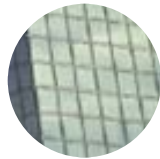


Energy Trends, Energy Solutions
***The impact on your business
and your clients' businesses***

December 10, 2012

Jack Connell, PE, CEM, LEED AP O&M
Energy Business Development Leader
Honeywell Environmental and Combustion Control

Agenda



Current Situation



Macro Trends



Visualization



Incentives & Mandates



The Cost of Green

Current Situation - Energy

- It's in the news everyday
 - Political
 - Economic
 - Societal
- Past energy crises came and went
- This time it's different
 - Mainstream
 - Core business driver
 - Codes and incentives
 - A variable cost
 - An operational risk

Creates Opportunity to Increase Building Performance

Modern Commercial Buildings





Macro Trends – Impact on HVAC



LG Internet Refrigerator



“The Popularization of What We Do”

Walmart and The Sustainability Consortium
Announce Global Sourcing Goals in Beijing



Environmental Responsibility



green efforts

Doing Our Part To Protect
The Earth - The Air - Our Future!

The National Marketing Institute estimates that consumers with environmental concerns represent more than \$230 billion in spending power.



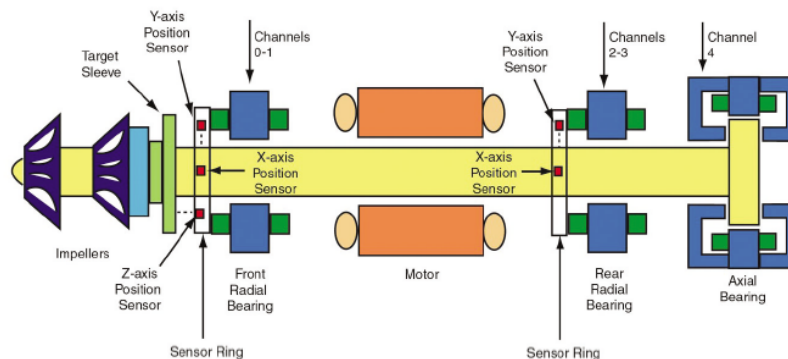
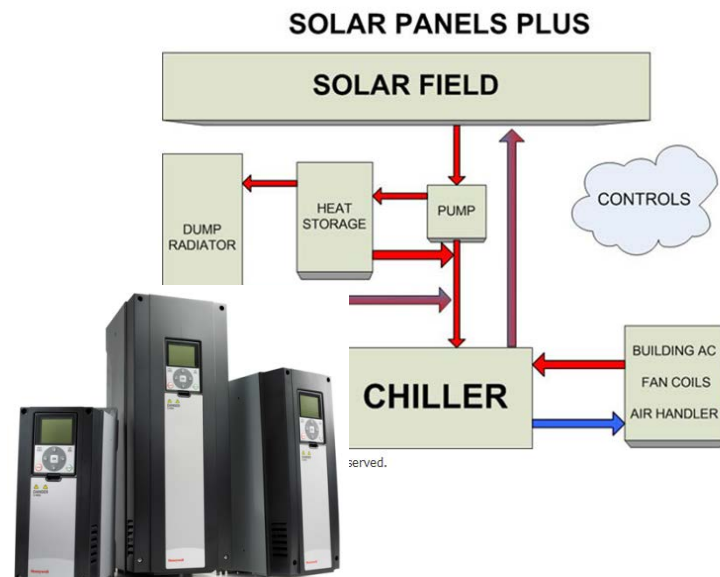
INTRODUCTION COMMUNITY PROD

Explore the Three Dimensions
of Sustainability

Georgia-Pacific believes sust
dimensions – social environ



Visualization - Where is Our Industry Heading?



An Energy Dashboard



Measuring and Managing

- Dashboard
 - Provides information (not just data)
 - Formatted to fit the user
 - Programmed to display the right stuff
- Fault Detection
 - Rules-based decisions
 - Notifies, recommends (demands?) action
 - Requires expertise in setup
 - Requires some expertise in interpretation
- Energy and Operational Analytics
 - Targeted to Energy Managers
 - Provides comparative analysis tools
 - Multi-site or complex campus

Keep it simple!

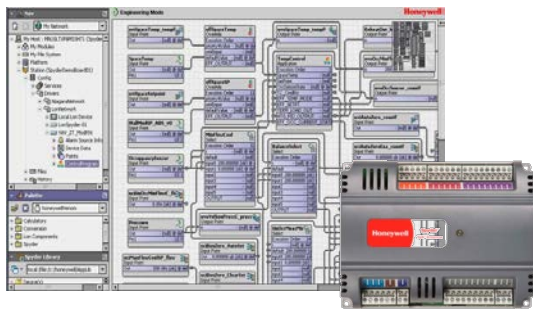


Visualization Expectations

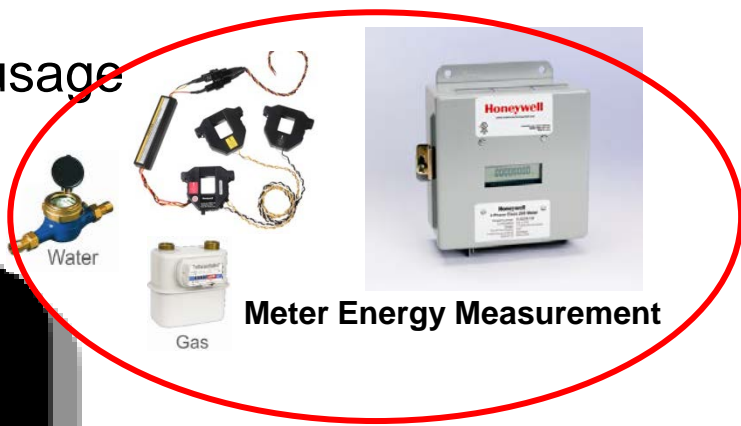
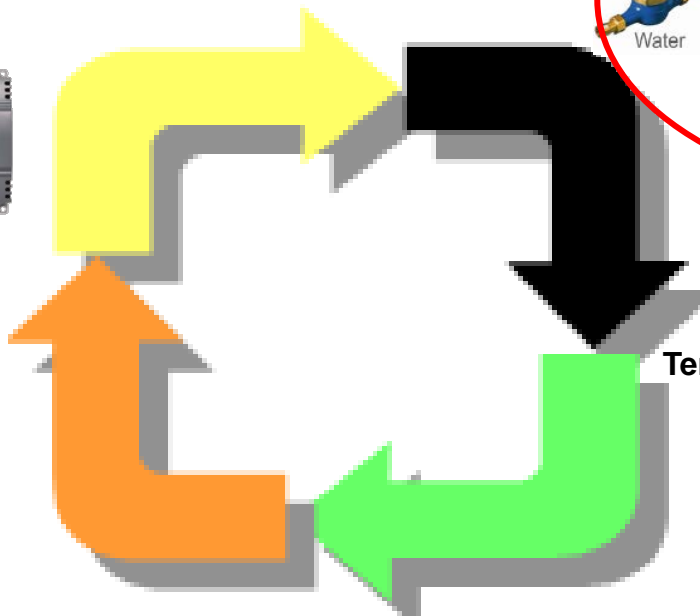


Can't Manage What You Don't Measure

- Are we really using our EMS strategies?
- Gain control of energy use by understanding usage



Implement Energy Strategies



Meter Energy Measurement

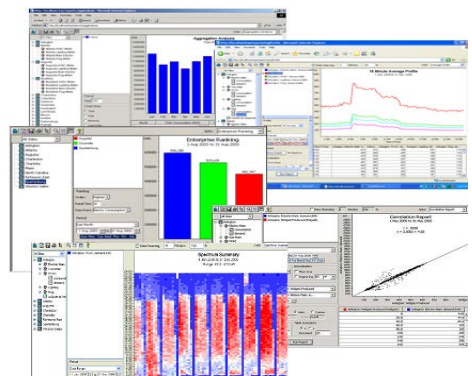


Tenant Billing/Invoicing

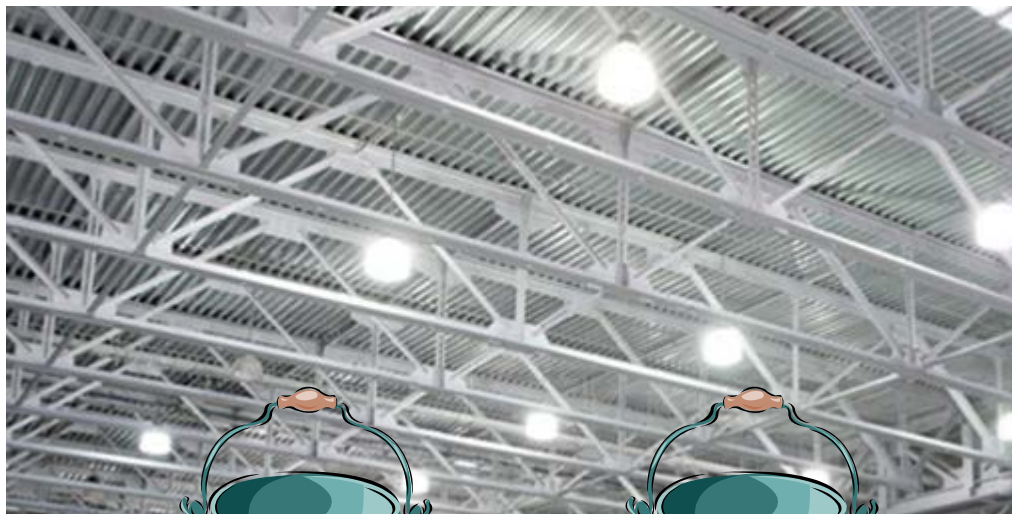
Starting Energy Bills

Billing Statement	
Customer Name	Address
Account Number	Account Number
Billing Date	Billing Date
Due Date	Due Date
Total Amount Due	Total Amount Due
Sub-Total	
Tax	
Grand Total	

Energy Analysis Tools



What is an “Energy Project”??



Energy
Water
Sewer
Trash



Operational
Savings



Sustainability

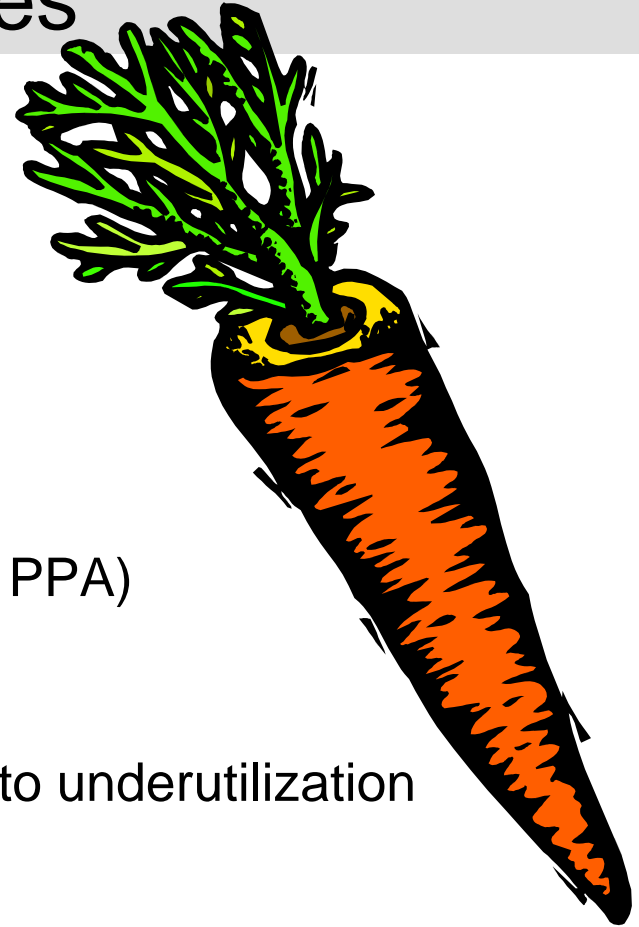


Other
Compelling
Needs

There are *many* reasons, other than energy, why a customer will buy!

Energy Incentives

- Utility Rebate Programs
 - Prescriptive and custom rebates
 - Example: \$100/hp for VFD installation
 - Renewables rebates
- State and Local Tax Credits
 - Only applies if income tax is paid
 - Can be complex, but might be simple
 - Options to use 3rd party ownership (PPP or PPA)
- State and Local Grant Programs
 - ARRA is gone, but the demand is stoked
 - Assumption that money is too tight leading to underutilization
 - “Green Business” programs
- Federal Tax Credits and Grants



Most programs found at www.DSIREUSA.org

DSIRE: DSIRE Home - Windows Internet Explorer

http://www.dsireusa.org/

File Edit View Favorites Tools Help

★ Favorites | cust-hon-com | Gmail - Inbox | SAS Travel Peru - Cusco, ... | Tambopata - Refugio Am...

DSIRE: DSIRE Home

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U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

IREC
INTERSTATE RENEWABLE ENERGY COUNCIL
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DSIRE SOLAR

solar policy information

DSIRE is a comprehensive source of information on state, local, utility and federal incentives and policies that promote renewable energy and energy efficiency. Established in 1995 and funded by the U.S. Department of Energy, DSIRE is an ongoing project of the N.C. Solar Center and the Interstate Renewable Energy Council.

View Federal Incentives

DSIRE

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Resources

- RPS Data
- Summary Maps
- Summary Tables
- Library
- What's New?
- Search

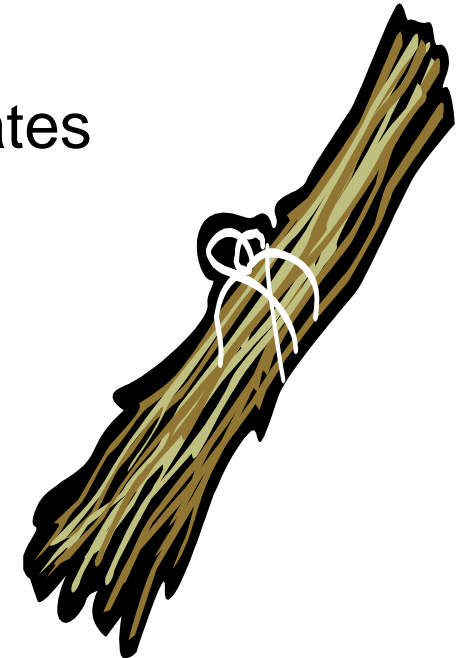
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customize DSIRE for your business

U.S. Territories

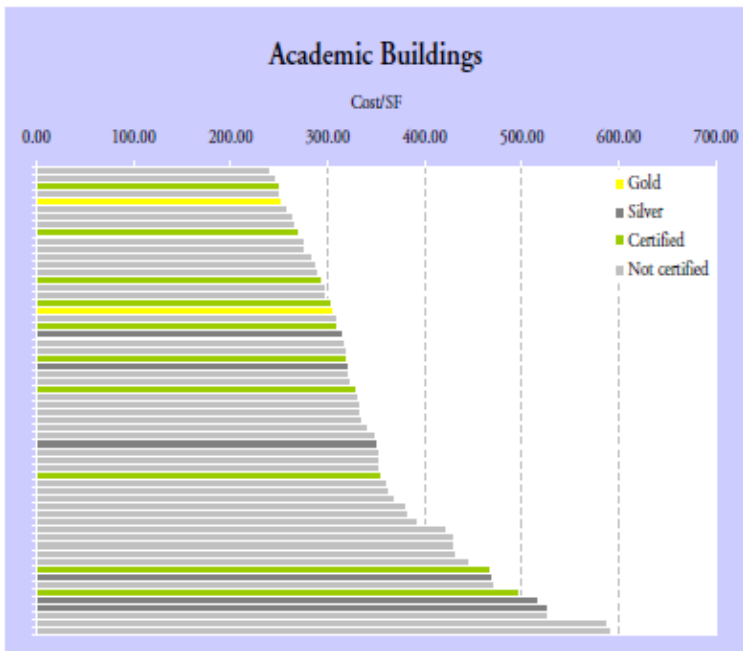
Legislation and Mandates

- ASHRAE 90.1 and other standards
- State Building Codes
- State and Federal efficiency mandates
- State and Federal environmental mandates
- Free market “mandates”
 - WalMart
 - GM, Toyota, Ford, etc.
 - Occupant or customer demand



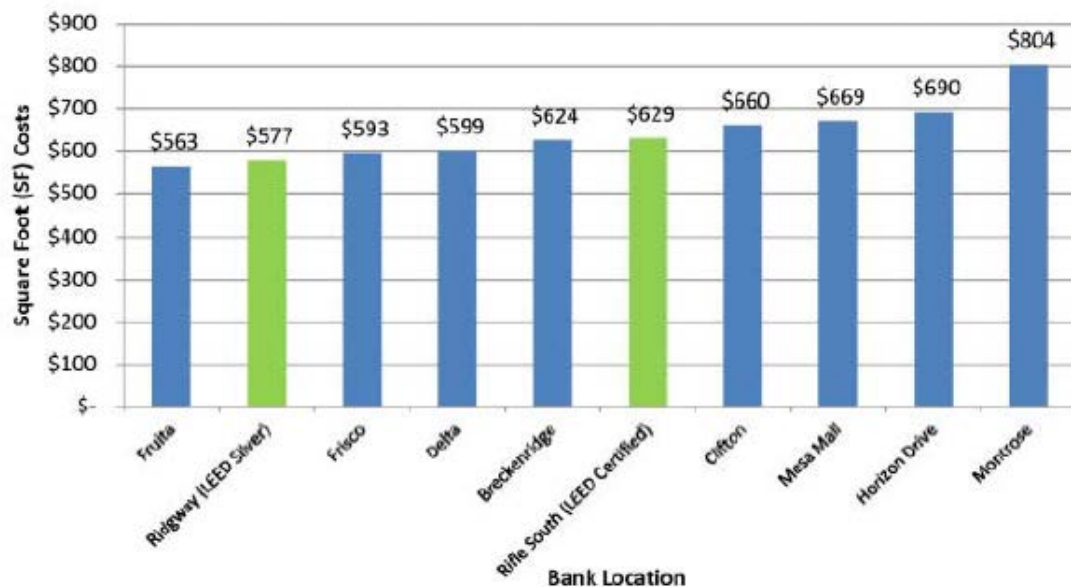
Does “Green” Construction Cost More?

or... Compliance with Energy Codes – burden or benefit?



Source: Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adoption by Davis Langdon, AECOM, July 2007

Exhibit 4 | Square Footage Costs Adjusted for Location and Time of Construction (2011 dollars)



Source: The Cost of LEED—An Analysis of the Construction Costs of LEED and Non-LEED Banks by Chad Mapp, MaryEllen C. Nobe, and Brian Dunbar, 2011

What Can Be Done - Now?

- Metering – on *every* project
- Broaden the conversation beyond utilities
- Make the invisible, visible - Visualization
- Use utility and government rebates and incentives
- Keep it simple

Summary

- As always, technology is driving significant change in HVAC
- Different is the “popularization of what we do”
 - Green
 - Visualization
 - Efficiency Expectations: Savings and Comfort
- Different is the market shift to energy efficiency: “Market Mandates”



Significant opportunity exists today for the design and implementation of energy efficiency and sustainability projects.

Questions?

A sunset scene over a body of water. The sun is low on the horizon, creating a bright reflection on the water. In the distance, a large ship is visible on the water. The sky is filled with soft, orange and pink clouds. The foreground shows the dark silhouettes of trees and bushes.

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