Business and Consumer Electronics
From Inspiration to Implementation

ENERGY STAR Meeting
Denver, CO
October, 2010
Overview

- Market Transformation
  - Strategies
  - Energy Savings
- Implementation of the Business and Consumer Electronics Program
  - Building utility market share
  - Developing a channel strategy
  - Creating an Attribution Methodology
  - Developing a robust product portfolio
“the strategic process of intervening in a market to create lasting change in market behavior…to accelerate the adoption of all cost-effective energy efficiency as a matter of standard practice”
Inspiration to Implementation

Inspiration

- Opportunity hypothesis
- Research objectives
- Organizational engagement

Market Transformation

Implementation

- Theory of Market Transformation
- Market characterization
- Refined Intervention strategies
- Logic Model/ACE Model
- Initiative metrics/market progress indicators
- Risk management plan
- Utility & stakeholder integration plan

- Annual Reviews (Implementation Report)
- MPER (Market Progress Evaluation)
- Revise plans and updates
- Lessons Learned!
- Tactical planning
- Develop RFP
- Refine Logic Model/ACE Model
- Establish goals & forecasts

Pacific Gas and Electric Company

3
Consumer Products

- **Transformed Market**
- **Accelerated Market Activities**
- **Identify Market Barriers**
- **Local energy efficiency program implementation**

Activities Supporting Market Penetration:
- Retailer and Manufacturer Incentive Programs
- Point of Purchase materials identifying the most energy efficient TVs
- Retailer support services
- Facilitate market coordination of Utilities with retailers, manufactures, and other EE Org
Innovative Strategies

- Develop relationships that help accelerate the adoption of the most energy efficient consumer products
- Build market knowledge and capability
- Create strategic partnerships
- Encourage emerging technologies
- Strategically intervene in markets to remove barriers and increase adoption
What We Do

Accelerating Market Transformation

TVs
PC
STB
Game Consoles
Emerging Technology

Build market awareness and capability
How We Work

Assess Market > Identify Barriers > Market Intervention
Market Transformation = Energy Savings

Total Regional Savings: Savings associated with all market change measured from a fixed point in time.

- **Net Market Effects:** Savings associated with market change and not counted as Baseline or Local Programs
- **Local Programs:** Savings claimed through local utility, ETO, or BPA activities (i.e. incentives).
- **Baseline:** Savings from naturally occurring market change without utility, NEEA, BPA, and ETO funded intervention.
Northwest Accomplishments

1990: 

1991: Design labs concept launched

1997: Efficient washers. 50% market share today - highest in the nation.

1998: BacGen reduces wastewater treatment energy use by up to 50%

2000: VFD cold storage fans reduce energy use by 61-86%.

2001: Market share for ENERGY STAR windows hits 75%.

2002: 80 PLUS. computer power supplies could save NW 8.5 million kWh annually.

2004: Northwest ENERGY STAR new homes spec – 15% more efficient than code.

2005: BetterBricks healthcare focus – today 30% of region’s beds have adopted a SEMP.

2008: NW Food processing industry commits to 50% reduction goal

2009: Ductless heat pump pilot begins

2007: CFL sales top 18 million
SUCCESS STORY: 80 Plus

Barriers
- No energy-efficient power supplies available
- Inefficient power supplies use 8.5 mill kWh per year
- ENERGY STAR spec didn’t include power supplies
- Efficient power supplies not a manufacturer priority

Intervention
- Worked with power supply manufacturers to bring products to market
- Provided funding to manufacturers to offset initial costs/
  convince them of the benefits to the 80 PLUS program, and
  creating market pull
- Worked with ENERGY STAR on national level to
  incorporate supplies into its spec
- Partnered with manufacturers to provide commercial rebate

Results
- First in the nation to sponsor 80 PLUS
- More than 2000 compliant power supplies available
- Potential to save region 8.5 million kWh per year (enough
  to power 700 homes)
- 80 PLUS added to ENERGY STAR desktop PC spec in ‘07
Assess Electronics Market

- Diverse products and channels
- Increasing load from electronics

Key Barriers

- No consumer push
- Additional costs to produce efficient products

Market intervention

- Provide financial and marketing incentives to market actors

End goal

- Transform the electronics market
Consumer Electronics: The next BIG opportunity!

Electronics account for more than 11% of consumer and almost 8% of non-residential U.S. electricity use.

Electronics load is growing at 6% per year vs. 1.8%.

If left unabated, U.S. consumer load may reach 18% by 2015.

Sources: CEA, CEE, Energy Solutions

International Energy Agency - Paris, France

Consumer electronics is "the fastest growing area and it's the area with the least amount of policies in place".

Existing technologies could slash consumption by 30% - 50% at a small cost.
Challenges Shaped Program Design

Challenges

- Large diversity of products
- Wide range of efficiency levels (small per unit savings)
- Ever changing consumer preferences
- Global manufacturing
- Multiplicity of market channels

Program Design

- Directed at channel players (Retailers, Manufacturers, Distributors)
- Impact stocking, promotion and sales behaviors for products that meet or exceed ENERGY STAR specifications
- Yield significant savings
- Launched 12/08
  Televisions, Desktop Computers, Monitors
BCE Program launched with the strategy of: (1) building utility market share, (2) developing channel presence, (3) creating attribution methodology, and (4) growing product portfolio.

Building Utility Market Share
- Program design necessitated new attribution methodology
- Developed multi-pronged approach to facilitate movement on the regulatory front

Developing a Channel Strategy

Creating an Attribution Methodology

Building Robust Product Portfolio
- Efficiency Aggregator of 130 utilities (11.5M customers)

- Laptops (Jan 2011)
- Commercial TVs
- Printers/MFDs* (Jan 2011)
- Set-top Boxes

- Flat screen TVs (Nov 2008)
- 61 GWh (goal)

- \(0.2 \text{ GWh}\), (March 2007)
- \(2.6 \text{ GWh}\), (June 2007)
- \(30 \text{ GWh}\), (March 2009)

* MFD = Multifunction Device (printer, scanner, copier, etc.)
Expansion through utility coordination and increased channel presence

COLLABORATION OF UTILITIES TO TRANSFORM THE ELECTRONICS MARKET

WORKING WITH MAJOR ELECTRONICS CHANNELS BY PROVIDING:

• Financial and Marketing Incentives
• Tools to identify most efficient products
  • Point of Purchase materials
  • Consumer education talking points
• Opportunities for collaboration around other initiatives

Business-to-Consumer
(Residential and SMB Customers)

Business-to-Business
(Commercial Customers)

Note: Retailer participation may vary from state to state
Creating an Attribution Methodology

Electronics model: Measure attribution based on measuring changes in annual retail buyer and OEM market behavior NATIONALLY

- Changes when to measure and what to measure:
  - Traditional model measures transaction behavior throughout the year, a consumer decision impacts one sale at a specific point in time
  - The BCE model measures market impact based on decisions made by the buyer one or two times per year – a single decision can impact sales of products for 12 months LOCALLY AND NATIONALLY
Methodology requires multi-pronged activities to support attribution

Engagement with Regulators

- Early EM&V
  - Submit work papers to regulators
  - Present at various conferences and Regulatory Brown Bags
  - White papers on evaluation methodology
  - File Program Implementation Plan w/ regulators for 2010-12 Cycle

Internal process

- On-going documentation of interaction with market
- On-going collection and analysis of baseline data
- Initial Baseline Collection by evaluation professionals

Efforts build upon each other to create reinforcing data points for attribution
Building a robust portfolio

PG&E Energy Saving Goals

- Computer Desktops (March 2007): 0.2 GWh
- Computer Monitors (June 2007): 2.6 GWh
- Flat screen TVs (Nov 2008): 30 GWh
- 61 GWh (goal)

* MFD = Multifunction Device (printer, scanner, copier, etc.)
Product Development Process

- Continually evaluate effectiveness of existing products
  - Increase specifications when sales are ~ >25% before new program year
- Work with EPA and Consortium for Energy Efficiency to impact market effects beyond incented units through specifications and standards
- Internal process to determine business case for adding new products to efficiency portfolio, considers the following:
  - Market Potential
  - Energy Savings
  - Customer benefit/need
  - Cost-effectiveness
- New products can be added to portfolio during the year (if budget is available)
- Careful consideration is given to how much lead time to give the industry prior to launching new products
- Budgets are locked in on a yearly basis
## Key issue is cost-effectiveness of measures

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Specification</th>
<th>Net to Gross</th>
<th>Incremental Measure Cost</th>
<th>Effective Useful Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Televisions</td>
<td>ENERGY STAR 4.1</td>
<td>0.70</td>
<td>$10-$100</td>
<td>10 years</td>
</tr>
<tr>
<td>Televisions</td>
<td>ENERGY STAR 5.1</td>
<td>0.70</td>
<td>$100</td>
<td>10 years</td>
</tr>
<tr>
<td>Desktop Computers</td>
<td>ENERGY STAR 5.0</td>
<td>0.70</td>
<td>$25</td>
<td>5 years</td>
</tr>
<tr>
<td>Computer Monitors</td>
<td>ENERGY STAR 5.0 +10%</td>
<td>0.70</td>
<td>$6.50</td>
<td>5 years</td>
</tr>
</tbody>
</table>

Note: Incentives and products may vary by utilities or efficiency aggregators
<table>
<thead>
<tr>
<th>Product Category</th>
<th>Specification</th>
<th>Channels</th>
<th>Incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Televisions</td>
<td>ENERGY STAR 5.1</td>
<td>Consumer</td>
<td>$6-$20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Business</td>
<td></td>
</tr>
<tr>
<td>Televisions</td>
<td>ENERGY STAR 5.1</td>
<td>Consumer</td>
<td>$10-$30</td>
</tr>
<tr>
<td></td>
<td>+ 20%</td>
<td>Business</td>
<td></td>
</tr>
<tr>
<td>Computers</td>
<td>ENERGY STAR 5.0</td>
<td>Consumer</td>
<td>$7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Business</td>
<td></td>
</tr>
<tr>
<td>Monitors</td>
<td>ENERGY STAR 5.0</td>
<td>Consumer</td>
<td>$5.00 (consumer)</td>
</tr>
<tr>
<td></td>
<td>+ 10%</td>
<td>Business</td>
<td>$6.50 (business)</td>
</tr>
<tr>
<td>Notebook Computers</td>
<td>ENERGY STAR 5.0</td>
<td>Consumer</td>
<td>$3 (consumer)</td>
</tr>
<tr>
<td>(tentative)</td>
<td>+ 20%</td>
<td>Business</td>
<td>$4 (business)</td>
</tr>
<tr>
<td>Imaging Equipment</td>
<td>ENERGY STAR 1.1</td>
<td>Business</td>
<td>$5</td>
</tr>
<tr>
<td>(tentative)</td>
<td>+ 50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Incentives and products may vary by utilities or efficiency aggregators
2011 and Beyond

- Continue growing product portfolio through measure development / technology roadmap:
  - Set-top boxes and/or set-top box alternatives
  - Game consoles
  - Advanced Power Strips / “smart” plugs
  - Servers
- Continue channel presence expansion:
  - Online sales
  - Distributors (selling direct to end-customers or through value-added resellers)
- On-going optimization around marketing and communications strategies
- Continue coordination with utilities and energy efficiency organizations
SUCCESS STORY: ELECTRONICS

Barriers
- Efficiency of products not a manufacturer priority
- Unengaged customers
- Multitude of products

Intervention
- Provide funding to market actors to stock & promote more efficient products
- Partner with utilities
- Increase consumer awareness
- Coordinate with EPA and others on specifications

Results to Date
- Increased efficiency of TVs by 40-60% over 2 years
- Incented ~850,000 units in 2 years
- Increased channel presence to 70%
Your Interest

• Sarah Bresko – PG&E
  – S3B3@pge.com (415) 973-0904

• Mardi Cino – NEEA
  – MCino@nwalliance.org (503) 827-8416 ext. 266

Your interest in participating is welcome!