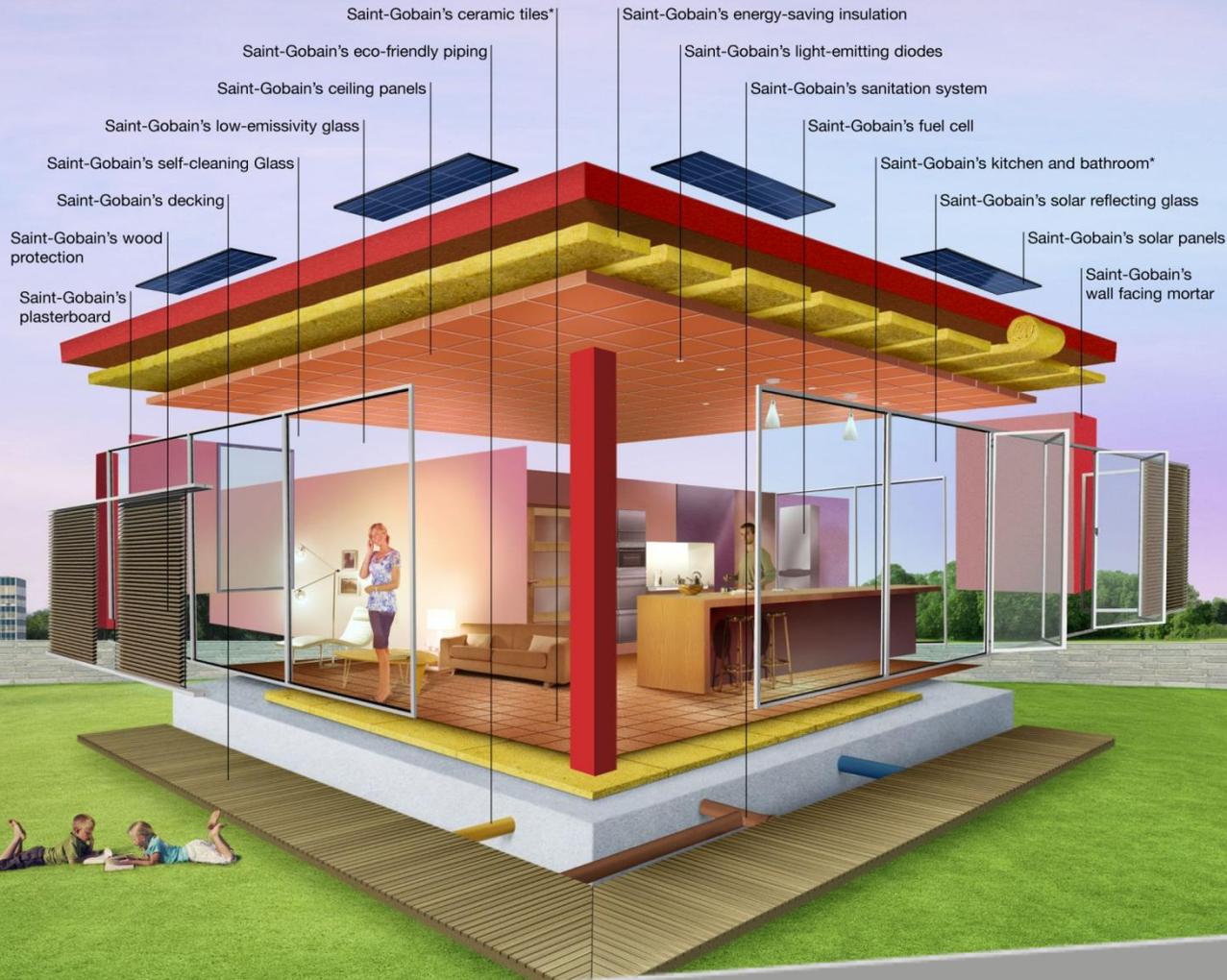


Energy-saving, innovation, environment-protecting.



Industrial Energy Efficiency and CHP Dialogue

DOE Midwest Regional Meeting

Brad Runda
June 21, 2012



Agenda

- **Saint-Gobain - Who we are**
- **Saint-Gobain Energy Efficiency Program**
 - **Practical Challenges Overcome**
- **CHP and WHR Activities + State Policies**

Saint-Gobain – Who we are



- **Worlds largest building materials company, Headquarters in Paris**
- **Global sales 2011 \$58.6 B; 195,000 Employees**
- **North America Headquarters in Valley Forge, PA**
- **North America 2011 : \$7.7 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 North America Sites

Construction Products

- **R&D**
Blue Bell, PA
Clearwater, FL
Jackson, MI
- **CertainTeed Ceilings**
Ellenton, FL
L'Anse, MI
Toronto, ON (Decoustics)
Plymouth, WI
- **CertainTeed Gypsum**
Calgary, AB (2)
Nashville, AR
Mohave County, AZ
Delta, BC
Invermere, BC
Napa, CA
Tampa, FL
Fort Dodge, IA
Junction City, KS
Carrollton, KY
Winnipeg, MB
Roxboro, NC
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
Athens, GA
Kansas City, KS
Berlin, NJ
Ottawa, ON
Sherman, TX
- **CertainTeed Pipe & Foundations**
Lodi, CA
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
- Ennis, TX

■ CertainTeed Siding

- Sodal Circle, GA
- Romeoville, IL
- Terre Haute, IN
- McPherson, KS
- Lake Charles, LA
- Hagerstown, MD
- Jackson, MI
- Buffalo, NY
- Claremont, NC
- Roaring River, NC
- White City, OR

Innovative Materials

- ▲ **Flat Glass**
Scottsdale, AZ (2)
Faribault, MN**
Columbus, OH
Fountain Inn, SC*

- ▲ **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
- Watervliet, NY
- Plattsville, ON
- Montgomeryville, PA
- Travelers Rest, SC
- Brownsville, TX
- Stephenville, TX

▲ Saint-Gobain Ceramic Materials

- Huntsville, AL
- Bryant, AR
- Fort Smith, AR
- Little Rock, AR†
- Anaheim, CA
- Louisville, KY
- Northampton, MA
- Worcester, MA (2)
- Milford, NH
- Amherst, NY
- Niagara Falls, NY (2)
- Canton, OH
- Hiram, OH
- Newbury, OH
- Stow, OH
- Niagara Falls, ON
- Latrobe, PA
- Olyphant, PA
- Soddy-Daisy, TN
- Bryan, TX
- Buckhannon, WV

▲ Saint-Gobain Performance Plastics

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

▲ Saint-Gobain ADFORS

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

Verallia

● GPS America

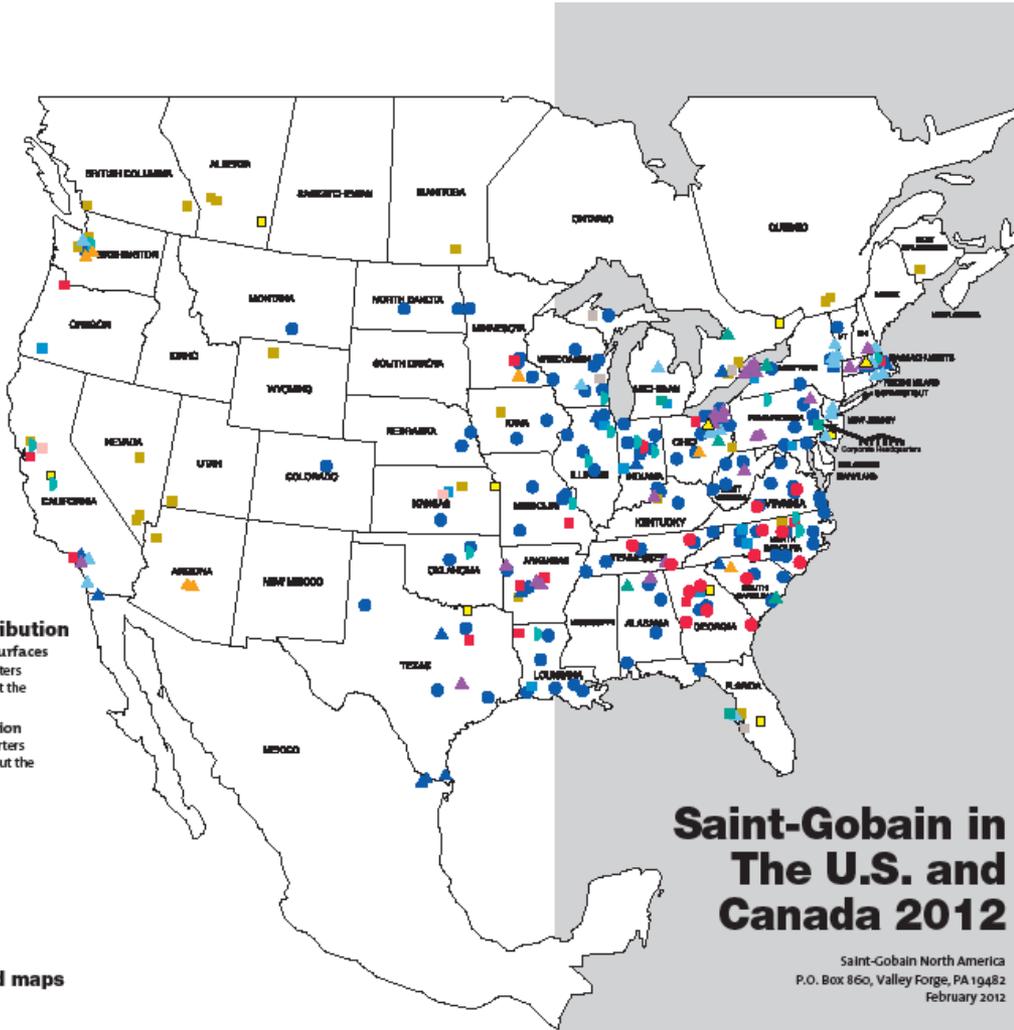
- Marion, IN

● Verallia North America

- Fairfield, CA
- Madera, CA
- Dolton, IL
- Lincoln, IL
- Dunkirk, IN
- Muncie, IN
- Ruston, LA
- Milford, MA
- Pevely, MO
- Henderson, NC
- Wilson, NC
- Sapulpa, OK
- Port Allegany, PA
- Seattle, WA
- Burlington, WI

Building Distribution

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



Saint-Gobain in The U.S. and Canada 2012

Saint-Gobain North America
P.O. Box 860, Valley Forge, PA 19482
February 2012

Click [here](#) for location addresses and maps

†Under Construction
*Joint Venture

Glass Packaging

- #2 in glass containers in US
- 15 plants, 4,371 employees
- Only glass company with ENERGY STAR labeled plants



Innovative Materials



- #1 or #2 in most activities
- 67 plants
- 6,978 employees



Abrasives

16 plants
2,362 people

Performance Plastics

18 plants
2,091 people

Ceramics

18 plants
1,685 people

Crystals

5 plants
274 people

ADFORS

5 plants
382 people

Glass

5 plants
184 people



Construction Products



- Leader in US and Canadian markets
- 58 plants
- 5,724 employees



EXTERIOR				INTERIOR		
Roofing	Vinyl Siding	Fiber Cement Siding	Pipe & Foundations	Insulation	Gypsum	Ceilings
13 plants 1,435 people	9 plants 1,188 people	3 plants 276 people	2 plants 180 people	7 plants 977 people	20 plants 1,199 people	4 plants 358 people



Agenda

- **Saint-Gobain - Who we are**

- **Saint-Gobain Energy Efficiency Program**

 - **Practical Challenges Overcome**

- **CHP and WHR Activities + State Policies**

Energy is a Primary Component of our Overall Business Strategy



Ambition

- Worldwide leadership in the habitat and construction markets, with innovative solutions to meet the fundamental global challenges of growth, energy and the environment

Setting an internal example for energy efficiency is key to our business. It provides benefits in:

- Cost Savings
- External Marketing Activities
- Process Understanding and Improvement
- Environmental Objectives

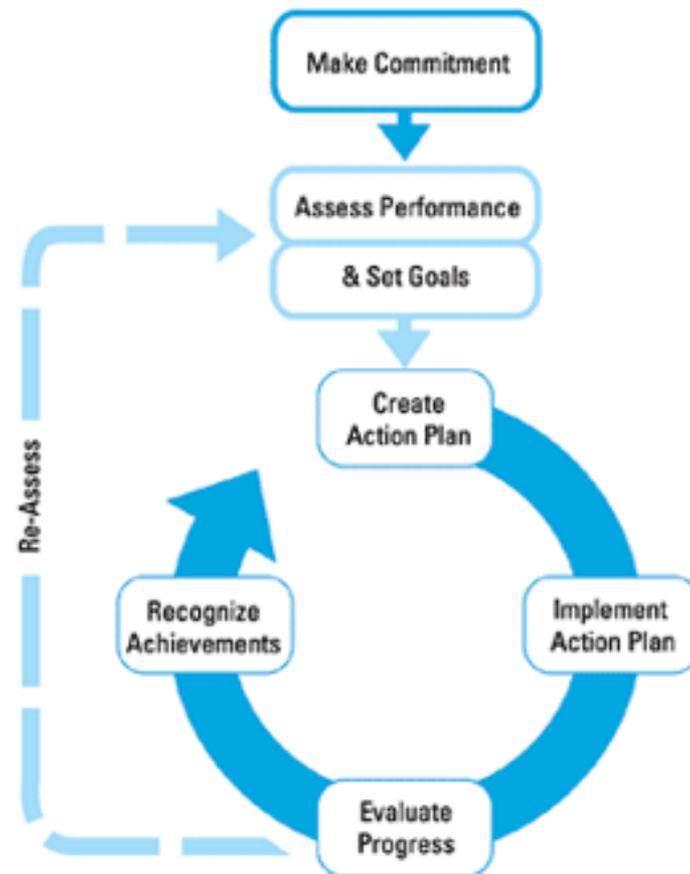
Critical Components for Success

- **As part of our centrally managed energy program, all business units require adoption of these strategic principles in order to maximize and sustain savings:**
 - **Adoption of energy reduction goals at a business unit level and at a facility level, tied to incentive compensation**
 - **Mandate of facility metering to identify savings opportunities and consumption reduction**
 - **Appoint Energy Champions at Business Unit level and creation of Energy Teams at the facility level**
 - **Budget for energy related projects and services**

ENERGY STAR – Voluntary Program

Saint-Gobain Participation

- Active participant and supporter of the program
- Proven, effective techniques guided by Industry
- Valuable tools and program resources
- Industry collaboration
- Valuable recognition



DOE Better Buildings Better Plants – Voluntary Program



■ Saint-Gobain – Challenge Partner

- Committed to 25% improvement over 10 years
- Improved access to ORNL
 - ▶ Energy efficiency ideas
 - ▶ Advanced manufacturing techniques
- Assessments and technical collaboration

Thanks for the Great Advice, But...



US Housing Starts
April 2012 = 516K

Internal Challenges

- **Plants designed to run 24X7**
 - Temporarily or permanently closed
 - Operating as little as 4 days per month
 - Reduced shifts
- **Reduced technical resources available**
- **Reduced and limited capital available**

Efficiency Success Despite Challenges

- Two Approaches: Culture Change and Project

- Culture Change: Strong focus on Low-cost / No-cost initiatives
 - Near Term
 - Target 'Low Hanging Fruit' First
 - Easy to do, immediate savings, keeps people engaged, establishes the proper baseline

- Project: Capital investments to improve infrastructure
 - Longer Term

Keys to Success

✓ **Top Management Support (Top Down)**

■ **Engagement (Bottom Up)**

- Kaizens
- Communication

■ **Communication - Fit it into the plant culture**

Cost to run chiller per week -

\$926.44!

Run weeks per year **25**

Total amount saved

\$23,161!!!



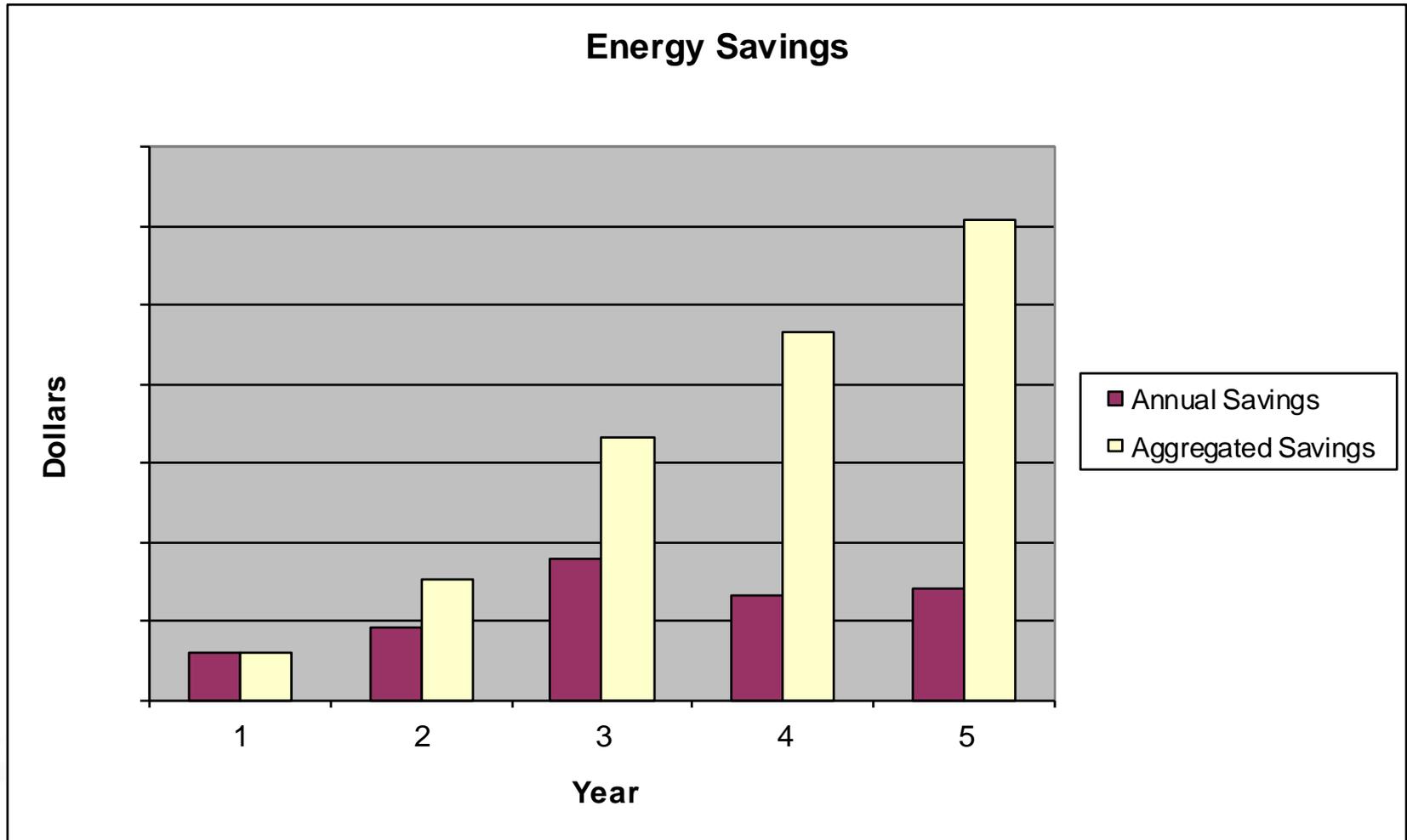
MSRP of a 2010 Dodge Challenger is \$23,460!!!

Results

- **Saint-Gobain's 2011 Energy Savings equate to the energy required to produce:**
 - 836 million typical glass containers
 - Shingles for new roofs on over 1.1 million typical houses
 - Insulation for 163,000 typical homes
- **Four year improvement of 11.9% energy-per-unit**



Results



Agenda

- **Saint-Gobain - Who we are**
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Combined Heat and Power Activities

- **1 CHP system in place in US**
 - Dual fuel - coal, natural gas
- **Project analysis ongoing for plants in:**
 - Abrasives
 - ADFORS (Technical Fabrics)
 - Insulation
 - Gypsum
 - Roofing

Combined Heat and Power Enabling Policies

- **Inclusion of CHP system in RPS and EERS**
- **PURPA Rules**
- **Incentives**
- **Net metering**
- **Reasonable interconnection protocols**
- **Tax policy – sales and use tax avoidance; tax credits**
- **No exit fees or lingering demand charges**

Waste Heat Recovery Activities

- **‘Conventional’ and ‘Unconventional’ waste heat to power project development ongoing for plants in:**
 - Verallia (glass containers)
 - Insulation
- **Conventional systems would be a first for US glass plants**
- **Unconventional (solid state) system would be a first globally**
- **Also evaluating new technology for low temperature waste heat to power generation at two plants**

Waste Heat Recovery Enabling Policies

- **Incentives**
- **No lingering demand charges**
- **Reasonable interconnection protocols for generation**

Incentives – Love Hate Relationship

- **Traditional utility incentive programs clearly encourage energy efficiency projects.**
- **Do incentives make plants and companies more profitable and more likely to employ people?**
- **Incentives are often viewed as state and utility investment in energy efficiency, but they are made with industry money diluted by overhead and utility profits.**
- **Higher rates make it less likely for a company to invest in a plant, less likely to grow jobs, less likely to remain competitive.**
- **Industry is required to pay twice to receive incentives – first in the rates, then via a capital investment.**
- **Industry prefers inducements that promote profitability and job growth, not cost increases.**

Questions?