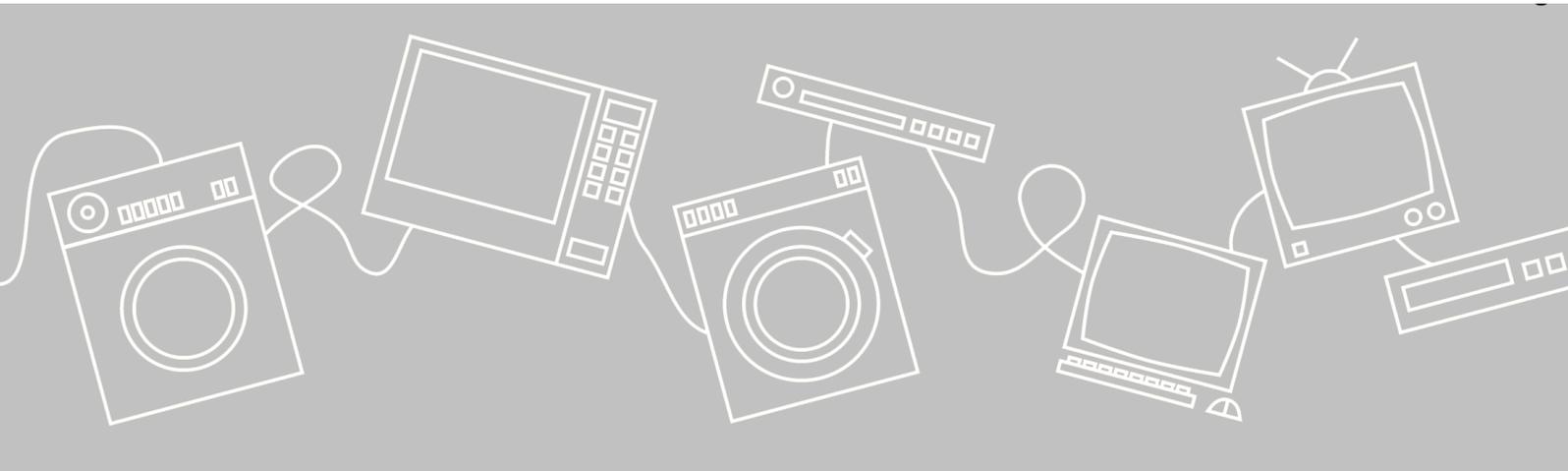


October 2006  
Report No 2006/10

# Standby Power – Current Status

A report for the Equipment Energy Efficiency (E3) Committee  
– which documents the state of standby power in Australia and  
New Zealand



## EXECUTIVE SUMMARY

Standby power is the energy consumed by an appliance while it is not performing its primary function. It now accounts for around 10% of the energy consumed in Australian homes.

The Ministerial Council on Energy published a national Standby Power Strategy - "*Money Isn't All You're Saving*" in late 2002 with the aim of curtailing excessive standby power. The strategy contained a wide range of possible policy measures to address excessive standby power and implemented some for particular product types. The strategy was a world-first and set a clear plan over ten years to ensure the standby power used by target products reached acceptable levels by 2012.

This report documents the actions and achievements in the field of standby power since 2000 when work and analysis first commenced in Australia. It also provides an overall assessment of the standby status of each major product group including information sources and trend data for each individual product where this is available.

In particular this report includes:

- Overview of the MCE Standby Power Strategy 2002-2012
- Overview of the status of each major product type
- An overview of standby power profiles released and their Stage 1 and Stage 2 requirements
- Full list of all E3 public reports on standby power
- Issues for consideration with respect to data collection
- An overview summary of several key studies undertaken to date
- A detailed summary of each significant product type with significant standby power levels.

This report has been prepared for the E3 Committee and provides background information for industry, governments and consumers on key actions in the areas of standby. The report also provides background information for the international and domestic standby conferences held in November 2006.



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## 1. Introduction

This report aims to provide an up to date picture of the status of standby power in Australia as of late 2006. It has been prepared by Energy Efficient Strategies for the Equipment Energy Efficiency (E3) Committee. It documents actions and achievements in the field of standby power since 2000 when work and analysis first commenced in Australia. It also provides an overall assessment of the standby status of each major product group including information sources and trend data for each individual product where this is available.

## 2. Description of the Problem

The energy consumption of major household appliances in Australia is generally well understood. Many of these products are now regulated for energy efficiency through programs such as energy labelling or Minimum Energy Performance Standards (MEPS). However, there is a significant proportion of household electricity consumption, most commonly called “miscellaneous end uses”, that is not well understood or documented.

Standby power was really only identified in the mid 1990’s. With the advent of consumer electronics and changes in the design and features of appliances, low levels of power consumption have become more prevalent when the product is not in use. There are also many products which are designed to operate on a continuous basis at low power levels and which provide functions such as monitoring (eg smoke alarms, security systems, telecommunications and network equipment). These end use products are now ubiquitous and individually their power consumption is small but collectively they consume a significant amount of electricity. While these devices offer increased flexibility, versatility and in many cases improved performance, many also result in power consumption when not performing their main function. Such energy consumption is generically described as “standby power” but it includes a range of modes from “off” through to “on” or continuous loads, depending on the product and its function.

Standby is now one of the largest individual electrical end uses in the residential sector (~10%) and is probably equivalent to the energy consumption of refrigerators and freezers. Studies have confirmed that standby power now represents one of the end uses with the largest potential energy savings in the residential sector.

## 3. Key Studies and Reports

Australia has been one of the world leaders in the issue of standby power. This section provides an overview of some of the key studies on standby power that have



been undertaken over the past 6 years. A full list of relevant publication and papers released to date is provided in Appendix A.

In 2000 the Australian Greenhouse Office (AGO) and the Equipment Energy Efficiency Committee (E<sub>3</sub>, formerly NAEEEEC) commissioned the first major report into standby; *Quantification of Residential Standby Consumption in Australia*. This involved an intrusive survey of 64 households in Brisbane, Melbourne and Sydney, with the goal of ascertaining the standby attributes of appliances in these households. The study found that standby power accounts for 11.6% of the electricity used in residential applications and it was estimated that it was costing Australian consumers over \$500 million per annum and generating more than 5 million tonnes of carbon dioxide annually. This ground breaking study provided base line data for evaluation and policy development in the area of standby power.

In 2002 the Ministerial Council of Energy (MCE) initiated a ten year policy on standby power entitled “Money isn’t all you’re Saving”. This policy set out the “One Watt” target for appliances, with an overall goal that by 2012 all appliances would only use one Watt in their lowest standby mode, although the exact targets were to be determined on a product by product basis. The strategy is described in more detail in the following section.

Good data is critical if well informed policy decisions are to be made. As a key element of the MCE Standby Power Strategy, regular store surveys have been undertaken with the specific goal to “quantify the magnitude of electricity used in standby modes by new appliances offered for sale on the Australian market” since 2001. These store surveys involve the measurement of a wide range of product types which are on display in retail stores in each of their applicable standby modes. Data from these store surveys allow any trends in standby to be viewed, including trends that are specific to certain appliance types. See Appendix E for a brief summary of store surveys.

In 2005, the Australian Greenhouse Office and E<sub>3</sub> commissioned another study into residential standby consumption and in early 2006, the report; “2005 Intrusive Residential Standby Survey Report”, was released. This study involved an intrusive survey of 120 households in Brisbane, Melbourne, Sydney and Gippsland, Victoria, with the goals of quantifying the magnitude of standby power used by appliances, identifying product types of concern and comparing the standby attributes of appliances measured in 2005 with the results of the 2000 survey. The study found that standby power accounts for 10.7% of Australia’s residential electricity consumption in 2005, cost consumers over \$950 million per annum and generated more than 6.5 million tonnes of carbon dioxide emissions in 2005. See Appendix F for a brief summary of this report.

A number of other technical reports on energy consumption of information technology and home entertainment equipment have been prepared as well as a report on standby in local government buildings. Together these provide detailed information on standby attributes for a wide range of relevant products.



## 4. MCE Standby Power Strategy 2002-2012

MCE published Australia's Standby Power Strategy 2002-2012 - "Money Isn't All You're Saving", in late 2002. It contains a wide range of possible policy measures to address excessive standby power.

The document sets out the long-term strategy to address excessive standby energy used by consumer appliances and equipment. The strategy:

1. Outlines the measures that governments will use to address excessive standby;
2. Identifies the products to be targeted in the first of three-year rolling plans under the strategy;
3. Establishes the procedure whereby standby targets will be set for each of the targeted products (Stage 1 targets); and
4. Identifies the sanctions that will apply should suppliers not meet the targets for these products (Stage 2 targets).

Under the strategy, product profiles for specific products were published over 2003-2005. The profiles provided a detailed assessment of current market, ownership levels, product attributes and the range of standby power typically found in new products on the market. The strategy envisaged as a first stage a range of voluntary targets for reductions in standby power on a product by product basis over the initial three year period (so called Stage 1). At a specified date, each product type or category would be assessed against the voluntary targets specified in the product profiles. If satisfactory progress was achieved towards or beyond the voluntary target, further long term voluntary targets would be confirmed. If adequate progress was not made by the target date, then the government would consider a range of possible actions, some of which may be mandatory or have mandatory components (so called Stage 2).

The strategy sets out a number of possible policy tools which were to be considered on a product by product basis as follows:

- Promotion of Energy Star
- Industry Codes of Conduct
- Publication of targets in Australian Standards
- Collection of data for new products
- Publication of standby data for products
- Inclusion of standby into the energy label for selected products
- Introduction of MEPS on standby for selected products
- Warning label for products with high standby

Each of these tools and their current status is discussed briefly in Appendix B.



## 5. Standby Product Profiles Released

A full list of standby product profiles released over the period 2003 to 2004 under the Standby Power Strategy is included in Appendix C together with their assessment year and a brief summary of the technical requirements for Stage 1 and draft requirements for Stage 2. While Stage 2 targets could be reviewed in the light of technology improvements, these were seen as suitable long term goals for the industry at the time the standby product profiles were developed. It is important to note that standby power profiles were also released for DVD Players/Recorders and DVD/VCR Combos, Free-to-air Set Top Boxes, Portable Stereos, VCRs and home theatre systems. However, these profiles have now been withdrawn as these products are now likely to be subjected to MEPS, together with televisions.



## 6. Overview of Standby Status by Product

The very ubiquitous nature of standby power means that the range and type of products of interest within the Standby Power Strategy is potentially very large and diverse. This section attempts to provide a condensed overview of the major product categories and outlines any significant issues. A fuller explanation and some discussion regarding for each product group can be found in Appendix C. A summary table covering all products is included in Appendix H. Detailed information for each individual product is included in Appendix I.

Overview by product category	
Category	Comment
Major Appliances	Contribution to total household standby of these products is modest at 13% of the total standby. Standby for clothes washers and dishwashers is now included in the energy label. Mandatory reporting of standby for air conditioners. Most products are covered by standby product profiles and will be assessed against Stage 1 targets. An average of 8.5 items per house that on average consume 1.4 Watts per item.
Televisions	A significant contributor to standby for a single product at 7% of the total standby. Product proposed for MEPS regulation in all modes. An average of 1.9 items per house that on average consume 3.6 Watts per item.
Set Top Boxes	A significant contributor to standby for a single product at 4% of the total standby. Modest penetration which is set to expand very rapidly. Product proposed for MEPS regulation in all modes. An average of 0.3 items per house that on average consume 12.1 Watts per item.
Other Home Entertainment	One of the most important product groups for standby at over 20% of the total. Product proposed for MEPS regulation in standby modes. An average of 5.0 items per house that on average consume 3.9 Watts per item.
Computers and Peripherals	The largest single significant contributor to standby at over 30% of the total. A couple of products are covered by standby power profiles but the main products are not. An average of 5.4 items per house that on average consume 5.2 Watts per item.
Telephones and Other Office Equipment	A significant contributor to standby considering the small number of products at nearly 8% of the total. This category is dominated by cordless phones. A couple of products are covered by standby power profiles but the main products are not. An average of 2.0 items per house that on average consume 3.6 Watts per item.
Monitoring and Continuous Appliances	A significant contributor to standby at nearly 10% but made up of a large number of products. Some of the more significant products are covered by standby power profiles but a number are not. An average of 7.6 items per house that on average consume 1.1 Watts per item.
Other products	Remaining items make up about 5% of total standby but this group covers a large number of products. Espresso coffee makers and breadmakers are covered by standby power profiles but other products are not. An average of 9.7 items per house that on average consume 0.4 Watts per item.

The following products already have some aspect of standby regulated or proposals for regulation are well advanced.



Products where some form of regulation is proposed	
<i>Product</i>	<i>Comment</i>
Televisions	Subject to high ownership and rapid market transformation with introduction of new technology types (plasma and LCD). Labelling and MEPS suggested to drive energy efficiency. MEPS proposed for 2008/9.
Set Top Boxes	Significant energy consumption, market set for rapid expansion in near future due to phase out of analogue broadcasts. MEPS to become mandatory in 2007.
Home Entertainment Equipment	Wide range of products, with high ownership and significant energy consumption in no active modes. Horizontal MEPS levels on non-active modes under discussion.
Dishwashers and Clothes Washers	Major appliances, subject to energy labelling since 1980's. Standby now included in label energy and star rating.
Air Conditioners	Major appliance, subject to labelling since 1980's and MEPS since 2001/2004. Public reporting of standby consumption is now mandatory during registration for all product types (residential and commercial).
External Power Supplies	Component of many relevant appliance types rather than a product in its own right. MEPS and international efficiency making system to be introduced in 2007.

The following products have special data collection issues which need to be addressed prior to the assessment of Stage 1 targets.

Products where there are some data collection issues	
<i>Product</i>	<i>Comment</i>
Air Conditioners	Product generally hardwired, therefore data difficult to obtain. Cooperation with test laboratories and mandatory reporting should provide data in due course. Data now provided through product registrations.
Cooktops	Product generally hardwired, therefore data difficult to obtain. Standby consumption generally low.
Instantaneous Gas Water Heaters	Limited field data collected. Manufacturers are aware of requirements – data can be obtained when required.
Ovens	Product generally hardwired, therefore data difficult to obtain.
Smoke Alarms	Product generally hardwired, therefore data difficult to obtain. Cooperation with test laboratories and approval agencies required.
Motion Detectors	Product sold through specialist retail outlets, data collection strategy required.
Roller Doors	
Security Systems	
Photocopiers	



## 7. Future and Ongoing Tasks

The following tasks should be noted as being in progress under the Standby Power Strategy.

- Regulatory Impact Statement for the inclusion of standby energy into the energy label of dishwashers and clothes washers is currently with the Ministerial Council on Energy and is awaiting out of session approval.
- Formal Stage 1 assessments for a range of products are due in 2007 (refer Appendix A):
  - Air Conditioners
  - Clothes Dryers
  - Clothes Washers
  - Dishwashers
  - Microwave Ovens
  - Instantaneous Gas Water Heaters
  - Printers
  - Photocopiers
  - Scanners and Multifunction Devices
  - Remote Garage Door Openers
  - Smoke Alarms
- Formal Stage 1 assessments for a range of products are due in 2008 (refer Appendix A).
  - Breadmakers
  - Espresso Coffee Makers
  - Gas Cooktops and Ovens
  - Ranges
  - Electric Space Heaters
  - Gas Space Heaters
  - Computer Speakers
  - Modems
  - Burglar Alarms
  - Motion Sensors and Sensor Lights
- Store surveys – these are ongoing and are targeting products which have profiles that are scheduled for assessment in 2007. The latest report was released in September 2006 on the Energy Rating website.
- Individual product data collected by government over the past 5 years is also being released in October 2006. Sector based reports are proposed for the future.



## Appendix A – List of Major Standby Publications by E3 & AGO

Australia has been one of the most active countries in the world with respect to standby power, both in terms of policy development and data collection. The data accumulated probably is one of the best in the world in terms of standby power consumption levels and trends for new products as well as products installed in residential households. Major reports and studies which have been published since 2000 are:

- 2001: **Quantification of Residential Standby Power Consumption in Australia.** Results of standby measurements in 64 homes in Australia in late 2000 (2,500 appliances). This study provided information on critical end uses and set a benchmark prior to any policy development.
- 2002: **Standby Power Consumption. A long-term strategy to achieve Australia's One-Watt Goal 2002 to 2012.** Discussion paper on a long-term strategy to achieve Australia's One-Watt Goal 2002 to 2012.
- 2002: **Australia's Standby Power Strategy 2002-2012 - "Money Isn't All You're Saving".** MCE endorsed strategy.
- **Appliance Standby Power Store Surveys.** These surveys track attributes of new products offered for sale in retail outlets. A total of 7 surveys over the period 2001 to 2006 have been conducted covering some 7,000 new products.
- 2003: **A Study of Home Entertainment Equipment Operational Energy Use Issues** – includes standby power and on modes.
- 2003: **A Study of Office Equipment Operational Energy Use Issues** – includes standby power and on modes.
- 2003-2004: Release of 27 individual standby product profiles.
- 2005: **IEC62301 – Measurement of Standby Power.** Australia played a lead role in the development of the international test method for the measurement of standby power which has been published by the International Electrotechnical Commission in Geneva.
- 2005: **Standby Energy Consumption - Australian Local Government Buildings.** Survey of 15 local government equipment standby attributes in 3 states.
- 2006: **2005 Intrusive Residential Standby Survey Report.** Results of standby measurements of all products found in a total of 120 homes in Australia (readings and data on some 8,000 appliances).
- Publication of various papers at international conferences.

All reports are available from the Energy Rating website [www.energyrating.gov.au](http://www.energyrating.gov.au) in the electronic library under standby.



## Appendix B – Policy tools outlined in the National Standby Power Strategy

The following policy measures were set out in the MCE ***Australia's Standby Power Strategy 2002-2012 - "Money Isn't All You're Saving"***. This appendix provides a brief overview of each policy measure and its current role in the strategy.

### Promotion of Energy Star

International Energy Star specifications have been available since 1992. Most specifications for internationally traded products (primarily office equipment and home entertainment) focus on power consumption in non-operational modes (standby) at the present time, although there is a move to introduce active mode requirements for some product types in this group. Australia has been an Energy Star partner since 1998 and the local program currently covers office equipment (computers, copiers, printers and fax machines, scanners, MFDs) and home entertainment equipment (consumer audio and DVD, TVs and VCRs). There is ongoing promotion and participation in the scheme. Energy Star are considering on mode requirements in the specifications for some products in these categories and Australia is likely to adopt these as they are finalised. Stage 1 targets for some equipment types (eg office equipment) have been defined in terms of Energy Star levels.

### Industry Codes of Conduct

Industry Codes of Conduct are used in some parts of the world as a method of achieving energy reductions, most notably in Europe. Industry Codes of Conduct are only really viable where a limited number of manufacturers, which all belong to an industry association, dominate the market for a particular product type. For most products of interest in Australia under the standby strategy, the markets have a large number of industry players and the markets are generally quite fragmented and highly competitive. This industry structure is generally not conducive to the development of effective codes of conduct. However, further work in this area is proposed to assess its feasibility.

### Publication of Targets in Australian Standards

The intent was to provide an accessible location for short term and long term standby targets under the Standby Power Strategy. While this approach was considered, it was felt that the release of the standby product profiles, which contained all relevant information, was sufficient for Stage 1. The large number of products covered, the staggered timing and the short term nature of the Stage 1 targets are not well suited for inclusion into Australian Standards, which generally take a long time prepare and publish (of the order of 1 year minimum). Australian Standards continue to be used for



all regulatory measures, which are more rigorous in nature and where the levels remain in force for a considerable time period.

### **Collection of Data for New Products (Store Surveys)**

Since early 2001, regular surveys of standby power attributes of a wide range of products which are offered for sale have been collected. This has been done in a cooperative manner with selected retail stores in capital cities. This now provides a large database of standby levels by product type and allows trends for various product types to be examined. This is a critical data source which will enable sound future policy decisions to be made.

### **Publication of Standby Data for Products**

Results from store surveys have been published in regular reports which have been released on the Energy Rating website. This data is in the form of aggregated information (average, maximum, minimum) and standby trends by product type. During 2006 detailed data sets are being made publicly available through the Energy Rating website which will allow manufacturers and other interested parties to examine data collected to date for individual brands and models. The rationale is that disclosure of actual standby data at a brand and model level will pressure the manufacturers of products with poor standby attributes to improve and it also provides a more transparent basis and justification for policy decisions.

### **Inclusion of Standby in the Energy Label for Selected Products**

The energy labelling program in Australia covers refrigerators, freezers, air conditioners, dishwashers, clothes washer and clothes dryers. There is no mode relevant to the standby strategy for refrigerators and freezers so these products have not been considered under this program element<sup>1</sup>.

Investigations regarding modes and the inclusion of standby power into the energy label have been concluded for dishwashers and clothes washers and these were implemented in late 2005 with a transition period to April 2007. After this date all dishwashers and clothes washers will have standby energy consumption included in the energy label value, which will also affect the product star rating.

Discussions have been undertaken on standby for clothes dryers but industry are keen to review the whole energy labelling program (on mode energy, star rating algorithms, as well as standby) and this is scheduled for late 2006/2007.

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<sup>1</sup> While the compressor switches on and off as required for a typical refrigerator or freezer, the product is essentially always on and the compressor cycles are merely to regulate internal temperature in response to ambient conditions, food loads and door openings etc. The test method for refrigerators and freezers measures energy consumption over a long period (typically of the order of a day or more) so any energy consumption during compressor off periods is included in the total energy consumption shown in the energy label.



Commencing April 2006, all new air conditioner registrations must report relevant standby power levels, including crankcase heaters. While this data does not yet directly affect the star rating of products, the data is being made available to the public through the Energy Rating website listings.

It is also proposed that televisions in the near future will carry an energy label and be subjected to MEPS. Relevant standby modes will be included in the total energy consumption value used to define MEPS levels and star rating values.

### **Introduction of MEPS on Standby for Selected Products**

The issue of MEPS on standby modes has been considered for a number of products. The issue is complex as there is little point in regulating standby modes for products where the on mode energy consumption is left unregulated and where this makes up the bulk of total energy. As a general rule, MEPS on standby modes can only be justified where the energy savings are significant (ie where standby levels are very poor). For some product groups, industry have approached government and requested that regulated standby MEPS levels be introduced as a first step on the basis that industry groups felt that the voluntary staged approach mapped out in the Standby Power Strategy would be ineffective (voluntary Stage 1 targets). So a range of specific products are scheduled for mandatory MEPS – set top boxes, televisions (standby modes + active (on) modes) and home entertainment equipment (standby modes for a very wide range of products from stereos to home theatre and associated equipment for producing sound and/or vision). Other products are also being considered such as office equipment as well as a more generalised horizontal standby requirement.

### **Warning Label for Products with High Standby**

This concept has been discussed widely since it was first raised in 2002. It has not been implemented for any products at this stage as it is considered to be a “Stage 2” measure – ie a response by regulators to an industry sector that has failed to meet voluntary targets in Stage 1. However, the concept is well understood and there are a range of program configurations associated with this concept that can create administrative penalties for manufacturers with products that have very poor standby (e.g. requirements for registration, registration fees, affixing warning labels) while exempting regulatory requirements for manufacturers with good products with low standby. Interestingly, the concept of a warning label has been used in Australia as part of the mandatory water labelling scheme introduced nationally in July 2006 and has also been used in Korea as part of their 1 Watt plan titled “**Standby Korea 2010**”.



## Appendix C – List of Standby Product Profiles and Summary of Requirements

Appliances	Stage 1 Target			Stage 2 - 2012	
Product	Off	Passive Standby	Year	Off	Passive Standby
Microwave Ovens	NA	4 W	2007	NA	1 W
Smoke Alarms	NA	0.4 W**	2007	NA	0.2 W**
Air conditioners	1 W	2 W	2007	0.3 W	1 W*
Clothes dryers	1 W	4 W*	2007	0.3 W	1 W*
Clothes washers	1 W	4 W*	2007	0.3 W	1 W*
Dishwashers	1 W	4 W*	2007	0.3 W	1 W*
Water heater - Inst. Gas	NA	3 W	2007	NA	1 W
Bread makers	NA	3 W**	2008	NA	1 W**
Coffee machines	1 W	NA	2008	0.5 W	NA
Cooktops	0.5	NA	2008	0.3 W	NA
Motion detectors	NA	0.75 W	2008	NA	0.25 W
Ovens	0.5	NA	2008	0.3 W	NA
Rangehoods	0.5	NA	2008	0.3 W	NA
Rollerdoors	NA	3 W	2008	NA	1 W
Security Systems	NA	4 W	2008	NA	1.8 W
Gas Space Heater	1 W	3 W	2008	0.3 W	1 W
Electric Space Heater	nhm*** - < 1 W		2008	nhm*** < 0.3 W	

\* End of cycle mode \*\* Active standby mode \*\*\*non-heating modes

IT/Office Equipment	Stage 1 Target		Stage 2 - 2012
Product	Off & Passive Standby	Year	Off & Passive Standby
Printers	66% comply with 2003 Energy Star	2007	100% compliance with 2006
Photocopiers	75% comply with 2003 Energy Star levels, or	2007	100% compliance with 2006
Scanners & MFDs	75% comply with 2003 Energy Star levels, or	2007	100% compliance with 2006
PC Speakers	1 W (off) and 1.5 W (passive standby)	2008	0.5 W (off) 0.75 W (passive)
Modems	On mode -< 2.8 W or < 6.6 W*	2008	0.5 W (off) 0.75 W (passive)

\*depends on modem type – see profile

Home Entertainment	
DVD player/recorder	These products are now scheduled for regulation of maximum standby power. Work is currently underway to determine appropriate levels.
VCRs	
Portable Stereos	
Integrated Stereos	
Home Theatre	
Set-top box - free to air	
Personal Video	



## Appendix D – Overview of Status by Product Category

The very ubiquitous nature of standby power means that the range and type of products of interest within the Standby Power Strategy is potentially very large and diverse. This section attempts to provide a condensed overview of the major product categories. A summary table covering all products is included in Appendix H. Detailed information for each individual product is included in Appendix I.

### Major Appliances

The major appliances group is made of appliances that are generally viewed as 'big ticket items', due to their initial purchase cost and high levels of ownership. As such, some appliance types in this group have been subject to regulation for quite some time. In the 2005 Intrusive Survey, the major appliances group was found to contribute a consumption of 11.8 Watts in standby per house. There were found to be 8.5 items per house and each was found to consume 1.4 Watts on average per item.

The major appliances group is made up of the following product types:

- Whitegoods; clothes washers clothes dryers, dishwashers, air conditioners, instantaneous gas water heaters (note that refrigerators, freezers and storage water heaters are considered to have no relevant standby mode)
- Cooking appliances; cooktops, ovens, rangehoods, microwave ovens
- Heating appliances; electric space heaters, gas space heaters

The following standby profiles have been released for appliance types in the major appliances group:

- Air conditioners
- Clothes dryers
- Clothes washers
- Dishwashers
- Gas cooktops and ovens
- Rangehoods
- Electric space heaters
- Gas space heaters
- Instantaneous gas water heaters
- Microwave ovens

Regulatory actions concerning the standby consumption of products found in the major appliances group include:

- Inclusion of standby power consumption in the energy rating label for dishwashers and clothes washers (clothes dryers are under discussion).
- Mandatory reporting of standby consumption for all new registrations of air conditioners.



Dishwashers and clothes washers are two of the major appliances which have been regulated for energy labelling since the late 1980's. As these products were already regulated for energy efficiency (energy labelling), it presented a logical opportunity to bundle standby energy consumption with the already regulated on mode energy consumption shown on the energy label. This approach has the advantage of giving consumers a more accurate "total energy" picture for these products when considering the energy costs as part of the total product cost, but also keeps the standby energy consumption in perspective with the total product energy consumption. It also provides manufacturers with a strong incentive to reduce standby on an opportunistic basis whenever control systems are redesigned or upgraded as improvements may result in an improved star rating on the energy label.

Air conditioners have also been regulated for energy labelling since the late 1980's and MEPS levels for single phase products were introduced in 2004 and are being upgraded in 2006 and 2007 (depending on the product type). Increasingly, air conditioners have remote controls and some have remote communications capability, meaning that standby is becoming very common. The approach taken for air conditioners is similar to clothes washers and dishwashers in that it is now mandatory to report this data and this is now publicly available. To include standby energy into the energy label, a usage pattern needs to be assumed and it is known that this varies enormously around the country, depending on climate. The other problem for air conditioners is that many types (eg ducted, purely commercial units, three phase models) are not required to carry an energy label (although manufacturers elect to label some of these models). This requirement to report standby applies to both residential and commercial air conditioners.

## Televisions

The television appliance group is made up of all television types, including CRT, LCD and plasma sets. In the 2005 Intrusive Survey, televisions were found to contribute a consumption of 6.2 Watts in standby per house. Ownership is about 1.9 items per house and each was found to consume 3.6 Watts on average per item.

Televisions do not have a standby profile. The energy consumption is dominated by on mode so these products have been earmarked for future MEPS and energy labelling. The energy consumption regulated under these program measures will incorporate relevant standby modes.

## Set Top Boxes

Set top boxes (which are used to convert signals from pay TV operators or from digital broadcasts which can then be played on an existing analogue television) are only found in a modest proportion of homes at the moment. However, the phase out of analogue television will almost certainly drive the demand for digital conversion boxes – as many as 7 to 10 million units over the next 5 years. In the 2005 Intrusive Survey, set top boxes were found to contribute a consumption of 3.5 Watts in standby per



house. There were found to be 0.3 items per house and each was found to consume 12.1 Watts on average per item.

Set top boxes did have a standby profile but this was withdrawn as industry requested MEPS regulation of all relevant modes which is in the process of implementation.

### Other Home Entertainment

The other home entertainment group is made up of products that are generally increasing in ownership and that have moderate to high standby consumption. The majority of the energy for these products is consumed during non-operational or intermediate modes. Large savings can be achieved through reduction of the power levels in these modes and through power management (powering down to lower modes when not in use). In the 2005 Intrusive Survey, this group was found to contribute a consumption of 19.6 Watts in standby per house. There were found to be 5.0 items per house and each was found to consume 3.9 Watts on average per item.

The “other home entertainment” group is made up of the following products:

- Home entertainment equipment; DVD players/recorders/combos, VCRs, portable stereos, integrated stereos, PVRs, AV receivers, subwoofers, stereo components
- Other audio; radios, headphones

The following standby profiles were released within this product group, but all have been withdrawn as there are proposals to introduce mandatory standby MEPS requirements for all of these products:

- DVD players/recorders and DVD/VCR combos
- Home theatre systems
- Integrated stereos
- Portable stereos
- VCRs

### Computers and Peripherals

The computers and peripherals appliance group is made up of products that are increasing in ownership and standby consumption is generally moderate to high. In the 2005 Intrusive Survey, computers and peripherals were found to contribute a consumption of 28.1 Watts in standby per house. There were found to be 5.4 items per house and each was found to consume 5.2 Watts on average per item. Computer ownership is continuing to rise rapidly and broadband connections are also changing usage patterns of computers, with many products now being left on continuously.

Computers and peripherals group is made up of a number of product types including:

- Computers, including laptop computers
- Computer monitors (CRT and LCD)



- Computer speakers
- Computer printers (laser and inkjet)
- Hubs, switches and routers
- Modems (dialup and broadband)
- Scanners and multi-function devices (MFDs)

The following standby profiles have been released for products in the computers and peripherals group:

- Computer speakers
- Printers
- Modems
- Scanners and MFDs

There have been no regulatory actions concerning energy consumption of the computers and peripherals group to date. But due to this appliance group's high on mode and standby mode energy consumption and likely future increases in ownership, a regulatory approach for many of these products may be warranted.

### **Telephones and Other Office Equipment**

The telephones and other office equipment appliance group is made up of product types that have significant standby consumption. In the 2005 Intrusive Survey, telephones and other office equipment were found to contribute a consumption of 7.1 Watts in standby per house. There were found to be 2.0 items per house and each was found to consume 3.6 Watts on average per item. The ownership levels for office equipment in this category are generally fairly low, while cordless phones are quite common (1.3 per household).

The telephones and other office equipment group is made up of the following product types:

- Office equipment; facsimiles, multifunction devices (MFDs), photocopiers
- Telephones; answering machines, cordless phone equipment

The only following standby profiles that have been released for appliance types in the telephones and other office equipment group are:

- Photocopiers
- Scanners and MFDs

There have been no regulatory actions proposed for these products to date. But the energy consumption in standby modes is significant for some of these products so consideration of options is warranted.



## External Power Supplies

External power supplies are not really a product type themselves but are an ancillary piece of equipment which is used to supply extra low voltage DC (or sometimes AC) power to a product. Many of the products connected to external power supplies are of interest within the Standby Power Strategy. As a key element under the Equipment Energy Efficiency Program (E<sub>3</sub>) (but largely unrelated to the Standby Power Strategy), MEPS for external power supplies is being introduced in October 2007. The test method for this product was developed in cooperation with the USA and China and a family of efficiency levels (MEPS levels) as well as an international efficiency marking system were also defined during this process. The MEPS levels define a maximum permitted no load power consumption and a minimum average efficiency across a range of power outputs from 25% to 100% of rated load. As a result of this initiative, standby power consumption of many products which use external power supplies can be expected to improve somewhat over the next few years.

However, while the efficiency of the supply of power will be improved through this measure, some end use products may still have poor designs which result in inefficient utilisation of power within the product for the required function(s). Many products with external power supplies are also providing power for modes that are not relevant to standby. So while this regulatory program element makes an important contribution towards the overall standby goals and should be noted, standby levels for individual products with external power supplies still need to be addressed within the Standby Power Strategy in many cases.

In the 2005 Intrusive Survey, external power supplies were found to contribute a consumption of 1.2 Watts in standby per house. There were found to be 1.2 items per house (which were plugged in and not permanently connected to a secondary device – primarily mobile phone chargers) and each was found to consume 1.0 Watts on average per item.

External power supplies are by function, part of other equipment. They are a component of many different appliance types, for example; cordless telephones, modems, mobile phones (as a charger) and laptops (to name a few).

## Monitoring and Continuous Appliances

The monitoring and continuous appliances group is made up of many product types. In the 2005 Intrusive Survey, monitoring and continuous appliances were found to contribute a consumption of 8.7 Watts in standby per house. There were found to be 7.6 items per house and each was found to consume 1.1 Watts on average per item.

The monitoring and continuous appliances group is made up of a multitude of product types including:

- Clock radios
- Fish tank equipment
- Pumps
- Pool equipment
- Security systems



The following standby profiles have been released for products in the monitoring and continuous appliance group:

- Burglar alarms
- Motion sensors and sensor lights
- Smoke alarms
- Remote garage door openers

There have been no regulatory actions concerning energy consumption of the monitoring and continuous appliance appliances group undertaken thus far, with the exception of pool equipment (which has been earmarked for possible future MEPS).

### **Other Items with a Standby Mode**

The other items group is made up of many products types. In the 2005 Intrusive Survey, other items with a standby mode were found to contribute a consumption of 3.9 Watts in standby per house. There were found to be 9.7 items per house and each was found to consume 0.4 Watts on average per item.

The other items group is made up of a multitude of (several hundred) product types including:

- Home cleaning aids; irons, vacuum cleaners, hand held vacuum cleaners
- Lighting; lamps, touch lamps, outdoor lights
- Personal health and hygiene products; rechargeable toothbrushes, hair dryers, electric shavers
- Small kitchen appliances; toasters, kettles, coffee makers, juicers
- Tools; cordless drills, lathes, benchsaws
- Miscellaneous appliances; game consoles, sewing machines, battery rechargers

The following standby profiles have been released for products in the other items group:

- Espresso coffee machines
- Breadmakers

There have been no regulatory actions concerning energy consumption of the other items group.



## Appendix E – Store Surveys: New Products

This Appendix provides a brief overview of the regular store surveys that have been conducted since 2001.

As part of an ongoing monitoring of trends in standby for new products, NAEEEEC (now E<sub>3</sub>) commissioned regular store surveys of new appliances. The intent was to establish a longer term benchmarking program, with results and analysis helping to establish the standby consumption trends of new products in the marketplace. Since their inception in 2001, eight in-store surveys have been undertaken, auditing over 7,000 appliances.

The objectives of the store surveys are to:

- Quantify the magnitude of electricity used in standby mode by new appliance offered for sale in the Australian market.
- Compare the results of each study to past studies in order to track industry progress in reducing standby power consumption

To achieve these goals, major Melbourne retail stores were approached to take part in the study. Audits are undertaken in both winter and summer, to obtain a cross section of seasonal products. A metering device was systematically used to measure all products found on the shop floor. Each product was measured in its applicable modes and other information was recorded such as brand, model, price, features and supply voltage. The report tracks trends by product across all surveys.

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

The trends in standby power levels for different product groups are mixed. While some products appear to be improving, there is still substantial work to be done for other product types. Some products have poor standby power characteristics. Ongoing work will track future trends for all major product types.

The latest report was released in October 2006 on [www.energyrating.gov.au](http://www.energyrating.gov.au) and includes the survey conducted in June 2006.



## Appendix F – Intrusive Residential Survey 2005

This Appendix provides a brief overview of the intrusive standby study of 120 homes that was conducted in late 2005.

The first study to establish the magnitude of standby power in the residential sector in Australia was an intrusive survey of 64 homes in late 2000. This study involved power measurement in various modes of nearly every plug load present in these households, which consisted of 2,300 individual products. The study estimated that standby power in a typical home was some 86.8 Watts.

In 2005 E<sub>3</sub> commissioned a second intrusive standby survey. This survey covered some 120 households including 40 houses in Brisbane, 30 houses in Sydney and 50 houses in Melbourne and Gippsland, Victoria. This 2005 study estimated that standby power in a typical home was some 92.2 Watts or some 807 kWh per year. This equates to around 10.7% of Australia's residential electricity consumption in 2005 and is estimated to cost Australian consumers approximately \$950 million (at an average retail tariff of 15c/kWh) per annum. This level of standby power consumption is estimated to have resulted in the emission of nearly 6.5 million tonnes of carbon dioxide in 2005.

The total number of appliances that run on mains power in a typical house was found to be 67 (ranging from as few as 16 to as many as 136 items per house). During the survey, it was found that about 28% (19) of these appliances were unplugged and were therefore assumed to contribute no power to the average standby power estimated for all households in the survey. Of the 48 or so appliances that were found plugged in, on average around 56% (27) used some standby power when plugged in and not performing their main function.

The most important product groups in terms of their total contribution to standby were computers and peripherals, home entertainment equipment (including televisions and set top boxes), major appliances and other office equipment. The contribution to the total average standby power for each of the major product groups is illustrated in the table and figure below.

Overall the 2005 intrusive report suggests that there is likely to be a significant growth in standby power in Australian households since the 2000 survey. While there is some uncertainty about the precise rate of growth, it would appear to be a minimum increase of the order of 2.5% per annum per household. This rate could be as high as 5% per annum per household or higher in absolute terms considering the increase in the number of households is about 2%. There appears to be a proliferation of products within households that have the potential to use standby power and there is evidence to suggest that there is rapid growth in the number of products that are connected to the mains and that use some power when not performing their primary function.

The report was released in April 2006 and can be found on [www.energyrating.gov.au](http://www.energyrating.gov.au) under standby.



## Appendix G – Local Government Survey 2005

This Appendix provides a brief overview of the standby study of local councils premises in Australia that was conducted in 2004/2005.

The study and report; Standby Energy Consumption in Australian Local Government Buildings was commissioned by the Australian Greenhouse Office and the International Council for Local Environmental Initiatives.

The objective of the study was to quantify the standby energy consumed by electronic equipment in Australian local government premises. It was conducted between September 2004 and June 2005 and involved 15 councils in 3 states, 57 premises and details of 8,700 items of equipment were recorded. The study focused on a total of 52 types of plug in electronic office equipment, which were divided into the 10 main categories shown in the table below.

Category	Number Surveyed	Number Measured	Measured/Surveyed
Computer	3,524	83	2.4%
Monitor	3,130	112	3.6%
Computer Peripheral	360	41	11.4%
Printer	945	156	16.5%
Photocopier/MFD	158	86	54.4%
Facsimile	68	47	69.1%
Telephone Peripheral	116	16	13.8%
Audio or Visual	104	31	29.8%
Kitchen Appliance	136	42	30.9%
Miscellaneous	150	88	58.7%
<b>Total</b>	<b>8,691</b>	<b>702</b>	<b>8.1%</b>

The majority of office equipment found in this study was located in Council head offices, followed by libraries and works depots. Computers and computer monitors constituted the great majority of all equipment items surveyed. The standby power consumption of each of the 702 items of equipment was measured using portable power meters. Where possible, each relevant standby mode was measured. As expected, standby power consumption levels were generally highest in active standby mode, followed by passive standby mode and then off mode.

After assessing the age of the equipment, analysis was made to discover whether there were any changes in standby performance of equipment over time. For the majority of the items of equipment in this study, standby power consumption appears to be decreasing. The exception is desktop computers, where active and passive standby modes both appear to have increased. This increase in consumption is generally consistent with the increase in penetration of higher specification models with increase functionality.



For equipment which remains switched on for long periods, with only sporadic use (such as computers, computer monitors, printers and photocopiers), power management is a significant energy conservation measure where implemented. These equipment types were found to have relatively high enablement rates (70% and above), except for computers (15%) where power management features are often disabled to avoid interfering with network connectivity.

Estimates were made on the average yearly standby energy consumption of single equipment items, based on actual measurements and information supplied by Councils.

For a typical council administration building, the total standby energy was between 4% and 8% of total electricity consumption and was between 200 and 500 kWh per annum, per employee. For other premises, standby energy was highly variable and was largely a function of equipment density installed in buildings. Council head offices were typically the greatest contributor to standby energy consumption, followed by libraries and works depots.

The report recommends that Councils that wish to reduce general standby power consumption undertake the following actions:

- Ensure that low power mode are enabled for all equipment were feasible. Note that this can be for computers without interfering with network connectivity in most cases.
- Set automatic low power mode waiting times to the lowest practical values.
- Ensure that all equipment is switched off overnight, preferably at the power outlet, where feasible.
- Ensure that any redundant equipment is disconnected from the power supply.
- Purchase only the lowest required number of office equipment.
- Purchase office equipment from the Energy Allstars product database ([www.energyallstars.gov.au](http://www.energyallstars.gov.au)) when product categories appear.
- Purchase only equipment with automatic low power modes.

## Appendix H – Overview: All Products

This Appendix contains an overview of all major products that make a significant contribution to standby power. The summary table provides a brief snapshot of most significant product types found in typical households in Australia. The total contribution to total household standby of listed items is 88.2%. The other 11.8% (approximately) will be accounted for in other miscellaneous appliances found in households. With over 300 different appliance types, this 11.8% is spread over many appliance types which are not listed.

Product Type	Product	Standby Profile	Stage 1 Target Year	Other Actions in Progress	Estimated Contribution Households	Comments
Major Appliances	Air Conditioners	June 2004	2007	Mandatory reporting of standby for energy labelling registrations	2.9%, 2.7 Watts	Labelling and MEPS. Standby on website, not in star rating at this stage
Major Appliances	Clothes Dryers	Oct 2003	2007	Various options under consideration	0.1%, 0.1 Watts	Labelling and MEPS. Dialogue with industry, other efficiency measures considered
Major Appliances	Clothes Washers	Oct 2003	2007	Standby included in star rating calculation from 2006	1.6%, 1.5 Watts	Labelling and MEPS.
Major Appliances	Dishwashers	Oct 2003	2007	Standby included in star rating calculation from 2006	0.8%, 0.7 Watts	Labelling and MEPS.
Kitchen Appliances	Breadmakers	Nov 2004	2008		0.0%, 0.0 Watts	Almost all are left unplugged
Kitchen Appliances	Espresso Coffee Machines	Nov 2004	2008		0.0%, 0.0 Watts	Ownership low
Kitchen Appliances	Gas Cooktops and Ovens	Nov 2004	2008		0.1%, 0.1 Watts	Few use any power
Kitchen Appliances	Microwave Ovens	Oct 2003	2007		2.4%, 2.2 Watts	Ownership 0.77
Kitchen Appliances	Rangehoods	Nov 2004	2008		0.0%, 0.0 Watts	Few use any power
Heating Appliances	Electric Space Heaters	Nov 2004	2008		0.1%, 0.1 Watts	Few use any power
Heating Appliances	Gas Space Heaters	Nov 2004	2008	Standby and electrical energy is included in energy label	1.4%, 1.3 Watts	Gas energy labelling scheme



Product Type	Product	Standby Profile	Stage 1 Target Year	Other Actions in Progress	Estimated Contribution Households	Comments
Heating Appliances	Instant Gas Water Heaters	March 2004	2007	Standby and electrical energy is included in energy label	1.1%, 1.0 Watts	Gas energy labelling scheme. Ownership low but increasing, power per unit high (9.6 W)
Office Equipment	Computers			Energy Star, MEPS under consideration	15.7%, 14.5 Watts	
Office Equipment	Computer Monitors			Energy Star, MEPS under consideration	3.6%, 3.3 Watts	
Office Equipment	Computer Speakers	Nov 2004	2008		2.2%, 2.0 Watts	
Office Equipment	Printers	Oct 2003	2007	Energy Star	2.2%, 2.1 Watts	
Office Equipment	Cordless Phone Equipment			Energy Star in USA but not applied in Australia yet	4.0%, 3.7 Watts	High ownership 1.33 and significant use per product
Office Equipment	Modems	Nov 2004	2008		3.7%, 3.4 Watts	Ownership 0.68, likely to increase
Office Equipment	Miscellaneous Computer Equipment				2.3%, 2.1 Watts	Wide range of products – external drives, hubs, switches, routers, likely to grow, mostly continuous
Office Equipment	Photocopiers	Oct 2003	2007	Energy Star	0.2%, 0.2 Watts	Very low ownership in residential
Office Equipment	Scanners and MFDs	Oct 2003	2007	Energy Star	2.2%, 2.0 Watts	
Office Equipment	Answering machines			Energy Star in USA but not applied in Australia yet	0.5%, 0.5 Watts	Some in cordless phones, ownership relatively low
Office Equipment	Facsimiles				1.4%, 1.3 Watts	Low ownership in residential, probably obsolete technology
Home Entertainment	DVD Players/ Recorder and VCR Combos	Oct 2003	Withdrawn	Energy Star, MEPS under consideration	2.6%, 2.4 Watts	
Home Entertainment	Free-to-air Set Top Boxes	March 2004	Withdrawn	Energy Star, MEPS under consideration	2.0%, 1.9 Watts	
Home Entertainment	Game Consoles				0.4%, 0.4 Watts	Ownership and standby levels increasing.
Home Entertainment	Home Theatre Systems	March 2004	Withdrawn	Energy Star, MEPS under consideration		



Product Type	Product	Standby Profile	Stage 1 Target Year	Other Actions in Progress	Estimated Contribution Households	Comments
Home Entertainment	Integrated Stereos	March 2004	Withdrawn	Energy Star, MEPS under consideration	5.8%, 5.4 Watts	
Home Entertainment	Portable Stereos	Oct 2003	Withdrawn	Energy Star, MEPS under consideration	1.1%, 1.0 Watts	
Home Entertainment	PVRs			Energy Star, MEPS under consideration	Included in set top boxes and DVD recorders.	Low ownership likely to increase. Many set top boxes and DVD recorders perform same function.
Home Entertainment	Televisions			Energy Star, MEPS under consideration	6.7%, 6.2 Watts	Ownership at 2.0 and increasing. On mode dominates energy.
Home Entertainment	VCRs	Oct 2003	Withdrawn	Energy Star, MEPS under consideration	6.4%, 5.9 Watts	Now obsolete product but ownership still high.
Home Entertainment	Miscellaneous Equipment			MEPS under consideration	2.5%, 2.3 Watts	Many equipment types, many obsolete (tapes, records)
Other	Burglar Alarms	Nov 2005	2008		0.8%, 0.7 Watts	More common in new homes, ownership 0.15
Other	External Power Supplies			MEPS October 2007	1.1%, 1.0 Watts	Includes only separate EPS only that were plugged in
Other	Motion Sensors and Sensor Lights	Nov 2004	2008		0.1%, 0.1 Watts	
Other	Remote Garage Door Openers	Nov 2004	2007		1.3%, 1.2 Watts	Ownership 0.30 and growing rapidly
Other	Smoke Alarms	March 2004	2007		0.2%, 0.2 Watts (mains only)	Ownership 1.23 (not all are mains) and growing rapidly
Other	Clock Radios				2.9%, 2.7 Watts	Ownership 1.3
Other	Pool equipment			MEPS and labelling under consideration	1.5%, 1.4 Watts	Ownership of pools steady but spas increasing



## Appendix I – Overview by Product

This Appendix contains an overview of all major products that make a significant contribution to standby power.

### Product: Air Conditioners

**Product synopsis:** Air conditioner ownership and sales have been increasing rapidly over the past 10 years. They are now a mainstream appliance with about 60% of homes having an air conditioner installed in 2005 (compared to 33% in 1994). The typical standby levels for this product are dependant on air conditioner type and are hard to measure in the field as most units are hardwired. Sufficient data may be available or will be available to assess the interim targets in 2007 for some air conditioner types, other types will need targeted surveying (due to them being hardwired or having inaccessible plugs).

**Regulatory status:** three phase air conditioning units have been regulated for MEPS since 2001, whereas single phase units have been regulated for MEPS from 2004 through AS/NZS3823.2. Single phase air conditioning units have been regulated for energy labelling since 1987. All new energy labelling and MEPS registrations must report data for off mode, standby mode and crank case heaters as applicable.

**Standby profile:** released in June 2004.

**Interim year and target:** 2007,

- Single phase unitary units and all portable units: less than 1 Watt in off mode, less than 2 Watts in passive standby mode.
- Split system units and three phase units up to 65kW cooling capacity: less than 1 Watt in off mode, less than 2 Watts in passive standby mode.
- Units with sump heaters: mandatory use of Positive Temperature Coefficient heaters from 2007.

**Final 2012 target:**

- Single phase unitary units and all portable units: less than 0.3 Watts in off mode, less than 1 Watt in passive standby mode.
- Split system units and three phase units up to 65kW cooling capacity: less than 0.3 Watts in off mode, less than 1 Watt in passive standby mode.
- Units with sump heaters: mandatory use of Positive Temperature Coefficient heaters from 2007.

**Current ownership:** 0.60 products per household, stock 4.7 million (ABS survey).

**Ownership trend:** increasing rapidly. Ownership has increased by 27% between the 1994 and 2005 ABS surveys.

**Annual sales:** approximately 1,000,000 in 2004, increasing. Includes sales to small commercial sector as well.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 2.7 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 2.9%.

**Available data sources for standby:** 151 new products in store surveys 2001 to 2006. 20 products in 2000 intrusive survey (installed). 65 products in 2005 intrusive survey (installed). Only off mode and passive standby mode available for some measurements to date, however, most are window wall units. There are no problems with gathering data on new and installed split system products (most are hard wired). Mandatory reporting for registration will provide good data.

**Trend in standby for new products** (where known): there is no clear trend for off mode for new products in 2004 and 2005 compared to earlier years.



## Product: Clothes Dryers

**Product synopsis:** Clothes dryer ownership and sales have been increasing very slowly over the past 15 years and the market can be considered saturated and stable. They are a fairly mainstream appliance and about 55% of homes had a clothes dryer installed in 2005 (compared to 52% in 1994). The typical standby levels for this product are relatively low (average of 0.2 Watts in off mode) as many are timer controlled with close to zero Watts in off mode. Sufficient data is available or will be available to assess the interim targets in 2007.

**Regulatory status:** regulated for energy labelling since 1989 through AS/NZS2442.2. Reporting and inclusion of standby values into the energy label are still under discussion. Water efficiency labelling is under discussion for dryers that use water (washer-dryers).

**Standby profile:** released in October 2003.

**Interim year and target:** 2007, less than 1 Watt in off mode, 4 Watts in end of cycle mode.

**Final 2012 target:** 0.3 Watt in off mode, 1 Watt in end of cycle mode.

**Current ownership:** 0.55 products per household, stock 4.3 million.

**Ownership trend:** increasing slowly to stable. Ownership has increased by 3% between the 1994 and 2005 ABS surveys.

**Annual sales:** 280,000 in 2005, increasing slowly.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.1 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.1%.

**Available data sources for standby:** 104 new products in store surveys 2001 to 2006. 38 products in 2000 intrusive survey (installed). 75 products in 2005 intrusive survey (installed). Only off mode and active standby mode available for most measurements to date (many products do not have active standby mode). End of cycle mode requires laboratory test but this is yet to be included in the Part 1 test method. There are no problems with gathering off mode data on new products using store surveys.

**Trend in standby for new products** (where known): there was a fall in off mode readings after 2001 (from 1.2 Watts) but these have remained relatively stable at about 0.3 Watts since.



## Product: Clothes Washers

**Product synopsis:** Clothes washer ownership and sales have been increasing slowly over the past 15 years and the market can be considered saturated and stable. They are now a mainstream appliance and about 96% of homes had a clothes washer installed in 2005 (compared with 94% in 1994). The typical standby levels for this product are dependant on mode, with average off mode being 1.9 Watts (2005 Intrusive Survey). Most European products do not automatically revert to off mode and the power consumption in end of cycle mode can be significant, which can be a problem. Actions to include the standby energy into the energy label have been finalised and are being implemented through 2006 and this should have some impact on future standby attributes for this product. Sufficient data is available or will be available to assess the interim targets in 2007.

**Regulatory status:** regulated for energy labelling since 1990 through AS/NZS2040.2. Standby incorporated in the energy label from 2006. Mandatory water label commenced in July 2006.

**Standby profile:** released in October 2003.

**Interim year and target:** 2007, less than 1 Watt in off mode, less than 4 Watts in end of cycle mode.

**Final 2012 target:** less than 0.3 Watts in off mode, less than 1 Watt in end of cycle mode.

**Current ownership:** 0.96 products per household, stock 7.5 million.

**Ownership trend:** stable. Ownership has increased by 2% between the 1994 and 2005 ABS surveys.

**Annual sales:** 725,000 in 2005, increasing slightly due to increasing household numbers.

**Other actions being implemented:** inclusion of standby power into the energy label Comparative Energy Consumption and Star Rating – transition commenced in early 2006 and will be completed by April 2007.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 1.5 Watts. An alarming proportion (40%) of European machines were found in the “left on” state when not in use (most do not automatically revert to off).

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 1.6%

**Available data sources for standby:** 380 new products in store surveys 2001 to 2006. 64 products in 2000 intrusive survey (installed). 114 products in 2005 intrusive survey (installed). Only off mode and active standby mode available from field measurements. End of cycle mode requires a laboratory test. New energy labelling registrations from 2006 will contain data for all current products, which can be cross matched with GfK model sales data to get true sales weighted average. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): there was a strong decline in off mode power from 2001 (3.8W) to 2004 (0.7W) probably in response to proposed reporting requirements and incorporation into the energy label. However, there appears to be a slight increase in both off mode and active standby mode for new products in 2004 and 2005 (1.2W) compared to earlier years. However, end of cycle mode is the most critical (especially for European products) and little data is available. Registration data will provide a more complete picture by late 2006.



## Product: Dishwashers

**Product synopsis:** Dishwasher ownership and sales have been increasing steadily over the past 15 years and they are becoming a mainstream product. Some 44% of homes had a dishwasher installed in 2005 (compared to 35% in 1994). The typical standby levels for this product are relatively low (typically less than 1 Watt), although many European products do not automatically revert to off mode, which can be a problem. Actions to include the standby energy into the energy label are finalised and are being implemented in 2006 and this should have some impact on future standby attributes for this product. Sufficient data is available or will be available to assess the interim targets in 2007.

**Regulatory status:** regulated for energy labelling since 1987 through AS/NZS2007.2. Standby incorporated in the energy label from 2006. Mandatory water label commenced in July 2006.

**Standby profile:** released in October 2003.

**Interim year and target:** 2007, 1 Watt off mode, 4 Watts end of cycle mode.

**Final 2012 target:** 0.3 Watt off mode, 1 Watt end of cycle mode.

**Current ownership:** 0.42 products per household, stock 3.3 million.

**Ownership trend:** increasing steadily. Ownership has increased by 9% between the 1994 and 2005 ABS surveys.

**Annual sales:** 290,000 in 2005, increasing.

**Other actions being implemented:** inclusion of standby power into the energy label Comparative Energy Consumption and Star Rating – transition commenced in early 2006 and will be completed by April 2007.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.7 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.8%.

**Available data sources for standby:** 181 new products in store surveys 2001 to 2006. 20 products in 2000 intrusive survey (installed). 68 products in 2005 intrusive survey (installed). Only off mode and active standby mode available from field measurements for most measurements to date. End of cycle mode requires laboratory test. New energy labelling registrations from 2006 will contain data for all current products, which can be cross matched with GfK model sales data to get true sales weighted average. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): the measured value for off mode varies over time but is usually less than one Watt (affected by the sample size and mix of products measured). However, end of cycle mode is the most critical (especially for European products) and little data is available. Registration data will provide a more complete picture by late 2006.



## Product: Gas Cooktops and Ovens

**Product synopsis:** Gas cooktops and ovens are common products in households. Products include separate ovens, separate cooktops and combined ovens and cooktops (called ranges). The typical standby levels for this product are relatively low (typically less than 0.5 Watts for non zero readings, mostly associated with clocks). Sufficient data is available or will be available to assess the interim targets in 2008.

**Regulatory status:** none.

**Standby profile:** released in November 2004.

**Interim year and target:** 2008, less than 0.5 Watts in off mode.

**Final 2012 target:** less than 0.3 Watts in off mode.

**Current ownership:** data is poor. About 40% of households used mains gas or LPG as their “main” energy source for cooking in 2005 (ABS4602). BIS Shrapnel report gas cooktops with electric ovens is 20%, gas cooktop with gas ovens is 17% and gas ranges are 12% (meaning nearly 50% of households use gas for at least some of their cooking requirements). A negligible number of households use an electric cooktop with a gas oven.

**Ownership trend:** gas cooktops are probably increasing.

**Annual sales:** around 400,000 units per annum for gas and electric (all types of cooktop and oven combinations).

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.1 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.1%.

**Available data sources for standby:** there are new products included in the store surveys 2001 to 2006, but unfortunately these are an aggregate of electric and gas units, thus no sample size was able to be defined. 9 products in 2000 intrusive survey (installed). 41 products in 2005 intrusive survey (installed). Only off mode and clock measurements are available for some products to date. These are sometimes difficult products to measure in store, as many of the units on display will not have a plug (designed to be hardwired) or the plug will be inaccessible.

**Trend in standby for new products** (where known): no trend for new products is available but likely to be very low.



## Sample Product: Rangehoods

**Product synopsis:** Rangehood ownership is probably increasing gradually. They are a fairly mainstream appliance and about 60% of homes had a range hood installed in 2005 (based on the 2005 Intrusive Survey and BIS Shrapnel data). The typical standby levels for this product are very low (actually typically less than 0.5 Watts for non zero readings, but most are zero Watts). Sufficient data is available or will be available to assess the interim targets in 2008.

**Regulatory status:** none.

**Standby profile:** released in November 2004.

**Interim year and target:** 2008, less than 0.5 Watts in off mode.

**Final 2012 target:** less than 0.3 Watts off mode.

**Current ownership:** 0.60 products per household, stock 4.7 million.

**Ownership trend:** probably steady.

**Annual sales:** around 400,000 units per annum.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.0 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.0%.

**Available data sources for standby:** 54 new products in store surveys 2001 to 2006. No products were measured in 2000 intrusive survey. 75 products in 2005 intrusive survey (installed). Only off mode is available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): off mode for new products is generally low and the average is close to zero Watts.



## Product: Portable Electric Space Heaters

**Product synopsis:** Electric space heater ownership has declined slightly over recent years. They are a fairly common appliance with over 60% of homes having at least one electric space heater installed in 2005. The typical standby levels for this product are relatively low (actually typically less than 0.5 Watts for non zero readings). Sufficient data is available or will be available to assess the interim targets in 2008.

**Regulatory status:** none.

**Standby profile:** released in November 2004.

**Interim year and target:** 2008, less than 1.0 Watt in non-heating modes.

**Final 2012 target:** less than 0.3 Watts in non-heating modes.

**Current ownership:** penetration is 58% and ownership is 0.9, stock about 7 million.

**Ownership trend:** declining slowly (penetration fell by 1% per annum from 2000 to 2004 – BIS Shrapnel).

**Annual sales:** 1.25 million in 2004, fairly steady.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.1 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.1%.

**Available data sources for standby:** 144 new products in store surveys 2001 to 2006. 6 products in 2000 intrusive survey (installed). 127 products in 2005 intrusive survey (installed). Only off mode is available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): most simple products have zero power consumption in non heating modes. Non zero power consumption is usually associated with a timers, LEDs or displays and these are probably becoming more common. Non heating modes averages have increased from 0.0 Watts in 2001 to around 0.5 Watts in 2005.



## Product: Gas Space Heaters

**Product synopsis:** Gas space heater ownership is fairly steady over the past 10 years. About 43% of homes had at least one gas space heater installed in 2005 (compared with 41% in 1994). The typical standby levels for this product are dependant on the mode and the appliance type. Convection based units average 7.2 Watts in passive standby mode and an average off mode of 3.9 Watts. Ducted systems have a similar average passive standby mode (7.1 Watts), but a much higher average off mode (6.7 Watts). Radiant and wall mounted units generally don't have a passive standby mode and have an average off mode of less than 1.0 Watts. Sufficient data is available or will be available to assess the interim targets in 2008.

**Regulatory status:** controlled through the Australia Gas Associated energy labelling scheme.

**Standby profile:** released in November 2004.

**Interim year and target:** 2008, less than 1 Watt in off mode, less than 3 Watts in passive standby mode.

**Final 2012 target:** less than 0.3 Watt in off mode, less than 1 Watt in passive standby mode.

**Current ownership:** 43% penetration, total products per household is likely to be about 0.49, stock 3.4 million.

**Ownership trend:** fairly steady. Ownership has increased by 2% between the 1994 and 2005 ABS surveys.

**Annual sales:** 150,000 in 2004, probably steady.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 1.3 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 1.4%.

**Available data sources for standby:** 31 new products in store surveys 2001 to 2006. 9 products in 2000 intrusive survey (installed). 80 products in 2005 intrusive survey (installed). Off mode and passive standby mode available for most measurements to date. There are no problems with gathering data on new products using store surveys, although there may be a need to target more specialised stockists in the future for some types.

**Trend in standby for new products** (where known): there are no trends available for new products as data collection is fragmented.



## Product: Instantaneous Gas Water Heaters

**Product synopsis:** Instantaneous gas water heater ownership and sales have been increasing steadily over the past 10 years. The typical standby levels for this product are relatively high, averaging around 9.5 Watts in active standby in 2005. It is doubtful that there is sufficient data available to assess the interim targets in 2007 unless special efforts are made to target readings for these products.

**Regulatory status:** controlled through the Australia Gas Associated energy labelling scheme.

**Standby profile:** released in March 2004.

**Interim year and target:** 2007, 3 Watts in passive standby mode.

**Final 2012 target:** 1 Watt in passive standby mode.

**Current ownership:** 0.20 products per household, stock 1.6 million (BIS Shrapnel).

**Ownership trend:** increasing.

**Annual sales:** around 175,000, increasing. Instantaneous gas water heaters are now outselling gas storage systems.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 1.0 Watts, but this may be understated as these products were under-represented in the intrusive survey.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 1.1%.

**Available data sources for standby:** 7 new products in store surveys 2001 to 2006. 1 product in 2000 intrusive survey (installed). 17 products in 2005 intrusive survey (installed). Data on 40 installed products collected in 2004 for the standby profile. There have been limited new products measured to date, as these are normally sold through specialist outlets. Targeting more specialised outlets in the future would be warranted to gather new product information. Measurements are fairly straight forward.

**Trend in standby for new products** (where known): there are no known trends for standby of new products available.



## Product: Microwave Ovens

**Product synopsis:** Microwave ownership and sales have been increasing over the past 10 years and the market can be considered saturated and stable. They are now a mainstream appliance and about 91% of homes had a microwave installed in 2005 (compared with 83% in 1999). The typical standby levels for this product are generally low (average 2.2 Watts in 2005), although this is dependant on type – microwaves with electronic controls and clocks have a higher consumption. Sufficient data is available or will be available to assess the interim targets in 2007.

**Regulatory status:** none.

**Standby profile:** released in October 2003.

**Interim year and target:** 2007, less than 4 Watts in passive standby mode.

**Final 2012 target:** less than 1.0 Watt in passive standby off mode.

**Current ownership:** 0.93 products per household, stock 7.3 million.

**Ownership trend:** probably stable. Ownership has increased from a based of virtually zero in 1980 to 30% in 1986 to 83% in 1999 (ABS8212, ABS4602).

**Annual sales:** probably increasing slightly with increases in household numbers.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 2.2 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 2.4%.

**Available data sources for standby:** 330 new products in store surveys 2001 to 2006. 51 products in 2000 intrusive survey (installed). 103 products in 2005 intrusive survey (installed). Passive standby mode and off mode (as applicable) available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): The majority of products have passive standby mode and this appears to be fairly stable at about 3 Watts from 2001 to 2006 with no significant improvement. The few products with off mode (no clock or electronic controls) are most zero Watts.

## Product: Televisions

**Product synopsis:** Television ownership and sales have been increasing steadily over the past 15 years. They are now a mainstream appliance with about 99% of homes having at least one television installed in 2005 (99% in 1999). Total television stock is continuing to increase with about 1.9 per house in 2005. The typical standby levels for this product are dependant on mode and unit type, with CRT televisions found to have an average passive standby of 7.4 Watts and an off mode of 0.1 Watts in 2005 (2005 Intrusive Survey). LCD televisions were found to have an average passive standby of 1.9 Watts and an average off mode of 1.0 Watts (2004/2005 Store Survey). Projection televisions were found to have an average passive standby of 5.8 Watts and an average off mode of 0.1 Watts (2004/2005 Store Survey). Plasma televisions were found to have an average passive standby of 2.3 Watts and an average off mode of 0.6 Watts (2004/2005 Store Survey). Actions to regulate the standby qualities of the home entertainment industry are being undertaken, which will have an impact on future standby attributes for this product.

**Regulatory status:** covered by the Energy Star program in Australia. Future regulation of all modes for televisions is proposed.

**Standby profile:** no standby profile released.

**Interim year and target:** none.

**Final 2012 target:** none.

**Current ownership:** 1.9 products per household, stock 15 million (ABS survey).

**Ownership trend:** increasing slowly despite virtually all houses owning at least one television.

**Annual sales:** around 1.8 million units per year.

**Other actions being implemented:** MEPS which will cover all relevant modes. Possible target date 2008.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 6.2 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 6.7%.

**Available data sources for standby:** 1103 new products in store surveys 2001 to 2006. 119 products in 2000 intrusive survey (installed). 253 products in 2005 intrusive survey (installed). On modes, passive standby and off modes available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): for CRT televisions, off mode is almost always zero Watts. Off mode for other types can be more than zero Watts in some cases. Passive standby mode has been decreasing strongly for CRT types, down from 6 Watts in 2001 to 3 Watts in 2005. Small sample sizes in each survey makes the trend in passive standby for other types less clear, but typically values are around 3 Watts or less.



## Product: Free-to-air Set Top Boxes

**Product synopsis:** Set top box ownership and sales have been increasing rapidly over the past 5 years. They are now becoming a common product and about 32% of homes had a set top box installed in 2005 (2005 Intrusive Survey). This is set to increase rapidly as analogue broadcasts are phased out. The typical power consumption for this product are dependant on mode, with average on mode found to be 13.3 Watts and average passive standby mode found to be 10.7 Watts (2005 Intrusive Survey). Proposals to regulate the all relevant modes for set top boxes are well advanced. Sufficient data is available or will be available to assess the interim targets in 2006.

**Regulatory status:** has not been regulated but proposals for MEPS on all relevant modes are well advanced..

**Standby profile:** released in March 2004 but later withdrawn in favour of MEPS.

**Interim year and target:** not applicable.

**Final 2012 target:** not applicable.

**Current ownership:** estimated at 0.32 products per household, stock 2.5 million (2005 Intrusive Survey). Data is fairly scant at this stage.

**Ownership trend:** increasing rapidly and this is likely to continue for next 5 to 8 years. Ultimate stock could be more than 10 million.

**Annual sales:** unknown, probably more than 500,000 units per year.

**Other actions being implemented:** MEPS on relevant standby modes. Possible target date 2008.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 1.9 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 2.0%.

**Available data sources for standby:** 107 new products in store surveys 2001 to 2006. 9 products in 2000 intrusive survey (installed). 38 products in 2005 intrusive survey (installed). Only on mode and passive standby mode available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): interestingly, store survey data shows there has been an increase in the passive standby mode for new products from 7.2 Watts in 2003 to over 9 Watts in 2006. However, on mode consumption has decreased from 20 Watts to 13 Watts. Caution is required interpreting this data as it is sometimes difficult to discern different features on products (eg hard drives).



## Product: DVD Players/Recorders and DVD/VCR Combos

**Product synopsis:** DVD players, recorders and VCR combo unit ownership and sales have been increasing rapidly over the past 7 years since when they were first introduced. They are now a fairly common product appliance and about 72% of homes had at least one of these units installed in 2005 (ownership is about 0.93 per household but was not reported before 2005). The average passive standby mode was found to be 3.0 Watts and average off mode found to be 0.0 Watts (for those few products with this mode) in 2005 (2005 Intrusive Survey). Proposals to introduce MEPS for all home entertainment equipment are well advanced. Sufficient data is available or will be available to assess the interim targets in 2006. There are a number of hybrid products in this category and there is some crossover with computers as these can perform a similar function.

**Regulatory status:** covered by the Energy Star program in Australia. Proposals for MEPS covering standby modes for all home entertainment equipment are well advanced.

**Standby profile:** released in October 2003 but later withdrawn in favour of MEPS..

**Interim year and target:** not applicable.

**Final 2012 target:** not applicable.

**Current ownership:** penetration of 72%, an average of about 0.93 products per household, stock 7.3 million.

**Ownership trend:** first introduced in 1999 and has been increasing rapidly but is likely to stabilise in future.

**Annual sales:** unknown, probably more than 1 million per year.

**Other actions being implemented:** MEPS on relevant standby modes. Possible target date 2008.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 2.4 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 2.6%.

**Available data sources for standby:** 414 new products in store surveys 2001 to 2006. 9 products in 2000 intrusive survey (installed). 130 products in 2005 intrusive survey (installed). Data for off mode, passive and active standby modes have been measured (as applicable) to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): few products have off mode but these are mostly zero Watts. Passive standby for DVD players has declined significantly from 2001 (5.8 Watts) to 2006 (2.2 Watts). Active standby mode for DVD players has also declined significantly from 2001 (15 Watts) to 2006 (8.7 Watts). DVD recorders have higher active standby (typically over 20 Watts) and passive standby values (around 7.5 Watts), mainly due to hard drives and possibly tuners. Trend data is less clear as DVD recorders have only been covered by some surveys.



## Product: Home Theatre Systems

**Product synopsis:** Home theatre system and AV receiver ownership has been increasing over the past 5 years. However, they are still a fairly uncommon appliance and about 13% of homes had an AV receiver installed in 2005 (2005 Intrusive Survey). The typical standby levels for this product are dependant on mode, with the average active standby mode for AV receivers found to be 35.3 Watts and the average passive standby mode found to be 3.1 Watts in 2005 (2005 Intrusive Survey). Proposals to introduce MEPS for all home entertainment equipment are well advanced. Sufficient data is available or will be available to assess the interim targets in 2007.

**Regulatory status** none. Proposals for MEPS covering standby modes for all home entertainment equipment are well advanced.

**Standby profile:** released in March 2004 but later withdrawn in favour of MEPS.

**Interim year and target:** not applicable.

**Final 2012 target:** not applicable.

**Current ownership:** for AV receivers there were found to be 0.13 products per household, stock 1.0 million (2005 Intrusive Survey). For the Intrusive Survey, individual components for home theatre systems were measured.

**Ownership trend:** probably increasing steadily.

**Annual sales:** unknown, probably increasing.

**Other actions being implemented:** MEPS on relevant standby modes. Possible target date 2008.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.7 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.8%.

**Available data sources for standby:** 114 new products in store surveys 2001 to 2006. No products in 2000 intrusive survey (installed). 15 products in 2005 intrusive survey (installed). Only passive and active standby mode available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): there appears to be a decrease in active standby mode for new home theatre systems, while passive standby mode has remained steady at about around 3 Watts.



## Product: Integrated Stereos

**Product synopsis:** Integrated stereo ownership has probably have been increasing over the past 10 years. Data is a bit sketchy, but it appears that around 60% of homes had an integrated stereo installed in 2005. The typical standby levels for this product can vary greatly by model, with active standby found to be between 1W and 60W and passive standby between 0.3W and 27W (2005 Intrusive Survey). This data is reflected in store survey data and shows that many products have poor designs. Proposals to introduce MEPS for all home entertainment equipment are well advanced. Sufficient data is available or will be available to assess the interim targets in 2007.

**Regulatory status:** covered by the Energy Star program in Australia. Proposals for MEPS covering standby modes for all home entertainment equipment are well advanced.

**Standby profile:** released in March 2004 but later withdrawn in favour of MEPS.

**Interim year and target:** not applicable.

**Final 2012 target:** not applicable.

**Current ownership:** penetration about 60% but ownership could be as high as 0.9 products per household, stock possible around 7 million. ABS data is unclear. In 2005 they report about 80% of homes have a “stereo system” which is thought to include integrated stereos, portable stereos and separate component stereo systems.

**Ownership trend:** probably steady, but unclear.

**Annual sales:** unknown, but likely to be more than 800,000 unit per annum.

**Other actions being implemented:** MEPS on relevant standby modes. Possible target date 2008.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 5.4 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 5.9%.

**Available data sources for standby:** 336 new products in store surveys 2001 to 2006. 59 products in 2000 intrusive survey (installed). 116 products in 2005 intrusive survey (installed). Off mode, passive and active standby mode available for most products measured to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): few products have off mode. There has been an improvement in passive standby from 2001 (9.4 Watts) to around 4 Watts in 2006. There is still a large difference between best and worst products with many less than 1 Watt in passive standby mode.



## Product: Portable Stereos

**Product synopsis:** Portable stereo ownership has probably have been increasing over the past 10 years. Data is a bit sketchy, but it appears that around 48% of homes had a portable stereo installed in 2005. The typical standby levels for this product for average active standby mode is above 5.0 Watts and for passive standby is around 2.0 Watts. Proposals to introduce MEPS for all home entertainment equipment are well advanced. Sufficient data is available or will be available to assess the interim targets in 2006.

**Regulatory status:** covered by the Energy Star program in Australia. Proposals for MEPS covering standby modes for all home entertainment equipment are well advanced.

**Standby profile:** released in October 2003 but later withdrawn in favour of MEPS.

**Interim year and target:** not applicable.

**Final 2012 target:** not applicable.

**Current ownership:** penetration is 48% and ownership is 0.63 products per household, stock estimated at 4.9 million.

**Ownership trend:** stable or decreasing slowly. Ownership based on intrusive surveys decreased by 5% between the 2000 and 2005, but data is patchy.

**Annual sales:** unknown but likely to be in excess of 500,000 units.

**Other actions being implemented:** MEPS on relevant standby modes. Possible target date 2008.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 1.0 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 1.1%.

**Available data sources for standby:** 205 new products in store surveys 2001 to 2006. 44 products in 2000 intrusive survey (installed). 76 products in 2005 intrusive survey (installed). Active and passive standby mode available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): passive standby mode for new products over the period 2001 to 2005 has been fairly stable at around 2 Watts.



## Product: VCRs

**Product synopsis:** VCR ownership probably increased until 2002 but now appears to be in decline. This may be occurring as they replaced by DVD players, DVD recorders and set top boxes with hard drives. VCRs are now an obsolete technology and stand alone products are now fairly hard to buy (a few are bundled with DVD player). About 84% of homes had a VCR installed in 2005 (87% in 1999). Installed product average standby levels for VCRs are dependant on mode: 10.5, 5.1 and 1.7 Watts for active, passive and off modes respectively (from the 2005 Intrusive survey). Proposals to introduce MEPS for all home entertainment equipment are well advanced. Sufficient data is available or will be available to assess the interim targets in 2006.

**Regulatory status:** covered by the Energy Star program in Australia. Proposals for MEPS covering standby modes for all home entertainment equipment are well advanced.

**Standby profile:** released in October 2003 but later withdrawn in favour of MEPS.

**Interim year and target:** not applicable.

**Final 2012 target:** not applicable.

**Current ownership:** penetration 84% and ownership 1.11 products per household, stock 8.7 million.

**Ownership trend:** probably declining as older products are retired. Ownership has decreased by 3% between the 1999 and 2005 ABS surveys with a peak in 2002.

**Annual sales:** declining. Few if any models now available as separate VCRs, a few are bundled with DVD players.

**Other actions being implemented:** MEPS on relevant standby modes. Possible target date 2008.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 5.9 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 6.4%.

**Available data sources for standby:** 181 new products in store surveys 2001 to 2006. 90 products in 2000 intrusive survey (installed). 133 products in 2005 intrusive survey (installed). Active, passive and off mode were available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products:** few products have off mode. There has been a decrease in passive standby mode for new products from 2001 (3.8 Watts) to 2006 (2.6 Watts).



## Product: Personal Video Recorders (PVRs)

**Product synopsis:** PVRs were introduced onto the market less than 5 years ago. As this is a relatively new product, no specific ownership data is currently available. There is a good deal of cross-over between PVRs, set top boxes and DVD recorders. The typical standby levels for this product are unknown.

**Regulatory status:** none.

**Standby profile:** no standby profile released.

**Interim year and target:** none.

**Final 2012 target:** none.

**Current ownership:** unknown, stock unknown.

**Ownership trend:** unknown, probably increasing.

**Annual sales:** unknown, probably increasing.

**Other actions being implemented:** MEPS on relevant standby modes. Possible target date 2008.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): N/A.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): N/A.

**Available data sources for standby:** 0 new products in store surveys 2001 to 2006. 0 products in 2000 intrusive survey (installed). 0 products in 2005 intrusive survey (installed). Although these are relatively new products, they should be found in the marketplace, including in the department stores surveyed in store surveys. Problems may be encountered with identification of the product, as they can easily be mistaken for DVD recorders or set top boxes.

**Trend in standby for new products** (where known): there are no known trends for standby of new products available.



## Product: Computers

**Product synopsis:** Computer ownership and sales have been increasing rapidly over the past 10 years. They are now a mainstream product with about 68% of homes having at least one computer installed in 2005 (45% in 1999). The average off mode was found to be 5.1 Watts in 2005 (Intrusive Survey). It is difficult to measure other modes for computers in a standard way, as the hardware build and software configuration of different units impact on the power consumption. The above figure and data below are an aggregation of desktop and laptop models. Total energy consumption dominated by on mode.

**Regulatory status:** covered by the Energy Star program in Australia. Proposals for MEPS covering various modes likely to be proposed.

**Standby profile:** no standby profile released.

**Interim year and target:** none.

**Final 2012 target:** none.

**Current ownership:** penetration 68% with a total of 0.90 products per household, stock 7 million (ABS) although this is likely to be an underestimate (as it is uncertain whether this ABS figure includes both laptops and desktop units). The Intrusive Survey ownership was closer to 2 per house (which is double ABS estimate) and about one third of these were laptops (which could explain the difference in ownership, although the Intrusive Survey figure is probably a slight overestimate). Does not include commercial sector stock which is likely to be comparable.

**Ownership trend:** has been increasing rapidly and is expected to increase for some time. Ownership increased from about 0.5 to 0.9 from 1999 to 2005.

**Annual sales:** unknown, but likely to be more than 3 million units a year including commercial, government and educational.

**Other actions being implemented:** MEPS for internal power supplies and all modes are under consideration.

**Estimated average standby power:** (as found, 2005 Intrusive Survey – sample weighted): 14.5 Watts (includes about 8% of desktop computers which were always left operating as servers).

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 15.7%.

**Available data sources for standby:** 134 new products in store surveys 2001 to 2006. 85 products in 2000 intrusive survey (installed). 215 products in 2005 intrusive survey (installed). Off mode and on mode available for most measurements to date, passive standby mode available for some. There are no problems with gathering data on new products using store surveys. Although the systems found in department stores surveyed will be of a generic build, perhaps targeting more specialised computer stockists could be used to gather new product information on a larger variety of systems.

**Trend in standby for new products** (where known): in the 1990's most computers used zero Watts in off mode. This climbed to a maximum of about 3.6 Watts in 2003 and appears to be decreasing in later years (store surveys).



## Product: Computer Monitors

**Product synopsis:** Computer monitor ownership has been increasing steadily over the past 10 years. About 68% of homes had at least one computer installed in 2005 (45% in 1999) according to ABS surveys, it could be assumed that the penetration would be the same for computer monitors (although there is uncertainty whether this figure includes both laptops and desktop units and in which case, this penetration would be an overestimate). The typical standby levels for this product are dependant on mode and type of monitor (CRT monitors generally having higher consumptions across all modes when compared to LCD monitors).

**Regulatory status:** covered by the Energy Star program in Australia. Proposals for MEPS covering various modes likely to be proposed.

**Standby profile:** no standby profile released.

**Interim year and target:** none.

**Final 2012 target:** none.

**Current ownership:** in the 2005 Intrusive Survey, About one third of computers were laptops, so this would suggest the residential stock of monitors is about 4.6 million (although it would seem that ownership found in the 2005 Intrusive Survey was an overestimate when compared to ABS surveys). Does not include commercial sector which is likely to be comparable.

**Ownership trend:** increasing rapidly. Ownership has increased from about 0.5 to 0.9 between the 1999 and 2005 ABS surveys (note that these figures are for computers, which may or may not include laptops). Rapid transition towards LCD.

**Annual sales:** unknown, but likely to be more than 2 million units a year including commercial, government and educational.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 3.3 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 3.6%.

**Available data sources for standby:** 165 new products in store surveys 2001 to 2006. 76 products in 2000 intrusive survey (installed). 147 products in 2005 intrusive survey (installed). On, passive standby and off modes available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): CRT monitors were found to have average on, passive standby and off mode consumptions of 61.7 W, 7.2 W and 1.9 W respectively, while LCD monitors had 29.3 W, 2.6 W and 1.0 W respectively in 2005 (2005 Intrusive Survey). There appears to be a decrease in off mode for new products in 2004 and 2005 compared to earlier years.



## Product: Computer Speakers

**Product synopsis:** Computer speaker ownership is linked strongly to desktop computer ownership with most having external speakers (although some LCD monitors contain inbuilt speakers). On average, about 83% of homes had computer speakers installed in 2005 (2005 Intrusive Survey) . The typical standby levels for this product are dependant on mode, with average active standby found to be 4.1 Watts and average off mode found to be 2.2 Watts in 2005. Sufficient data is available or will be available to assess the interim targets in 2007.

**Regulatory status:** none.

**Standby profile:** released in November 2004.

**Interim year and target:** 2007, less than 1 Watt in off mode, less than 1.5 Watts in relevant standby mode.

**Final 2012 target:** less than 0.5 Watts in off mode, less than 0.75 Watts in relevant standby mode.

**Current ownership:** 0.83 products per household, stock 6.5 million.

**Ownership trend:** probably steady. Ownership has remained stable at 0.83 for both 2000 and 2005 household surveys.

**Annual sales:** probably steady.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 2.0 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 2.2%.

**Available data sources for standby:** 26 new products in store surveys 2001 to 2006. 53 products in 2000 intrusive survey (installed). 99 products in 2005 intrusive survey (installed). Only off mode and active standby mode available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): it appears that both the active standby mode and off mode for computer speakers have increased and in 2005 the average values for new products were 7.5 W and 4.2 W respectively (although, this should be interpreted with caution due to a small sample size).



## Product: Printers

**Product synopsis:** Printer ownership is linked strongly to desktop computer ownership where about 3 in 4 desktop computers have a printer in the residential sector. On average there was one printer per house installed in 2005 (2005 Intrusive Survey). The typical standby levels for this product are dependant on mode, with the average active standby mode found to be 5.7 Watts and the average off mode found to be 1.8 Watts in 2005 (2005 Intrusive Survey). Also note, the above figures and below data are an aggregation of inkjet and laser printer models. Sufficient data is available or will be available to assess the interim targets in 2007.

**Regulatory status:** covered by the Energy Star program in Australia.

**Standby profile:** released in October 2003.

**Interim year and target:** 2007, at least 66% of products to comply with targets set out in Tables 5 to 9 in computer printer standby profile (tables are large and complex, best to view them in the respective profile).

**Final 2012 target:** movement to mandatory targets if the above interim targets are not reached (standby profile does not state what these might be).

**Current ownership:** 1.03 products per household, stock 8.1 million (2005 Intrusive Survey). Does not include commercial sector which is likely to be comparable. At this stage inkjet printers are more common on the residential sector (although the share is likely to be decreasing in time) (0.89 inkjet units compared to 0.13 laser units in the residential sector) where as laser printers dominate the commercial sector.

**Ownership trend:** decreasing slowly in the residential sector. Ownership has decreased by from 1.30 to 1.03 between the 2000 and 2005 household surveys, probably due to increased networking of computers and sharing of printers.

**Annual sales:** unknown.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 2.1 Watts (with inkjet units consuming on average 1.6 Watts and laser printers consuming 0.5 Watts on average).

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 2.2%.

**Available data sources for standby:** 147 new products in store surveys 2001 to 2006. 83 products in 2000 intrusive survey (installed). 123 products in 2005 intrusive survey (installed). Only off mode and active standby mode available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): there appears to be a slight decrease in off mode for new inkjet printers in 2004 and 2005 compared to earlier years. Off mode for new laser printers has remained stable across all years.



## Product: Modems

**Product synopsis:** Modem ownership is strongly linked strongly to computer ownership. With the advent of broadband and increasing networking, there is typically only one modem per house which have one or more computers. It is estimated that about 68% of homes had a modem installed in 2005 (2005 Intrusive Survey) (although this is likely to be an underestimate). The typical standby levels for this product are dependant on mode, with an average of 5.9 Watts, 4.4 Watts and 2.4 Watts for active standby, passive standby and off modes respectively (note: these figures are amalgamated figures of all modem types). It is doubtful that there is sufficient data available or will be available to assess the interim targets in 2008 without special data collection efforts.

**Regulatory status:** none.

**Standby profile:** released in November 2004.

**Interim year and target:** 2008, for on mode:

- Dialup, external modem, self-powered: < 2.8 Watts
- Broadband, external modem, self-powered: < 2.8 Watts
- External modem, self-powered with network hub and/or wireless connectivity to the PC: < 6.6 Watts

**Final 2012 target:** for external, self-powered modems: 0.75 Watts in standby modes and 0.5 Watts in off mode.

**Current ownership:** 0.68 products per household, stock 5.3 million.

**Ownership trend:** increasing rapidly. Ownership has increased from 0.59 to 0.68 between the 2000 and 2005 household surveys.

**Annual sales:** unknown, probably overall increasing. Broadband modem sales probably increasing rapidly, dialup modem sales are probably decreasing.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 3.4 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 3.7%.

**Available data sources for standby:** 20 new products in store surveys 2001 to 2006. 38 products in 2000 intrusive survey (installed). 82 products in 2005 intrusive survey (installed). Active standby, passive standby and off modes are available for most measurements to date. A large percentage of the products measured in the 2005 intrusive survey were broadband modems, whereas most of the units measured in 2000 were dialup. This presents some problems given that this is a product experiencing market growth, households in the future would use ADSL modems and that dialup internet is becoming a rarer. It may be difficult to survey new products under the current store survey regime, as the department stores currently visited would generally have limited stock on display. Perhaps targeting more specialised computer and peripheral stockists in the future would be warranted to gather new product information.

**Trend in standby for new products** (where known): there are no known trends of standby of new products available due to the small sample. Most broadband modems are left running continuously, so active mode is likely to be the one of most concern.



## Product: Scanners and Multifunction Devices

**Product synopsis:** Scanner and multifunction device ownership and sales are linked to computer ownership. About 48% of homes had one of either installed in 2005 (2005 Intrusive Survey). Multifunction devices are a more recent technology and have increased in ownership and sales rapidly in the past 5 years due to their functionality, whilst ownership and sales of scanners have probably decreased due to the increased market share of multifunction devices. The typical standby levels for this product are dependant on mode, with the average active standby mode being 9.9 Watts and the average off mode being 4.3 Watts (2005 Intrusive Survey). Sufficient data is available or will be available to assess the interim targets in 2007. Most MFDs are left in active standby mode so that they can receive faxes.

**Regulatory status:** covered by the Energy Star program in Australia.

**Standby profile:** released in October 2003.

**Interim year and target:** 2007, at least 75% of products to comply with targets set out in Tables 8 to 11 in scanners and multifunction devices standby profile (tables are large and complex, best to view them in the respective profile).

**Final 2012 target:** movement to mandatory targets if the above interim targets are not reached (standby profile does not state what these might be).

**Current ownership:** 0.48 products per household, stock 3.8 million (2005 Intrusive Survey).

**Ownership trend:** multifunction device ownership is probably increasing, scanner ownership may be decreasing (due to the ability of multifunction devices to function as scanners). Overall ownership has increased from 0.31 to 0.48 between the 2000 and 2005 household surveys.

**Annual sales:** unknown, probably increasing for multifunction devices and steady or declining for scanners. Significant sales of these products in the commercial sector, especially for small businesses.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 2.0 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 2.2%.

**Available data sources for standby:** 108 new products in store surveys 2001 to 2006. 20 products in 2000 intrusive survey (installed). 57 products in 2005 intrusive survey (installed). Only off mode and active standby mode available for most measurements to date. There are no problems with gathering data on new products using store surveys. Although it may be worth measuring more multifunction devices prior to assessing the interim targets, as this product group now has increased market share.

**Trend in standby for new products** (where known): there appears to be a slight decrease in both off and active standby mode for new MFD units in 2004 and 2005 compared to earlier years (scanner units were only measured in one store survey, thus trends for scanners are uncertain).



## Product: Cordless Phone Equipment

**Product synopsis:** Cordless phone equipment (both base stations and extra handsets) ownership has been increasing rapidly over the past 5 years. They are now a product with an average of 1.3 cordless phones per house in 2005 (2005 Intrusive Survey – average figure). The average active standby levels for this product were found to be 3.1 Watts, while the average passive standby level was found to be 2.1 Watts in 2005 (this is averaged over both base stations and extra handsets). All products are powered by an external power supply.

**Regulatory status:** none. Covered by Energy Star in the USA but not included in the Australian program.

**Standby profile:** no standby profile released.

**Interim year and target:** none.

**Final 2012 target:** none.

**Current ownership:** 1.33 products per household, stock 10.4 million (2005 Intrusive Survey).

**Ownership trend:** increasing rapidly. Ownership has increased from 0.88 to 1.33 between the 2000 and 2005 household surveys.

**Annual sales:** unknown, probably increasing.

**Other actions being implemented:** external power supplies will be subject to MEPS in the near future and this will indirectly affect this product.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 3.7 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 4.0%.

**Available data sources for standby:** 2 new products in store surveys 2001 to 2006. 56 products in 2000 intrusive survey (installed). 160 products in 2005 intrusive survey (installed). Only active and passive standby modes available for most measurements to date (if the unit had an external power supply, this was also separately measured in 2005). Note: 17% of cordless phone base stations also had an answering machine function. It may be difficult to survey new products under the current store survey regime, as the department stores currently visited would generally have limited stock on display and available for measurement. Perhaps targeting more specialised stockists in the future would be warranted to gather new product information. Measurements are complicated by the battery charging function as the state of charge can have a large impact on power levels. Laboratory measurements would be required to accurately measure all relevant modes under controlled conditions.

**Trend in standby for new products** (where known): there are no known trends for standby of new products available.



## Product: Answering Machines

**Product synopsis:** Answering machines ownership has probably been decreasing over the past 5 years. This is partly due to the increasing number of cordless phone base station units that have an answering machine function built in but also as a similar function is provided by many telephone companies (message bank). About 17% of homes had an answering machine installed in 2005 (house survey). The average active standby levels for this product were found to be 3.1 Watts in 2005. All products are powered by an external power supply.

**Regulatory status:** none.

**Standby profile:** no standby profile released.

**Interim year and target:** none.

**Final 2012 target:** none.

**Current ownership:** 0.17 products per household, stock 1.3 million (2005 Intrusive Survey).

**Ownership trend:** probably decreasing. Ownership has decreased from 0.39 to 0.17 between the 2000 and 2005 household surveys.

**Annual sales:** unknown, assumed to be decreasing.

**Other actions being implemented:** external power supplies will be subject to MEPS in the near future and this will indirectly affect this product.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.5 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.5%.

**Available data sources for standby:** no new products have been measured in store surveys 2001 to 2006. 25 products in 2000 intrusive survey (installed). 20 products in 2005 intrusive survey (installed). Only active standby mode available for most measurements to date. It may be difficult to survey new products under the current store survey regime, as the department stores currently visited would generally have limited stock on display and available for measurement. Perhaps targeting more specialised stockists in the future would be warranted to gather new product information.

**Trend in standby for new products** (where known): there are no known trends of the standby of new products.



## Product: Photocopiers

**Product synopsis:** Photocopier ownership in the residential sector is very low (of the order of a few percent - only three units were found in the 120 house measured in the 2005 Intrusive Survey). They are a mainly commercial product. The typical standby levels for this product are very dependant on mode, but are generally quite high; 83 W, 47 W and 7.5 W for active standby, passive standby and off modes respectively (Local Government Standby Consumption survey). It is doubtful that there is sufficient data available or will be available to assess the interim targets in 2008 without special data collected efforts.

**Regulatory status:** covered by the Energy Star program in Australia.

**Standby profile:** released in October 2003.

**Interim year and target:** 2008, USA Energy Star criteria including – 3 Watts in off mode for large format copiers, 2 Watts in off mode for all others.

**Final 2012 target:** as per USA Energy Star criteria.

**Current ownership:** <0.03 products per household, stock of the order of 200 thousand in the residential sector (2005 Intrusive Survey) but the stock of commercial sector is likely to be large.

**Ownership trend:** unknown.

**Annual sales:** unknown.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.2 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.2%.

**Available data sources for standby:** 3 products in 2005 intrusive survey (installed). 86 products measured in the local government standby survey. Active standby, passive standby and off mode available for most measurements to date. There have been limited new products measured to date, generally as it is difficult to survey new products under the current store survey regime, as the department stores currently visited would generally have limited stock on display. Perhaps targeting more specialised stockists in the future would be warranted to gather new product information.

**Trend in standby for new products** (where known): unknown.



## Product: External Power Supplies

**Product synopsis:** External power supply ownership is very high and these are now ubiquitous with the advent of consumer electronic equipment. Each home had an average of almost 7 EPSs per house, although 4.2 of these were normally/always connected to a separate product (eg portable vacuum cleaner, cordless phone, answering machine etc.) and hence would be classified as part of that separate product.

**Regulatory status:** proposed regulation for mandatory MEPS in 2007 across a range of power outputs.

**Standby profile:** no standby profile released.

**Interim year and target:** none.

**Final 2012 target:** none.

**Current ownership:** 2.67 products per household, stock 21 million (2005 Intrusive Survey) (50 million if all that are part of separate products are included).

**Ownership trend:** increasing rapidly.

**Annual sales:** unknown, increasing.

**Other actions being implemented:** regulation for MEPS.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 1.0 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 1.1%.

**Available data sources for standby:** 0 new products in store surveys 2001 to 2006. 230 products in 2000 intrusive survey (installed). 824 products in 2005 intrusive survey (installed). Only passive standby mode (no load state) available for most measurements to date. It may be difficult to survey new products under the current store survey regime, as the department stores currently visited would generally have limited stock on display, given that these products are generally found as a component of another appliance.

**Trend in standby for new products** (where known): there are no known trends for standby of new products available.



## Product: Burglar Alarms

**Product synopsis:** Burglar alarm ownership has been increasing gradually over the past 5 years, although they are still a fairly uncommon product. About 15% of homes had a burglar alarm installed in 2005 (2005 Intrusive Survey). The typical standby levels for this product are relatively unknown, as many units are hardwired (those measured had an average passive standby of 4.8 Watts). It is doubtful that sufficient data is available to assess the interim targets in 2008 without special data collection efforts.

**Regulatory status:** none.

**Standby profile:** released in November 2005.

**Interim year and target:** 2008, 4 Watts for relevant standby mode for central control unit with the keypad battery fully charged.

**Final 2012 target:** 1.5 Watts for relevant standby mode for central control unit with the keypad battery fully charged.

**Current ownership:** 0.15 products per household, stock 1.2 million (2005 Intrusive Survey).

**Ownership trend:** probably increasing slowly.

**Annual sales:** unknown, probably increasing

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.7 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.8%.

**Available data sources for standby:** 0 new products in store surveys 2001 to 2006. 0 products in 2000 intrusive survey (installed). 18 products in 2005 intrusive survey (installed). Only passive standby mode readings available for some measurements to date. These are difficult products to measure in store, as any of the units on display will not have a plug (designed to be hardwired). Perhaps targeting more specialised stockists in the future would be warranted to gather new product information.

**Trend in standby for new products** (where known): no known trend for standby of new products available.



## Product: Motion Sensors and Sensor Lights

**Product synopsis:** Motion sensor and sensor light ownership and sales have been increasing gradually although they are still a fairly uncommon product with about 17% of homes having either a motion sensor or sensor light installed in 2005 (2005 Intrusive Survey). The typical standby levels for this product are relatively unknown, as many units are hardwired (those measured had an average passive standby of 0.8 Watts). It is doubtful that sufficient data is available to assess the interim targets in 2008 without special data collection efforts.

**Regulatory status:** none.

**Standby profile:** released in November 2004.

**Interim year and target:** 2008, less than 0.75 Watts in respective standby modes.

**Final 2012 target:** less than 0.25 Watt in respective standby modes.

**Current ownership:** 0.17 products per household, stock 1.3 million (2005 Intrusive Survey).

**Ownership trend:** probably increasing steadily. Ownership has increased from 0.03 to 0.17 between the 2000 and 2005 household surveys (although this may be a function of survey sampling).

**Annual sales:** unknown, probably increasing.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.1 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.1%.

**Available data sources for standby:** 0 new products in store surveys 2001 to 2006. 2 products in 2000 intrusive survey (installed). 20 products in 2005 intrusive survey (installed). Only active standby mode available for some measurements to date. These are difficult products to measure in store, as most units on display will not have a plug (designed to be hardwired). Perhaps targeting more specialised stockists in the future would be warranted to gather new product information.

**Trend in standby for new products** (where known): there are no known trends for standby of new products available.



## Product: Mains Powered Smoke Alarms

**Product synopsis:** Smoke alarm ownership have been increasing steadily over the past 10 years, with a rapid increase in sales over the past 5 years as these are now mandatory for all new homes and major renovations. An average home now has more than one mains powered smoke alarm installed in 2005. The typical standby levels for this product are relatively low (actually typically less than 0.5 Watt for mains powered models). Many smoke alarms are battery powered smoke alarms and care is required to distinguish battery from mains powered products. More data on the range of power consumption of new models needs to be collected (a laboratory measurement is required – field and store measurements are not usually possible) to assess the interim targets in 2007.

**Regulatory status:** no regulations exist regarding the energy consumption of smoke alarms. New houses and major renovation have required mains powered alarms to be fitted since 1996.

**Standby profile:** released in March 2004.

**Interim year and target:** 2007, less than 0.4 Watt in active standby mode.

**Final 2012 target:** less than 0.2 Watt in active standby mode.

**Current ownership:** penetration of 62% with an ownership of 1.23 products per household, stock approaching 9.5 million (2005 Intrusive Survey).

**Ownership trend:** increasing fairly quickly.

**Annual sales:** estimated at over 1 million per annum.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.4 Watts (estimated).

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.2%.

**Available data sources for standby:** 147 products in 2005 intrusive survey (installed). Standby measurements require laboratory tests, so data is difficult to obtain.

**Trend in standby for new products** (where known): unknown trend.



## Product: Remote Garage Door Openers

**Product synopsis:** Remote garage door opener ownership has been increasing rapidly over the past 5 years. About 30% of homes had a remote garage door installed in 2005 (Intrusive Survey). The average active standby for this product was found to be 4.1 Watts and as the unit is in this mode for the vast majority of its operating life. It is doubtful that there is sufficient data available or will be available to assess the interim targets in 2008 without special data collected efforts.

**Regulatory status:** none.

**Standby profile:** released in November 2004.

**Interim year and target:** 2008, less than 3 Watts in active standby mode.

**Final 2012 target:** less than 1 Watt in active standby mode.

**Current ownership:** 0.30 products per household, stock 2.4 million (2005 Intrusive Survey).

**Ownership trend:** increasing rapidly (less than 0.1 per household in 2000).

**Annual sales:** could be as high as 300,000 units per year (estimate only).

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 1.2 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 1.3%.

**Available data sources for standby:** 6 products found in the 2000 intrusive survey (installed). 36 products in 2005 intrusive survey (installed), no store surveys have measured this appliance. A total of 23 products were measured in 2004 for the standby power profile. Only active standby mode available for all measurements to date. It may be difficult to survey new products under the current store survey regime, as the department stores currently visited would generally have limited or no stock on display. Perhaps targeting more specialised stockists in the future would be warranted to gather new product information.

**Trend in standby for new products** (where known): no trend data available.



## Product: Espresso Coffee Machines

**Product synopsis:** Espresso coffee machine ownership has been increasing slowly over the past 10 years. They are still a relatively uncommon appliance with about 18% of homes having an espresso coffee machine installed in 2005 (from 2005 house survey). The typical standby levels for this product are low (actually typically less than 2.0 Watts for new products), although some older products have a mode where the heater keeps the coffee warm. Sufficient data is available or will be available to assess the interim targets in 2008.

**Regulatory status:** none.

**Standby profile:** released in November 2004.

**Interim year and target:** 2008, less than 1 Watt in off mode.

**Final 2012 target:** less than 0.5 Watt in off mode, with a power down time of 1 hour.

**Current ownership:** 0.18 products per household, stock 1.4 million (2005 Intrusive Survey).

**Ownership trend:** increasing steadily.

**Annual sales:** 57,000 in 2005, increasing.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.0 Watts (all products were found in off mode).

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.0%.

**Available data sources for standby:** 108 new products in store surveys 2001 to 2006. 0 products in 2000 intrusive survey (installed). 22 products in 2005 intrusive survey (installed). Only off mode is available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): there appears to be a slight increase in off mode for new products in 2004 and 2005 compared to earlier years up to 1.3 W.



## Product: Breadmakers

**Product synopsis:** Breadmaker ownership has been steady over the past 5 years. About 18% of homes had a breadmaker installed in 2005 (house survey). The typical standby levels for this product are relatively low (actually typically less than 2 Watts in active standby mode), although most units were found unplugged in the 2005 house survey (thus breadmakers had minimal impact on the standby consumption totals for the survey). Sufficient data is available or will be available to assess the interim targets in 2008.

**Regulatory status:** none.

**Standby profile:** released in November 2004.

**Interim year and target:** 2008, less than 3 Watts in active standby mode.

**Final 2012 target:** less than 1 Watt active standby mode.

**Current ownership:** 0.18 products per household, stock 1.4 million (2005 Intrusive Survey). Ownership has decreased by 1% between the 2000 and 2005 household surveys.

**Ownership trend:** probably steady.

**Annual sales:** unknown, probably steady.

**Other actions being implemented:** none.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.0 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.0%.

**Available data sources for standby:** 75 new products in store surveys 2001 to 2006. 12 products in 2000 intrusive survey (installed). 22 products in 2005 intrusive survey (installed). Only active standby mode available for most measurements to date. There are no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): the average active standby mode power for new products from 2001 to 2005 has been fairly steady between 1.5 W and 2.0 W. Most products are unplugged during normal use.



## Product: Game Consoles

**Product synopsis:** Game console ownership has increased rapidly over the past 5 years. About 31% of homes had a games console installed in 2005 (ABS). The typical standby levels for this product are dependant on mode with the average active standby mode being 26.7 Watts, the average passive standby mode being 1.9 Watts and the average off mode being 1.4 Watts.

**Regulatory status:** none.

**Standby profile:** no standby profile released.

**Interim year and target:** none.

**Final 2012 target:** none.

**Current ownership:** 0.31 products per household, stock 2.4 million.

**Ownership trend:** probably increasing rapidly. Ownership has increased from 0.16 to 0.33 between the 2000 and 2005 household surveys.

**Annual sales:** unknown, probably increasing.

**Other actions being implemented:** MEPS on home entertainment products currently being drafted but it is unclear whether these will be included within the scope.

**Estimated average standby power** (as found, 2005 Intrusive Survey – sample weighted): 0.4 Watts.

**Contribution to total household standby** (as found, 2005 Intrusive Survey): 0.4%.

**Available data sources for standby:** 1 new product in store surveys 2001 to 2006. 10 products in 2000 intrusive survey (installed). 40 products in 2005 intrusive survey (installed). Active and passive standby modes and off mode are available for most measurements to date. The lack of new data is due to this product not been targeted in store surveys to date, it is expected that there will be no problems with gathering data on new products using store surveys.

**Trend in standby for new products** (where known): there are no known trends for standby of new products available.

