

Residential standby power consumption in Australia

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1. SYNOPSIS

Research has revealed that 11.6% of residential energy consumption in Australia is attributable to appliances in 'standby' mode. Australian governments are responding to the challenge.

2. SIZE AND SCOPE OF THE PROBLEM

Standby generally refers to a product or appliance that is connected to a power source but does not produce any sound or picture, transmit or receive program information or data and is waiting to be switched 'on' by a direct or indirect signal. Until recently, the extent of residential standby energy consumption in Australia had not been adequately quantified.

Recent Research

In 2000, Australian Governments commissioned a comprehensive survey of the residential sector with the objective of developing a thorough understanding of standby energy consumption in Australia.¹ This involved intrusive surveys of 64 houses in 3 large Australian cities, telephone interviews of 801 people Australia-wide, measurements of 533 appliances in major retail stores and analysis of historical metering data. For the purposes of this study, appliances that were in "off" mode and consuming some power were also included within the scope of standby. The study also includes a range of small continuous loads within households that do not strictly fall into the standby category (miscellaneous electricity consumption).

Results

The results revealed that the average standby and miscellaneous power consumption was 86.8 Watts or 760 kWh per household per annum. It is estimated that standby costs each Australian household A\$95 (or 52 Euro). These figures exclude water heaters and refrigeration appliances.

Overall, standby and miscellaneous accounts for 11.6% residential electricity use in 2000, equating to 5.3 Mt CO₂e. It is estimated that this figure is increasing at 8% per annum.

Product profiles

Product	Ownership per household	Stock average	Usage patterns	Comments
TVs	1.9 (increasing) Average age 8 years	Standby = 9.6W (decreasing)	50% in 'off' mode 50% in standby	Most have hard off switch. Older TVs usually have no standby.
VCRs	1.21 (increasing) Average age 6 years	Standby = 7.9W (decreasing)	89% in standby 11% off (at wall)	Few have hard off switch
Computers and peripherals	0.73 (increasing fast) Average age 3.5 years (most < 2 years)			Most computers have hard off, but standby in off mode increasing. Monitors, speakers, modems and printers have significant off mode consumption
Clothes washers	0.95 (saturated)	Off = 2.0W (increasing)	All in off mode	Increasing electronics => off mode consumption becoming common

Product	Ownership per household	Stock average	Usage patterns	Comments
Clothes dryers	0.53 (saturated)	Off = 0.4W (increasing)	All in off mode	Electronics relatively uncommon, but increasing
Dishwashers	0.31 (increasing slowly)	Off = 0.5W (increasing)	All in off mode	Increasing electronics => off mode consumption becoming common
Microwave ovens	0.93 (saturated) Average age 7 years	Standby = 3.9W (stable)	Most in standby mode (clock) 20% of households switch off at wall.	Some manual timer models with no standby
Mobile phone chargers	1.05 (close to saturated) Average age 2 years	Standby = 1.2W	31% in standby (plugged in, not charging) 69% unplugged	Newer models mostly have very low standby
Fax machines	0.17 (trend unknown)	Standby = 8.2W (decreasing)	Most in standby. 27% only on as required	
Answering machines	0.42 (saturated)	Standby = 3.3W	Most in standby	
Portable vacuum cleaners	0.26 (increasing)	Standby = 1.3W (stable)	Most in standby	
Other audio and visual	5	Standby = 9.5W (stable) Off (where present) = 1.3W		Includes stereo systems (integrated and separate), pay TV decoders & DVDs (excludes TVs & VCRs). Many have no off mode.
Battery operated appliances	3.5	Standby = 1.9 (stable)		Includes battery chargers, electric toothbrushes and shavers, some halogen lamps & video cameras.
Miscellaneous		Standby = 8.0W Off = 1.5W		Includes aerial amps, air fresheners (1.9W), heated towel rails, musical instruments etc.

3. AUSTRALIA'S POLICY RESPONSE

The issue of how to reduce standby power consumption in Australia is being addressed jointly by Commonwealth, State and Territory Governments.

One Watt target

Australian governments recently adopted a one-watt standby target for all products. Consequently, policies are designed to ensure that the maximum standby power consumption of all appliances manufactured in or imported into Australia is one watt.

This statement of principle sends a clear message to industry and provides coherence to a diverse range of policies designed to combat standby power consumption.

Energy Star²

Australian governments have supported the Energy Star Office Equipment program since 1999. Substantial resources have been allocated to promoting and developing the program, resulting in a large number of manufacturers and retailers signing up as partners.

In July 2000, Australian governments agreed to expand the Energy Star program to incorporate home electronics. It is expected that the first TVs, VCRs, DVD players and audio equipment marked with the Energy Star logo will appear on the shop floor in 2001. A significant marketing effort will commence at this time in order to promote the benefits of purchasing energy efficient Energy Star appliances to consumers.

Energy Rating label³

All Australian State and Territory Governments have in place regulations which make it mandatory for Energy Rating labels to be displayed on refrigerators, freezers, clothes washers, clothes dryers, dishwashers and air conditioners up to 7.5kW. Appliances are awarded a star rating of between one and six stars.

The methodologies currently used to determine the energy efficiency of appliances measures energy use over the course of a single cycle. Annual energy use is then estimated by multiplying the per cycle energy use by the assumed number of cycles per year based on an assumed usage pattern. Standby energy consumption is therefore not adequately accounted for in the current estimation of annual energy use.

Australian governments have given their in-principle support to the revision of the testing methodologies to ensure that standby power consumption is incorporated into annual energy usage figures and the star ratings. The mandatory nature of the label means that this revision process will take some time.

A harmonised approach

Given that standby energy consumption is largely attributable to products traded internationally, it is important that costs to industry are minimised by ensuring that Australia's policy response is developed in co-operation with its major trading partners. Consequently, Australian governments are committed to working closely with the International Energy Agency and the International Electrotechnical Commission to develop a harmonised response designed to reduce standby power consumption globally.

4. END NOTES

¹ Quantification of Residential Standby Power Consumption in Australia: Results of Recent Survey Work, Energy Efficient Strategies and EnergyConsult for the National Appliance and Equipment Energy Efficiency Committee, February 2001

² See www.energystar.gov.au.

³ See www.energyrating.gov.au.