

From Shop Floor to Top Floor: Best Business Practices in Energy Efficiency



Andre de Fontaine
Pew Center on Global Climate Change

DOE ITP Webinar
April 1, 2010

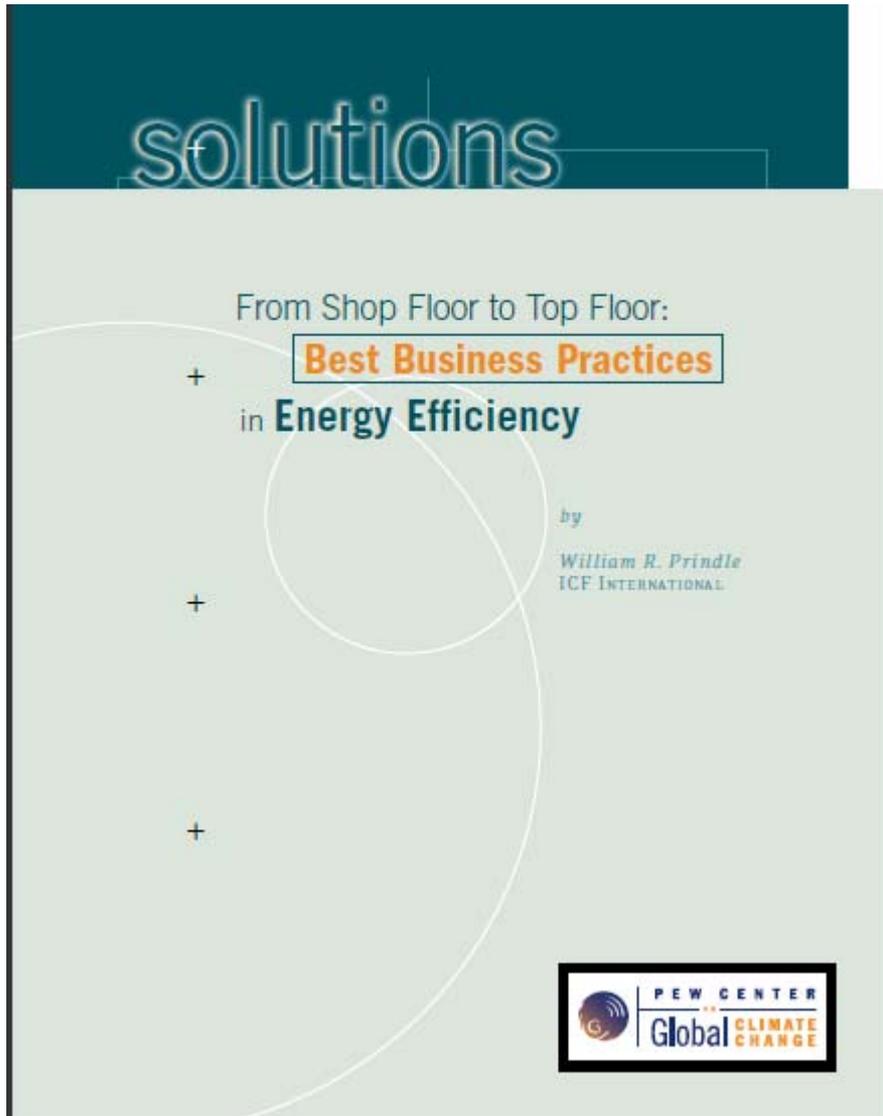
- Established in 1998 as an independent, non-partisan climate organization
- Three-fold structure – a “do” tank:
 - Research – 100+ reports over 10 years
 - Actively advise on policy – state, federal, international
 - Business Environmental Leadership Council (BELC)
 - 46 companies
 - \$2 trillion in revenues
 - Nearly 4 million employees

Introduction to BELC



- Exploring best practices in corporate energy efficiency strategies
 - Project funded by 3-year, \$1.4 million grant from Toyota
- Focus is on management approaches to improving efficiency throughout a company, including:
 - Internal operations
 - Supply chains
 - Products & services
- Report published March 31, 2010 (yesterday)
 - Major conference set for April 6 with yearlong communications/outreach campaign to follow.
 - Web portal (www.pewclimate.org/energy-efficiency) contains additional resources and project-related materials

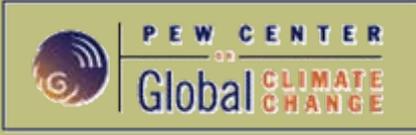
- Expert author: Bill Prindle, ICF International
- Four BELC Workshops: Opportunities for companies to present and share lessons learned.
- Survey: Designed to capture key quantitative data and broad trends in corporate efficiency programs.
- Advisory Committee: 11 experts from a diverse range of sectors; provide overall direction and guidance for the project.
- Case studies: In-depth profiles of six exceptional programs and strategies.



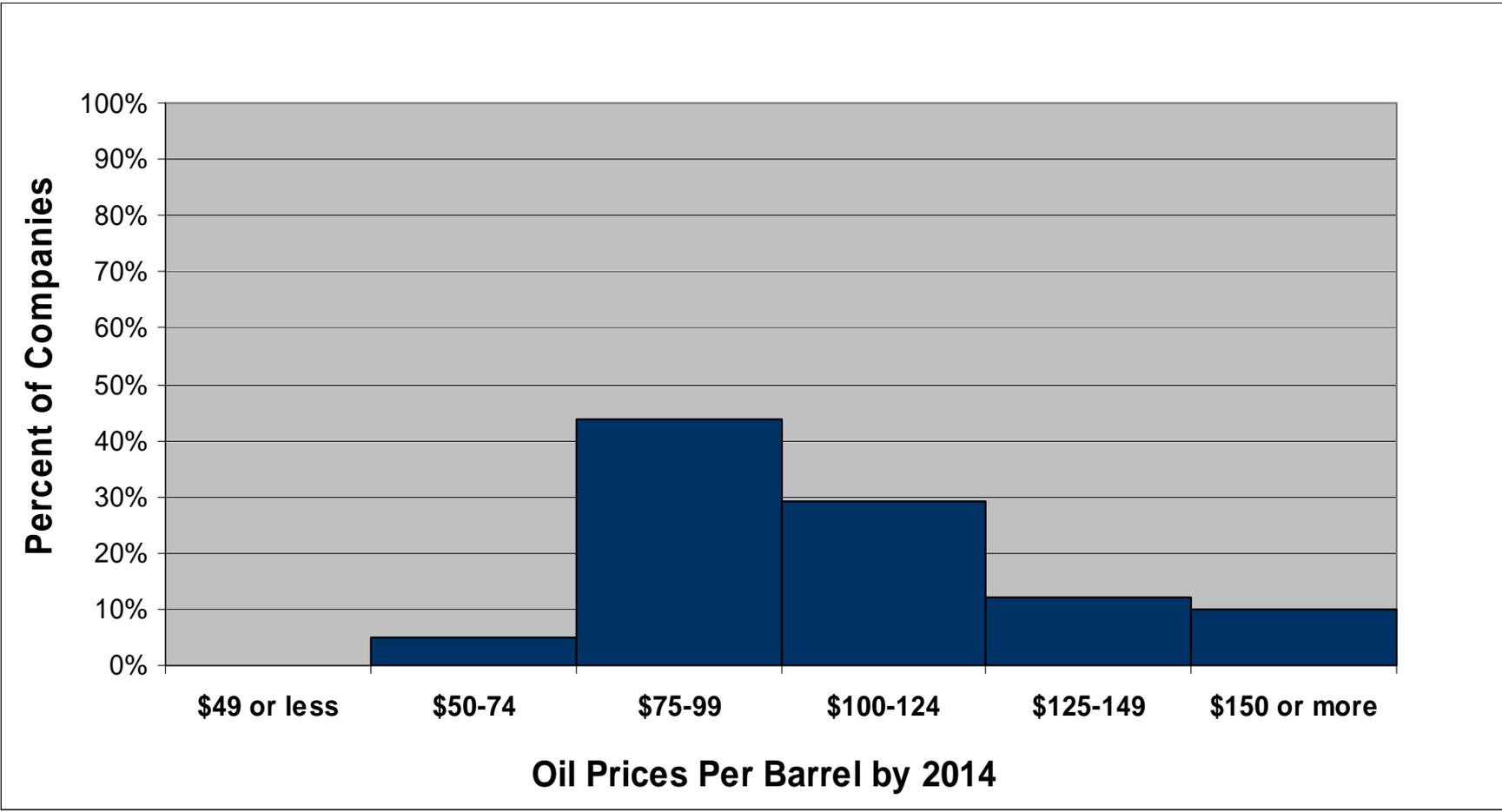
- I. The Business Case for Energy Efficiency
- II. Pew Center Survey Results
- III. The 7-Habits of Highly Efficient Companies
- IV. Best Practices
 - a) Internal Operations
 - b) Supply Chains
 - c) Products & Services
- V. Case Studies

- Survey designed to gather key quantitative data, identify trends, and gauge current activities
- 95 companies invited to participate
 - Large corporations with demonstrated commitment to climate & energy issues
 - Diverse industry representation
 - Average revenue: \$29 billion
 - Average energy costs: \$2 billion
 - 48 surveys completed (response rate >50%)
 - Approximately 65 questions covering range of corporate efficiency programs and activities

Energy Price Expectations by 2014



(Using World Oil Prices as a Proxy)





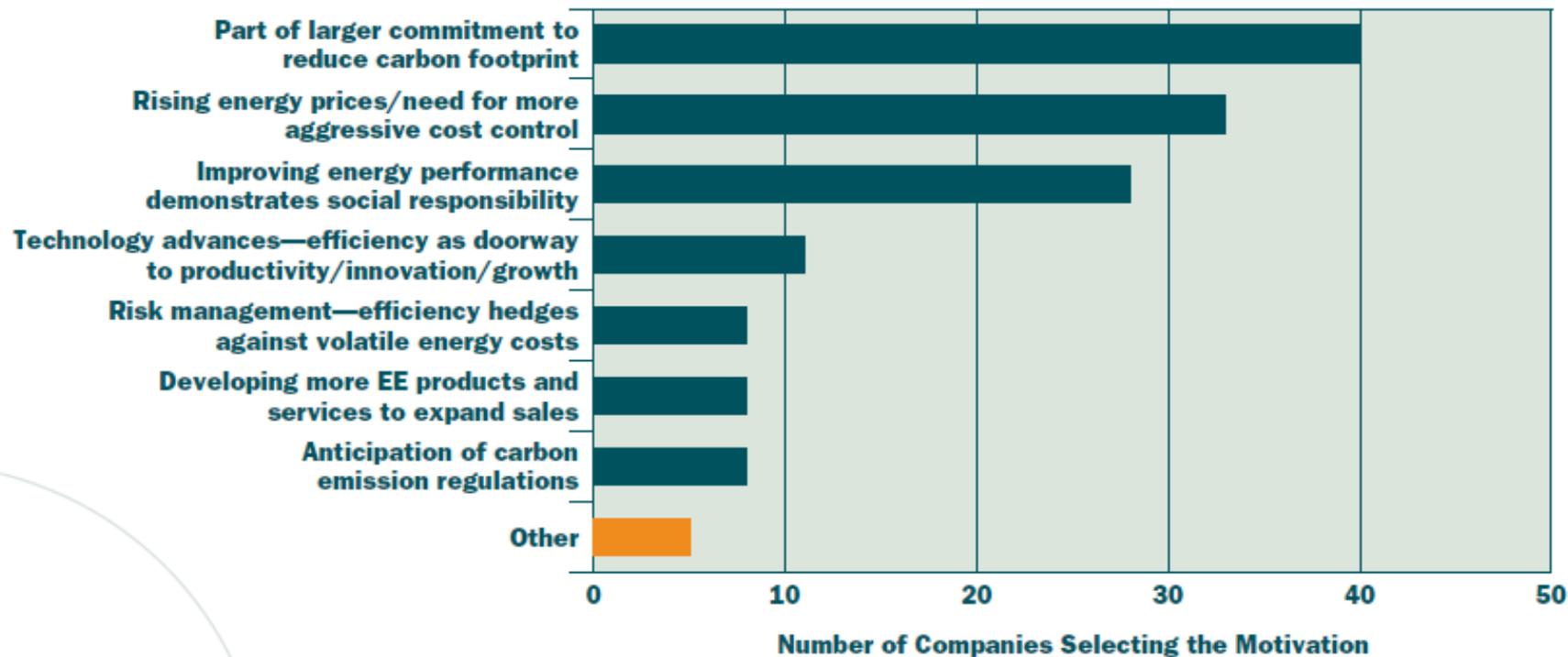
U.S. Climate Legislation Expectations



	<u>Number of Companies</u>	<u>Percent</u>
Within Two Years	27	57.4%
After Two Years, but Before Four Years	20	42.6%
Total	47	100.0%

Motivations for EE Strategies

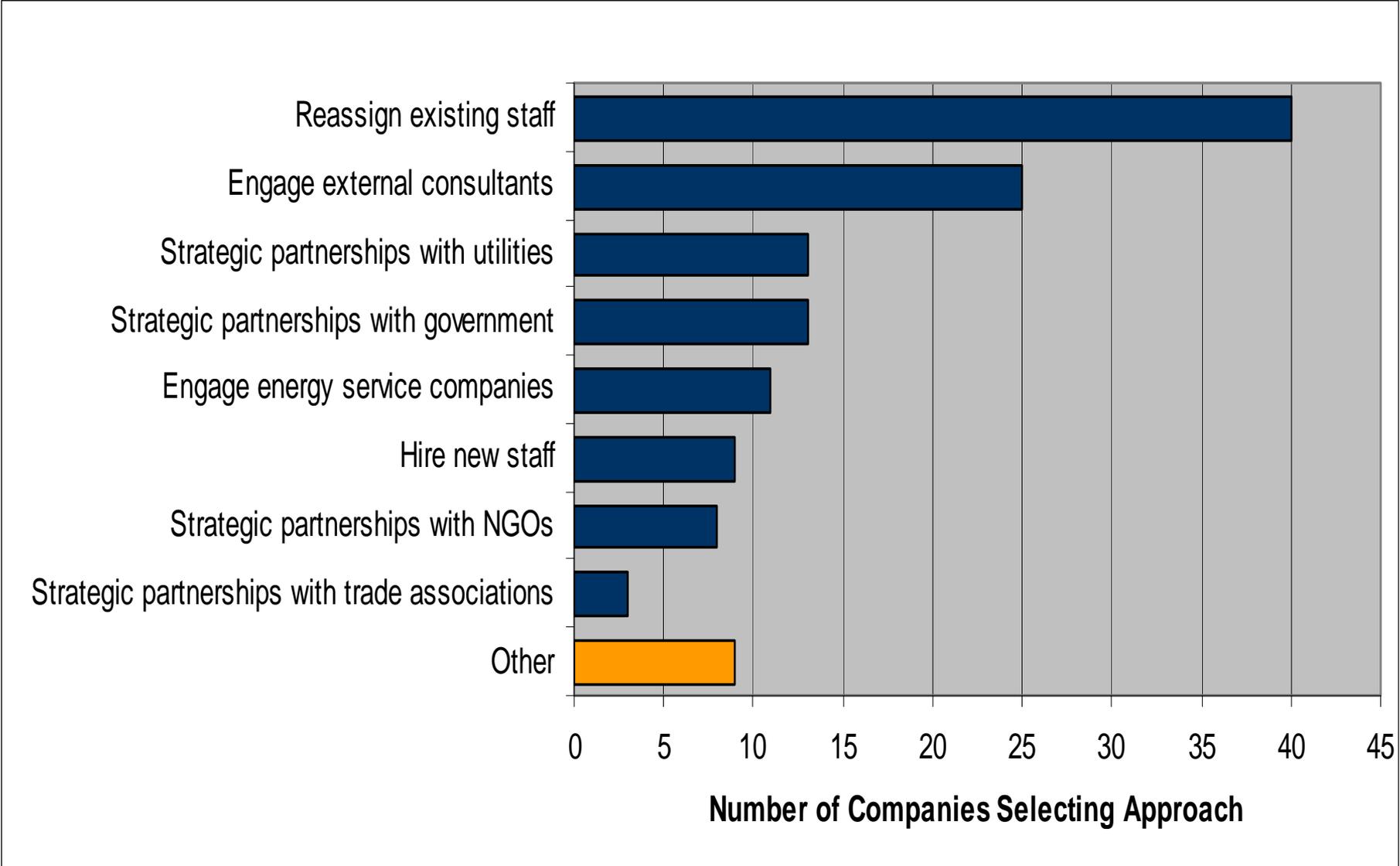
Pew Center Survey Respondents' **Leading Motivations** for Efficiency Strategies



Source: Pew Center 2009.

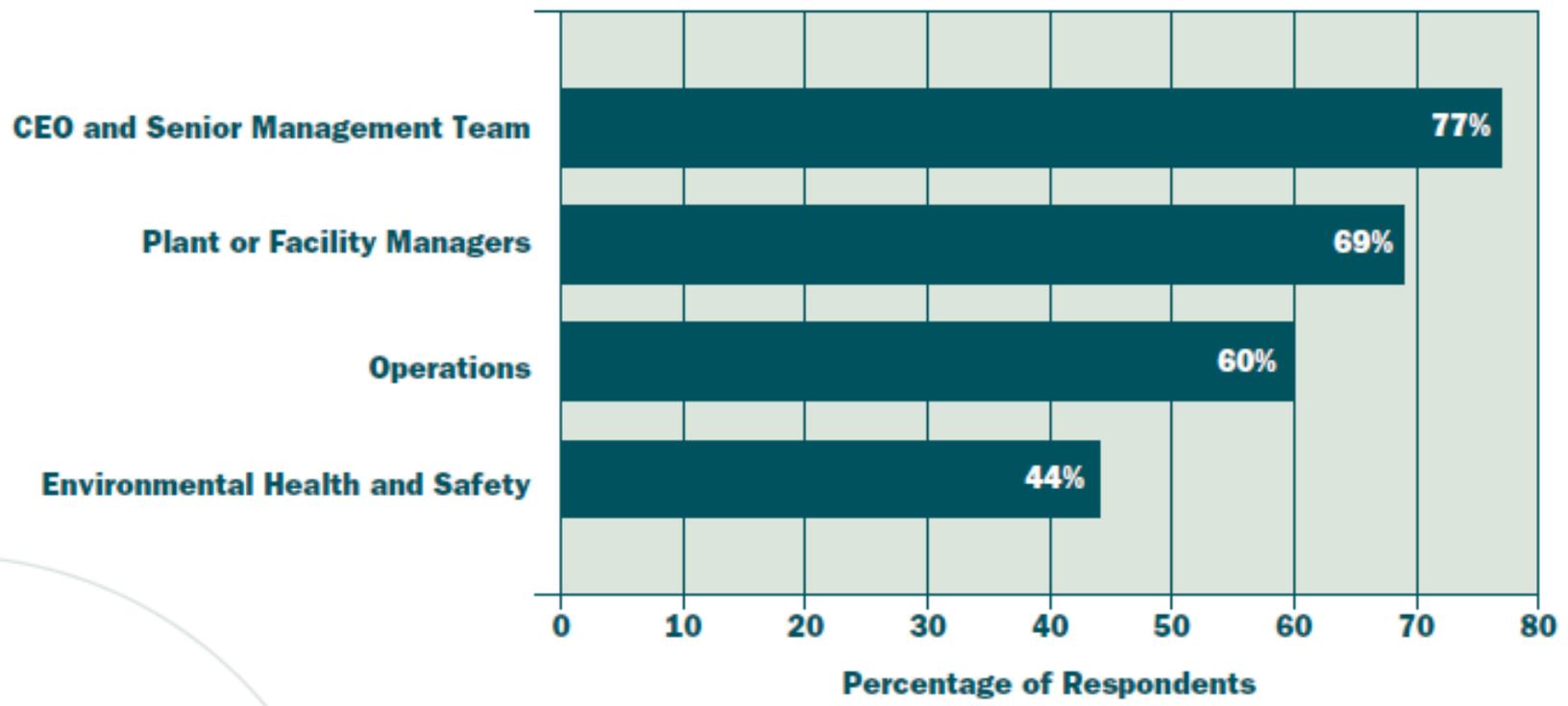


Meeting EE Strategy Resource Needs



Where are the EE Champions?

Key Champions of Energy Efficiency Strategies



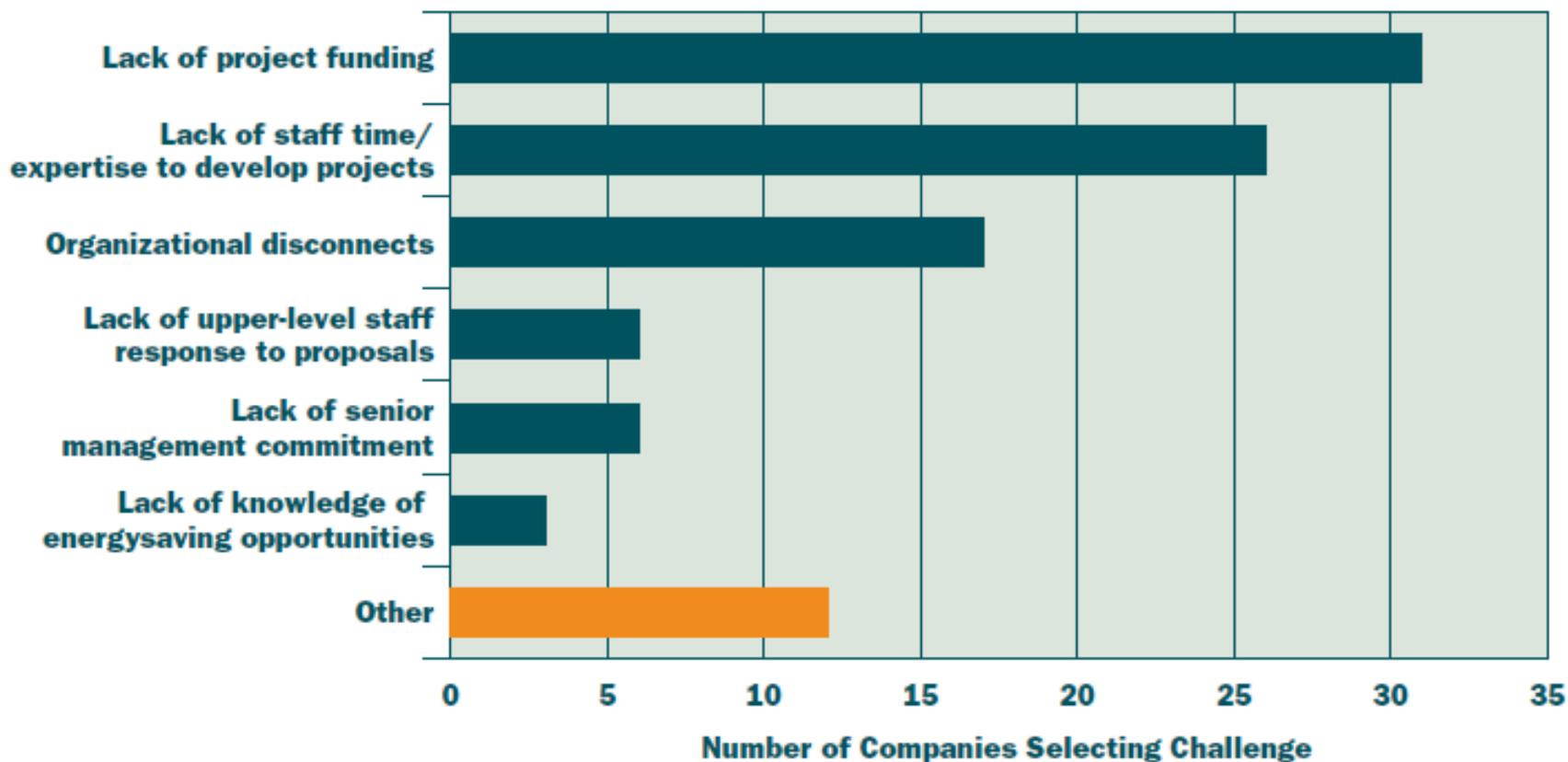
Source: Pew Center 2009.

Greatest Successes

- Meeting / Exceeding Goals 47.9%
- Implementing Corporate Wide Plan 22.9%
- Increasing Employee Involvement 20.8%
- Formalizing a Policy / Strategy 14.6%
- Implementing at Local Level 14.6%
- Better Communication w/ Biz Units 12.5%
- Support from Management 8.3%
- Winning Awards or Recognition 4.2%

Challenges/Barriers to EE in Internal Operations

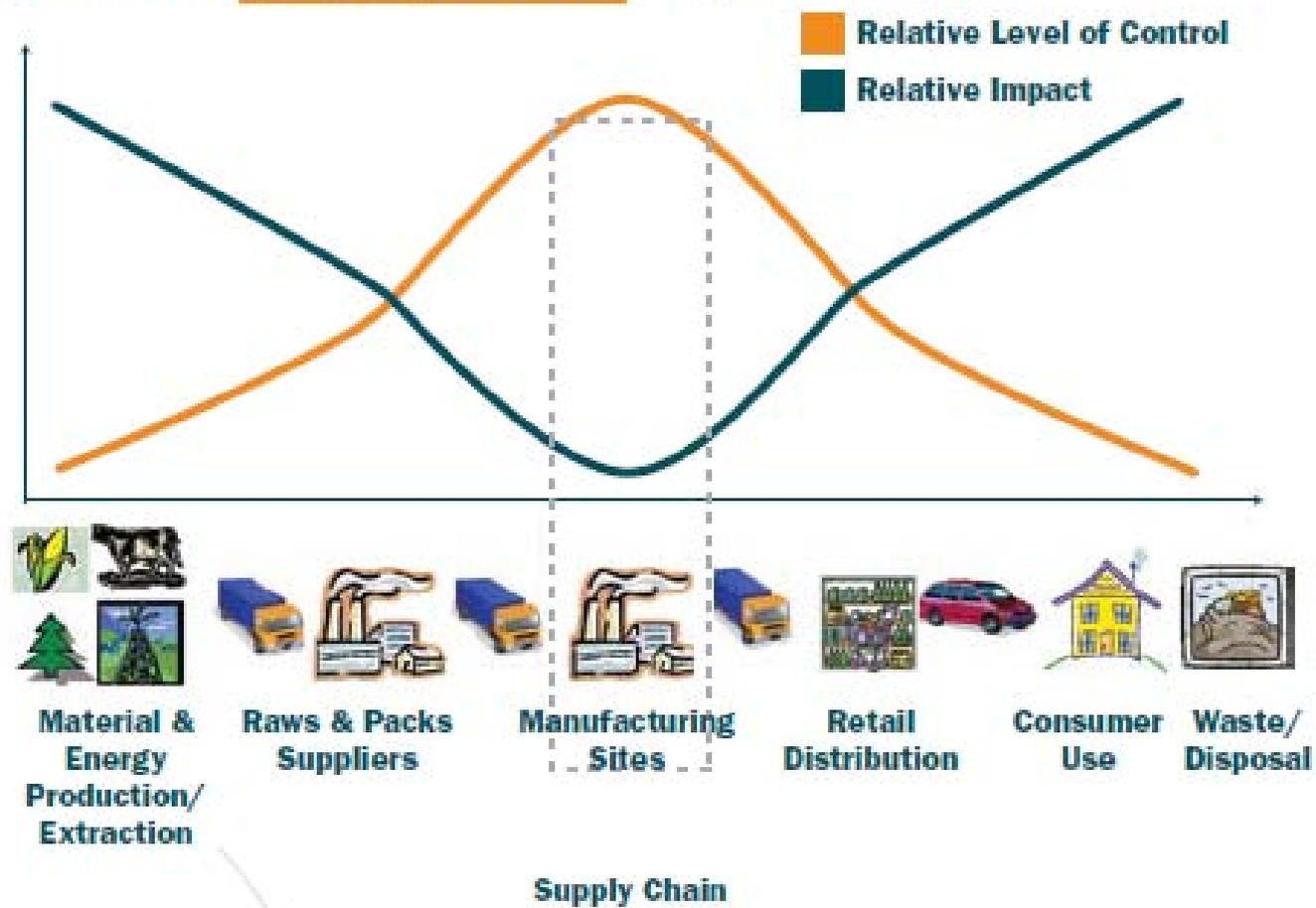
Greatest Challenges to Implementing Energy Efficiency Strategies



Source: Pew Center 2009.

Supply Chain Energy Efficiency

Qualitative **Supply Chain** Map for Mars, Inc.



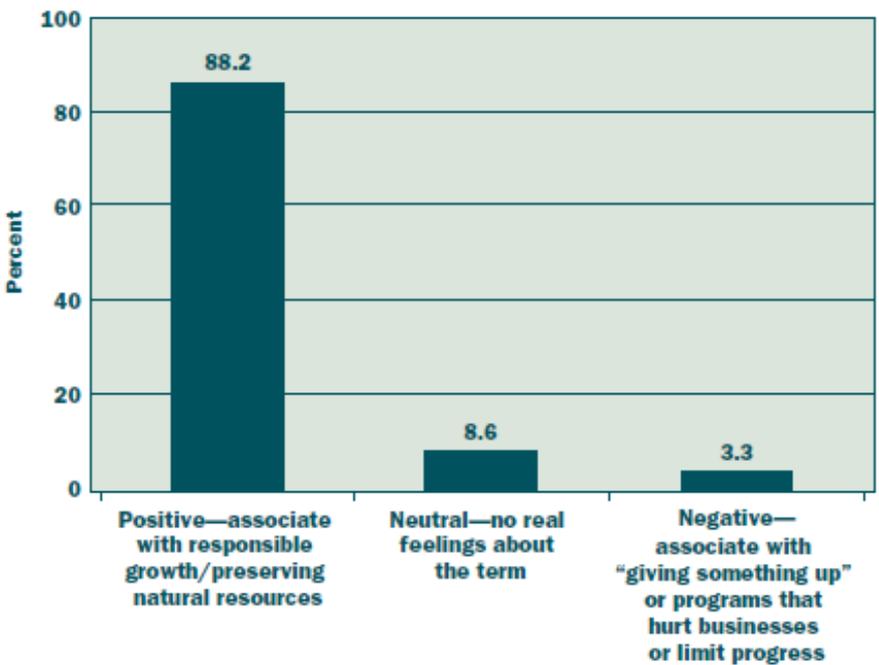
Recreated based on image provided courtesy of Mars (2008).

Products & Services Energy Efficiency



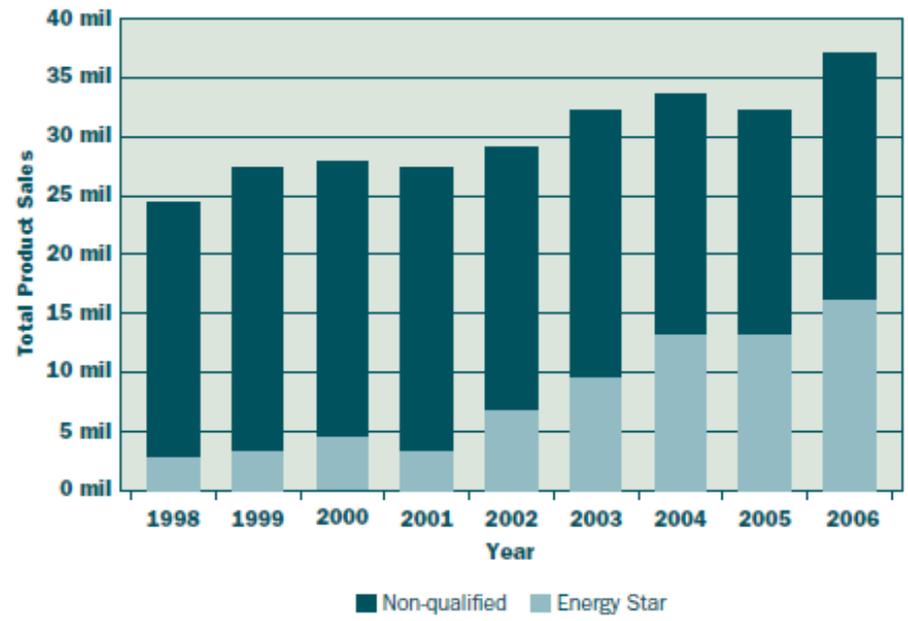
Consumers' Perception of Energy Efficiency

How do you feel about the term "efficiency," as in "energy efficiency"?



Source: Shelton Group Energy Pulse Survey

Energy Star Appliance Market Share is Growing



Recreated based on data provided by U.S. Department of Energy (2007).

- UTC: Highly decentralized company, but all business units focused on efficiency
- IBM: Parlayed internal expertise in efficient data centers into a customer offering
- Dow Chemical: Uses about the same amount of energy annually as Australia
- Toyota: One of the most efficient car companies in the world
- PepsiCo: Leading edge of companies focused on supply chain energy efficiency
- Best Buy: Focus is on marketing energy efficiency solutions to customers

The 7-Habits of Highly Efficient Companies



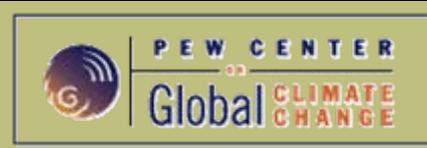
1. Efficiency is a core strategy
2. Leadership and organizational support is real and sustained
3. Company has SMART energy efficiency goals
4. Strategy relies on a robust tracking and measurement system
5. Organization puts substantial resources into energy efficiency
6. Energy efficiency strategy shows results
7. Company effectively communicates results



Habit 1: Efficiency is a Core Strategy

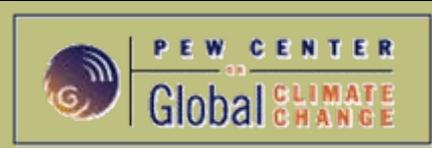
- UTC: Broader corporate commitment to eliminate all forms of waste
- Toyota: Energy efficiency tied in to kaizen philosophy of continuous improvement
- Dow: Energy efficiency is a matter of competitive survival

Habit 2: Leadership & Organizational Support is Real & Sustained



- At least one, full-time staff person is responsible for energy performance
- Corporate energy management leadership interacts with teams in all business units
- Energy performance results affect individuals' performance reviews and career advancement paths
- Employees are empowered and rewarded for energy innovation

Habit 3: Company has SMART energy efficiency goals



- PepsiCo: Big Hairy Audacious Goals— purposefully set as stretch targets
 - Targeting 20% electricity; 25% fuel; 20% water savings by 2015 against a 2006 baseline
- UTC: Moved to absolute GHG reduction goal after years of energy efficiency improvements
 - 2010 target to reduce CO₂ 12% below 2006 baseline
- Dow Chemical: Re-upped on efficiency targets after exceeding previous goal
 - New target: 25% efficiency improvement by 2015 off a 2006 baseline

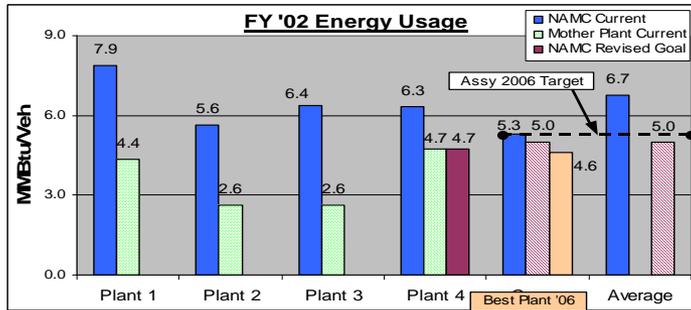
Habit 4: Strategy relies on robust tracking and measurement system

2008 Toyota Energy Action Plan

Purpose :

Become the North American Leader (#1) in energy usage per vehicle among all North American Automobile Manufacturing Facilities.

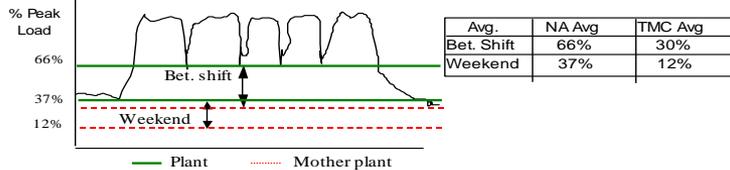
Current Situation



Energy Usage



Non-Production Time Energy Usage



Key Activities:

- 1) Focus on paint shop energy reductions
- 2) Optimize Non-production energy

Energy Metering :

All shop metering is operational and meets TMC's requirements.

Develop plan and implementation costs for measuring all utilities ED, Primer, T/C Booths, and all Ovens by the end of November 2002.

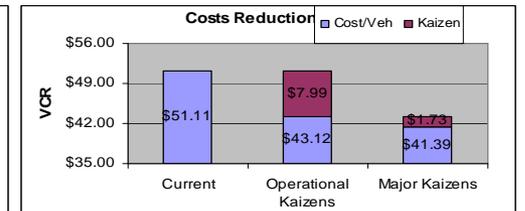
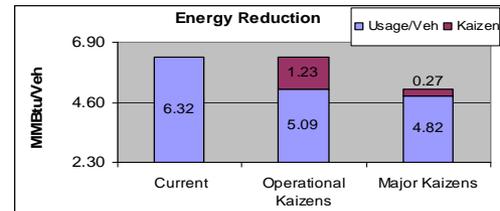
Kaizen Scenarios:

Operational Kaizens	Dept.	Energy Savings (MMBtus/Veh)	Savings (\$)/Veh	Implement. \$/Veh	Impl. Costs (\$)
A. Reduce NAMC electrical loads to TMC BS and WE stds; Tahara BS=30 WE=12, TMMI Current BS=66 WE = 37	All	0.56	\$ 3.63	\$ 0.29	\$ 50,000
B. Reduce painting booth air flow IAW NFPA 91. 10% reduction from existing 1,266,250 cfm.	T/R	0.18	\$ 1.19	\$ 0.12	\$ 20,000
C. Eliminate air flow in portions of paint booths that work is not being performed in. Reduce booth area 3% average.	T/R	0.14	\$ 0.93	\$ 0.29	\$ 50,000
D. Reduce air volume at lunch and between shifts to 50% of 1,033,000 cfm. Total of 4.7 hours day. (Gas Savings)	T/R	0.05	\$ 0.36	\$ 0.12	\$ 20,000
E. Database Kaizens not yet implemented	All	0.29	\$ 1.88	\$ 3.17	\$ 550,000
Sub-Total		1.23	7.99	3.97	690,000

- Investigate and Plan Operational kaizens by 3rd Qtr FY04

- Evaluate Major kaizen budget in 4th Qtr of FY04

Major Kaizens	Dept.	Energy Savings (MMBtus/Veh)	Savings (\$)/Veh	Implement. \$/Veh	Impl. Costs (\$)
1. Steam Generation through Incinerator Waste Heat Recovery: 6 klb/hour 60 psi steam	T	0.22	\$ 1.42	\$ 5.76	\$ 1,000,000
2. EnergySaver panels: 2,000 HIDs, 24 x 365 and 100T baseload cooling 8 months year	ALL	0.03	\$ 0.17	\$ 6.33	\$ 1,100,000
2. Add De-Superheater: Recover heat from ACU for pre-heating boiler water make-up water.	F/C	0.02	\$ 0.14	\$ 0.58	\$ 100,000
Sub-Total		0.27	1.73	12.66	\$ 2,200,000
Project Payback =	1.71	Total	1.50	9.72	\$ 16.63



Yearly Energy Targets

Plant	FY 01	FY 02 (Base Year)	FY 03	FY 04	FY 05	FY 06	Total
Current Plan			3%	3%	3%	3%	12%
Additional Plan			0%	3%	5%	5%	13%
New Annual Reduction Targets			3%	6%	8%	8%	25%
Actual Target (MMBtu/Veh)	8.12	6.32	6.130	5.750	5.245	4.739	1.58

1.58 - Total Reduction required to achieve target (FY02 - FY06)

Habit 5: Organization puts substantial resources into efficiency



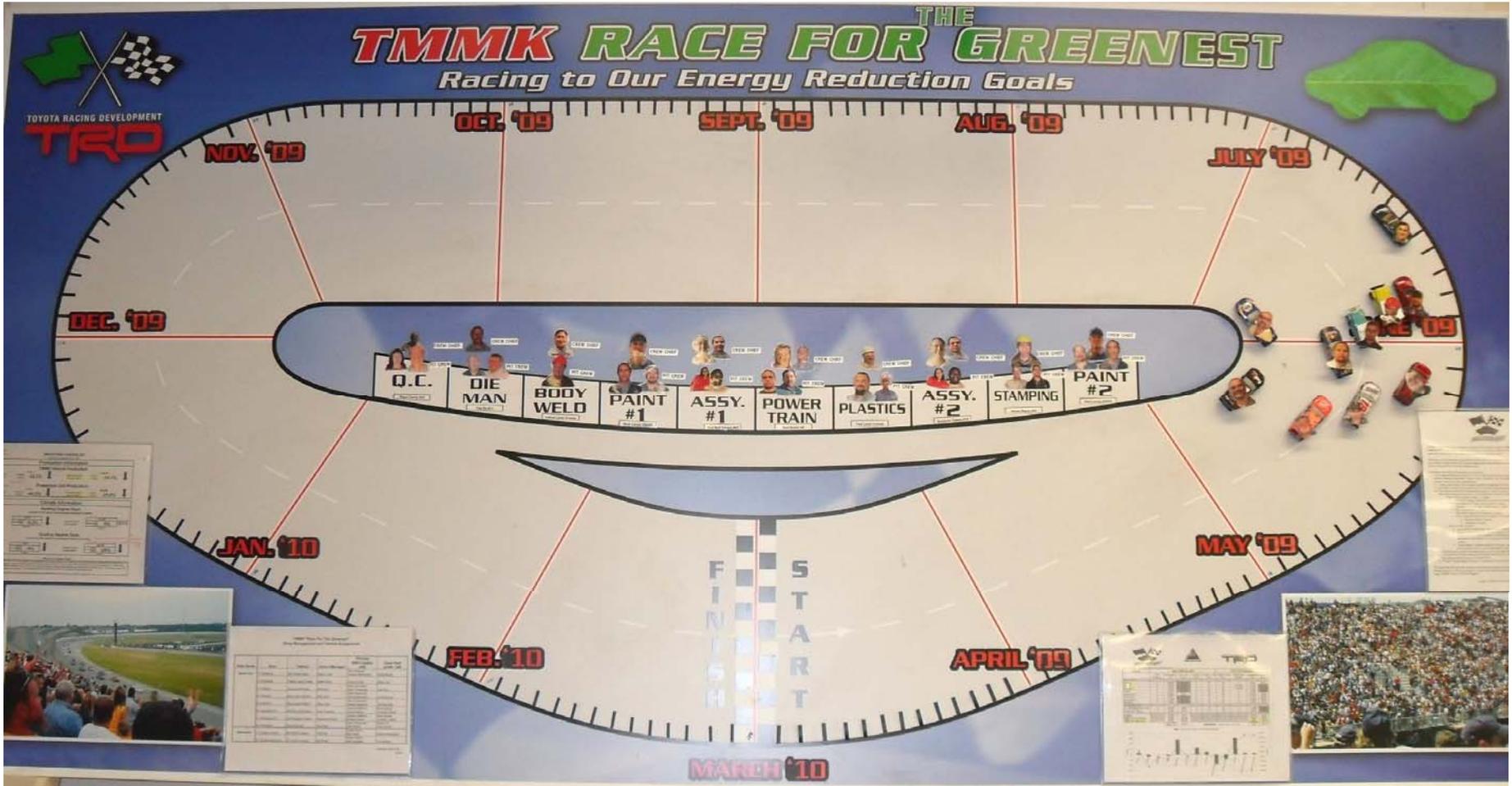
- PepsiCo: 2% of company's capital budget goes to a Sustainable Investment Fund
 - Creates dedicated source of funding for environmental projects
- UTC: Set a goal of investing \$100 million in energy conservation projects by 2010.
 - So far \$96 million worth of projects have been funded.
- IBM, and others, consider co-benefits to energy efficiency investments
 - Co-benefits include increased productivity, improved worker morale, and broader innovation value

Habit 6: Energy efficiency strategy shows results



- Dow: Estimates its energy efficiency strategy has led to \$8.6 billion in cost savings and 86 million tons of avoided CO₂ emissions.
- PepsiCo: Saved \$100 million and prevented the release of 170,000 tons of CO₂ from 2006-2008
- DuPont: Estimates its efficiency initiatives saved the company approximately \$2 billion between 1990 and 2000
- Best Buy: Estimates that sales of ENERGY STAR products in 2008 saved consumers about \$90 million in electricity savings

Habit 7: Company Effectively Communicates Results



Corporate Efficiency Web Portal



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Business Environmental Leadership Council

Learn more about the 45 companies that lead the way in addressing climate change.

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- [News](#)
- [Calendar](#)
- [External Resources](#)
- [Workshops](#)

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- [Buildings](#)
- [Internal Operations](#)
- [Products & Services](#)
- [Supply Chain](#)
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BROWSE BELC MEMBERS

Company

Initiative

Industry

The Corporate Energy Efficiency Project was launched by the Pew Center on Global Climate Change with generous funding from Toyota.

The project is a multi-year research and communications effort to identify and highlight the most effective methods used by companies to reduce their energy consumption and lower their related greenhouse gas emissions. [Read More >](#)

WHAT'S NEW



From Shop Floor to Top Floor: Best Business Practices in Energy Efficiency

The Pew Center on Global Climate Change invites you to join us on April 6-7, 2010 in Chicago for a major

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BELC Member Search

Learn more about what our 45 Business Environmental Leadership Council member companies are doing on energy efficiency. You can click on a company name to see what an individual company is doing, or you can use the database and sort for different categories – just select the category you're interested in and hit the "Apply" button. Hold down the Ctrl key when clicking to select more than one option in the list (or to unselect options).

Filter List by:

Company ABB AEP Air Products Alcoa Alstom Bank of America BASF Baxter Boeing BP CalPortland Cement CH2M HILL	Initiative Buildings Internal Operations Products & Services Supply Chain Cross-Cutting Success Stories	Industry Cement Chemicals Consumer Goods Electric Utilities Engineering
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- Energy Efficiency Home
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- News
- Calendar
- External Resources
- Workshops

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- Products & Services
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BROWSE BELC MEMBERS

Company

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Bank of America Summary

- ▲ Buildings
- ▲ Internal Operations
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Conference and Report Launch



Are you looking for ways to **reduce** your company's **energy** consumption, **lower** greenhouse gas **emissions** and **save** money?

The Pew Center on Global Climate Change presents:

**From Shop Floor to Top Floor:
Best Business Practices in
Energy Efficiency Conference
and Report Launch**

April 6-7, 2010 • Chicago, IL

A conference on corporate energy efficiency and release of in-depth research report. Learn from business community peers about the most effective management approaches to reduce energy use across four categories: internal operations; supply chains; products and services; and cross-cutting issues.

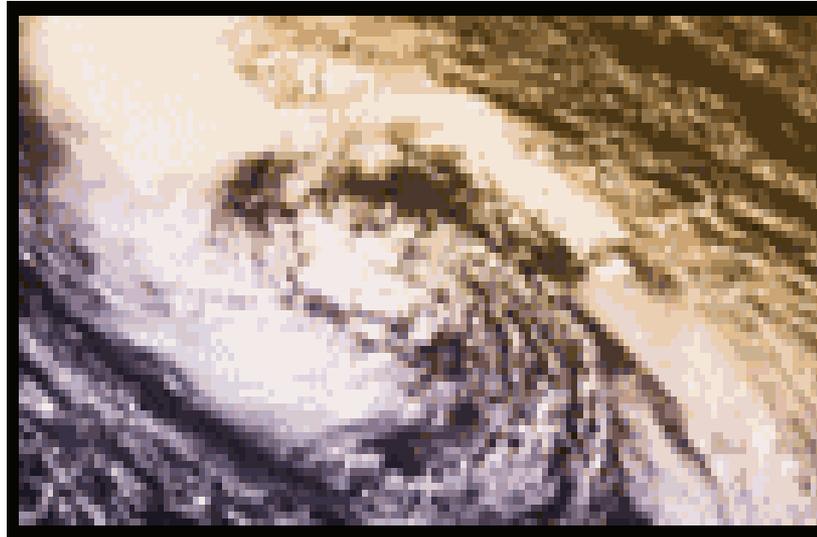
Don't miss this opportunity to learn from the experts.
Register now at:
www.pewclimate.org/energy-efficiency/conference

Underwritten by the generous support of

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- Topics: Future of corporate energy efficiency; financial barriers; employee engagement; supply chain; engaging consumers; federal policy
- Speakers include: Eileen Claussen, Pew Center; John Rowe, Exelon; Kathleen Hogan, DOE; Kateri Callahan, ASE; Sen. John Warner (retired); Jay Golden, ASU
- Companies represented: IBM, PepsiCo, Best Buy, UTC, Dow, Toyota, DuPont, HP, Dell, Mars, Whirlpool, Boeing, News Corp., Alcoa, Wal-Mart, Coca-Cola, Target, and others

www.pewclimate.org/energy-efficiency



Andre de Fontaine
Markets & Business Strategy Fellow
Pew Center on Global Climate Change
703-516-4146
deFontaineA@pewclimate.org