

Country: Australia

Technology: Set Top Boxes

Sub Category: Simple and Complex

Introduction

The first stage in the Mapping and Benchmarking process is the definition of the products, i.e. clearly setting the boundaries that define the products for use in data collection and analysis. This ensures that comparison between the participating countries is done against a specific and consistent set of products.

The summary definition for this product is:

M&B Category	Description
Definition and Scope	<p><i>Set top boxes as used to convert digital TV signals to a signal compatible with the existing TV receiver and TV monitor technology, including analogue signal, composite video, s-vhs, IP, component video and HDMI. Both Simple STB (free access) and Complex STB (conditional access¹) are included.</i></p> <p><i>Note: standalone digital television adapters (digital to analogue converters) are not included.</i></p>
Signal Types	Cable STB, Satellite STB, Terrestrial STB, Cable digital transport adapter (DTA), Internet protocol (IP) STB, Thin client / remote STB
Other Characteristics to be Noted	Auto power down , Additional Tuners, Digital Video Recorder, Advanced Video Processing, High Definition Resolution, Removable Media Player or Player/Recorder , Home Network Interface (e.g. WiFi, MoCA), Provision/type of a return path etc.

The detailed product definition can be found at the Annex website:

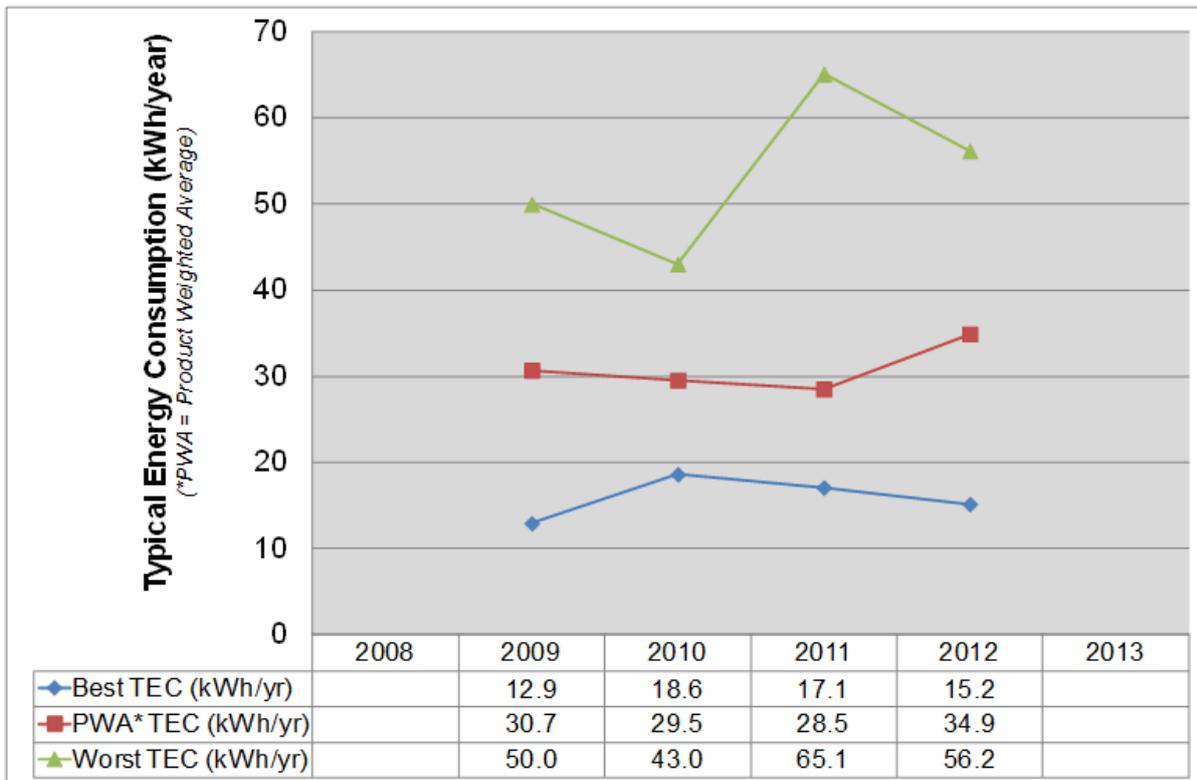
<http://mappingandbenchmarking.iea-4e.org/matrix?type=product&id=14>

¹ Conditional access is for receiving subscription services through built-in access control or the use of an access card-key or similar (e.g. CableCard type services)





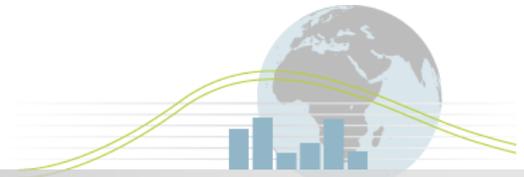
Annual Typical Energy Consumption (TEC) of Set Top Boxes in Australia



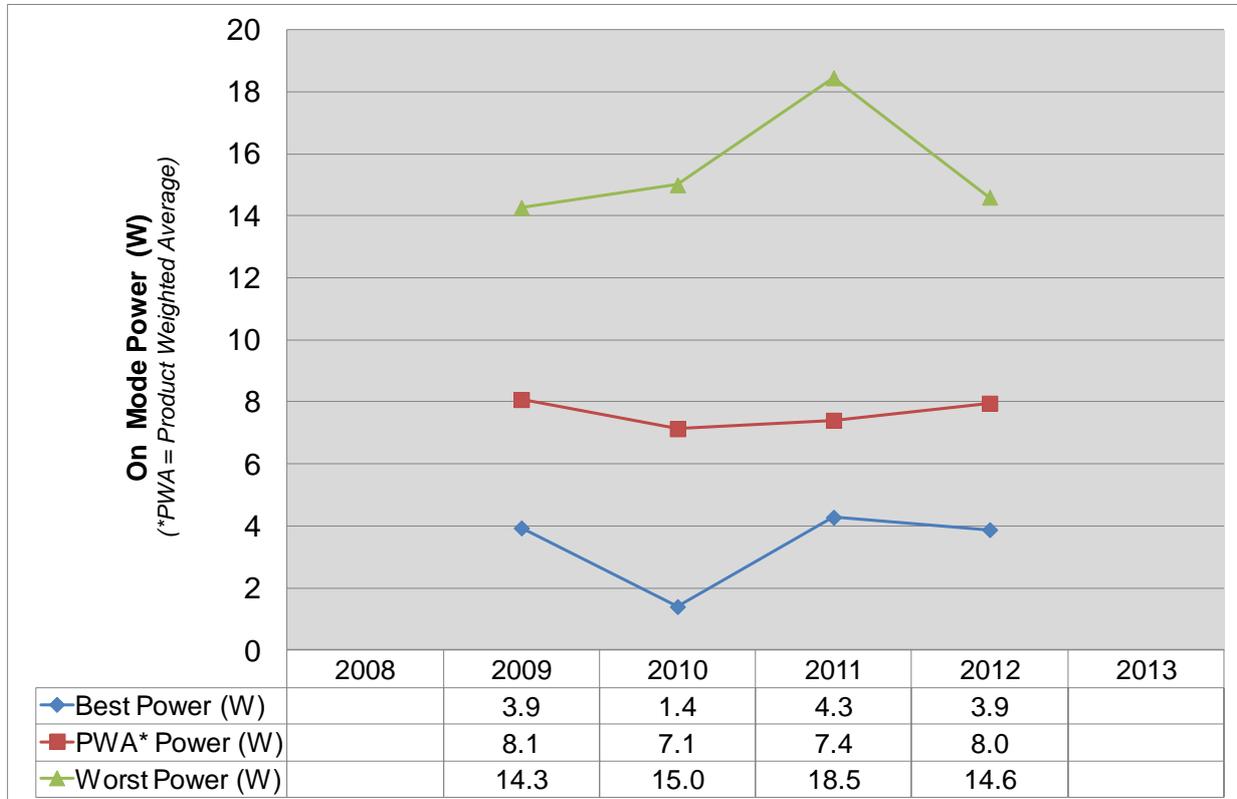
Key notes on Graph (see notes section 1)

- Typical Energy Consumption, in kWh per year, is calculated according to the Australian Code of Conduct methodology for TEC, but using only the power in *on* and *sleep* modes: 9 hours in on mode and 15 hours in sleep mode per day (same as the EU Voluntary Agreement TEC calculation, but different to that used in the USA that has 14 hours on and 10 in standby).
- The count of products in the datasets for each year for which TEC could be calculated varied from 123 in 2009 down to 20 in 2012.
- The Australian data is primarily from a government registration scheme database that addresses simple STBs. Data on a few complex (conditional access) STB products were available and added to the data set. Hence, around 90% of the products in this data set are of the simple STB type.





On mode power of Set Top Boxes in Australia



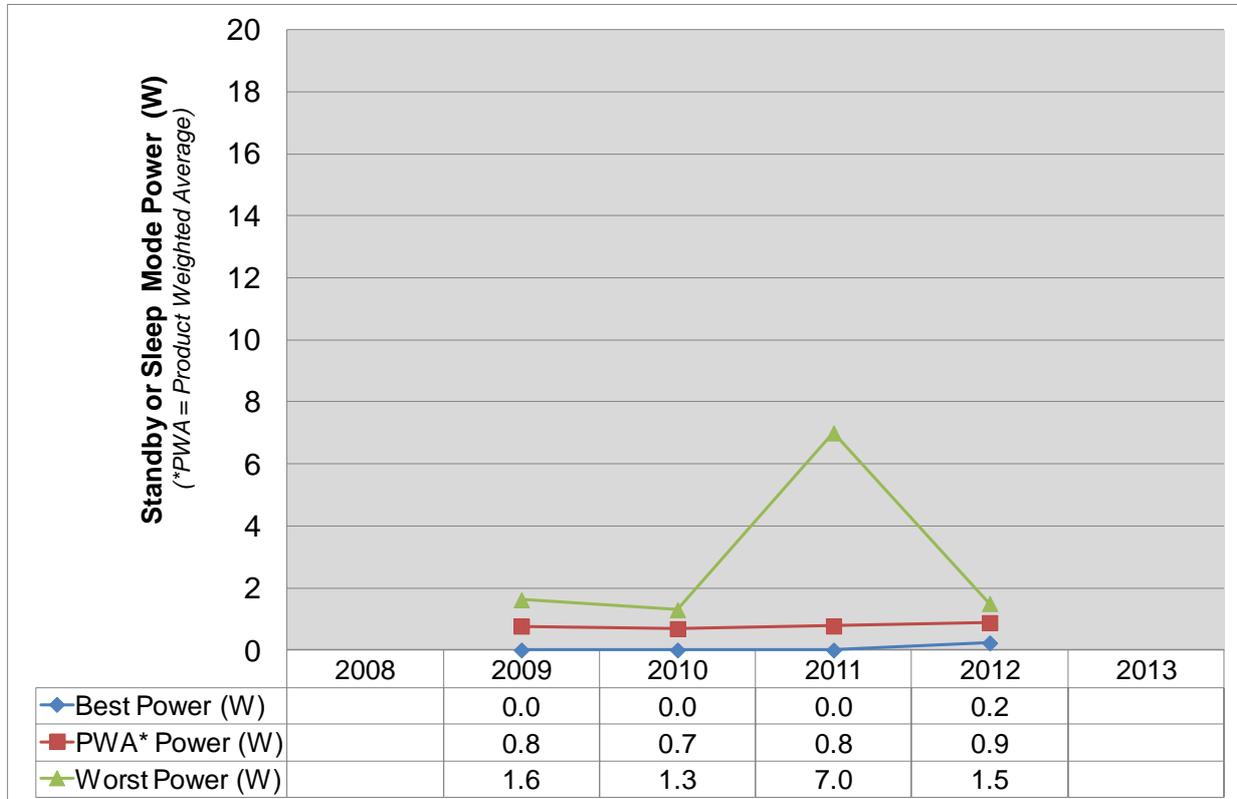
Key notes on Graph (see notes section 1)

- The graph shows the manufacturer's declared on mode power.
- The Australian data is primarily from a government registration scheme database that addresses simple STBs. Data on a few complex (conditional access) STB products were available and added to the data set. Hence, around 90% of the products in this data set are of the simple STB type.





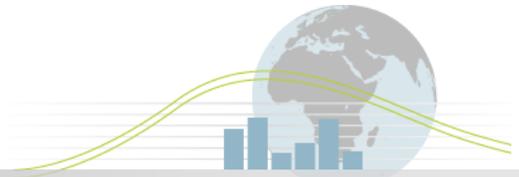
Standby (Sleep) mode power of Set Top Boxes in Australia



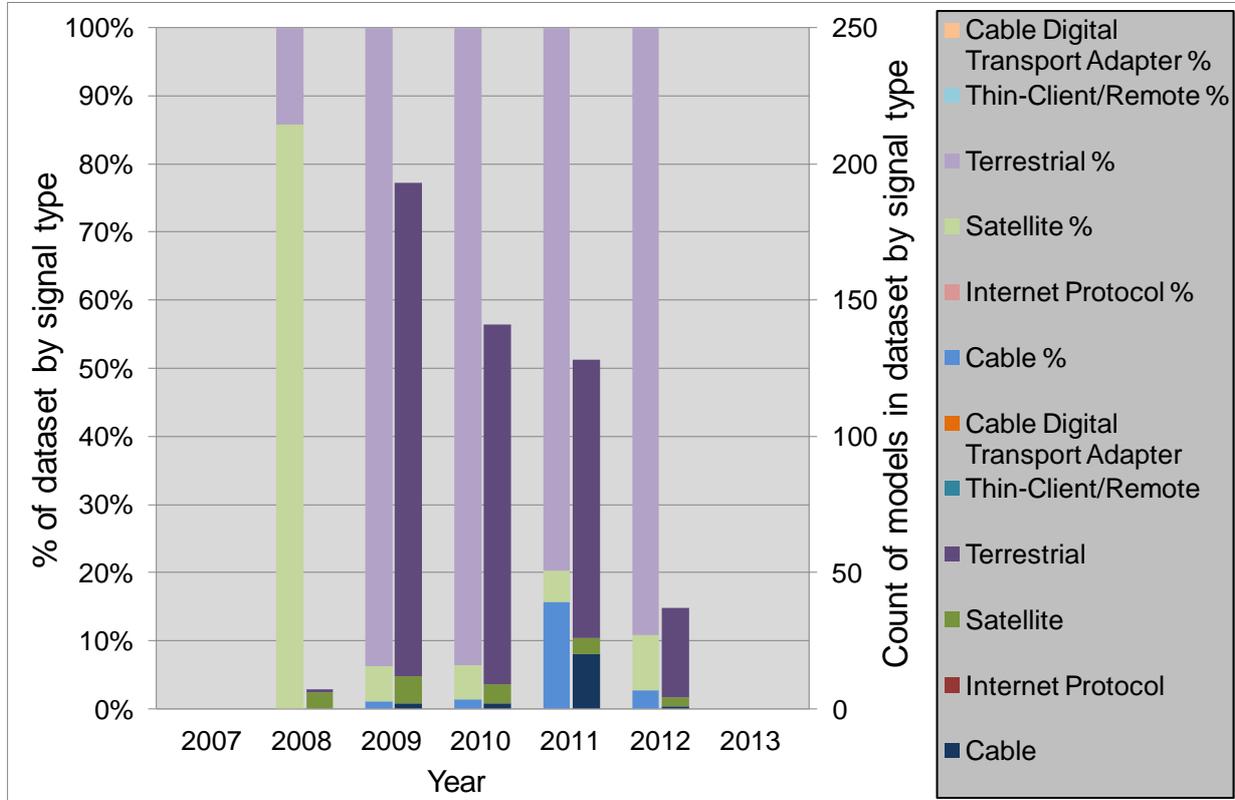
Key notes on Graph (see notes section 1)

- The graph shows the manufacturer's declared active standby power as collated in the Australian data set. *Active standby* is also referred to as *standby mode in some countries*, and as *sleep mode* in the USA. These three were assumed equivalent for this analysis.
- The Australian data is primarily from a government registration scheme database that addresses simple STBs. Data on only a few complex (conditional access) STB products were available and added to the data set; hence, around 90% of the products in this data set are of the simple STB type.





Share of set top box dataset by signal type in Australia



Key notes on Graph (see notes section 2)

- The graph shows the breakdown of the Australian set top box dataset by input signal type.
- Note that the data set does *not* include products subject to a voluntary code of conduct in Australia that covers some 2.5 million homes with satellite and cable type complex STBs.
- Results are shown in two formats: as a percentage of the count for that year (pale colours, left hand column of each pair) and as a count of individual products (darker colours, right hand column of each pair).
- The Australian dataset is dominated by terrestrial type products accounting for around 90% of the dataset in most years (with the exception of 2011).
- Around 90% of the products in this dataset are of the simple type since 2009 (complex STBs do not feature in the regulatory database which was the main source of this data).



Major Policy Interventions (see notes section 3)

Mandatory performance requirements

From 1st December 2008 in Australia, Set Top Boxes manufactured or imported for sale in Australia have been required to meet minimum energy performance requirements (MEPS)². The STB must not exceed the power limits specified in the standard AS/NZS 62087.2.1:2008. There are requirements for simple and for complex set-top boxes. Products are required to meet maximum power requirements for passive standby, active standby and for on mode. The maximum platform allowance (MPA) is dependent upon the type of STB and manufacturers may choose one of two options for requirements, with different combinations of passive and on mode maximum power. There are also certain additional features allowances (AFA) that may be added to the basic requirement but these may not exceed a stated maximum power limit for the platform.

Labelling requirements

There is no applicable energy labelling requirement, voluntary or mandatory.

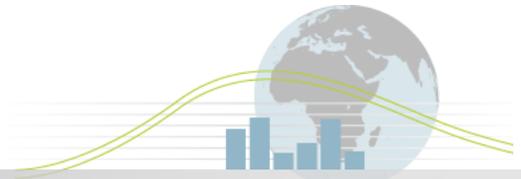
Voluntary performance requirements: Code of Conduct for subscription, i.e. complex, STBs

The Australian government and subscription television industry made a voluntary code³ for improving the energy efficiency of complex set top boxes in Australia. Tier 0 came into effect in December 2010; Tier 1 in January 2012 with a maximum annual energy allowance in kWh/year that varies depending on the type of set top box and its features. This is calculated based on a daily usage cycle that corresponds with that used in the EU code of conduct, being nine hours per day in on mode and 15 hours in standby mode. Further tiers come into effect in January 2014 and 2017.

² See <http://www.energyrating.gov.au/products-themes/home-entertainment/set-top-boxes/meps/>, and *Greenhouse and Energy Minimum Standards (Digital Television Set-top Boxes) Determination 2012*, 25 October 2012.

³ SUBSCRIPTION TELEVISION INDUSTRY, *Voluntary Code for Improving the Energy Efficiency of Conditional-Access Set Top Boxes: An industry initiative supported by government under the National Framework for Energy Efficiency*, Version 3 August 2012.





Cultural Issues (see notes section 4)

The Australian market is dominated by terrestrial broadcast type products with very few homes fitted with cable services. Digital switchover was completed in 2013 and around 35% of homes at 2013 used a subscription (pay TV) service involving a complex STB.



Notes Section 1. Typical Energy Consumption and Power Graphics

1.1 Test methodologies, Performance Standards and Labelling Requirements

1.1.1 Test Methodology

For MEPS, the STB must be measured in accordance with the test standard AS/NZS 62087.1:2008.

The Australian voluntary Code of Conduct includes its own definition of test methodology which is closely aligned with IEC 62087 Edition 3 and the technical requirements of the EU Voluntary Agreement. It adopts general conditions of test as in IEC 62301 *Household electrical appliances – Measurement of standby power*.

1.1.2 Performance Metrics

Typical Energy Consumption (TEC)

Typical Energy Consumption (TEC) provides a valuable way to present performance of a product in several modes in a single figure for comparison. This figure can also provide a reasonable indicator of annual consumption in the home (dependent of course on the accuracy of the assumed hours in each mode). TEC is calculated assuming a certain number of hours per day in each relevant mode of operation: the daily usage profile. This profile is defined in various ways in different regions and also according to the functionality available in the device.

For the purposes of the analysis in this mapping document for Australia, the approach described in the Australian Code of Conduct was adopted wherever the available data makes that calculation possible. This assumes 9 hours per day in on mode and 15 hours in standby active (which is identical to that used for the EU voluntary agreement). It also allows for APD which is 4 hours on and 19 hours in standby active.

Maximum Platform Allowance (MPA)

The mandatory performance requirements in Australia are defined in terms of a Maximum Platform Allowance (MPA) power level for active standby and on mode that is dependent on the type of STB and what MEPS option is chosen. The MPA is essentially the maximum power requirements for a basic STB, described in the standard. If a STB has features in addition to those shown in the standard, an additional features allowance (AFA) is added to the MPA, up to a maximum power limit (MPL) that must not be exceeded. The measured power consumption of the STB must not exceed the MPA + AFA (for applicable features);

and it must not exceed the MPL regardless of how many features are available in the STB. The formula to determine the applicable MEPS level for a particular STB is:

$$MPA + AFA < MPL$$

Two separate tables of MPA and MPL levels are provided, one regarding free to air STBs and the other regarding subscription TV STBs.

1.2 Product Classifications

The mandatory performance requirements define a maximum power level for the platform that all set top boxes placed on the market in Australia must meet.

The regulations also define a high efficiency performance level: products that meet this requirement are allowed to be designated as 'high efficiency' in their literature.

1.3 Data sources and limitations

The vast majority of data for this analysis was provided from the government registration database. To this was added data on a small number of complex STBs known to comply with the Code of Conduct.

There are no known issues of uncertainty associated with this data, other than how it reflects the whole market: It is considered to be highly representative of the free to air (simple) set-top box market in Australia but does not reflect the complex set-top box market to any significant extent.

1.4 Data manipulations and specific limitations

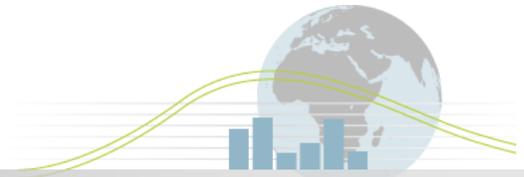
No normalisation adjustments were required for the power data in any mode; this was assumed to be directly comparable within and between regions without adjustment.

Figures for the total energy consumption (TEC) were calculated from the reported on mode and standby modes performance figures.

In order to avoid misleading averages from very weak data bins, only calculated averages for any one year based on seven or more products were used in the graphics and analysis. Years with six or less products were ignored.

Only the simple TEC using on mode and sleep mode were used, auto power down and other low power data were not used due to lack of similar data within this and all other datasets.

The data manipulation process introduced no additional limitations or uncertainties.



Notes Section 2. Signal type graphic

2.1 Data sources and limitations

Signal type is reported in the registration database. No manipulation of this information was required and so no additional uncertainties were introduced.





Notes Section 3. Major Policy Interventions

No additional notes.





Notes Section 4. Cultural Issues

No additional notes.

