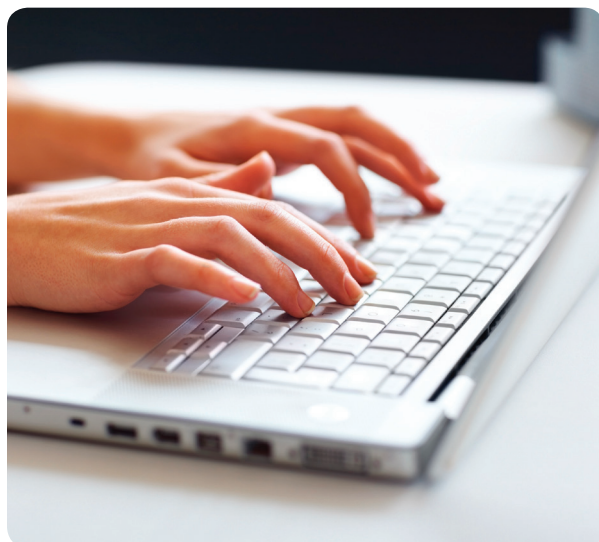


# Mapping & Benchmarking of Notebook PCs



The IEA's 4E Mapping and Benchmarking Annex provides policy makers with evidence based comparisons of the performance of products sold in various national markets. This allows benchmarking of the success of national policies in managing product energy consumption and efficiency and enables identification of opportunities to further encourage the uptake of energy efficient products.

The analysis includes information drawn from Australia, EU, Republic of Korea, Switzerland, Canada & USA (ENERGY STAR data).

## Observations for Policy Makers

**Product performance is very similar between major regions.**

- **Average performance of notebooks appears to be steadily improving** with data showing a 10% decrease in average annual consumption for 2007 to 2008; consumption of the best performing notebooks in the US and EU fell by 8% per year from 2008 to 2011. The evolving mix of product types on the market year on year also influences this average.
- **The performance of products with similar computing capability is improving even faster:** A sample of 2011 products consumed less than two thirds of the energy of comparable products from 2009.
- **The most efficient products in the EU and US have similar consumptions** with the average energy consumption of ENERGY STAR qualified products being very comparable between the two markets. In 2008, EU ENERGY STAR products were around 30% better than the average for the whole market.
- **Performance varies between brands** with a sample of ENERGY STAR category B products (mid level computing power) sold under six market leading brands showing wide differences in average consumption and annual improvement rates. Differences may be partly due to differing product specifications within the brand portfolios.
- **Long term trends are difficult to determine** because the performance metrics used under ENERGY STAR have changed significantly over the years and further changes are already planned.

## More Information

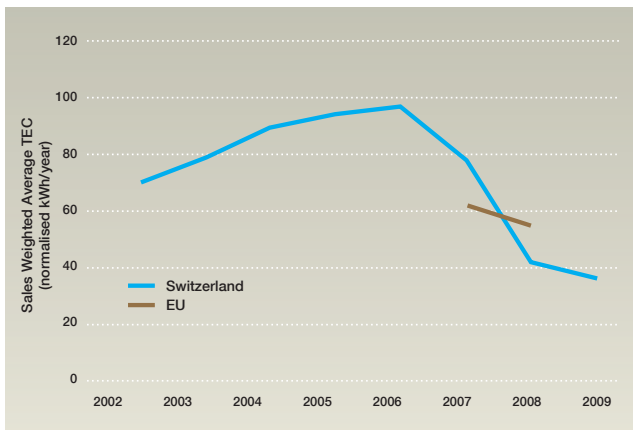
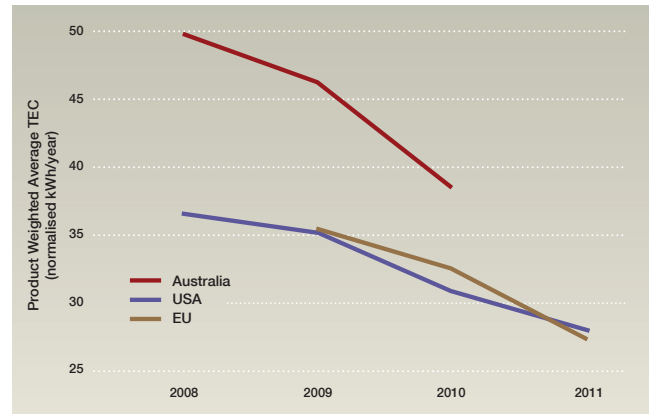
All publicly available Annex mapping and benchmarking outputs are available on the Annex website at <http://mappingandbenchmarking.iea-4e.org>.

For further information email: [contact@mapping.iea-4e.org](mailto:contact@mapping.iea-4e.org)

# Key Findings

## Typical Energy Consumption (TEC) - Market Samples

The average TEC<sup>1</sup> of ENERGY STAR notebooks in both the US and EU (representing the most efficient products) has fallen by 23% over three years to reach an average of 28 kWh/year in 2011. A similar trend is also seen in a market sample from Australia. The range of performance (best to worst) amongst low and medium computing capability products in 2011 is also half that in 2009. This probably indicates that some scope for efficiency improvement has been taken up in that time.



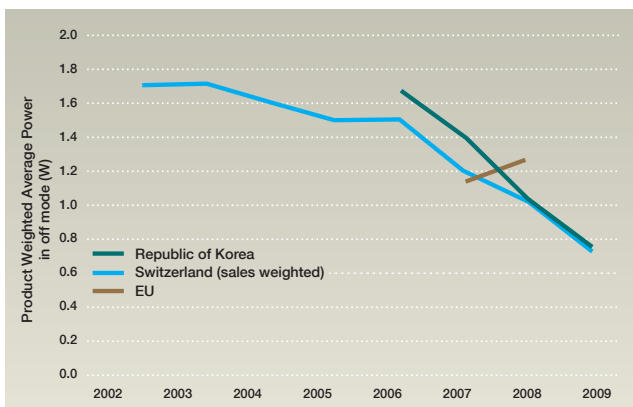
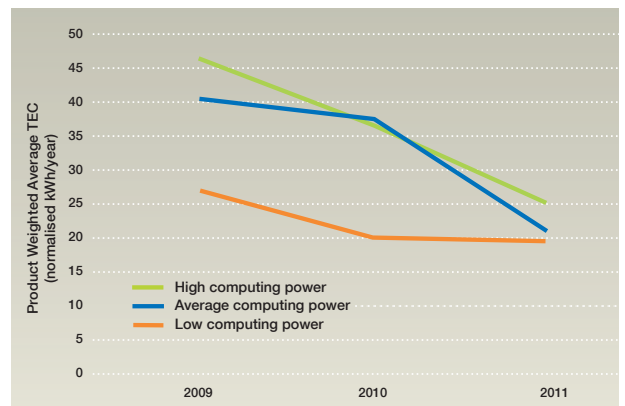
## Typical Energy Consumption (TEC) – Whole Market, Sales Weighted

Sales weighted data implies an average TEC of 55 kWh/year for the EU (2008) decreasing (i.e. improving) by around 10% per year.

Idle mode power mirrors the TEC trend; the average was 12 W for Switzerland (2009) and 18 W for the EU (2008).

## Comparison of Products with Varying Computing Power

The energy consumption of all notebooks is falling year on year irrespective of computing power. The difference in energy consumption between products of different computing capability also appears to be narrowing.



## Off Mode Power (The Lowest Power Mode)

Average off mode power has halved in three years to 0.8 W for the Republic of Korea and Switzerland in 2009, as shown in the figure. By contrast, improvement rate in sleep mode power has been less dramatic, with an average of around 1 W for Switzerland and the Republic of Korea (2009) and 1.7 W for the EU (2008).

<sup>1</sup>TEC is Typical Energy Consumption - this approximates the annual consumption of a computer used according to an assumed office usage pattern based on idle, sleep and off mode power, as defined by the ENERGY STAR specification for computers.

This policy brief is based on a full report published in April 2012. Data quality varies between countries and graphs. See full report for details. The IEA Implementing Agreement on Efficient Electrical End Use Equipment has made its best endeavours to ensure the accuracy and reliability of the data used herein, however makes no warranties as to the accuracy of data herein nor accepts any liability for any action taken or decision made based on the contents of this report.