

PRODUCT PROFILE



HOME THEATRE

AUSTRALIA'S STANDBY POWER STRATEGY 2002 - 2012

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

The National Appliance and Equipment Energy Efficiency Committee seeks comment on this proposal from any interested person or organisation.

Please email comments to:

energy.efficiency@greenhouse.gov.au

Alternatively, hard copy comments can be mailed to:

Home Theatre Product Profile
Equipment, Appliances & Transport Team
Australian Greenhouse Office
GPO Box 621
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Comments received by 30 June 2004 will assist in determining the final form of the policy proposals taken to government regarding home theatres.

An electronic version of this Standby Product Profile and other Profiles released for public discussion can be obtained from www.energyrating.gov.au under standby.

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PRODUCT DESCRIPTION

Home theatre products are becoming increasingly popular for their superior sound and associated picture quality, which allow the consumer to almost have a cinema experience from home. This product group, which in the past has also been referred to as surround sound units, consists of a range of items which share the common functionality of providing high quality sound for audio visual components (Stereo TV, DVD, VCR etc.). The home theatre product group can be divided into two sub categories: AV receivers and home theatre systems.

AV receivers are essentially an amplifier with a built-in radio tuner that functions as a control centre for other components such as TV, DVD player, stereo etc. AV receivers are also available with built-in DVD players and/or digital signal decoders i.e. built-in set top boxes. For the purposes of this profile, the AV receiver category includes all these variations.

Home theatre systems cover units that include an AV receiver and subwoofer speaker system all powered by the one lead. This category of product nearly always has a built-in DVD player and can include other components such as a digital signal decoders i.e. built in set top boxes. The key characteristic that defines a home theatre system is that all components are powered from the one source lead.

It should be noted that manufacturers and retailers sometimes package individual components together, labelling them a "Home Theatre System". These would not fall into the home theatre system category covered by this profile as each product has its own individual power source. Hence, each component would be covered by its own profile category i.e. AV receiver, DVD player etc.

CURRENT OWNERSHIP AND TRENDS

As the home theatre is an emerging technology, there is little (if any) data on penetration or ownership. Home theatre products were fairly new to the Australian market in 2000 and as such the NAEDEC commissioned store survey conducted late in 1999 in stores in Brisbane and Sydney failed to find any of these products for sale. However, sales data shows popularity is rapidly increasing as prices decrease. Energy consumption of home theatres will therefore be a priority for government.

Table 1 shows the sales of home theatre products have increased nearly threefold in each year since 2000. While the average price of home theatre products was still over \$1,000 in 2002, it has been observed that most systems are now priced below \$1,000 with budget priced systems being sold for under \$200, making them increasingly competitive with integrated stereos.

TABLE 1: TOTAL SALES AND AVERAGE PRICE OF HOME THEATRE/AV RECEIVER SYSTEMS 2000-2002

Year	Total Sales	Average Price
2000	7,232	\$1,427
2001	22,466	\$1,419
2002	61,258	\$1,169

Source: GfK Marketing

It is possible that these systems will eventually overtake integrated stereos as the major audio appliance in the household, in addition to their complimentary audio functions for video entertainment.

RELEVANT MODES FOR THE 'ONE WATT' POWER PLAN

Home theatre products available in Australia have up to four operational modes: on, active standby, passive standby and off.

On mode is not generally relevant for the standby power plan, although the on mode power consumption and the hours of use are critical in determining total energy consumption of products. However, in the case of AV receivers, the way on mode has historically been measured means the in-use status has similar characteristics to the active standby measurements of other products. AV receivers can be left in this in-use mode for extended periods while producing no audible output, which is very similar to the active standby mode for home theatre systems; therefore this mode has been reported for AV receivers only.

Active standby mode applies to all home theatre systems. This mode occurs while the unit is activated

and waiting to play. While in this mode, many units display a digital message reporting the status.

Passive standby mode applies to both categories of home theatre products. Most home theatre products have a remote control function that means the units can be put 'to sleep' rather than turned off. Many models also have a standby button on the unit and no longer have a 'hard off' switch at all.

Off mode, also known as 'hard' off, in theory, disconnects the mains from all electrical circuits in an appliance. Again, this mode applies to both categories, however less than half of the home theatre products on the Australian market have a 'hard' off switch, and some of these are still consuming power in this mode. For most home theatre products passive standby is the lowest power state, i.e. the unit can always be activated by a remote control.

KNOWN STANDBY DATA FOR NEW PRODUCTS

AV RECEIVERS

The NAEEEC store surveys measured AV receivers in three modes: on mode, when the unit was on auxiliary power or a component was not plugged in (i.e. not set to radio); passive standby - ready to be activated; and off where applicable. The vast majority of units do not have an on/off function. The units measured included 23 receivers with DVD players and four receivers with decoders.

Table 2 summarises the results for the 2002 and 2003 NAEEEC store surveys. No AV receivers were found during the 2001 survey.

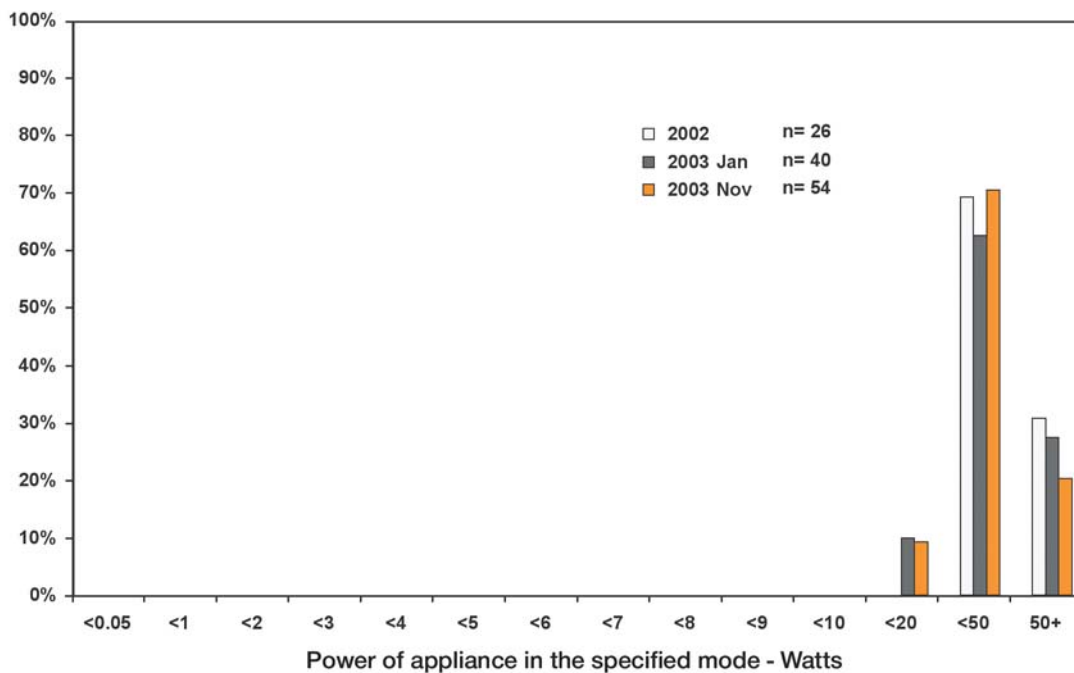
In on mode most AV receivers consume more than 20W. In November 2003, the average was 39W and the maximum was 100.7W with a minimum of 11.4W. Figure 1 presents the distribution of on mode results.

TABLE 2: SUMMARY OF RESULTS FOR 2002 AND 2003 NAEEEC STORE SURVEYS

	2002 (n=26)	2003 (Jan) (n=40)	2003 (Nov) (n=54)
Average On Mode	48.3W	43.9W	39.0W
Minimum On Mode	28.0W	12.2W	11.4W
Maximum On Mode	88.2W	94.5W	100.7W
Average Passive Standby	2.1W	2.0W	1.7W
Minimum Passive Standby	0.6W	0.0W	.02W
Maximum Passive Standby	10.9W	10.6W	15.0W
Average Off	0.2W	0.2W	1.6W

Note: n is total sample size in survey

FIGURE 1: POWER MEASUREMENTS FOR AV RECEIVERS: ON MODE



The variation in passive standby measurements for AV receivers is significant. In November 2003, the maximum power consumption recorded was 15W with the minimum being 0.2W. Figure 2 illustrates this variation, demonstrating that most units consume less than 2W in passive standby mode.

Figure 3 presents the off mode data for AV receivers, highlighting that the vast majority do not consume energy in off mode.

FIGURE 2: POWER MEASUREMENTS FOR HOME THEATRE PRODUCTS: PASSIVE STANDBY MODE

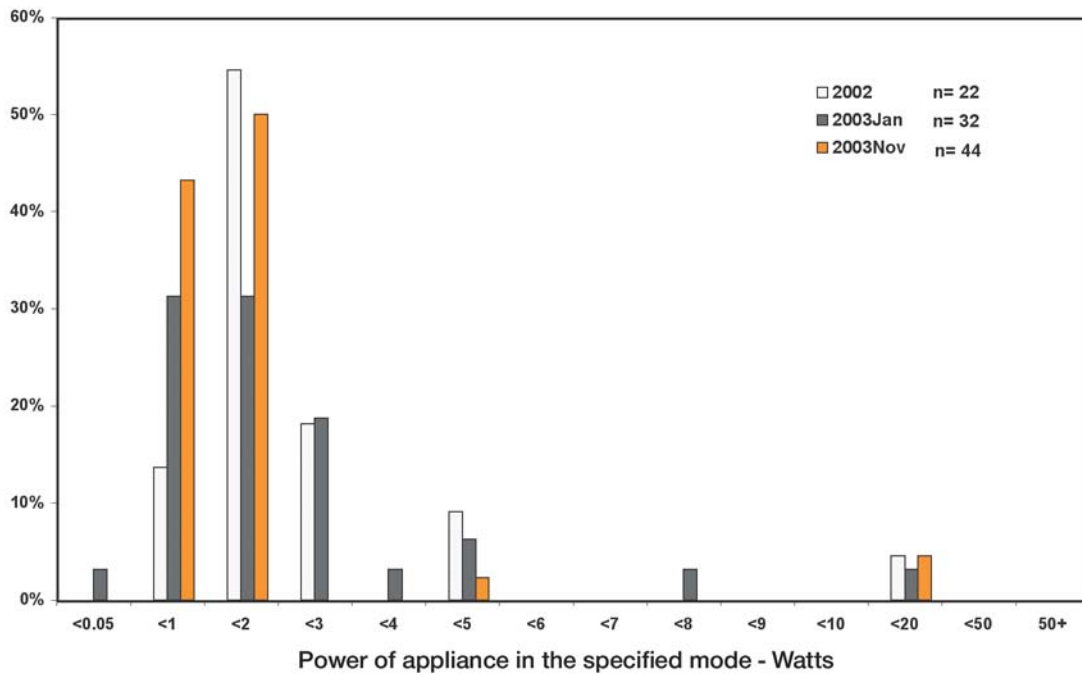
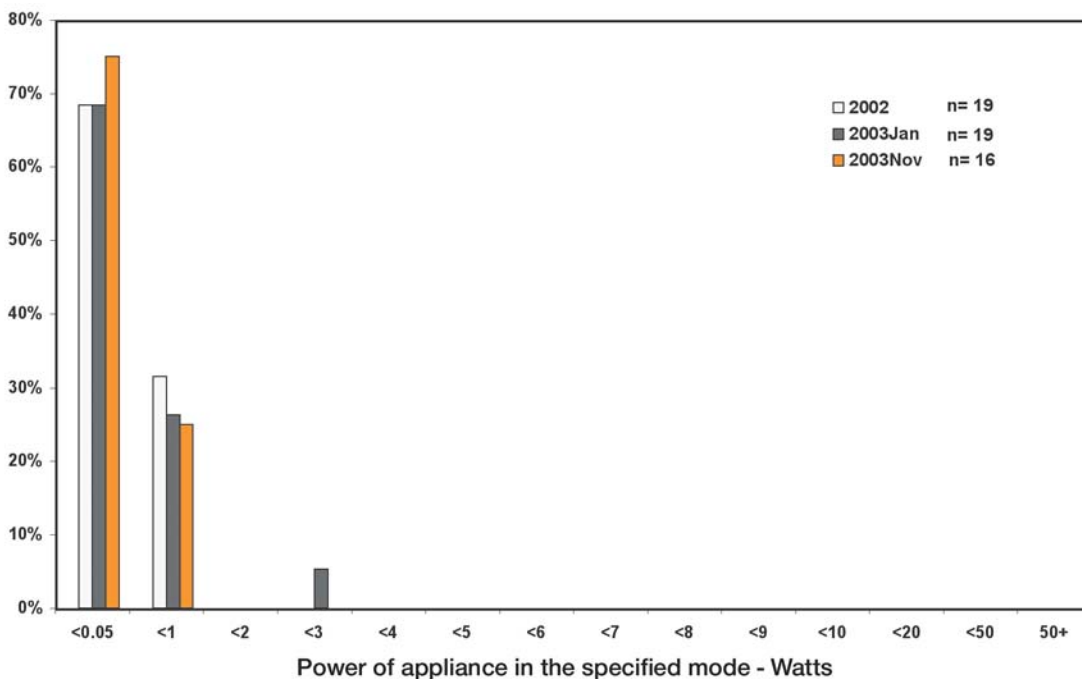


FIGURE 3: POWER MEASUREMENTS FOR AV RECEIVERS: OFF MODE



HOME THEATRE SYSTEMS

The November 2003 NAEEEC store survey was the first time home theatre systems had been found in retail outlets. The units were measured in three modes: active standby - ready to play a disc; passive standby - ready to be activated; and off where applicable. The vast majority of home theatre systems do not have an on/off function. In-use measurements were not taken. The measurements included 11 units with built-in decoders.

Table 3 summarises the results for the November 2003 NAEEEC store survey.

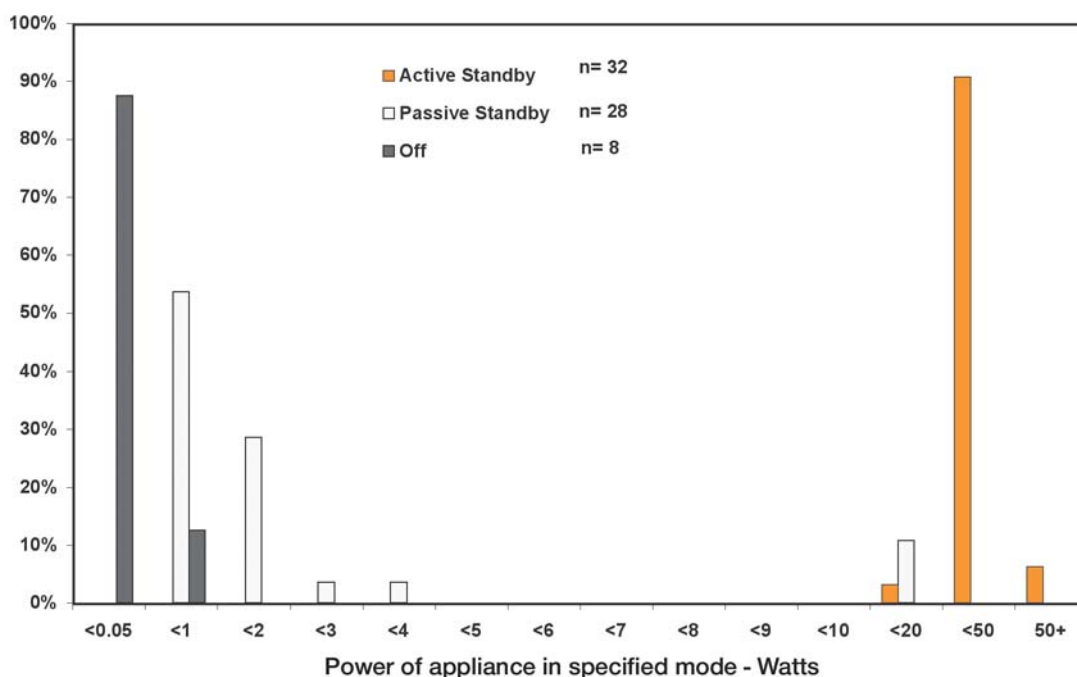
In active standby mode, the vast majority of systems consumed more than 20W. In passive standby mode, 80% of units used less than 2W with over 50% meeting the less than 1W target. Seven of the eight units with off mode had zero consumption when not in use. Figure 4 presents the distribution of power measurement for all three modes.

TABLE 3: SUMMARY OF RESULTS FOR NOVEMBER 2003 NAEEEC STORE SURVEYS

	2003 (Nov) (n=32)
Average Active Standby Mode	36.4W
Minimum Active Standby Mode	18.5W
Maximum Active Standby Mode	54.4W
Average Passive Standby	2.5W
Minimum Passive Standby	0.04W
Maximum Passive Standby	15.6W
Average Off	0.1W

Note: n is total sample size in survey

FIGURE 4: POWER MEASUREMENTS FOR HOME THEATRE SYSTEMS NOVEMBER 2003



KNOWN STANDBY DATA FOR INSTALLED STOCK

As a relatively new product to the Australian market, installed stock data for home theatre products is limited. It can be assumed that the overwhelming

majority of products would be less than five years old and consumption data would be consistent with the data for new stock.

GREENHOUSE EMISSIONS

For the purposes of estimating greenhouse emissions, it has been assumed that all home theatre products are used for 730 hours per year. Of the remaining time, 70%, is spent in passive standby mode, 25% in active standby mode and 15% switched off. This scenario assumes that active standby time will be minimised with the introduction of a power-down cycle during inactive periods.

The greenhouse emissions reduction potential for the proposed standby target of 1W for passive standby and

power-down time is shown in Figure 5. This figure illustrates potential greenhouse emissions reduction under this scenario of 126 kt CO₂-e pa by 2012, building to over 375 kt CO₂-e pa by 2020. Note that Figure 5 shows the greenhouse emissions from all home theatre products installed since 2000.

The projected effect on total annual energy consumption of integrated stereos based on the implementation of these targets in Australia is shown in Figure 6.

FIGURE 5: BAU VS POLICY TARGET – GREENHOUSE EMISSIONS FROM ALL HOME THEATRE PRODUCTS INSTALLED SINCE 2000

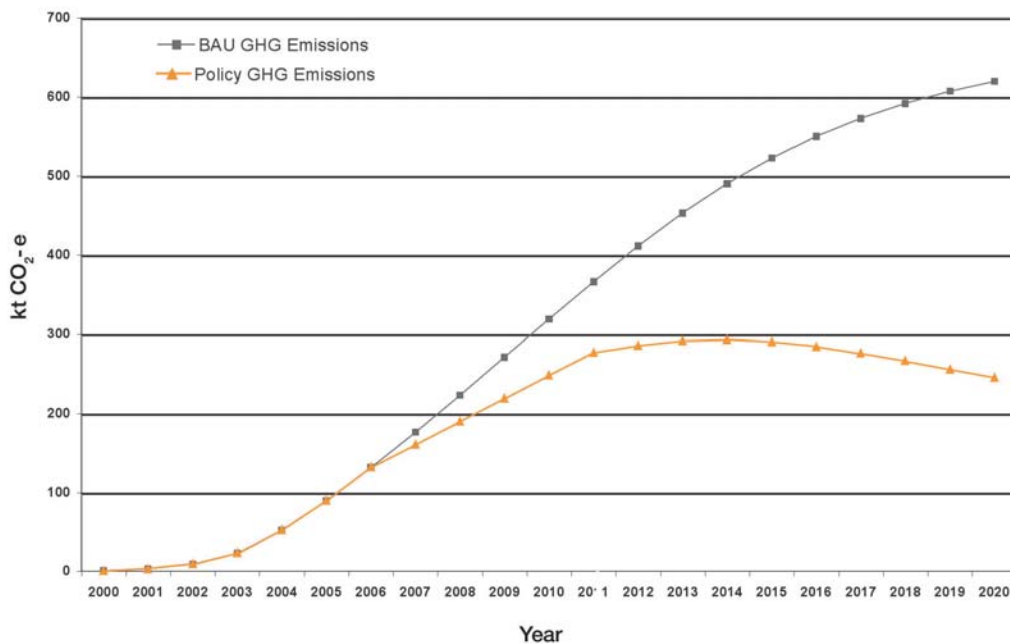
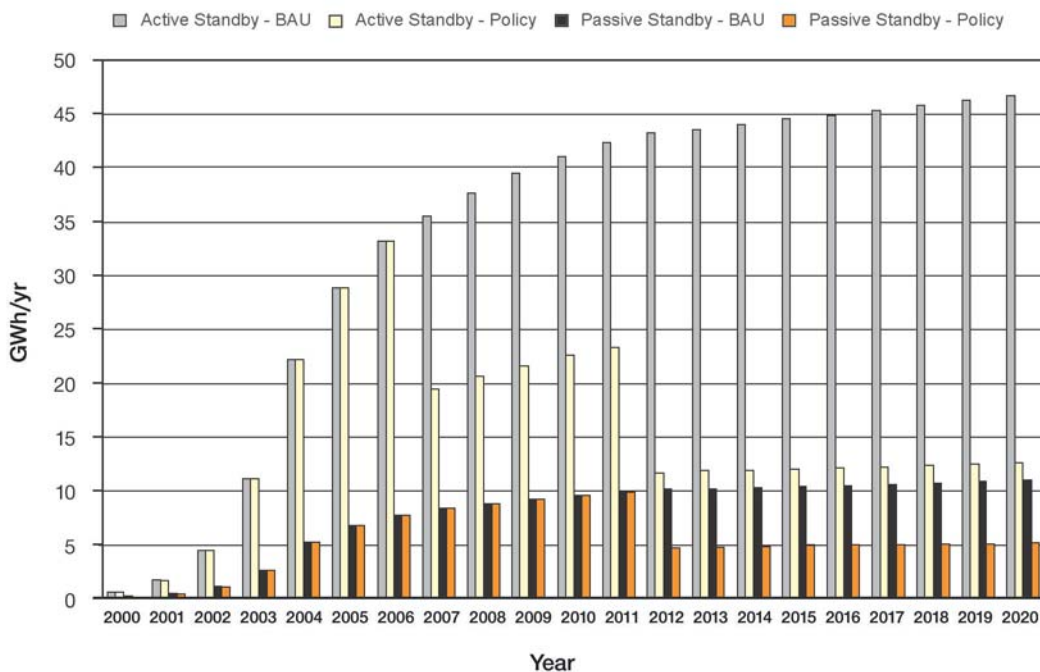


FIGURE 6: ANNUAL EFFECT ON ENERGY CONSUMPTION OF POLICY TARGETS VS. BAU FOR ALL HOME THEATRE PRODUCTS



CURRENT OVERSEAS POLICIES AND TRENDS

Various international voluntary programs that address standby and in-use power consumption are summarised briefly below. The international ENERGY STAR Program is the only one of these programs that operates in Australia.

USA AND INTERNATIONAL

The ENERGY STAR program in the US www.energystar.gov covers home theatre products under the category Consumer Audio Products. To qualify for an ENERGY STAR label, such consumer audio products must not exceed 1W in standby mode.

EUROPE

In 2000 the EU negotiated an agreement, receiving a commitment from the Consumer Electronics Industry to reduce the energy consumption of audio products in standby mode. The agreement covers home theatre products and sets out a three phase program with standby targets for newly released models set at 5W from 2001, 3W from 2004 and 1W from 2007. For more details see http://energyefficiency.jrc.cec.eu.int/html/standby_initiative.htm.

The Group for Energy Efficient Appliances (GEEA) encourages industry best practice through a voluntary energy labelling scheme. The GEEA Energy Tick label for audio equipment has two categories: Audio Systems, which covers home theatre systems; and

Audio Separates, which covers AV receivers. In order to be able to display the GEEA label, equipment must not exceed 1W in passive standby mode. In addition “Audio Separates” products that contain a disc or tape function must automatically power down to passive standby within 30 minutes of ceasing to play a tape or disc. For more details see www.gealabel.org.

The Nordic Swan program is a voluntary eco label system used across five northern European countries. It launched audio product eligibility criteria in 2003 that cover home theatre systems. The requirements include a passive standby target of less than 1W, an on mode target of less than 40W and the inclusion of an off switch. For more details see www.svanen.nu.

INTERNATIONAL INITIATIVES

The International Energy Agency (IEA) has been promoting the “One Watt Initiative” energy saving program to cut world-wide electricity losses from appliances in standby mode. Launched in 1999, this campaign aims to guide government policy-makers and appliance manufacturers towards equipment that consumes no more than 1W when in standby mode. The Australian Government has endorsed the 1W standby target for appliances sold in Australia. More details can be found in the Ministerial Council on Energy standby strategy “Money isn’t all you’re saving” (MCE 2002).

TABLE 4: SUMMARY OF PROGRAM REQUIREMENTS FOR HOME THEATRE PRODUCTS UNITS INTERNATIONALLY

	Mode	Dates	Criteria
Home Theatre Products Stereos			
Energy Star	Passive standby	Phase II: from 1/01/2003	A1W
EU Negotiated Agreement	Passive standby	Phase II: from 1/01/2004	A3W
	Passive standby	Phase III: from 1/01/2007	A1W
GEEA, Europe	Passive standby	From 1/01/2004	A1W
Nordic Swan	Passive standby	From 19/3/2003	A1W
	On	From 19/3/2003	A40W
	Off	From 19/3/2003	Must have off switch

Note: GEEA criteria are reviewed annually.

GOVERNMENT TARGET

In accordance with the National Standby Strategy, NAEEEC intends to recommend to the Ministerial Council on Energy an 'interim' target, the purpose of which is to provide governments with confidence that Australian products will meet the ultimate target of 1W in 2012. If the 'interim' target is not met in the specified year, government will commence dialogue with industry to explore other options, including the possibility of moving to Stage 2 mandatory measures.

1. INTERIM TARGET - 2007

Product	Off mode power ¹	Passive standby mode power ²	Power down time ³
AV Receiver	Less than 1 Watt	Less than 4 Watts	30 minutes
Home Theatre System	Less than 1 Watt	Less than 4 Watts	30 minutes

Notes:

1. Lowest power when connected to the mains. Limit is applicable to models which have an off mode.
2. When switched off using a remote control, where applicable.
3. Required to power down to passive standby after a nominated period of inactivity.

This target applies to all home theatre products brought into Australia for sale in that year. NAEEEC proposes to monitor the sale of home theatre products in that year and to move toward regulation should that target not be met by a significant number of suppliers of products. In addition, all home theatre products will be required to "power down" to passive standby after a period of **thirty** minutes of inactivity.

2. NATIONAL STANDBY STRATEGY TARGET – 2012

Product	Off mode power ¹	Passive standby mode power ²	Power down time ³
AV Receiver	Less than 0.3 Watt	Less than 1 Watt	10 minutes
Home Theatre System	Less than 0.3 Watt	Less than 1 Watt	10 minutes

Notes:

1. Lowest power when connected to the mains. Limit is applicable to models which have an off mode.
2. When switched off using a remote control, where applicable.
3. Required to power down to passive standby after a nominated period of inactivity.

The National Standby Strategy sets the target of 1W, to be achieved by 2012. This is consistent with international activities, in particular, the IEA "One Watt Initiative" and the current Energy Star requirements. This target should apply to all home theatre products. In addition, all home theatre products will be required to "power-down" to passive standby after a period of ten minutes inactivity.

The above requirements will be inserted into the relevant Australian Standard.

GOVERNMENT PROPOSALS TO ACHIEVE THIS TARGET

Government agencies intend to take the following actions to assist industry meet the standby targets for home theatre products:

Voluntary Tool Available	Use for this Product	Rationale/Action	Date
Energy Star	✓	<ul style="list-style-type: none"> This Program will continue to be supported and communicated to stakeholders, particularly emphasising the value of investing in Energy Star compliant home theatre products. 	Ongoing
		<ul style="list-style-type: none"> MCE are considering creating Government Policy of purchasing Energy Star home theatre products where available and fit for purpose. 	2004
		<ul style="list-style-type: none"> NAEEEC will also consider highlighting manufacturers who are not Energy Star partners. 	2005
Australian Standard	✓	<ul style="list-style-type: none"> To communicate government expectations consistent with Energy Star levels in an Australian Standard. At this stage, likely to be a part of AS/NZS 62301. 	Initiated
Industry Code of Conduct	✗	<ul style="list-style-type: none"> Not considered appropriate at this stage. 	NA
Procurement database	✓	<ul style="list-style-type: none"> MCE are considering creating a high efficiency products database to assist consumers in their purchasing choice. Government agencies may purchase products from this database. 	2004
Annual in-store survey	✓	<ul style="list-style-type: none"> To collect data on all modes for new home theatre products and to analyse trends. 	Ongoing, at least annually
Publish Statistics	✓	<ul style="list-style-type: none"> NAEEEC will highlight the range of performances of home theatre products in the marketplace through publishing data on a website or other means. 	Ongoing, at least annually

Government will announce whether this product should be targeted for stage two intervention under the National Standby Strategy (involving possible regulatory intervention) or whether the abovementioned actions together with industry intervention have been successful in meeting the target at the NAEEEC Forum in the year:

2008

REFERENCES

- EES & EnergyConsult 2003, *Appliance Standby Energy Consumption: Store Report 2003*, report for the National Appliance and Equipment Energy Efficiency Committee prepared by Energy Efficient Strategies & EnergyConsult, March 2003, Canberra. NAEEEEC Report 2003/04. www.energyrating.gov.au
- EES & EnergyConsult 2002, *Appliance Standby Energy Consumption: Store Report 2002*, report for the National Appliance and Equipment Energy Efficiency Committee prepared by Energy Efficient Strategies & EnergyConsult, June 2002, Canberra. NAEEEEC Report 2002/08. www.energyrating.gov.au
- EES & EnergyConsult 2001, *Quantification Of Residential Standby Power Consumption In Australia: Results Of Recent Survey Work*, report for the National Appliance and Equipment Energy Efficiency Committee prepared by Lloyd Harrington (EES) and Paula Kleverlaan (EnergyConsult), Canberra. www.energyrating.gov.au
- MCE 2002, *Australia's Standby Power Strategy 2002-2012 - "Money Isn't All Your Saving"*. Final report of long-term strategy to achieve Australia's One-Watt Goal 2002 to 2012, Ministerial Council on Energy. NAEEEEC Report 2002/12. www.energyrating.gov.au