

LoadDown

THE STANDBY POWER NEWSLETTER



4E

Efficient Electrical End-Use Equipment
International Energy Agency



ASIA-PACIFIC PARTNERSHIP
BUILDING AND APPLIANCE TASKFORCE

Welcome to the first edition of **Load Down** the standby power newsletter. The newsletter will provide regular updates on the latest standby power research results and policy initiatives.

Load Down is published under the Australian Equipment Energy Efficiency Committee. This newsletter is also supported by the International Energy Agency 4E Implementing Agreement and the Asia Pacific Partnership for Clean Development and Climate.

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What is Standby Power?

Standby power consumption is the power used by appliances when they are switched off or not performing their primary function. For example, a device will continue to draw power after the user switches it off with the remote control. However standby power consumption is not restricted to products with remote controls, all products with an external power supply also consume power when idle as do most white goods and computer products.

The Enormity of Global Standby Power Consumption

Standby power is responsible for roughly 1% of global carbon dioxide emissions with consumption estimated to be between 200 TWh and 400 TWh per year (International Energy Agency). That level of emissions is almost equal to Australia's total emissions and is not far behind the world's airline industry or the international ICT industry which each contribute around 2%. So standby power needs to be considered as a significant contributor to global warming.

A typical home in an industrialized country often contains at least 20 devices constantly drawing standby power. Individually the energy consumption in standby mode for each product may be small, however the sheer number of appliances continually drawing power quickly adds up to 5-10% of total electricity used by most homes.



Standby Power \approx 1%
Global Emissions



Australia \approx 1.2%
Global Emissions



Airline Industry \approx 2%
Global Emissions



ICT Industry \approx 2%
Global Emissions

In this Issue

What is Standby Power? > The Enormity of Global Standby Power Consumption
> The Importance of Standby Power and Policy > Economics of Standby > New Website allows access to current data > Australian Case Study > Global Action

The Importance of Standby Power and Policy

Standby power losses are on the rise as an ever increasing number of products come onto the market place, secretly consuming power when inactive. This waste of energy and dollars is totally unnecessary. Thanks to technological breakthroughs standby power can be reduced by up to 90% while maintaining all the conveniences and design features consumers want. This is far more than can be achieved in other sectors (eg global travel). Reducing standby power has also been recognised as an extremely cost effective end-use energy efficiency measure. This means that it is relatively simple for policy makers to have a huge influence on the levels of consumption and greenhouse gas emissions created by standby power losses. Reducing standby is a win-win situation, as changes to devices are unlikely to be detectable to the average user yet result in dollar



Microwave Ovens and Standby: When heating food a microwave uses more than 100 times as much power as when it sits idle. However as it is in standby most of the time, a microwave oven's total electricity consumption in the standby mode is higher than when in use. Many products around the home are idle for long periods making the standby state the highest consumption mode.

savings for them and reduced energy usage. Policy decisions can include increasing awareness of standby power, influencing the market through

purchasing policy, setting voluntary targets for products and mandating maximum standby power consumption.

Economics of Standby

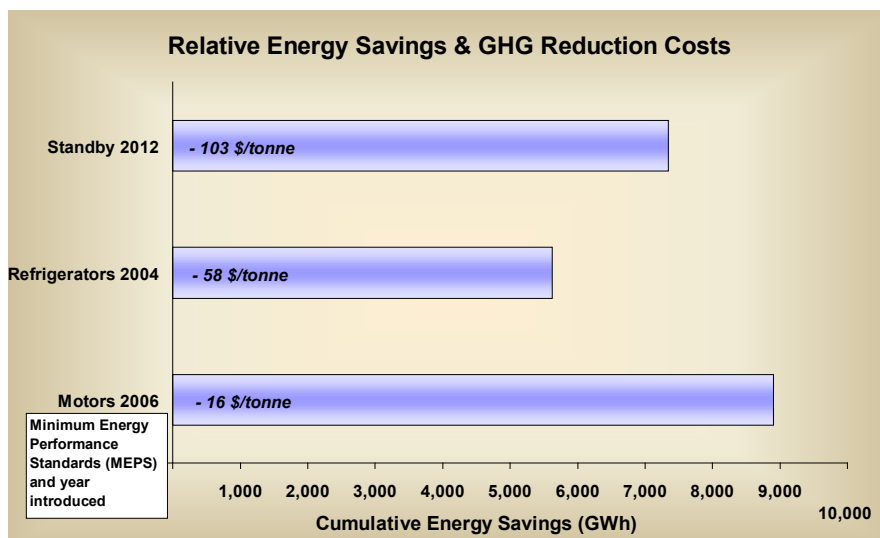
The benefits of lower standby power can be significant. A preliminary cost benefit analysis of policy options to reduce standby power in Australia shows

the benefits exceed the costs by a ratio of over 7 times. The net benefits are estimated to result in savings of almost AU\$700M from policy options being considered by the Australian Government. These options include regulating maximum standby to 1 Watt by 2012 and requiring products to automatically

power down to this level after a period of inactivity. With cumulative energy savings of over 7,000 GWh and 6.8 million tonnes of greenhouse gas emissions, the Australian Government is aiming to make significant action on standby power a policy priority.

Standby power efficiency standards are predicted to save energy on a similar scale to the standards introduced in Australia for Motors in 2006 and Refrigerators in 2004. These savings are estimated to reduce greenhouse gas emissions at a negative cost to the economy. In other words the standards are expected save consumers over AU\$100 for every tonne CO₂-e reduced.

Very few other energy efficiency initiatives offer as cost effective a return for industry investment. This is the reason standby power is attracting significant interest by government.

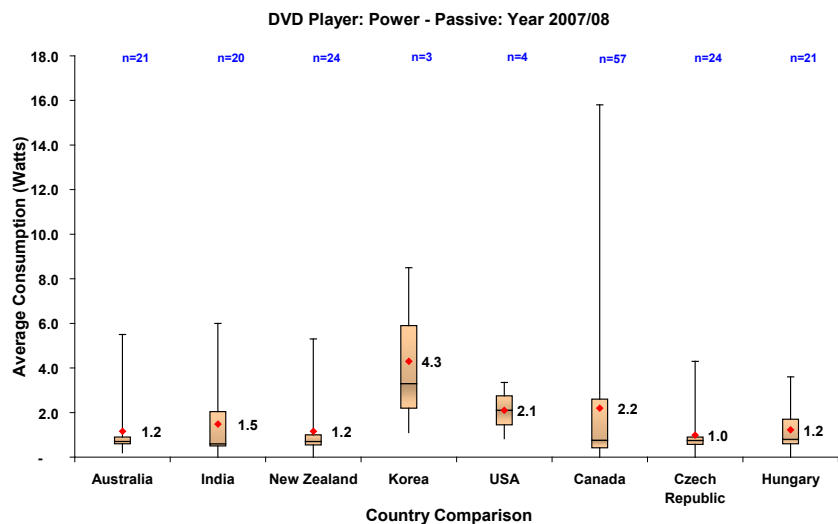
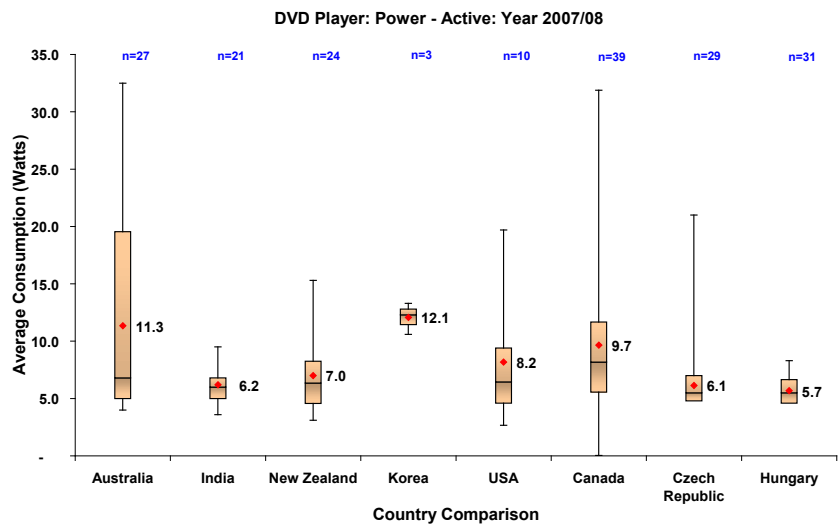


New Website allows access to current data

www.energyrating.gov.au/standbydata/app

The APP project has recently launched a website that includes information and links relating to the project's current status; details on how to participate in the project and charts detailing the store survey results for all participating countries. Charts can be filtered by product, by country or by mode allowing the user flexibility in accessing the data. The web site will be updated with new data on a six monthly basis.

The first round of data released on the website covers the 2007/08 international in store test results. The data was collected in 8 countries, covered 62 product types and recorded measurements for over 3,500 appliances. A 'core basket of 14' priority products was established and readings were recorded in all countries for at least 70% of the products in the priority basket. Early results indicate that average standby consumption for products does vary from one country to the next. This is illustrated in the results for DVD players where average consumption ranged from 1 watt in the Czech Republic to 4.3 watts in Korea. It was also noted that there can be quite large variations in the range of readings found in each country, for example in Canada the highest consuming model was more than 7 times the average.



No country recorded low standby consumption data across all product types showing that the application of best practice technology was inconsistent

within countries. For example Korea whilst having the highest average consumption for DVD players had the lowest average consumption for Microwave ovens.

Additionally it was noted that some products may have the lowest consumption in one standby mode but the highest in another. An example of this is DVD players where Australia recorded the second lowest average passive consumption but the highest average active standby consumption. Low passive standby does not guarantee low active standby.

The website also presents time series data for individual products showing data over the previous 5 years. Currently time series data is only available for Australia however as more data is collected in

International Standby Power Data Project

Introduction Project Information Data

Power

Introduction

The aim of the International Standby Basket of Products project is to enable consistent collection of data on standby power, resulting in a representative set of standby measurements. The data will be gathered for a common set of products in different regions and countries around the world. Such a comprehensive set of data will facilitate international comparisons, allowing trends in standby consumption, by products and/or by countries, to be tracked over time. The benefit of such a high quality data set is to enable benchmarking for success and to provide a sound basis for policy development and analysis.

The project is being driven by the Australian Government's Department of Environment, Water, Heritage, and the Arts with assistance from Korea, as part of the Asia Pacific Partnership on Clean Development and Climate Change (APPC). The APP members include, Australia, Canada, China, India, Japan, Republic of Korea, United States of America. The purpose of this union is 'to address the challenges of climate change, energy security and air pollution in a way that encourages economic development and reduces poverty'. The standby project is one of several being undertaken by the APP's Building and Appliances Taskforce (BATF).

This web site includes information and links relating to the project's current status and history, charts detailing survey results by product and by country, including international comparisons, definitions of standby modes and details on how to participate in the project.

Project Funding
 Asia Pacific Partnership on Clean Development and Climate Change
 Building and Appliances Taskforce - Project 2
 Alignment of National Standby Power Approaches - International Basket of Products Survey

[Find out more About the Project](#)

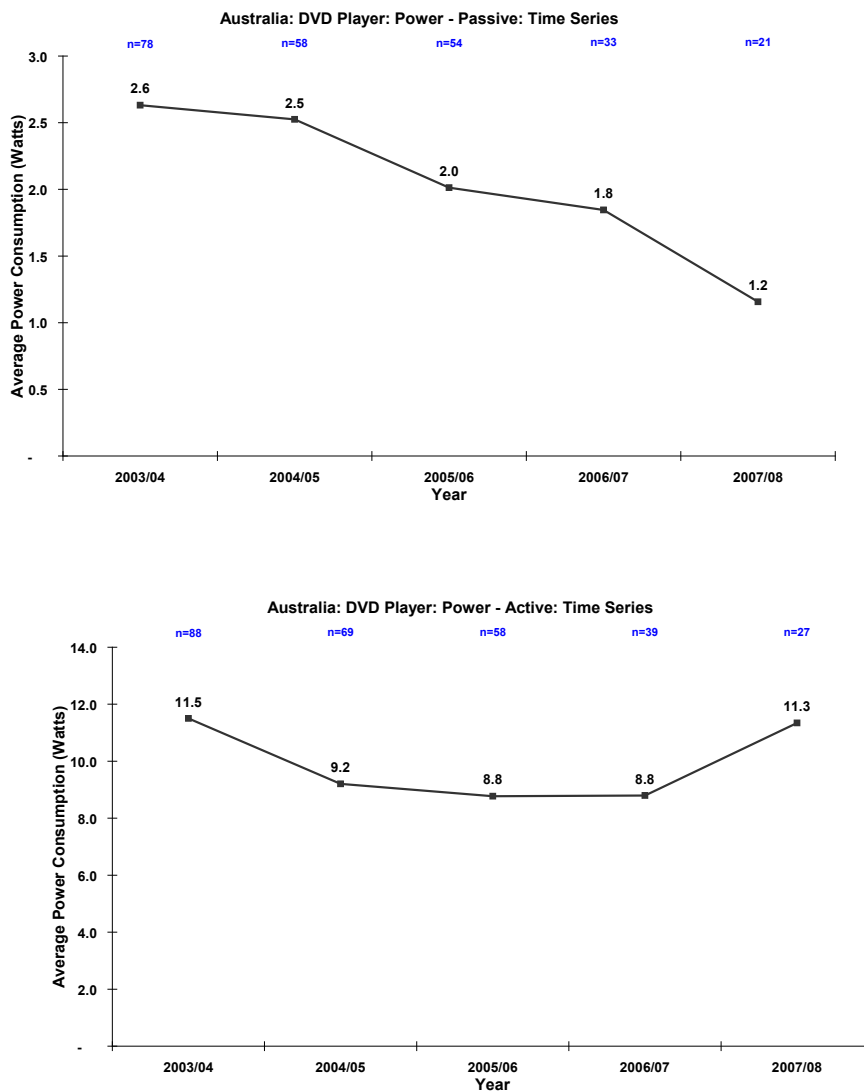
other countries this information will become available. An example of the time series data is shown on the following page for DVD players. The continuous monitoring of DVD player passive standby has shown over a 50% reduction in average power, over the last

5 years (see Figure 1). This indicates substantial manufacturer action and a high probability of most products meeting the 1 watt goal by 2012.

On the other hand, the monitoring has shown an increase in the average active standby power consumption by

DVD players over the last year, after a period of stabilisation at about 9 W. The DVD player category includes the new Blue Ray and HD DVD players, and this increase in active standby is attributed to these new types of video players.

Figure 1: Australian Time Series Data – DVD Player Passive and Active Standby Power



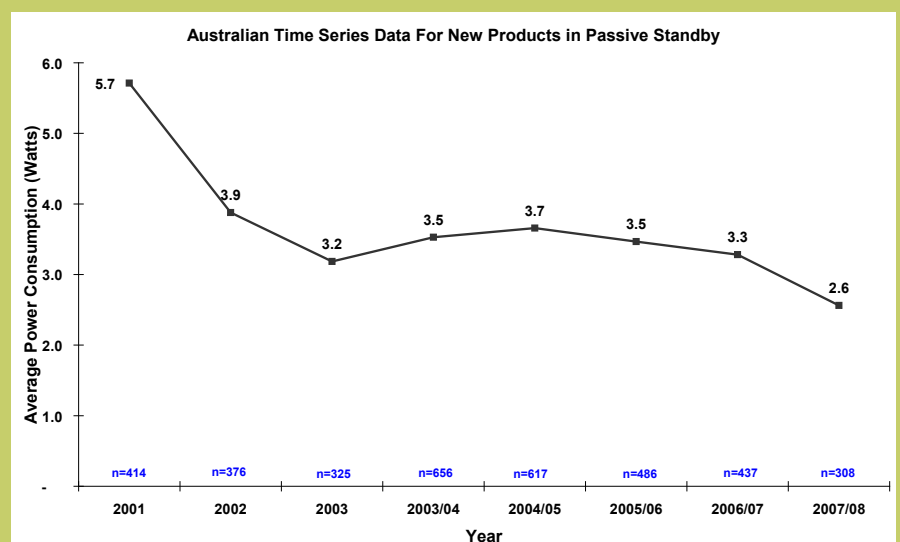
- Active standby** - the appliance is on but not performing its main function; e.g. a DVD player may be on but not playing.
- Passive standby** - the appliance is asleep, not performing its main function but is ready to be switched on (usually by remote control) or it is performing a secondary function e.g. active clock display
- Off Mode** - the appliance is connected to a power source but does not transmit or receive information and cannot be woken by a remote control.

Australian Case Study

Australia has also been conducting annual in-store measurements to capture the standby power consumption levels for new products. Almost 7000 devices have been measured across 50 product categories. The survey has found the number of products with standby consumption is increasing, with new products coming into the market and design changes to products that previously had no standby consumption. Devices increasingly have more than one standby setting, exposing the need for multiple modes to be considered when tackling standby. Some products have rapidly reduced standby consumption however there is still much work to be done.

Since 2000 Australia has been undertaking surveys that investigate the level of standby power consumption for consumer electronics. Intrusive surveys measuring the consumption of existing products in Australian homes found that standby power accounts for 10.7% of Australia's residential electricity consumption. This costs consumers over \$950 million per annum and generates more than 6.5 Million tonnes of carbon dioxide emissions. Standby power consumption appears to be increasing at between 2.5 to 5% per annum in Australian households.

Having such a large amount of data collected over many years has enabled policy makers to identify problem products that need assistance to encourage a reduction in energy usage. Alternatively products that are performing well and showing improvements in energy efficiency can be acknowledged. More information about this research and access to the Australian data can be found at <http://www.energyrating.gov.au/standby.html>.



Global Action

The products that consume standby power are often designed, manufactured, and traded in different countries, so solutions will require coordination across borders. A variety of organizations have begun work to reduce standby consumption, however it will be important to align these actions to gain a harmonized global approach.

In 1999, the IEA proposed that all countries harmonize energy policies to reduce standby power use to one watt per device. Many countries have since introduced both voluntary and mandatory measures to achieve this goal. The IEC62301 standard has provided a test procedure allowing more consistent testing and expanding our understating of the problem. This has helped identify the options available to tackle standby power.

The IEA is currently endorsing a horizontal approach which would see all devices automatically included in a single target, unless an exemption was granted. A framework for how such an approach could operate is being created and will provide a list of products recommended for exemption. It is envisaged that this project will foster harmonization and decrease the arduous task of establishing individual programs and requirements for each product and/or country. (More

information @ <http://www.iea.org/textbase/subjectqueries/standby.asp>)

The APP standby project is collecting data in a consistent manner, for a common set of products, in different countries around the world. This comprehensive set of standby power data will facilitate international comparisons, allowing trends in standby consumption to be tracked over time. The benefit of such a high quality data set is to enable benchmarking for success and to provide a sound basis for policy development and analysis.

APEC has highlighted the need for harmonized standby power policy approaches by promoting information sharing and projects to identify possible solutions. APEC has supported the International Standby Power Conference in 2006 in Australia and may support other conferences over the next few years.

The EU is about to adopt a new directive which will apply to all electric devices used in households and offices. From 2010 the maximum allowed standby consumption will be 1 or 2 Watts depending on the product and in 2013 this will be reduced to 0.5 or 1 Watt. As a result, the current EU standby consumption will decrease by 73% by 2020. As many of the targeted products are sold worldwide the anticipated



In Store Testing of New Delhi India 2008



In Store Testing of Standby Consumption in Seoul Korea 2007

savings from this decision are likely to be much greater. More information can be found at the Europa Press Room



Next Edition.....

- > **Korea's Standby Program**
- > **Who's who at the International Energy Agency**
- > **Poor Performers – A Product Case study**
- > **What's happening in Europe?**

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