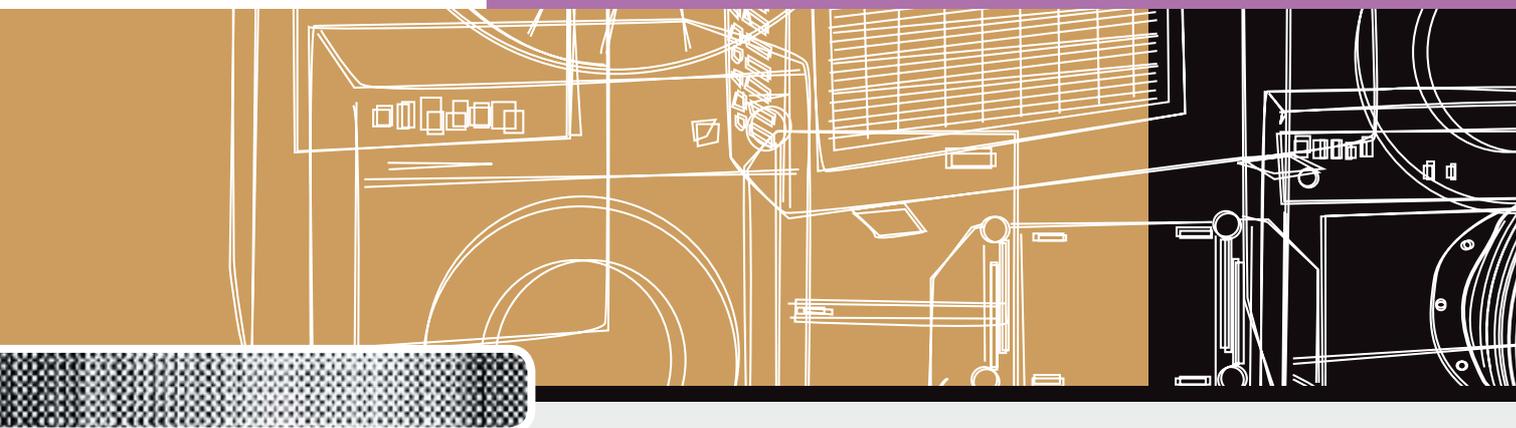


*NATIONAL APPLIANCE AND EQUIPMENT
ENERGY EFFICIENCY PROGRAM*

*APPLIANCE STANDBY POWER CONSUMPTION
STORE SURVEY 2003 - EXECUTIVE SUMMARY*



March 2003

**AN INITIATIVE OF THE MINISTERIAL COUNCIL
ON ENERGY FORMING PART OF THE
NATIONAL GREENHOUSE STRATEGY**

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March 2003

INTRODUCTION

Overview

This report summarises the results of in-store standby measurements for some 573 new household appliances that were undertaken in January 2003. The results are summarised by product group and are compared with readings undertaken in similar surveys in 2001 and 2002. These three in-store surveys are the beginning of a longer term benchmarking program and results need to be viewed in this light. NAEEEEC propose to undertake similar surveys in future years to assess industry progress in reducing standby power of appliances.

Background

In 2000, the Australian Greenhouse Office (AGO) and the National Appliance & Equipment Energy Efficiency Committee (NAEEEC) commissioned the report, Quantification of Residential Standby Power Consumption in Australia (EES and EnergyConsult, 2001). This study provides results of an intrusive survey where measurements on 2,500 appliances were undertaken in 64 houses in Melbourne, Sydney and Brisbane. The report also includes results of measurements on 531 new appliances in retail outlets and results of a telephone survey of 801 households in Australia, which documents information on appliance ownership, age and usage patterns. This research revealed that 11.6% of Australia's household electricity consumption can be attributed to energy used by appliances and electronic equipment when not performing their primary function (this figure also includes some small continuous loads not traditionally classified as "standby"). This "standby" consumption was estimated in 2000 to be costing Australians more than \$500 million per year and generating more than 5 million tonnes of carbon dioxide per annum.

Following the 2001 study follow-up store survey of new appliances was conducted in early 2002. The report titled Appliance Standby Power Consumption: Store Survey 2002 (EES and Energy Consult, 2002), measured standby power of 635 new appliances in retail outlets. This data was compared with the information recorded in the 2001 report, finding that while there appeared to be a slight decrease in standby power overall, a large proportion of products still consumed more than 1 W in standby and off modes.

This executive summary outlines results which are detailed in the full report titled Appliance Standby Power Consumption: Store Survey 2003 (EES and EnergyConsult, 2003).

Objectives of this Study

The AGO and the NAEEEEC commissioned this survey in 2003 as part of the monitoring of its program to reduce the standby power of all electronic appliances to less than 1W. The main objectives of this survey were to:

- Quantify the magnitude of electricity used in standby mode by new appliances offered for sale in the Australian market in early 2003.
- Compare the results from this study with the results of similar studies undertaken in 2001 and 2002 in order to track the industry's progress in reducing standby power.

Similar studies are proposed in future years to assess industry progress towards the government's 1 Watt target.

Research Methods

Four major Melbourne retail stores were approached to take part in the study, in which power measurements on a large range of appliances were undertaken on the shop floor. An accurate metering device was systematically used to measure display stock across 31 appliances. Power consumption was measured in Watts for a range of modes including "in use", "passive and/or active standby" and "off mode", where applicable (only certain modes were measured for each appliance group). Other information recorded included brand, model, power factor, current crest factor and supply voltage. These results were analysed and compared with outcomes from the 2001 and 2002 in-store surveys.

For the purposes of this report, "standby" is a general term which refers to the power consumption of a product or appliance that is connected to a power source but does not produce any sound or picture, transmit or receive information or is waiting to be switched "on" by a direct or indirect signal from the consumer. This includes the "off" mode, even where there is no remote control. Unqualified use of the term standby generally means the lowest power consumption when connected to the mains.



Key Findings

Overall there has been a significant decline active and passive standby since 2001

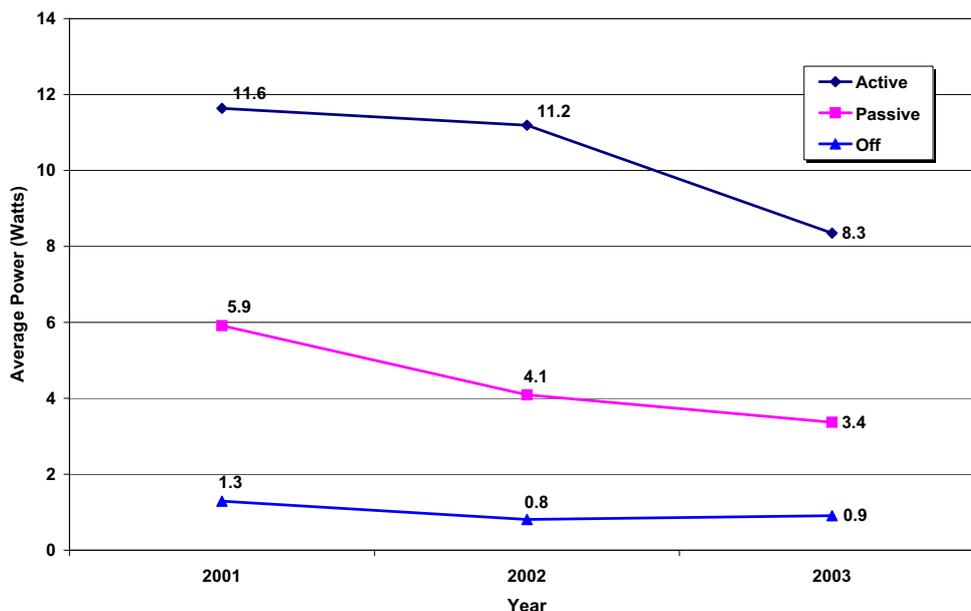
When all products measured are analysed as one group and compared to 2001 data, a statistically significant¹ decline in average power was evident in both active and passive standby modes. For passive standby, the decline in average power was significant between 2001 and 2002 and between 2002 and 2003 while for active standby significant improvement was noted between 2002 and 2003². This indicates that there is a downward trend in active and passive standby power for the products measured in this survey (noting that the mix and number of products measured in each year is comparable but not identical).

Interestingly, while the average off mode power declined significantly from 2001 to 2002 it remained stable between 2002 and 2003 (a slight increase was noted although this was not significant). It is difficult to determine whether off mode power is trending downwards as significance was not evident between 2001 and 2003. Forthcoming surveys will determine if there is a downward trend emerging. It should be noted that the number and mix of products measured in each year of the survey were somewhat different so the results need to be taken as indicative: trends within each product need to be examined separately to give a more concise picture. Table 1 below summarises the results while Figure 1 graphs these results.

TABLE 1 – SUMMARY OF AVERAGE POWER BY MODE ACROSS ALL PRODUCTS

	2001	2002	2003
Total readings off	258	380	330
Average off	1.3W	0.8W	0.9W
Total readings passive standby	440	397	325
Average passive standby	5.8W	4.1W	3.4W
Total readings active standby	101	210	216
Average active standby	11.6	11.2	8.3

FIGURE 1 – SUMMARY OF AVERAGE POWER BY MODE ACROSS ALL PRODUCTS



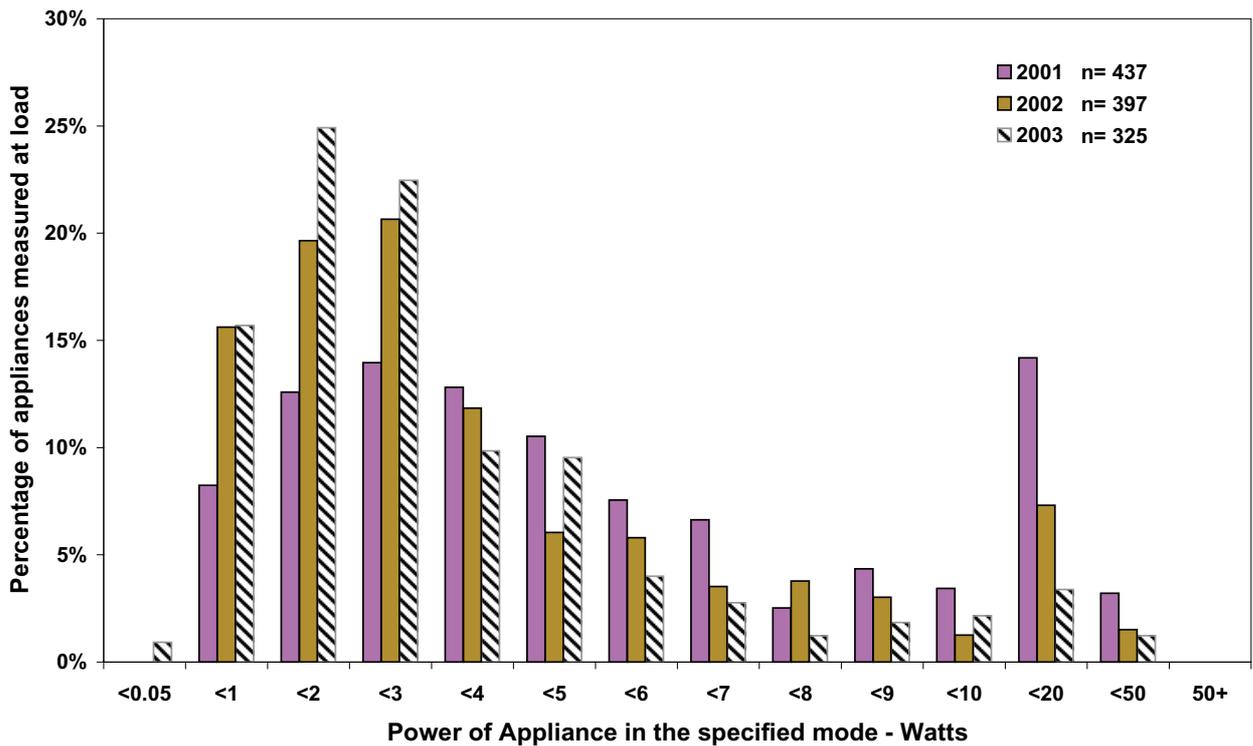
1 Significant at the 95% confidence level.

2 It should be noted that active standby measurements for espresso machines were removed from the analysis due to their uncharacteristic high power during the appliance warming (active standby) phase which requires further investigation.

Figure 2 below shows the distribution of measurements taken for all products in passive standby mode. The distribution of all three years of data are presented on the graph. The graph clearly shows that the proportion of measurements of less than 3W has increased since 2001. In 2001, 35% of all measurements taken were less than 3W, in 2002 this had increased to 57%, while in 2003,

64% of measurements were under 3W. Similarly, the proportion of passive standby measurements less than 1 Watt increased from 8% in 2001 to 16% in 2002 to 17% in 2003. The change in the power distribution further supports that passive standby has declined in the appliances measured since 2001.

FIGURE 2: DISTRIBUTION OF “PASSIVE STANDBY MODE” POWER – ALL PRODUCTS



There has been a major shift in the type of home entertainment technology available in 2003 and encouragingly, some new technologies are proving to be good performers in terms of standby power.

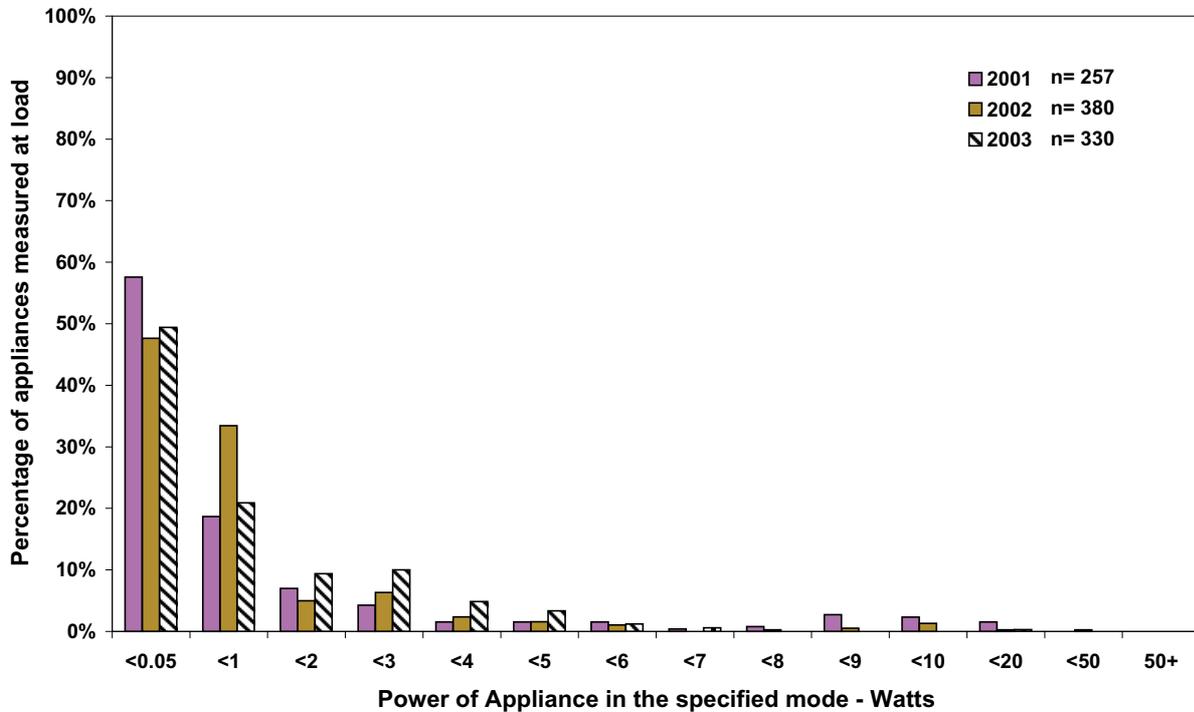
The ever changing world of home entertainment equipment saw new products being measured in the 2003 survey, such as DVD recorders, AV Receivers with DVD players, DVD/VCR combination units, subwoofers and plasma televisions. While sample sizes were very small for some of these products, average standby was considered reasonable (i.e. <3W) for both AV receivers with DVD players and plasma televisions. Product types that were measured in previous surveys but have become obsolete in 2003 include some separate stereo components which have been replaced by DVD technology.

The profusion of remote controls to operate products has rendered hard “off” switches almost obsolete.

Since 2001 there has been a decline in presence of true “off” switches on appliances, such that in 2003 it was found that most products, particularly among home entertainment equipment, have no off switch and nearly all have remote control operation from their lowest power mode (passive standby). Even those products with a “power” switch (which many consumers assume to be off) continue to use significant amounts of power in “off mode”: this is particularly the case among computers, laptops, computer monitors and other computer peripherals. While some of this power may be required for some essential functions (eg maintaining clock functions, awaiting remote control signals etc), in many cases the majority would appear due to be poor product design, or at best, little consideration of standby power issues.

Figure 3 shows that in 2001 77% of products with an off mode measured less than 1 Watt in off mode. In 2003, only 70% measured less than 1 Watt and the proportion of appliances using between 1W and 5W in off is increasing.

FIGURE 3: DISTRIBUTION OF “OFF MODE” POWER – ALL PRODUCTS



Results indicate that there is an opportunity for many appliances to improve energy consumption in standby and off modes.

For the products measured, there was generally a wide variance in power in off mode and passive standby mode without any difference in performance or functionality between these products. This tends to suggest that there are substantial opportunities for manufacturers to reduce standby power, probably at low marginal cost.



Trends for different product groups are mixed. While some products appear to be improving, there is still substantial work to be done for some product types. Some products have poor standby power characteristics. Ongoing work is required to track current and future trends. Key trends are:

MAJOR APPLIANCES:

- Air conditioners – insufficient data is available through retailers (most models are hard wired);
- Clothes dryers – standby has decreased since 2001, although sample sizes for all years are too small to draw definitive conclusions;
- Dishwashers – standby increased slightly from 2002 to 2003;
- Washing machines – trend appears to be decreasing standby. Samples are biased towards front loader models which have a lower standby and smaller overall market share (approximately 35% in the store sample compared to 13% of sales in the market), so data may be providing a false indication.

COMPUTERS AND PERIPHERALS:

- Computers – small samples but standby appears to be increasing;
- Monitors – small sample but standby appears to be increasing;
- Inkjet printers – standby appears to be stable but is poor;
- Laser printers – insufficient data to determine trends (probably low standby);

HOME ENTERTAINMENT EQUIPMENT:

- Standard TVs – a slight decrease in passive standby although the improvement in 2003 is not significant;
- Projection TVs – standby appears to be stable (small sample);

- Plasma TVs – no trend data but data shows that passive standby usage is at the lower end (average 2.4W) (new product in 2003);
- VCRs – standby appears to be trending downwards but differences in 2003 are not significant;
- DVD players – significant improvement in off and passive standby mode;
- Integrated stereos – significant improvement in passive standby power but standby started from a high base;
- Portable stereos – no improvement in passive or active standby, but these were already at a relatively low base;
- AV Receivers – standby is stable;
- AV Receivers with DVD – no trend data (new product in 2003).

SMALL APPLIANCES:

- Breadmakers – standby is stable;
- Hand held vacuum cleaners (dustbusters) – standby is stable;
- Microwaves ovens – standby is stable;
- Espresso machines – no trend data (new product in 2003). Sample is small but possibly a poor standby associated with these products. Further investigation required.

Overall results - summary

The power consumption of 573 appliances was measured in four large retail stores in January 2003 in Melbourne, Australia. Table 2 provides a summary of the average active/passive standby and off readings (as applicable) for each of the appliance groups measured.

Product summaries, summarising key data and significant trends, are included following. Numbers in brackets indicate the sample size used to determine the average value. It should be noted that where samples are less than five, the results for these products should be considered as indicative only.

TABLE 2 – A SUMMARY OF POWER MEASUREMENTS BY APPLIANCE – 2003 STORE SURVEY

Appliance	Total Number of Appliances	Valid Readings: 26	Average of Off Power (W)	Valid Readings: Passive Standby	Average of Passive Standby Power (W)	Valid Readings: Active Standby	Average of Active Standby Power (W)	Valid Readings: In Use	Average of In Use Power (W)
Air Conditioner	26	26	0.6						
Breadmaker	17			17	1.6				
Digital Set Top Box	4	1	0.2	4	7.2			4	21.5
Dishwasher	27	27	1.0						
Dryer	11	11	0.4			1	3.9		
DVD Recorder	1			1	9.1	1	25.0		
Microwave Oven	40			40	3.1				
Printer - Inkjet	15	11	2.4	13	6.0				
Printer - Laser	2	2	0.0	2	3.9				
Stereo - Integrated	35	1	1.6	32	4.1	35	17.4		
Stereo - Portable	38			38	2.0	38	5.4		
TV - LCD	1	1	0.7	1	1.2			1	54.7
TV - Plasma	13	9	0.7	12	2.4			10	292.4
TV - Projection	16	15	0.1	12	2.3			16	174.7
TV - Standard	72	72	0.0	56	5.9			70	79.1
TV/VCR	2	2	0.0	2	7.8			2	50.8
VCR	25			25	3.1	25	8.0		
Washer/Dryer	3	3	1.2			2	3.3		
Washing Machine	60	60	1.0			28	3.3		
DVD Player	39	12	0.1	27	1.7	39	9.9		
Stereo - Receiver	1			1	0.6	1	13.3		
CD Amp	3			3	2.1	3	13.6		
DVD & VCR Player	6			6	4.3	6	17.3		
Computers - Box	20	20	3.6						
Computers - Laptop	9	9	1.4						
Computers - Monitor	14	14	2.6						
Espresso Machine	12	12	1.8			12	1057.5		
Hand-held Vac	18			18	1.1	17	3.2		
Home Theatre – AV Receiver	24	11	0.4	23	1.6			24	49.4
Home Theatre – AV Receiver/DVD	16	8	0.1	9	2.9			16	35.8
Home Theatre - Subwoofer	3	3	0.0			3	13.6		
Grand Total	573	330	0.9	325	3.4	228	63.6	143	92.7

PRODUCT SUMMARY – HOME ENTERTAINMENT

Televisions

Description: Conventional cathode ray tube (CRT) televisions.

Number of products measured in 2003: 72

Mode = off: average power 0.0W (72)

Mode = passive standby: average power 5.9W (56), maximum 35.4W.

Mode = in use: average power 79.1W (70).

Trend: The passive standby power for TVs is still high. There has been a slight decrease in average power in passive standby mode although the improvement in 2003 is not statistically significant.

Notes: In off mode all models were 0.1W or less. In passive standby 12 models used less than 1W in 2003.

All products had remote controls. Average size on display was 59cm.

Televisions – LCD

Description: Liquid crystal display (LCD) televisions.

Number of products measured in 2003: 1

Mode = off: average power 0.6W (1).

Mode = passive standby: average power 1.2W (1).

Mode = in use: average power 54.7W (1).

Trend: Comparisons are unable to be made due to small sample size and units having different screen sizes.

Notes: 2003 unit was 50cm and 2002 units were 109cm.

TVs – Projection

Description: Large projection screen televisions (mostly rear projection).

Number of products measured in 2003: 16

Mode = off: average power 0.1W (15).

Mode = passive standby: average power 2.3W (12), maximum 10.1W.

Mode = in use: average power 174.7W (16).

Trend: Standby power appears to be stable.

Notes: In off mode all models were 0.1W or less. In passive standby 2 models used less than 1W. Sizes ranged from 109cm to 135cm.

TVs – Plasma

Description: Plasma Display screens for television viewing

Number of products measured in 2003: 13

Mode = off: average power 0.7W (9).

Mode = passive standby: average power 2.4W (12), maximum 5.2W.

Mode = in use: average power 292.4W (10).

Trend: Prior to 2003 only one unit had been measured.

Notes: In off mode most models (6) were 1W or less. In passive standby 1 model used less than 1W. Sizes ranged from 106cm to 127cm. High in use power.

VCRs

Description: Conventional VHS video cassette recorders.

Number of products measured in 2003: 25

Mode = passive standby: average power 1.7W (27), maximum 5.7W.

Mode = active standby: average power 8.0W (25).

Trend: Passive and active standby modes both appear to be trending downwards although no statistically significant differences were noted in 2003.

Notes: None of the units measured had an off mode. The minimum power in passive standby was 1.4W. Intermediate sleep mode (down from active standby) and "in use" were not measured as this was too time consuming.

DVD Players

Description: Digital Video Disk players (DVD).

Number of products measured in 2003: 39

Mode = off: average power 0.1W (12)

Mode = passive standby: average power 3.0W (37)

Mode = active standby: average power 9.9W (39)

Trend: Power in all modes measured display a significant downward trend.

Notes: Only a limited number of models had off mode, but most of these were 0.0W.

Stereos – Integrated

Description: Integrated stereo systems (usually CD/tape/tuner/amp, non portable).

Number of products measured in 2003: 35

Mode = off: average power 1.6W (1).

Mode = passive standby: average power 4.1W (32), maximum 25.2W.

Mode = active standby: average power 17.4W (35).

Trend: While there is no evident trend in active standby, there has been a statistically significant improvement (i.e. decrease) in passive standby power, but from a high base in 2001.

Notes: Only 1 of 35 models had an off mode. In passive standby mode 31% of models used less than 1W. In 2002, 38% used more than 10W compared to just 9% in 2003.

Stereos – Portable

Description: Portable stereo systems (usually CD/tape/tuner/amp, single case).

Number of products measured in 2003: 38

Mode = passive standby: average power 2.0W (38), maximum 6.5W.

Mode = active standby: average power 5.4W (38).

Trend: There appears to be no improvement in active or passive standby.

Notes: None of the models measured had an off mode. In passive standby mode most models used between 1W and 3W (2 models were just below 1W).

AV Receiver

Description: Amplifiers for home theatre suitable for both audio and visual devices and usually 4+ speakers.

Number of products measured in 2003: 40

Mode = off: average power 0.3W (20).

Mode = passive standby: average power 2W (20), maximum 10.6W.

Mode = in-use: average power 43.9W (40).

Trend: Power in all modes appears to be stable.

Notes: Half the models had an off mode and except for one unit, all were less than 1W.

AV Receiver with DVD

Description: Amplifiers for home theatre with built in DVD player

Number of products measured in 2003: 16

Mode = off: average power 0.1W (9).

Mode = passive standby: average power 3.2W (8), maximum 10.6W.

Mode = in-use: average power 35.8W (16).

Trend: 2003 was the first time this product was measured.

Notes: Over half the models had an off mode and all were less than 1W.

PRODUCT SUMMARY – MAJOR APPLIANCES

Air Conditioners

Description: Fixed (window wall) and portable air conditioners.

Number of products measured in 2003: 26

Mode = off: most 0.0W, average power 0.6W, maximum 4W

Trend: Off mode power in Air Conditioners appears to be increasing.

Notes: Very few of models measured had remote control operation. The most popular type of air conditioners are split systems (many of these use remote controls) and almost all “hard wired”, so in-store measurements were not possible. Lab measurements will be necessary to collect data.

Dishwashers

Description: Domestic dishwashers.

Number of products measured in 2003: 27

Mode = off: average power 1W, maximum 4.5W, 26% were 0.0W

Trend: Towards a slight increase in off mode power

Notes: Soft touch controls may increase off mode power.

Clothes Dryers

Description: Domestic clothes dryers.

Number of products measured in 2003: 11

Mode = off: average power 0.4W, maximum 2.5W, 73% were 0.0W

Trend: There appears to be a trend toward reducing off mode power.

Notes: Sample sizes are small so care is required when examining trends.

Washing Machines

Description: Domestic clothes washers (front and top loading).

Number of products measured in 2003: 60

Mode = off: average power 1W, maximum 5.1W, 45% were 0.0W (60)

Trend: The reduction observed from 2001 levels appears to be being sustained in 2003.

Notes: Although some 55% of clothes washers had an off mode power of less than 1W, there were a significant number in the range 1-4W. Care is required when examining this trend as the samples include up to 35% front loaders which have generally had a low off mode power (typically 0.15W). However, front loader sales are less than 15% of total sales. Some machines had to be “tricked” into standby mode after power is first applied (normally this takes up to 30 minutes).

PRODUCT SUMMARY – COMPUTERS AND PERIPHERALS

Computers - Box

Description: PC/hard drive box with desktop computers.

Number of products measured in 2003: 20

Mode = off: average power 3.6W, maximum 6.3W, none consumed less than 1W.

Trend: Appears to be a slight increase in off mode power

Notes: Off mode power may allow hot key start for some models. Main change is associated with recent changes in power supply design and configuration.

Computers - Laptop

Description: Portable or laptop computer.

Number of products measured in 2003: 9

Mode = off: average power 1.4W, maximum 2.4W, two consumed less than 1W.

Trend: 2003 was the first time these were measured

Monitors – Computer

Description: Separate monitors for desktop computers.
Number of products measured in 2003: 14
Mode = off: average power 2.6W, maximum 6.3W.
Trend: Appears to be increasing.
Notes: The reason for any off mode power is unclear (possibly EMC filters).

Printers - Inkjet

Description: Inkjet printers for personal computers.
Number of products measured in 2003: 15
Mode = off: average power 6W, maximum 10.6W, five less than 1.0W.(11)
Mode = passive: average power 2.4W, maximum 6.0W, None less than 1.0W (12)
Trend: Standby power values appear to be stable but standby power is poor.
Notes: Some models had no off switch (most were soft touch).

Printers - Laser

Description: Laser printers for personal computers.
Number of products measured in 2003: 2
Mode = off: average power 0.0W.
Mode = passive: average power 3.9W, maximum 4.6W
Trend: Insufficient data to establish a trend
Notes: All models had zero power in off. Passive standby power was instantaneous only and did not include laser drum heating cycles.

PRODUCT SUMMARY – SMALL APPLIANCES

Breadmakers

Description: Domestic electric breadmakers.
Number of products measured in 2003: 17
Mode = active: average power 1.6W, most in the range 1W to 3W
Trend: Little change from 2001 value (1.6W).
Notes: No models had an off button

Hand Held Vacuum

Description: Portable battery operated vacuum cleaners (dustbusters).
Number of products measured in 2003: 18
Mode = passive standby: average power 1.1W
Mode = active standby: average power 3.2W
Trend: There appears to little change in both active and passive standby.
Notes: Passive mode is power supplied to the charging station but appliance removed. Active standby mode is when the appliance is on the charging station, battery is charging.

Microwaves

Description: Domestic microwave ovens.

Number of products measured in 2003: 40

Mode = passive standby: average power 3.1W, maximum 6.2W

Trend: There is no statistically significant trend for microwave ovens (stable standby).

Notes: Stock values would suggest that there has been a slight reduction of standby power for microwaves in recent years. All but 2 models had electronic controls. Only one manual control model had a standby power < 1W.

Espresso Machines

Description: Steam or pump operated coffee making.

Number of products measured in 2003: 12

Mode = Off: average power 1.8W, maximum 12.5W (67% 0.0 W)

Mode = active standby: average power 1,057.5W, maximum 1,310W

Trend: 2003 was the first time this appliance was measured.

Notes: In active standby, all machines consumed a great deal of energy due to the machine warming up at a fast rate. Further research needs to be conducted to determine consumer behaviour towards turning off their espresso machines.

Further Information:

Energy Efficient Strategies and EnergyConsult, 2003, Appliance Standby Power Consumption: Store Survey 2003, NAEEEEC report 2003/04. This report contains the detailed results of the Australian retail store standby survey undertaken in early 2003 as outlined in this executive summary. A copy is available from www.energyratng.gov.au from the electronic library under the standby section.

Energy Efficient Strategies and EnergyConsult, 2002, Appliance Standby Power Consumption: Store Survey 2002, NAEEEEC report 2002/08. This report contains detailed results of the Australian retail store standby survey undertaken in early 2002. A copy is available from www.energyratng.gov.au from the electronic library under the standby section.

Energy Efficient Strategies and EnergyConsult 2001, Quantification of Residential Standby Power Consumption In Australia: Results of Recent Survey Work. Prepared for NAEEEEC, this report provides results of an intrusive survey where measurements on 2,500 appliances were undertaken in 64 houses in Melbourne, Sydney and Brisbane. The report also includes results of measurements on 531 new appliances in retail outlets and results of a telephone survey of 801 households in Australia, which documents information on appliance ownership, age and usage patterns. A copy is available from www.energyratng.gov.au from the electronic library under the standby section.

An electronic copy of this executive summary and the main report is available from www.energyratng.gov.au from the electronic library under the standby section.

NAEEEC MEMBER ORGANISATIONS

The Commonwealth, New Zealand, each State and each Territory are represented on NAEEEC and participate in its deliberations. Representatives are drawn from officials within Government departments, agencies and statutory authorities or from persons appointed to represent those bodies. Representatives are usually a senior officer directly responsible for energy efficiency. The membership is currently under review and may expand to include other agencies working in these fields.

The *Australian Greenhouse Office* is the lead Commonwealth agency for greenhouse matters. The Australian Greenhouse Office (AGO) is responsible for monitoring the National Greenhouse Strategy in a cooperative effort with States and Territories and with the input of local Government, industry and the community. An AGO officer is the chair of NAEEEC and others provide support for its activities.

The *NSW Ministry of Energy and Utilities* provides policy advice to the NSW Government and operates a regulatory framework aimed at facilitating environmentally responsible appliance and equipment energy use. The Ministry is represented on the Energy Efficiency and Greenhouse Gas working group through which the appliance and equipment related elements of the National Greenhouse Strategy will be progressed.

The *NSW Sustainable Energy Development Authority* was established in February 1996 with a mission to reduce the level of greenhouse emissions in New South Wales by investing in the commercialisation and use of sustainable energy technologies.

The *Office of the Chief Electrical Inspector* is the Victorian technical regulator responsible for electrical safety and equipment efficiency. Its mission is to ensure the safety of electricity supply and use throughout the State. The corporate vision of the Office is to demonstrate national leadership in electrical safety matters and to improve the superior electrical safety record in Victoria. The Office's strategic focus is to ensure a high level of compliance is sustained by industry with equipment efficiency labelling and associated regulations.

The *Sustainable Energy Authority* was established in 2000 by the Victorian Government to provide a focus for sustainable energy in Victoria. The Authority's objective is to accelerate progress towards a sustainable energy future by bringing together the best available knowledge and expertise to stimulate innovation and provide Victorians with greater choice in how they can take action to significantly improve energy sustainability.

The *Electrical Safety Office, Department of Industrial Relations*, is the Queensland technical regulator responsible for electrical safety and appliance and equipment energy efficiency. The office ensures compliance with electrical safety and efficiency regulations throughout Queensland.

The *Environmental Protection Agency*, a Division of Sustainable Industries, is Queensland's lead agency in the promotion of energy efficiency, renewable power, and other initiatives that reduce greenhouse gas emissions throughout the State. The key aim of the unit is to achieve increased investment in sustainable energy systems, technology and practice.

Energy Safety WA seeks to promote conditions that enable the energy needs of the Western Australian Community to be met safely, efficiently and economically.

The *Western Australian Sustainable Energy Development Office* promotes more efficient energy use and increased use of renewable energy to reduce greenhouse gas emissions while increasing jobs in related industries.

The *Office of the Technical Regulator* seeks to ensure the coordinated development and implementation of policies and regulatory responsibilities for the safe, efficient and responsible provision and use of energy for the benefit of the South Australian community.

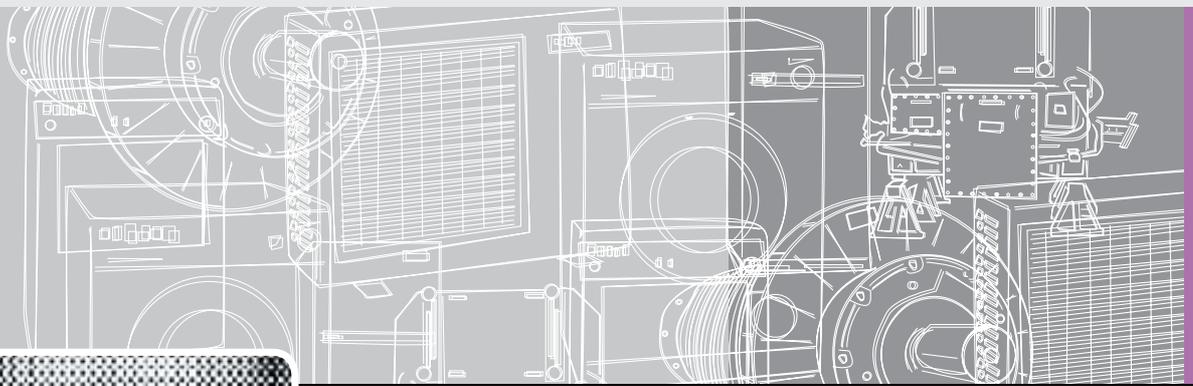
The Tasmanian Government's interest is managed by the *Office of Energy, Planning and Conservation*.

The Australian Capital Territory's interest is managed by the *Energy Policy Unit, Economic Management Branch, ACT Department of Treasury*. (<http://www.treasury.act.gov.au/energypolicy>)

The *Department of Employment, Education and Training* is responsible for the administration of regulations in the Northern Territory regarding various aspects of safety, performance and licensing for goods and services including electrical appliances.

The *Energy Efficiency and Conservation Authority (EECA)* is the principal body responsible for helping to deliver the New Zealand Government's extensive sustainable energy future. EECA's function is to encourage, promote and support energy efficiency, energy conservation and the use of renewable energy sources.

The *Ministry for the Environment (MfE)* is the lead environmental policy agency in New Zealand and is the government policy agency which advises the Minister of Energy on energy efficiency and renewables policy. MfE administers the Energy Efficiency and Conservation Act 2000, and energy efficiency regulations made under the Act.



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or any member organisation working
on the National Appliance and Equipment
Energy Efficiency Program.