

BNTV02: Televisions: developing an energy efficiency index

Version 1.0

This Briefing Note and referenced information is a public consultation document and will be used to inform Government decisions. The information and analysis form part of the Evidence Base created by Defra's Market Transformation Programme.

1 Summary

This Briefing Note sets out the approach taken by the Market Transformation Programme (MTP) in developing an energy efficiency index for televisions. It explains why this is being developed and outlines how energy efficiency targets for future years might be established. For further information, see the Market Transformation Programme website at: www.mtprog.com.

2 Background

Whilst a wattage power metric can be used to compare the average absolute energy consumption of typical televisions of each type (cathode ray tube, plasma display panel, and liquid crystal display based - see BNTV01: *Televisions: Future stock and energy trends*), it is difficult to use it to measure the relative efficiency of each screen (ie the watts consumed per unit of screen area).

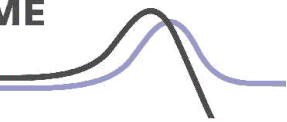
Specifying a W/cm^2 metric is an easy way of ensuring that stakeholders can compare the efficiency of televisions, regardless of display technology or size. It allows a single set of future performance targets covering all televisions to be presented, which makes interpretation, compliance and planning ahead far easier.

Using the alternative of wattage metric, a complex and possibly confusing system of individual criteria for each television technology and each common screen size would have to be established, or a single 'blanket' indicative target could be set which is unlikely to provide an incentive for certain technologies (which would comfortably meet the criteria).

3 Screen efficiency index

It is generally recognised that screen size is a relevant determinant that can be used to set a performance index which would allow the full market of televisions to be assessed.

Therefore, an index of screen size and energy performance has been developed for assessing televisions for certain product policies. This approach is supported in the proposed revision of the test standard for televisions (IEC: 62087).



To derive a measure for the 'on' power efficiency performance of televisions, the performance and size characteristics of 115 televisions (46 CRT, 48 LCD, 21 plasma) and two rear-projection televisions have been examined. These televisions have been tested using the (draft) revised procedure of the IEC: 62087 test standard. A linear trend of 'on' power against screen size has been plotted (see Figure 1).

The plot provides an 'on' power per square centimetre index - in effect, a model performance average energy efficiency measure - which can be used as a reference on which targets can be based.

3.1 Processing and interfacing power 'overhead'

Evidence emerging from product policy research activities, including the preparatory study for the EU Eco-Design of Energy using Products Directive and work through the Global Sustainable Product Network (GSPN)¹ to support the revision of the IEC: 62087 standard, suggests that televisions will have a processing and interfacing power 'overhead' which is independent of screen size. This overhead must be factored in to an energy efficiency index if a single index figure to cover all screen sizes is to be derived. Without inclusion of this allowance, compliance with the index would be overly challenging for smaller screens, in which the processing overhead forms a greater proportion of overall 'on' power. From analysis of existing evidence, a reference processing overhead allowance of 15 W (for 2006) has been adopted by MTP². This allowance is reduced in 2007 and subsequent years to provide a moving target for retailers and manufacturers.

To ensure that the index plot starts at the processing overhead, the intercept of the energy efficiency trend plot can be set to equal the processing overhead allowance. Figure 1 shows the resulting trend.

¹ The GSPN has been established as part of the International Task Force for Sustainable Products (www.itfsp.org). The issue of an efficiency index was discussed at a meeting of the GSPN in July 2007 hosted by the IEA. Readers may be interested in two papers which were presented at that meeting: www.iea.org/Textbase/work/2007/set-top/day1/Lane_MTP.pdf www.iea.org/Textbase/work/2007/set-top/day2/Horowitz_NRDC.pdf

² In co-operation with UK and international stakeholders, MTP is undertaking work to establish more evidence on this signal processing and interfacing overhead.

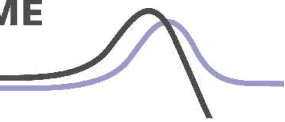


Figure 1 Reference energy efficiency trend for televisions

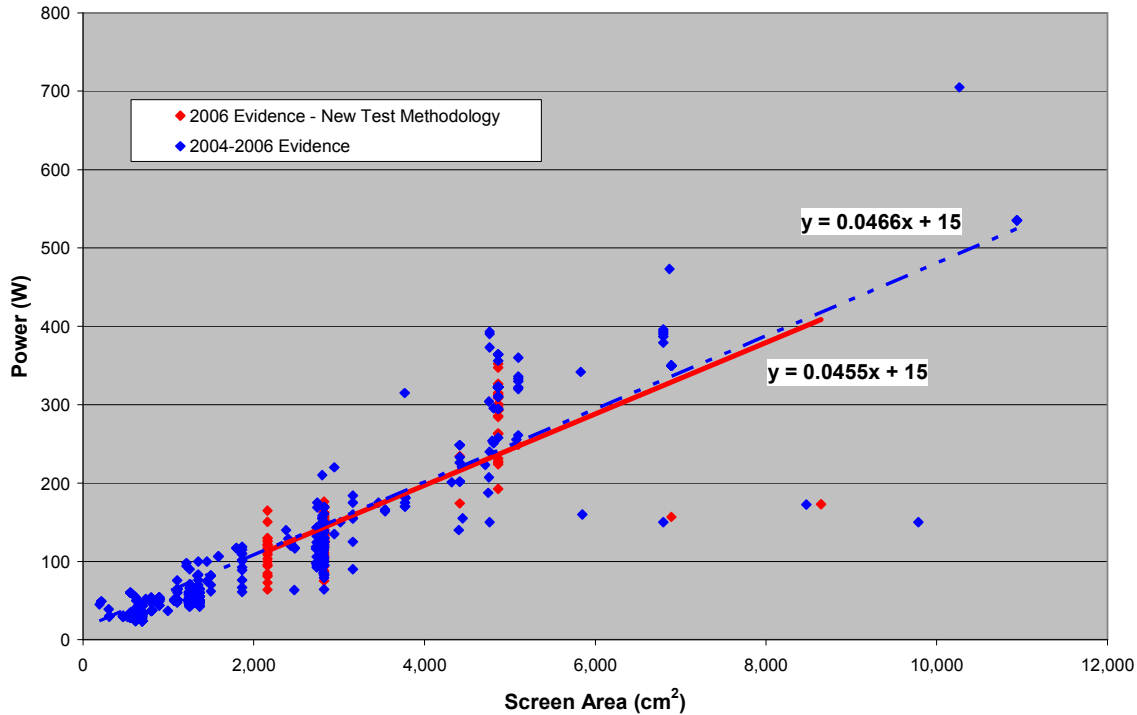


Figure 1 shows the results of two data sets: the 115 televisions tested using the new test procedure (2006 data), and a 2004-2006 data set for 635 televisions which is mainly comprised of manufacturers' claimed energy performance figures. The comparison is made to check that the trend derived for the new test data, which consisted of televisions of 28 inches and greater screen diagonals, can be applied across the wider screen size range. It can be seen that, as the trends share the same origin and the divergence at larger sizes is minimal, the difference at smaller sizes is negligible. Therefore, the index based on the data for televisions tested to the draft revised test standard has been adopted as the basis of the efficiency index.

4 Standards for future years

Targets for future performance are based on the policy goal that the performance of the average (sold) television will meet that of the best performing product on the market today by 2015. This assumption underpins the MTP 'P1' scenario model of television performance. The percentage 'saving' between the Reference and P1 scenarios is calculated, and both the energy efficiency index and processing/interfaces allowance (intercept) are reduced by an equal amount. This effectively translates the P1 scenario objectives into a challenging but achievable energy efficiency index, as illustrated in Figure 2.

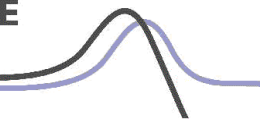
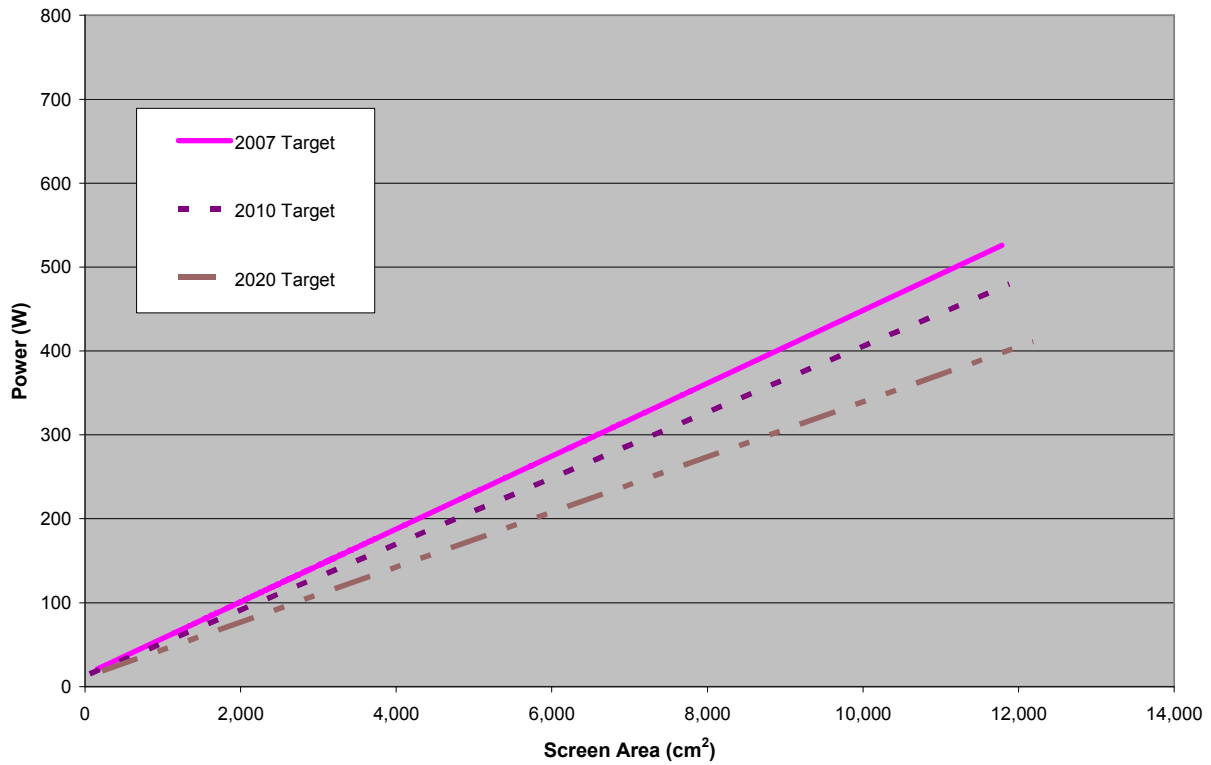


Figure 2 Change in energy efficiency index 2006-2020



Related MTP information

- [Sustainable Products Policy Brief on Consumer Electronics \(23 May 2007\)](#)
- [Briefing Note BNTV01: Televisions: Future stock and energy trends](#)

Consultation and further information

Stakeholders are encouraged to review this document and provide suggestions that may improve the quality of information provided, email info@mtprog.com quoting the document reference, or call the MTP enquiry line on +44 (0) 845 600 8951.

For further information on related issues visit www.mtprog.com