

Scotty, We Need More Power!

An Examination of Advanced Power Strips

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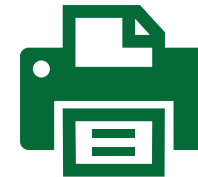
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Plug Load Trends

- 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?



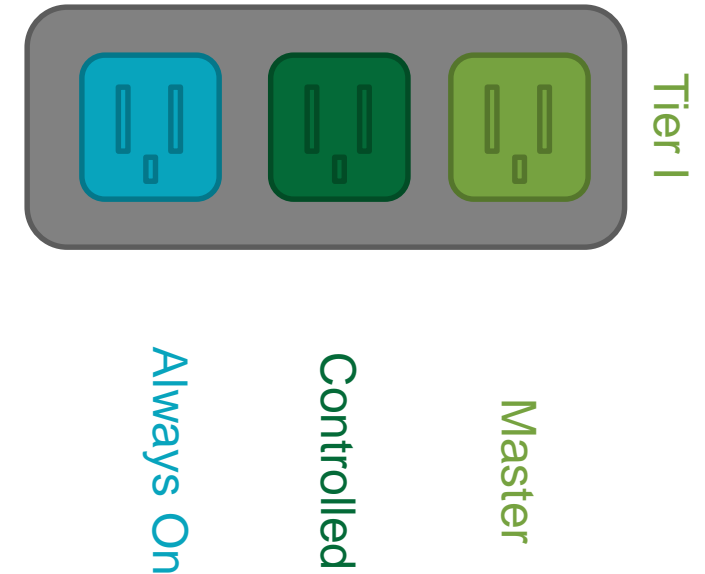
Vampire Load

Photo by: Courtney Barclay

Tell Me More About APS

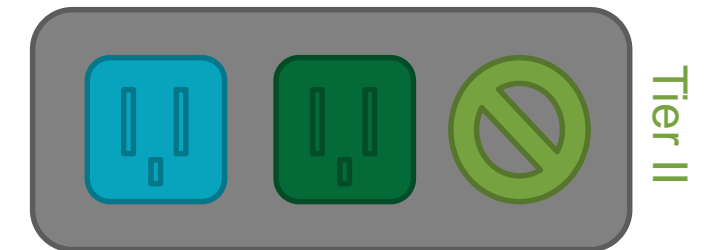
Tier I:*

- 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.

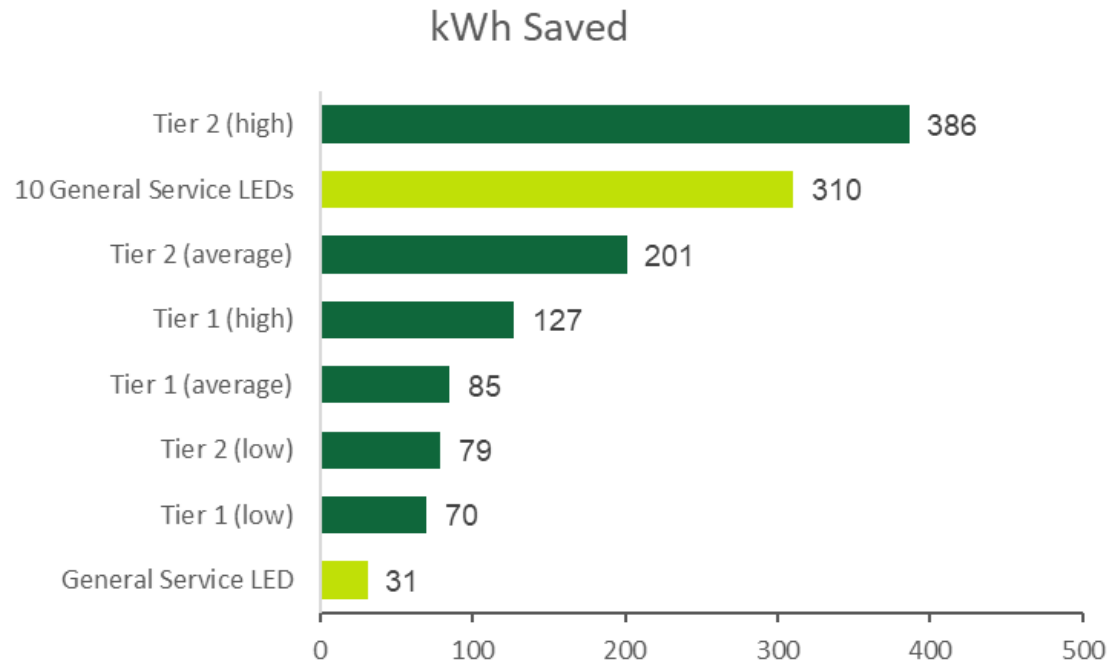
<https://www.youtube.com/watch?v=unqpq-9e8gg>

A close-up photograph of a person's hand squeezing a lemon over a grill. The lemon juice is falling onto two pieces of food, likely salmon, which are cooking on wooden planks over a metal mesh grill. The grill is positioned over a fire pit with glowing coals and flames. The background is slightly blurred, showing an outdoor setting.

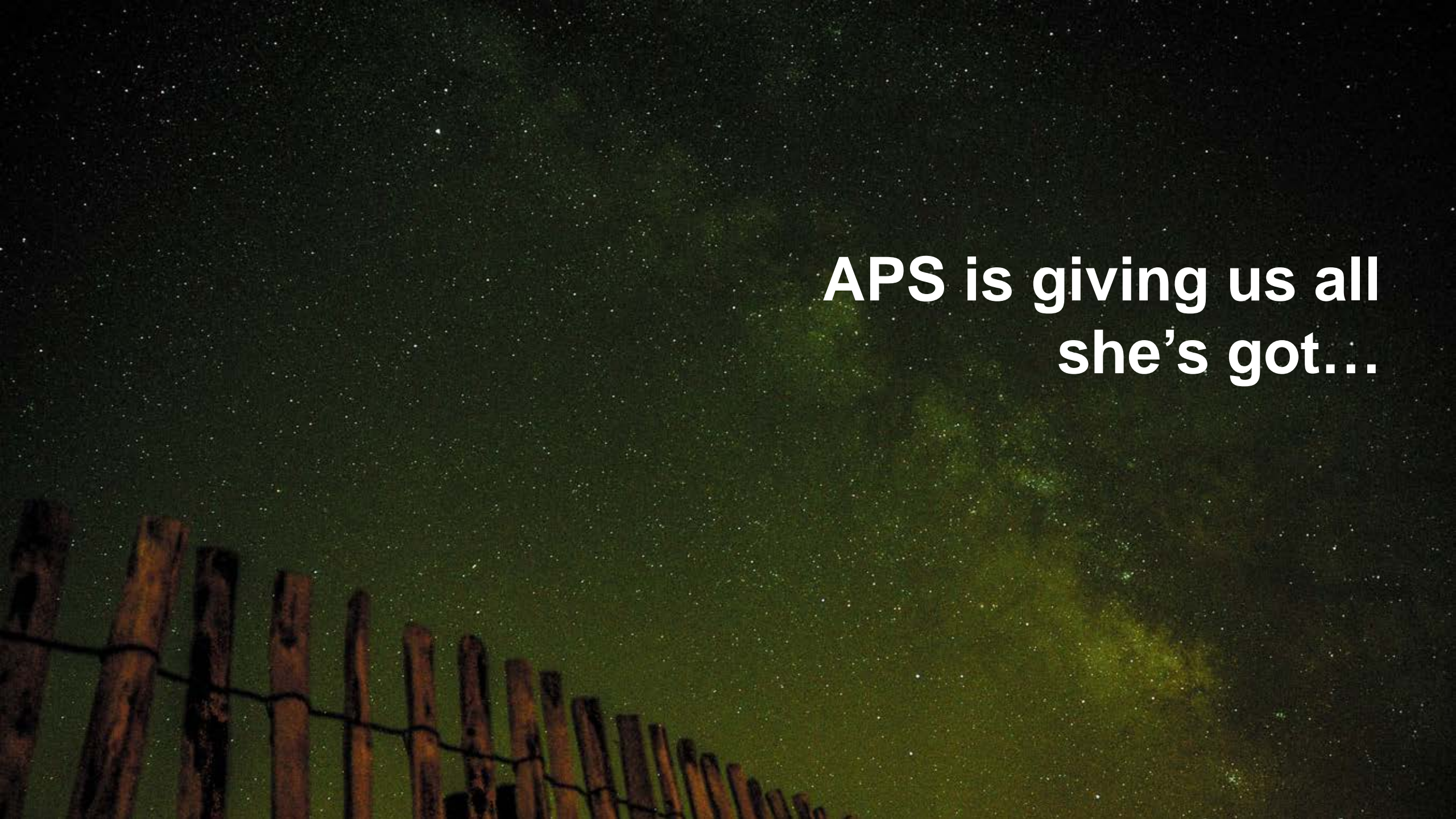
Worth the Effort?

- 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...**

- 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

- 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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A photograph of a brick wall with a sign. The sign is rectangular and mounted on the wall. It features the letters 'NMR' in large, green, 3D block letters. Below a horizontal line on the sign, the words 'Group, Inc.' are written in a smaller, dark grey, sans-serif font. The background of the sign is a textured, light brown color. The brick wall is made of red bricks with grey mortar. To the left of the wall, a white window frame is visible, slightly out of focus.

NMR

Group, Inc.

- 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)
 - <https://tinyurl.com/RLPNC174-5>
- Field Metering Study in Massachusetts
 - <https://tinyurl.com/RLPNC173>