- XY Trend Plot Of All Variables

User Name: DEMO
Password: DEMO

Engineer: Schoeler Engineering, P.C.
Contact: Call PEPCO for contact info
THANK YOU
WIRELESS ------ BECOMING THE NEW STANDARD

DRIVEN BY

- HIGHER COST OF LABOR TO WIRE
- BETTER and MORE RELIABLE TECHNOLOGY
- UTILITY REBATES

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BMS Wireless System Architecture
2 CASE STUDIES

Cutting Edge vs Bleeding Edge

- MORNINGSIDE HEIGHTS HOUSING
- THE CLAREMONT
EXISTING PROJECTS