We’ll be starting in just a few minutes…

Tell us…please send your response to the webinar organizers via the question box:

What topics are you interested in for future webinars?
Efficiency Treasure Chest

Unlocking Energy Savings in Warehouses and Distribution Centers

January 10, 2016
3:00-4:00 PM ET
## Today’s Presenters

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bob Valair</td>
<td>Staples, Inc.</td>
</tr>
<tr>
<td>Kirk Myers</td>
<td>Recreational Equipment, Inc. (REI)</td>
</tr>
<tr>
<td>Alan Moran</td>
<td>Cascade Energy</td>
</tr>
</tbody>
</table>
Bob Valair

Staples
Unlocking Energy Savings in Warehouses
*The Staples Story*

**Bob Valair**
Staples, Inc.
Director of Energy and Environmental Management
Staples, Inc.

- 25 Countries
- United States: 1800 stores, 200+ DCs/FC
- 5 Continents
- World’s Largest Office Supply
- $24 Billion
- E-commerce Leader
- #3 Online Retailer
- First store 1986
- 96,000 Employees
ENERGY STAR® Journey

- 1999 - Staples joined Green Light
- 2002 – Staples joined the EPA launch the retail building category
- 2007 – Benchmarking in Portfolio Manager
- 2009 – EPA Partner of the Year, 6 years
- 2016 – Certified 718 buildings, re-certified 81 buildings
Staples energy efficiency is through the supply chain, beginning with energy efficient building design, selling more than 600 ENERGY STAR products, and transporting these products from an ENERGY STAR distribution center to an ENERGY STAR store.
Participate in Energy Programs

Energy Star Award 2011
Partner of the Year

Designing Commercial Buildings to Achieve ENERGY STAR
U.S. Environmental Protection Agency

Battle of the Buildings
EPA's National Building Competition

Better Buildings Challenge
U.S. Department of Energy

Staples
## Building Portfolio Profile

### Retail vs. Non Retail Opportunities

<table>
<thead>
<tr>
<th>Retail Status (Store # &lt; 2000)</th>
<th>Square Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Square Feet</td>
<td>33,584,545</td>
</tr>
<tr>
<td>Square Feet Energy Star Certified</td>
<td>10,863,630</td>
</tr>
<tr>
<td>Percent Energy Star Certified</td>
<td><strong>32%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Retail Status (Store # &gt; 2000)</th>
<th>Square Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Square Feet</td>
<td>16,006,952</td>
</tr>
<tr>
<td>Square Feet Energy Star Certified</td>
<td>8,689,714</td>
</tr>
<tr>
<td>Percent Energy Star Certified</td>
<td><strong>54%</strong></td>
</tr>
</tbody>
</table>
Energy Champions

- Each warehouse has energy champion
- Bi-monthly webinars with peers
- Review ENERGY STAR program progress
- Seasonal best practices shared & studied
- View educational videos
- Review Staples treasure hunt program
Treasure Hunt Program

Together, the Hagerstown team and the Staples Energy team will be searching for new ways to save energy for you and the planet.

You Can Make A Difference Contest
Win $50 gift card for the best energy saving idea.

- Submit your ideas in the idea box at the front desk.
- Contest ends Friday, May 1.

April 26 - 27, 2015
• Four teams meet on Sunday afternoon at warehouse to review scope and goals
• Teams are HVAC, lighting, plug load and communications
• Teams walk the closed facility looking for lights on, equipment working and checking space temperatures
• Team regroup to brainstorm opportunities for energy savings
• Monday team arrives early to observe start-up
• Measure energy use of all major equipment
• Teams regroup midday to introduce prospects to management
• Employee rally scheduled at lunch break
• End of the day each team quantifies prospects
Tuesday the team arrives early to finalize all prospects

Together the team compares all prospects and analyze energy reduction savings

Team prepares presentation and does a dry run

Report final recommendations out to management
Employee Engagement
Better Buildings Challenge makes good business sense and helps the environment.
Kirk Myers

Recreational Equipment, Inc. (REI)
Co-operative Design

- Integrated design approach
- Clear requirements of Net Zero Energy and long-term total cost of ownership
- Partners work in parallel, starting with charrette
Sustainability

• **Net Zero Energy**
  • Integrative design process led to significant energy efficiency improvements
  • 2.2MW solar array produces all of the energy that building consumes
  • More than doubles REI’s current solar production
  • Equivalent to powering 390 homes for one year
  • Provides REI with 20 years of free energy

• **LEED Platinum**
  • Design, construction, maintenance and operations

• **Water Conservation**
  • Non-evaporative cooling saves millions of gallons of water annually—trades power for water conservation
  • Saves enough to provide water for more than 20 homes each year
Efficiency Measures

- 57 measures were considered post-charrette
  - Optimized orientation, envelope and insulation through extensive energy modelling
  - Used all LED lighting
  - Included Air Turnover Units to de-stratify building; highest-efficiency mechanical cooling used
  - Focused on “vampire loads” for all material handling equipment
  - Hyperchairs are one cool example of innovation
- Reduced consumption over 50% below ASHRAE 90.1-2007
- Significantly downsized size of needed PV array
- Energy modelling for a production facility is difficult
Water Project

- Whole systems thinking
  - Intersection of energy and water: “embedded water” in energy

- Habitat restoration project in Verde Valley in partnership with Bonneville Environmental Foundation and The Nature Conservancy of Arizona
  - Putting water back in river
  - Supporting local farmers
  - Creating recreation economy

- Balanced facility’s annual water footprint over five years and earned two LEED points

- USGBC now recognizes Water Restoration Certificates for LEED points
Refrigerated Warehouse Energy Efficiency
Cascade Energy, Inc.

- Cascade Energy: In business for 20+ years
- 115+ employees, about 66.6667% are engineers
- Experts in industrial energy efficiency
- Worked with 700-800 ammonia refrigeration systems

Visit us at: www.cascadeenergy.com
Refrigerated Storage

Refrigerated Warehouses and Distribution Centers

= 1,300 aMW of energy per year

Elec. costs \( \sim \$800 \text{ million per year} \)
Where is energy efficiency on your list of priorities?

1. Be safe
2. Keep things COLD
3. Save energy
Where does your energy go?

- Refrigeration: 50%
- Lighting: 15%
- Battery Chargers: 12%
- Office HVAC: 10%
- Miscellaneous: 5%
- Warehouse door heat: 8%
What can you do?

- Track energy performance
What can you do?

- Make sure refrigeration equipment is functional
What can you do?

- Minimize refrigeration load
What can you do?

- **Standardize temperature requirements**
  - Is there a contracted product temperature?
  - Capability of maintaining tight temperature controls?
  - Lower than necessary temps can dictate inefficient control
What can you do?

- Set appropriate refrigeration system pressure settings

Reduce Compressor Lift
What can you do?

- Efficiently match equipment capacity with refrigeration load
Everyone Contributes to Energy Efficiency

Management provides funding and executive buy-in

Energy Efficiency

Operations oversees schedules and production

Maintenance “boots on the ground” equipment and system support
Better Plants Program: In-Plant Trainings

- Teach participants how to conduct assessments, use DOE tools, and implement projects
- Open to employees from host plant, peer companies, suppliers
- More than 60 INPLTs covering steam, compressed air, process heating, pumps, and fans since 2011
- More than 850 participants
- Identified > 3 TBTU and $14 million in energy savings
- Pre-INPLT webinars available on program website

Process heating INPLT at an ArcelorMittal plant in Nov. 2013. Photo courtesy ArcelorMittal and ORNL.
Refrigeration INPLT Objectives

1. Knowledge

2. Tools

3. Action

Energy Savings
New Offering: Refrigeration In-Plant Training

• **What?**
  • 3 day on-site refrigeration system training

• **Who?**
  o Refrigeration operators
  o Maintenance managers
  o Plant engineers
  o Corporate energy managers
  o Service contractors

• **How do I sign up?**
  o Application process opens later this spring

https://betterbuildingssolutioncenter.energy.gov/better-plants/plant-trainings
Additional Resources
Resources

- Staples Showcase Project: Coppell Fulfillment Center
  - https://betterbuildingssolutioncenter.energy.gov/showcase-projects/coppell-fulfillment-center

- Staples Implementation Model: Eco-Treasure Hunts at Fulfillment Centers
  - https://betterbuildingssolutioncenter.energy.gov/implementation-models/eco-treasure-hunts-fulfillment-centers
Q & A
MADE TO FIT:
HOW PAID-FROM-SAVINGS PROJECTS CAN WORK FOR SMALL ORGANIZATIONS TOO

Tuesday, February 7, 2017 | 3:00 - 4:00 PM ET

REGISTER TODAY

Learn how to seek out technical experts and financing options for saving energy and water while protecting your interests.
Better Buildings
U.S. Department of Energy

SUMMIT
WASHINGTON, D.C.
MAY 15-17, 2017
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### DOE Program Leads

<table>
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<tr>
<th>Name</th>
<th>Email</th>
<th>Program</th>
</tr>
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<tbody>
<tr>
<td>Holly Carr</td>
<td><a href="mailto:Holly.Carr@EE.Doe.Gov">Holly.Carr@EE.Doe.Gov</a></td>
<td>DOE, Better Buildings Challenge</td>
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### Program Support

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<tr>
<td>Kendall Sanderson</td>
<td><a href="mailto:ksanderson@jdmgmt.com">ksanderson@jdmgmt.com</a></td>
<td>JDM Associates</td>
</tr>
<tr>
<td>Holt Mountcastle</td>
<td><a href="mailto:hmountcastle@jdmgmt.com">hmountcastle@jdmgmt.com</a></td>
<td>JDM Associates</td>
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