Plug Load Management
L.I.F.E 2014

Addressing a Growing Issue

Commercial in Confidence
“Plug loads for household electronics account for 15-19% of residential energy use and are increasing as more households purchase more electronics” ~ California Energy Commission PIER

“Energy Star labeling of electronic products with lower standby power levels. But public policies and programs have paid insufficient attention to active-mode energy use because of a lack of detailed information about the quantity and types of devices and use patterns in the home.” ~ California Energy Commission PIER
Low Income, High TV Penetration

OWN TWO TO FOUR TVs
(ANNUAL HOUSEHOLD INCOME)

LESS THAN $20,000
$60,000 TO $79,999
$120,000 OR MORE

Source: Residential Energy Consumption Survey

Low-income consumers own almost nearly as many televisions as middle-class and wealthy Americans.
Increase in PLUG LOAD Leading to New OPPORTUNITY

As the CFL savings values drop and becoming harder to capture, and LED in its infancy, plug load is another cost effective efficiency area to help reach demanding kWh reduction targets

- While Televisions become more efficient, they are becoming less expensive
- Larger TVs that consume more energy are less expensive
- Creating demand with unique features encourages early replacement (Smart TV, 3D TV, thinner designs, LED, Ultra HD, etc)
- TV manufacturers are not alone, new PS4, Xbox One, Wii U, smart BluRay players, media streamers, etc
- This is creating “The Refrigerator Syndrome” where the existing units will get handed down, added to additional rooms, creating more overall plug load
- Adding more TVs and devices to more rooms means more peripherals shuffled around
As the Net to Gross value for CFLs continues to drop and LED is in its infancy, plug load is the next cost effective efficiency area to help reach demanding kWh reduction targets.

- Consumer electronics wastes power in two distinct ways:
  - **Passive standby** where power is used by the product to keep it ready to switch on (vampire/phantom)
  - **Active Power Wastage** where the product is on but not performing its main function (e.g. TV is on but is not being watched)

- An ideal efficiency approach would target both types of waste.

**Active power wastage**
Quick Primer- Tier 1 APS

First Gen Advanced Power Strips (APS) are a master control device that reduce standby power

Benefits of Tier 1 APS
- Inexpensive
- Saves 35-75 kWh annually if installed and used correctly
- Good for proactive energy savers

Issues with Tier 1 APS
- Only saves 4% of overall AV area
- No real existing field trial data
- Only saves energy if someone takes action
- Not intuitive, must be manually adjusted
- Too many work arounds
- High de-installation rate
- Ask me later, there are more issues
Quick Primer-Tier 2 APS

2\textsuperscript{nd} gen Advanced Power Strips utilize advanced controls-micro processor with greater automation

Benefits

- Address both Active and Standby waste
- Saves up to 48-53% of overall AV area (NYSERDA 603=301)
- Real world field trials average 486 kWh (Deemed 346 kWh Calplug 300 BPA)
- Real world field trial proven savings
- Automated savings/Automatic adjustment
- Low cost per kWh
- No workaround to operate
- Proven high installation rate
- Many more features and benefits, ask me later
Tier 1 & Tier 2 AV Energy Savings Comparison

Source: Northeast Energy Partners (NEEP)
Where does the energy go?

Sources:
Energy Consult Pty Ltd – Residential Energy Consumption
**APS Tier1 VS APS Tier2**

- Evaluation of APS will be very important in the years to come, especially for rate of persistence.
- If a device does not inconvenience a consumer it is more likely to stay installed.
- Tier1 APS has multiple barriers.

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<tr>
<th>APS</th>
<th>Tier1</th>
<th>Embertec Tier2</th>
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<tbody>
<tr>
<td>Automatic Savings*</td>
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<td>Automatic Threshold Adjust</td>
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<td>Saves Standby</td>
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<td>Saves Active Waste</td>
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<td>Automatically Adapts to New Devises</td>
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<td>Higher Persistence Level</td>
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<td>Manual Adjustment</td>
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*T1 products require a user to power down their main device to realize savings and to power up their main device to use other connected devices.*
Hitting EE targets, Best Practices

The charts below shows sales volumes for NY, VT, and MA through three years of assisted retail sales compared to less than two years Embertec sales in Victoria South Australia.

- VT, NY, MA three year total was 81,523 units with an average 8.2 million kWh annual savings.
- Victoria South Australia less than two year total 1.8 million units. Claiming approximately 784.8 million kWh annual saved.
Emerging Programs

- Multiple Co-op Utilities in the NW buying APS for their annual meetings over 2,000 units
- Puget Sound is running a hand out program through the Multi Family program (over 15k units)
- Victoria Australia stand alone program DI (over 2 million units)
- Efficiency Nova Scotia has included the Emberplug in their DI program and physically install our device (over 15k units)
- Silicon Valley Power running a 50 unit trial
- Many other small trials and programs in the works in the works
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Maximum Savings - Zero Effort