

Better Buildings Webinar Series

We'll be starting in just a few minutes....

Tell us...please send your response to the webinar organizers via the chat window:

- 1. What topics are you interested in for future webinars?**






Cutting Edge Building Technologies – Join the Fun!

January 12, 2016
3:00-4:00 PM ET

Overview and Agenda

- Welcome & Introductions
- Energy Efficient Technologies – U.S. Department of Energy
- Case Study – New York Presbyterian
- Case Study – enVerid
- Additional Resources
- Question & Answer Session

Today's Presenters

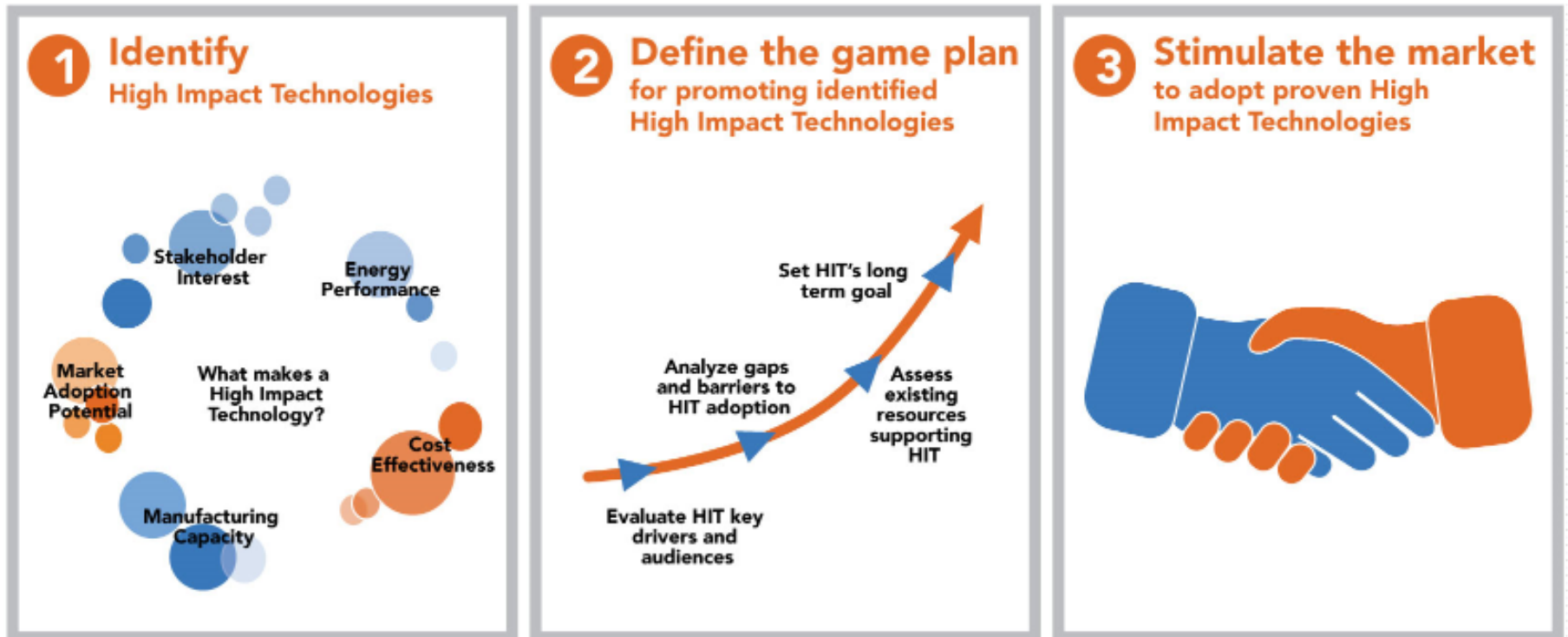
Name		Organization
Andrew Mitchell		DOE
Roberto Nunez		New York Presbyterian Hospital
Udi Meirav		enVerid

Andrew Mitchell

U.S. Department of Energy

High Impact Technology (HIT) Catalyst

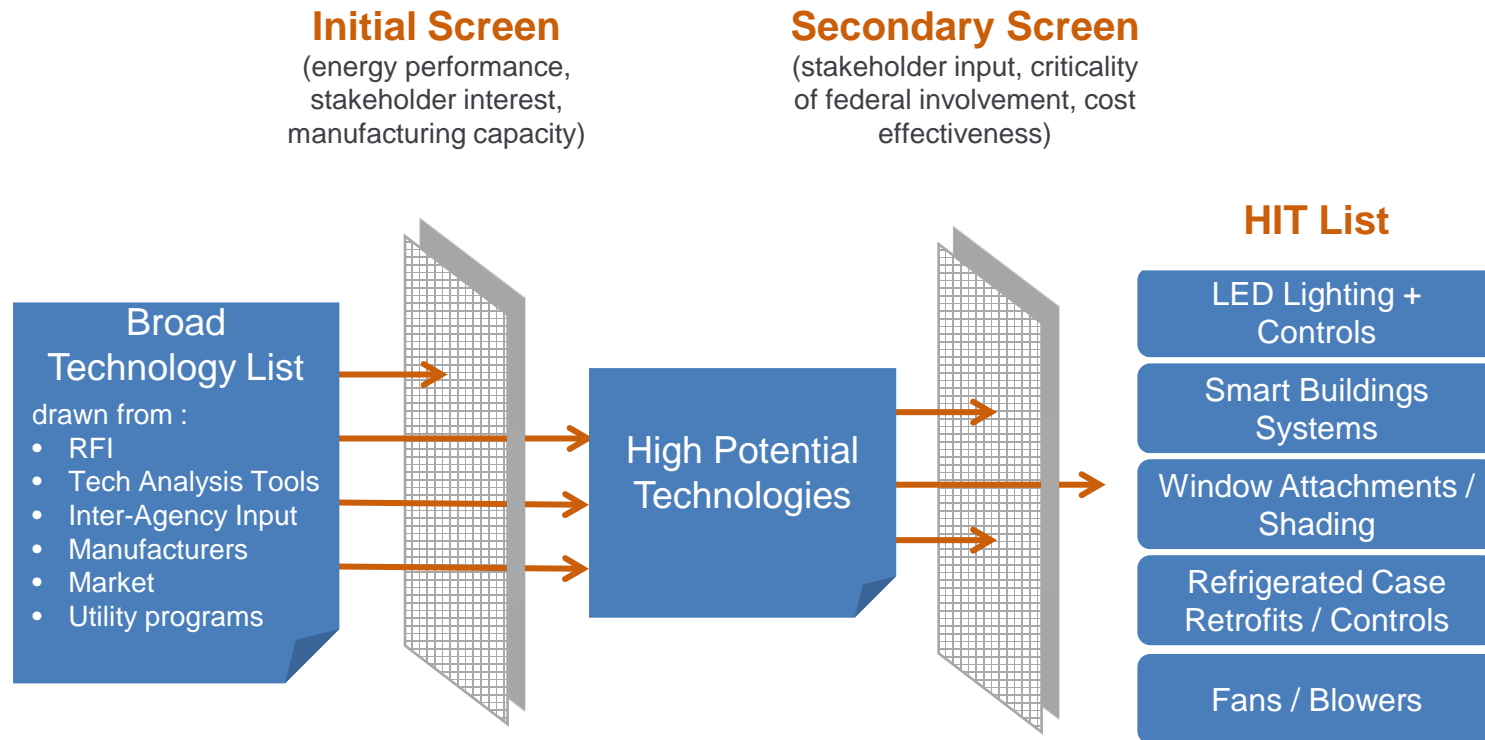
Goal: Identify, promote, and stimulate HITs



<http://energy.gov/eere/buildings/high-impact-technology-catalyst>

Identify, Evaluate, Prioritize Building Technologies

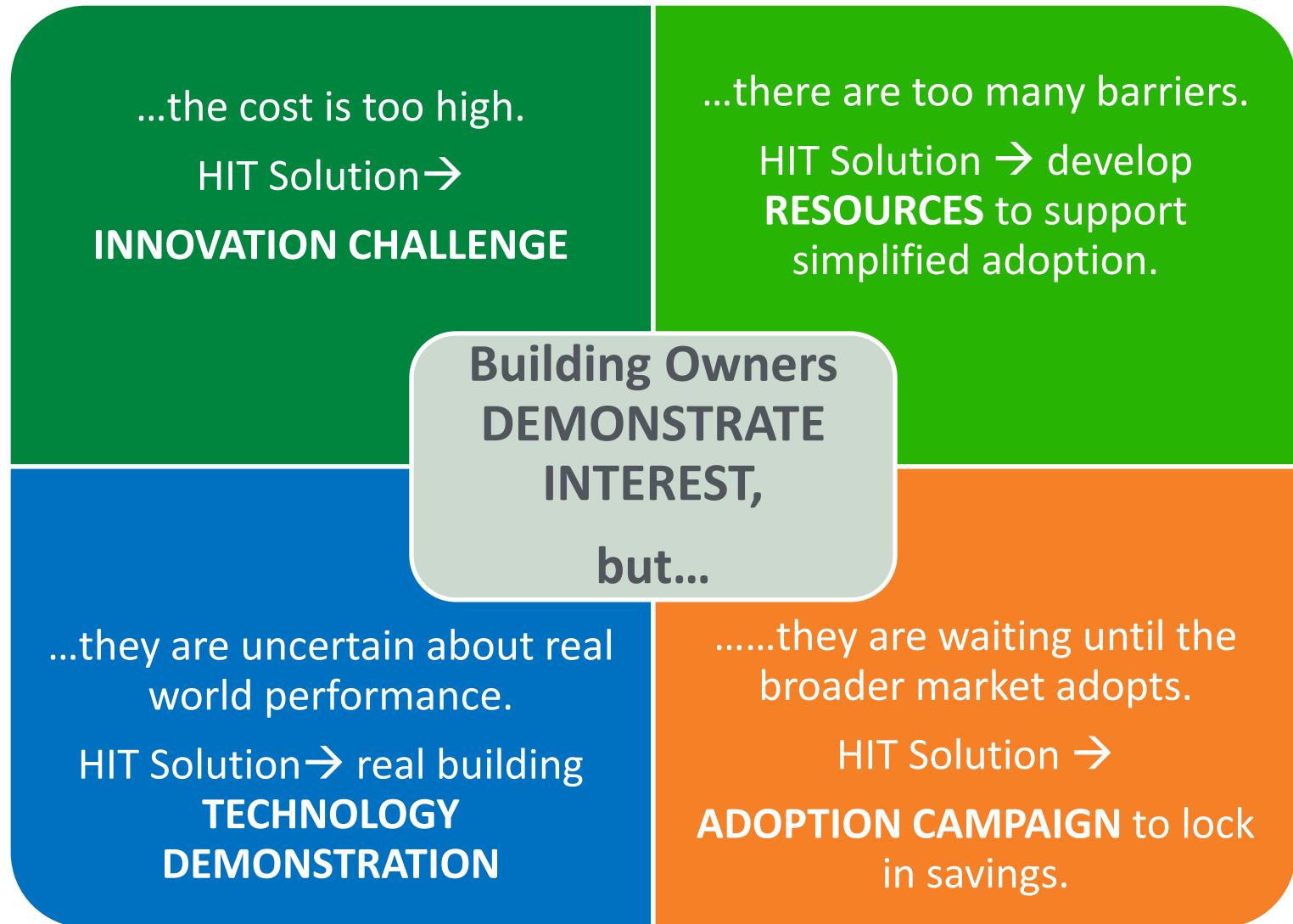
Deployment prioritization enables partners to focus on market-ready, high potential technologies in a shifting landscape with multiple, complicated choices.



The 5 High Impact Technologies (2015-16):

1. LED Troffers with Controls
2. Packages of Building Management and Information Systems (including submetering, control and automated fault detection and diagnostics)
3. Shading Attachments and Awnings
4. Refrigeration Controls & Display Case Retrofits
5. Commercial Fans and Blowers

Define the Game Plan by Selecting Core Activities



1) Stimulate the Market by Issuing a Challenge

When the building owners say “the cost is too high” ...

- DOE and Commercial Building Owners Issue a Challenge for manufacturers to innovate toward more efficient performance and features
- Currently ongoing: The low cost wireless submeter challenge
- The Roof Top Unit Challenge was issued in 2010 **zero** RTU models met the 18 IEER criteria. By 2014, 21 RTU models **exceeded** the 18 IEER criteria.
- DOE verified performance and recognized winning manufacturers:



DAIKIN McQUAY[®]



Credit: Peter Yuen, NAVFAC

2) Stimulate the Market by Providing Resources

When the building owners say “There are too many barriers, uncertainties, or unknowns” ...

- Technical experts, manufacturers and end users collaboratively develop criteria.
- Provide boundaries for companies to select efficient technologies.
- 10 existing performance specifications represent 12% energy savings (\$24 Billion) across commercial buildings

The screenshot displays the Better Buildings Alliance website. At the top, it features the U.S. Department of Energy logo and the text 'Energy Efficiency & Renewable Energy'. Navigation links include 'EERE Home | Programs & Offices | Consumer Information'. The main header includes the 'Better Buildings' logo and the 'BETTER BUILDINGS ALLIANCE' text. Below this is a navigation bar with 'Sectors', 'Activities', 'Events', 'About', and 'Join'. A secondary navigation bar shows 'HOME > TECHNOLOGY SOLUTIONS TEAMS'. The 'Activities' section is expanded to show 'Technology Solutions Teams' with a list of categories: Lighting & Electrical, Space Conditioning, Plug & Process Loads, Food Service, Refrigeration, Laboratories, Energy Management Information Systems, and Renewables Integration. The 'Market Solutions Teams' section is also visible. The 'Technology Solutions Teams' section contains a description of the alliance's mission and a list of project teams with corresponding images: Lighting & Electrical, Space Conditioning, Plug & Process Loads, and Food Service.

3) Stimulate the Market by Proving Performance with a Demonstration

- When the Building owners say “does this technology really work?” ...

Market Stimulation Activity = Real Building Demonstration.

Match HITs and Partners and National Laboratories:

- Sites (as applicable)
- 3rd party measurement and verification.

Demonstration generates performance data and market information.

Cultivate the path to market through dissemination of information and resources to enable adoption by partners.

- Better Buildings members notified first
- Sign up to host a demo site [HERE](#)

4) Stimulate the Market With an Adoption Campaign

When the building owners say “I think I’ll wait” ...

- Key industry partnerships for outreach, technical assistance, and recognition for best practices
- Resources and technical assistance from national experts
- Hub for technology information: case studies, specifications, guidance, incentives
- Commitments enable DOE to track metrics

Replace. Retrofit. Reap Rewards.

Get advice.
Save energy and money.
Get recognized for success.

Join

ASHRAE RILA Better Buildings

RILA RETAIL INDUSTRY LEADERS ASSOCIATION
Educate. Collaborate. Advocate.

Better Buildings
A COMMITMENT TO EXCELLENCE



Stimulating Adoption: Interior Lighting Campaign

- Goal: 1,000,000 lighting retrofits
- LED lights with controls produce 30-75% savings
- Awards at the Building Owners and Managers Association (BOMA) Conference in 2016
- Federal Lead by Example: GSA
- Commitments from Target, Macy's, MGM, Sands, CKE, City of Milwaukee, DoD, Wendy's, more...
- Recognition for best practices and energy savings at the BOMA Conference in 2016
- Join! At www.interiorlightingcampaign.org



Stimulating Adoption: Advanced RTU Campaign

- Promotes high-efficiency RTU solutions high-efficiency replacements, and new
- Advanced RTUs produce 20-50% energy savings and \$900-\$3,700 energy cost savings per RTU
- Goal: 75,000 RTUs
- Recognizing Best Practices at the Professional Retail Store Maintenance (PRSM) Conference in 2016
- www.advancedrtu.org

The screenshot shows the homepage of the Advanced RTU Campaign website. At the top is a dark blue navigation bar with the title "Advanced RTU Campaign" and a search bar. Below this is a light grey menu bar with links for HOME, ABOUT, JOIN, TECHNICAL ASSISTANCE, FINANCIAL RESOURCES, AWARDS & RESULTS, and CONTACT US. The main content area features a heading "What is the Advanced RTU Campaign?" followed by a paragraph explaining that older, inefficient RTUs waste energy and can be replaced or retrofitted for savings. A large blue box contains the slogan "Replace. Retrofit. Reap Rewards." and a "Join" button. Below the box are logos for ASHRAE, RILA, and Better Buildings. To the right of the text is a photograph of a large, tan-colored RTU unit on a rooftop.



Energy Efficiency & Renewable Energy

Stimulating Adoption: Lighting Energy Efficiency in Parking

- Supported with multiple case studies and a performance specification
- Launched in 2013 to promote high performance lighting in parking lots and parking structures
- Savings = up to 80%
- 350 partners
- Over 475 million square feet, 1.4 million parking spots retrofitted
- Savings so far of 120 million kWh, over \$10 million annually; 146M pounds of CO2
- www.leepcampaign.org



Roberto Nunez

New York Presbyterian Hospital



Predictive Energy Optimization New York Presbyterian Hospital The Allen Hospital/The Spine Hospital

Roberto Nunez
Director-Facilities Operations

Introduction

Roberto Nunez (CHFM, MBA)

Director-Facilities Operations and Engineering

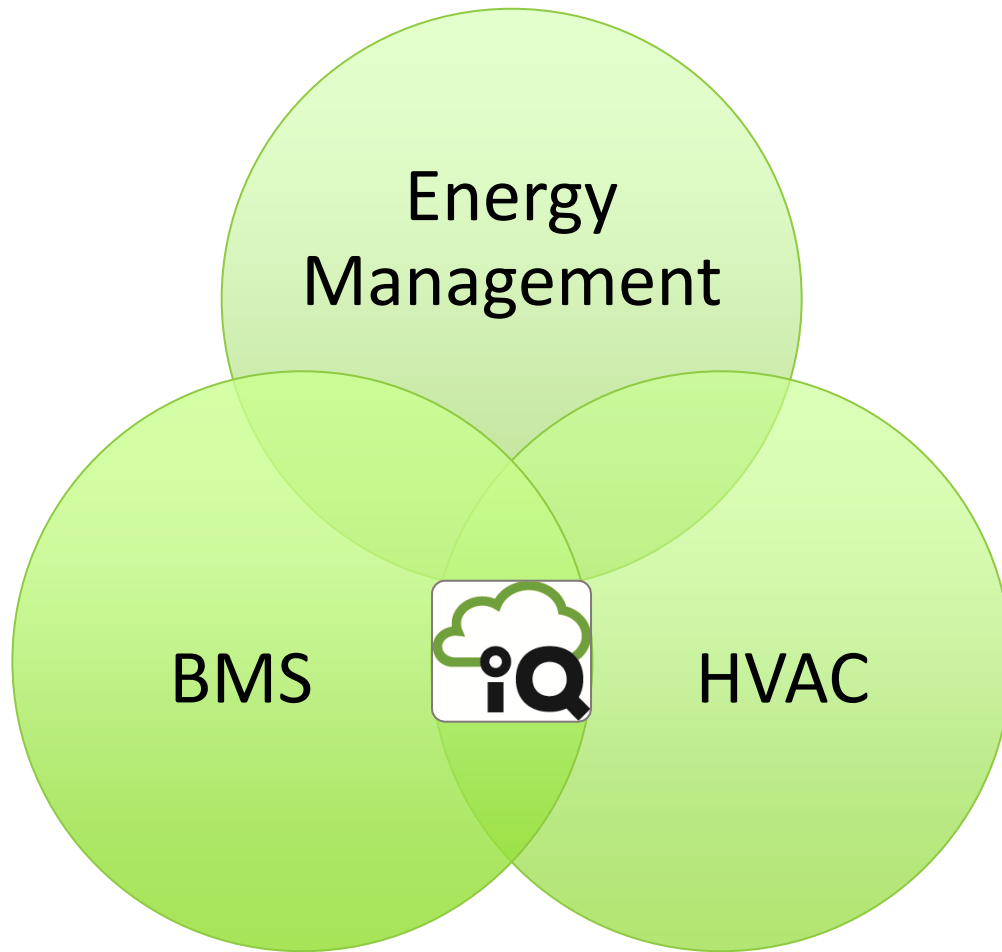
New York Presbyterian Hospital-

The Allen Hospital / The Spine Hospital Campus

-12 Years with Organization

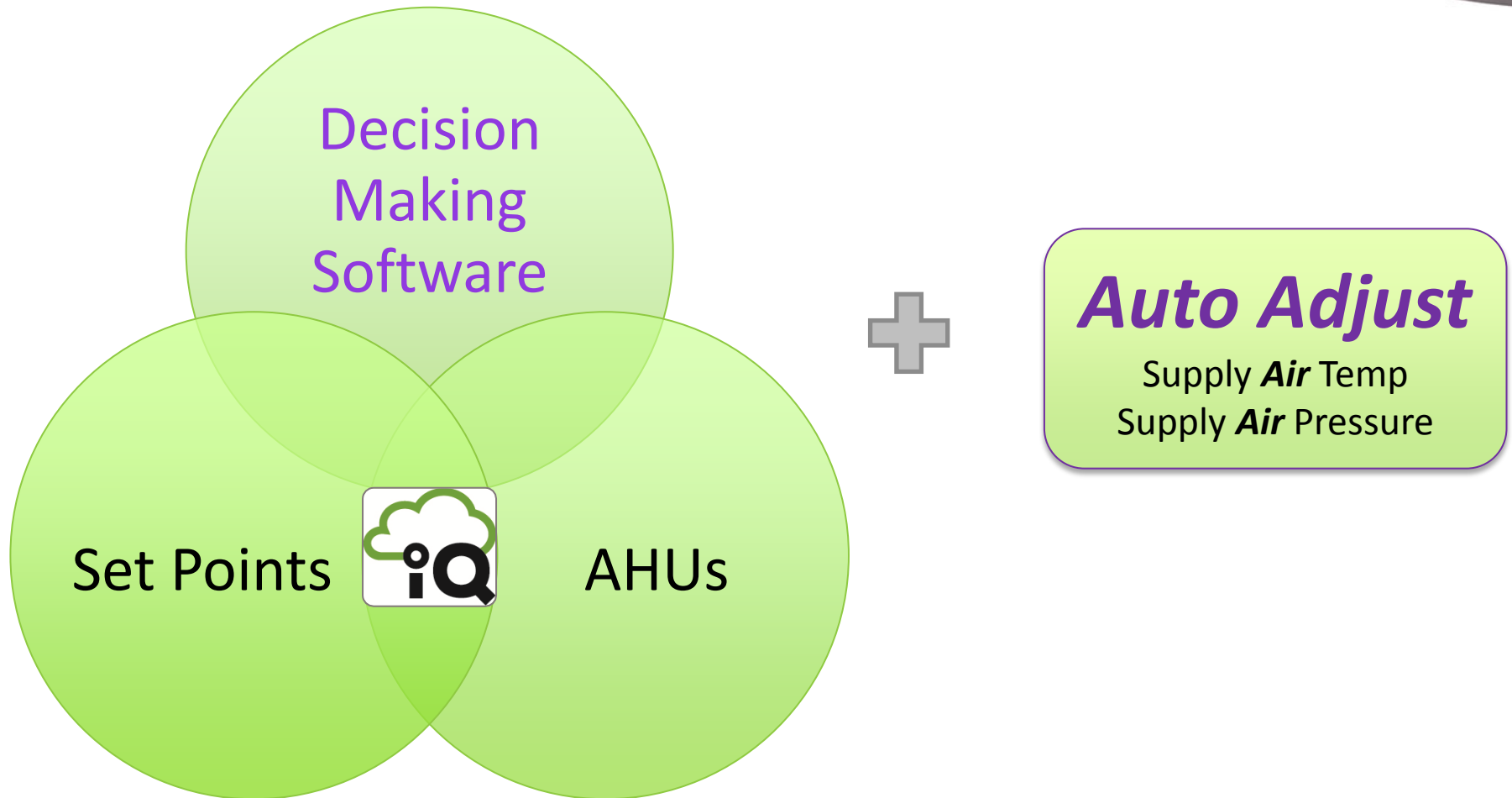
-17 Years working with DDC (NYPH, Siemens & Johnson Controls)

Overview



***AIR* Flow**

BuildingIQ Functional Position



BuildingIQ Interface Points

Chilled Water/Fan Coil Systems (per AHU)

- Actual supply air temperature
- Actual supply air static pressure
- Supply air temperature Setpoint
- Supply air static pressure Setpoint
- Chilled water valve position (AHU)
- Hot Water valve position (AHU)
- Zone/AHU return air humidity
- Outside air damper position
- BMS-side BuildingIQ enable/disable
- Occupied/Unoccupied
- Outside air temperature (global)
- Chiller(s) kW(h) usage (or % loading) (global)
- Whole-building kw/kWh metering (global)

DX AC Unit Systems

- Actual supply air temperature
- Actual supply air static pressure
- Supply air temperature Setpoint
- Supply air static pressure Setpoint
- Outside air damper position
- Outside Air Temperature (global)
- Zone/Unit return air humidity
- Compressor kw/kWh or % Load
- BMS-side BuildingIQ enable/disable
- Occupied/Unoccupied
- Whole-building kw/kWh metering (global)

Note: Underlined points are control points

BuildingIQ Software

The software's algorithms continually model, learn and re-learn the unique behavior of the building

- Synthesizing this data, the software communicates sensible operational forecasts to the BMS, which the BMS *automatically* acts upon

Resulting in a ***net drop in system demand***,

>> without sacrificing occupant comfort

BuildingIQ calls this process:

Predictive Energy Optimization™ (PEO)

PEO results in lower energy costs, without sacrificing occupant comfort.

BuildingIQ Thermal Model

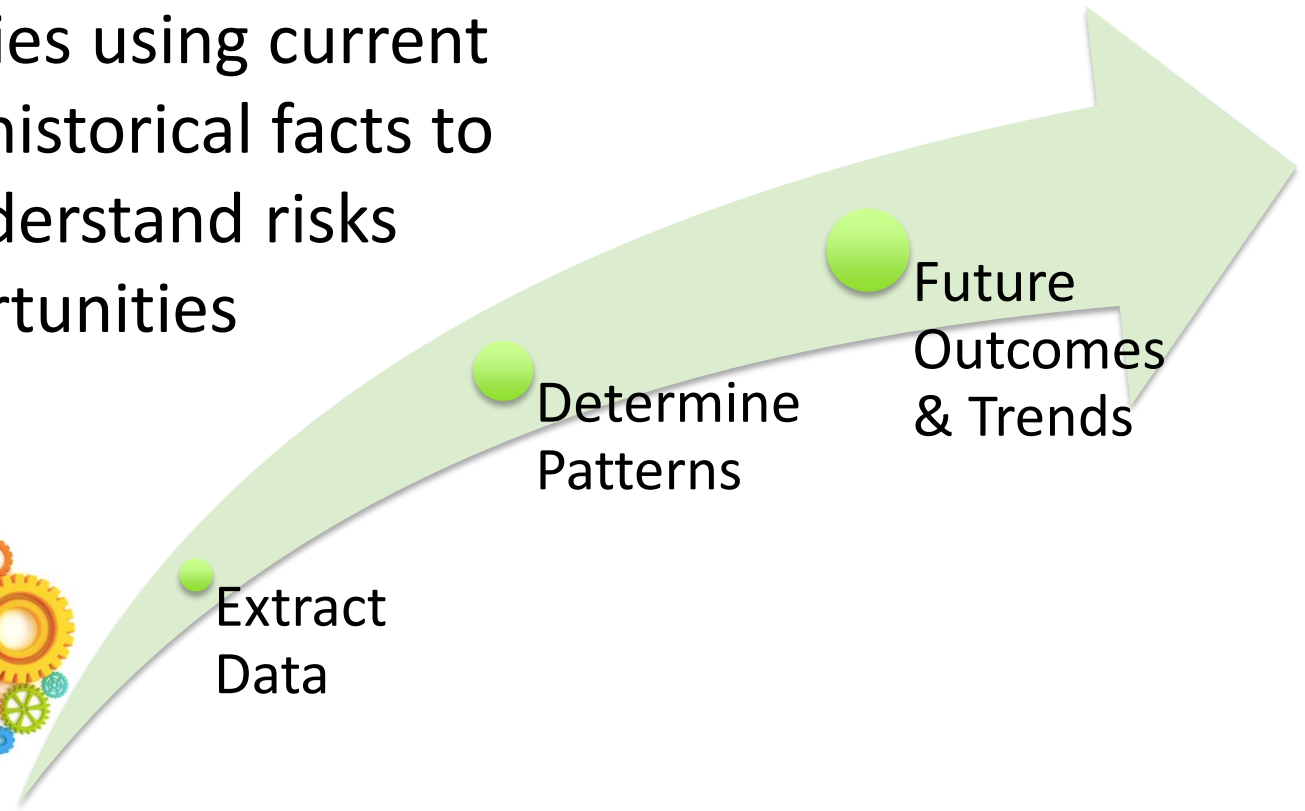
Advanced Artificial Intelligence (AI) algorithms learn and model thermal characteristics

- Continuously learn by analyzing energy, weather and BMS data coming from the building
- Intelligently determine optimal sequences, temperature set-points and other relevant system parameters
- Automatically adapt to changes in usage patterns, internal or external conditions
- Cumulatively improve performance



BuildingIQ Predictive Analytics

- Forecast future probabilities using current data and historical facts to better understand risks and opportunities



BuildingIQ *PEO*: Dual Benefit



Financial \$ Management Tool

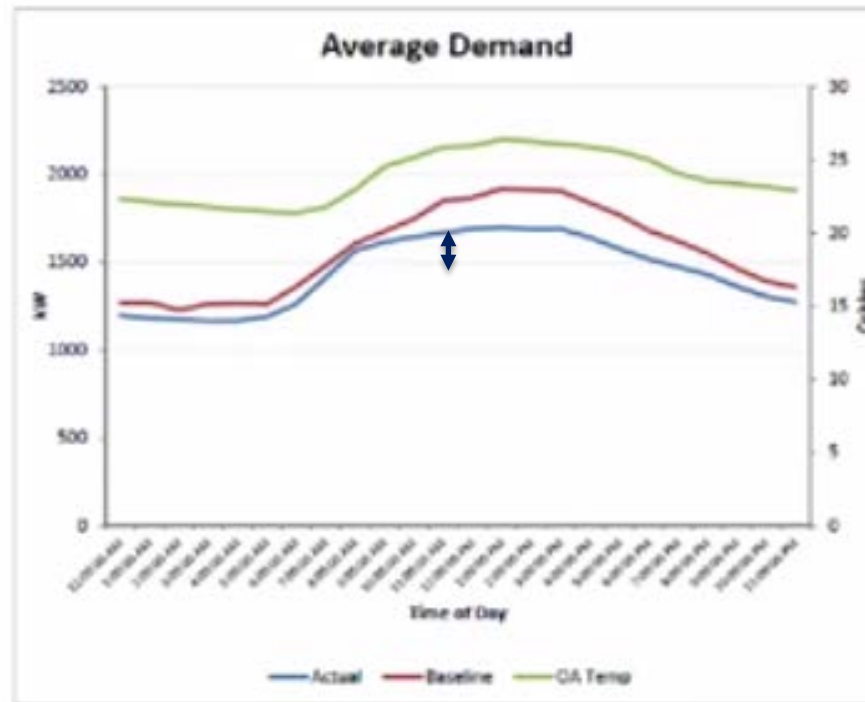
- Reduce HVAC Energy Spend
- Create Cash in Form of Savings
- Finance Other Energy Projects
- Conserve the Cash of the Owners
- Avoid Costs
- Trim Budgets



Energy Management Tool

- Reduce HVAC Energy Consumption
- Reduce Demand
- Reduce Greenhouse Gases
- **Analyze HVAC Performance**
- **Dynamic Energy Usage**
- **Continuous Optimization**

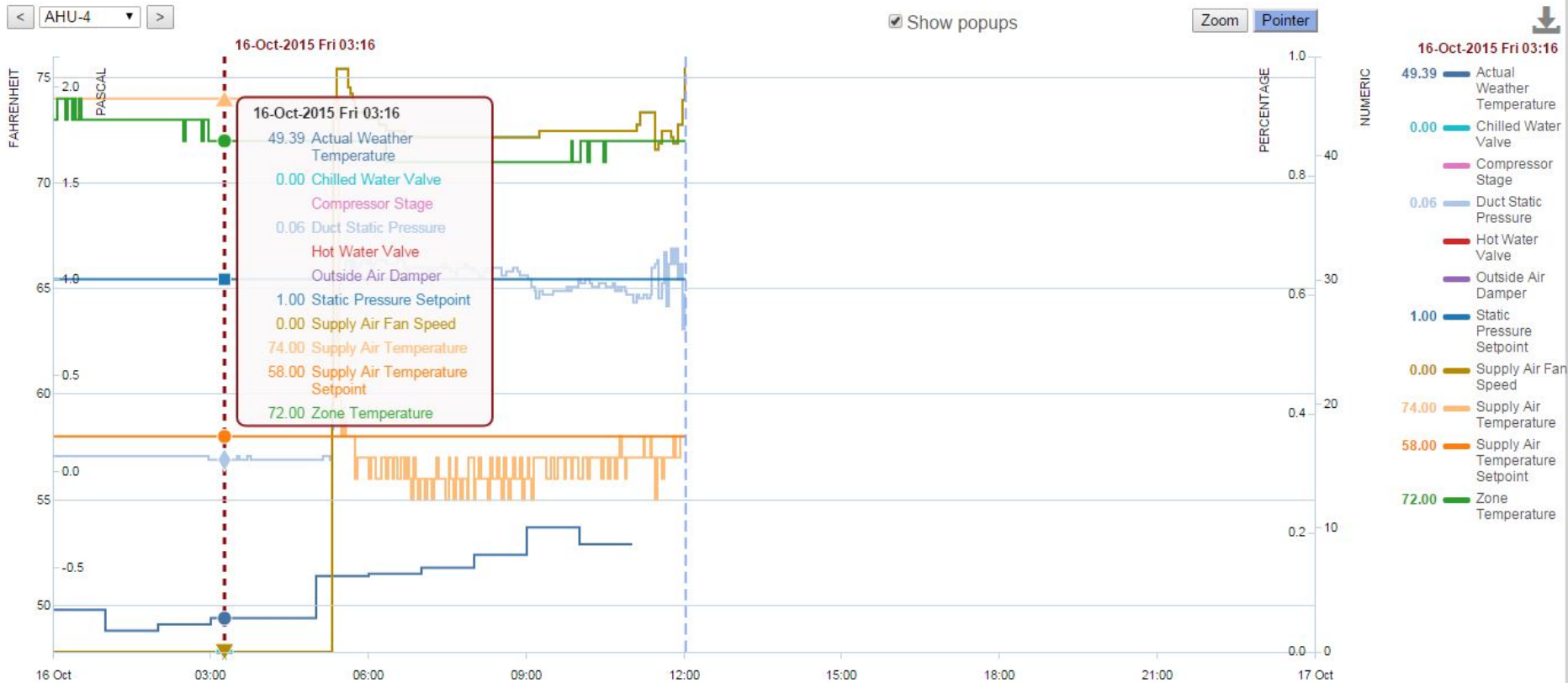
BuildingIQ Predictive Energy Optimization (PEO) in Hospital Facility



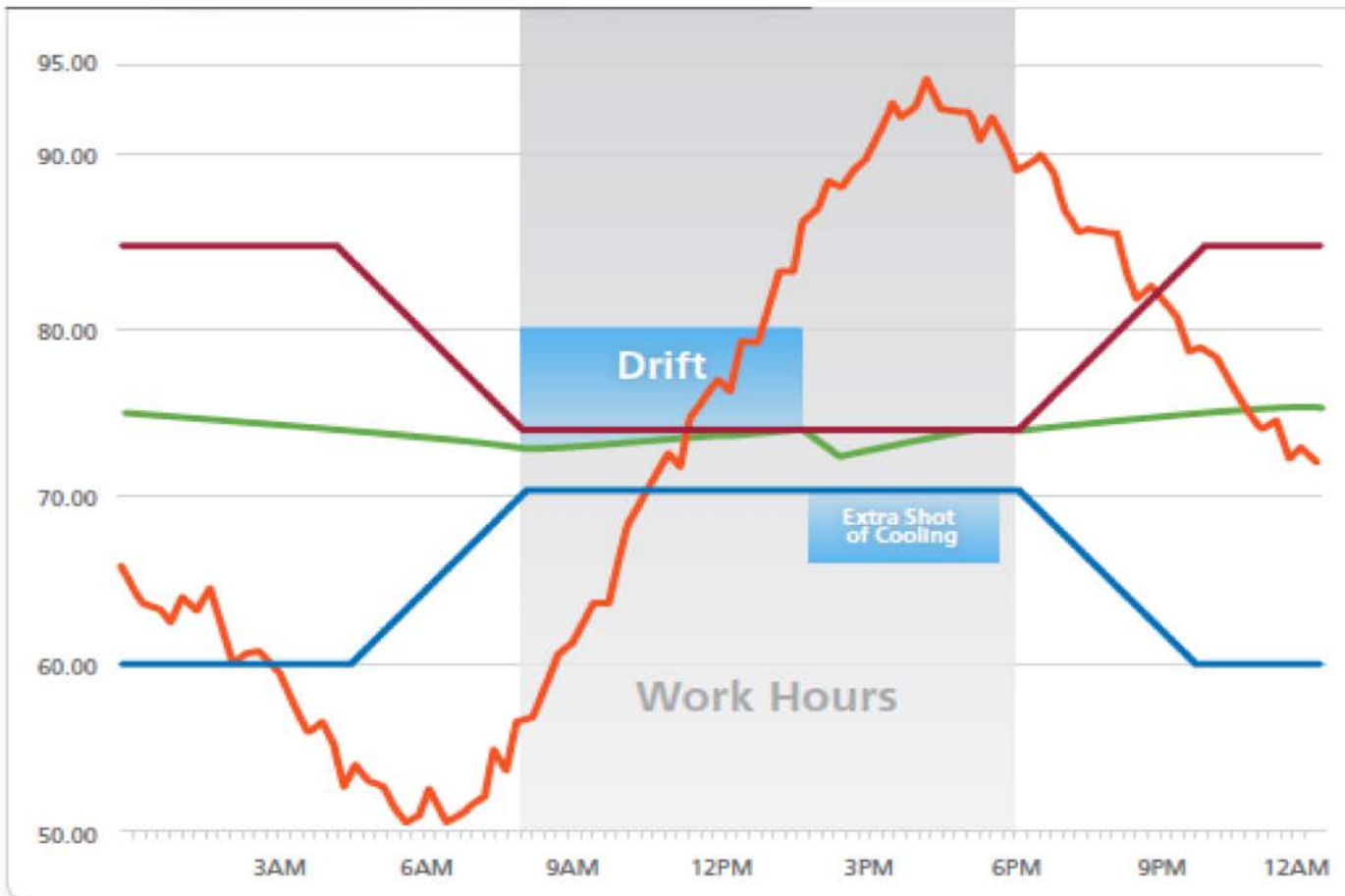
↕ **BuildingIQ Savings**

TOTAL Energy Spend Savings = 20%

Data profile from the Allen Hospital

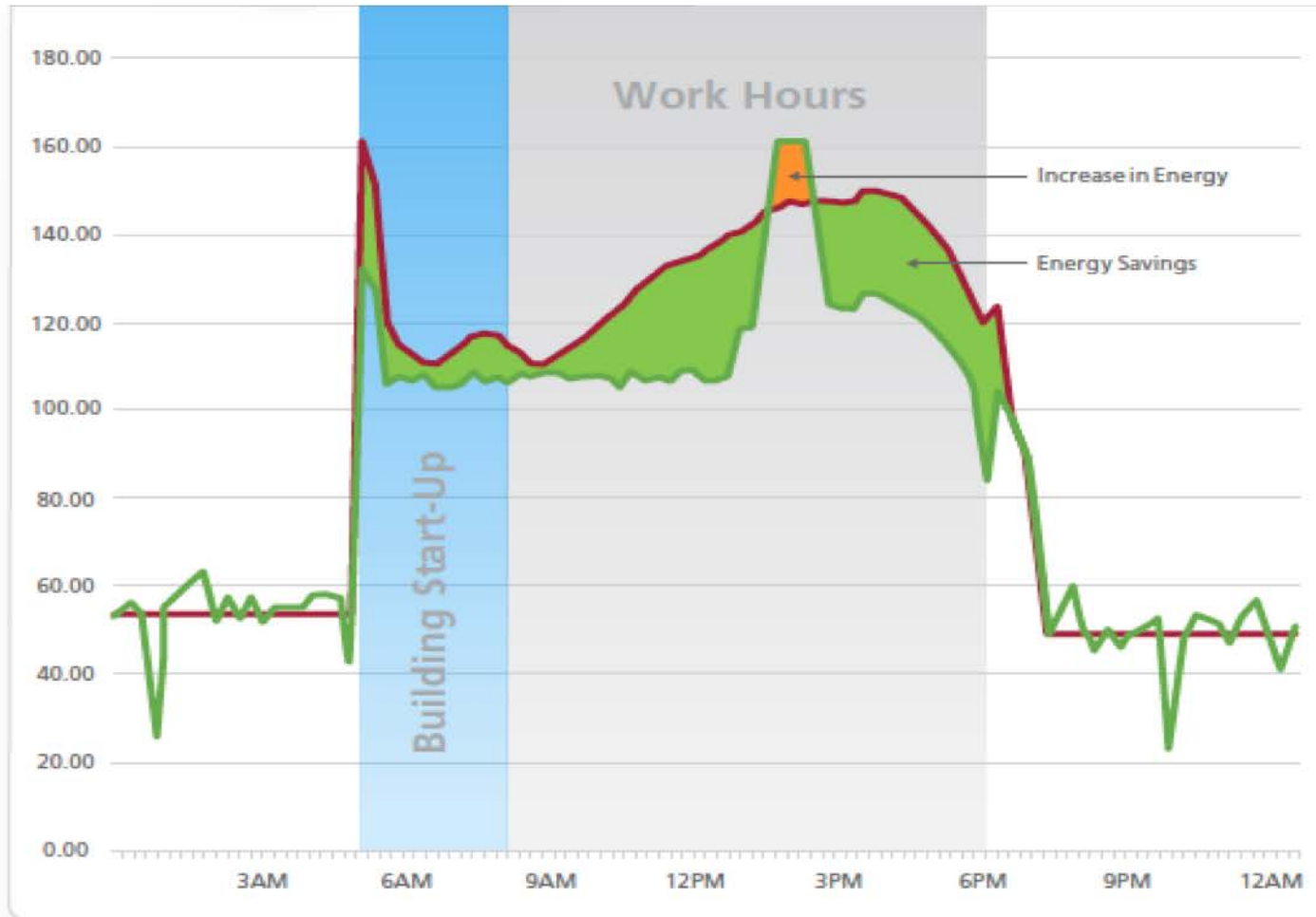


Optimized Temperature Control



- Outside Temperature
- Energy Optimization
- Lower Limit
- Upper Limit

Optimized Power Profile



Baseline Model

Energy Optimization

BuildingIQ Case Study

NYC Office Tower

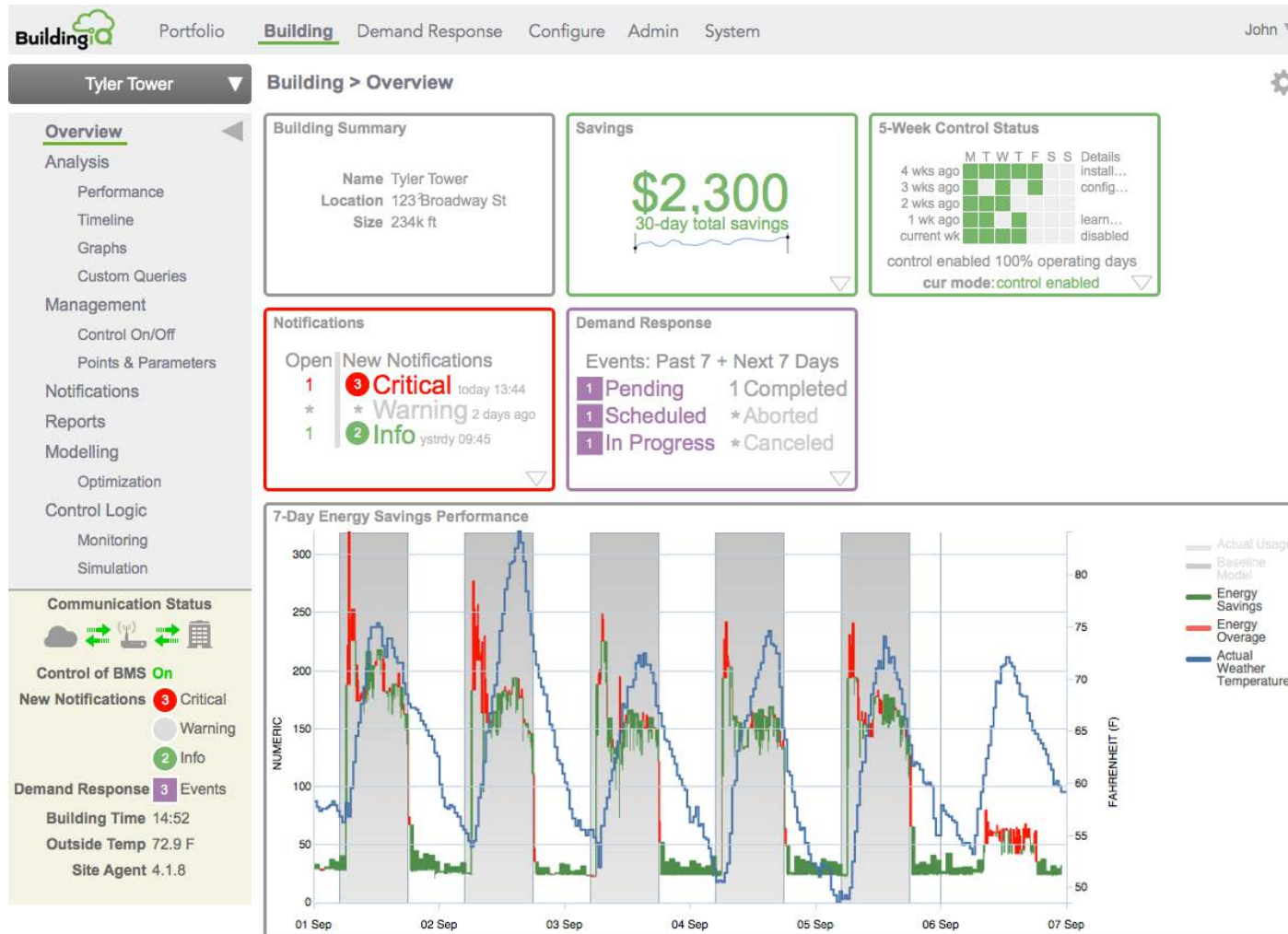


Largest Gold LEED-EB in NYC
2.5 million square feet

\$1.6 Million Saved
Over 4 Years

HVAC Spend
Reduction = 17%

BuildingIQ Portal: Building Visualization



BuildingIQ Customers



A Sempra Energy utility™



Summary

- Combining advanced machine data analytics and predictive modelling to deliver intelligent, automated optimization of HVAC maintaining comfort
- Proven 10-25% HVAC energy savings and up to 20% peak load reduction during demand response (DR) events
- Backed by industry-leading vendors and partnered with U.S. and Australian national labs



Thank You for Your Time

January 15, 2016

Udi Meirav

enVerid



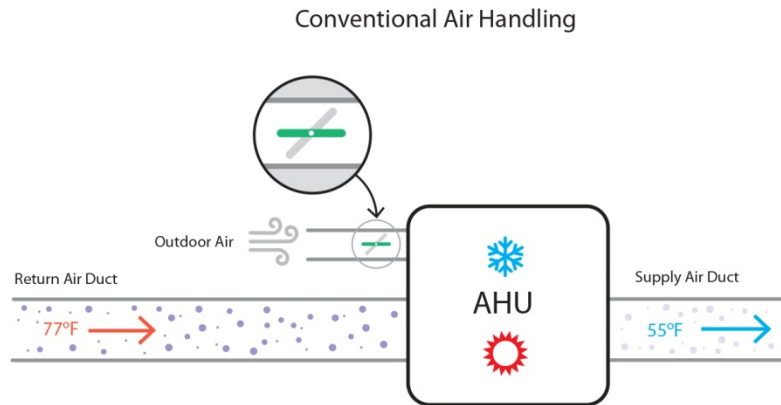
enVerid

Energy savings. Air quality.

Better Buildings Webinar

January 2016

Managing Indoor Air Quality Requires Energy



- Commercial buildings use a lot of outside air
- The reason: ensuring indoor air quality (ASHRAE 62.1)
- A universal, but *inefficient* practice

Remove all molecular contaminants

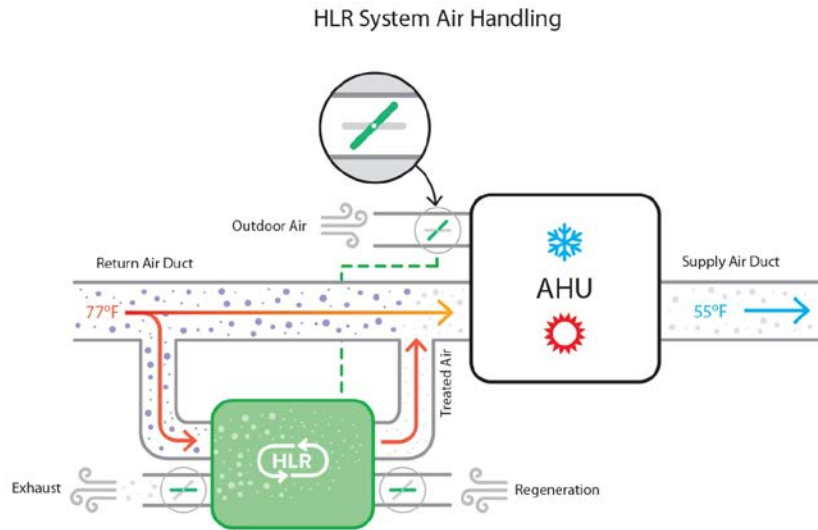


Reduce amount of outside air



Lower energy costs & maintain indoor air quality

Introducing HLR[®] “Smart Scrubber” Technology

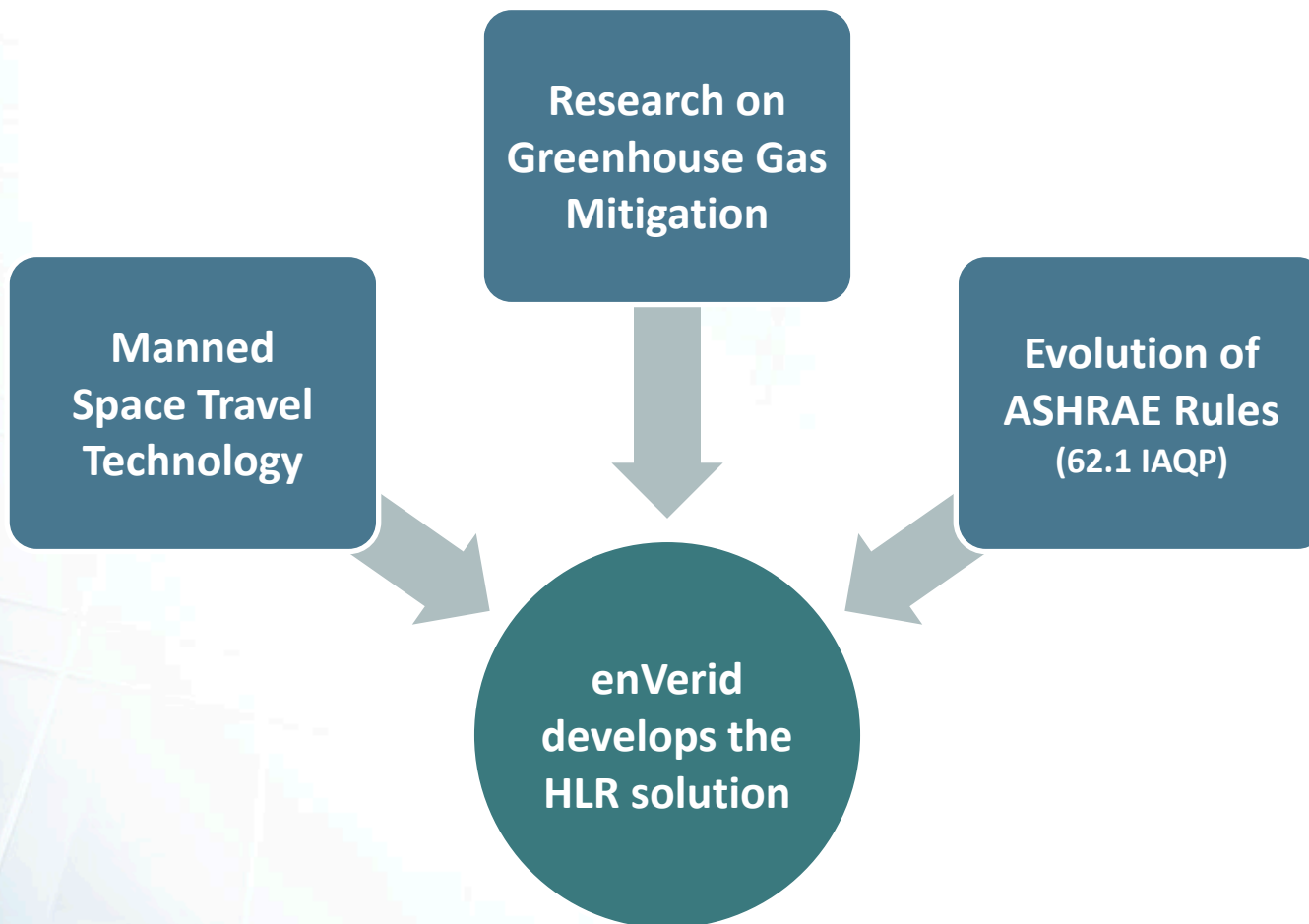


HLR-1000E

Add-on units perform four key Functions:

- Treat the indoor air
- Automatic self-cleaning (“regeneration”)
- Manage the outside air intake
- Monitor, report and validate

Enabled by technological and regulatory convergence.

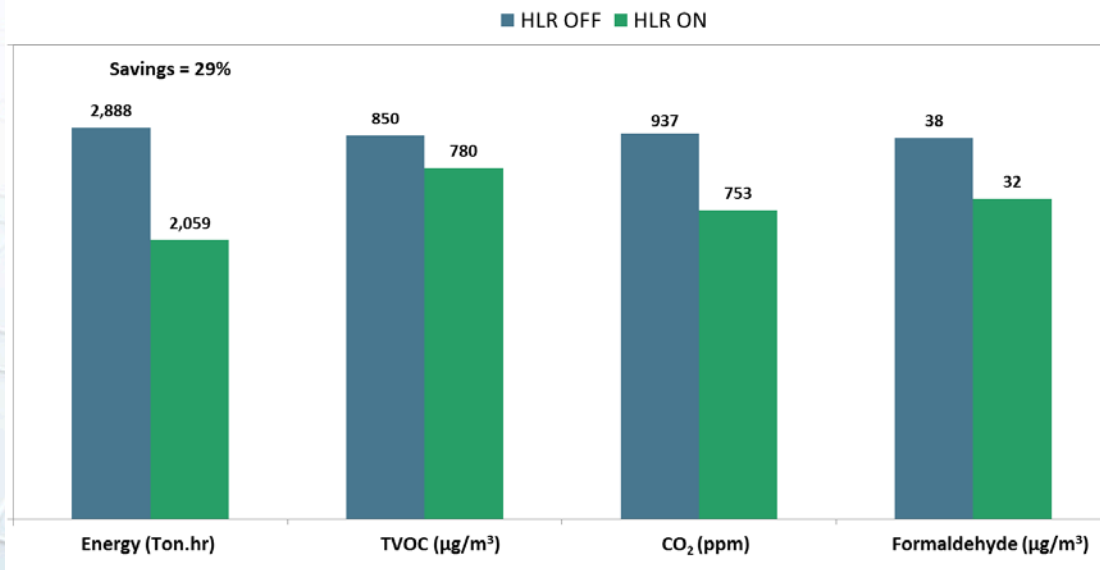


Energy Savings Benefit and ROI

- Typical annual savings ~ 20%
 - Peak savings > 40%
 - Payback for retrofit is 1.5 – 3 years
 - Even better for new construction is
-
- Other benefits
 - Reduction in equipment size / load
 - Less outside air = less pollution brought *in*
 - Extend life of HVAC filters



DOE-supported demo Project: Univ. of Miami Wellness Center



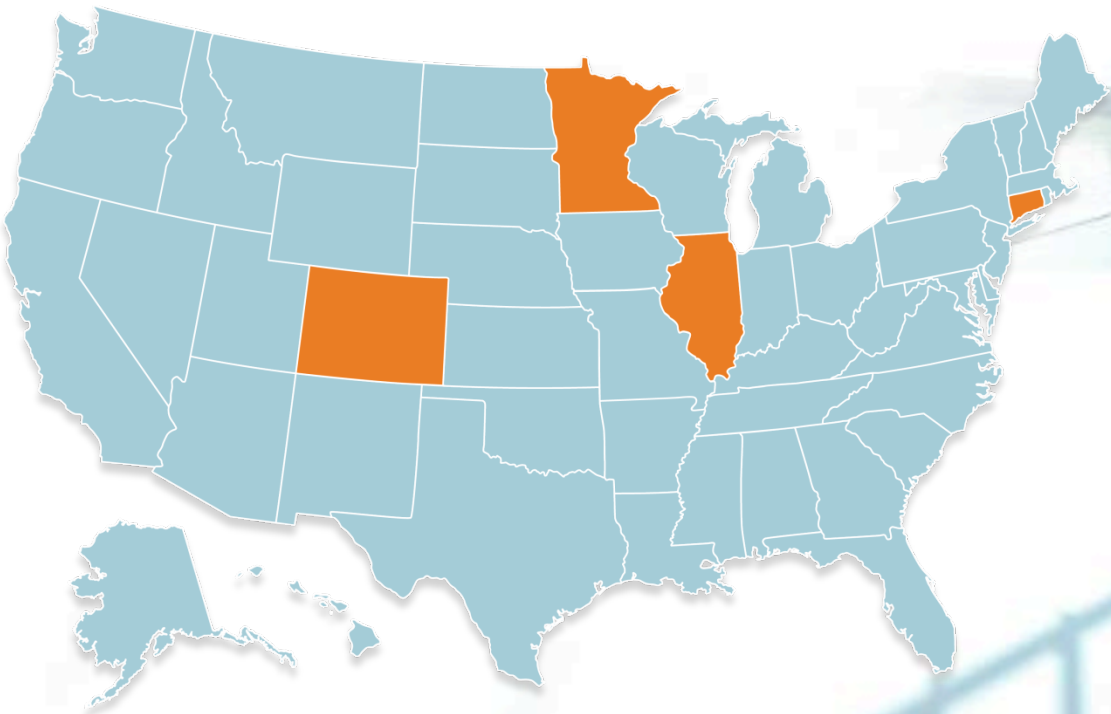
- 29% reduction in energy consumption with HLR ON
- All air quality parameters improved

Recognition



Accelerate Performance

A new construction initiative for superior energy performance



- U.S. Department of Energy initiative to scale performance-based procurement for new construction
- Achieve zero energy (or near zero energy) buildings at little to no cost premium
- Technical assistance and financial incentives to support your next project
- Projects must be in pre-design (prior to design team being selected) and in specific geographic region to qualify

Now recruiting pilot projects in the following states.

For more details, visit www.seventhwave.org/accelerateperformance

Additional Resources

For More Information

U.S. Department of Energy

- [Energy Management & Information Systems](#)
- [High Impact Technology Hub](#)

New York Presbyterian Hospital

- [Partner Profile](#)
- [Gallery Walks Implementation Model](#)

enVerid

- [Technology](#)

Q & A

Join us for the next Better Buildings Webinar

Registration is now open!

Downstream Savings: From Water Efficiency to Energy Savings

February 2, 3:00 – 4:00 PM ET

Presenters:

United Technologies Corporation

The City of Atlanta

InterContinental Hotels Group

Register [here](#).

Join Us at the Better Buildings Summit

2016

REGISTER TODAY

BETTER BUILDINGS SUMMIT

WASHINGTON, DC ■ MAY 9-11



Additional Questions? Please Contact Us

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