

BN-DICT MON04: Domestic Monitors Government Standards Evidence Base 2009: Best Available Technology Scenario

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 forms part of the Evidence Base created by Defra's Market Transformation Programme.

1 Introduction

The Best Available Technology (BAT) scenario is a hypothetical projection of what would happen if the best available technologies on the (current and future) market were bought or installed from now on.

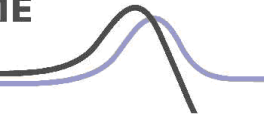
The best available technologies are defined as the most efficient, or lowest energy consuming technologies available on the market, or those which are close to market (where the development stage is completed, but it is not necessary available as a designed product).

- This Government Standard Briefing Note (GSBN) covers domestic monitors. The following definition of monitors is adapted from the EuP Preparatory study on PCs and monitors¹:
- A commercially-available, electronic product with a display screen and its associated electronics encased in a single housing that is capable of displaying output information from a computer via one or more inputs, such as VGA, DVI, and/or IEEE 1394.

¹ European Commission DG TREN Preparatory studies for Eco-design Requirements of EuPs (Contract TREN/D1/40-2005/LOT3/S07.56313) Lot 3 Personal Computers (desktops and laptops) and Computer Monitors Final Report (Task 1-8)

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- The monitor usually relies upon a liquid crystal display (LCD) or, less frequently, cathode-ray tube (CRT) or other display devices such as plasma.
- This definition is intended primarily to cover standard monitors designed for use with personal computers.
- The computer monitors included in this definition must have a viewable diagonal screen size greater than 9 inches and must be capable of being powered by a separate AC wall outlet, or a battery unit that is sold with an AC adapter.
- Computer monitors with a tuner/receiver may be covered as long as they are marketed and sold to consumers as computer monitors (i.e. focusing on computer monitor as the primary function) or as dual-function computer monitors and televisions. However, products with a tuner/receiver and computer capability that are marketed and sold as televisions are not included in the scope of this definition.

2 Scenario outputs

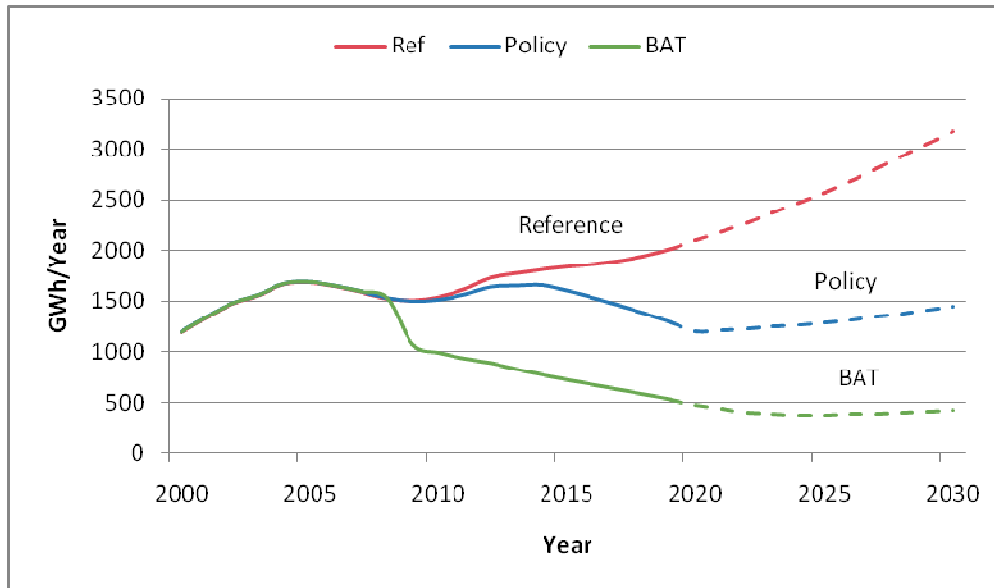
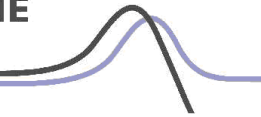


Figure 1 Total Domestic Monitor Energy Consumption

- Total domestic monitor energy consumption is expected to fall under the BAT scenario. This reduction in energy is almost entirely due to the reduced power consumption of monitors.
- Total CRT monitor energy consumption is expected to fall under the BAT scenario as a result of falling stock. All three scenarios follow the same line as CRT products are becoming obsolete.
- Total LCD monitor energy consumption is expected to fall under the BAT scenario. This reduction in energy is almost entirely due to the reduced power consumption of monitors.



- Total plasma monitor energy consumption is expected to fall under the BAT scenario as a result of falling stock.

Table 1 - Domestic Monitor Summary scenario outputs²

Energy Consumption (GWh)	2009	2020	2030
Plasma	10	0	0
CRT	140	0	0
LCD	920	480	420
TOTAL	1070	480	420
Energy Savings (GWh)			
Plasma	0	0	0
CRT	0	0	0
LCD	0	1630	2760
TOTAL	0	1630	2760
CO ₂ Emissions (MtCO ₂)			
Plasma	0.00	0.00	0.00
CRT	0.05	0.00	0.00
LCD	0.34	0.18	0.16
TOTAL	0.40	0.18	0.16
CO ₂ Emissions Savings (MtCO ₂)			
Plasma	0.00	0.00	0.00
CRT	0.02	0.00	0.00
LCD	0.15	0.61	1.04
TOTAL	0.16	0.61	1.04

3 Efficiency

3.1 Summary

- This section provides details of the efficiency inputs assumed (for new sales i.e. not stock average)
- The Reference Scenario GSBN provides a full description of the metrics used.

² Refer to BNXS01 Carbon Dioxide Emission Factors for UK Energy Use for details on factors used.

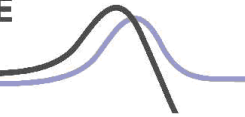


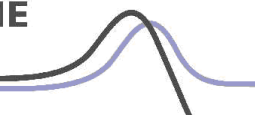
Table 2 - Monitor product power consumption

Year	CRT	LCD	Plasma
	On-Active (W)	On-Active (W)	On-Active (W)
2010	63.7	22.0	228.0
2020	19.0	6.5	145.9
2030	19.0	6.5	145.9

3.2 Data sources – efficiency

Table 3 CRT Monitor Efficiency data sources

Year	Reference	Reference date	Author	Justification	Confidence in sources (High/Low)
2009, 2013, 2015, 2030	Expert Assumptions	2009	MTP Technical Expert	Required expert assumptions to collate power (CRT Monitors)	Medium
2009, 2015, 2020, 2030	Expert Assumptions	2009	MTP Technical Expert	Required expert assumptions to collate power (LCD monitors)	Medium
2009	MTP Television policy briefing note BNCE TV03 (plasma TV details)	2009	Various	Best Data Available (Plasma monitors)	High
2009	Expert Assumption	2009	MTP Technical Expert	Required expert assumptions to reduce TV tuner add on (Plasma monitors)	Medium



3.3 Methodology & key assumptions – efficiency

- This section describes what has been done with the data listed in Table 3 along with a rationale for any key assumptions (in particular any expert judgements listed in Table 3) and detail of any background calculations behind the data points
- Methodology & key assumptions for historic data are included in BN-DICT02 – Reference Scenario.

3.3.1 Future analysis

Table 4 Extrapolation & background calculations – Monitor efficiency

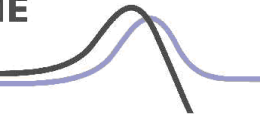
Year	Methodology & assumptions
2009	CRT and LCD monitors – best practice power figures for all are based on a top performing percentage of products found in all referenced datasets. The level at which this percentage figure is set varies depending on the range of product performance found in each dataset. It is typically set at between 10-20%. Class leading products are defined as the single most efficient product over all datasets (per product group).
2009	CRT and LCD monitor (all power modes) - uses best practice figure
2010-2012	CRT monitor (on-active mode) - based on a straight line interpolation between the 2009 and 2013 values
2013	CRT monitor (on-active mode) - moves from best practice level to class leader level by 2013
2014-2030	CRT monitor (on-active mode) - uses class leader value from 2013.
2010-2019	LCD monitor (on-active mode) - based on a straight line interpolation between the 2009 and 2020 values
2020	LCD monitor (on-active mode) – assumed class leader level is achieved in 2020
2021 - 2030	LCD monitor (on-active mode) - extrapolates same value from 2020 into future.
2010-2029	CRT and LCD monitors (sleep mode) - based on a straight line interpolation between the 2009 and 2030 values
2030	CRT and LCD monitors (sleep mode) - assumed class leader level is achieved in 2030
2010-2014	CRT and LCD monitor (off mode) - based on a straight line interpolation between the 2009 and 2015 values
2015	CRT and LCD monitor (off mode) - – assumed class leader level is achieved in 2015
2016-2030	CRT and LCD monitor (off mode) - extrapolates same value from 2020 into future
2009-2030	Plasma monitor – BAT line is taken from the MTP plasma television model with 50% of the TV tuner power removed in each year.

3.4 Data issues – efficiency

- This section flags any areas of uncertainty, both in general and for specific data points, along with a description of how this has been dealt with in the model

Table 5 Data issues – efficiency

Issue/risk	Approach taken/rationale
Product development in the ICT industry is rapid. The MTP future BAT line	MTP review the BAT line figures on an annual basis. This annual review will ensure that MTP BAT line



assumptions could change with a sudden uptake of an extremely efficient or inefficient product.	figures reflect current best practice and class leading products.
Much of the power data sourced for LCD monitors comes from products compliant to ENERGY STAR. There is a risk that the best practice figures could be too low in relation to the “true” market best practice level which results in future values also being too ambitious.	MTP has commissioned its own testing and power figures are included in the datasets. Inclusion of these figures helps to develop realistic best practice figures, which can be reviewed on an annual basis.
On-active power of monitors is heavily dependent on the size of monitor screen. Should average screen size increase more than has been expected then the MTP figures could become too stringent.	MTP can review changes in screen sizes of monitors and if necessary adapt figures on an annual basis.

3.5 Confidence level – efficiency

- This section provides an indication of overall confidence in the data set (i.e. data points, calculations, interpolation and projections).
- MTP utilises the current database of product information to estimate what could happen in future years to products’ energy efficiency. The fast moving nature of the ICT industry could result in these estimates needing to change considerably in future years.

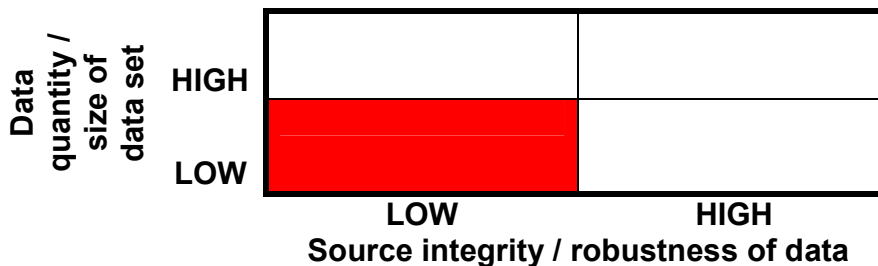
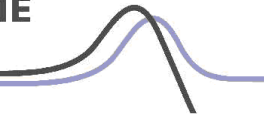


Figure 2 Confidence indicator for efficiency data

4 Usage

4.1 Summary

- Usage is the same as that assumed in the policy scenario, as 2020 is considered the soonest 100% power management can be achieved. See BN-DICT_MON03 for details.



5 Other issues

- None addressed.

Related MTP information

- BN-DICT MON01: Government Standards Evidence Base 2009 – Key Inputs, Domestic Monitors
- BN-DICT MON02: Government Standards Evidence Base 2009 – Reference Scenario, Domestic Monitors
- BN-DICT MON03: Government Standards Evidence Base 2009 – Policy Scenario, Domestic Monitors
- BN-NDICT MON01: Government Standards Evidence Base 2009 – Key Inputs, Non Domestic Monitors
- BN-NDICT MON02: Government Standards Evidence Base 2009 – Reference Scenario, Non Domestic Monitors
- BN-NDICT MON03: Government Standards Evidence Base 2009 – Policy Scenario, Non Domestic Monitors
- BN-NDICT MON04: Government Standards Evidence Base 2009 – Best Available Technology (BAT) Scenario, Non Domestic Monitors
- BN-DICT KO01: Government Standards Evidence Base 2009 – Key Outputs, Domestic ICT
- BN-NDICT KO01: Government Standards Evidence Base 2009 – Key Outputs, Non Domestic ICT
- Television Briefing notes published in the consumer electronics area, beginning “BNCE TV”.

Changes from previous version

- No changes. This is the first published version.

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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