

# Can Energy Management Deliver Real Savings?

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*The miracles of science™*

# Corporate Level Energy Management for Operations

Typical Situations	Challenges
GHG and energy use improvements are desired but clear targets not cascaded down to site levels in a well defined or well managed way	Developing a clear set of KPI's and targets for business unit and site level improvement initiatives
Functional groups leading Energy Management improvement efforts	Getting the line organizations to prioritize energy improvement work
Business units are competing for capital budgets	Making good decisions on which projects give best corporate sustainability results
Overall targets are not necessarily aligned with business objectives	Product Mix, increased Production, Energy sourcing, etc. affect usage



# Plant Site Level Energy Management

Typical Situations	Challenges
Site teams are lean and stretched	Limited time and focus for Continuous Improvement efforts
Line organization has many KPI's (Safety, Production, Uptime, Cost, etc.)	Accountability for energy improvement work is often unclear and not a top priority
Capital and cost budgets are restricted	Energy improvement projects are often postponed for more urgent needs
Equipment level energy usage information is limited	Difficult to improve and sustain improvements on what is not measured
Energy use management is seen as a tradeoff with other initiatives	Developing a culture of conservation that meshes with other objectives



# A Familiar Challenge for DuPont as well!

**Who we are - A global science company solving problems in ways that makes people's lives better, safer and easier**

**~200 plants and 80 R&D facilities in 70 countries**

**A significant user of energy**

- 144 Trillion Btu
- \$1 Billion annual spend

**Energy Management is a global challenge that has required a clear strategy and execution plan**



DuPont Tyvek® Housewrap



# DuPont's Goal is "Sustainable Growth"

## We define "Sustainable Growth" as

- Increasing shareholder and societal value...
- While decreasing the footprint<sup>†</sup> of our operations...
- Along the value chains in which we operate

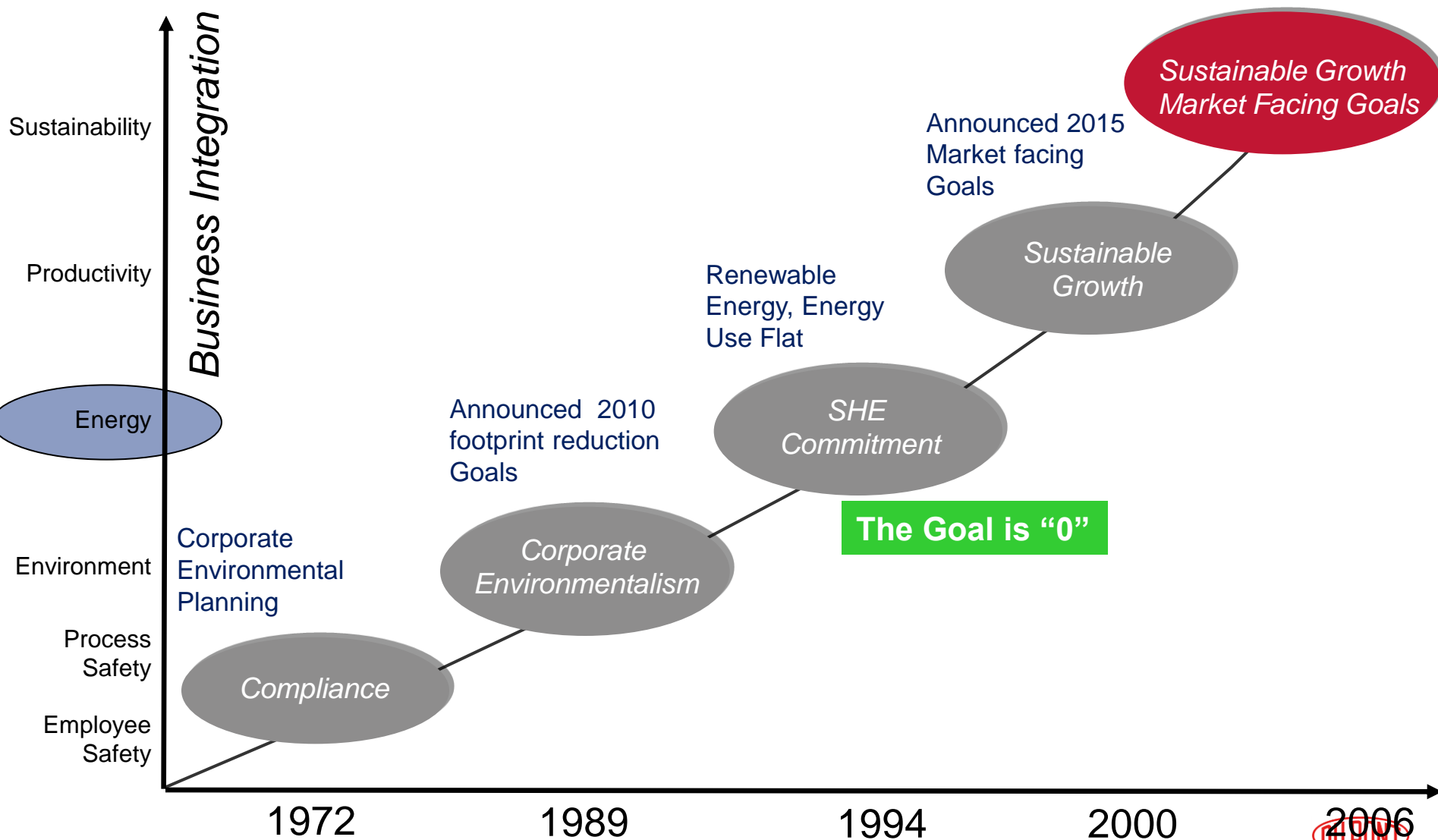
**We view energy use as part of our footprint...**

**So we've set goals to reduce it**

<sup>†</sup>Footprint = injuries, illnesses, incidents, waste, emissions, and depletable forms of raw materials and **energy**



## DuPont Sustainable Growth Journey: from Safety to Sustainability



# DuPont's Public Commitment on Energy

**We announced the following energy goals at the Pew Center Conference on Global Climate Change in 1999**

- Hold total energy use flat versus a 1990 baseline
- Reduce GHG emissions by 65% versus 1990
- Supply 10% of total energy from renewable resources

**All are to be accomplished by year-end 2010**



**Completed  
in 2004**

**We have since committed to reduce GHG emissions an additional 15% versus a 2004 baseline by 2015**

**Measurable, public goals put teeth into commitment**



# Our Challenge: “Grow While Shrinking”

To achieve Sustainable Growth, we must **grow** shareholder value **while shrinking** energy use

**This is a difficult challenge for many reasons...**

- Energy efficiency is not a product quality variable
- Energy use is broadly dispersed
- Inefficiencies are frequently invisible
- Expertise to make improvements is limited

**The remaining slides show our approach**





# Our Response to the Challenge

Our Ad hoc approach yielded good results...but stagnated

CEO mandated the “Bold Energy Plan” in late 2007 *“Enthusiasm for sustainability inside DuPont has grown because it is now directly tied to the company’s growth.”*

## Key elements of the Bold Energy Plan include

- Senior Leadership oversight...with financial objectives (Save \$230MM over 5 years)
- Dedicated leadership for site efficiency programs
- Provision of capital for improvement
- Local plant improvement objectives
- Tracking of site performance versus targets
- Leveraging expertise to help plants help themselves
- Networking among peers

**Led by a Full time Corporate Energy Leader and sponsored by the VP of Operations who oversees Plan progress and drives accountability for results versus goals**



# Best Practice Corporate Approaches to Strategic Issues

- Recognize strategic value & drive from the top
- Line accountability
- Appropriate support resources
- Integrated Management System
- Consistent implementation approach across entire operations portfolio
- Rigorous performance management
- Prioritize no-capital & low-capital improvement



# Driving energy efficiency improvements through cultural change and an integrated management system built on:

## Strong Leadership

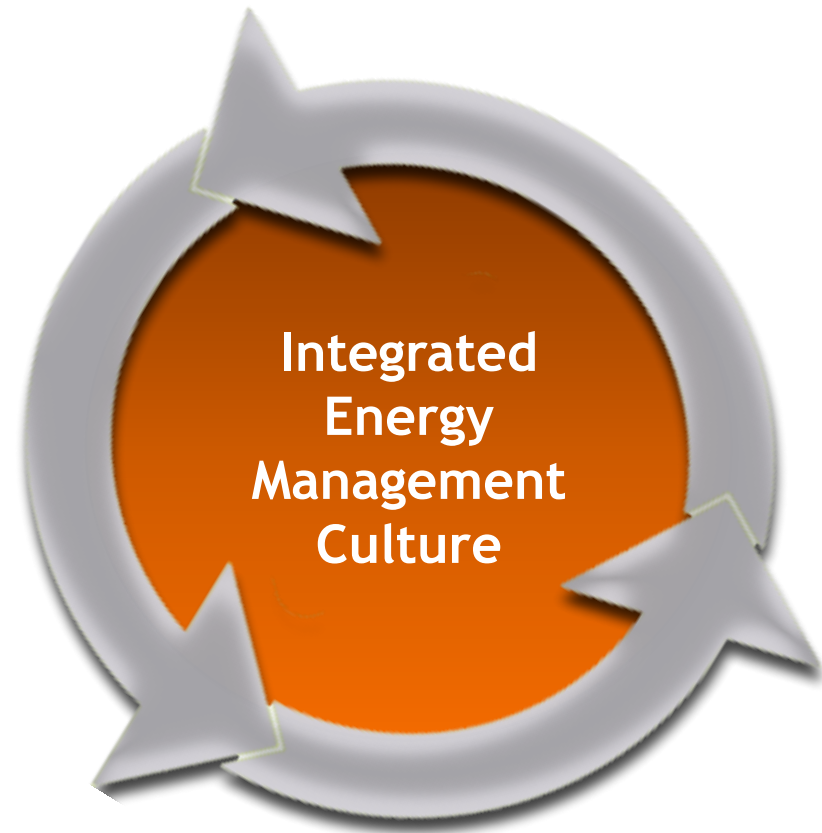
- Engaged & Committed Leadership
- Challenging Goals, Policies, & Principles
- Metrics and Data-Driven Decisions

## Appropriate Organizational Structure

- Integrated Energy Efficiency Organization
- Responsible Line Organization
- Timely Recognition of Success

## Focused Processes and Actions

- Consistent & Targeted Business Planning Process
- Commitment to Training & Development
- Effective Communication System
- Standard Improvement Methodology



**These elements, and the system for realizing them, form a best practice reference model against which we implement change**



## Engaged & Committed Leadership – AN EXAMPLE

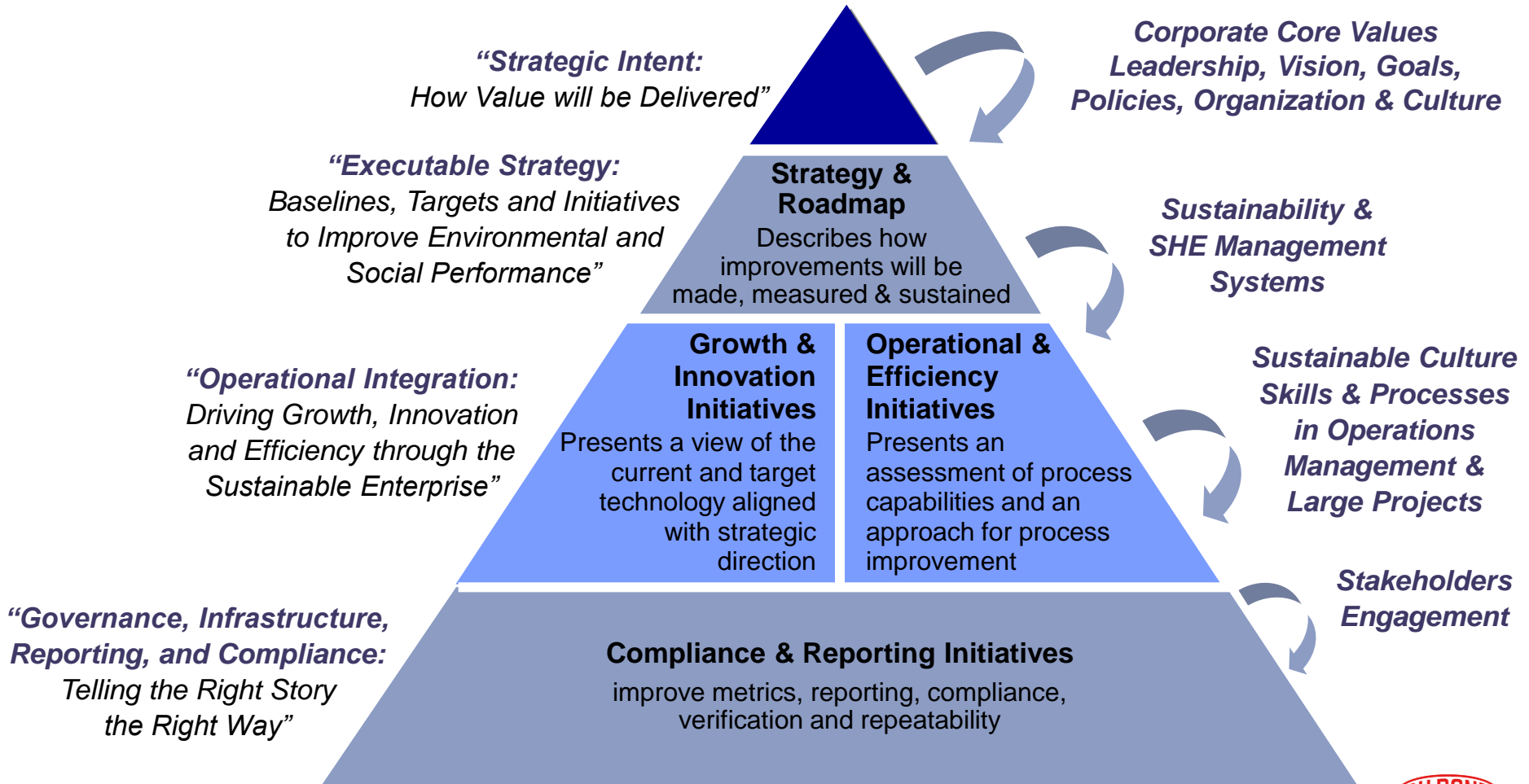
- ❖ Leadership should manage energy efficiency programs as a critical priority similar to quality, productivity and cost.
- ❖ Engagement and commitment to energy performance improvements must start from the most senior managers and cascade to all levels of the organization.
- ❖ Leadership should demonstrate commitment to energy efficiency programs through attitudes, behavior, and follow up. Be consistent in what they say, speak, write, and do.
- ❖ Examples of leadership behaviors that demonstrate engagement and commitment to energy efficiency improvements are:
  - ❑ Provide support for energy efficiency improvement ideas
  - ❑ Participate in audits, workshops, and energy team meetings (site leadership)
  - ❑ Set organizational goals, principles, and objectives for energy efficiency improvements
  - ❑ Include energy discussion during routine performance dialogues; seek updates and follow up on recommended energy efficiency improvements
  - ❑ Praise and recognize excellence in improving energy efficiency
  - ❑ Communicate progress towards goals and objectives to the organization
  - ❑ Support energy efficiency training and development programs
  - ❑ Allocate proper resources (financial and personnel) to drive energy efficiency improvements

**Leadership engagement and commitment will create a culture that has value for implementing and sustaining energy efficiency improvements**



# DuPont Approach - Driving Sustainable Operations

Successful, sustainable growth (including energy management) is rooted in core-values, top-down driven by leadership commitment, aligned with business objectives and embedded across the entire organization and culture.



# Real World Examples – Improving Energy Efficiency

## **Challenge**

Sabine River Works, which consumes 15% of the energy used by DuPont, wanted to reduce the site's energy use, consistent with the company's long-term energy goals.

## **Solution**

Implemented over 55 projects, many utilizing Six Sigma methodology:

- Improved the reliability of steam supply to a key process area, which reduced wasteful forced outages
- Made improvements to key process equipment, including a large steam turbine
  - Corrected metering problems with purchased energy
  - Made repairs and improvements to steam traps

## **Results**

Reduced energy consumption by 20% from a 2000 baseline

*(Equivalent of heating 257,000 home for one year)*

\$100 million cost savings over five years



# Real World Examples – Reducing Energy Demand and Greenhouse Gas Emissions

## Challenge

*The Solae® Ieper plant in Belgium, which produces isolated soy protein (ISP) through a highly energy-intensive process, was facing rising energy prices.*

## Solution

Included three independent projects:

- Installation of cogeneration biogas engine
- Introduction of a new process for soy fiber processing
  - Reduces the energy requirement for the drying process
  - Results in lower carbon emission from the dryer's natural gas burner
- Contracted for wind generated electricity from a nearby wind farm

## Results

15% reduction in annual CO2 emissions  
\$2.9 million in annual savings



# Enablers for Energy Efficiency Management for Operations

## Identifying and elevating energy cost as a strategic business issue

- Understanding business implications of energy consumption and escalating costs
- Understanding implications of energy cost variability on portfolio profitability
- Benchmarking and quantifying the total opportunity value

## Implementing a vertically integrated management approach to drive results

- Driving leadership and management commitment to breakout performance with clear KPI's
- Instituting organizational structures and accountabilities to drive results
- Designing and implementing managing processes to sustain results

## Developing skills and capabilities of the people in the organization

## Identifying and executing the right projects to drive highest gain results

- Prioritizing highest gain / lowest investment opportunities
- Utilizing leading methods for improvement opportunity execution (six sigma, lean, etc)
- Access to technical expertise, in both energy systems & core processes





# Dedicated Site Leadership

Improving energy efficiency is everyone's job...

But without dedicated leadership, it is no one's job

Over 100 plants now have a Site Energy Champion

- *We've learned that if the lead person is not at least 50% fully dedicated to the Energy Champion role, results quickly fall off*

The Champions lead site energy efficiency programs

The programs strive to meet annual savings targets based on known improvement opportunities



# Local Objectives and Targets

**Our plants tend to be fairly autonomous**

**A Site Manager is responsible for all aspects of operations and sets priorities for the workforce**

**His/her performance is judged by annual metrics**

- Safety: “Did you meet the goal of 0 injuries?”
- Environment: “Did you meet the goal of 0 incidents?”
- Fixed cost: “Did you meet your budget?”

**We’re putting energy on the Manager’s report card**

- “Did you meet your annual energy savings target?”

**Site Energy teams with cross-area and cross-function representation manage the improvement at most sites**



# Tracking Performance vs. Target

**Having a target is useless unless you “keep score”**

**We have an online database that tracks performance**

**Progress is measured by the savings achieved from individual improvement projects at each plant**

**The database currently tracks over 1,000 projects**

**If plants hit their targets, we'll reduce energy use 5% and avoid \$45 Million in energy costs in 2011**

**Our 5-year objective is to reduce energy use 20% and avoid \$230 Million in energy costs**



# Availability of Capital for Improvement

**Setting public goals will not drive improvement unless you “put your money where your mouth is”**

**If employees see that you won't invest capital in good energy projects, they'll stop looking for improvements**

**We created an Energy Capital Fund in 2007 to fix this**

**We've invested \$60 Million in energy projects that will**

- Reduce annual energy costs by \$70 Million
- Reduce CO<sub>2</sub> emissions and energy use by 6%
- Deliver \$170MM in NPV and achieve a 60% IRR

**But non-cap and low cap projects (including software improvements) have been a critical part of our progress!!!**



# Networking Among Peers

**We have over 100 plants with specific annual energy targets**

**Although each plant is unique, they use similar technology and have similar efficiency objectives**

**We want our Energy Champions to talk to each other to rapidly replicate successful projects**

**We conduct monthly Champions conference calls and bi-annual corporate energy conferences**

**The Champions now see themselves as part of a corporate energy community... not just at a plant location**



# Leveraging of Technical Expertise

**DuPont has world-class energy experts**

**The problem: there aren't enough to go around**

**We recognized we must “leverage” our expertise so that the plants learn how to help themselves**

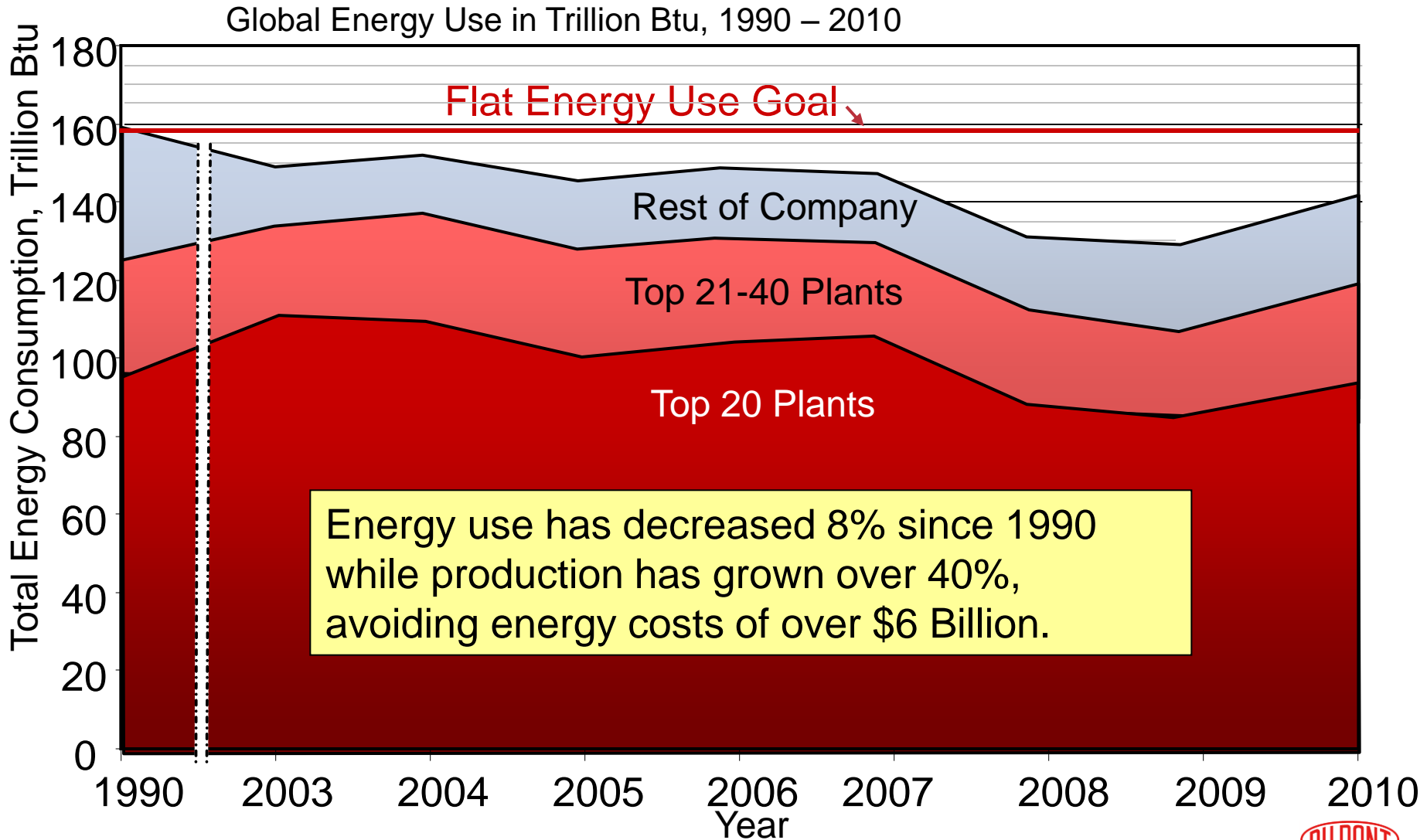
**We're using technology to accomplish this objective**

- Comprehensive website disseminates best practices
- Downloadable energy engineering assessment tools
- “Virtual workshops” for energy training without travel

**Need to have dedicated “continuous improvement” resources to complete project work (cap and non-cap projects)**



# Our Energy Efficiency Focus Is Paying Off



# Some Questions to Think About

**What is your organization's "top floor" commitment to energy efficiency and sustainability?**

**What energy and sustainability goals have you set? Are they public? Do you track and publish?**

**Are you putting your money and your people where your stated priorities are?**

**How are you motivating your organization to drive continuous improvement in energy efficiency?**

**Are you working through all aspects of energy management including leadership, organization, processes, technical efforts and actions?**

**Our conclusion: Improving energy efficiency through a well managed process is good for our shareholders and good for the planet**







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