Achieving Energy Savings through Consumer Electronics DSM Programs

Margie Lynch, Program Manager
Consortium for Energy Efficiency

5th Annual
Southwest Regional Energy Efficiency Workshop
Consortium for Energy Efficiency

- Non-profit membership organization
- More than 100 members in U.S. and Canada
  - Efficiency program administrators, national research laboratories, state energy offices, advocacy organizations
- Staff of 23, budget $2.7 million, located in Boston
- Last year, efficiency program industry budgeted over $4.5 billion ($3.9 electric) to bring energy efficiency to the public
Current CEE Program Committees

- **Residential**
  - HVAC
  - Whole House
  - Consumer Electronics
  - Lighting
  - Appliances
- **Industrial**
  - Motors and Motor Systems
  - Program Planning
  - Water/Wastewater
  - Transformers
- **Commercial**
  - Lighting
  - HVAC
  - Data Centers and Servers
  - Kitchens
  - Whole Building Performance
  - Schools Program Roundtable
- **Evaluation**
  - Behavior Interest Group
  - Evaluators Forum
  - National ENERGY STAR Survey
- **Gas**
  - Water Heaters
  - Commercial Boilers
Electronics: A Major End Use

U.S. Residential Electricity Consumption by End Use

- Other: 21%
- Lighting: 17%
- Space Cooling: 15%
- Consumer Electronics*: 11%
- Space Heating: 9%
- Refrigeration: 8%
- Water Heating: 8%
- Clothes Dryer: 5%
- Freezer: 3%
- Cooking: 2%

*TIAx LLC 2007

Excluding Digital TVs

Percent of Residential Electricity Consumption
And Growing

Forecasted Baseline AEC—Consumer Electronics in PG&E Mass Market Sector
(million kWh/yr)

Chase, Ramos & Pope 2006
Additional Drivers for CE Programs

- Regulatory demands for increasing savings
- Declining savings opportunities from other products
- New ENERGY STAR specifications
  - Version 4.0 computers (July 2007)
  - TVs (Nov. 1, 2008)
  - Set-top boxes (Jan. 1, 2009)
CEE Consumer Electronics Initiative

• Framework for addressing existing and increasing electrical consumption by consumer electronics products
• Adopted by CEE Board June 2007
• Initiative focuses:
  – Working with ENERGY STAR®
  – Program guidelines
  – Industry outreach
  – Consumer education
• Implemented by Consumer Electronics Committee with support of CEE staff
ENERGY STAR®

- Marketing platform for promoting efficient products
  - Incentives
  - Consumer education
- Specifications
  - Consensus comments
- Programs and promotions
  - Change the World, Start with ENERGY STAR
  - Low Carbon IT campaign
Consumer Electronics Program Guide

- Informational resource for energy efficiency program administrators and consumer electronics industry
- Developed over 9-month period by CEE Consumer Electronics Committee
- Draws heavily on experience developed in administering programs for other products
- Intended to be “living document”
Savings Opportunity--End Use

Cumulative Energy Savings (TWh)

- Electronics
- Cooling
- Appliances
- Lighting
- Water Heating
- Space Heating
- Furnace Fans

Electric Power Research Institute-Edison Electric Institute

Working Together, Advancing Efficiency
Savings Opportunity--UEC

TIAX LLC for the U.S. Department of Energy 2008
Market Actors

- **Upstream**
  - Manufacturers
    - Office Equipment
    - Consumer Electronics
  - Distributors
    - Computer Distributors
    - Consumer Electronics Distributors

- **Midstream**
  - Resellers/Dealers/Retailers
    - Direct Sales
    - VARS
    - Web Retailers
    - Cable Companies
    - Computer Retailers
    - Appliance, television, & other electronics stores
    - Department Stores/Warehouse Clubs
    - Office Supply

- **Downstream**
  - Government, Industry, Consumers
    - Highly concentrated customer consumption
    - Customers
    - Consumption

Pacific Gas and Electric Company

CEE
Working Together, Advancing Efficiency
Common Themes

- Consumer education
- Focus on product purchase and product use
Upstream Approaches

• Developing relationships with industry
• Co-branding/co-op marketing
• Incentives to manufacturers
  – To bring to market
  – Buydowns
  – Golden Carrot
• R&D
Midstream Approaches

- Transfer lessons learned
- Incentives
- Co-branding/co-op marketing
- Point of purchase information
- Spiffs
- Retail sales staff training
- Cable and satellite service providers
Downstream Approaches

- Leverage ENERGY STAR
- Consumer education
- Rebates
- Buy-back/turn-in programs
- Product labeling
- Collaboration
- Feb. ‘09 digital transition
- Bulk purchasers
  - E.g., Starwood Hotels announced it’s buying 80,000 EE TVs from Philips, est. $12 million lifetime savings
**CEE Super-Efficient Specifications**

- Facilitate increased market adoption of super-efficient products
  - Differentiate higher efficiency products
  - Provide consistency to CEE members, manufacturers, and retailers
- Address differing program needs for savings
CEE Television Specification

• Program interest in savings opportunity
  – Substantial differentiation between most and least efficient products
  – TVs consume almost 50 percent of U.S. residential electricity use by electronics products
    • 70 TWh of 147 TWh total
  – Digital transition
    • Est. 31 million TVs to be sold in 2008
## CEE Television Specification

<table>
<thead>
<tr>
<th>Screen Area</th>
<th>Tier 1 (ENERGY STAR®)</th>
<th>Tier 2 (15 percent above ENERGY STAR®)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maximum On Mode Power Consumption</td>
<td>Maximum On Mode Power Consumption</td>
</tr>
<tr>
<td>Non-High Definition TVs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 480 Native Vertical Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All screen areas</td>
<td>$P_{\text{Max}} = 0.120 \times A + 25$</td>
<td>$P_{\text{Max}} = 0.102 \times A + 21.25$</td>
</tr>
<tr>
<td>High Definition and Full High Definition TVs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 480 Native Vertical Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A &lt; 680 inch$^2$</td>
<td>$P_{\text{Max}} = 0.2 \times A + 32$</td>
<td>$P_{\text{Max}} = 0.17 \times A + 27.2$</td>
</tr>
<tr>
<td>680 inch$^2$ ≤ A &lt; 1045 inch$^2$</td>
<td>$P_{\text{Max}} = 0.24 \times A + 27$</td>
<td>$P_{\text{Max}} = 0.204 \times A + 22.95$</td>
</tr>
<tr>
<td>A ≥ 1045 inch$^2$</td>
<td>$P_{\text{Max}} = 0.156 \times A + 151$</td>
<td>$P_{\text{Max}} = 0.1326 \times A + 128.35$</td>
</tr>
</tbody>
</table>

- Effective November 1, 2008
- Incorporates all requirements of ENERGY STAR Version 3.0 TV spec
- Technology neutral
CxEE Television Specification

• Next steps
  – CxEE members evaluate use of specification in their programs
  – Save More with ENERGY STAR pilot in CA
  – Build up products list
  – Possible CxEE Tier 3: TBD early 2009
Electronics Program Activity

- California utilities pilot program
- Interest in Canada and across U.S.
- Exploring role for CEE in supporting a national effort
  - Research
  - Marketing
  - Create and implement a national program model
Much Still to be Learned

- General industry information
- Shipment and sales data
- Consumer behavior (purchase and use)
- Most effective program approach
Next Steps

- Prepare 2009 Work Plan
- Advance collaboration with electronics industry and ENERGY STAR
- Continue specifications work
  - ENERGY STAR and explore other possible CEE specs
- Member program deployment
- Program summary
Resources

- CEE Consumer Electronics Initiative Description and Program Guide http://www.cee1.org/resid/rs-ce/rs-ce-main.php3
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