



Best Practice and Project Replication Strategies

ENERGY STAR Monthly Partner Meeting

Call in number: 866 299 3188

Conference Code: 202 343 9965#

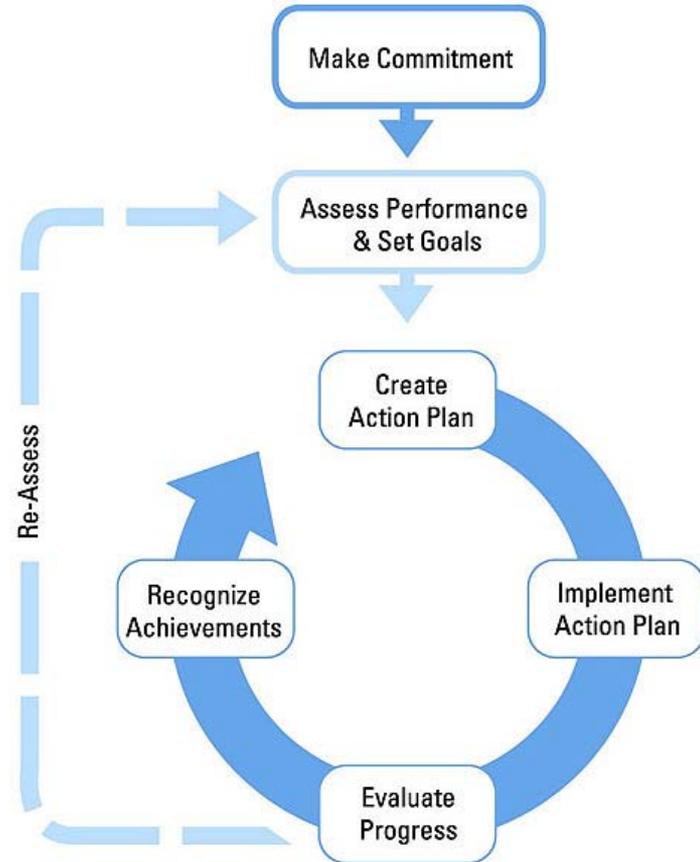


Learn more at energystar.gov

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
- Open & interactive



Web Conference Tips



- Mute – To improve sound quality, all phones will be muted.
 - Use # 6 to un-mute
 - * 6 to mute
- Presentation slides will be sent by email to all participants following the web conference.

Replicating best practices



- What defines a best practices?
- Best practices or minimum standard?
- How to ensure adoption?
- What are realistic implementation time lines?
- Who pays for implementation?

Today's Web Conference

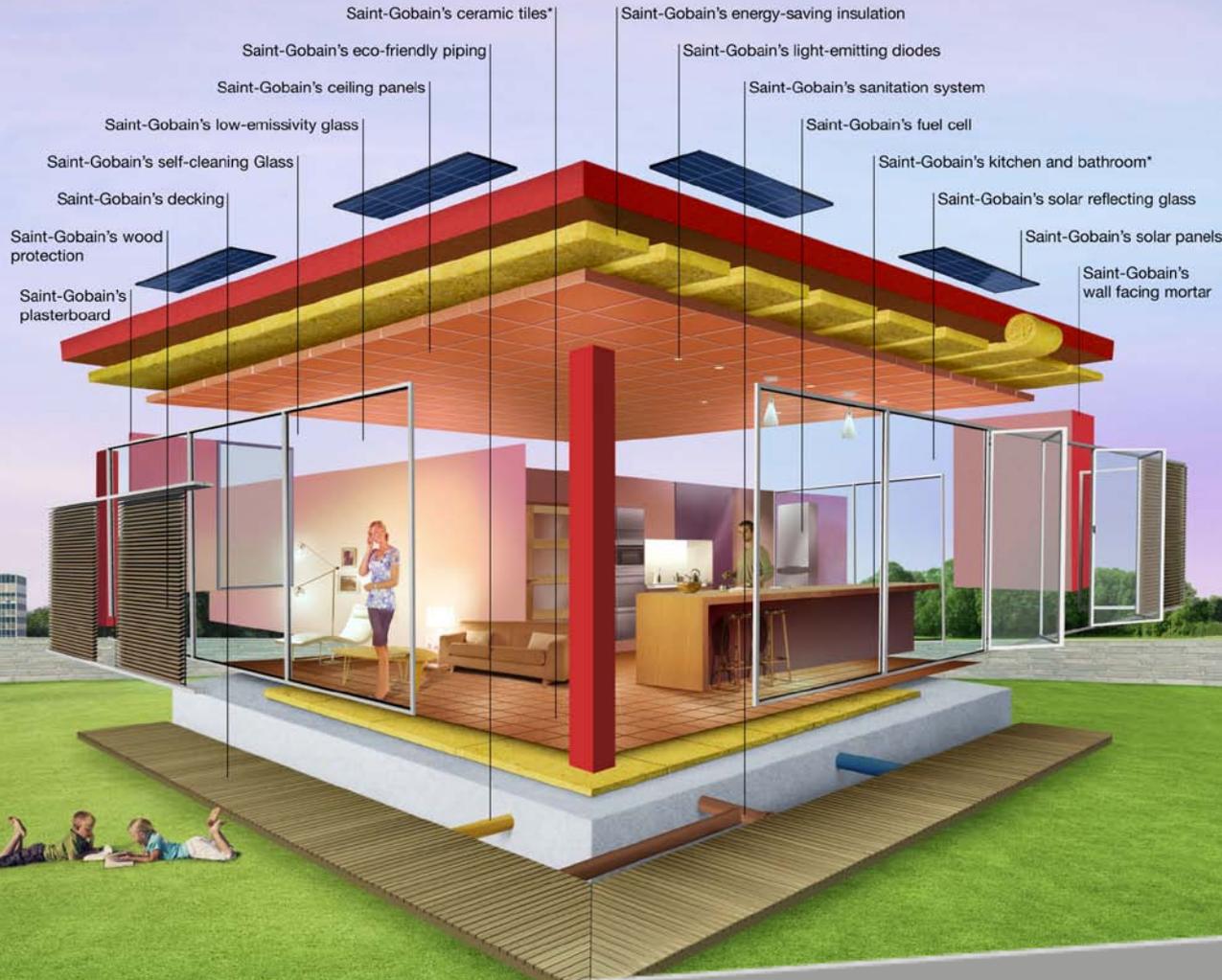


Best Practice and Project Replication Strategies:

- Brad Runda, Saint Gobain
- Tom Pagliuco, Merck



Energy-saving, innovation, environment-protecting.



REPLICATING BEST PRACTICES

ENERGY STAR Partner Meeting

July 20, 2011



Saint-Gobain – Who we are



- **Worlds largest building materials company, Headquarters in Paris**
- **US Headquarters in Valley Forge, PA**
- **North America 2010 : \$6.8 B sales; 19,000 Employees**
- **140 manufacturing plants throughout North America; Four Divisions; 18 business units. Building materials distributor with more than 160 outlets**
 - **Building Materials**
 - **Innovative Materials**
 - **Glass Containers**
 - **Building Materials Distribution**

Saint-Gobain – Who we are



■ Saint-Gobain building materials:

■ CertainTeed (Valley Forge, Pennsylvania)

- Ceilings (ceiling tile) – 3 plants
- Gypsum (drywall and mortar) – 14 drywall plants, 6 finishing plants
- Insulation (fiberglass insulation) – 8 plants
- Pipe and Foundations (pvc pipe and drainage systems) – 2 plants
- Roofing (asphalt roofing, cool roofs, solar shingles, granules) – 14 plants
- Siding (vinyl siding and fiber cement siding) – 8 vinyl, 3 fiber cement

Saint-Gobain – Who we are



- **Saint-Gobain Innovative Materials:**
- **R&D – 1 facility in Northboro, MA**
- **Saint-Gobain Crystals (Hiram, Ohio)**
 - **Radiation detection, quartz, photonics – 6 plants**
- **Saint-Gobain Performance Plastics (Aurora, Ohio)**
 - **Bearings, seals, polymer products, tapes, coated fabrics, gaskets, foams, radomes, tubing, specialty engineered plastics – 18 plants**
- **ADFORC (Grand Island, New York)**
 - **Specialty woven fabrics (fiberglass) – 4 plants**

Saint-Gobain – Who we are



■ Saint-Gobain Innovative Materials:

■ Saint-Gobain Abrasives (Worcester, Massachusetts).

- Bonded (grinding wheels – tiny to huge), Coated (sandpaper), Super (specialty like diamond cutters)

■ Saint-Gobain Ceramics

- Grains and Powders (Worcester, MA) – 7 plants
- High Performance Refractory (Worcester, MA) – 3 plants
- SEFPRO refractory (Buchannon, WV) – 1 plant
- NorPro proppants (Stow, OH) – 6 plants

Saint-Gobain – Who we are



- **Saint-Gobain businesses:**
- **Norandex Building Materials Distribution (Hudson, Ohio)**
 - **Building material distribution - 160 facilities in the US**
- **Verallia (Muncie, Indiana)**
 - **Glass containers – 13 plants**
- **Flat Glass**
 - **Process flat glass – 3 plants**
- **Saint-Gobain Solar (Scottsdale, AZ) – startup**
- **SAGE Electrochromic Glass**

Saint-Gobain North America Sites

Construction Products

- **R&D**
Blue Bell, PA
Clearwater, FL
- **CertainTeed Ceilings**
Ellenton, FL
L'Anse, MI
Meridian, MS
Toronto, ON (Decoustics)
Plymouth, WI
- **CertainTeed Fiber Cement**
Terre Haute, IN
Roaring River, NC
White City, OR
- **CertainTeed Gypsum**
Calgary, AB (2)
Jackson, AR
McHavie County, AZ
Delta, BC
Invermere, BC
Napa, CA
Jacksonville, FL
Tampa, FL
Fort Dodge, IA
Junction City, KS
Carrollton, KY
Winnipeg, MB
Black Rock, NV
Blue Diamond, NV
North Las Vegas, NV
McAdam, NB
Mississauga, ON
Oakville, ON
Ville Ste. Catherine, QC (2)
St. George, UT
Kent, WA
Seattle, WA
Moundsville, WV
Cody, WY
- **CertainTeed Insulation**
Redcliff, AB
Chowchilla, CA
Winter Haven, FL (Unisu)
Athens, GA
Kansas City, KS
Berlin, NJ
Ottawa, ON
Tiltsburg, ON
Mountaintop, PA
Sherman, TX
- **CertainTeed Pipe & Foundations**
Lodi, CA
Romeoville, IL
McPherson, KS

■ CertainTeed Roofing

- Glenwood, AR
Little Rock, AR
Fremont, CA
Wilmington, CA
Peachtree City, GA
Shreveport, LA
Norwood, MA
Shakopee, MN
Gads Hill, MO
Oxford, NC
Avey, OH
Portland, OR

■ CertainTeed Siding

- Sodal Circle, GA
McPherson, KS
Lake Charles, LA
Hagerstown, MD
Shakopee, MN
Joplin, MO
Buffalo, NY
Claremont, NC

Innovative Materials

- ▲ **Flat Glass**
Shelby Township, MI
Columbus, OH
Fountain Inn, SC
Auburn, WA
Kent, WA
- ▲ **R&D**
Northboro, MA
Stow, OH
- ▲ **Saint-Gobain Abrasives**
Hot Springs, AR
Fullerton, CA
Carol Stream, IL
Plainfield, IN
Worcester, MA (3)
Reynosa, MX (2)
Tijuana, MX
Romulus, MI
Glenmont, NY
Watervliet, NY
Arden, NC
Greensboro, NC
Hamilton, ON
Plattsville, ON
Montgomeryville, PA
Travelers Rest, SC
Brownsville, TX
Stephenville, TX

▲ Saint-Gobain Ceramic Materials

- Huntsville, AL
Bryant, AR
Fort Smith, AR
Anahelm, CA
Colorado Springs, CO
East Granby, CT
Northampton, MA
Worcester, MA (3)
Milford, NH (2)
Amherst, NY
Niagara Falls, NY (2)
Canton, OH
Stow, OH
Niagara Falls, ON
Paris, ON
Latrobe, PA (2)
Olyphant, PA
Soddy-Daisy, TN
Bryan, TX
Buchannon, WV

▲ Saint-Gobain Crystals

- Boulder, CO
Louisville, KY
Milford, NH
Hiram, OH
Newbury, OH
Houston, TX
Washougal, WA

▲ Saint-Gobain Performance Plastics

- Garden Grove, CA
Clearwater, FL
Tampa, FL
Taunton, MA
Worcester, MA
Beaverton, MI
Merrimack, NH
Bridgewater, NJ
Mickleton, NJ
Wayne, NJ
Granville, NY
Hoosick Falls, NY (2)
Poestenkill, NY
West Fargo, ND
Akron, OH
Ravenna, OH
Bristol, RI
Puyallup, WA
Seattle, WA
Portage, WI

▲ Saint-Gobain Technical Fabrics

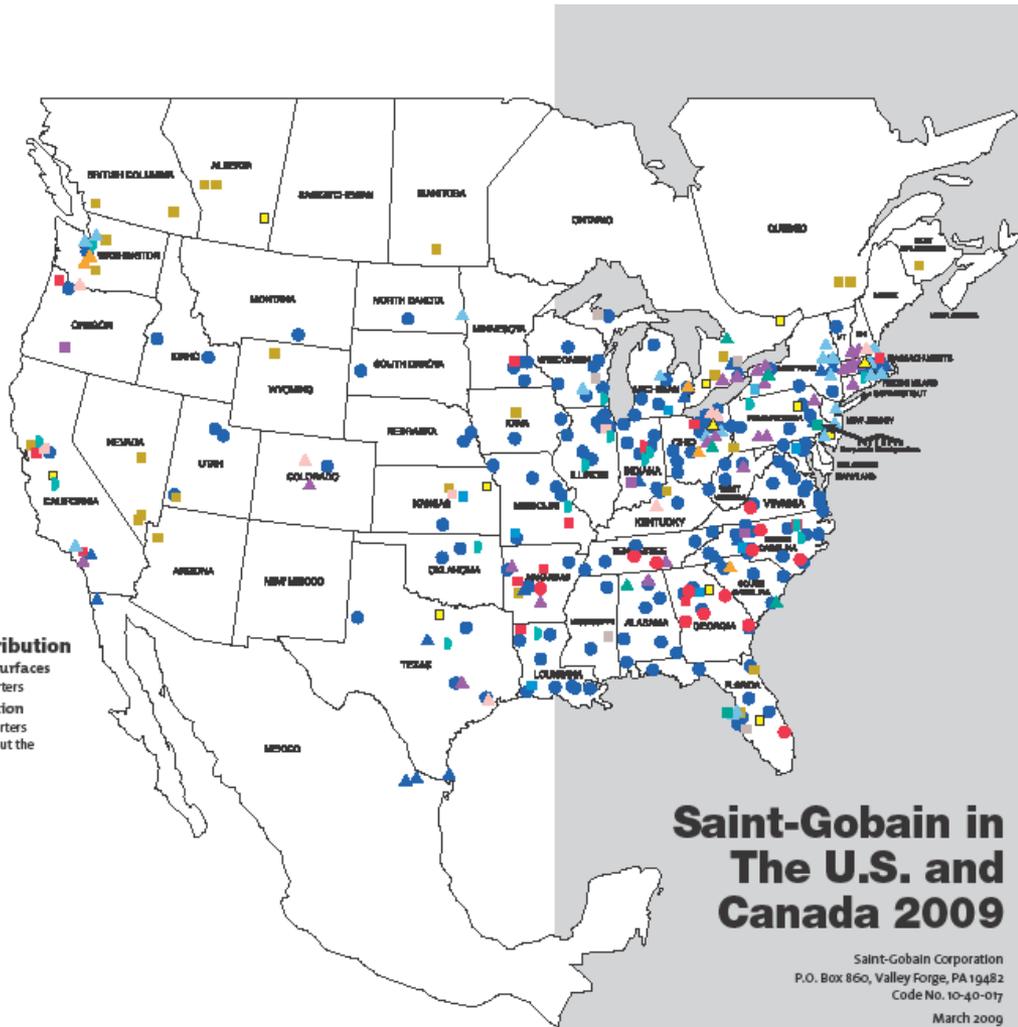
- Russellville, AL
Albion, NY
New Philadelphia, OH
Midland, OH
North Charleston, SC

Containers

- **GPS America**
Marion, IN
- **Saint-Gobain Containers**
Fairfield, CA
Madera, CA
Dolton, IL
Lincoln, IL
Dunkirk, IN
Muncie, IN
Ruston, IA
Milford, MA
Pevely, MO
Henderson, NC
Wilson, NC
Sapulpa, OK
Port Allegany, PA
Waxahachie, TX
Seattle, WA
Burlington, WI

Building Distribution

- **Meyer Decorative Surfaces**
Atlanta, GA – Headquarters
- **Norandex Distribution**
Hudson, OH – Headquarters
(153 branches throughout the United States)



Saint-Gobain in The U.S. and Canada 2009

Saint-Gobain Corporation
P.O. Box 860, Valley Forge, PA 19482
Code No. 10-40-017

March 2009

* Joint Venture

Sharing and Replicating Energy Best Practices

- Communication is the Key



Process specific:

- **Business Unit communication – periodic calls within each BU with the plant energy teams**
- **National Account vendors**
- **Energy Kaizens with shared personnel from multiple plants within the BU**

Sharing and Replicating Energy Best Practices



- Communication is the Key

■ General recommendations (common systems and program):

- Annual Energy Conference – supported by CEO
- Annual Energy Champion meeting
- Energy Portal
- National Account vendors
- Kaizens with participation from multiple BU's

Sharing and Replicating Energy Best Practices



- Communication is the Key

■ General recommendations (common systems and program): :

- **Internal networking**
 - Safety program, environmental goals
- **External Networking - ENERGY STAR Partner Collaboration**
 - Program best practices
- **Site visits**
- **Persistence, Time, and Success helps break down barriers across businesses**

■ Energy Conference Takeaways – breakout session

Energy Best Practices – Breakout Session



What are Barriers to being able to Share Best Practices?

- **Communications**
- **Silos within the company – Sharing information**
- **Access to portals and web sites**
- **Projects that did not fully consider impact**
- **Not following the national contract guidelines**
- **Availability of Capital to implement good projects**
 - **Funds for metering and high impact tools**

Energy Best Practices – Breakout Session

Key Takeaways



- **Improve communications using a centralized approach – Portal content that everyone can access**
- **Blog for energy**
- **Tie capital for energy to our longer term goals**
- **Incentives for management and employees to improve energy**
- **Development of Standards or guidelines for metering**
- **Participation of top managers**

Energy Best Practices – Breakout Session

Judging Success



- **Specific energy performance**
- **Sustained energy performance**
- **Monetary savings on projects**
- **Focus on usage metric rather than dollars**



Best Practice and Project Replication Strategies at Merck



ENERGY STAR Web Conference
Thomas A. Pagliuco
July 20, 2011

Today's Merck

Merck is a global healthcare leader working to help the world be well

We provide innovative medicines, vaccines, biologic therapies and consumer and animal health products to help improve health and well-being

We work with customers in 140 countries to deliver broad-based healthcare solutions

Key Facts:

TRADE NAME The Company is known as **Merck** in the United States and Canada. Everywhere else, we are known as **MSD**.

EMPLOYEES Approximately 100,000

HEADQUARTERS Whitehouse Station, New Jersey, U.S.A.

2009 REVENUES \$27.4 billion

2009 R&D EXPENSE \$5.8 billion



Global Recognition

United States - EPA named Merck as a 2011 ENERGY STAR Sustained Excellence Partner, the 6th time in a row receiving such recognition



Ballydine, Brinny and Rathdrum, Ireland – have all received certification from Sustainable Energy Ireland (SEI) under Irish Standard 393 for Energy Management



Las Piedras, Puerto Rico - Energy Custodian Team was recognized by the P.R. Manufacturing Association (PRMA) with a PRMA Quest Team Excellence Award



Cleveland, TN, Elkorn, NE, Las Piedras, PR, US – receive the 2010 ENERGY STAR from the US Environmental Protection Agency (EPA) for ranking in the top 25 percent of energy performance. These sites represent three of only six pharmaceutical facilities in the US to receive the 2009 ENERGY STAR. This is the Cleveland sites second ENERGY STAR.



Barceloneta, PR, Elkton, VA, Wilson, NC, US – receive the ENERGY STAR Challenge for Industry recognition for achieving a 10% reduction in energy intensity in less than 5 years.

Tuas, Singapore – the 9 MW trigen project was recognized with a grant from the National Environment Agency's Innovation for Environmental Sustainability fund.



Our Environment - Sustain and Enjoy



Presentation Topics

What is a Best Practice?

Merck Best Practice Examples

- Energy Management
- Energy Efficiency and Conservation

How does something become a Best Practice?

- “New” Technology
- Examples

- Recipe for success

What is a Best Practice?



- Generally accepted method, process or technology
- Replicable across sites, companies and industries
- Proven over time
- Low risk
- Consistently solves the problem and reliably generates the desired business results



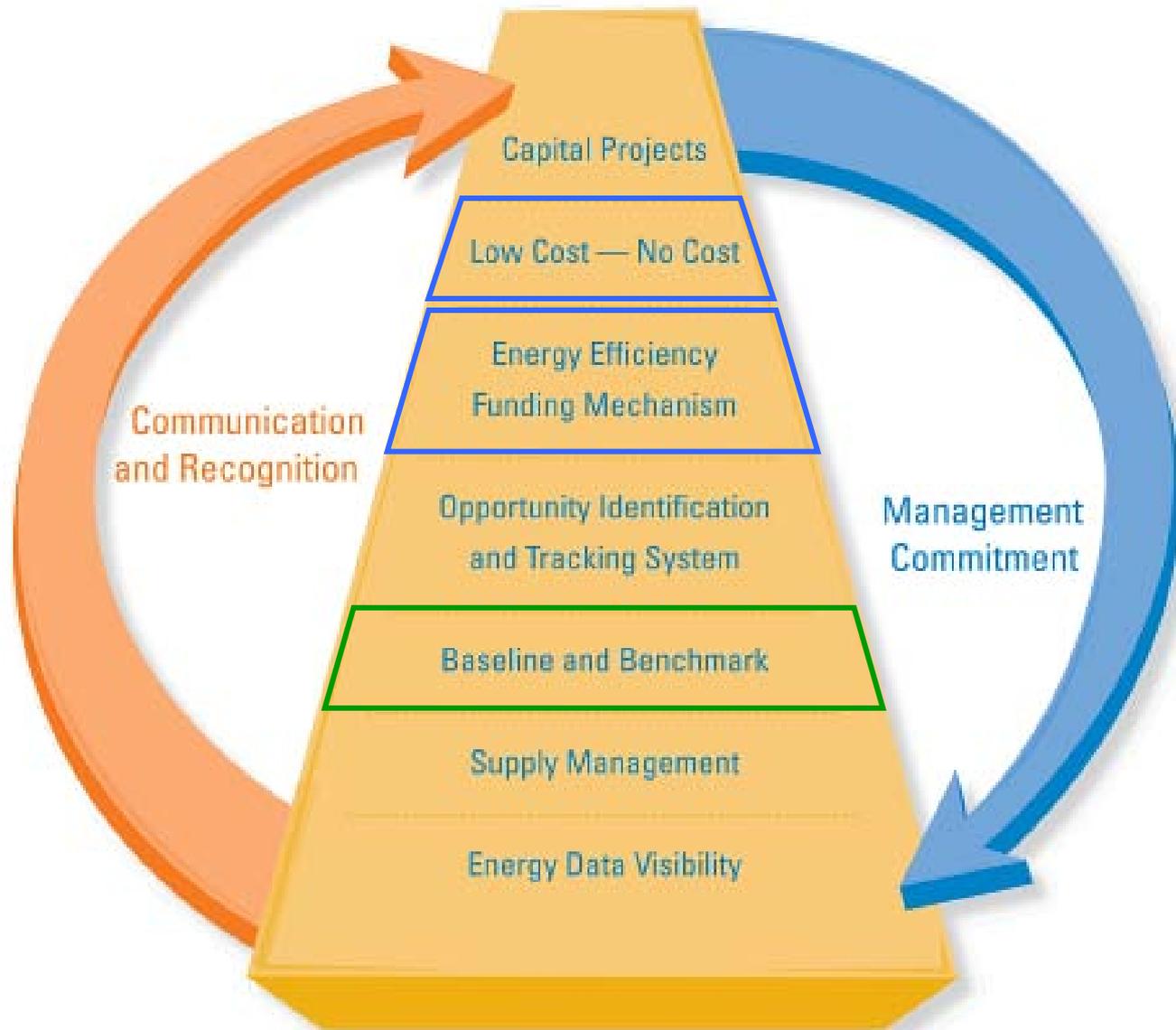
ENERGY STAR Guidelines for Energy Management



ENERGY STAR® Energy Management Assessment Matrix				
	Little or no evidence	Some elements	Fully implemented	Next Steps
Make Commitment to Continuous Improvement				
Energy Director	No central or organizational resource. Decentralized management	Central or organizational resource not empowered	Empowered central or organizational leader with senior management support	
Energy Team	No company energy network	Informal organization	Active cross-functional team guiding energy program	
Energy Policy	No formal policy	Referenced in environmental or other policies	Formal stand-alone EE policy endorsed by senior mgmt.	
Assess Performance and Opportunities				
Gather and Track Data	Little metering/no tracking	Local or partial metering/tracking/reporting	All facilities report for central consolidation/analysis	
Normalize	Not addressed	Some unit measures or weather adjustments	All meaningful adjustments for organizational analysis	
Establish baselines	No baselines	Various facility-established	Standardized organizational base year and metric established	
Benchmark	Not addressed or only same site, historical comparisons	Some internal comparisons among company sites	Regular internal & external comparisons & analyses	
Analyze	Not addressed	Some attempt to identify and correct trends	Profiles identifying trends, peaks, valleys & causes	
Technical assessments and audits	Not conducted	Internal facility reviews	Reviews by multi-functional team of professionals	
Set Performance Goals				
Determine scope	No quantifiable goals	Short term facility goals or nominal, corporate goals	Short & long term facility and corporate goals	
Estimate potential for improvement	No process in place	Specific projects based on limited vendor projections	Facility & organization defined based on experience	
Establish goals	Not addressed	Loosely defined or sporadically applied	Specific & quantifiable at various organizational levels	
Create Action Plan				
Define technical steps and targets	Not addressed	Facility-level consideration as opportunities occur	Detailed multi-level targets with timelines to short goals	
Determine roles and resources	Not addressed or done on ad hoc basis	Informal interested person competes for funding	Internal/external roles defined & funding identified	
Implement Action Plan				
Create a communication plan	Not addressed	Tools targeted for some groups used occasionally	All stakeholders are addressed on regular basis	
Raise awareness	No promotion of energy efficiency	Periodic references to energy initiatives	All levels of organization support energy goals	
Build capacity	Indirect training only	Some training for key individuals	Broad training/qualification in technology & best practices	
Motivate	No or occasional contact with energy users and staff	Threats for non-performance or periodic reminders	Recognition, financial & performance incentives	
Track and monitor	No system for monitoring progress	Annual reviews by facilities	Regular reviews & updates of controlled system	
Evaluate Progress				
Measure results	No reviews	Historical comparisons	Compare usage & costs vs. goals, peers, competitors	
Review action plan	No reviews	Informal check on progress	Revise plan based on results, feedback & business factors	
Recognize Achievements				
Provide internal recognition	Not addressed	Identify successful projects	Acknowledge contributions of individuals, teams, facilities	
Get external recognition	Not sought	Incidental or vendor acknowledgment	Government/third party highlighting achievements	

http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index

Strategic Energy Management Roadmap



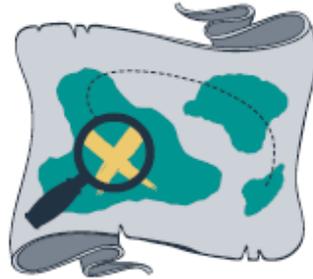
Energy Capital Fund



- \$10MM per year for 5 years
- Managed by Energy CoE
 - Accountable to maximize return on investment ~3 yr payback
 - Portfolio management approach
- Only for capital projects <\$1,000,000
- Sites must remove energy usage savings from their operating budgets (i.e. kWhs)

Treasure Hunts - a New Merck Energy Management Best Practice

MERCK
TREASURE HUNT
Global Energy Team



- Based on the principles of Lean and Kaizen
- Identifies energy and operational energy saving ideas
- Allows us to harness the diverse process and energy knowledge from the site personnel
- Increases team awareness and enthusiasm for energy reduction



Energy Best Practice Scorecard

[Back to Instructions](#)
[Graph Summary](#)



Merck Site Energy Best Practices Checklist

Stage Summary

Company:
 Location:
 City:
 Country:

	Best Practices Complete	Best Practices Required	% Complete
Stage 1: Management Practices & Continuous Improvement	0	28	0%
Stage 2: Energy Purchasing & Monitoring	0	18	0%
Stage 3: Air Handling (HVAC)	0	35	0%
Stage 4: Motors & Pumps	0	12	0%
Stage 5: Boiler Systems	0	31	0%
Stage 6: Chiller Systems	0	35	0%
Stage 7: Electrical & On-site Generation	0	15	0%
Stage 8: Lighting	0	23	0%
Stage 9: Compressed Air	0	18	0%
Stage 10: Manufacturing & Other Load Reductions	0	32	0%
All Stages	0	247	0%

- 247 Best Practices
- 10 Energy Areas
- Major utility processes
- O&M practices
- Capital upgrades
- Energy Management Practices

Typical Energy Efficiency Best Practices

Lighting

- Retrofit T12 to T8
- Retrofit HIDs to T5 & QL
- Controls



Motors

- Higher efficiency
- VFDs



Steam

- Steam Trap Audits and Repair



Advantages of Scorecard

- Identifies gaps that can be turned into projects
- Provides an action plan for energy efficiency improvement
 - training & education
 - global agreements for services
- Provides no cost-low cost ideas for improving energy efficiency
- Cross check for EPI score
 - Quantitative vs Qualatative
- Provides an indication of a sites energy efficiency

Introducing a New Best Practice

Identify and evaluate new technologies

- Solves a known problem
- Replicable solution
- Multiple claims of success – verify within network

Pilot at a “willing” site

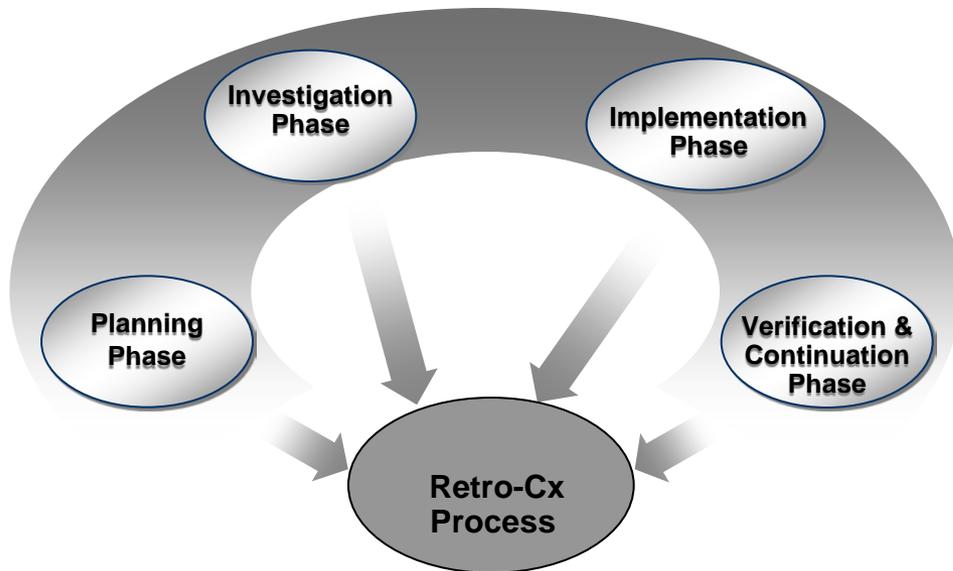
- Get the site excited that this will solve their problem
- Pay for the study??
- Go slow, gather data before and after installation
- Think case study

Analyze results

- Determine level of success
 - Financial
 - Did it solve problem?
 - Is site satisfied?

Publicize and Recognize

Retro-Commissioning is a Best Practice



28 Retro-Cx Projects
have been completed
at Merck since 2007

- Various space types
 - Laboratory
 - Office
 - Manufacturing
- Scoping Studies and Projects with ECM Implementation
- Energy Modeling
- Infrared Surveys

Not a Best Practice.....Yet



VS



T8s vs LEDs

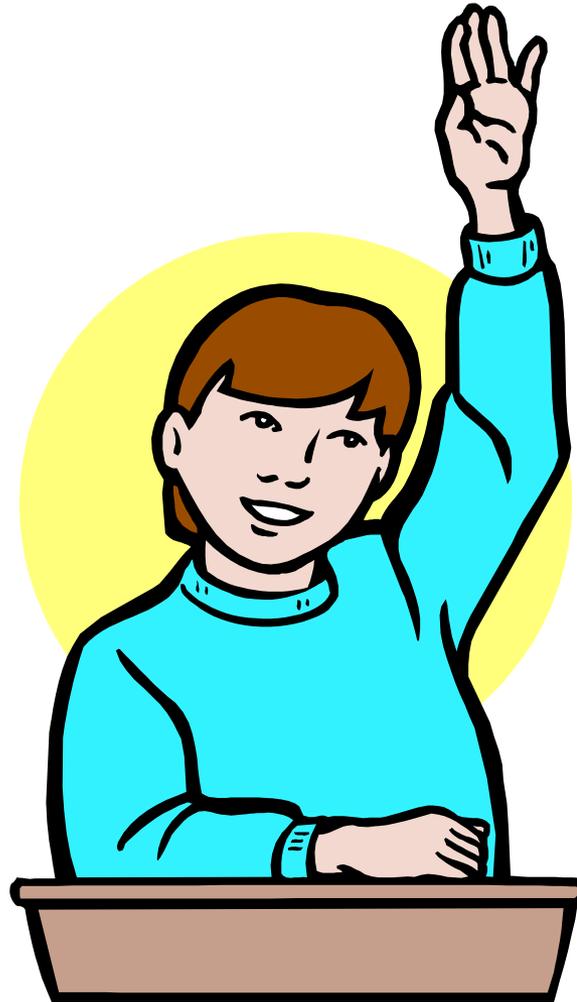
- Technology has improved
- Long life means big maintenance savings
- EXPENSIVE
- Long paybacks
- Limited applications
- Not ready to adopt as a Best Practice

Recipe for Success

- Listen and Learn
- Network!!
- Cultivate early adopters
- Pilot ideas
- Use peer pressure
- Publicize success
- Recognize the pioneers



Questions ???



Contact Information



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Global Facility Management

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- Questions & Comments
 - # 6 to un-mute phone
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Next Month's Web Conferences



August – Our Top Energy Projects

Register online at:
energystar.webex.com/meetings

Thank you!