### Advanced Power Strip – Tier 1

###### Description

This measure relates to Advanced Power Strips – Tier 1 which are multi-plug power strips with the ability to automatically disconnect specific connected loads depending upon the power draw of a control load, also plugged into the strip. Power is disconnected from the switched (controlled) outlets when the control load power draw is reduced below a certain adjustable threshold, thus turning off the appliances plugged into the switched outlets. By disconnecting, the standby load of the controlled devices, the overall load of a centralized group of equipment (i.e. entertainment centers and home office) can be reduced. Uncontrolled outlets are also provided that are not affected by the control device and so are always providing power to any device plugged into it. This measure characterization provides savings for a 5-plug strip and a 7-plug strip.

This measure was developed to be applicable to the following program types:  TOS, NC, DI.

If applied to other program types, the measure savings should be verified.

###### Definition of Efficient Equipment

The efficient case is the use of a 5 or 7-plug advanced power strip.

###### Definition of Baseline Equipment

The assumed baseline is a standard power strip that does not control connected loads.

###### Deemed Lifetime of Efficient Equipment

The assumed lifetime of the advanced power strip is 4 years[[1]](#footnote-1).

###### Deemed Measure Cost

The incremental cost of a advanced power strip over a standard power strip with surge protection is assumed to be $16 for a 5-plug and $26 for a 7-plug[[2]](#footnote-2).

###### Loadshape

Loadshape R13 - Residential Standby Losses – Entertainment

Loadshape R14 - Residential Standby Losses - Home Office

###### Coincidence Factor

The summer peak coincidence factor for this measure is assumed to be 80%[[3]](#footnote-3).

Algorithm

###### Calculation of Savings

###### Electric Energy Savings

ΔkWh5-Plug = 56.5 kWh [[4]](#footnote-4)

ΔkWh7-Plug = 103 kWh [[5]](#footnote-5)

###### Summer Coincident Peak Demand Savings

∆kW**=** ∆kWh/ Hours \* CF

Where:

Hours = Annual number of hours during which the controlled standby loads are turned off by the Advanced power Strip.

= 7,129 [[6]](#footnote-6)

CF = Summer Peak Coincidence Factor for measure

= 0.8 [[7]](#footnote-7)

ΔkW5-Plug = 56.5 / 7129 \* 0.8

= 0.00634 kW

ΔkW7-Plug = 102.8 / 7129 \* 0.8

= 0.0115 kW

###### Natural Gas Savings

N/A

###### Water Impact Descriptions and Calculation

N/A

###### Deemed O&M Cost Adjustment Calculation

N/A

###### Measure Code: RS-CEL-SSTR-V02-160601

1. David Rogers, Power Smart Engineering, October 2008; “Smart Strip electrical savings and usability”, p22. [↑](#footnote-ref-1)
2. Price survey performed in NYSERDA Measure Characterization for Advanced Power Strips, p4 [↑](#footnote-ref-2)
3. Efficiency Vermont coincidence factor for advanced power strip measure –in the absence of empirical evaluation data, this was based on assumptions of the typical run pattern for televisions and computers in homes. [↑](#footnote-ref-3)
4. NYSERDA Measure Characterization for Advanced Power Strips. Study based on review of:

   Smart Strip Electrical Savings and Usability, Power Smart Engineering, October 27, 2008.

   Final Field Research Report, Ecos Consulting, October 31, 2006. Prepared for California Energy Commission’s PIER Program.

   Developing and Testing Low Power Mode Measurement Methods, Lawrence Berkeley National Laboratory (LBNL), September 2004. Prepared for California Energy Commission’s Public Interest Energy Research (PIER) Program.

   2005 Intrusive Residential Standby Survey Report, Energy Efficient Strategies, March, 2006.

   Smart Strip Portfolio of the Future, Navigant Consulting for San Diego G&E, March 31, 2009. [↑](#footnote-ref-4)
5. Ibid. [↑](#footnote-ref-5)
6. Average of hours for controlled TV and computer from; NYSERDA Measure Characterization for Advanced Power Strips [↑](#footnote-ref-6)
7. Efficiency Vermont coincidence factor for advanced power strip measure –in the absence of empirical evaluation data, this was based on assumptions of the typical run pattern for televisions and computers in homes. [↑](#footnote-ref-7)