Scotty, We Need More Power!

An Examination of Advanced Power Strips

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Photo source: unsplash.com @stefanbc
• Residential plug loads increasing

• Diverse set of end-use devices

• Four common traits:
  – Tend to appear in clusters / groups
  – Use a standard power cable
  – Low individual energy usage
  – Draw standby power

*Remember fax machines?
Plug Load Trends

*Remember fax machines?

*Picture by: Courtney Barclay
Tell Me More About APS

Tier I:*
- Commonly referred to as master-controlled
- Target passive standby or vampire energy loads
- Require monitoring of a master device
- Disable power to controlled devices when master is off

Tier II:*
- Use algorithms to monitor power of all controlled devices
- Use infrared (IR) and power sensing
- Disable power to individual controlled devices
- Do not require a master device

*Footnotes in a presentation? Heck yeah! These are generalizations. Each manufacture has specific products and features.

https://www.youtube.com/watch?v=unqpg-9e8gg
Worth the Effort?

- **High NTG**
  - Low NOMAD
  - Low availability outside programs

- **High ISRs**
  - 81% leave behind
  - 89% online / downstream

- **Sizeable End-Use Load**
  - 300 – 700 kWh / year
  - Equiv. to about 5-10 incandescent bulbs

- **Energy Reduction Potential (ERP)**
  - Estimates vary widely
  - 22 – 50% ERP

- **Plentiful Opportunities**
  - Most homes have at least one opportunity
  - Low natural penetration (<5%)
  - Program delivery works!
    - 27% penetration in RI
Potential Annual Savings

Disclaimer: Savings based on range from literature review and primary research. Per-unit savings presented are averages used for illustrative purposes and are not necessarily representative of the savings that any individual customer or program design may achieve. First-year cost not lifetime cost.
APS is giving us all she’s got...
Threats to Savings

• Difficulty in setting up devices
  – Reduction in savings for incorrect setups

• Persistence
  – Customers uninstall APS

• Lack of familiarity
  – Primarily available as part of a program offering

• Lack of robust metering studies
  – Small sample sizes and disparate results

• Diversification of usage
  – Short-term opportunity / long-term threat
Conclusions

• APS have been shown to generate savings
  – Savings estimates vary widely
  – Baseload energy usage may vary by region

• Program efforts work!
  – Increased penetration
  – People actually use them
  – Relatively high in-service rates

• Barriers and threats appear manageable
  – Awareness / advertising
  – Installation education
  – Customer targeting

• Changes in customer behavior merits attention
  – Decentralization of media usage
  – Reduction in peripheral devices
Total media use among U.S. adults remains unchanged year-over-year at 10-and-a-half hours per day...[but] there are shifts in where that time being spent is dedicated to, as...increases in Internet connected devices and app/web smartphone usage [are] gradually replacing time spent on other sources.

- Nielsen 2019
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• Residential Appliance Saturation Survey (Rhode Island)  
  – https://tinyurl.com/RI-RASS

• Residential Appliance Saturation Survey (Connecticut)  
  – Results forthcoming

• New and Emerging Product Market Scan (Massachusetts)  
  – https://tinyurl.com/RLPNC1610

• Products Survey and Literature review (Massachusetts)  

• Field Metering Study in Massachusetts  
  – https://tinyurl.com/RLPNC173