New York City Housing Authority’s Computerized Heating Automation System

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Presentation Outline

- Infrastructure overview and business challenges
- Solution functionality, screen-shots, reports and configuration
- Benefits and ROI
Typical NYCHA Heating Plant: Manhattanville

- Central, multi-boiler plant with “lead-lag” modulation sequencing controls
- Steam distributed underground to buildings for heat and hot water – through automated, temperature-sensing zone valves/controls
Heating System / Sustainability Challenges

- Aging infrastructure: more than 70% of NYC public housing complexes are 40+ years old
- Utility costs rising at a rate far greater than revenues
- Staffing quandary: affordable, skilled technical personnel harder to come by as equipment becomes more complex…
- …Same staff now serving as “soldiers in green army”
Defining CHAS

The Computerized Heating Automated System, or “CHAS”, makes automated boiler-room / building control panels from multiple manufacturers accessible through a web-based software tool....
CHAS Functionality

- Facilitates remote monitoring and management of NYCHA’s largest centralized heating plants
  - Drill-down into individual locations / history
  - Heating plan settings may be modified remotely
  - Aggregated exception reports

- Features 24-hour boiler room alarms for emergencies and outages (flood, loss of power, low pressure) – with “map alerts” and email notifications to key personnel

- Broad coverage: 210 boiler rooms, more than 1,700 buildings (zone valves), 1,500 end-users and more than 150,000 households served
CHAS Map
CHAS Map
Virtual Boiler Room

The image shows a screenshot of a virtual boiler room interface. The interface includes a table with columns for Street, SRC-Gold, Day Heat Adjustment, Night Heat Adjustment, Call for Heat, Manual Valve Target, Outdoor Temp., Heat Established, Mode, Display of Percent Valve Open, System Temp., and Link. The table lists several streets with corresponding buildings and various settings for heat adjustment, heat establishment, and other parameters. The interface has a header with a logo for New York City Housing Authority.
### Boiler Mode Detail Report

**CHAS - Boiler Mode Details - 04/24/2008**

Time period: 12 hours - 7:00 PM on the report date to 7:00 AM on the next day.

#### NYCHA

<table>
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<tr>
<th>Borough</th>
<th>Cluster</th>
<th>Site</th>
<th>Category</th>
<th>Boiler</th>
<th>Date</th>
<th>Time</th>
<th>Total</th>
<th>Auto</th>
<th>Standing</th>
<th>On</th>
<th>Off</th>
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</tbody>
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### Illustration

- [Image of report interface]
CHAS Network

Central Office

Borough Offices

Technical Services

BOILER ROOM

Control Panel 1

Control Panel 2

Alarms

CHAS Heating Server

WAN

Development Management Office

Remote Sites

Buildings

Emergency Services Dept

Energy Dept

Home Access

Remote Sites

Wireless

Remote Sites

Buildings
CHAS Benefits

- Reduces fuel costs through boiler and zone-valve automation – and “management by exception”

- Supports streamlined, Borough-based heating maintenance model, with “roving crews” assigned to monitor neighborhood “clusters”

- Permits managers to more effectively and efficiently deploy technical personnel where warranted
CHAS Benefits (cont’d)

- Increases transparency of heating operations, enhances supervision and compliance with maintenance procedures
- Improves response time when heating plant emergencies arise
- Prevents service downtime and promotes more reliable heat and hot water to residents
Returns on Investment

- **Energy savings** expected to reach 7.5% of baseline heating fuel costs going into the October 2008 heating season, which equates to...

  - ....13 million therms of natural gas per year
  - ....$20 million in fuel cost savings per year ($1.50/therm)
  - ....a 75,000 tons of CO2 in curtailed emissions

- Elimination of heating plant “morning/evening watch” shifts allowed reinvestment of staff hours into preventative maintenance and troubleshooting

- **Improved service to residents** with more reliable comfortable indoor temperatures and reduced heating and hot water downtime