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

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DOE ITP Webinar
April 1, 2010

Introduction to Pew Center

- 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

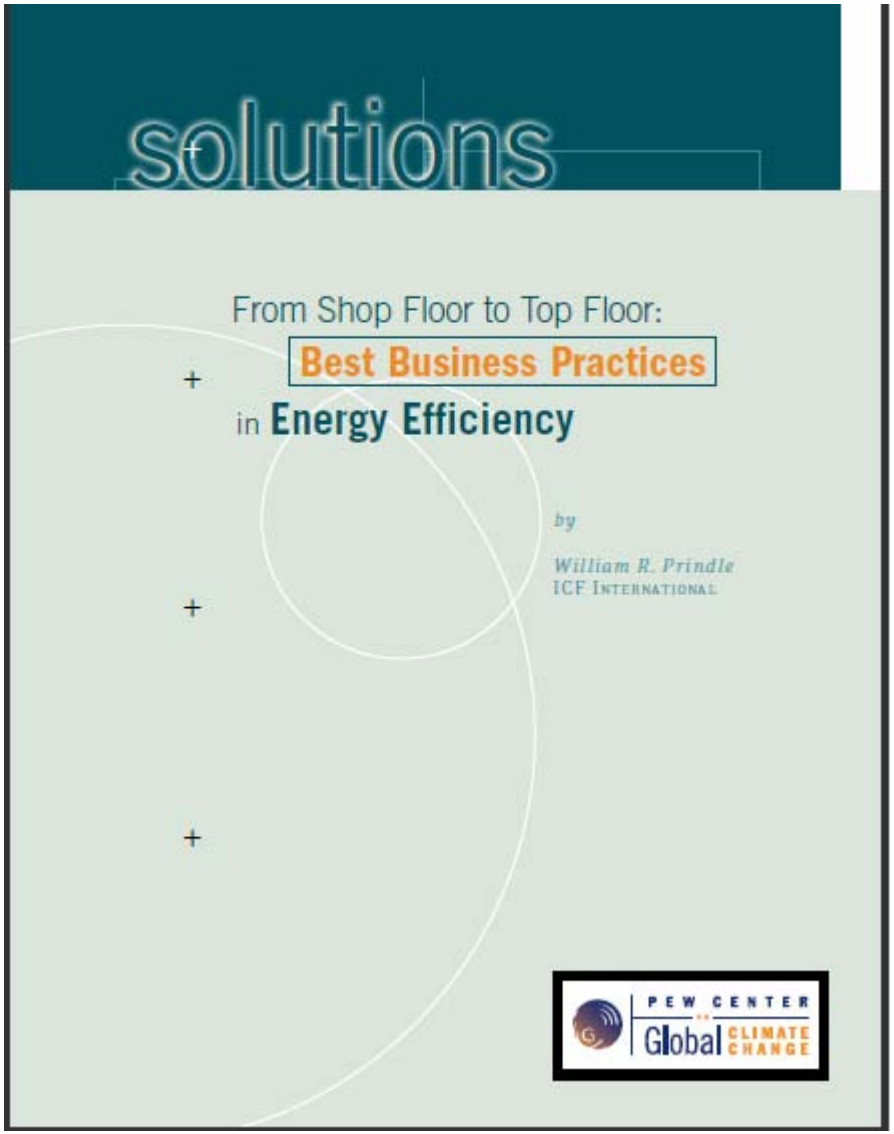
Efficiency Project Overview

- 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

Report Background

- 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.

Report Overview



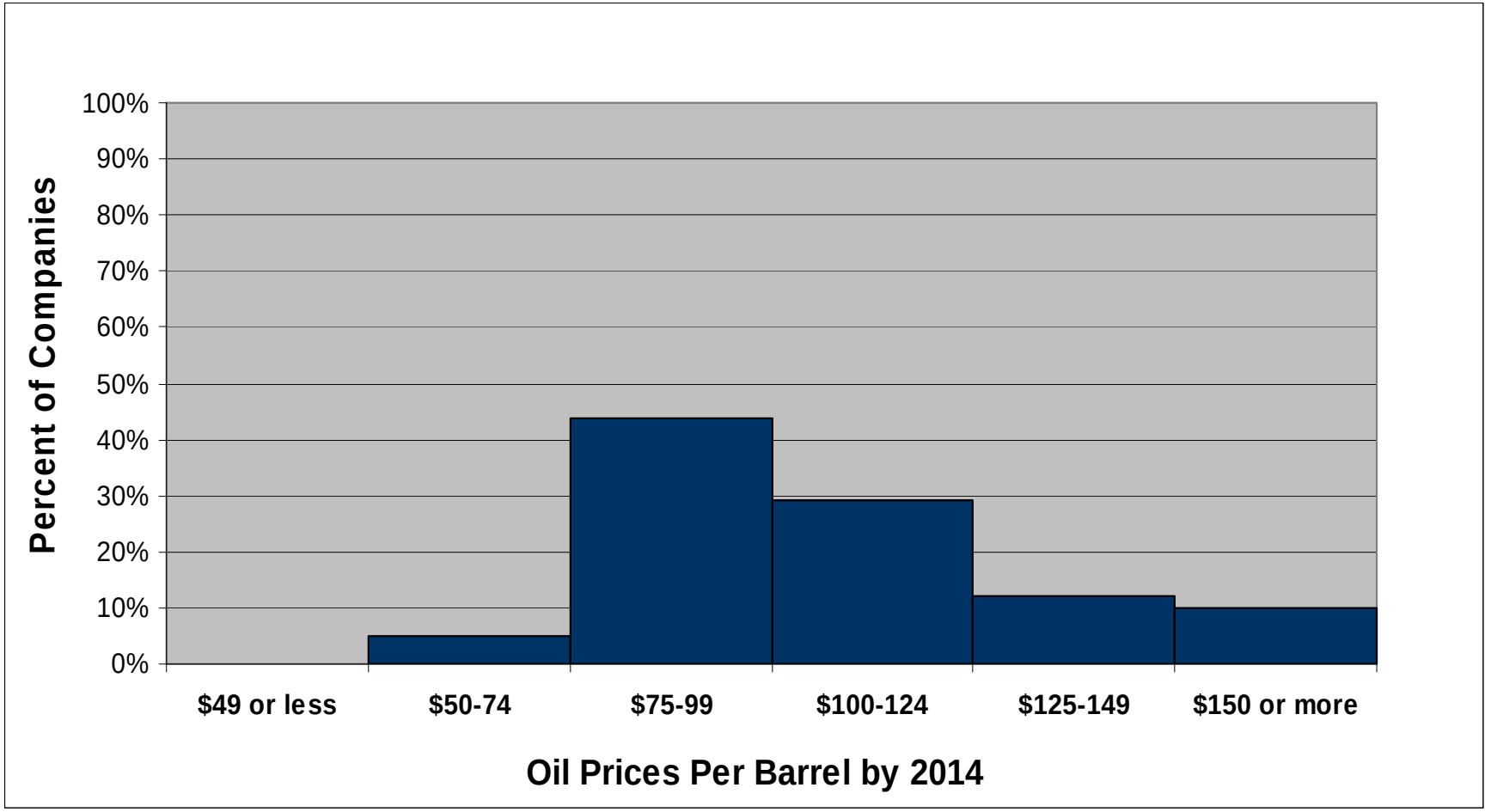
I. The Business Case for Energy Efficiency
II. Pew Center Survey Results
III. The 7-Habits of Highly Efficient Companies
IV. Best Practices
    a) Internal Operations
    b) Supply Chains
    c) Products & Services
V. Case Studies

Survey Background

- 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)

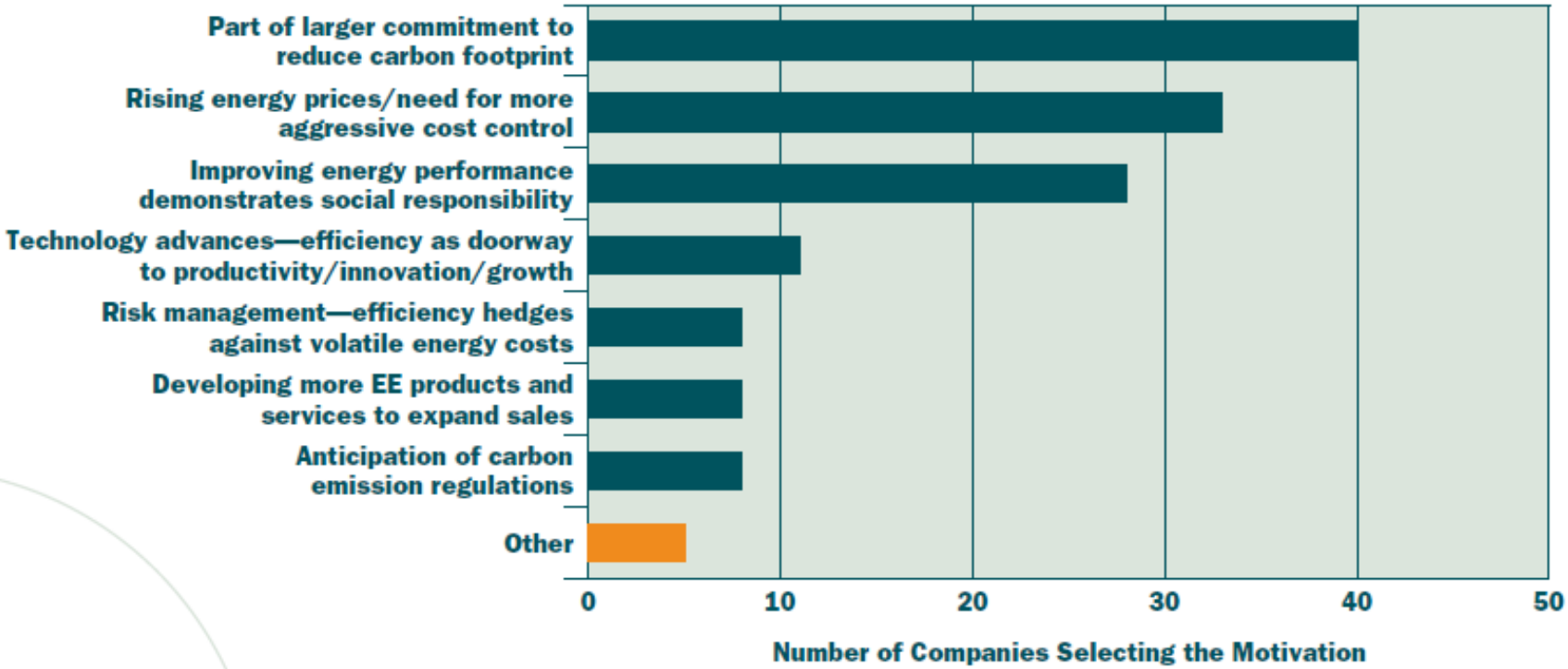


U.S. Climate Legislation Expectations

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

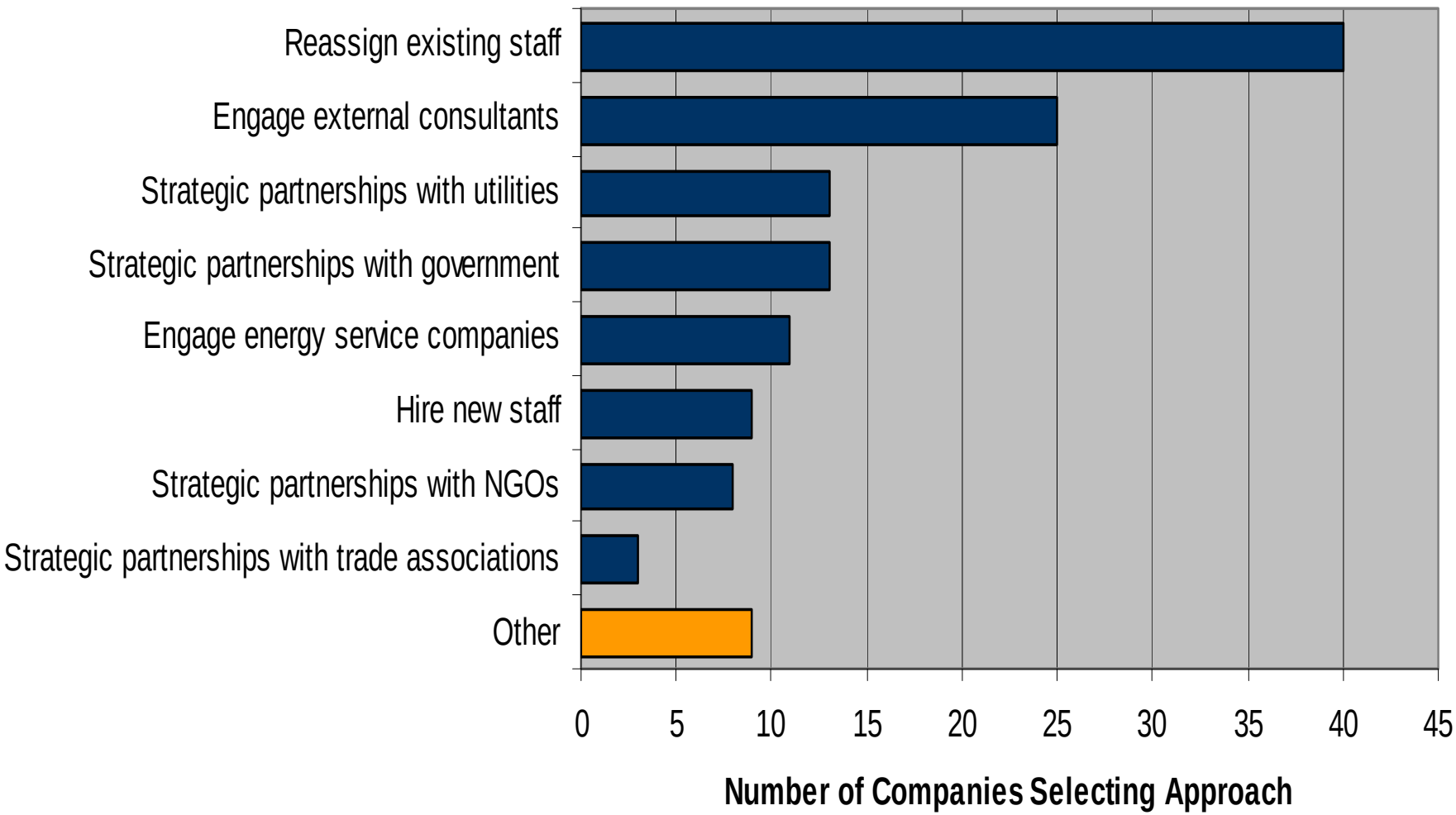
Motivations for EE Strategies

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



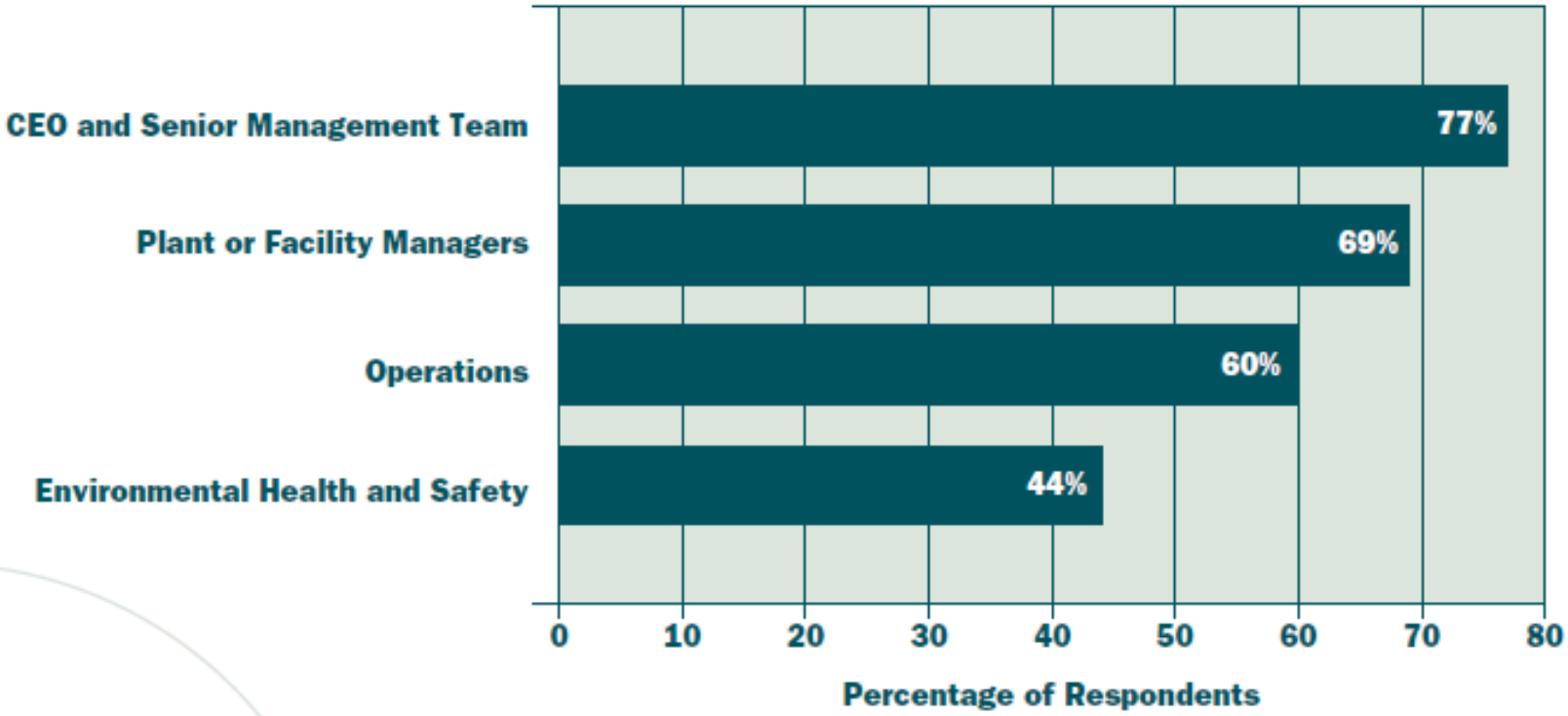
Source: Pew Center 2009.

Meeting EE Strategy Resource Needs



Where are the EE Champions?

Key Champions of Energy Efficiency Strategies



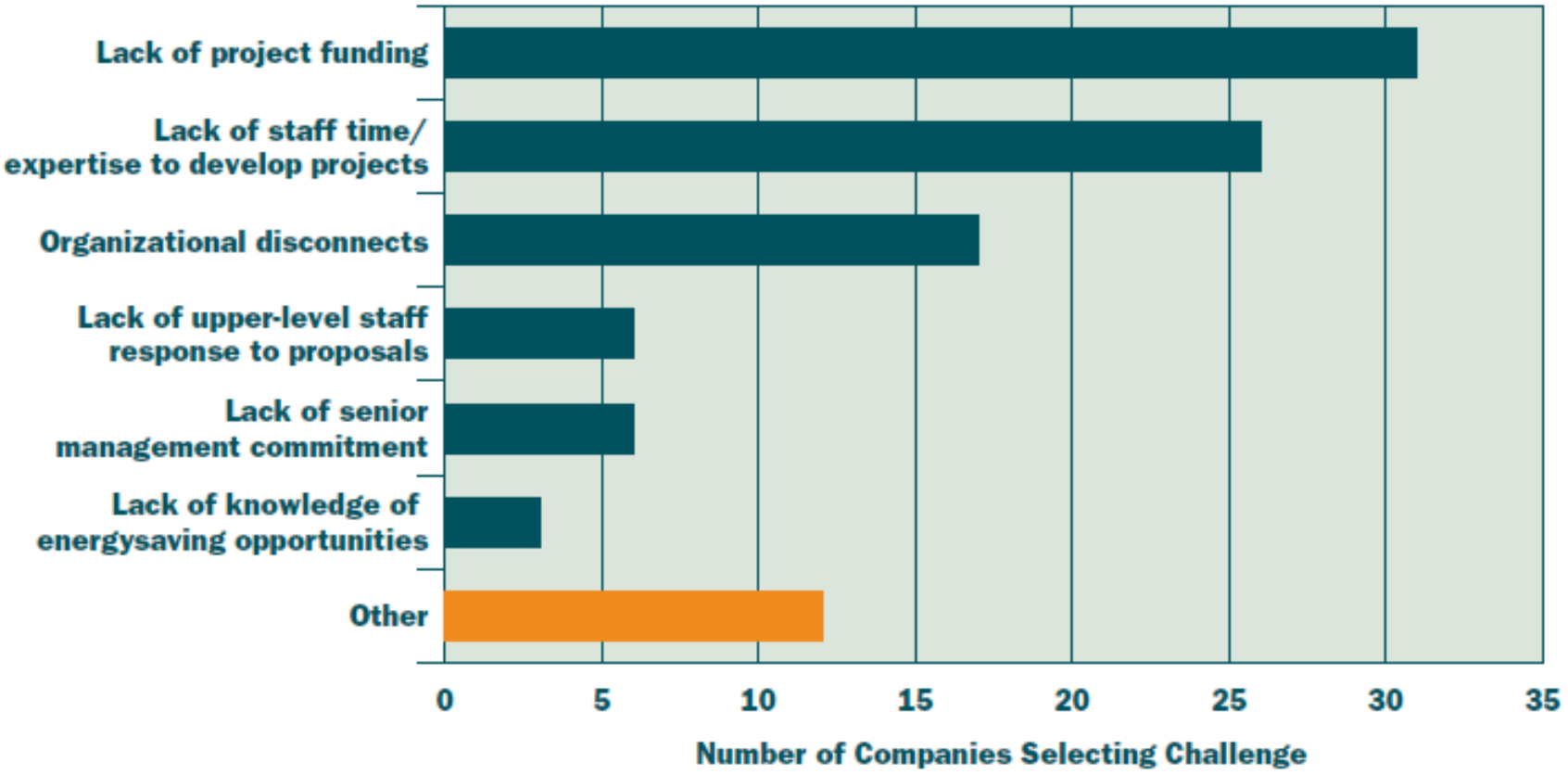
Source: Pew Center 2009.

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%

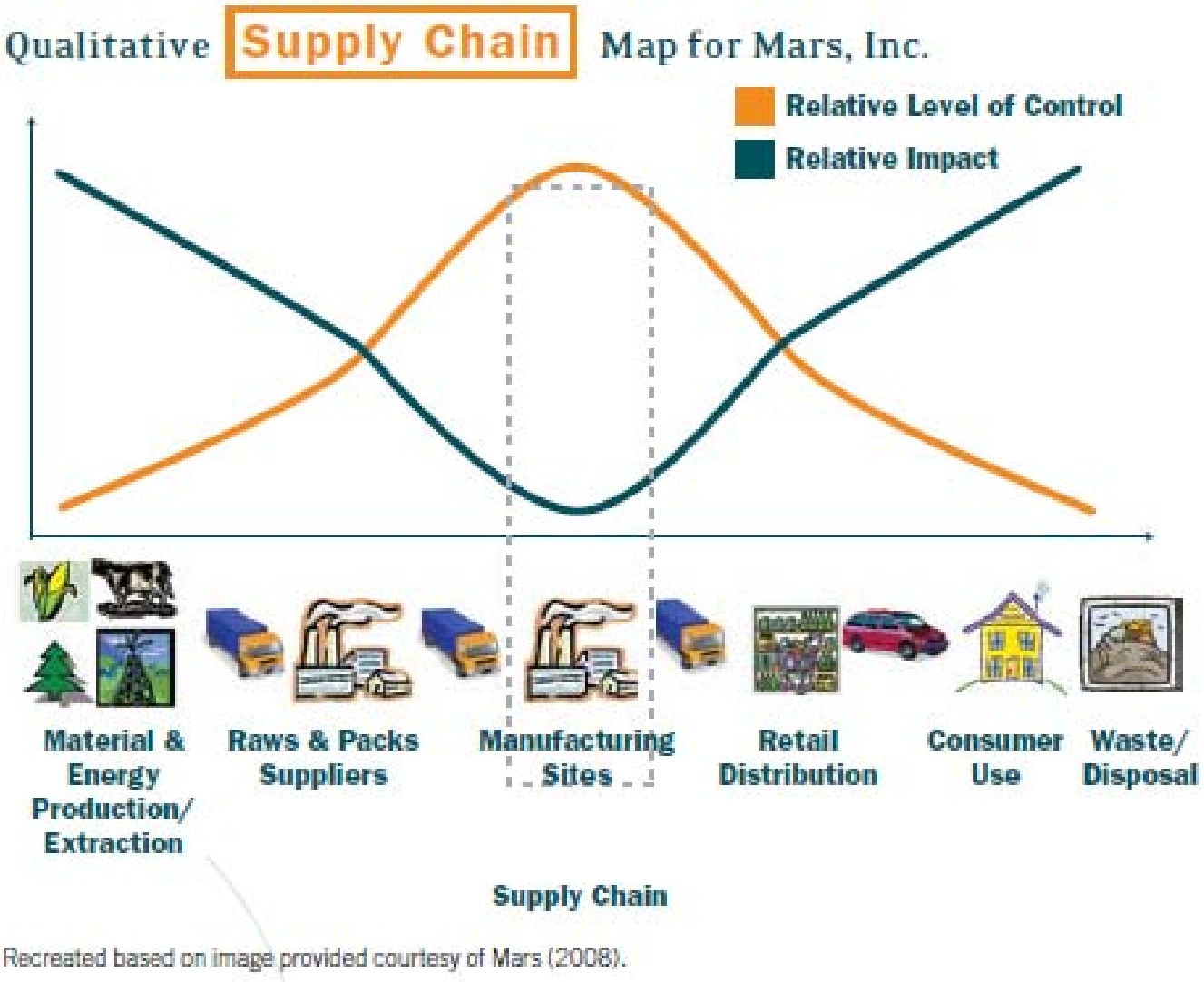
Challenges/Barriers to EE in Internal Operations

Greatest Challenges to Implementing Energy Efficiency Strategies



Source: Pew Center 2009.

Supply Chain Energy Efficiency

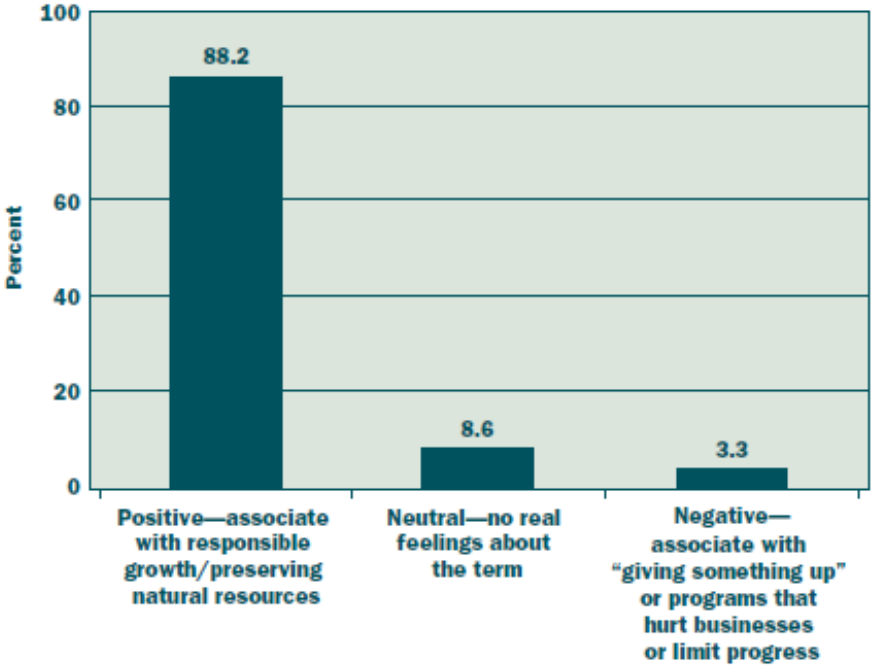


Recreated based on image provided courtesy of Mars (2008).

Products & Services Energy Efficiency

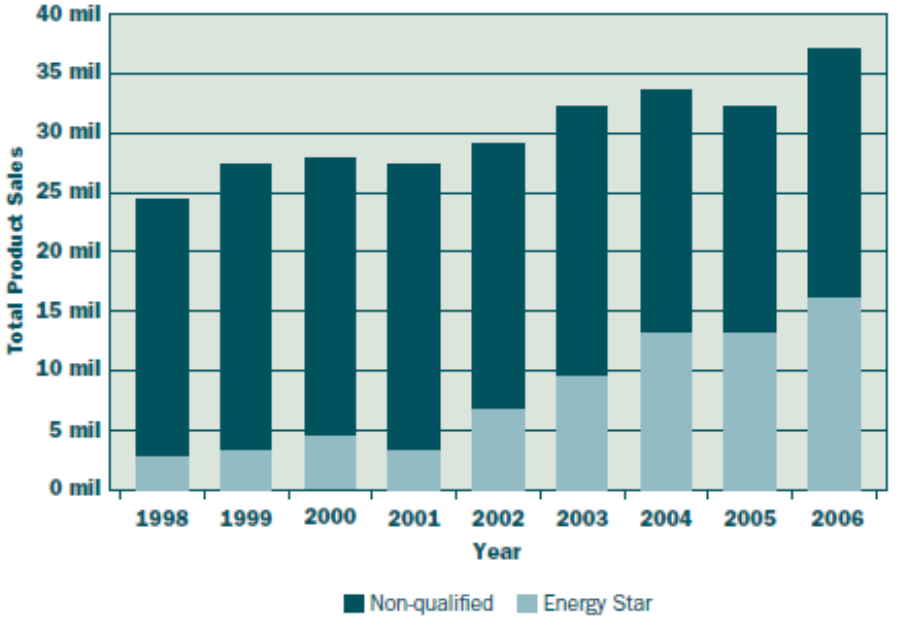
Consumers' Perception of Energy Efficiency

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).

Case Studies

- 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 CO_2 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

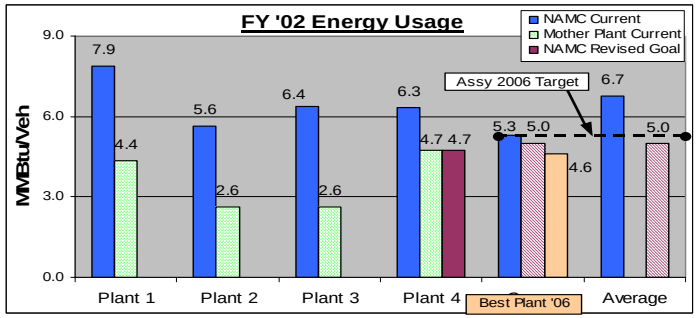
PEW CENTER on Global CLIMATE CHANGE

2008 Toyota Energy Action Plan

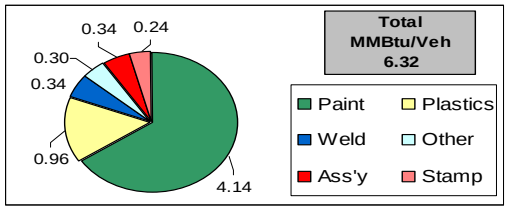
Purpose :

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

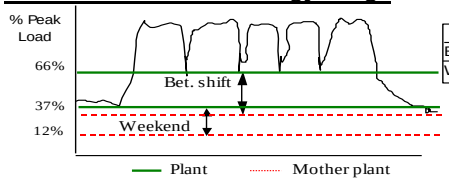
Current Situation



Energy Usage



Non-Production Time Energy Usage



Avg.	NA Avg	TMC Avg
Bet. Shift	66%	30%
Weekend	37%	12%

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.

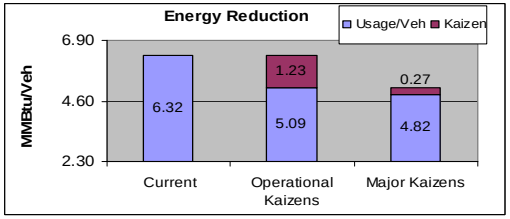
Develop plan and implementation costs for measuring all utilities ED, Primer, T/C Booths, and all Ovens by the end of November 2002.

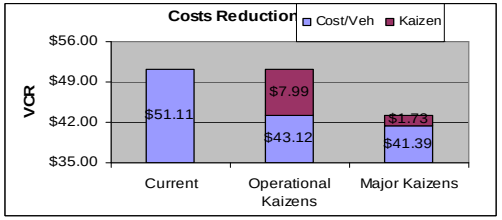
Kaizen Scenarios:

TMMI $/MMBTU = $ 6.49 (US) 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					
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	$2,890,000





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

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

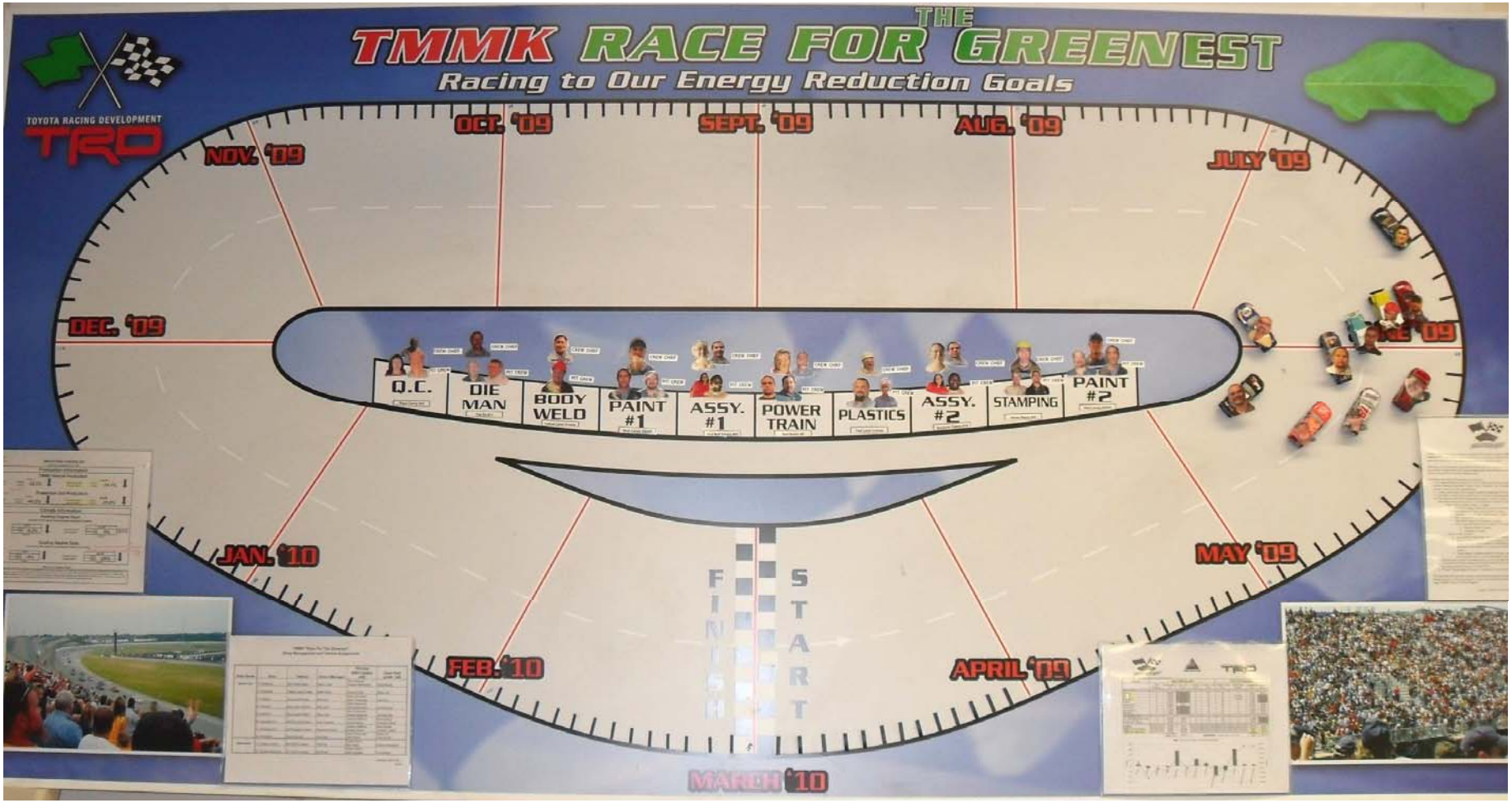
Habit 5: Organization puts substantial resources into efficiency

- 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

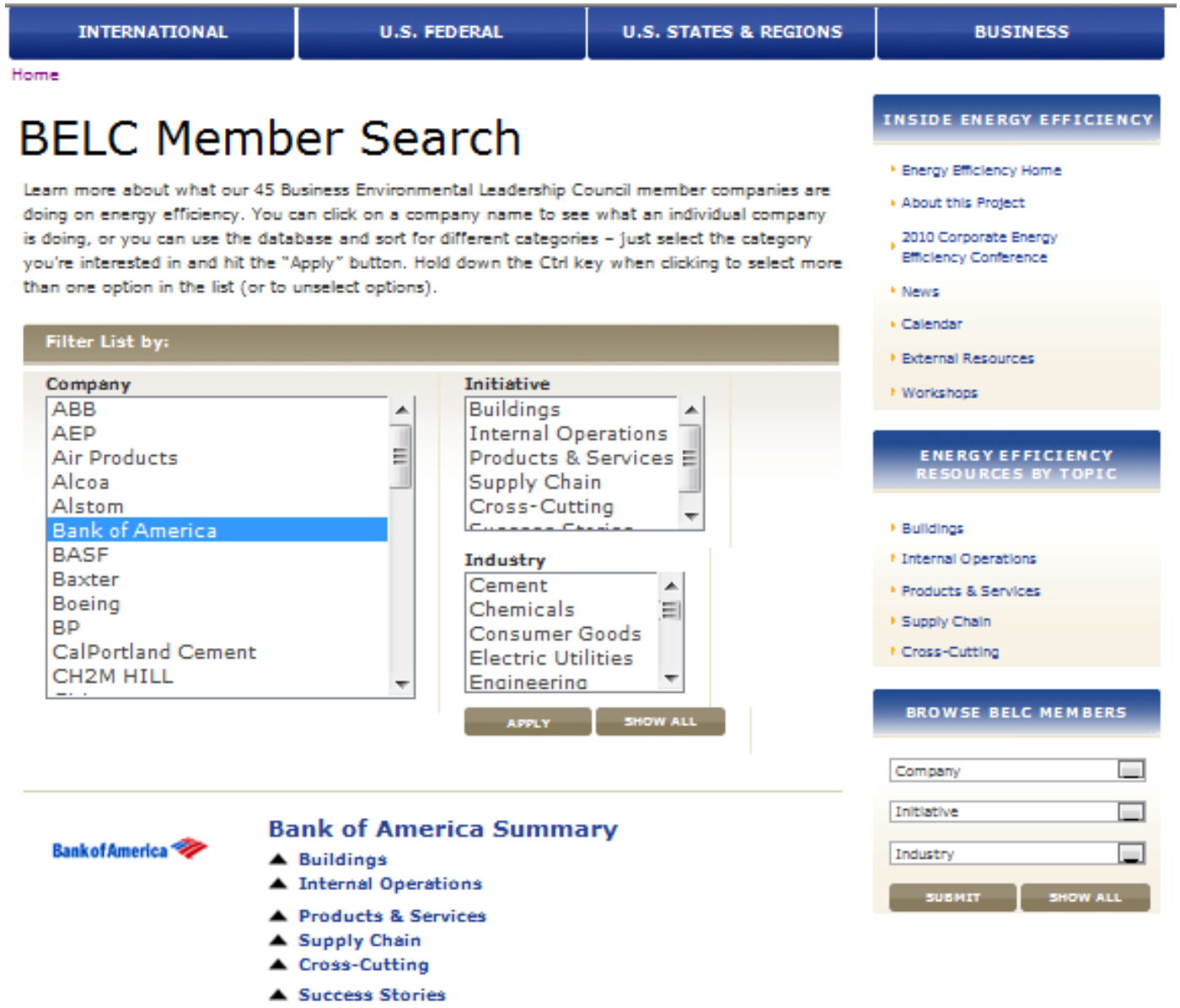
- Dow: Estimates its energy efficiency strategy has led to $8.6 billion in cost savings and 86 million tons of avoided CO2 emissions.
- PepsiCo: Saved $100 million and prevented the release of 170,000 tons of CO_2 from 2006-2008
- DuPont: Estimates its efficiency initiatives saved the company approximately $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

BELC Efficiency Database



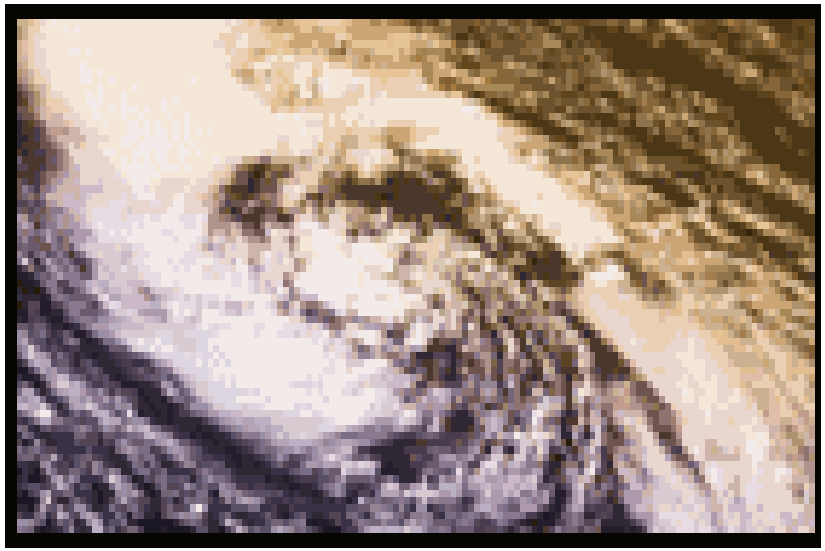
Conference and Report Launch

Conference Program

- 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

For More Information

www.pewclimate.org/energy-efficiency



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