The Efficiency Standard

Summer 2010 EQUIPMENT ENERGY EFFICIENCY PROGRAM NEWSLETTER No. 2

Welcome to the second edition of *The Efficiency Standard*, an online newsletter designed to provide an update on the latest news concerning energy efficient appliances and equipment from the Equipment Energy Efficiency Program (E3 Program). We produce the newsletter quarterly and welcome contributions to future editions. Please send your articles or suggestions to energyrating@climatechange.gov.au.

Keeping an eye on home entertainment

Home entertainment equipment accounts for at least 5% of household energy usage in Australia, making it larger than the combined energy consumption of clothes washers, dishwashers and dryers.

This energy consumption is forecast to grow by around 50% in the next five years due to the doubling of sales since 2000 of products such as DVD players and recorders, set-top boxes and games consoles (but excluding televisions), combined with the increased functionality of many products that causes them to use more electricity. Further information is contained in a recent E3 product profile on *Home Entertainment Products* released in June 2010 to gain feedback from industry stakeholders before proceeding to new policy measures.

While many products now draw 1 Watt or less in the lowest standby power mode, entertainment products spend a large amount of time in passive or active standby modes where they may draw up to 80 Watts each (see Figure 1). However, over 2,700 measurements of home entertainment products

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Figure 1: Summary of Active Power Standby Store Survey Measurement Ranges 2008/09

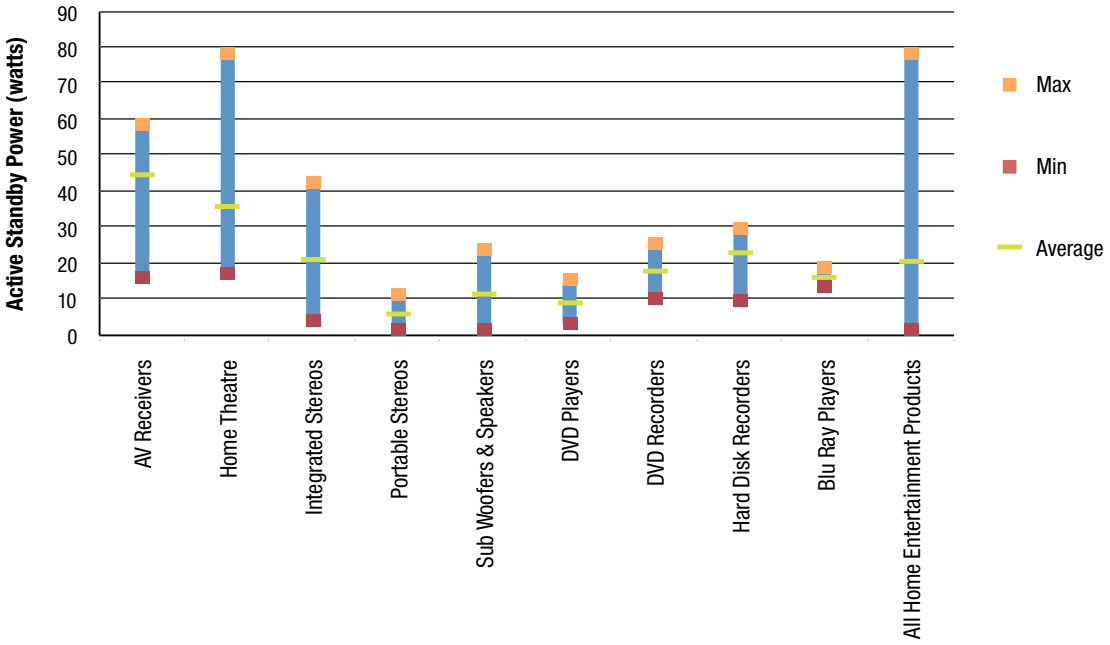
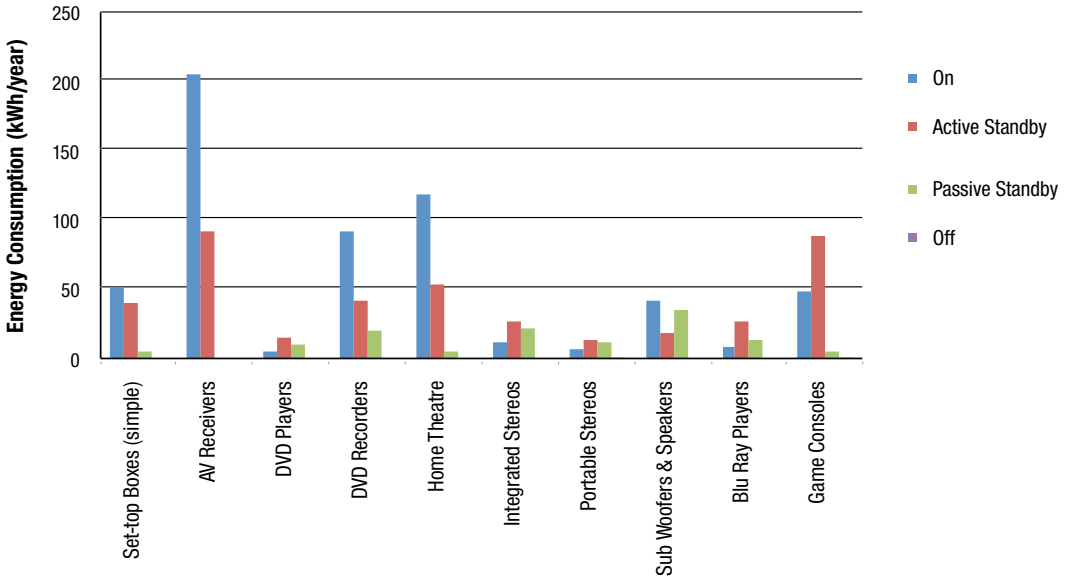


Figure 2: Annual Energy Consumption by Mode and Product Type in Australia



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taken since 2001 show a considerable gap between the best and worst performing models, indicating the opportunity for energy savings (see Figure 2). Significantly, data collected on the cost of home entertainment equipment indicates that more efficient products do not cost more than their energy wasteful counterparts.

Home entertainment equipment is traded globally and the Australian and New Zealand markets are not alone in being dominated by suppliers based in Japan, Korea and China. Like the E3 Committee, energy efficiency agencies in the USA, Japan, and the European Union are targeting these products for policy action such as Minimum Energy Performance Standards (MEPS) and voluntary labelling to encourage greater energy efficiency.

Based on the implementation of measures used in international programs, the report identifies the potential to cut energy consumption by 2,200 GWh p.a. and greenhouse gas emissions by 1.4 Mt CO_2-e by 2020.

Copies of the full report are available from:

www.energyrating.gov.au/library/pubs/201006-hep-product-profile.pdf

In Brief

Air Conditioner RIS

The decision Regulation Impact Statement (RIS) on new MEPS for air conditioners was approved by the Ministerial Council on Energy at the 10 December 2010 meeting. AS/NZS 3823.2 will be revised to implement the new MEPS levels which will come into effect from October 2011.

LED workshop

On November 29 over 30 stakeholders met in Canberra from the lighting industry, Australian and NZ governments, Choice and NECA (National Electrical Communications Association) to discuss options for action on LED (light emitting diodes) efficiency and quality in Australia.

Swimming pool pump-units

The Voluntary Energy Rating Labelling Program for swimming pool pump-units has been recently updated. The updated rules no longer require participating suppliers to report the noise levels of their pump-units on the Energy Rating Label. The Department of Climate Change and Energy Efficiency (DCCEE) has recently approved Astral Pool Australia's application to label their Viron P300 multi-speed pool pump-unit. This pump achieves 8 stars on the new 10 star Energy Rating Label.

Gas Ducted Heaters

The Product Profile on Gas Ducted Heaters has been completed and should be released for comment in December. It is expected that comments will close in February 2011, and that consultation workshops will be held towards the end of January 2011.

New product registration process for all suppliers

All suppliers will need to confirm the availability of regulated products registered at www.energyrating.gov.au before 31 March 2011 to avoid being removed from the public website listing. This new arrangement is being introduced to address the frustration felt by consumers using the site to select products to buy, only to find that these are no longer sold.

In future, any registered product that has not been verified as available for purchase by 31 March each year will automatically be transferred to the Run out listing on the Energy Rating website.

For full details see:

www.energyrating.gov.au/pubs/runout-notice-nov-2010.pdf

Non-Domestic Pumps and Fans

Product Profiles on non-domestic pumps and fans are currently under preparation, and are expected to be released during the first quarter of 2011 (See E3 focus on industrial sector, Page 5).

Load Down Newsletter on Standby Power

The latest edition of *Load Down* was released in September 2010 and is available at: www.energyrating.gov.au/pubs/2010-loaddown-ed7.pdf

2010 Survey of Standby Power and Lighting in Australian Households

A survey of 150 homes in Brisbane, Sydney, Melbourne and regional Victoria is underway to improve our understanding of standby power and lighting energy use, which together account for up to 25% of the annual electricity consumption of Australian households. The survey follows a similar standby power study in 2005 and has been extended this time to gather information on the number and types of lights in use in existing homes. Analysis of this information is expected to be made public in the first half of 2011.

See: www.energyrating.gov.au/survey-lighting-standby.html

Demand response for managing peak loads

Demand Response (DR) interfaces form part of Australia's strategy to integrate demand management, smart metering and smart grids. Currently work is progressing on those electrical appliances that have the potential to make significant contributions to residential sector peak electricity demand. These include air conditioners, swimming pool pumps, hot water heaters and electric vehicle battery re-chargers.

The E3 Committee has been supporting the development of a standard to enable the take-up of demand management on these specific appliances. The presence of the DR interfaces will allow householders to take advantage of special tariffs that may be offered by electricity utilities in exchange for allowing interruptions or modifications to normal operations (usually for brief periods) during peak demand.

Draft standards for DR interfaces for air-conditioners, swimming pool pump controllers, and electric and electric-boosted water heaters (AS 4755.3) are near completion and will soon be released for public comment as part of the standards development process. Standards work has also begun on developing standards for DR interfaces for electric energy storage devices (such as electric vehicle battery rechargers). The development of the Regulatory Impact Statement (RIS) assessing the impacts of mandating the inclusion of these interfaces on the four priority appliances is currently underway.

For further information about this project, contact Lelde Vitols, Assistant Director, Lighting and Equipment Energy Efficiency Team, DCCEE on (02) 6159 3350 or lelde.vitols@climatechange.gov.au

Phase-out of Greenhouse Intensive Hot Water Systems in Australian Homes

Currently, about 50 per cent of Australia's 8 million homes get their hot water from electric hot water systems. These systems produce up to three times more greenhouse gas emissions than low emission hot water heaters such as solar, heat pump or gas hot water systems.

The Australian and most of the state and territory governments have agreed to phase-out greenhouse-intensive (electric) water heaters in Australian homes. The endorsement comes after the Council of Australian Governments (COAG) under the National Framework for Energy Efficiency and the National Strategy on Energy Efficiency agreed to investigate the costs and benefits of implementing the phase-out. This will help householders save money on their energy bills and contribute to the reduction of Australia's greenhouse emissions.

The phase-out of greenhouse intensive water heaters in existing Australian homes is estimated to save approximately 78.7 million tonnes of greenhouse gas emissions over the next twenty years. This is equivalent to taking more than 1.1 million cars off the road for that time.

It is important to note that households that come under the program will not need to replace working systems until they fail. Householders will be able to choose from a number of options including gas (natural or LPG), heat pump, and solar water heaters, depending on their situation.

The phase-out for existing homes is planned to be implemented through a staged approach:

- Stage one – From 2010, electric hot water systems will no longer be able to be installed in any existing detached, terraced or town house that has access to reticulated gas, except where an exemption applies. Queensland and South Australia have already commenced their programs and regulation in other jurisdictions will take effect over the next year.
- Stage two – From 2012, electric hot water systems will no longer be able to be installed in any existing detached, terraced or town house, except where an exemption applies.

To support the phase-out, transitional training for plumbers has commenced and online information is being expanded to help inform householders. More information is available online at www.climatechange.gov.au/what-you-need-to-know/appliances-and-equipment/hot-water-systems/phase-out.aspx

E3 focus on industrial sector

Amongst new industrial equipment in Australia and New Zealand, electric pumps, fans and gas boilers have the greatest potential for energy savings, according to the new E3 discussion document *Improving the Energy Efficiency of Industrial Equipment.* Other equipment with potential for energy efficiency improvement identified in this report includes air compressors, industrial chillers, furnaces & ovens.

Feedback on this discussion document will be used in the development of a 10-year Industrial Equipment Strategy, following a decision in 2009 by all Australian governments (through COAG) to significantly expand the E3 Program into the industrial equipment sector.

The report estimates that motor systems are estimated to account for 49% and 55% of total industrial electricity consumption in Australia and New Zealand respectively; and gas-fired steam systems (or boilers) are responsible for 25% and 65% of total industrial gas consumption respectively.

A number of countries already regulate key industrial equipment for MEPS or include this equipment in endorsement labelling or efficiency certification programs. For example, the European Union has been developing test methods and regulatory levels for pumps and fans with industrial and commercial applications. There have also been major advances in internationally harmonised approaches to testing and regulating electric motor systems.

Based on the analysis in the discussion document, the primary tools proposed for inclusion under a proposed 10-year Industrial Equipment Strategy are:

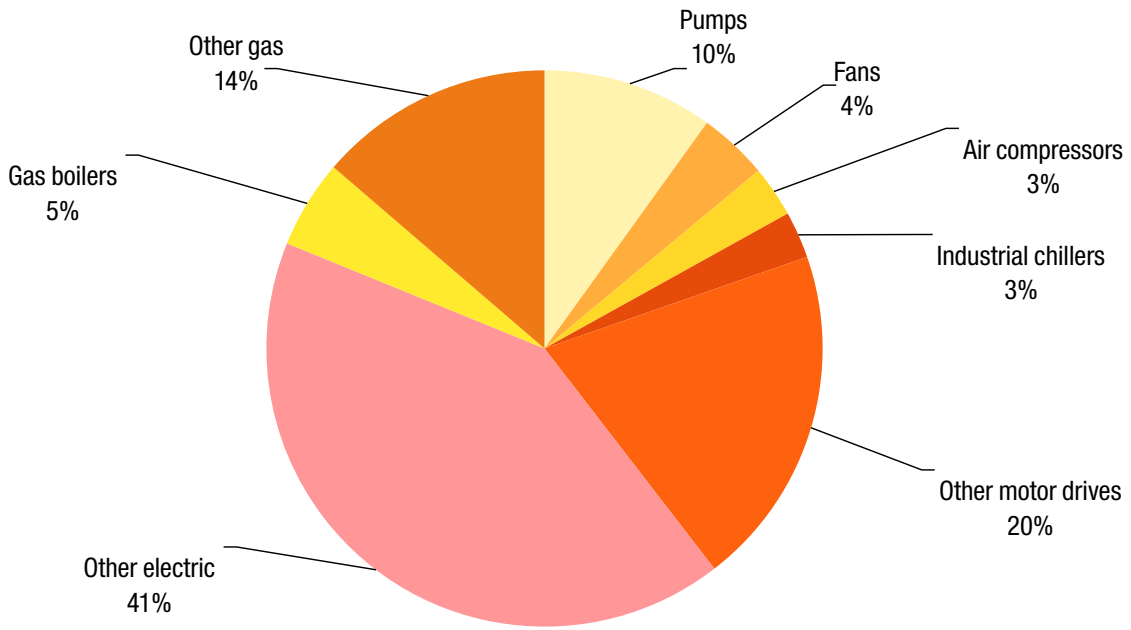
- Energy performance test standards, where possible based on international standards;
- MEPS for key equipment;
- Mandatory disclosure of key energy performance data for publication on publicly accessible web sites, and for use in equipment selection and system optimisation tools;
- Definition of high energy efficiency levels within standards, to assist businesses to identify the best performing equipment. In addition to assisting businesses to select high efficiency equipment suitable for their applications this would facilitate the introduction of government incentives to encourage the uptake of high efficiency equipment.

Modelling conducted for the discussion document suggests that these measures could cut energy consumption by 21.9PJ and save 3.1Mt CO_2-e per annum after 10 years, with savings continuing to build for another decade or so. The cumulative greenhouse gas savings during the 10-year period are estimated to be 18.4Mt CO_2-e.

Copies of the full report are available from:

www.energyrating.gov.au/library/pubs/201009-indust-equip.pdf

Figure 3: Relative share of Industrial greenhouse gas emissions, Australia and NZ



How green are your whitegoods?

This question is answered in a recent E3 Program report, *Greening Whitegoods: A Report into the Energy Efficiency Trends of Major Household Appliances in Australia from 1993 to 2009,* which highlights the improvements in energy efficiency that have been achieved over this period.

In 2009, whitegoods accounted for around a quarter[1] of the electricity consumed by all residential electrical appliances in Australia and around 2.6 million units were sold, with a retail value of $2.2 billion. This compares to sales of 1.4 million appliances, worth $1.2 billion, in 2000. Despite this dramatic increase in sales, upward trends in the energy efficiency of these products have helped to mitigate the overall increase in the energy consumption of Australian households over this period.

Greening Whitegoods 2009 draws on 17 years of appliance retail sales data to measure the effectiveness of MEPS for domestic refrigerators and freezers and the impact of the Energy Rating Label on the energy efficiency of refrigerators, freezers, dishwashers, clothes washers and clothes dryers.

The report demonstrates that all product groups have shown an improvement in energy efficiency, in some cases a very substantial improvement, since data was first available in 1993 (as shown in Figure 4).

The study also assesses market and price trends for the five product groups, providing an interesting insight into the changes over the period. Contrary to the common belief that increases in appliance efficiency cost more, the analysis shows that not only have these products become more energy efficient but they have also experienced substantial real price decreases over the past 17 years. Products have also improved in other ways - the water consumption of clothes washers and dishwashers has declined by 3.9% and 4.3% per annum facilitated by Water Efficiency Labelling introduced in the 1990s.

This encouraging trend in improved performance and increasing energy efficiency is illustrated in the graph Figure 5 below which shows the year-by-year breakdown of key performance characteristics for refrigerators. It clearly shows the significant increase in Star Rating Index (SRI) and decrease in energy consumption achieved despite increases in

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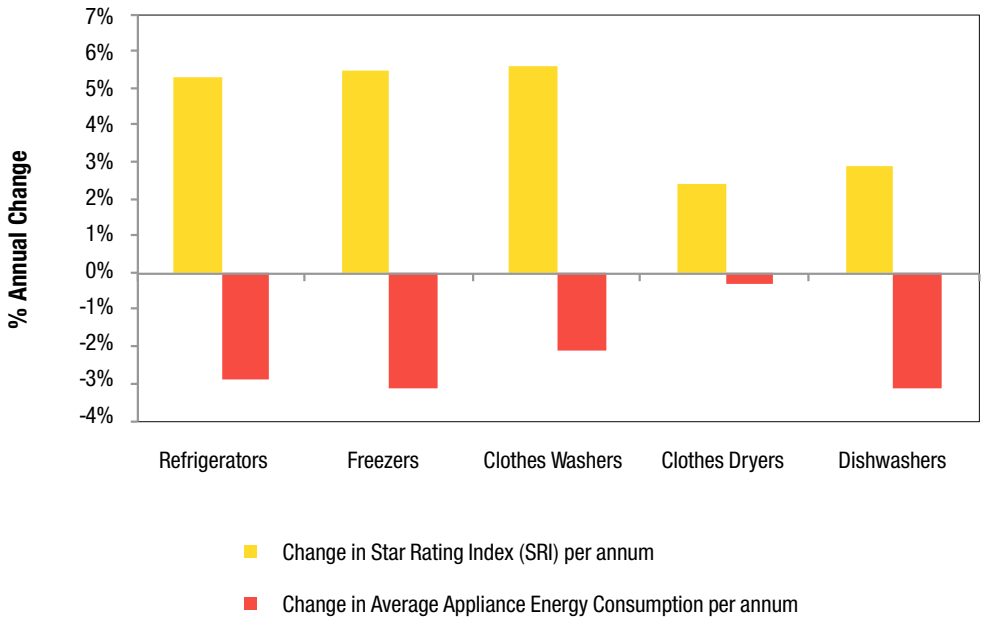
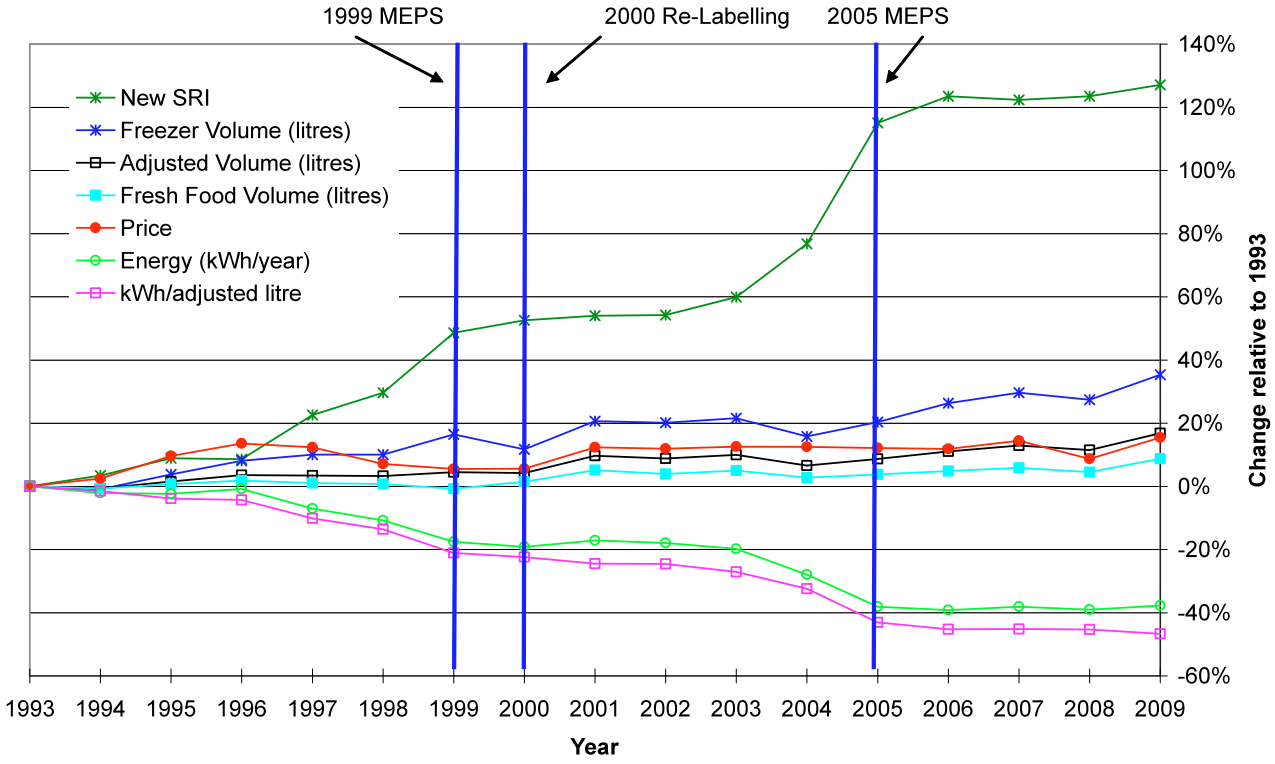
Figure 4: Change in Energy Performance of Whitegoods in Australia, 1993-2010



Note: The SRI improvements shown are those calculated against the current Energy Rating Label algorithms for each product

[1] Estimated from graph in *Energy Use in the Australian Residential Sector 1986-2020*, p41 - Trends in electrical appliance by type in Australia

Figure 5: Annual Trends in Refrigerator Key Performance Characteristics since 1993



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the volume of refrigeration compartments over this period.

To find out more about the study, the full report is available to download from the Energy Rating website at:

www.energyrating.gov.au/library/pubs/201008-greening.pdf

Click here for energy efficiency

Following the public release of the Consultation RIS for computers and computer monitors on 25 October, a public forum was held at The Menzies Hotel, Sydney on 18 November 2010. An additional telephone conference was organised on 1 December to include overseas suppliers so that they could better understand the proposals and raise questions concerning the data used in the RIS. This facility was used to promote engagement by an industry that is dominated by US based corporations with their regulatory and environmental experts based overseas. The closing date for submissions on the RIS was 8 December 2010.

Alongside preparation of the Decision RIS and the drafting of state and territory legislation, AS/NZ Standards for computers and computer monitors will be developed based on the internationally accepted ENERGY STAR Version 5.0 testing and efficiency protocols. Three Standards are being developed by a Standards sub-committee. The standards are:

- Computers, Part 1 – test method, and Part 2 MEPS;
- Computer monitors, Part 1 – test method and Part 2 MEPS and labels; and
- Internal power supplies, Part 1 – Test method.

Standby Power: *Moving Towards 1 Watt and Beyond*

Australia played a leading role in the recent Asia-Pacific Economic Co-operation (APEC) conference on standby power held in Tokyo from 19-21 October 2010 that brought together approximately 50 experts from 12 APEC countries, and 10 different manufacturers and suppliers. Under discussion were a wide range of standby related topics, ranging from technologies and components to high level policy and implementation issues.

Conference participants learnt of technologies and improved user-interaction that can help to reduce standby power and which are currently used in portable electronic products – demonstrating the benefit of migrating these to mains powered products. In addition, many countries outlined their efforts to reduce standby power and conference participants learnt of international cooperation in the area of measurements and test procedures that pave the way for policy alignment.

The growing issue of network connected products and the need to ensure that today's policies are not made redundant with the rapid expansion of network products was highlighted throughout the conference.

The workshop helped to identify areas where progress can be made now and where more research and development is needed to achieve a low standby power future. Amongst the key policy issues arising from the conference were the need for continued efforts towards a broad alignment of policy approaches and the importance of user-interfaces to indicate what state a product is in and how energy can be saved. The Conference also encouraged the wide use of The Energy Efficient Ethernet (IEEE 802.3az); and IEC62301 Edition 2 as a measurement method.

A total of 22 presentations were made over the first two days and each of these presentations is available for download at:
www.energyrating.gov.au/standby2010-apec-presentations.html

Saving More Energy Through Compliance

Greater co-operation amongst energy efficiency agencies and regulators to increase compliance rates was the main focus when 120 participants from 25 countries met in London from 14-16 September 2010. The Conference *Saving More Energy Through Compliance* was organised by the IEA 4E (Implementing Agreement for Efficient Electrical End-Use Equipment) in partnership with CLASP (Collaborative Labeling and Appliance Standards Program) and hosted in London by the UK Government's Defra (Department for Environment, Food and Rural Affairs).

Worldwide, there are now over 1,300 mandatory and voluntary energy efficiency standards that are estimated to save more than 500 TWh each year, but participants heard that substantial additional energy savings may be lost due to non-compliant products being sold between 2010 and 2030.

The presentation of best practice examples at the conference showed that much can be achieved through education, training and information provision to enable industry to understand and meet requirements. Visible enforcement is also vital to maintaining confidence in these programs both by participants and consumers, and therefore helps to maintain and raise future participation levels.

> ***"The efficient use of energy is a global concern, and the effective enforcement of energy efficiency regulations is a global priority. There is much that nations can do together -- but are not yet doing -- to improve the enforcement of energy efficiency regulations. We should begin a more robust discussion about how we can work together toward our common goals".***
>
> Scott Blake Harris, General Counsel to the US Department of Energy.

Lord Henley, Parliamentary Under-Secretary, at UK Defra, explained that sharing best practice examples and results of verification activities amongst programs and regulators from different countries, is a vital step to improving the effectiveness of compliance regimes. The potential to use market intelligence from another country or region to target recurrent non-compliance by particular brands or products was also highlighted.

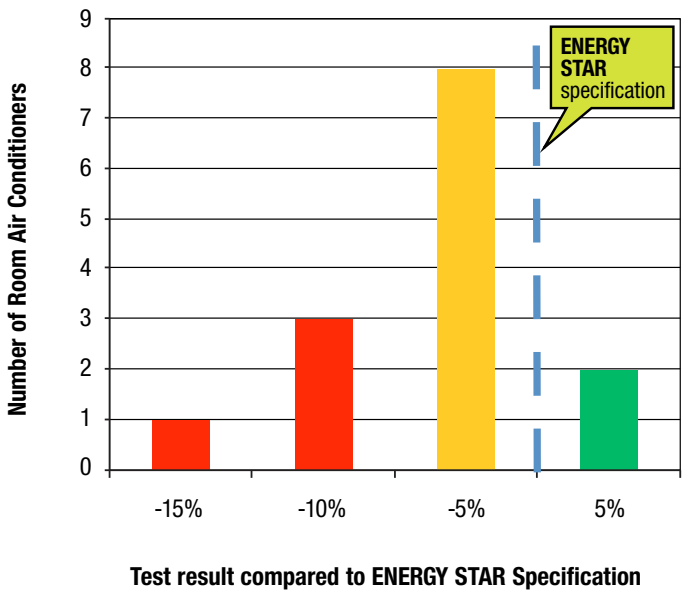
Many potential new collaborative initiatives were proposed, including the strengthening of regional groupings of market surveillance and enforcement authorities to co-ordinate activities and improve testing facilities and provide a forum for the regular exchange of information.

All conference presentations can be downloaded from the following site: www.iea-4e.org/events-and-meetings

Air conditioner claims found wanting in USA

Two air conditioning systems supplied by Air-Con International are the latest of nearly 70 different products that have been removed from the US market for non-compliance with energy efficiency requirements since 2009.

Figure 6: Preliminary results of compliance tests on room air conditioners in US



As a result of finding that Air-Con International had distributed nearly 2,000 air conditioning units that are rated at 10 Seasonal Energy Efficiency Ratio (SEER), compared to the federal minimum standard of 13 SEER, the Department of Energy has told the company to stop selling these products and have proposed a civil penalty of more than $230,000.

See: www.gc.energy.gov/documents/AirCon_Notice_of_Noncompliance_and_Penalty.pdf

In parallel, the Department of Energy is conducting nearly 270 checktests of products carrying the ENERGY STAR label. Based on the preliminary results, 17% of all the units tested require further investigation, with room air conditioners (RACs) providing most cause for concern with 29% of the 14 RAC models tested failing to meet ENERGY STAR specifications by a margin of 5% or worse (see Figure 6).

LG Australia provides ACCC with undertaking over energy efficiency claim

A recent court enforceable undertaking between LG Australia and the Australian Competition and Consumer Commission (ACCC) shows the potential benefit of information exchange.

The September 2010 undertaking responds to concerns raised by Choice, the Australian consumer advocacy group, which found that LG were not rating refrigerators built with a low energy 'storage mode' correctly according to the energy labelling requirements. As a result, these refrigerators claimed a Comparative Energy Consumption of 738kWh/year, rather than 820kWh/year when tested correctly.

LG Australia have agreed to offer compensation to all consumers who bought one of the refrigerator models as well as implementing an upgraded trade practices law compliance program, and conduct additional testing on a selection of refrigerators, televisions, clothes washers, clothes dryers and dishwashers prior to release into the Australian market.

Commenting on the undertaking, ACCC chairman Graeme Samuel said: "*The cost of electricity is paramount to all consumers in Australia such that energy efficiency claims can significantly influence consumer purchasing decisions. To ensure companies cannot take advantage of this, the ACCC will thoroughly investigate claims that have the potential to be false or misleading. Companies need to have in place measures to ensure their claims are accurate.*"

See: www.accc.gov.au/content/index.phtml/itemId/947285

Living Greener this summer

Are you dreaming of a greener Christmas this year? During the summer holidays Australians eat more, drink more, shop more and travel more - making a big impact on our budgets and the environment.

If you want some great ideas for living greener this summer www.LivingGreener.gov.au is a great place to start. LivingGreener.gov.au now has recently been expanded to include an exciting range of new features including information for Australians at key life stages and real stories submitted by members of the public.

There's a lot of guidance about 'what to expect when you're expecting', but did you know that having a baby can lead to a 25 per cent increase in household energy consumption? The new How green is my baby guide has tailored information for new or expecting parents and provides tips on how to go greener without blowing the budget - in fact some of the tips can lead to large cost savings and safer alternatives for your child.

I'm dreaming of a green Christmas has easy, practical and realistic tips that you can take when deciding how to celebrate the festive season. Many of these tips are fun, family-friendly and may help you celebrate in style and still have change in your back pocket. You don't have to try all the ideas - initiating even a few changes this year will make a difference.

If you're planning or carrying out building or renovating over the summer, check out www.LivingGreener.gov.au for information on all aspects of living sustainably and for links to all Commonwealth, state and territory rebates and assistance.

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Outdoor radiant gas heaters

There are 500,000 outdoor radiant gas heaters in use throughout Australia at the current time, typically comprising models ranging from very small, portable, butane-fired camp heaters to very large heaters used for large open-plan workshops, factories and even livestock pens.

Although growth rates in the commercial sector are small due to largely saturated markets, there is significant growth potential for patio heaters in the residential sector according to a new product profile commissioned by E3. The product profile also notes that patio heaters have received bad press internationally for being highly inefficient and a wasteful form of heating, with the result that a number of major retail chains in the UK have voluntarily stopped selling these heaters due to their environmental concerns.

However, due to the estimated low level of greenhouse gas emissions from these products, the profile concludes that the introduction of regulations for energy efficiency would not be justifiable in Australia. Instead, E3 has committed to review options for improving the efficiency of outdoor radiant gas heaters in 3 years.

See: www.energyrating.gov.au/library/pubs/201007-radiant-gas-heaters.pdf

In the pipeline

Energy Rating website

The Energy Rating website: www.energyrating.gov.au, in its current format, was launched in 2002. Since that time web technology has changed significantly. In 2008 the E3 Committee made the decision to review the website. In 2009 an external company was engaged to scope a redevelopment project. Following this a detailed requirements analysis was prepared to enable an open tender process to take place. WSP Digital have now been appointed to rebuild the website with a brief to improve speed, useability and functionality. The aim is to launch a new website early in 2011. Completely new, more efficient registration and compliance systems will follow. We look forward to providing progress updates in subsequent newsletters. Watch this space!

Monitoring and evaluation projects

Retrospective studies of household refrigeration and non-ducted air conditioners that compare savings achieved with those predicted in the respective RIS's for MEPS and energy labelling will be available in an upcoming edition of *The Efficiency Standard.*

Computer testing

Since the beginning of 2008 testing of 167 desktop and notebook computers has taken place. Products have been sourced from retail outlets, Australian Government agencies, and via the internet in order to build up a picture of the energy performance of computers available in Australia and benchmark them against the default global energy performance specification of the day: the voluntary US EPA ENERGY STAR®. The report highlights the need for a regulatory program for computers and computer monitors and the importance of check-testing to ensure compliance.

MEPS for gas water heaters

The E3 Committee has agreed that Minimum Energy Performance Standards (MEPS) for gas water heaters will commence no earlier than 1 February 2011. Jurisdictional commencement dates will occur on a state-by-state basis. For further information please contact your jurisdictional regulator.

Retail outlets in the spotlight over the holidays

During the up-coming holiday season, inspectors will be visiting a number of electrical retailer stores throughout Australia to conduct the second national survey of television energy efficiency labelling and registration requirements.

We would like to take this opportunity to wish you all a Merry, green and energy efficient Christmas and a happy and safe New Year!

Thanks to everyone who has contributed to the first two issues of The Efficiency Standard, we hope you've found them informative.

We look forward to working with you all in 2011.

Next issue: Autumn 2011

Get your articles* in by: February to energyrating@climatechange.gov.au

* ***Submissions subject to editorial approval***