Our Top Projects

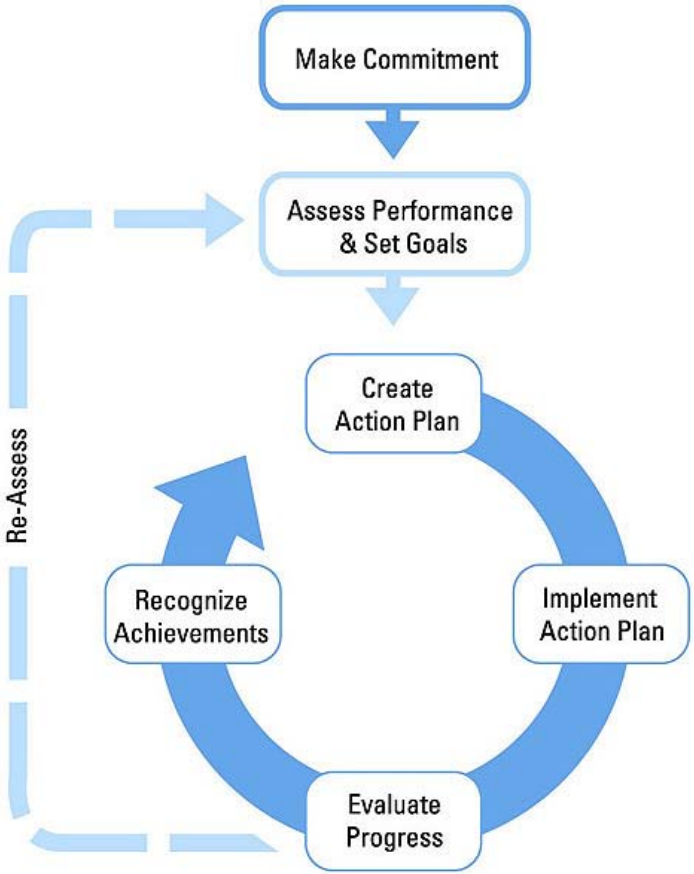
Monthly Partner Web Conference
August 17, 2011

Call-in number: 866 299 3188
Access code: 202 343 9965

Host: Walt Tunnessen

About The Web Conferences

- Monthly
- Topics are structured on a strategic approach to energy management
- Help you continually improve energy performance
- Opportunity to share ideas with others
- Slides are a starting point for discussion



Web Conference Logistics

- Phones will be Muted

  To ask a question use # 6 to un-mute

  and * 6 – to mute

- Questions – use the chat window or ask question during the Q & A period.

- Presentation slides will be sent by email to all participants following the web conference.

Today's Web Conference

Where are you finding energy savings?

Speakers:

- **Kathia Benetiz**, **New York-Presbyterian Hospital**
- **Derek Gould, Servidyne**
- Questions & Discussion
- Announcements

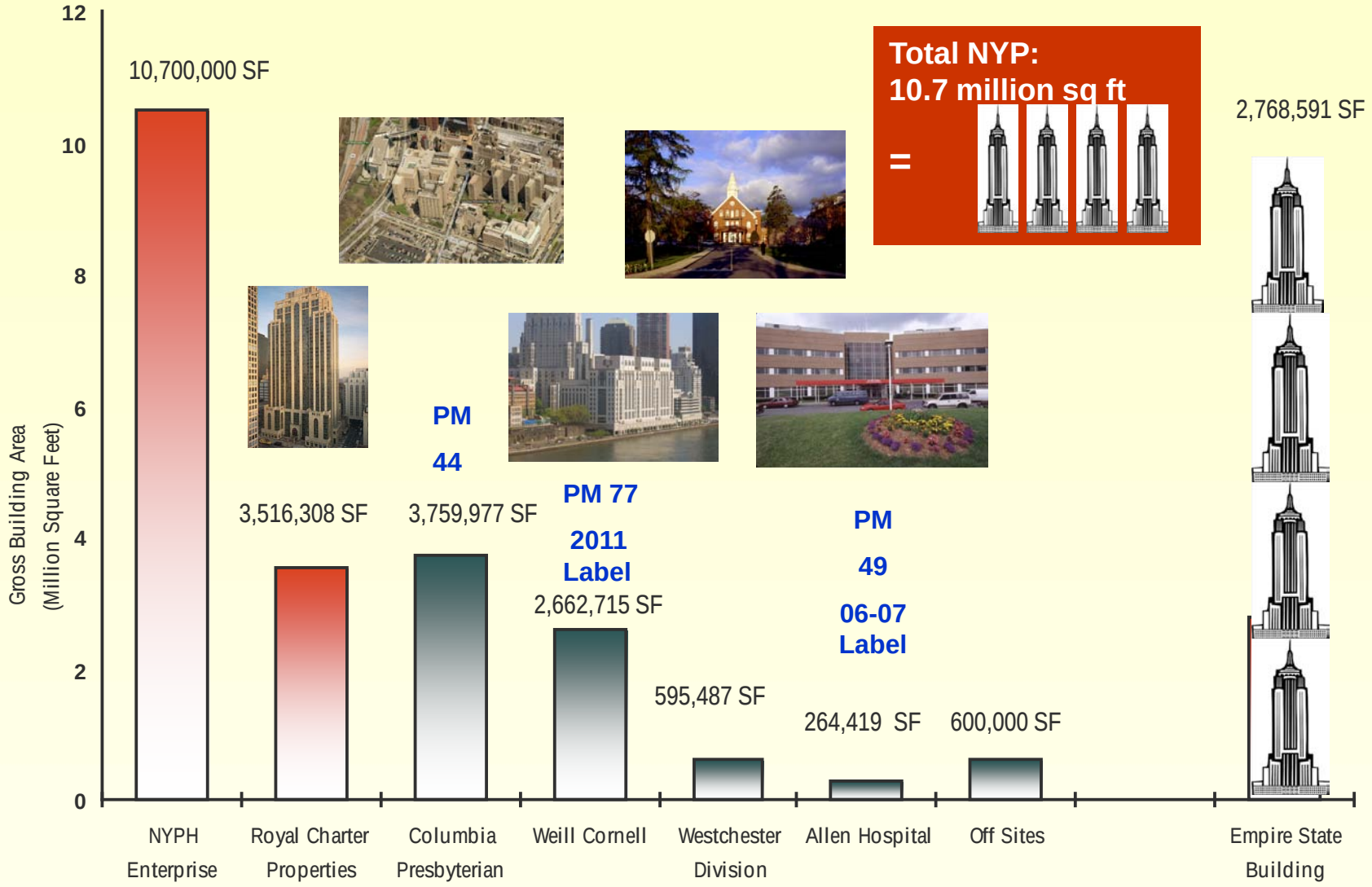
" Our Top Energy Projects"

AMAZING THINGS ARE HAPPENING HERE

ENERGY STAR AWARD 2011
SUSTAINED EXCELLENCE

NewYork-Presbyterian
The University Hospital of Columbia and Cornell

NEW YORK PRESBYTERIAN HOSPITAL – THE ENTERPRISE



ENERGY BUDGET & RECOVERIES

– NYP is a District Energy provider to a number of energy partners, supplying steam & chilled water.

NYP Budget $69 M

HOSPITAL FOR SPECIAL SURGERY

COLUMBIA UNIVERSITY MEDICAL CENTER
Discover. Educate. Care. Lead.

Weill Cornell Medical College

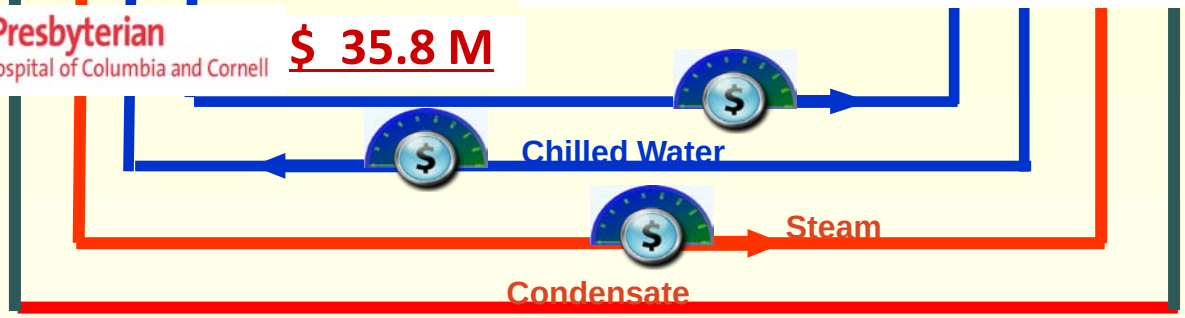
NEWYORK-PRESBYTERIAN | REAL ESTATE

Royal Charter Properties

Anticipated Recoveries $29.7 M

NewYork-Presbyterian
The University Hospital of Columbia and Cornell

$ 35.8 M

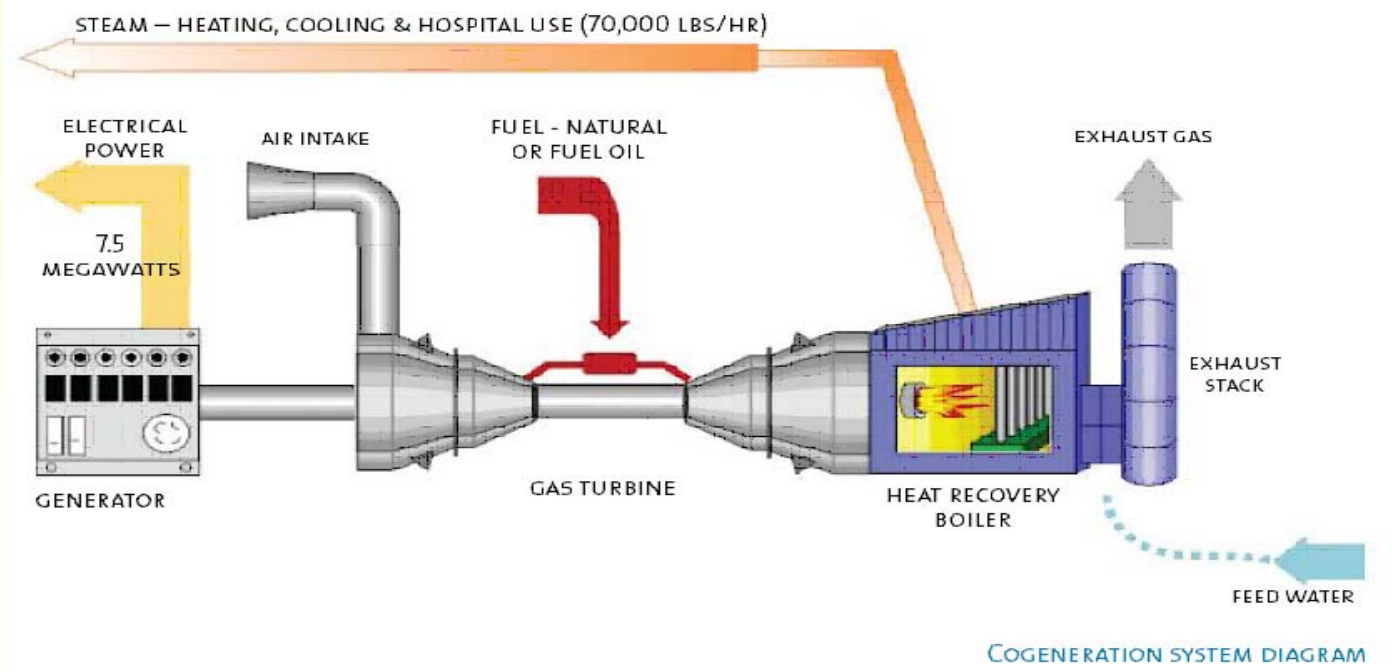


NYP – ENERGY REPORT

Partner of the Year Comparative Energy Performance Report			
Facilities included: All			
Located in:			
Date Generated: 12/1/10			
Number of facilities in report: 6*			
Number of facilities in portfolio: 8			
	Year ending 10/2009	Year ending 10/2010	Change
Total Floorspace (sq. ft.)	8,219,072	8,506,788	287,717
Average Rating	62	69	7
Number of Facilities with a Rating	3	3	0
Number of Facilities not eligible to receive a rating**	3	3	0
Total Site Energy Use (kBtu)	2,255,870,615	2,111,047,592	-144,823,024
Total Weather Normalized Source Energy Use (kBtu)	3,324,161,410	3,055,007,911	-269,153,499
Average Weather Normalized Source Energy Intensity (kBtu/Sq. Ft.)	404.4	359.1	-45.3
Average Site Energy Intensity (kBtu/Sq. Ft.)	274.5	248.2	-26.3
Total Site Electric Use (kWh)	171,708,505	140,744,707	-30,963,797
Total Site Natural Gas Use (Therms)	22,853,104	23,983,664	1,130,560
Average Actual Annual Source Energy Intensity (kBtu/Sq. Ft.)	404.6	351.2	-53.4

COMPLETED PROJECTS
2009 - 2011

COGENERATION NYP/Weill Cornell



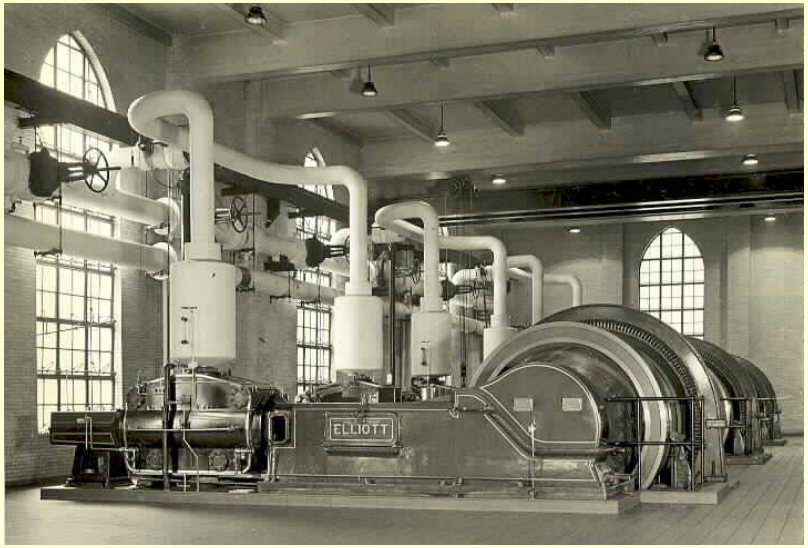
- Natural Gas turbine drive
- 7,500 kW electric generator (1/2 of peak demand)
  - *Total campus load 12.5 MW*
- Heat recovery boiler with duct firing (1/3 of our steam requirements)

COGENERATION INCENTIVES FOR NYP

- Savings - Reduced electricity cost
  - **By purchasing 10% more fuel, NYP purchases 80% less electricity**
- Enhanced Power Reliability
  - **Provides 100% redundant source of power for Inpatient areas**
- Enhanced Steam Reliability - Adds Capacity
- Reduced Financial Risk
  - **Lower exposure to utility cost volatility**
- Positive Environmental Impact
  - **Lowering our carbon footprint**

- **Reduce emissions of CO2 by 27,114 tons per year. Equivalent to the removal of 4,622 cars.**
- **Annual operating savings in excess of $6 -7 Million.**

CHP
EPA COMBINED HEAT AND POWER PARTNERSHIP

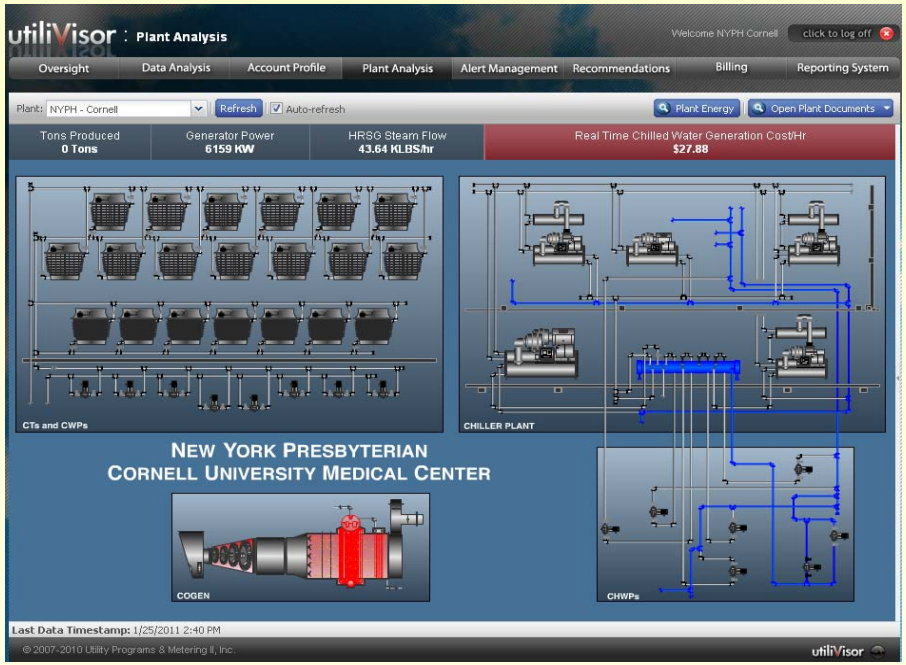


Courtesy of the Medical Center Archives of NewYork-Presbyterian Hospital / Weill Cornell Medical Center

Dynamo Room
2009

Advanced Sub-metering/Continuous Energy Oversight of the Chilled Water Generation

utiliVisor
continuous energy oversight



NYP can analyze central chilled water plants in real time, identifying equipment operating problems and integrating solutions.

Savings realized in 6 months for both Cornell and Columbia = $1.6M

Steam and Condensate System Analysis

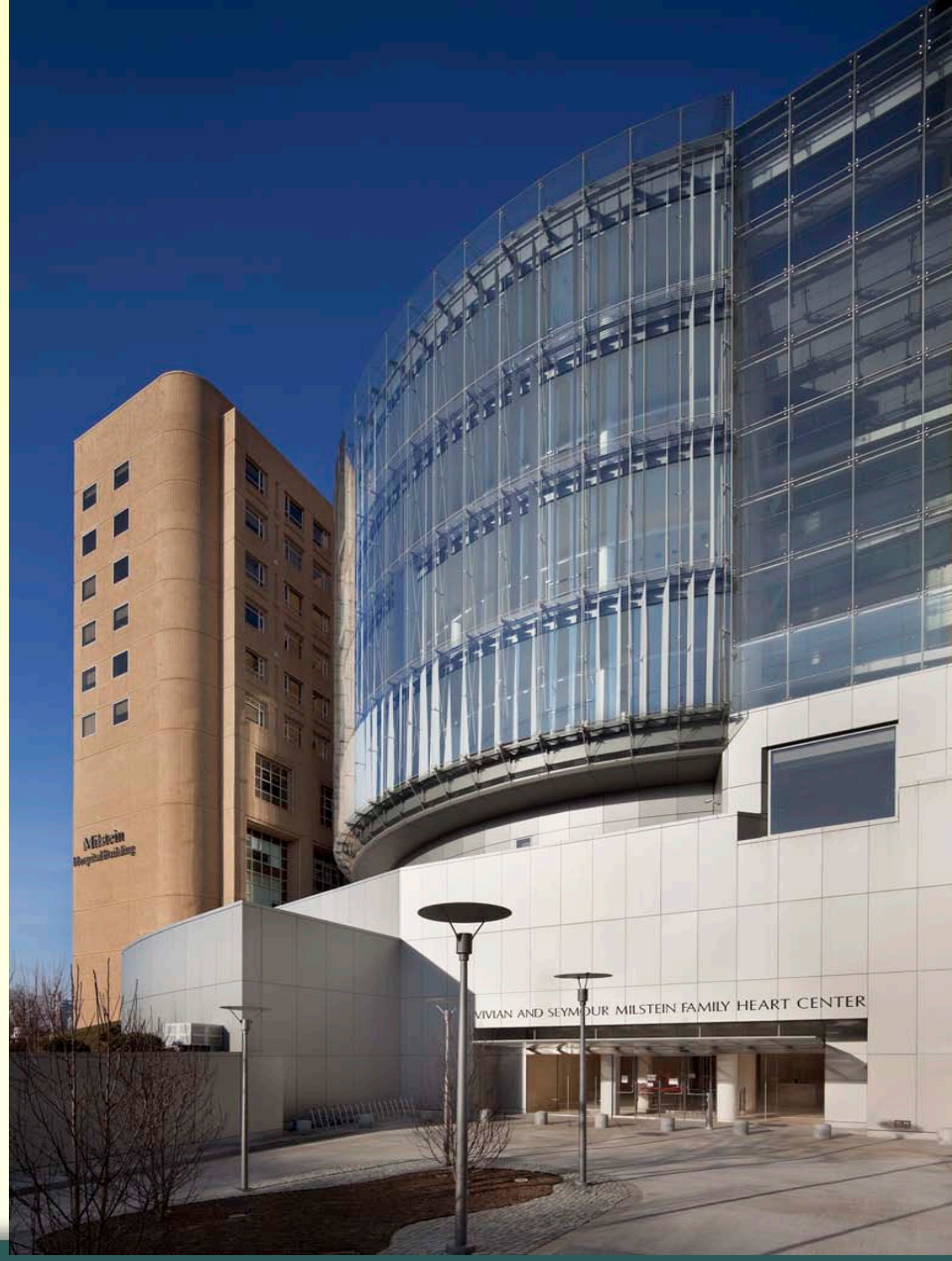
- **Surveyed 3,000 Steam Traps (all sites)**
  - Traps were identified, tagged and analyzed for proper functioning
  - Identified missing pipe insulation
  - Identified steam and condensate issues
- **Project Summary:**
  - Potential energy savings in Natural Gas
    - 4,167,490 kWh
    - 14,223 mmbtu's
  - Dollars Saved $204,875.76 per year
  - Simple payback 1.76 years

Compressed Air Survey

- Survey compressed air leaks
- Reducing air leaks will lower electrical consumption needed to power compressors, resulting in lower costs.
- If every leak is repaired:
  - Allen 262,489 kWh
  - WCMC 880,041 kWh
  - CUMC 1,615,002 kWh
  - Total operational savings $441k

Vivian and Seymour Milstein Family Heart Center

- Located at the Columbia Campus
- LEED Gold Certification
- Six story high, state of the art building
- 142,000 sq. ft.
- Provides cutting edge critical care capabilities and high –tech surgical suites equipped for all aspects of cardiac care



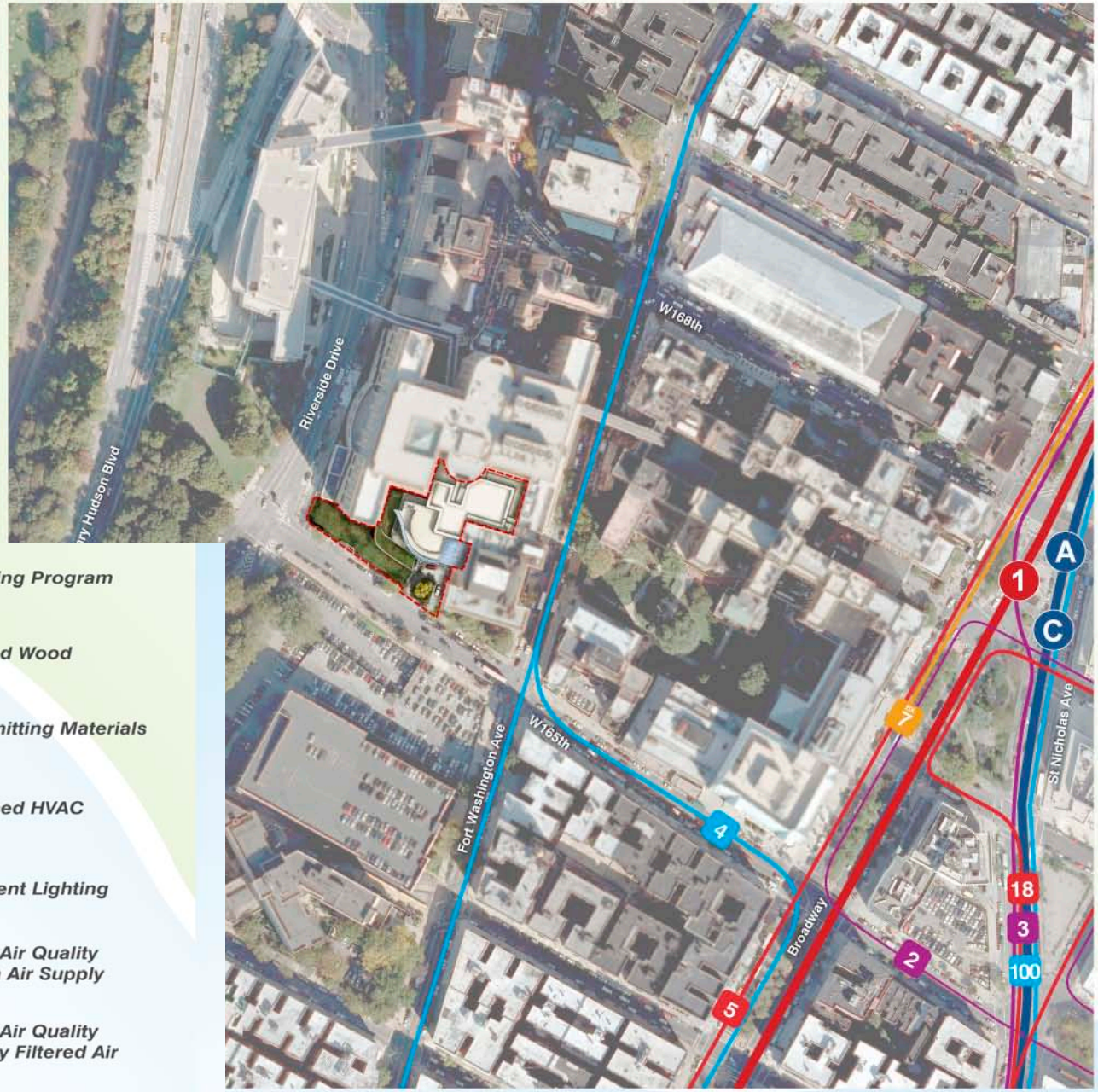
USGBC LEED Rating System

Alternative Transportation

Careful Site Selection

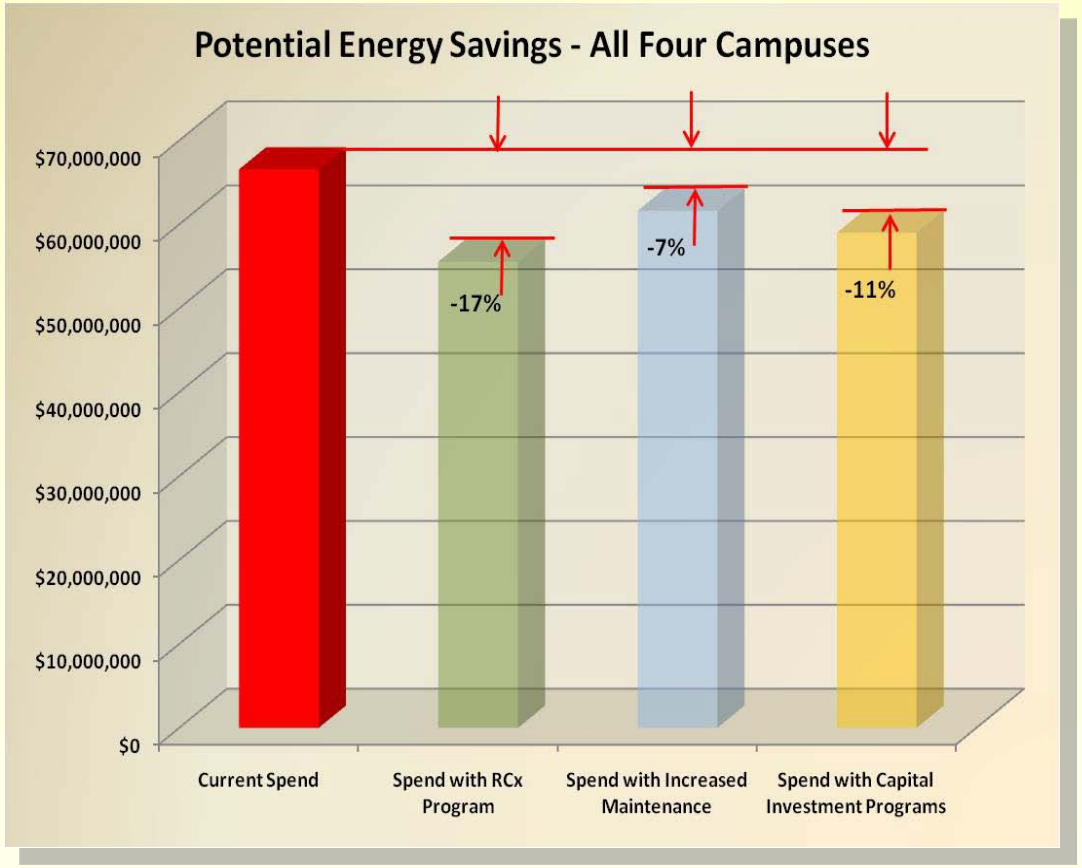
Regional Materials

- High Albedo Materials
- Minimize Light Pollution
- Native/Adaptive Vegetation
- Efficient Water Fixtures
- Adaptive Reuse
- 75% Construction Waste Reuse or Reduction
- Recycled Building Materials
- Recycling Program
- Certified Wood
- Low-Emitting Materials
- Advanced HVAC
- Intelligent Lighting
- Indoor Air Quality - Fresh Air Supply
- Indoor Air Quality - Highly Filtered Air
- Green Energy



Retro-Commissioning Assessment

- High Level energy study of all NYP facilities
- Study observations categorized 70 energy conservation measures for
  - Retro-Commissioning opportunities,
  - Maintenance and Operational enhancements
  - Capital investments



THE PATH TO FUTURE SUCCESS…

- Executive Leadership Support
- Further development of policies to enhance sustainability initiatives
- Increasing staff engagement
- Commitment to EPA's Energy Star Partnership
- Monitoring and Auditing ongoing energy efficiency efforts
- Benchmarking our energy usage and water consumption
- Developing a data driven dashboard for Senior Leadership
- Share best practices with other organizations
- Communicate, Communicate, Communicate!!!

Presented by:

Kathia Benitez

Energy Program Manager

New York Presbyterian Hospital

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Top Energy Saving Projects – Retro-Commissioning (RCx) Opportunities

Presented by:
Derek Gould, PE
Senior Engineer
Servidyne

Presented at:
August 2011 ENERGY STAR Web Conference
August 17, 2011

About Servidyne

- Founded in 1925 with 30+ years experience in energy efficiency & optimizing building performance
- Nine time United States EPA ENERGY STAR® Partner of the Year
- Mission: Optimizing your buildings' performance by:
  - Lowering energy and operating costs
  - Reducing environmental impacts
  - Enhancing occupant satisfaction

Where does Servidyne find that the top opportunities are coming from?

Retro-Commissioning (RCx)

SERVIDYNE

Why Retro-Commissioning?

- **Building never commissioned properly**
- **Not operated correctly over time**
- **Owner's operating requirements have changed**
  - **Occupancy**
  - **Addition/subtraction of spaces**
  - **Different space types**
- **Design standards have changed**

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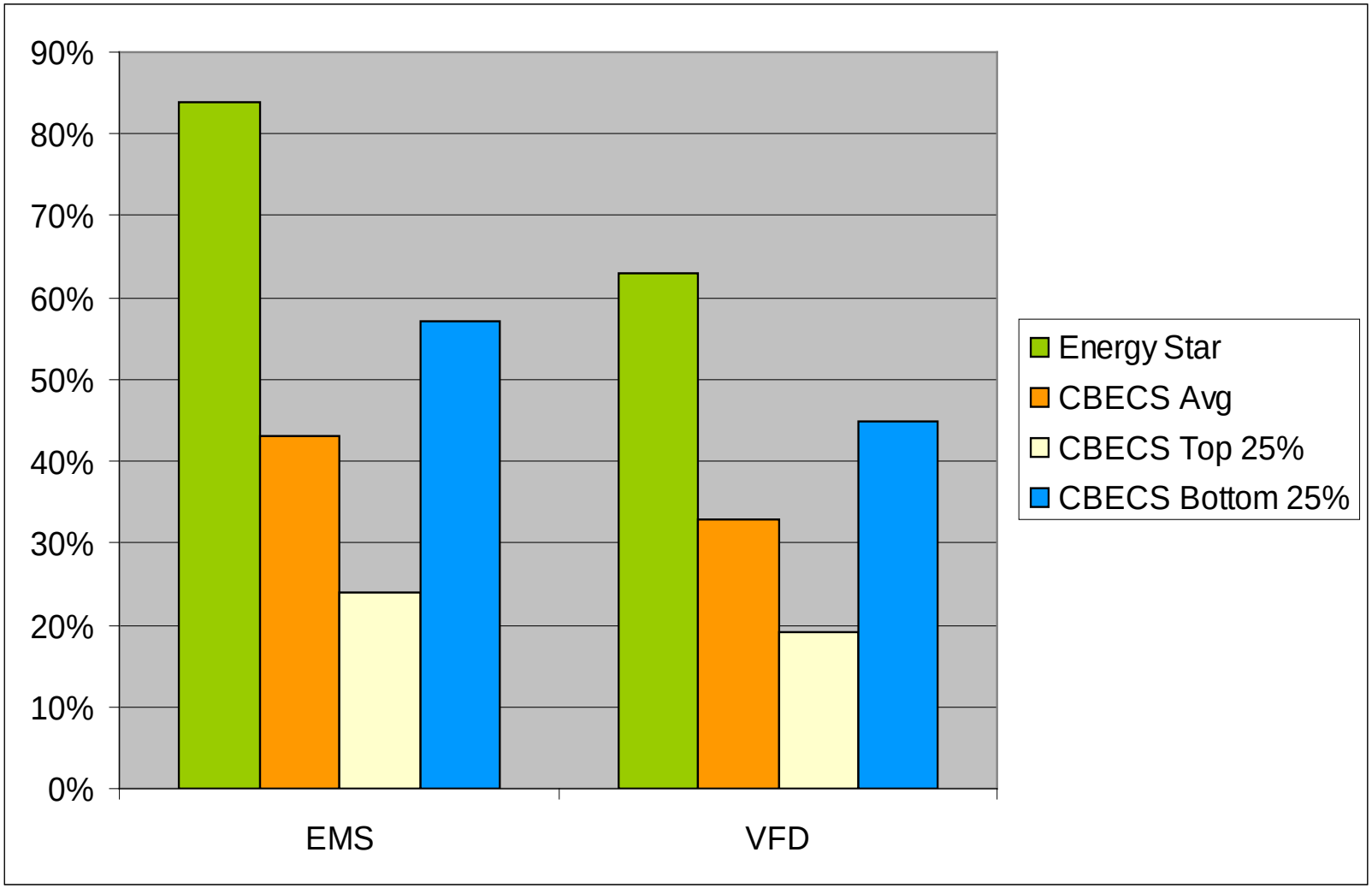
Technology vs. Performance



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Retro-Commissioning Value

Findings of Recent CA Energy Study:

"Commissioning is arguably the single-most cost-effective strategy for reducing energy, costs, and greenhouse-gas emissions in buildings today."

- **Median costs: $0.30/Sq Ft**
- **Median energy savings: 16%**
- **Median payback time: 1.1 years**
- **Energy savings persistence: 3 to 5 years at least**
  - **Study covered 643 buildings, 99 million sq ft, 26 states**
  - **Conducted by LBNL, July 21, 2009**

Servidyne Case Studies

- California utility-sponsored programs
  - 25 commercial buildings
  - 6.2 million square feet
  - Findings
    - Electricity savings: 4.9%
    - Natural gas savings: 12.1%
    - Cost savings: $0.11/SF
    - Payback: 1.7 Yrs
- Chicago utility-sponsored programs
  - 6 commercial buildings
  - 4.2 million square feet
  - Findings
    - Electricity savings: 6.1%
    - Cost savings: $0.07/SF
    - Payback: 0.6 Yrs

Top Retro-Commissioning Opportunities

1. Schedule HVAC Systems
2. Adjust Outside Air to Current Needs
3. Mitigate Simultaneous Heating and Cooling
4. Reduce Flow from Oversized Pumps
5. Reset Supply Air Temperatures
6. Enable Economizer Controls
7. Reset Static Pressures/Optimize VFD Operation
8. Stage Chillers Properly
9. Lower Condenser Water Setpoints
10. Correct Lighting Control Operation

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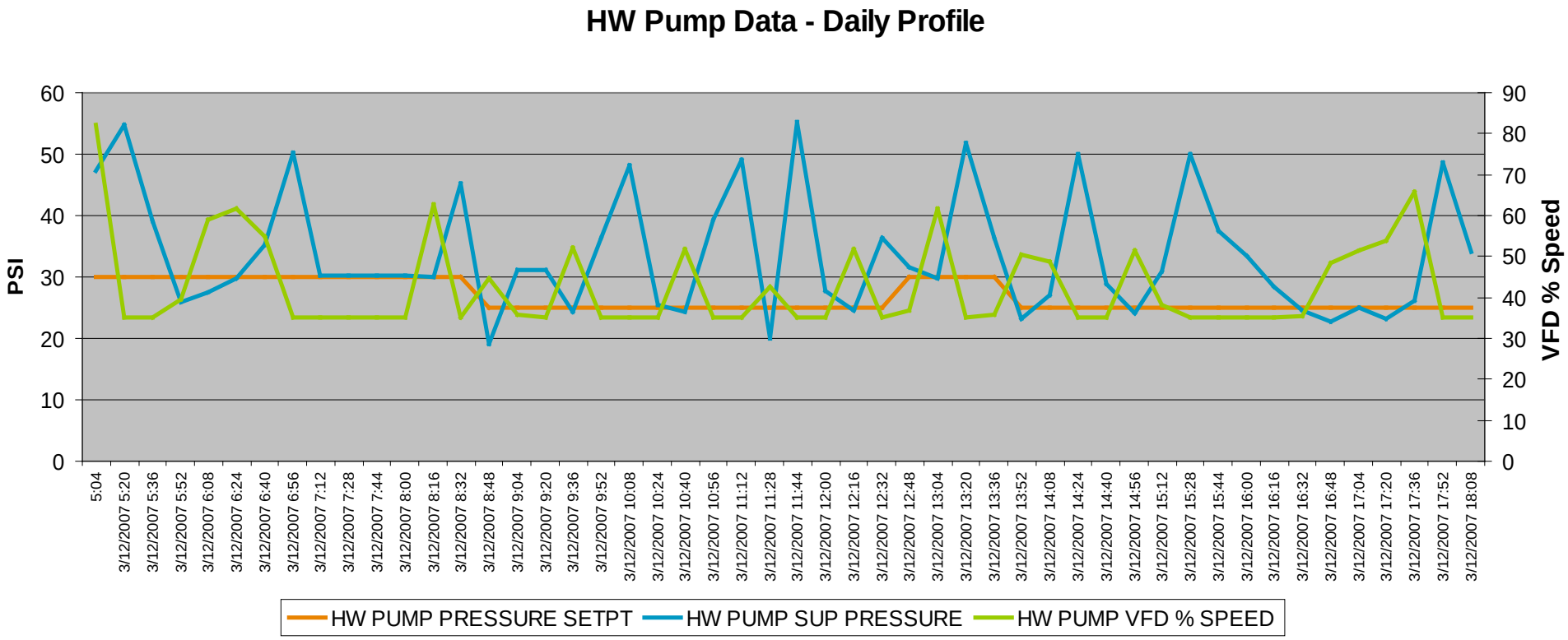
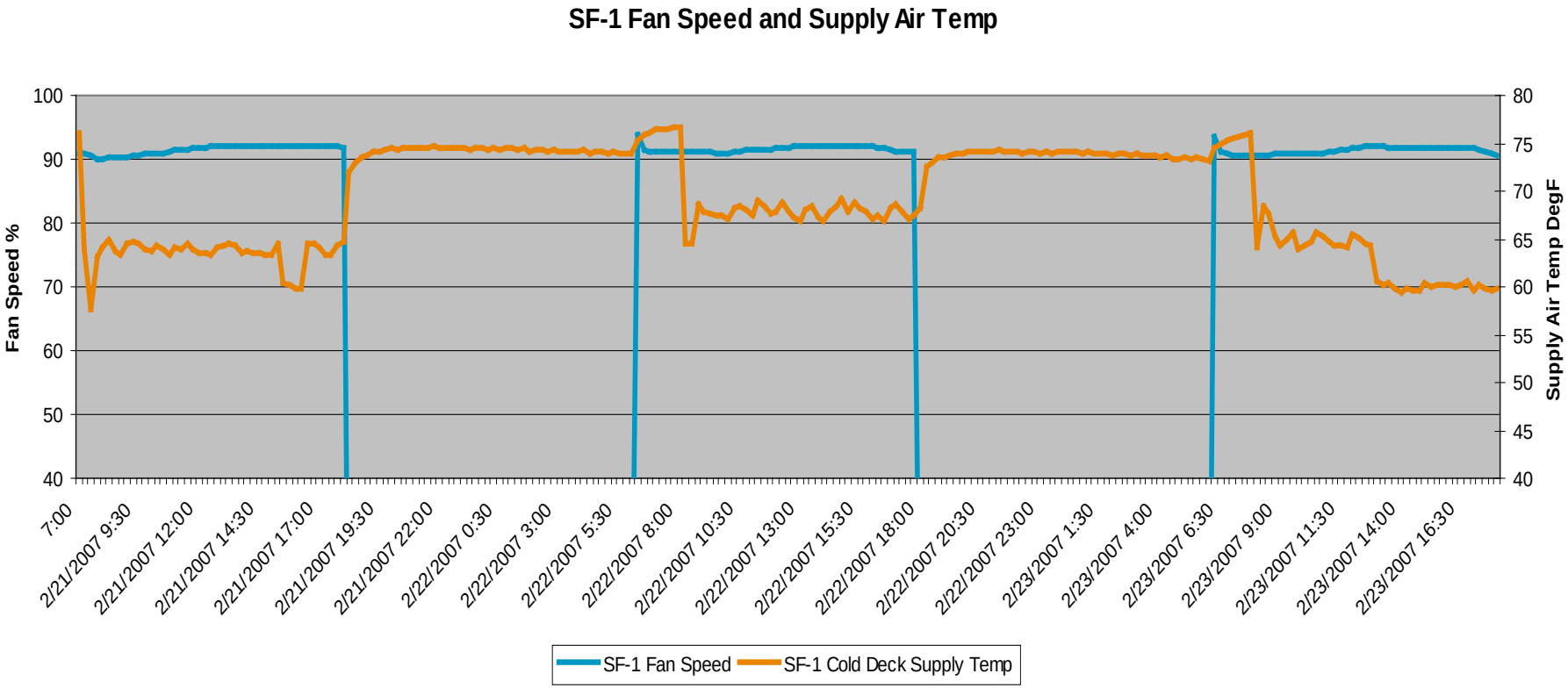
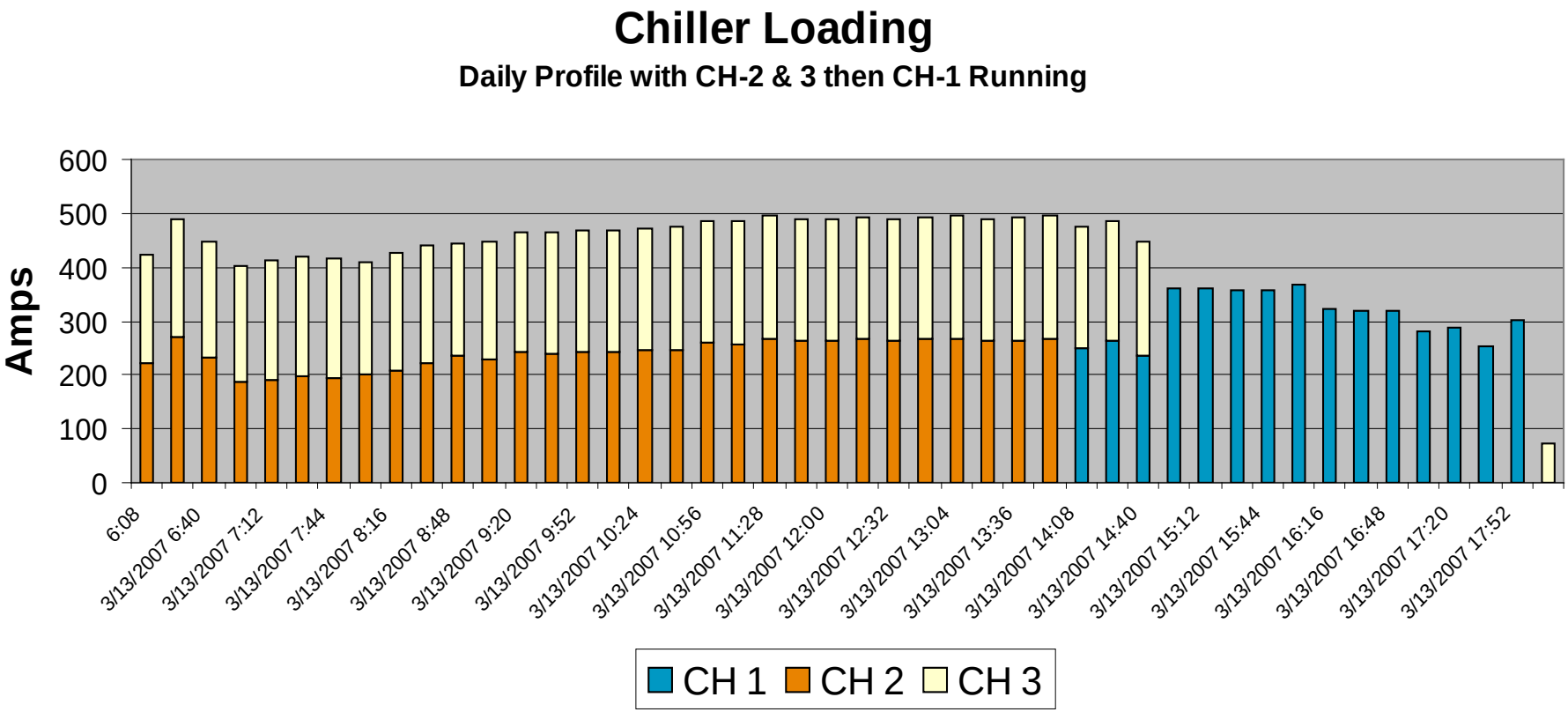
RCx Findings



RCx Findings

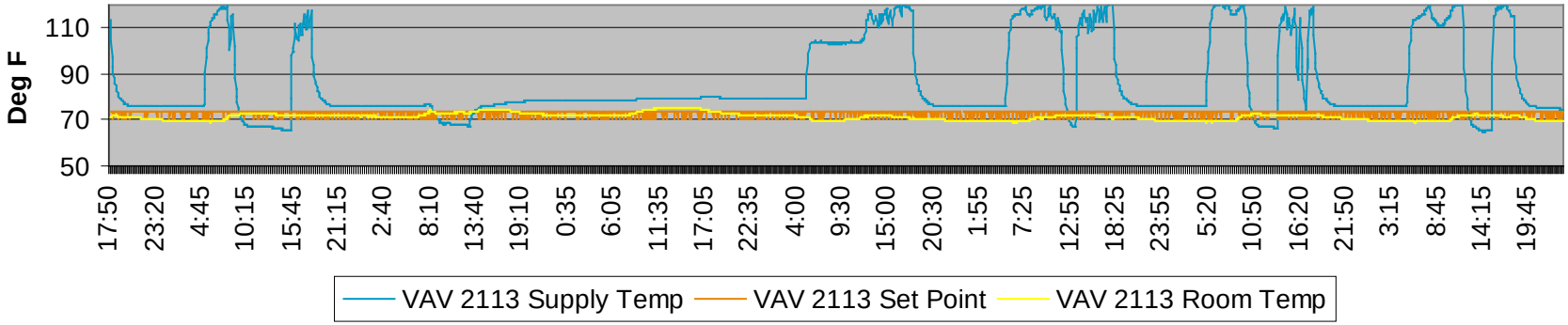


RCx Findings

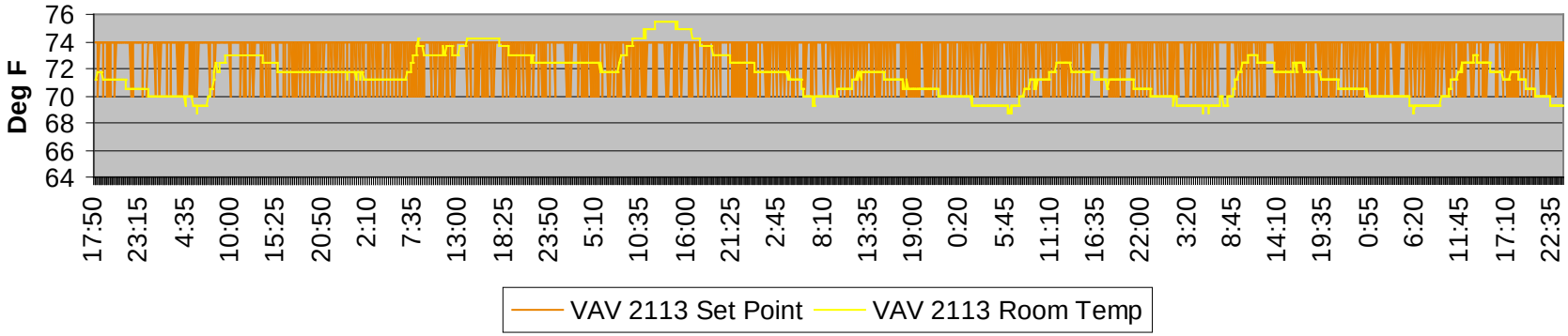


RCx Findings

VAV 2113 - Reheat
Room Temp Setpoint Cycling Erratically; Reheat Hunting

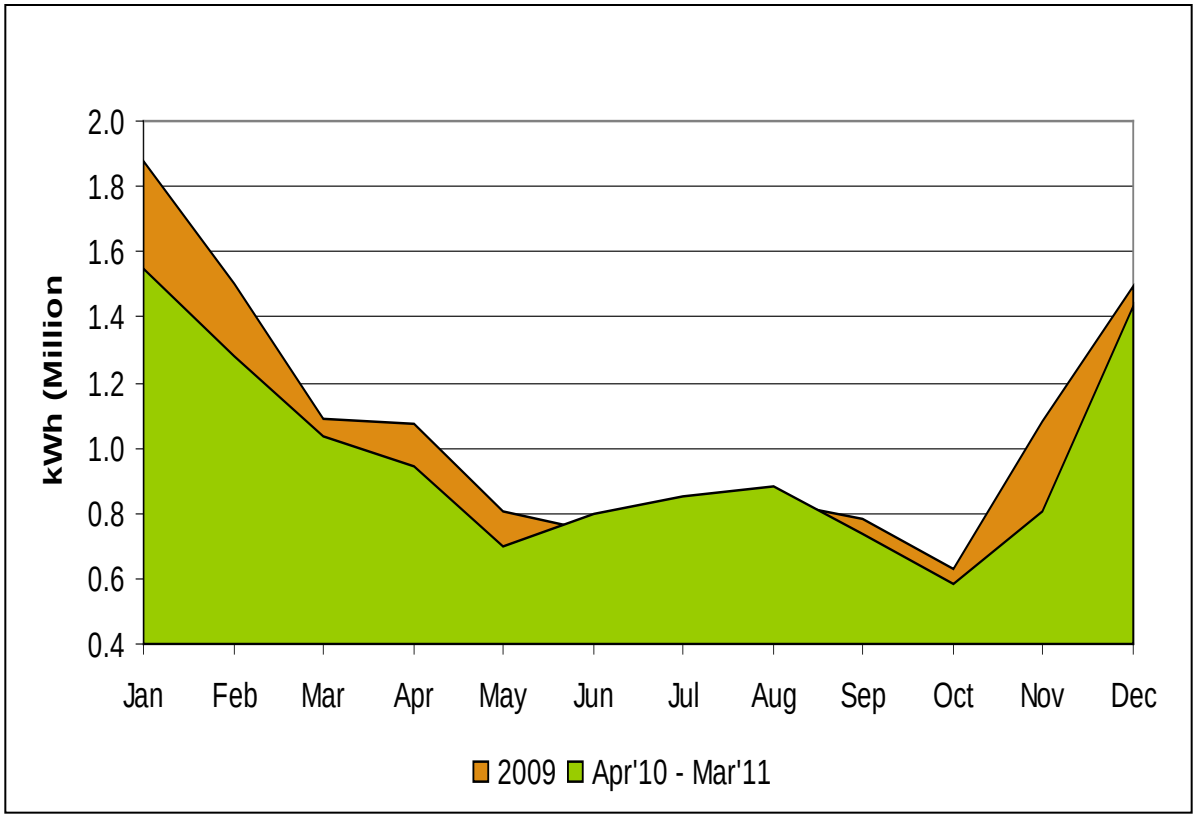


VAV 2113 - Reheat
Detailed View of Cycling Setpoint and Room Temp



RCx Findings

- Chicago office building
  - Baseboard electric heating control
  - AHU fan pressurization



Through the Eyes of an RCx Provider

Controls

Natural Materials

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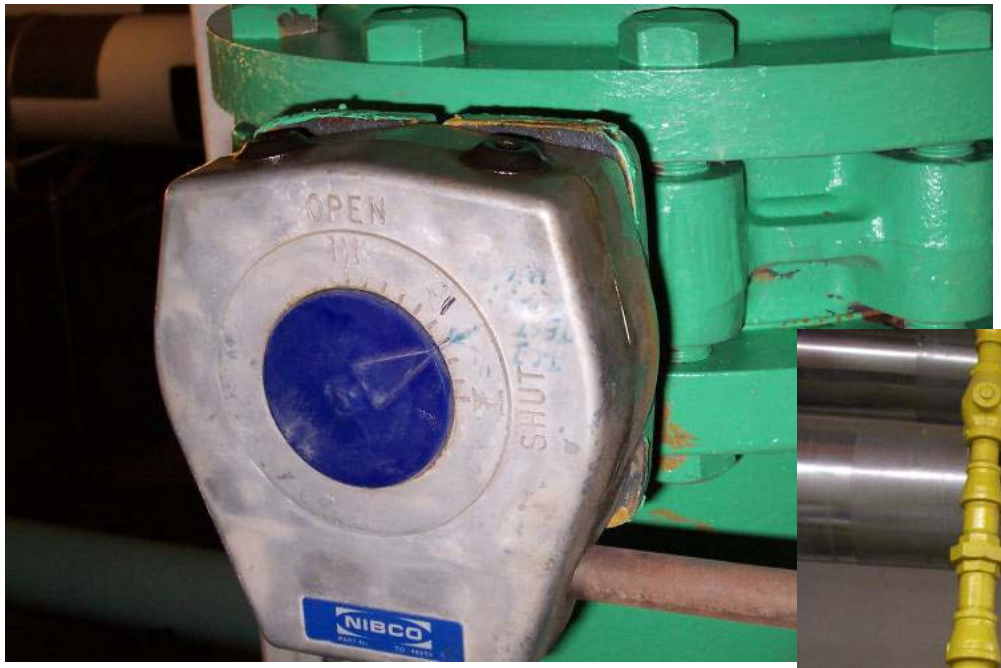
Through the Eyes of an RCx Provider

Passive Control



And more…

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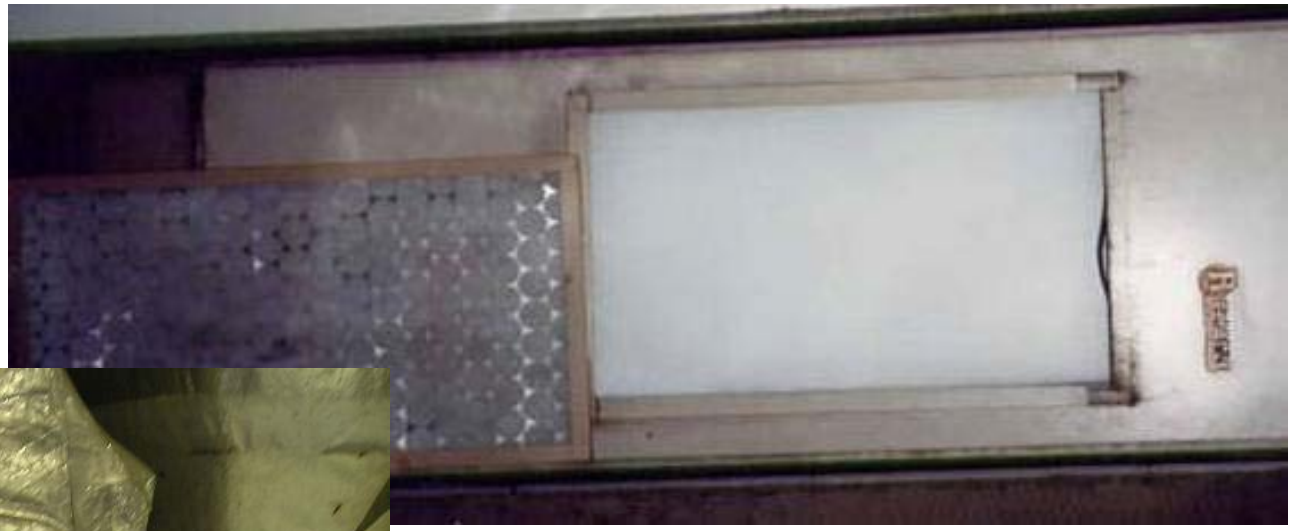
Through the Eyes of an RCx Provider

Refrigerant Reduction



Wireless Devices

SERVIDYNE

Questions?

Learn more about optimizing your buildings' performance

Derek Gould, PE
Senior Engineer
Servidyne
Tel : (770) 933-4200
Email: derek.gould@servidyne.com

Questions & Discussion

- Use # **6** to un-mute phone
- *** 6** to mute phone.

Upcoming Web Conferences

September 21 – ISO 50001 & ENERGY STAR

October 20 – Energy & GHG Management

November 17 - Energy Management Financing Strategies

Register for Partner Meetings online at: energystar.webex.com/meetings

- Thank you