

STANDBY PRODUCT PROFILE 2004/05

MARCH 2004

PRODUCT PROFILE



## SMOKE ALARMS

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:**

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**Alternatively, hard copy comments can be mailed to:**

Smoke Alarms Product Profile  
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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 smoke alarms.

An electronic version of this Standby Product Profile and other Profiles released for public discussion can be obtained from [www.energyrating.gov.au](http://www.energyrating.gov.au) under standby.

## CONTENTS

Product Description	3
Current Ownership and Trends	5
Relevant modes for the 1 Watt power plan	7
Known Standby Data for New Products	8
Known Standby Data for Installed Stock	10
Greenhouse Emissions	12
Current Overseas Policies and Trends	13
Government Target	13
Government Proposals to meet this Target	14
References	15



## PRODUCT DESCRIPTIONS

Smoke alarms provide early warning and enable emergency action in the event of a fire. They are inexpensive, easy to install, unobtrusive, and require very little maintenance.

This standby profile concentrates on residential smoke alarms which operate on mains power (nominally 240 volts) within the scope of AS 3786-1993 and which are therefore intended for operation as stand alone units (without external connection to fire control stations), primarily in the residential sector. This profile concentrates on the energy consumption aspects of these devices and is not concerned with their use or performance.

Smoke alarms are small self contained sensors with an alarm system which typically have white/cream coloured plastic housings. Sizes and shapes can vary but are usually around 150mm in diameter and 50mm thick. They are designed to be mounted on a ceiling inside a dwelling, typically near bedroom doors. They are widely used and their use is now mandatory in most new residential dwellings and substantial renovations.

There are two main types of smoke alarms available in Australia: ionisation smoke alarms (more common) and photoelectric smoke alarms

(less common). Both are covered by Australian Standard AS 3786 (published in 1993, with three subsequent amendments published in 1995, 1995 and 2001).

The standard states as its scope:

*This Standard specifies requirements for the design and performance of electrically operated smoke alarms containing both detection and alarm facilities. This Standard allows, although it does not require, the inclusion within the smoke alarm of facilities for interconnection with other similar units, or accessories. Where such facilities are included, this Standard specifies requirements for the connection interface. However, such an interface is not intended for connection to fire control stations. This Standard applies to smoke alarms intended for installation within residential accommodation where connection to fire control stations is not required.*

This standby product profile examines mains powered smoke alarms within the scope of AS 3786.

## **IONISATION SMOKE ALARMS**

The most common type of smoke alarm is the so called ionisation smoke alarm. These smoke alarms use a small ionisation chamber which is open to the air in the room together with a source of ionising radiation. The source of ionising radiation is typically americium-241 (in the order of a few micrograms) which produces a stream of alpha particles. These alpha particles ionise the nitrogen and oxygen in the ionisation chamber. On each side of the ionisation chamber is a conducting plate to which is applied a small electric charge. The charge on the plate attracts the ionised particles and allows a small electric current to flow across the air in the chamber which can be measured by the electronic circuit in the smoke alarm.

Many smoke particles have a strongly polarised charge, so when they enter the ionisation chamber they attract and lock up some of the ionised nitrogen and oxygen. This in turn reduces the current flow across the ionisation chamber between the charged plates. The smoke detector senses this reduction in current and once it falls below a set level, the alarm is sounded.

Ionisation smoke alarms are more common because they are cheaper to build and are considered to be generally better at detecting invisible by-products of combustion produced by flame fires.

## **PHOTOELECTRIC SMOKE ALARMS**

Photoelectric smoke alarms use a photo detector beam and a photo sensor based on the principle that smoke (where present even in small amounts) will scatter light beams (only a large amount of smoke will block a light beam). A light source is placed in a tube and emits light through air that can circulate from the room into the smoke alarm. A light sensor is placed “around a corner” at an appropriate scattering angle to the light beam inside the smoke alarm. If the air is clear of smoke, the light passes in a straight line unhindered and the light sensor will detect no light. As soon as small amounts of smoke are present in the air, some light beams start to scatter and the light sensor will be able to detect some light rays. Once the amount of light detected increases to a set level, the alarm is sounded. Usually a pulsing light emitting diode (LED) and photo-sensor cell circuit is used.

Photoelectric smoke alarms are generally more expensive to build (more complicated circuits to generate and detect light and they have to be sealed from external light) and are considered to be generally better at detecting visible by-products of poor combustion (smoke) which are produced by smouldering fires.

## **GENERAL SMOKE ALARM ISSUES**

The literature suggest that home smoke alarms should be interconnected where possible. Some models have a facility to allow interconnection, which means that when one smoke alarm is triggered, all others in the home will alarm simultaneously. Typically the alarms are connected by a wire (or pair of wires) to transfer a signal from one alarm to all the others in the chain.

Most smoke alarms have a test button to check the operation of the alarm and a hush button to silence the unit on a false trigger.

## CURRENT OWNERSHIP AND TRENDS

Smoke alarms are one of the most important safety devices installed in homes. They are generally installed in the hallways near bedrooms to alert sleeping occupants if there is a fire elsewhere in the house.

Smoke alarms are considered to be so important that they are now a mandatory requirement in the Building Code of Australia (BCA) for all new dwellings and substantial renovations. The BCA is produced and maintained by the Australian Building Codes Board (ABCB) on behalf of the Commonwealth, State and Territory Governments. The BCA has been adopted into building regulations by all States and Territories in Australia.

### BUILDING CODE OF AUSTRALIA REQUIREMENTS

Since 1996, the BCA has required smoke alarms to be installed in all new Class 1a and Class 1b buildings (BCA 1996). Smoke alarms installed under the Code must:

- Be installed in Class 1a and 1b buildings (as set out below);
- Comply with AS3786; and
- Be connected to the consumer mains power where this is connected to the building.

Class 1a dwellings are detached houses or semi-detached houses separated by a fire-resisting wall (eg row houses, town houses or villas). Class 1a does not include flats or apartments which have separate occupants on different floors of the building (Class 2).

In summary, the Building Code of Australia (BCA 1996, clause 3.7.2.3) requires that smoke alarms be installed between any part of the building containing bedrooms and the remainder of the dwelling. In practice this means that nearly every house (even single storey dwellings) will have at least two mains powered smoke alarms installed. Many homes will have more than two installed. A two storey dwelling must have at least one smoke alarm on each level, irrespective of the location of the bedrooms. Special care is required to avoid "dead air spaces" (e.g. cathedral ceilings) which may stop smoke from reaching the alarm.

Class 1b dwellings are boarding houses which are not more than 300 m<sup>2</sup> in area and are not of primary concern for this profile as the total number of this dwelling type is relatively small. The requirements for smoke alarms for these types of dwellings are more stringent than Class 1a as an alarm has to be

installed in each bedroom in addition to the Class 1a requirements. Class 1b dwellings also require emergency evacuation lighting.

Neither the Building Code of Australia nor AS3786 require smoke alarms to be interconnected.

### CHANGES IN THE REQUIREMENTS FOR SMOKE ALARMS

In December 2003, the International Standards Organisation (ISO) published the following standard:

#### ISO 12239-2003: Fire detection and fire alarm systems - Smoke alarms.

This standard is published by technical committee TC21, sub-committee SC3 (working group WG3). Australia provides the chair and secretary to this committee (fire detection and alarm systems: self contained smoke alarms). Most commentators regard this standard as being equivalent to AS3786, although the requirements have not been reviewed for this profile.

Although there is no documentation at this stage regarding future requirements for smoke alarms, a number of commentators in the industry expect that in future the BCA would be amended to allow acceptance of products which have been certified to either AS3786 or ISO12239.

The degree of regulation and control of the industry that supplies smoke alarms in the future (with the possible change of certification requirements) will come down to a political decision. Given that smoke alarms are a critical piece of household equipment that save lives, it is likely that some degree of market control and surveillance will continue. The degree of market control with respect to smoke alarm performance under the relevant standards will to some degree affect the feasibility (or otherwise) of implementing a system of energy regulation in Australia for these products.

### MANUFACTURE AND IMPORT DATA

Most smoke alarms in Australia are imported. However, one company (Firetronics) makes a range of battery operated and externally powered 12/24V DC smoke alarms which can also operate on 240V AC mains. However their equipment tends to be used in higher end applications in the commercial sector.

The Australian Bureau of Statistics (ABS) collects data on various types of alarms and sensors. The import and

tariff product code for these items is 8531.10.99.53. However this includes a wide range of alarms and fire related equipment. ABS have advised that, since this category includes a wide range of products, no details on the numbers of units imported are collected. The only parameter collected by ABS is value of the imports, which is of no value to this study.

Discussions with various industry stakeholders suggest that the total number of smoke alarms imported into Australia is well over 1 million units per year.

The number of new houses constructed is approximately 150,000 per year and rising slightly (approximately 100,000 detached dwellings and 50,000 other dwellings, mostly flats) (BIS Shrapnel 2003). It is expected that a typical new house will have at least two smoke alarms. This alone would generate sales of 300,000 to 400,000 mains powered units per year.

In addition, there are some 1.2 million so-called renovations per year which are significant enough to require council or building approval. Many of these are minor, but some would require the installation of a mains powered smoke alarm in accordance with the BCA. These renovations could be expected to generate sales of at least several hundred thousand mains powered smoke alarms per year. Many of these installations would only require a single smoke alarm.

Many smoke alarms are also used in commercial applications. However, many commercial systems will use more sophisticated fire protection systems such as remote detectors and fire control panels (rather than

simple smoke alarms). There are no estimates of sales of self contained smoke alarms to this sector.

Battery powered smoke alarms were available in the 1980's but their use is now limited to installations which do not have mains powered systems installed. Sales of battery powered smoke alarms are still significant and are estimated to be of the order of 750,000 units per year while sales of mains powered units are estimated to be over 500,000 units per year.

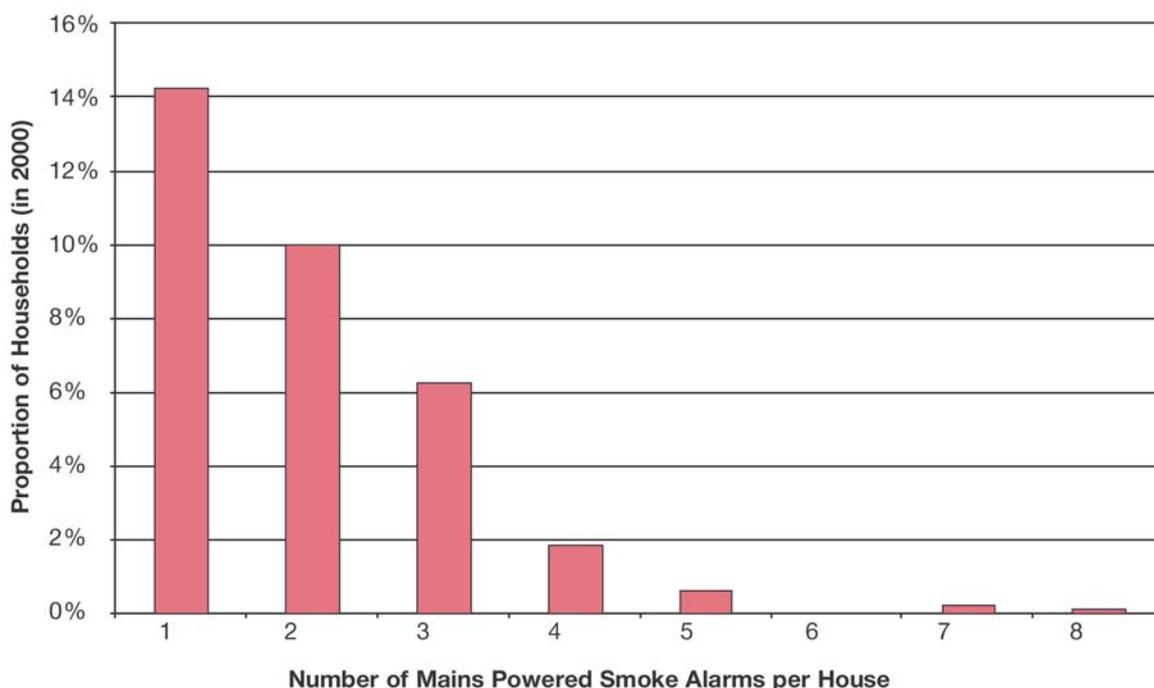
## OWNERSHIP DATA

There is very little data on ownership of smoke alarms in Australian houses. The only study known that records this data was a telephone survey of 801 households commissioned by NAEEEC in late 2000 (Harrington & Kleverlaan 2001). In this study data on the penetration and ownership of mains powered smoke alarms was collected. This survey found that the penetration was 33.4% (ie 33.4% of households had at least one mains powered smoke alarm) while the ownership was 0.664 (ie households that had a smoke alarm on average have two per house).

Given that mains powered smoke alarms only became mandatory for new houses in about 1996, ownership prior to this date would be expected to be small. So growth to 33% penetration in 5 years is quite spectacular.

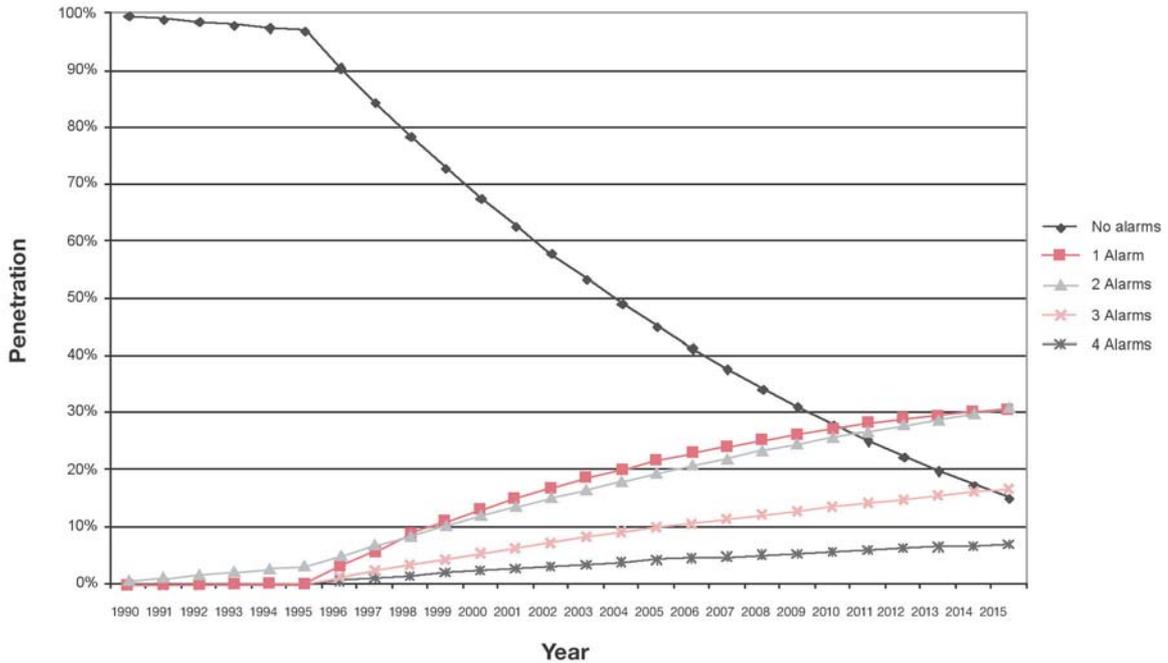
Data on ownership from the 2000 survey has been examined in some detail. The distribution of mains powered smoke alarms is shown in Figure 1.

**FIGURE 1: DISTRIBUTION OF NUMBER OF SMOKE ALARMS – TELEPHONE SURVEY 2000**



Source: Harrington & Kleverlaan 2001.

**FIGURE 2: PROJECTED PENETRATION OF SMOKE ALARMS**



Source: EES estimates and Harrington & Kleverlaan 2001.

Interestingly, the number of houses with only one mains powered smoke alarm appears predominant in 2000. As indicated above, most new houses are expected to have at least two (usually more) mains powered smoke alarms to meet the requirements of the BCA. The data above would suggest that the majority of houses with only one mains powered smoke alarm are possibly a result of renovations.

Based on this limited data, some projections have been made on the number of households with smoke alarms to 2015. These are shown in Figure 2. This data suggests that by 2015 the penetration of mains powered smoke alarms will be 85% of households, with the ownership being about 1.7 (ie an average of two alarms per house). The total stock in 2015 will be approaching 15 million units.

## RELEVANT MODES FOR THE 'ONE WATT' POWER PLAN

Smoke alarms have only main two modes:

- Active standby (the unit is turned on and the system is monitoring for smoke), and
- Alarm on (the unit has detected smoke and the alarm is sounding).

Alarm on mode is not relevant for the standby power plan. This mode normally only functions for a very small proportion of the unit's life (if ever) and its energy consumption, even if substantial, is irrelevant.

Active standby mode is the normal operational mode for smoke alarms and is continuous. In this mode all circuits are active and the system is actively monitoring for smoke.

There may be other modes present in some smoke alarms (eg running on battery when mains are disconnected, hush mode, test mode) but these are not relevant to this standby profile.

Given that smoke alarms will be in active standby mode for virtually their whole operating life, it is assumed that this mode is operating for 8,760 hours per year (100% of the time) for the purposes of energy consumption estimates.

## KNOWN STANDBY DATA FOR NEW PRODUCTS

### MAIN BRANDS AND PRODUCT TYPES

The following companies and brands supply smoke alarms into the Australian market. These models have been derived from the Activfire register (see website listed in references). A few models on the Australian market are certified by Standards Australia International Global and may not appear on the Activfire register.

Most smoke alarms sold in Australia are imported. There is only one main local manufacturer. The following table shows the range of products, their type and origin.

It is important to note that the largest number of models on the market are still battery powered smoke alarms. It is estimated that this type is still the majority of smoke alarm total sales. This type of unit is relatively inexpensive (in the order of AU \$10 each) but they do

not meet the requirements of the BCA and are not of interest for this standby profile as they do not use an external power supply.

Models that have external DC power supplies appear to be mostly used in specialised applications where a DC voltage rail is already available for other purposes such as security systems and residential fire control panels. Some suppliers of these products do have available an external power supply as an optional accessory, but their application appears to be very limited. These tend to be higher-end products so their sales volume is probably small.

There are currently approximately eight photoelectric smoke alarms and 22 ionisation smoke alarms which are mains powered on the Australian market. These units are the primary focus of this standby power profile.

**TABLE 1: MAIN SUPPLIERS OF SMOKE ALARMS CERTIFIED TO AS3786**

Company (Brand if other)	Origin	Battery *	DC external	AC external
Ademco	USA	1 × P	2 × P	
Brooks	Ireland	2 × P, 5 × I	1 × I	3 × P, 3 × I
FFE (Chubb, Fire Sentry, Fire Smart, Quell)	Hong Kong	1 × P, 8 × I		1 × I
Firetronics	Australia	1 × I	4 × I	
GAF (Eyston)	Hong Kong	1 × I		
Gerard Industries (Clipsal)	USA	1 × I		2 × P, 2 × I
HPM	Hong Kong	2 × I		1 × I
Kidde	Hong Kong	5 × I		1 × I
Mistral (Acme Bi-Lo, Reliance, Ringgrip)	Hong Kong	6 × I		
Opal (Dicon)	China	3 × I		
PDL	Hong Kong			1 × P, 1 × I
PSA (Lanson, Lifesaver, Smotec)	Hong Kong	4 × I		1 × P, 6 × I
Tyco Fire (ADT, Exelgard, Exit, Eyston, Wormald)	Hong Kong (some USA)	13 × I	2 × P	1 × P, 7 × I
<b>Total</b>		<b>4 × P, 49 × I</b>	<b>4 × P, 5 × I</b>	<b>8 × P, 22 × I</b>

Notes: P = photoelectric sensor, I = ionisation sensor

\* battery operated units are mostly 9V, some are lithium batteries, some batteries are not replaceable.

All mains powered models have a battery backup. Mostly these are replaceable 9V but some have internal rechargeable batteries.

Units with rechargeable batteries are Brooks (1×P, 1×I), HPM (1×I), Lanson (1×I), Lifesaver (2×I), Exit (1×I), Wormald (1×P, 2×I). Total rechargeable are 2×P and 8×I.

## ENERGY & DESIGN ISSUES

As indicated above, there are three basic configurations of smoke alarms:

- Self contained battery operated devices (replaceable batteries typically 6V to 9V);
- Externally powered devices, usually with 12V DC and/or 24V DC input (supplied using an external power supply or existing DC supply rail); and
- Mains powered units.

All smoke alarms have a battery backup in case of a power failure (which is common during a fire). Battery types include replaceable (usually alkaline), internal rechargeable and non-replaceable (usually lithium or composite).

The basic operation of an ionisation smoke alarm requires only minute amounts of power. A battery operated ionisation smoke alarm typically draws less than 100  $\mu$ W (or 0.1 mW). A small power increase is required for a fraction of a second to power a pulsing LED once every 10 to 60 seconds. The power required for the basic operation of monitoring for smoke is negligible by any measure.

The background power requirement for photoelectric smoke alarms is similar to ionisation smoke alarms (typically around 200  $\mu$ W or 0.2 mW).

The problem for smoke alarms is providing DC power to the system in an efficient manner. In a battery only DC system, power is supplied continuously and a normal alkaline cell can last for several years (although authorities recommend an annual battery change). With a current draw of typically 10  $\mu$ A to 20  $\mu$ A, the life of a 9V cell with a capacity of several hundred mAh will probably be limited by the battery shelf life rather than the energy capacity of the battery.

When the alarm is sounding, the power draw typically rises to between 20 mA and 60 mA (in the order of 0.15W to 0.5W). However, this mode is rarely if ever encountered in normal use and in any case the power used in this mode is irrelevant to this standby profile.

The other main configurations for smoke alarms are those supplied with 240V AC directly and those that use an external AC to DC power supply to provide DC power to the unit. Both of these types qualify for use under the BCA.

## INTERNAL DC BATTERY UNITS

These units, which became available in the 1980's, use an internal replaceable battery supply to power the smoke alarm. Typically the battery is 9V but this can be as low as 3V. These types of units are not within the scope of this standby profile and they do not meet the requirements of the BCA.

## EXTERNAL DC POWER SUPPLY UNITS

These units require an external DC power supply to power the smoke alarm, typically 12V DC or 24V DC (although the actual input voltage can vary by model, some can accept a range of voltage inputs). This is usually supplied by a dedicated or generic external power supply which converts 240V AC to the DC voltage required. These units are within the scope of this standby profile and meet the requirements under the BCA.

The internal smoke alarm circuit for an externally DC supplied model will be similar to a battery powered model. There is likely to be no significant voltage conversion requirement within the smoke alarm itself and the power draw will be a fraction of a mW.

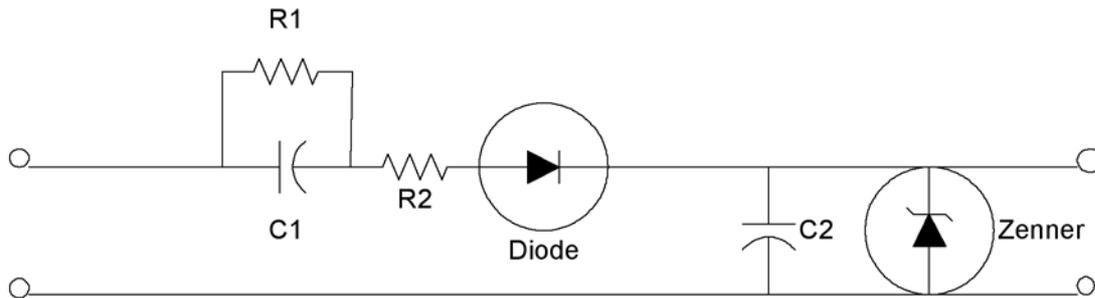
Most energy losses will therefore be associated with an external power supply which converts AC power to DC. The type of power supply used will determine the level of these losses. DC power supplies vary enormously in their efficiency. Given the smoke alarm itself uses negligible power, the standing (no load) losses of a power supply would be the most important factor if the power supply was dedicated to the smoke alarm alone. However, many of these systems are designed to operate in conjunction with other equipment that operates on the same DC power supply (eg fire control equipment or security systems). Specification of power supply efficiency for the DC system is not practical where there are multiple uses from a single power supply.

## AC MAINS POWERED UNITS

These units, which became widely available in the 1990's, have a 240V AC supply directly connected to the smoke alarm system. These units are within the scope of this standby profile and meet the requirements under the BCA.

Most of the mains powered units examined appear to have a similar configuration of their power supply. This includes a series capacitor resistor and diode / zenner regulator as set out in Figure 3.

**FIGURE 3: TYPICAL POWER SUPPLY FOR A MAINS POWERED SMOKE ALARM**



The input current from the mains is set by the size of the series capacitor C1 in Figure 3. The current drawn does not however determine the power drawn. This is determined by the consumption of the rest of the load circuit and also by the power lost in the resistor R1, which is used to discharge the series capacitor to make sure no dangerous touch voltage appears on the connector pins. The power lost in R1 can be significant. In one of the units measured, the power dumped through this resistor was approximately 160mW. The discharge time constant for C1 in this case was approximately two seconds. Resizing this capacitor and resistor would reduce this power dump down to 50 mW and the time constant to less than 0.5 seconds.

Of the units measured with a direct 240V AC mains connection, the average power consumption ranged from 500 mW down to 250 mW. The power factor for these units was fairly poor at less than 0.05. Given the smoke alarm circuit itself uses negligible power (much less than 1 mW), most of the power consumption for these devices (>99%) is associated with the conversion of AC power to a suitable, safe and reliable DC supply. Small amounts of additional power may be consumed by indicator LEDs (that show power is connected) and interconnection to other smoke alarms (if present).

Battery charging systems could theoretically result in higher energy consumption as power is dumped when the battery is fully charged. However, this is highly dependent on the design of the system. Tests on a limited number of systems indicated that power consumption may be marginally higher for rechargeable systems, but this is in the order of 0.1W for systems examined.

Without further detailed investigations and review of circuit designs, it is unclear what energy savings potential could be achieved through improved design of smoke alarm 240V circuits. This may be worthy of further investigations if the industry was prepared to cooperate on such research.

## KNOWN STANDBY DATA FOR INSTALLED STOCK

No systematic large scale data on the electrical characteristics of new models has been collected by NAEDEC. These units are usually in sealed packets when sold through retailers (some are sold through hardware stores), but most are supplied through electrical suppliers. The units are designed to be hard wired into the power system of a home or building, so field measurements in retailers or in homes are not possible. Only laboratory measurements are possible for mains powered products.

A total of seven units have been purchased and measured for energy consumption in the laboratory. These results are presented below.

The range of power consumed by these units range from a low of 250mW to 500mW with an average of 405mW. These units are thought to be typical of models on the Australian market today but the average is not sales weighted.

Even though the products pull a significant current and apparent power (typically 30mA and 7VA), the current waveform is very distorted and almost 90 degrees offset to the voltage waveform, so the active power is relatively low (of the order of 0.4W). A typical voltage and current trace for a mains powered smoke alarm is shown in Figure 4.

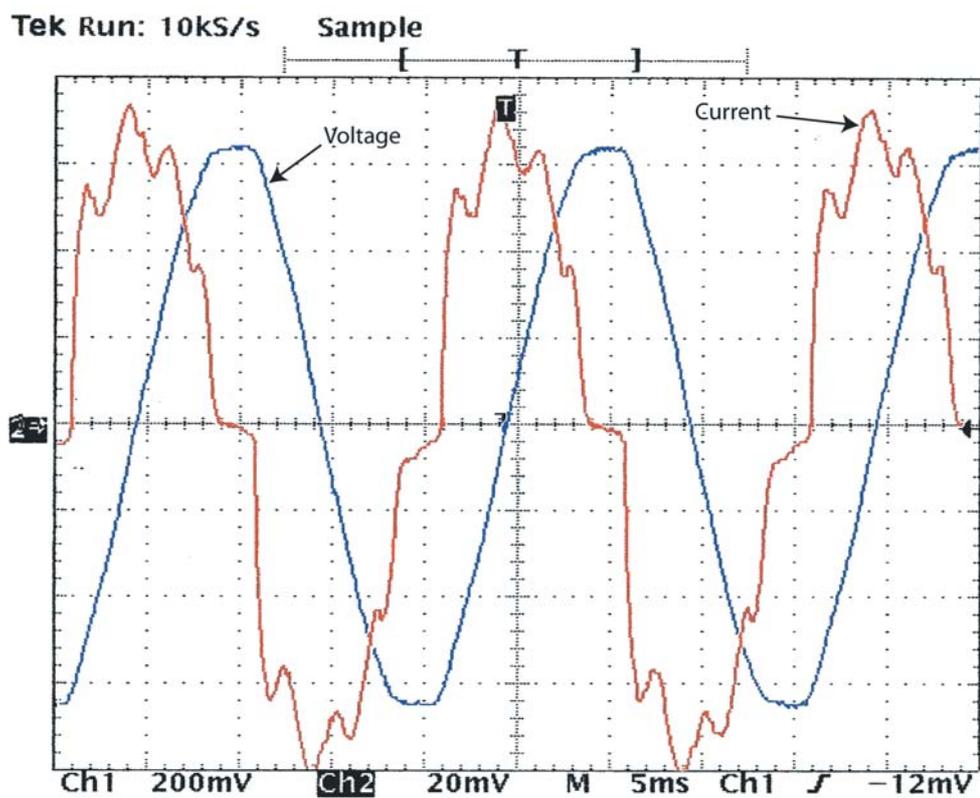
**TABLE 2: LABORATORY MEASUREMENTS ON NEW MAINS POWERED SMOKE ALARMS - 2004**

Brand	Model	Type	Origin	mW	mA	Volts	PF
Exit	EX13786M2	Ionisation	Hong Kong	499	47.2	225.9	0.046
PDL	SD100	Ionisation	Hong Kong	250	34.8	232.2	0.030
PDL	SD200	Photoelectric	Hong Kong	494	35.7	236.8	0.059
Kidde	123/9HIAUS	Ionisation	Hong Kong	505	50.7	231.9	0.042
Brooks	EIB 146P	Photoelectric	Ireland	333	30.1	238.2	0.046
Brooks	EIB 1411	Ionisation	Ireland	325	31.2	240.8	0.043
Brooks	PFS PTL*	Photoelectric	Ireland	391	31.5	239.1	0.052
Clipsal	755 Lifesaver	Ionisation	Mexico	442	33.9	236.1	0.056

Notes:

\* This unit, which had a non-replaceable rechargeable lithium battery, was 400mW when first connected. The reading of 391 mW was taken after a stabilisation period of 48 hours.

**FIGURE 4: VOLTAGE AND CURRENT WAVESHAPES OF A TYPICAL SMOKE ALARM**

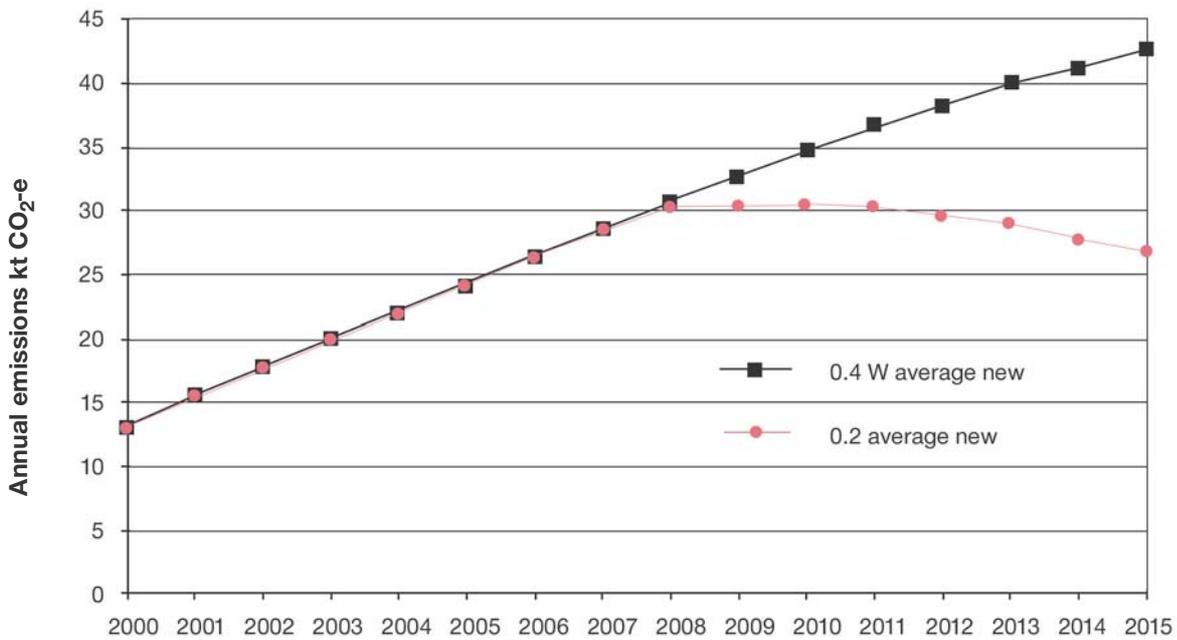


## GREENHOUSE EMISSIONS

The current average power consumption in active standby mode for mains powered smoke alarms in Australia is currently estimated to be 0.4W. It is expected that this value has not changed significantly in the past 10 years, nor is it likely to change in future without some government intervention.

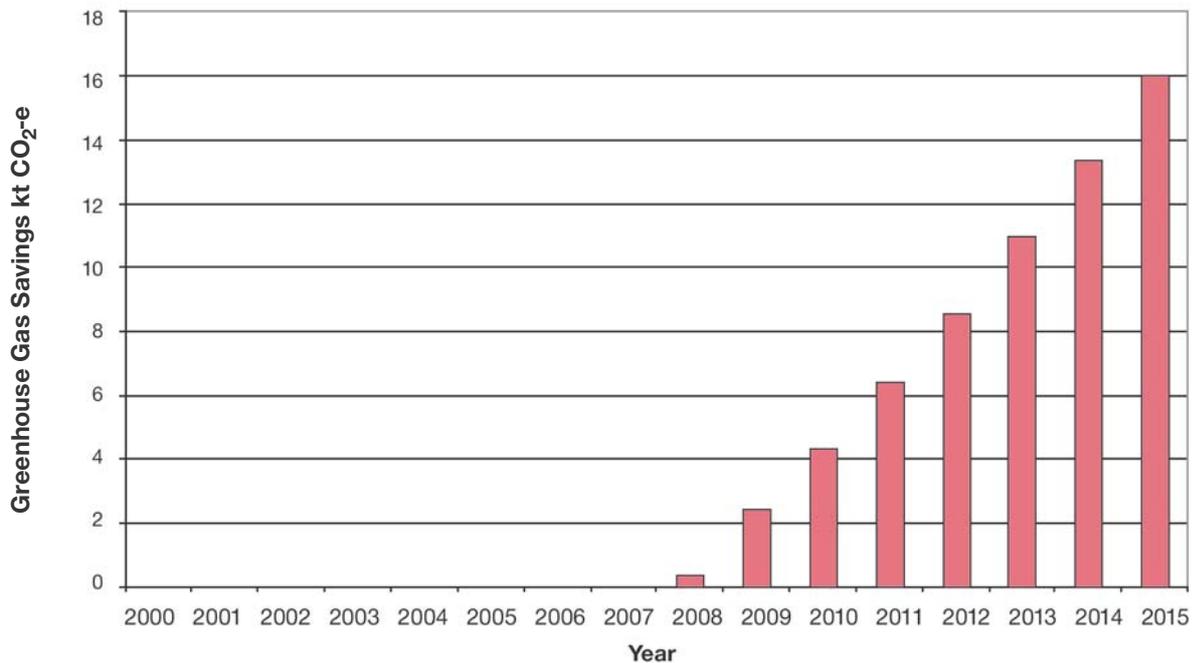
One possible scenario is that mains powered smoke alarm power consumption falls marginally through attention to design and sizing of components as a result of the measures proposed in this profile. It is expected that a limit of not more than 0.2W could be achieved with some care in design. Achieving this level

**FIGURE 5: ESTIMATED GREENHOUSE GAS EMISSIONS FROM BAU AND LOW STANDBY SCENARIOS**



Source: EES estimates.

**FIGURE 6: ENERGY SAVINGS FROM STANDBY TARGETS FOR MAINS POWERED SMOKE ALARMS**



by 2011 for all new sales has been modelled to provide an estimate of greenhouse gas savings potential that could be expected under such a scenario.

The greenhouse emissions reduction potential for the proposed standby target of 0.2W for active standby mode by 2011 is in the order of 4.3 kt CO<sub>2</sub>-e pa by 2010 and 16.1 kt CO<sub>2</sub>-e pa by 2015, with continued savings growing well beyond 2025. The weighted passive standby power consumption of all installed mains powered smoke alarms in Australia by 2015 is estimated to fall to 0.25W under this scenario.

Cumulative greenhouse savings to 2015 are estimated to be about 72 kt CO<sub>2</sub>-e for this scenario.

The projected total cumulative energy savings from more efficient mains powered smoke alarms to 2015 based on the implementation of these targets in Australia is shown in Figure 6.

## CURRENT OVERSEAS POLICIES AND TRENDS

No specific policies that cover electricity consumption for mains powered smoke alarms have been found during the research for this project. The energy consumption of mains powered smoke alarms has not been investigated in any depth in either Australia or overseas prior to this standby profile.

## 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 0.2W 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 two mandatory measures.

Although the proposed targets are less than 1W for mains powered smoke alarms, they are likely to be technically achievable without undue cost and changes in the design of the product. Standby targets for each product are developed in the context of what is achievable. It should be noted that this product is projected to be present in very large numbers in Australian homes, so even modest reductions in per unit energy consumption will result in significant national energy and greenhouse savings.

### 1. INTERIM TARGET - 2007

Product	Active Standby mode power <sup>1</sup>
Mains powered smoke alarms	Less than 0.4 Watt

Notes:

1) Mode used to monitor for the presence of smoke.

This target applies to all mains powered smoke alarms brought into Australia for sale in that year. NAEEEC proposes to monitor the sale of mains powered smoke alarms 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	Active Standby mode power <sup>1</sup>
Mains powered smoke alarms	Less than 0.2 Watt

Notes:

1) Mode used to monitor for the presence of smoke.

This target should apply to all mains powered smoke alarms.

No targets are proposed at this stage for smoke alarms that are supplied by an external DC supply. This requirement, however, will be reviewed.

The above requirements may be inserted into the relevant Australian Standard, depending on future compliance requirements.

## GOVERNMENT PROPOSALS TO ACHIEVE THIS TARGET

Government agencies intend to take the following actions to assist industry meet the standby targets for mains powered smoke alarms:

Voluntary Tool Available	Use for this Product	Rationale	Date
Government procurement list	✓	<ul style="list-style-type: none"> <li>MCE will consider creating Government Policy of purchasing low standby mains powered smoke alarms where available and fit for purpose. This policy will encourage manufacturers to supply government agencies with mains powered smoke alarms that are energy efficient.</li> </ul>	2005
Industry Code of Conduct	✗	<ul style="list-style-type: none"> <li>Not considered appropriate at this stage</li> </ul>	N/A
Australian Standard	✓	<ul style="list-style-type: none"> <li>To communicate government expectations in the relevant Australian Standard, likely to be a part of AS3786 or its successor. A separate standard regarding energy consumption of smoke alarms may be developed.</li> </ul>	2005
Annual survey	✓	<ul style="list-style-type: none"> <li>To collect data on new mains powered smoke alarms and to analyse trends</li> </ul>	ongoing
Publish Statistics	✗	<ul style="list-style-type: none"> <li>Not considered appropriate at this stage</li> </ul>	N/A

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 NAEIEC Forum in the year:

**2008**

## REFERENCES

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