



U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



**Changing behavior to drive  
greater energy efficiency:**

**Lessons from 2 US programs**

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US Department of Energy  
March 11, 2015

## Today

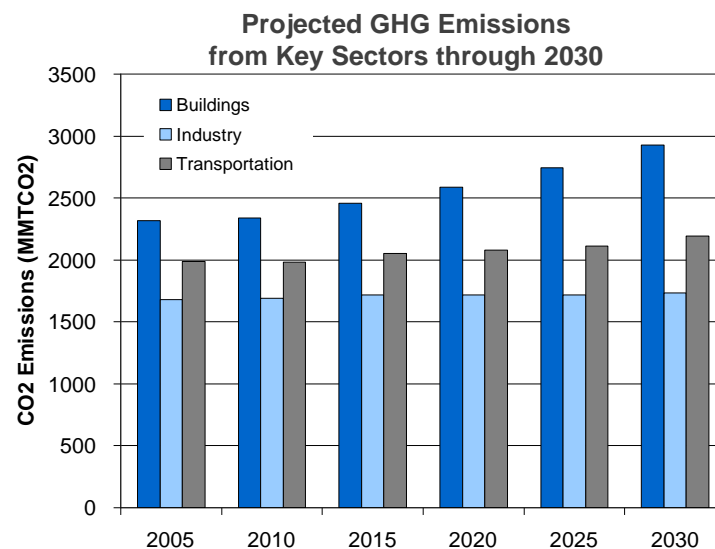
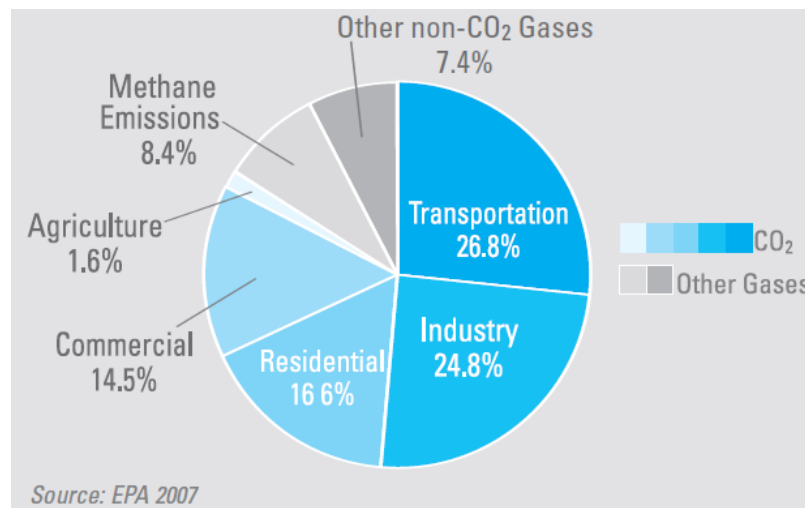
- Introduction
- ENERGY STAR and Better Buildings
  - Program overviews and goals
  - Reaching consumers and businesses to reduce greenhouse gas emissions
  - Success in changing behavior
  - Lessons learned/ongoing learning
- Next steps and challenges



# ENERGY STAR



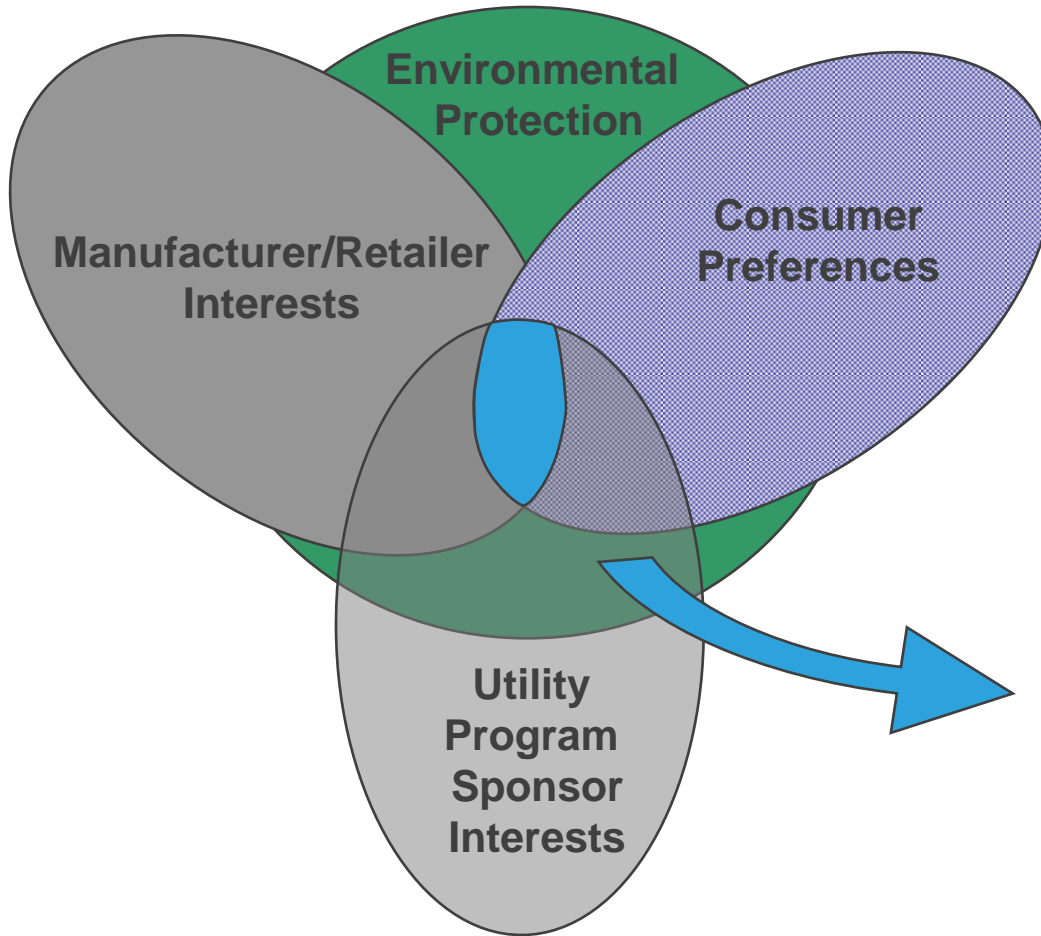
- Started in 1992, voluntary
- GOAL: Reduce greenhouse gas (GHG) emissions through large win-win-win opportunities with today's energy efficient technologies and practices.
- Achieve 30% savings possible in many buildings, homes, and facilities
- Provide credible information to buyers
- Work with the marketplace to capitalize on motivations of individual actors



Source: AEO 2008

# Builds Upon Intersection of Interests

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- Cost-effective
- No Sacrifice in Performance
- Govt backed

Consumer is  
Key

# ENERGY STAR



## Residential

### Labeled Products

- 60+ products / 2000+ manufacturers
- 10-60% more efficient

### Labeled New Homes

- 20-30% more efficient

### Home Improvement Services

- beyond products
- ducts / home sealing
- whole home retrofits

## Commercial / Industrial

- Corporate energy management
- Benchmarking, goals, upgrades (mgmt & systems; not widgets)
- whole building labeling for excellence

### Labeled Products

- for plug load, not system components

### Industrial

### Small business initiative

**International partnerships – Canada, EU, Japan, etc**

**ENERGY STAR means:**

**Protects the environment through superior energy efficiency**

**No tradeoffs in performance or quality**

**Cost effective**

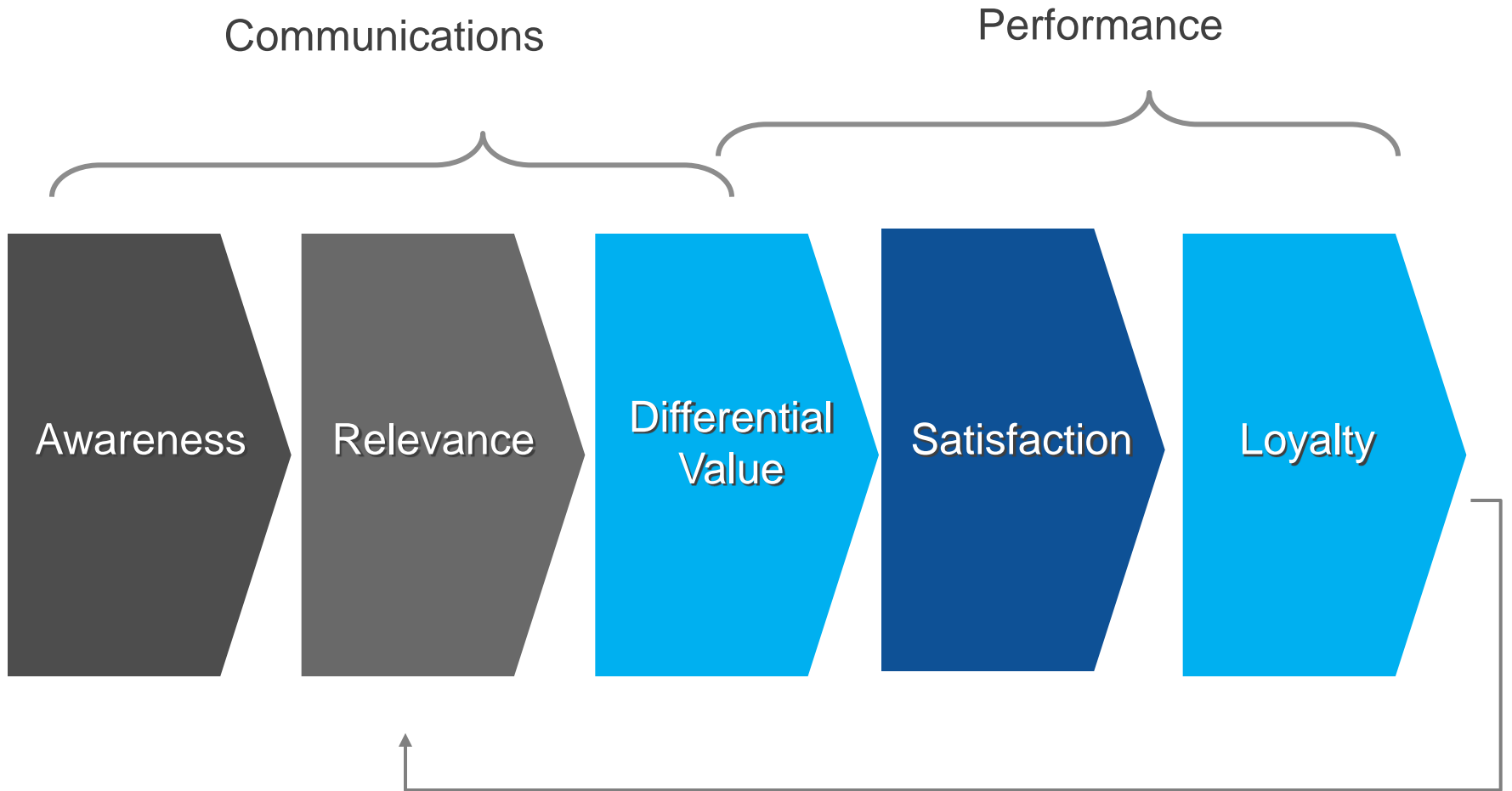
- Began as a source of information; evolved to be a brand
- Source of authority:
  - government backed
  - provides valuable, unbiased information
  - trusted, easy to understand (binary)

A few keys to success:

- Deliver on brand promise
- Appeal to head and heart
- Partner with thousands of organizations
- Structure program/outreach to change behavior

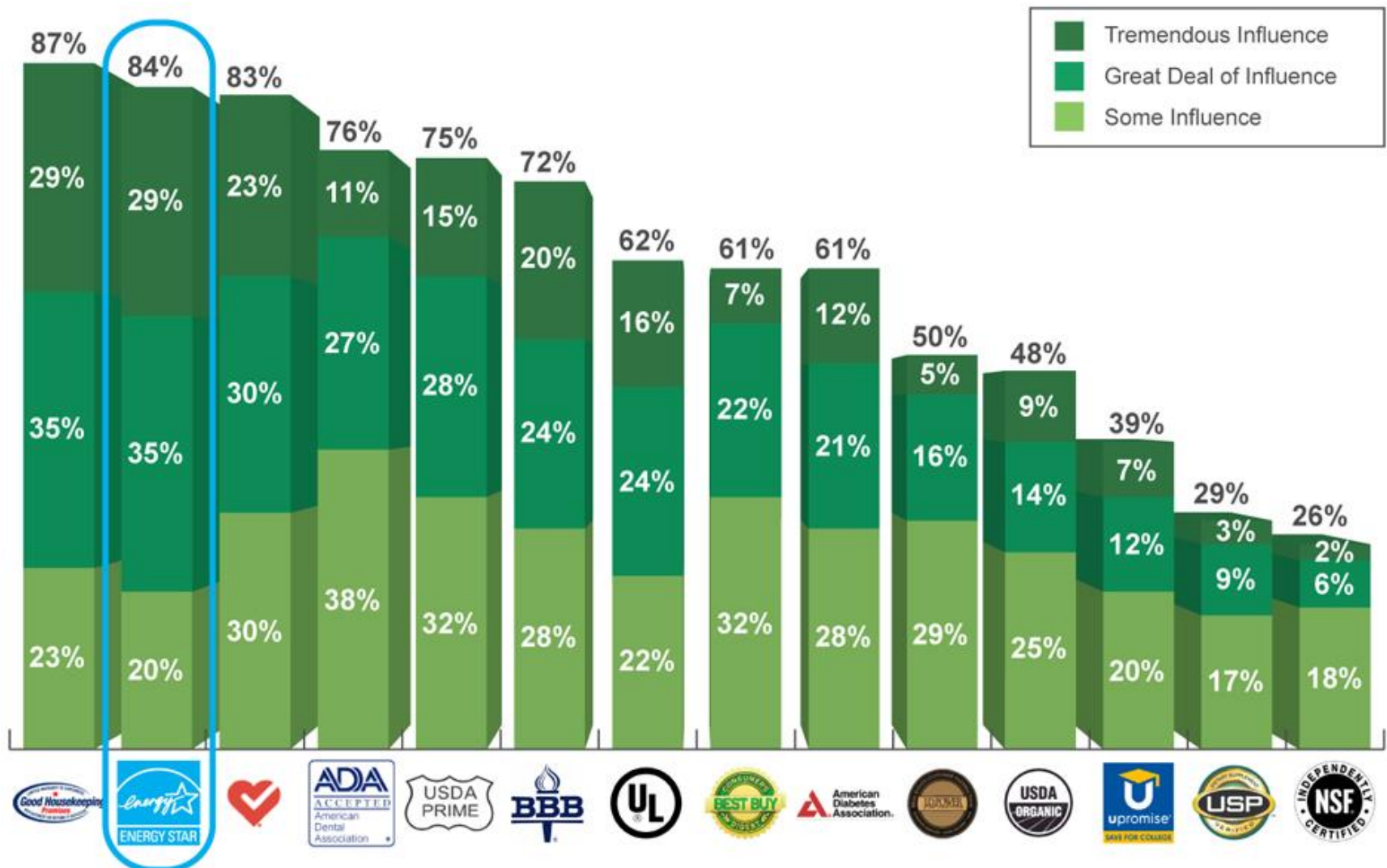
# Loyalty is the goal

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# Brand Influences Product Purchases



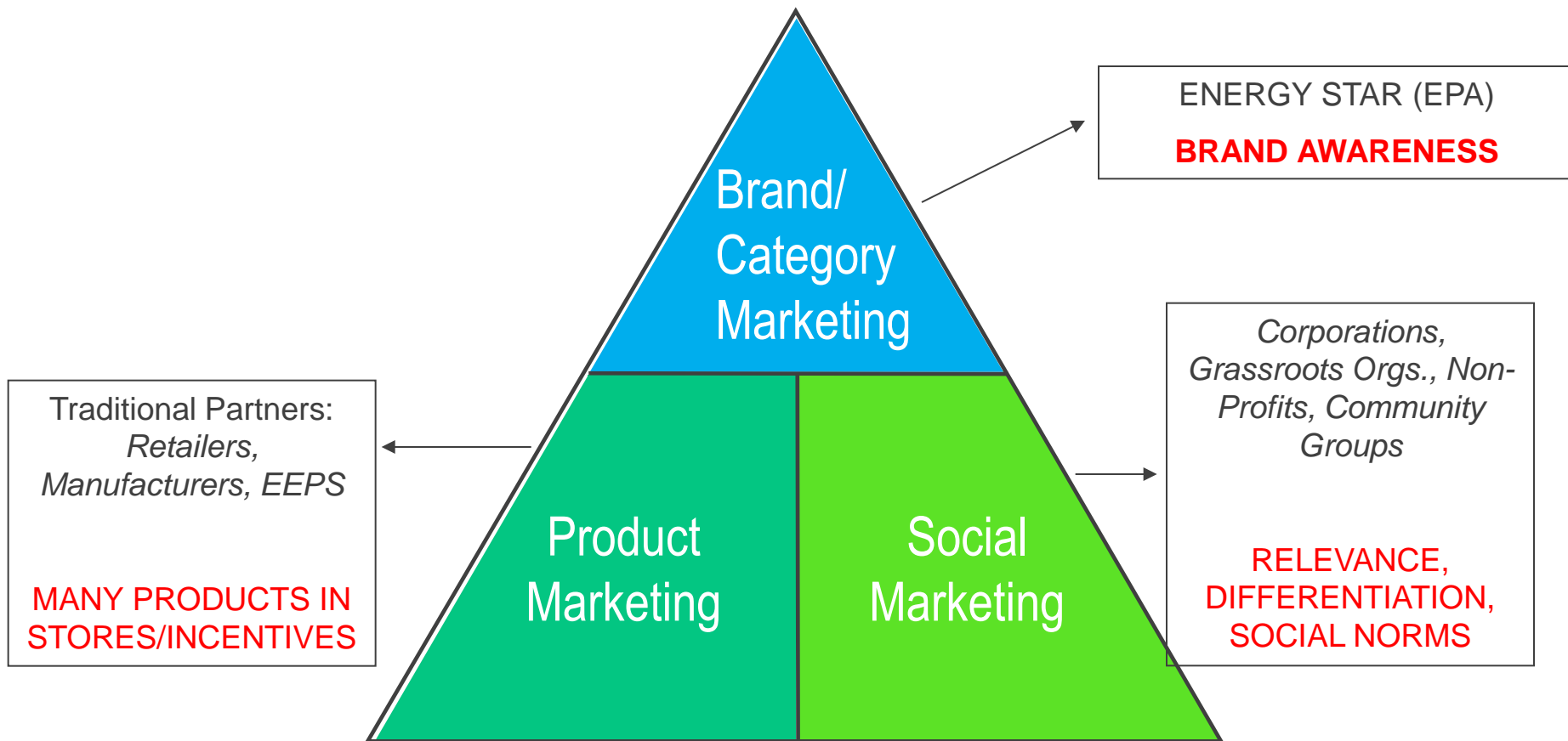


# Behavior vs. preference change

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- **Change preference – *easier***
  - Changing brands – traditional marketing is effective
  - So, while you're *already* shopping, look for the ENERGY STAR
- **Change behavior** – not already doing a parallel behavior
  - Use less water
  - Get a home energy audit
  - Seal up gaps and cracks, add insulation
  - Programmable thermostat proper usage
  - Peak energy use
  - HVAC maintenance

# Driving behavior change as part of outreach



# Coordinated Outreach Across Program Partners and Key Product Categories



- Educate Consumer
  - Second price tag (life cycle costs)
  - Environmental choice
  - Tools/advice/unbiased information
  - Information at transaction points
  - Speak to head and heart
- Broad
  - PSA – profiles of real people
  - ENERGY STAR Home Energy Advisor
  - Change the World, Start with ENERGY STAR
- Specific campaigns
  - HVAC-- Summer campaign, DIY Home sealing, Properly used thermostat
  - Office equipment
  - Consumer electronics

## Multiple Goals

**Build Awareness**

**Provide value of program partners**

**Promote action**

**Promote growth in product sales**

# Engaging People of All Ages

NAME: PepsiCo Green Team

FOUGHTING GLOBAL WARMING BY: Empowering employees to help make their facilities and manufacturing processes more energy efficient.

SAVED SINCE 1998: \$179 million | 20 trillion Btu | 3 billion lbs. CO<sub>2</sub>

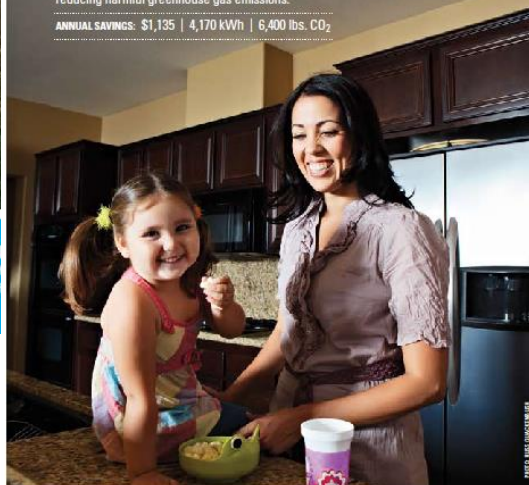
NEXT PROJECT: Winning the softball championship



## Join the Atilano Family and EPA in the Fight Against Global Warming.

Lourdes and her family are choosing ENERGY STAR® qualified products for their home including appliances, lighting, and cooling equipment as simple ways to save energy, save money, and help protect the environment by reducing harmful greenhouse gas emissions.

ANNUAL SAVINGS: \$1,135 | 4,170 kWh | 6,400 lbs. CO<sub>2</sub>



We can all do our part in helping to protect the environment by choosing products, homes, and buildings in our community that have earned the government's ENERGY STAR. Learn more at [energystar.gov](http://energystar.gov).

## Join Leona and Will in the Fight Against Global Warming.

They've joined over one million American families across the country living in ENERGY STAR® qualified homes.

COLLECTIVE SAVINGS TO DATE: \$1.24 billion | 22 billion lbs. CO<sub>2</sub>



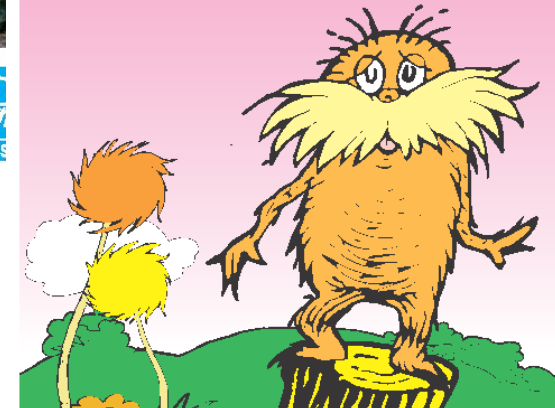
ENERGY STAR meets strict guidelines for energy efficiency, lower utility bills, and reduce the greenhouse gas warming. Learn more at [energystar.gov](http://energystar.gov).



To save the earth, the **LORAX** shows you that **kids** can help and it's easy to do.

Turn off **lights**, **TVs**, and **things you won't use**. Save **energy** with your computer - set it to **shooze**.

Get your **friends** and your **family** to all do their part. Just look for the **ENERGY STAR** - the best way to start. Let's show **greedy Once-lers** what is right. **Against global warming**, join **EPA** in the fight!



JOIN THE LORAX AND EPA IN THE FIGHT AGAINST GLOBAL WARMING.

We can all do our part by making easy changes in our homes, at school, and at work. Learn more at [energystar.gov](http://energystar.gov).



© 2007 EPA and the U.S. Green Building Council, U.S. Green Building Council

# ENERGY STAR label on products, in stores, in ads





# LOWE'S

Home Improvement Warehouse

Improving Home Improvement™

## Grab the remote and chill out!

EVERYDAY  
**LOW  
PRICES**  
GUARANTEED!

If you happen  
to find a lower price,  
we'll match it  
PLUS take off an  
additional 10%!

**Look for the  
Energy Star®  
label when you make  
your next purchase.**

Energy Star® helps you make energy-efficient choices that save money on your utility bills by using less energy, while still providing you with all the features you want.

Save money, save energy and help protect the environment by purchasing Energy Star® labeled products at Lowe's.

**Air conditioning  
purchase and installation  
tips to save you energy**

- Buy the right size equipment
  - Hire a professional for installation
- Lowe's installs window  
air conditioning units!**

For more tips and tools to help you create a cool and comfortable home, visit [Energys Star](#) online at



**6000 Btu Electronic Air Conditioner \$209 SHARP.**

- 11.0 energy efficiency rating - Energy Star® qualified
- 3 fan/3 cooling speeds
- Rest easy remote control
- Comfort touch control
- 12 hour on/off timer
- Library Quiet - ultra quiet operation #183179

and purchase  
portable fans and  
air conditioners  
online!

We also  
have  
a **wide  
selection**  
of fans in stock



**10,000 Btu Air Conditioner \$269** **Whirlpool**

- Available exclusively at Lowe's
- Energy Star saves 10% energy
- 10.8 energy efficiency ratio #188246

Additional Air Conditioners Available...



**Whirlpool**  
**40 Pint Dehumidifier \$174**

- 40 pints per day
- 7.5 amps
- AccuDry™ system
- Automatic deicer
- 2 speed fan
- Bucket full indicator light (AD40DSL) #196859



**Whirlpool**  
**25 Pint Dehumidifier \$139**

- 25 pints per day
- 4.9 amps
- AccuDry™ system
- 1 speed fan
- EZ-Empty™ frontremovable bucket
- Bucket full indicator light (AD2588) #196862



**\$988**  
**Window A/C Vinyl Side Panel Kit**

- Replaces old, cracked or torn side panels
- 2 flexible panels each expand to fit openings to 21" H x 12" W #110445



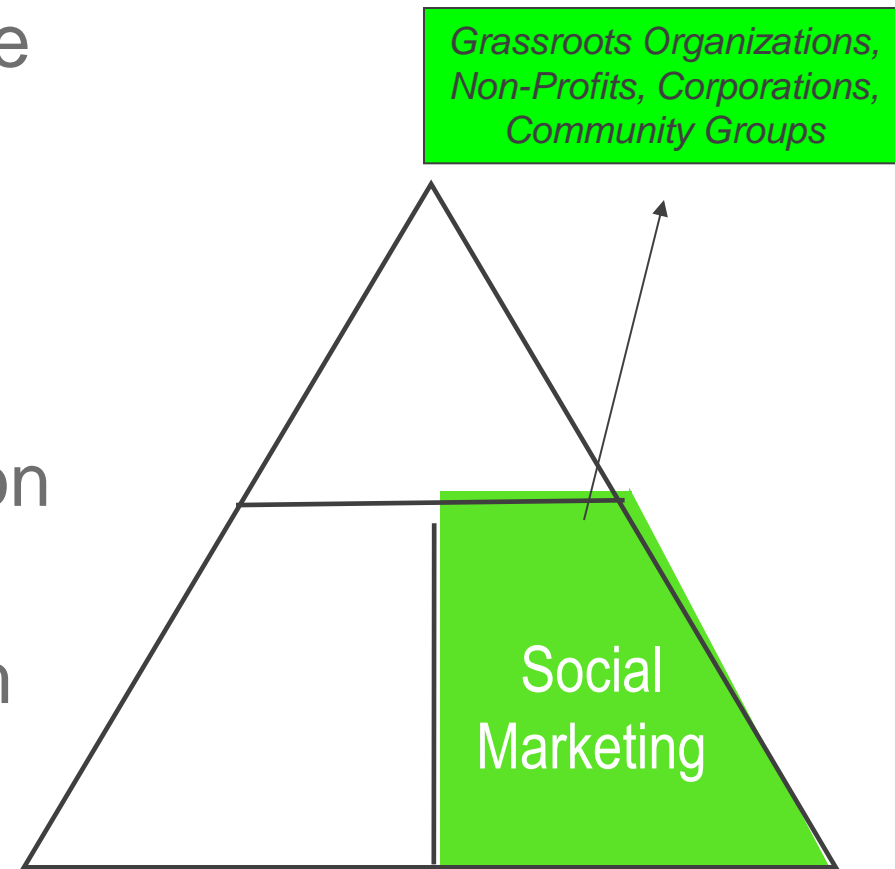
**\$2696**  
**Light Duty Window A/C Support**

- Load rated to 80 lbs.
- Typical range 5,000 - 10,000 Btu #54549

# Social and Community Based Marketing– driving relevance, action

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- Engage and mobilize community of individuals and organizations to take specific action/s
- Create **sustainable change** in energy consciousness and action
- Local, direct contact with community





# From 'knowing' to 'doing'

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*Campaigns that rely solely on giving information often have little or no effect on behavior !!*

# Community Based Social Marketing – basic steps

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1. Identify **barriers & benefits** to an activity
2. Develop strategy using **behavior-change tools**
3. **Pilot** on small scale
4. **Implement**
5. **Evaluate** *every step of the way*

Douglas McKenzie Mohr's CBSM Model

# EXAMPLE: Change the World, Start with ENERGY STAR campaign

- Combat global warming
- Launched Earth Day 2009
- Expanded ENERGY STAR Pledge
- Nationwide events with local sponsors
- Focus: youth (8-15) and families
- Community service projects
- National youth organization partnerships
  - Boys & Girls Clubs of America
  - PTO Today
- Many ways to leverage





# Social and community based marketing tools used in campaign

## Commitment

- Public commitments more effective

## Incentives

- Individual and group incentives

## Norms

- Everyone else is doing it
- Spread the word; testimonials

## Effective, Credible Communication

- Know audience and reel them in
- Credible source

## Kick-start implementation

## Online pledge

- Take action in your home
- Part of a community
- Pledge drivers
- **Special offers** from manufacturers, utilities
- In store prompts, POP
- **Testimonials, share your story**
- Government Proclamations
- Join in – Boy Scouts go door-to-door; Catholic sisters host pledge event
- **Persuasive language**
- Interactive; hands-on
- **Easy to act on**

# The ENERGY STAR Pledge



**CHANGE THE WORLD. START WITH ENERGY STAR**

## I pledge to:

Replace at least one light in my home with an ENERGY STAR qualified one.

How many bulbs do you plan to replace with an ENERGY STAR qualified bulb? (up to 50) \_\_\_\_\_

Make my home heating and cooling system work better. I will:

- Set or program my thermostat to save energy while I'm asleep or away from home
- Have my heating and cooling equipment tuned-up by a professional and change my air filter
- Seal obvious leaks and repair disconnections in my home's duct system

Make sure my home is well sealed and insulated. I will:

- Seal my home's envelope (outer walls, ceiling, windows, doors, and floors) with caulk, spray foam, or weather stripping, and add insulation to the attic.

Choose ENERGY STAR qualified equipment for my home office. I plan to purchase a(n):

- Computer
- Fax
- Ink-Jet Printer

Ion Device

Choose ENERGY STAR qualified home theater products. I plan to purchase a:

- TV
- DVD player
- Home Theater in a Box (sound system)

Enable my ENERGY STAR computer and monitor to sleep while I'm away.

Choose ENERGY STAR qualified products for my kitchen and laundry. I plan to purchase a:

- Clothes Washer
- Dish Washer
- Refrigerator

Purchase ENERGY STAR holiday lights this holiday season. I plan to buy \_\_\_\_\_ light strings

I'd like to receive quarterly e-mails from ENERGY STAR with energy-saving tips.

## Success to date:

**Hundreds of organizations (pledge drivers)**

**3 million people have taken the pledge**

**Commitments = 15 Billion LBS GHG**

# Lessons learned

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Start with desired behavior, work backwards to identify tactic

Combine tools to address complex behavior

Make it easy to remember *how*, *when* and *what* to do

Involve people – greatest influence on behavior is contact;  
use commitment, prompts, norms, incentives

Place tools/messages as close in time and space to action

Evaluate each step of the way– stay research based

# Loyalty is the goal – how is ENERGY STAR doing?



Awareness

Relevance

Differential Value

Satisfaction

Loyalty

**80+%** of households recognize the label.

**65+%** of households that recognized ENERGY STAR feel that “buying ENERGY STAR labeled products helps protect the environment for future generations.”

**55+%** agree “buying ENERGY STAR labeled products makes me feel like I am contributing to society.”

**75%** agree that “the ENERGY STAR label indicates superior performance with respect to energy efficiency relative to products without the label.”

**70%** of knowing purchasers would likely recommend ENERGY STAR to a friend.





# Better Buildings Initiative

## Broad strategies to overcome persistent barriers

### **Developing Innovative, Replicable Solutions with Market Leaders**

#### **Better Buildings Challenge**

Better Buildings Accelerators

Better Buildings Alliance

Better Buildings, Better Plants

Better Buildings Case Competition

Better Buildings Neighborhood program

### **Developing a Skilled Clean Energy Workforce**

Workforce Guidelines

Pilot program with NIST: Training and education programs

### **Making Energy Efficiency Investment Easier through Better Information**

Asset Rating/Home Energy Score

Buildings Performance Database

Green Button

Data Access Map

MOU with the Appraisal Foundation

### **Improving Effectiveness of Federal Incentives**

### **Federal Leadership by Example**

# Better Buildings Challenge

**Launched December 2011**

## **Goals:**

- Make commercial, industrial buildings & multifamily housing 20%+ more efficient in 10 years
- Save more than \$80B+ for US organizations
- Create American jobs; improve energy security
- Mitigate impacts of climate change

## **How:**

- ✓ Leadership
- ✓ Results
- ✓ Transparency
- ✓ Best Practice Models
- ✓ Recognition
- ✓ Catalyzing Action



**Launched 2011, Now 250+ Partners**  
*Commercial, Industrial, Public, Private*

## **Represent:**

3+ Billion Square Feet  
\$5 Billion Private Financing  
600+ Manufacturing plants  
\$2 B Federal Commitment

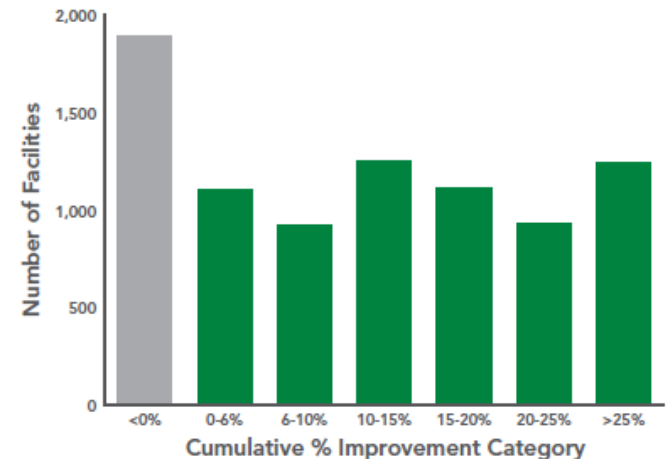


# Results: Better Buildings Challenge

- **Partners on track to meet goals**
  - 2.5% average annual improvement in energy intensity
  - \$300 million in savings since 2011
  - Goal achievers: Partners & Allies
- **More than 110 solutions** (70 showcase projects, 40+ implementation models)
- **New Partners:** Walmart, Hilton, San Diego, General Mills, General Motors, Penn State, Jonathan Rose, State of New York
- **Water Saving Pilot**
- **5 Better Buildings Accelerators**

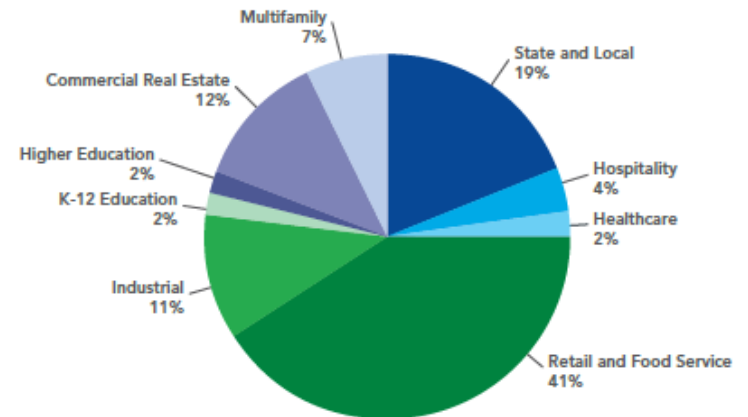
Facility-level Percent Improvements

(Figure 2)



Percent of Floor Area by Market Sector

(Figure 4)



# Organization-wide commitment

## Commitment

- Public commitment
- External goal (creates internal goal)
- Annual reporting

## Incentives

- Public recognition; leadership

## Norms

- Leaders are doing it; vanguard for others
- Peer sharing, partner networks

## Effective, Credible Communication

- Solutions center
- National and local media coverage

## Rapid Implementation

- Showcase projects
- Annual Data



# Lessons from Better Buildings Challenge Partners

## 1. Know the goal.

Organizations that have set portfolio-wide goals and have met them, or are well on their way, include **University of California, Irvine, Legrand, Cummins, and Best Buy.**

## 2. Data matters.

If you can't measure it, you can't manage it. **Macy's, TIAA CREF, Schneider Electric, the City of Columbia, Missouri, the State of Delaware and the City of Beaverton, Oregon.**

## 3. Look beyond technology.

Successful projects combine technology advances with organizational changes and commitment. **3M, the City of Arlington, Virginia, Delaware State University, the states of North Carolina and Minnesota, the Commonwealth of Massachusetts, Kohl's and Alcoa.**

## 4. It takes an (energy) champion – and a team.

**Saint-Gobain, the City of Hillsboro, Oregon, the State of Maryland, Cleveland Clinic, the City of El Paso, Texas and Cummins** are just a few of the organizations with a successful champion. **Staples and New York Presbyterian Hospital** are great demos of why people power matters.

## 5. Learn, teach and evolve.

Successful businesses and organizations are constantly evolving to succeed and meet their customers' needs. These leaders also recognize that how they use their buildings must evolve too. They seek out best practices from others and share their learnings with peers. **City of Atlanta, Georgia and the City of Gillette, Wyoming implemented just such programs, as did Partners such as Legrand, Ford and HEI Hotels & Resorts.**



# Partner Playbooks

- ✓ **FINANCE**
  - Facilities Infrastructure Pool
  - Update Internal Purchasing Systems To Facilitate A Portfolio-Wide Energy Upgrade With Maintenance Funds
  - Energy Finance Strategy
  - Building Upgrade Value Calculator
  - On-Balance Sheet, Off-Debt Capacity Performance Contracting
  - Internal Green Revolving Fund
  - Capital Set Aside Fund
  - Green Initiatives Trust Fund
  - Utility Savings Initiative
  - ESA in BAE Facilities Nationwide
  - Commercial PACE Financing at Pier 1
  - On-Bill Financing

- ✓ **DATA/ENERGY MANAGEMENT**
  - Energy Looking Glass Dashboard
  - Real-Time Energy Monitoring And Weekly Engagement With Field Staff
  - Accessing Tenant Utility Data in Triple-Net Leased Buildings
  - Data Update and Certification Scorecard
  - Centralized Energy Management And Capital Set-Aside Fund
  - Submetering Initiative and Energy Dashboards
  - Uniform Methodology To Measure Energy Efficiency Improvement
  - Inventory and Tracking Process
  - Designing A Comprehensive Energy Plan
  - Mass Benchmarking
  - Energy Benchmarking Program

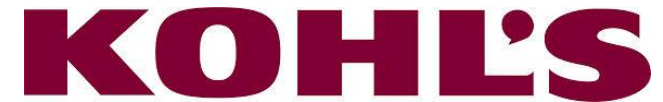
- ✓ **EMPLOYEE /CUSTOMER ENGAGEMENT**
  - Engaging Clinicians To Reduce Resource Use In Operating Rooms
  - Chasing Quarters With Energy Set-Points
  - Innovation Hotel
  - Student Fellowships To Kickstart In-House Energy Programs
  - Eco-Treasure Hunts at Fulfillment Centers
  - Leveraging Green Leases To Reduce Energy And Water Use
  - Wyndham Vacation Ownership Green Certification Program
  - Leverage Student-Faculty Research
  - Linking Energy Efficiency to Performance-based Compensation
  - Energy Champion Program
  - Operations Management Leadership Program
  - Energy Champions at All Plants
  - Rethink Energy
  - Public-Private Partnership
  - Community Engagement
  - Employee Behavioral Change
  - Community Outreach
  - County V. County Energy Challenge
  - Public-Private Partnership
  - Energy Leader Partnership

- ✓ **OVERCOMING ORGANIZATIONAL HURDLES**
  - Enterprise-wide Coordination
  - Good, Better...BEST Standards of Sustainability
  - Developing an Integrated "Smart Lab" Program
  - Integrated Model For Long Term Campus Energy Planning
  - Creating a Culture of Energy Efficiency
  - Streamlined Tri-resource Efficiency Programs

# Implementation Model: Kohl's

## Energy Finance Strategy

Kohl's embedded members of the Finance Department into the Energy team to expedite communication of financial benefits & approval of energy efficiency projects.

The Kohl's logo is displayed in a bold, dark red, sans-serif font.

### **BARRIER**

Getting and defending sustained corporate funding for energy efficiency projects

### **SOLUTION**

Create a partnership between the Finance and the Energy teams

By integrating Finance Associates within the energy department to prioritize projects and investments Kohl's can test and validate results and provide the momentum and with financial savings history roll out the project at additional locations.

### **OUTCOME**

Today, Kohl's has more than 700 ENERGY STAR labeled stores. Since 2008, Kohl's has improved the energy performance of more than 1,100 buildings by 12%.

# Implementation Model: Alcoa

## Linking Energy Efficiency to Performance-Based Compensation

Energy efficiency is one of the metrics influencing variable compensation of the company's business leaders.



### BARRIER

Energy performance improvement crowded out by other business priorities

### SOLUTION

Business units determine which energy efficiency performance contribute to incentive pay of employees within that business.

For example, Alcoa Recycling may choose to make energy efficiency count towards 3% of employee incentive pay, whereas Alcoa Building and Construction Systems may make it 5%.

### OUTCOME

Alcoa businesses are increasing their focus on energy efficiency to meet long-term sustainability goals

Up to 20% of Alcoa's variable compensation was tied to sustainability targets, including safety, workforce diversity, and reductions in carbon dioxide emissions due to process improvements and improved energy efficiency.

# Role of behavior change in deployment programs

- Many DOE programs use behavior based tools and information
- Guide and shape program design, implementation and evaluation
- Across diverse programs/customers/market segments
  - SEE Action
  - Clean Cities
  - Better Buildings Neighborhood Program
  - Home Energy Score
  - Home Performance with ENERGY STAR
  - Commercial Building Asset Rating
  - Building Performance database
  - Smart Grid

- Continue focus on behavior change; fast and powerful way to save energy, reduce GHG
- Solutions center– May 2015
- Real world successes and lessons learned
- Applied learning and research
- Evaluate, learn, evolve

## Challenges:

- Consumers attention, prioritization
- Driving sustained change; avoid snapback
- Understand customer; need for research
- Role of technology
- Dynamic marketplace

# Thank you!

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