



Mapping and Benchmarking Newsletter



Issue 5, May 2011

Welcome to the fifth issue of the 4E Mapping and Benchmarking newsletter

In this issue we focus on providing the summary outcomes of the recently completed 4E Mapping and Benchmarking air conditioning study.

The comparison is timely. Historical data shows substantial growth in the number of air conditioning units installed worldwide, with numbers in China trebling in six years, more than doubling in the Korea in nine years and, even in the relatively mature market of Canada, the number of units installed has risen by 20% in five years.

Obviously, this rapid increase in installed capacity means proportionate increases in total energy consumption, thus putting additional focus on the requirement for improved unit efficiency – the benchmarking gives some timely pointers on where policy is working, and where it might focus in the future.

Air conditioning is the first of four new benchmarkings due for completion in the near future. Other products featured are:

- Notebook Computers
- Domestic Lighting
- Laundry Driers

Summary outcomes of each of these will appear in coming issues of the newsletters.

We encourage you to pass the newsletter on to anyone you think may find it of use. Should they wish to subscribe directly, they can do so by via our website at mappingandbenchmarking.iea-4e.org/newsletter

Cooling Facts for Air Conditioners

The air conditioning benchmarking makes international comparisons of product performance and regulatory levels for residential split air-conditioning systems, along with some unitary products (ducted units were excluded).

The report's analysis and resulting commentary are based on material from seven countries: Australia, Canada, Republic of Korea, China and the EU, plus ENERGY STAR data for the USA

Regulatory Comparisons: Outcomes

- The performance of split air-conditioners in Korea is approximately 20% above those of other countries. This appears to be as a result of Korea's Minimum Energy Performance Standards (MEPS) which, until recently, have been the most stringent of all countries reviewed. This experience suggests that stringent and long term MEPS are able to significantly influence the market and improve product performance (see Figure 1 overleaf)
- MEPS levels in China became more stringent than those in the Republic of Korea during 2010.

Consumption and Efficiency: Outcomes

- In Australia and the EU, *sales weighted* data implies that the efficiency of both unitary and split air conditioners is improving at nearly 10% every two years. These countries are gradually closing the gap in product performance compared with Korea where performance improvement has slowed (see Figure 2 overleaf).

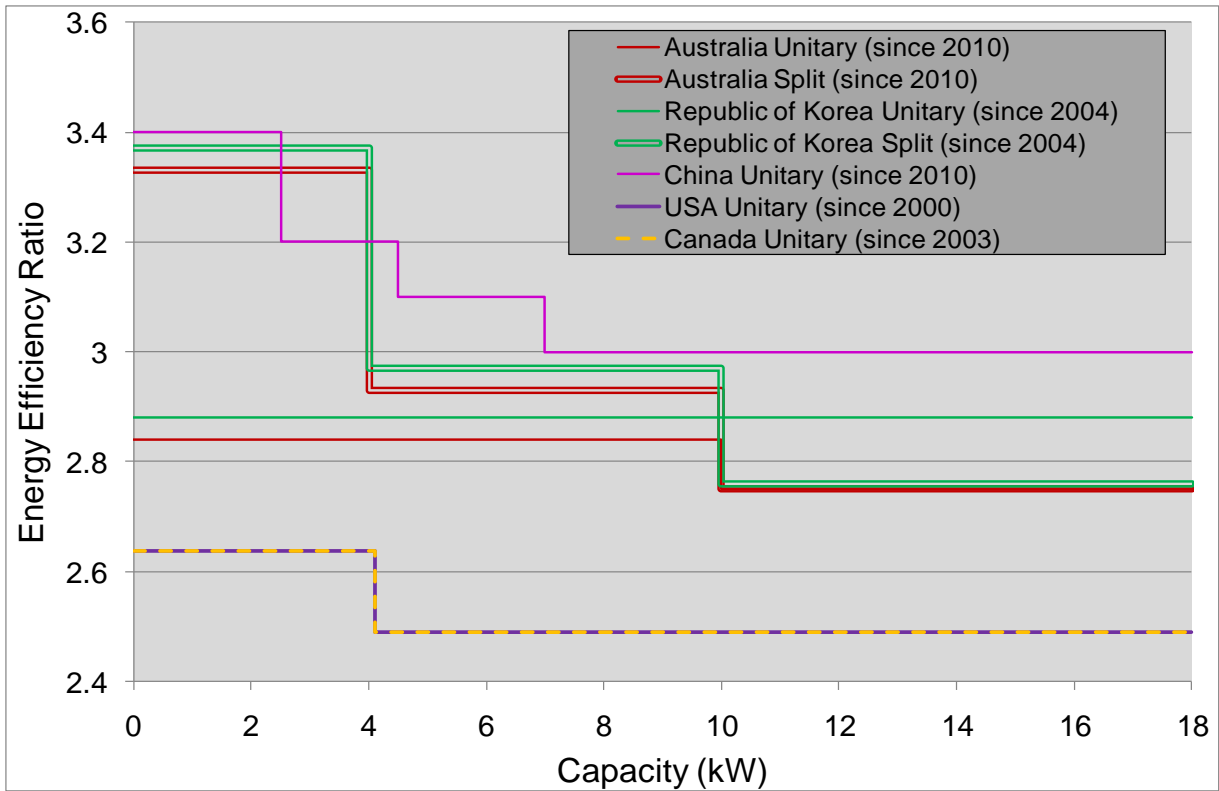


Figure 1: Selected current and planned MEPS for split and unitary (packaged) air conditioners >14kW cooling capacity. (Note: the scope of products included in each regulation may be slightly different in type and capacity range between countries/regions)

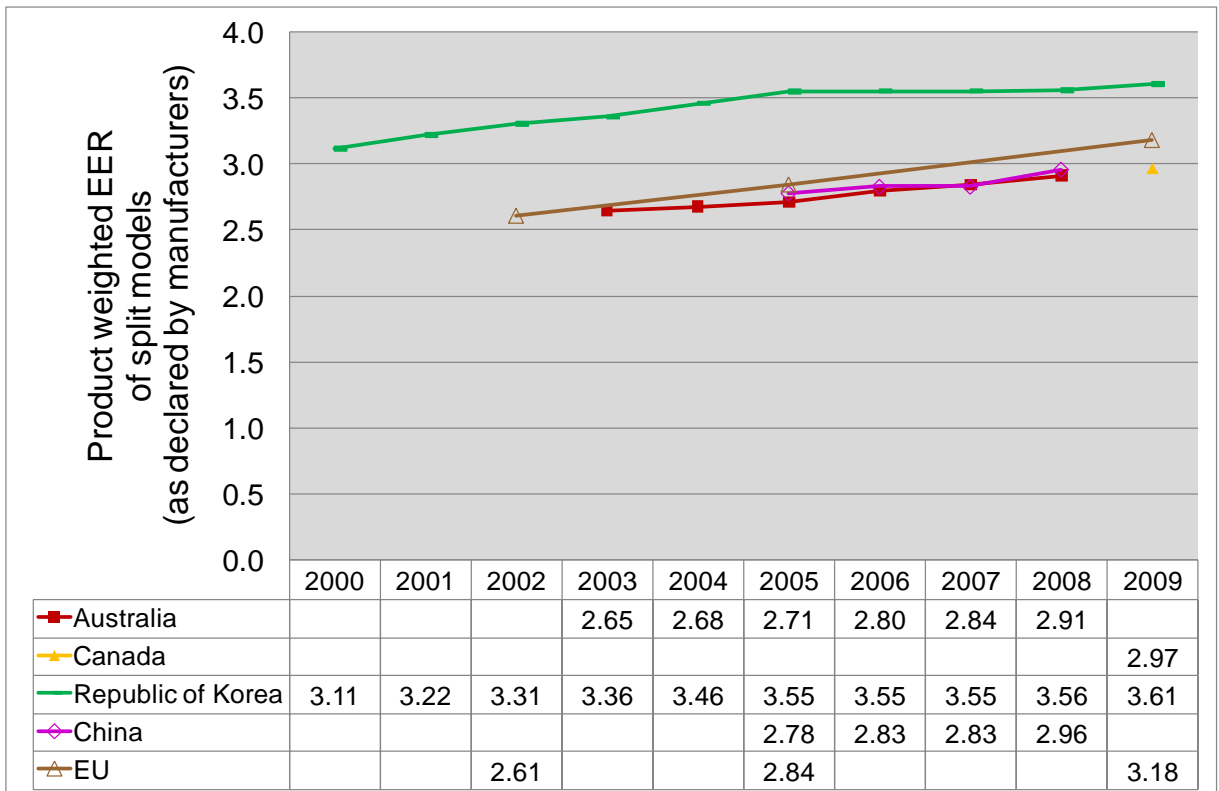


Figure 2: International Comparison of Energy Efficiency Ratio (EER) for split air conditioners of >14kW cooling capacity (as declared by manufacturers)

- *Product weighted* EER data imply that the average efficiency of unitary products has hardly changed since 1996 in the countries studied. Thus, the sales weighted improvement in Australia and the EU for unitary products must be through users voluntarily choosing better performing products. The average EER performance of split products has been improving at around 3% per year in the countries studied and so, again, users in Australia and the EU are tending to choose the more the efficient products on the market.
- Despite this improvement, there appears to be significant scope for additional improvement in average full load efficiency. The theoretical best efficiency is around EER 6.5 and the best split products are approaching this level. But market average performance is only 3.0 for unitary products and 3.3 for split products, thus leaving huge potential for future improvement of the average product.
- The proportion of products with variable speed or multispeed compressors is rapidly increasing (over 50% of Australian and EU markets in 2009). This can save a significant amount of energy in real life use over a cooling season. The previous policy focus on use of EER may underestimate the benefits of these products. The Seasonal EER (SEER) metric much better reflects the

real performance and is now the focus of policies in most regions.

- Standby consumption for air conditioners has become an energy policy issue, with regulations addressing this already in place in Australia and the Republic of Korea.

If you would like more information on this benchmarking of air-conditioners, the full report is now available at

<http://mappingandbenchmarking.iea-4e.org/matrix?type=product&id=4>.

Dates for your diary...

Mapping and Benchmarking Annex Management Committee and 7th 4E Executive Committee Meetings
16-20 May 2011 – Zurich, Switzerland

International Conference on Energy Efficiency in Domestic Appliances and Lighting (EEDAL)
24-26 May 2011 – Copenhagen, Denmark

European Council for an Energy Efficient Economy (ECEEE) Summer Study
6-11 June 2011 – Toulon/Hyères, France

Vienna Energy Conference 2011: Energy for All – Time for Action
21-23 June 2011 Vienna, Austria

Energy Efficiency in Motor Driven Systems (EEMODS)
12–14 September 2011 – Alexandria, Virginia, near Washington DC, USA



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