Energy Savings Opportunities for Home Electronics: Insights from a Minnesota Field Study

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Energy Star Partners Meeting, Denver Colorado
October, 2010
What does metering a bunch of old electronics in homes tell us about future directions for Energy Star?
We metered...705 (of 1,612) devices in 50 homes...

...for one month...

...at 6-minute intervals
1,300 ± 400 kWh/yr

2,300 ± 700 kWh/yr

- **TV-RELATED (31%)**
  - TVs
  - set-top boxes
  - DVDs etc.
  - gaming
  - other

- **COMPUTER-RELATED (21%)**
  - desktops
  - monitors
  - laptops
  - networking
  - printers
  - other

- **AUDIO (5%)**
  - compact stereos
  - receivers
  - radios
  - CD players
  - other

- **TELEPHONE (2%)**
  - cordless base
  - cordless handsets
  - other

- **HVAC (25%)**
  - space heaters
  - dehumidifiers
  - room AC
  - fans
  - humidifiers
  - other

- **KITCHEN (6%)**
  - coffee makers
  - microwaves
  - toasters
  - other

- **OTHER (10%)**
  - utility
  - sleeping
  - household
  - clocks
  - chargers
  - other
<table>
<thead>
<tr>
<th>TECHNICAL SAVINGS</th>
<th>STRATEGY</th>
<th>BEHAVIORALLY-ADJUSTED SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(kWh/year/home)</td>
<td>enable computer power management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>manually unplug</td>
<td></td>
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<tr>
<td></td>
<td>turn off when not in use</td>
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<tr>
<td></td>
<td>use a timer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use a smart power strip</td>
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</tbody>
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- **DEVICE CATEGORY:**
  - TV and peripherals
  - Computer and peripherals
  - Audio
  - HVAC
  - Other

- □ = 1 kWh/year/home
75% of desktop computer electricity use occurs when no one is in front of it.
Sat/Cable Set-top Boxes

- 200 kWh/yr per box on average
- 85% are satellite
- Little potential for household-driven savings
  - fear of messing w/ box
  - don’t want to hassle with recovery delays
  - recording at odd hours
- Need a manufacturing solution!
Auto Power-Down ---
When electronics are left on, it’s often for days...

DVD/VCR (Site 20)

Day 1

Day 7

Day 13

Day 19

Day 25
Promise from TV automatic brightness control?

~30% reduction
Summary

- Computer power management is a significant savings opportunity
  - continue to work to ensure that it is user-friendly and enabled by default
- Set-top boxes need a manufacturing solution!
- Auto power-down specifications will help
  - a long APD delay may be better if people are less likely to disable it, and it still prevents most wasted use.
- Field data for 2 TVs suggests some promise for automatic brightness control
Thank You!

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(Public-Use data sets available)