

STANDBY PRODUCT PROFILE 2003/08

OCTOBER 2003

PRODUCT PROFILE



CLOTHES WASHERS

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:

Clothes Washers Product Profile
Equipment, Appliances & Transport Team
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Comments received by 30 December 2003 will assist in determining the final form of the policy proposals taken to government regarding Clothes Washers.

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



Clothes washing machines have been around for over a century with the modern appliance available in a wide variety of sizes and styles. The four distinct classes of machine are:

1. Top loading machines that have a vertical axis and clean by agitating fully immersed clothes. This type of washer is more common in Australia and the United States.
2. Front loading machines that have a horizontal axis and clean using a tumbling action that gently drops the clothes into the water. This type of machine is more common in Europe.
3. Twin Tub machines that function as a top loading agitating machine however they contain separate compartments for washing and spinning allowing the same water to be reused for more than one wash. These once popular machines are now only a very small part of the market.
4. Washer/Dryer combinations are units that perform the function of clothes washer and dryer within a single cylinder. These units typically operate as front loading models although top loading units are available. This type of machine has a very small part of the market. There has however been a small increase in the availability and popularity of these units with marketing focused on the compact nature as ideal for apartment dwellers and differently abled people.

Washing machines are available in a range of sizes from a compact 3kg capacity to large 8.5kg capacity. In 2001 the average capacity of clothes washers available in the Australian market was 6.2kg. Most modern washing machines offer a wide range of cycles that consumers can choose from, allowing the machine to operate appropriately to the task.

CURRENT OWNERSHIP AND TRENDS

Clothes washer sales will see only marginal growth as the market is considered to be saturated. The 2002 BIS Shrapnel Study found that 82% of clothes washer purchases were for replacement units. Since 1993 the clothes washer retail sales have increased by less than 45,000 units with the value of sales only increasing \$37 million. Table 1 shows the national retail sales figures from 1993 through to 2001.

TABLE 1: AUSTRALIAN RETAIL SALES OF CLOTHES WASHERS, 1993- 2001

Year	Units Sold	Value (\$m)	Average Price (\$)
1993	400,304	\$321	\$802
1995	437,658	\$356	\$813
1997	450,234	\$386	\$858
1999	444,075	\$358	\$806
2001	443,836	\$358	\$808

Source: GFK Marketing Services

During the last decade there has been some changes in the types of clothes washers being purchased in Australia. As demonstrated in Table 2 there has been a small decline in the proportion of Top Loading Machines from 88.4% in 1993 to 86.3% in 2001. The twin tub market has been reduced to less than 1%, while Front Loading machines now make up 13% of purchases compared with 7.5% in 1993.

TABLE 2: AUSTRALIAN RETAIL SALES SHARE OF CLOTHES WASHER TYPES, 1993- 2001

Year	Top Loader	Front loader	Twin Tub
1993	88.4%	7.5%	4.1%
1995	88.0%	7.7%	4.3%
1997	84.2%	12.6%	3.2%
1999	85.2%	12.4%	2.4%
2001	86.3%	13.0%	0.6%

Source: EES & EnergyConsult Greening February 2003

BIS Shrapnel have conducted studies that have investigated consumer purchases of front loading washer/dryer machines. It concluded that washer dryer combinations made up 12% of all front loaders purchased in 2001/2002, which would account for less than 2% of the total Australian clothes washer market. The results of these studies are in Table 3.

TABLE 3: AUSTRALIAN PURCHASE OF FRONT LOADING MACHINES 1999- 2002

Year	Front loader	Front loader with dryer
1999/2001	91%	9%
2001/2002	88%	12%

Source: BIS Shrapnel 2002

The ABS has collected ownership data for clothes washers in its "Environmental Issues – People's Views and Practices" report since 1994. In 2002 it reported that 95% of households across Australia owned an automatic washing machine. This concurs with the results of NAEEEC 2001 report which considered clothes washer ownership to be saturated with very little or no market growth. The BIS Shrapnel 2002 report found that ownership had reached 0.99. As shown in Table 4 saturation was found to be 1.03 and penetration was 96%, with less than 3% of households having more than one clothes washer.

TABLE 4: OWNERSHIP DATA FOR CLOTHES WASHERS - AUSTRALIA

Clothes Washers	2001/02
Penetration	96%
Ownership	0.99
Saturation	1.03

Source: BIS Shrapnel 2002

RELEVANT MODES FOR THE 'ONE WATT' POWER PLAN

Clothes Washers sold in Australia have several operational modes:

- On (the unit is running a cycle or performing a program)
- Active standby (the unit is turned on and waiting to be programmed)
- Delay start (the unit has been turned to active standby and the program selected but commencement of program has been delayed by the user)
- End of program (program completed - waiting for action by the user)
- Off

The **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 clothes washers. Washing machine usage varies dramatically dependent upon the type of household. Most households comprising of families average more than 6 loads per week, with over 14% of families averaging greater than 11 loads per week. This compares with the majority of single person households that use their washing machine less than 3 times a week.

Active standby mode is usually relevant only for a short period prior to commencement of the program. Power consumption in this mode is not relevant for the standby strategy as the clothes washer is usually only in this mode for short periods.

Delay start mode, the unit may be in this mode for several hours each day, but this feature is present only on a limited number of models. Typically even when present, this function is rarely used by consumers. This mode is not considered relevant for the standby strategy at this stage.

End of program mode: this mode is present on many clothes washers currently available in the Australian market. Commonly, this mode is present in units

originating from Europe. This mode persists for an indefinite period at the completion of the program (i.e. the unit does not revert to off mode after a fixed period). In this mode, many units have an indicator light or visual display communicating that the clothes washer is either finished, or waiting to be programmed to start another wash cycle. Given user habits, the end of program mode is likely to constitute a significant proportion of the total mode time for a clothes washer, especially if the machine is run overnight or programs are completed when the user is not there to turn it off. Standby limits for this mode are relevant to the standby strategy.

Most clothes washers manufactured in Australia or New Zealand "power down" at the end of a cycle, or turn themselves off. As such, end of program mode is not relevant for these models.

Off mode is applicable to all clothes washers and standby limits for this mode are relevant to the standby strategy. The 2003 store survey found around half of all new clothes washers on sale have a 'hard' off switch which disconnects the mains from most electrical circuits in an appliance, however this feature was uncommon in older appliances.

There is limited data on how households turn off their clothes washers. However, a NAEDEC commissioned survey of households conducted in 2000 did record details of how households left their washing machines when not in use. The household survey measured the on, standby and off consumption of all appliances present in the household. Sixty-four houses were measured over three cities, Melbourne, Sydney and Brisbane. The survey found that the majority of clothes washers (73%) were plugged in and switched off. Twenty four percent were found unplugged and 3% were on. It should be noted that with the average age of the washing machines being 9 years, many of the units tested would not have had an on/off button, hence no capacity to be left in on or standby mode. Additionally the sample size was only 63 and as such we can only infer about the mode that the wider population leave their clothes washer when not in use.

KNOWN STANDBY DATA FOR NEW PRODUCTS

The NAEEEC commissioned store surveys of products conducted in major retail stores during 2001, 2002 and 2003 collected measurements from 173 clothes washers over the 3 years: 36 in 2001, 77 in 2002 and 60 in 2003. The clothes washers on display were measured in off mode. In 2001 and in 2003 clothes washers were also measured in active standby, or end of program mode when an on/off switch was present.

Energy consumption of clothes washers in off mode appears to be decreasing with the average power drawn measured as 3.8W in 2001, 1.7W in 2002 and 1.0W in 2003. The 2001 survey found that 31% of clothes washers consumed less than 1W in off mode, while this figure rose to 73% in 2002 and 55% in 2003. With the exception of 3 models all these machines were in fact under the proposed 0.3W recommendation. Additionally, the proportion of models consuming more than 5W in off mode decreased from 31% in 2001 to 12% in 2002 and 2% in 2003.

Active standby or end of program mode for washing machines was measured for 32 models in 2001 and 28 models in the 2003 store survey. In 2001 the average consumption was 7.2W with 6% drawing less than 1W while in 2003 the average was 3.3W with 7% drawing less than 1W. Forty-seven percent of clothes washers consumed more than 5W with 22.4W being the highest consumption recorded in 2001. This differed substantially from the 2003 results, which saw only 14% of models consuming more than 5W with 6.3W the highest consumption. Table 5 below summarises the results for the 2001, 2002 and 2003 NAEEEC store surveys. Figure 1 and Figure 2 present the distribution of clothes washers in off mode and active standby (end of program) mode.

TABLE 5: SUMMARY OF RESULTS FOR 2001, 2002 AND 2003 NAEEEC STORE SURVEYS

Mode	2001 (n=36)	2002 (n=77)	2003 (n=60)
Average Off	3.8W	1.7W	1.0W
Minimum Off	0.0W	0.0W	0.0W
Maximum Off	9.7W	25.9W ¹	5.1W
Average Active Standby	7.2W	N/A	3.3W
Minimum Active Standby	0.6W	N/A	0.0W
Maximum Active Standby	22.4W	N/A	6.3W

¹ Since this survey it was discovered that this model has a 10min power down cycle and actually registers less than 7W. The next highest model recorded in 2002 was 9.5W.

FIGURE 1: DISTRIBUTION OF OFF POWER CONSUMPTION - CLOTHES WASHERS 2001, 2002 & 2003

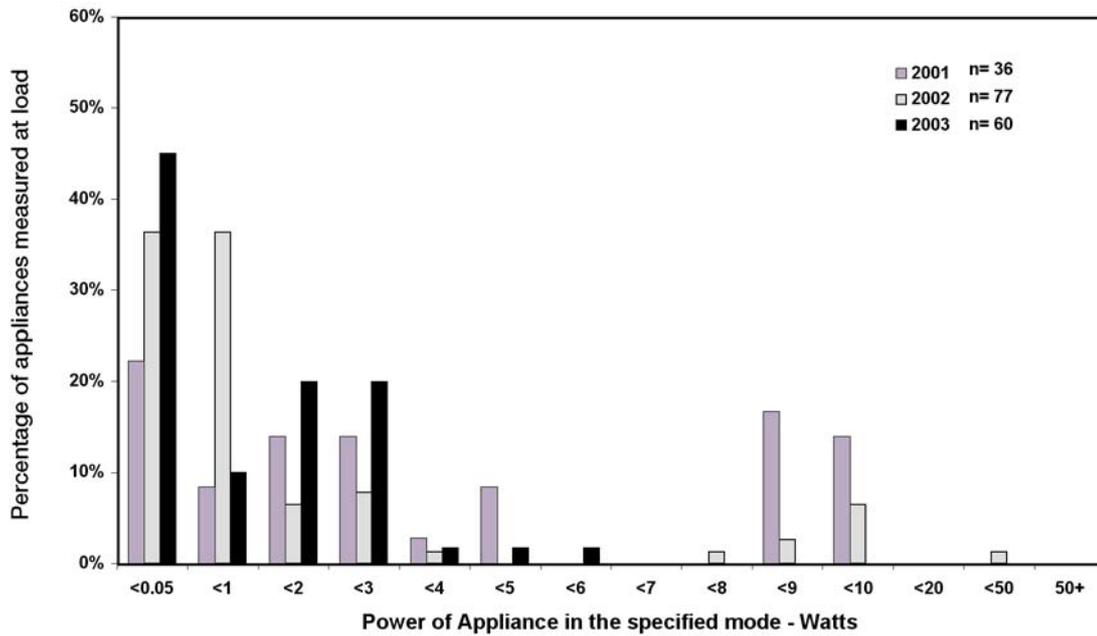
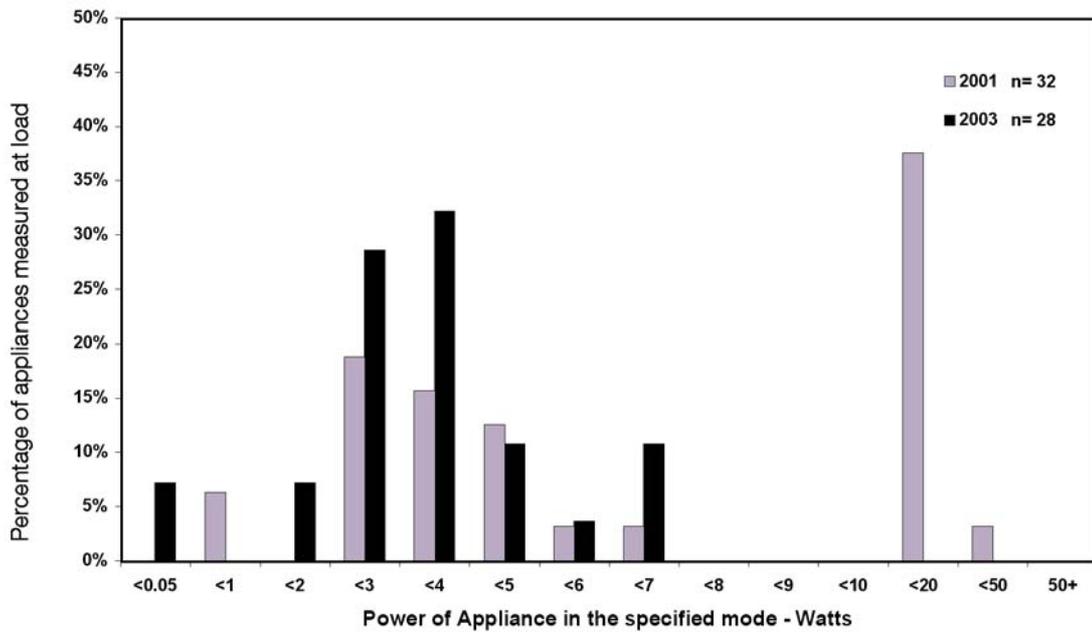


FIGURE 2: DISTRIBUTION OF ACTIVE STANDBY (END OF PROGRAM MODE) POWER CONSUMPTION - CLOTHES WASHERS 2001 & 2003



KNOWN STANDBY DATA FOR INSTALLED STOCK

The NAEEEC commissioned household survey conducted in late 2000 measured 61 washing machines. The machines had an average age of 9 years with the oldest model being 25 years. The average consumption in off was found to be 2W. Fifty-six percent of models had a reading of zero Watts however most (28) of these were pre-1993 models. Prior to 1993 only two models, recorded consumption in off. This coincides with the introduction of soft touch technology. The household survey also recorded 25 models in end of program mode ranging from 0.2 Watts to 14.7 Watts with an average of 6.0 Watts.

Based on the household survey, the amount of time a clothes washer is estimated to be left in the relevant mode is shown in Table 6. These estimates are conservative in that the time left in the end of program mode is considered to be low.

TABLE 6: ESTIMATED TIME IN MODE FROM NAEEEC HOUSEHOLD SURVEY

Mode	Time in Mode/day
In use	1 hr
Delay start	0
Active Standby	0
End of program (EoP)	20% remaining time
Off	80% remaining time

GREENHOUSE EMISSIONS

The GHG emissions reduction potential for the proposed standby target of 1 Watt for end of program mode and 0.3 Watt for off mode is in the order of 27 kt CO₂-e pa by 2012 and 44 kt CO₂-e pa by 2020. Overall, the model weighted end of program standby power consumption of all clothes washers sold in Australia in 2003 was estimated to be approximately 2 Watts.

To examine the potential for greenhouse savings, one scenario was modelled based on a standby power target of 1W for end of program mode applying to 80% of the market in 2005 and 0.3 W for off mode applying

to 80% of the market in 2005. Figure 3 shows the potential GHG emissions reduction. The projected sales of clothes washers are expected to continue to rise at about 2% pa.

The projected effect on total energy consumption used annually by these clothes washers based on the implementation of these targets in Australia is shown in Figure 4.

FIGURE 3: BAU VS. POLICY TARGET GHG EMISSIONS FOR CLOTHES WASHERS

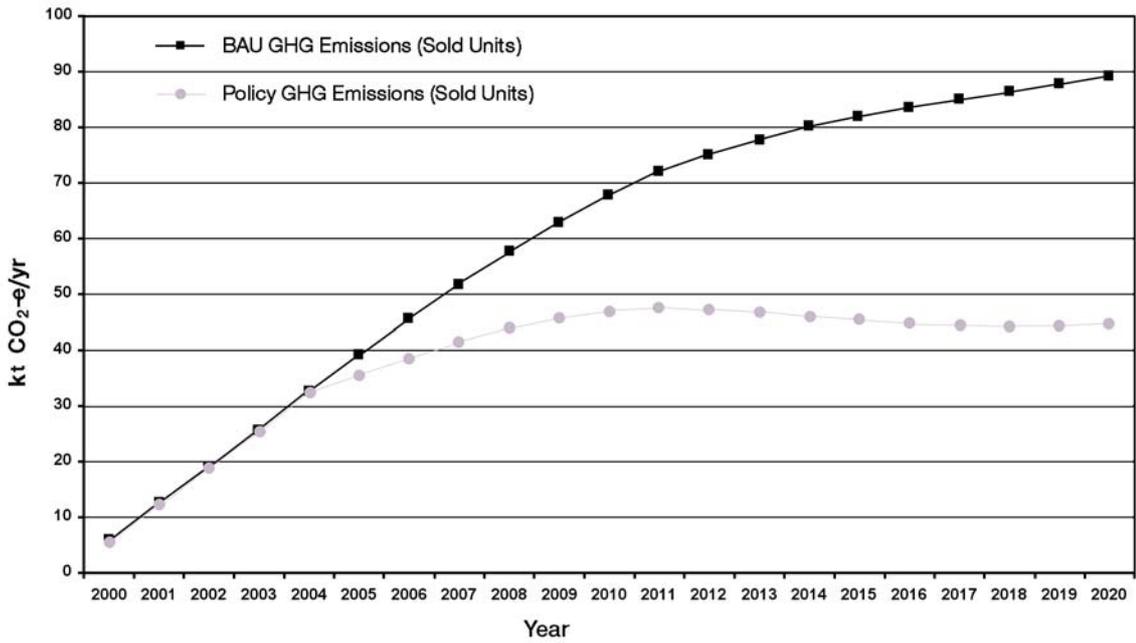
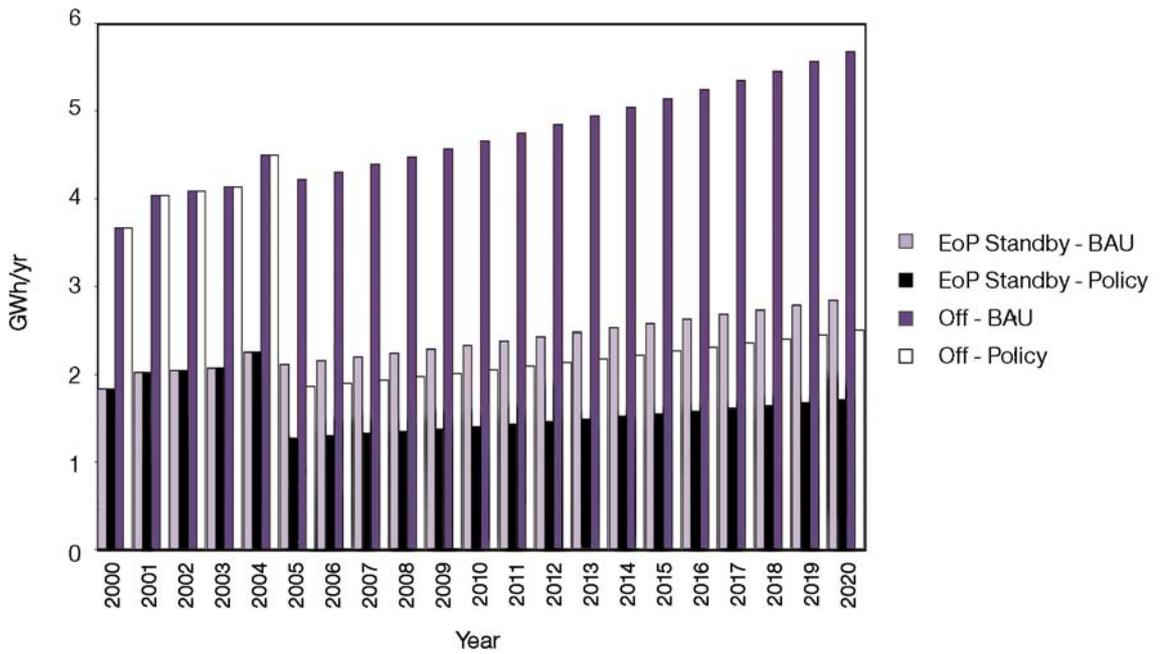


FIGURE 4: BAU VS. POLICY TARGETS FOR ENERGY CONSUMPTION OF ALL CLOTHES WASHERS SOLD



CURRENT OVERSEAS POLICIES AND TRENDS

Many countries around the world have Energy Labels and MEPS that cover clothes washers, however presently these are only concerned with the energy consumed when the product is in use rather than the power drawn in standby. These programs are summarised below in Table 7. A summary of the German “Blue Angel” labelling program and the IEA “One Watt Initiative” follows. These are the only programs that focus on standby power consumption.

TABLE 7: SUMMARY OF REGULATORY AND VOLUNTARY POLICY MEASURES FOR CLOTHES WASHERS

Country/Region	MEPS	Energy Efficiency Label	Voluntary Programs (Name)
USA	✓	✓	ENERGY STAR
Canada	✓	✓	
Europe (EU)	✓ ¹	✓	EU Eco-label
China	✓		
Korea	✓	✓	
Germany		✓	Blue Angel
Australia		✓	

¹ Voluntary Negotiated Agreement

GERMANY

The German eco-label program, “Blue Angel”, is currently the only program that has developed standby power consumption levels for clothes washers. The Blue Angel labelling program is an endorsement system that is available to a broad range of products. Products are assessed to be eligible for the label once meeting a set of environmental criteria. Clothes washers are assessed on criteria as varied as type of exterior coating, water efficiency and energy usage. The standby criteria are as follows:

- When a washing cycle has ended the appliance’s power draw must not exceed 5W.
- When the appliance is switched off the power draw must not exceed 1W.

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. Launched in 1999, this campaign aims to guide government policy-makers and appliance manufacturers towards equipment that consumes no more than one Watt when in standby mode. The Australian Government has endorsed the ‘One-Watt’ 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).

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 one watt 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⁾	End of program mode ²⁾
Clothes washer	Less than 1Watt	Less than 4 Watts

Notes:

1. *Lowest power when connected to the mains. Limit is applicable to models which have an off mode.*
2. *Power consumed when the clothes washer has ended the program or cycle, where the unit does not revert to off mode after a fixed period.*

This target applies to all clothes washers brought into Australia for sale in that year. NAEEEC proposes to monitor the sale of clothes washers in that year and to move toward regulation should that target not be met by a significant number of suppliers of products.

2. NATIONAL STANDBY STRATEGY TARGET - 2012

Product	Off mode power ¹⁾	End of program mode ²⁾
Clothes washer	Less than 0.3 Watt	Less than 1 Watt

Notes:

1. *Lowest power when connected to the mains. Limit is applicable to models which have an off mode.*
2. *Power consumed when the clothes washer has ended the program or cycle, where the unit does not revert to off mode after a fixed period.*

The National Standby Strategy sets out the target of one watt, to be achieved by 2012. This is consistent with international activities, in particular, the IEA "One Watt Initiative". This target should apply to all clothes washers.

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 clothes washers:

Voluntary Tool Available	Use for this Product	Rationale	Date
Government procurement list	✓	<ul style="list-style-type: none"> MCE will consider creating Government Policy of purchasing low standby clothes washers where available and fit for purpose. This policy will encourage manufacturers to supply government agencies with clothes washers that are energy efficient. 	4th Q - 2003
Industry Code of Conduct	✗	<ul style="list-style-type: none"> Not considered appropriate at this stage 	NA
Australian Standard	✓	<ul style="list-style-type: none"> To communicate government expectations in a new Australian Standard, likely to be a part of AS/NZS 62301 	Initiate 3rd Q - 2003
Annual in-store survey	✓	<ul style="list-style-type: none"> To collect data on all modes for new clothes washers and to analyse trends 	ongoing
Publish Statistics	✓	<ul style="list-style-type: none"> NAEEEC will highlight the range of performances of clothes washers in the marketplace through publishing data on a website or other means. 	Ongoing
Energy Rating label	✓	<ul style="list-style-type: none"> Over the past three years NAEEEC has reiterated its intention to progressively include standby energy consumption into the Comparative Energy Consumption for labelled products such as dishwashers, clothes washers and clothes dryers. NAEEEC will be working with the Standards Committees to finalise the details of modes and test methods for incorporation into Part 2 of the relevant standards. 	Ongoing

Government will announce whether this product should be targeted for stage two intervention under the National Standby Power 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

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- 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. NAEDEC Report 2002/12. www.energyrating.gov.au

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