

# **Comments from ECESB Technical Working Group on ENERGY STAR specification for Computers Draft 1**

## **Introduction**

The ENERGY STAR specification for computers version 4.0 draft 1 was discussed at a meeting in the ECESB Technical Working Group on 6 February 2006 at European Commission DG JRC, Ispra. The Working Group has been established under the ECESB (European Community Energy Star Board) and comprises technical experts from Member States and industry stakeholders.

This document reflects the comments provided and discussed at the meeting. Where relevant, major differences in views between Member States and the Commission services on one hand, and the industry stakeholders on the other hand are indicated in the following.

The comments will be submitted to the US EPA and will also be provided at a stakeholder meeting in Washington DC on 15 February 2006. Comments sent to the US EPA separately by the individual parties may differ from the ones presented below.

Participants in the meeting:

- Paolo Bertoldi, European Commission DG JRC
- Jan Viegand, Technical Consultant to the European Commission on the Energy Star programme
- Hans-Paul Siderius, SenterNovem, NL
- Bob Harrison, Market Transformation Programme, UK
- Catriona McAlister, Market Transformation Programme, UK
- Bernd Schäppi, EVA, A
- Milena Presutto, ENEA, I
- Roy Janssen, OCE
- Thomas Bazlen, HP
- Malcolm Hemming, Xerox
- Roy Reed, Sun

## **Summary of main comments**

- Thin clients should be included in the specification because they are often an energy-efficient alternative to desktop computers connected to the network.
- The off and the standby modes should be defined as two different modes, where the off mode does not have any functions at all, while the standby mode has functions as Wake-On-Lan, Wake-On-USB etc. Off mode power consumption should be 1 W maximum.
- The distinction between the basic and high performance desktops based on processor speed and types should be avoided due to the rapid development of processor architecture. The metrics of speed and type will not necessarily be relevant to functionality. Furthermore, high-end desktops could be wrongly categorised as worksta-

tions for conformance purposes, because the definition of workstation is not clear and open to inclusion of other type of computers. Therefore, only in the case these definitions could not be improved within the short timeframe these categories should only be valid for Tier I and the product registration details should be closely scrutinised.

- Desktop-derived servers should have the same power supply criteria as the desktop computers have, because they typically use the same type of ATX power supply.
- Integrated computers should not have higher power allowance for off, standby and sleep modes compared to desktop computers.
- Some definitions need to be more precise in order to avoid confusions and mistakes.

These comments and a number of other comments are detailed in the following.

## **Comments**

### General comment: Second hand products

A manufacturer raised the question of handling of labelling of second hand products. Some manufacturers take back used computers and sell them afterwards as second hand product. The labelling policy of second hand products should be clearly defined in the specification.

### General comment: References to US conditions

There are many references to the US and US conditions, but no references to the agreement with the European Commission and to specific EU conditions. Examples are:

- Line 91: Use of shipment data: Only EPA has been included instead of both the EPA and the European Commission.
- Line 105: The ENERGY STAR mark for buildings is not used in the EU
- Line 628: European organisations typically do not use wattmeters calibrated with a standard that is traceable to the U.S. National Bureau of Standards (NBS). A wording such as “... or the equivalent EU process ...” could be used here.

It is preferable to have the EU counterpart requirements and specific EU conditions mentioned in conjunction with those of the US EPA where relevant.

### Line 78: Updating product lists

Qualifying products and product data regarding the criteria and relevant features should be added by the manufacturers to the list of qualifying products as soon as possible after they are put onto the market. It is not sufficient to update the lists with new products annually if the lists are to properly reflect the current product market to customers and stakeholders. This is particularly important for the fast moving computer market where the product market availability is often less than one year.

However, if annual updating means the updating of a conforming products list then the frequency is acceptable with the proviso (above) that data is made available as soon as each product comes to market. A clear definition of the annual update should be provided.

The data on the lists and data provided when a conforming product comes to market should be public and should be available for the EU Energy Star database immediately after it is entered into the US Energy Star database.

#### Line 152: Words used in definitions and repeated definitions

Some definitions need to be more precise in order to avoid confusions and mistakes. Definitions should preferably not contain words like “often” and “typically”, since these make the definition ambiguous.

Definitions should only be provided one place in the document (under “Definitions”) and not in Annex B as well.

#### Line 170: Specification in a definition

A specification for a component should not be included in the definition of the components as is the case for external power supplies, but instead be included in the energy efficiency requirement.

#### Line 187 Definition of desktop computers

Processor speeds and types develop rapidly and reference to specific speeds and types should be avoided. For instance, Intel has already launched dual core processors (Core Duo) for notebooks. However, the Working Group accepts the current definitions as a preliminary solution if the definition is revised within one year. As part of the assessment for the revision, the number of computers placed in each category should be checked.

#### Line 217: Multi-user environment

Multi-user environment is also available with Windows XP. A main characteristic of servers is that they give a simultaneous multi-user environment, i.e. many users are connected to the server at the same time and using the server services.

The last part of the sentence “...access to the computer or accompanying storage or storage array is not required of the user.” is not clear and it should be revised.

#### Line 220: Operating system

As server-capable operating system, other newer systems could be included such as Windows Server 2003 and Mac OS X Server.

#### Line 225: Gateway

Gateway and switching services are normally provided through a separate switch, not through the server.

#### Line 263: Wireless for notebooks

The sentence “Notebooks typically include an integrated wireless device for access to local area networks and the internet.” is superfluous because it does not make the definition more precise. Notebooks typically also include network card, modem, infrared, bluetooth etc.

#### Line 267: Definition of workstations

The Member States of the Working Group is sceptical about the definition, i.e. the current definition could easily lead to ‘misuse’ by placing high-end desktops in the workstation category. Some of the performance criteria are not very clearly defined (“2 or more qualified Independent Software Vendor (ISV) products on the system” and (“Sold

into the HPTC (High Performance Technical Computing) market”) and these should be removed. Other criteria are also seen in high performance desktops and even notebooks (such as RAID and hardware 3D graphics).

The Working Group recommends that the workstation definition is revised and improved and if this is not possible in the short timeframe it shall be valid only for Tier I and product registration shall be closely scrutinised to ensure that desktops are not categorised as workstations for the purposes of compliance.

#### Line 294: Definitions of operational modes

The definition of the operational modes is not consistent throughout the document. There is a general problem with the Standby (Off Mode) definition (which is based on IEC62301): The lowest power consumption mode can mean off (no function), but also a standby mode in which one or more functions are still available, e.g. WOL is enabled. This leads to different power requirements. Off (no function) should be 1 W or less, but standby may need additional power for the functions enabled.

We suggest the inclusion of both an off mode and a standby mode. Wake on Lan, Wake on USB etc. will be possible in the standby mode but not in the off mode. Conforming products may have an off mode, or a standby mode, or both.

#### Line 346: Thin clients

In many offices, desktop computers work as networked computers connected to servers and could be substituted with efficient thin clients.

Regarding the impact on the server power requirement, there is considerable industry data. The consumption of the client itself without monitor is typically between 5 and 20 W. A typical server with a consumption of 200 to 300 W could at least serve 20 to 30 clients thus adding about 10 W per client. On-time for the servers is higher, but it may be possible to throttle down servers, when they are not used by the thin clients.

The consumption of a traditional net-connected desktop plus the share of the server will typically be much higher.

Thin clients will also give other operational benefits such as lower support costs.

Probably all thin clients will qualify and in principle it is not a problem not to include them in the specification. However, excluding them could be interpreted as if they are not a serious option for an office and we believe this sends a wrong signal.

Therefore, we think that thin clients including a definition of them should be included in the specification in line 154 and line 349.

If Energy Star decides to establish a specification for servers, it may advantageous to move the thin clients to this specification.

#### Line 323: Wake events

The transition could be both from the sleep mode and the standby mode.

#### Line 360: Standby/off values

We suggest to add an off mode (no function) level of 1 W maximum.

Regarding integrated computers we do not see any reason why the standby and off modes should have a higher power allowance than the desktop category. It was remarked that this is possibly a concession only relevant to CRT integrated monitors and should not apply to this revision.

#### Line 360: Sleep mode

Also here we do not see any reason to give a higher power allowance for integrated computers.

#### Line 360: Idle state

The idle state levels seem to correlate reasonably with the data provided.

For the integrated computer systems, the idle state level could be the sum of the desktop idle state and the allowed consumption for the display category in accordance with the Energy Star monitor specification.

We would however suggest that the levels should not only be based on historical consumption data but should include a consideration of imminent technological developments. New processors are constantly launched on the market, which may have an influence on the power consumption.

#### Line 360: Game consoles

We believe that the values should be close to the values for a basic performance desktop.

#### Line 360: Desktop-derived servers

The Working Group has considered if there is a need for this product group. The idle state level would probably be about the level for high performance desktops. It is however agreed that there is no need for the sleep mode.

The power supplies in desktop-derived servers typically have ATX power supplies and there should be no need to allow a relaxation in the efficiency at 20% and 100% of rated output compared to desktop computers.

#### Line 420: Sliding scale for sleep mode

If it is necessary to use a sliding scale for the sleep mode levels, it is more relevant to relate the consumption to the amount of RAM in the computer, because the power consumption needed is basically for keeping the RAM modules active for storing the content during sleep

#### Line 423: Power management requirements

Only the sleep mode should be mentioned in this section because the low power is not defined as an operational mode.

To avoid confusion, it is better to write "...activate the computer's sleep mode..." and not CPU, which could be understood as "processor".

One problem in complying with the sleep mode requirement is that networked computers with some types of open network files (such as Excel) cannot go into sleep mode. This should be further investigated. If proper sleep mode function could be achieved making a fast wake up possible, the default enabling time may be reduced to 15 minutes for the computer.

#### Line 428: User education requirement

The consumer information should be very specific regarding actions and impact for the specific consumer. It is a good idea to provide a common template as suggested.

The power consumption in idle, sleep and off should also be provided and preferably the annual consumption for a typical office and home user. Explanatory advice and recommendations should be provided on the various default power schemes in Windows, because these features are very poorly described in the Microsoft help function.

It should be considered if special information could be provided to company IT managers who often produce an image for the hard disk with default software, settings etc. to simplify the installation process of new computers. IT managers should be advised that the image should include enabled power management features.

At the same time, information on server based software for remote power management of the client computers on the network may be provided. EPA has described some of these software products on their web site:

[http://www.energystar.gov/index.cfm?c=power\\_mgt.pr\\_pm\\_step3](http://www.energystar.gov/index.cfm?c=power_mgt.pr_pm_step3)

The software can shut down networked computers after a period of inactivity. Other types of software can adjust the power management settings of the client PCs each time the user logs on. This may be a better solution for many companies because the power management will be centrally controlled and thus cannot be overridden by the users.

#### Line 467: Tier II requirements

A performance benchmark requirement should be further studied for a future Tier II. It is agreed that alternatively the idle state power allowances will automatically be reduced by January 1, 2008.

#### Line 478: Re-examine categorisation of products

In addition to re-examining the levels, the categorisation of products should also be re-examined to see if the definition of the categories needs to be adjusted.

#### Line 556: Measuring sleep mode power levels

Only the test conditions are included, not the test procedure, which therefore should be added.

#### Line 640: Terms and definitions in test procedure for idle state

Some terms and definitions in the text differ from the rest of the specification. E.g. use of "Laptop" and the definition of integrated computers. It is recommended to use the same terms and not repeat definitions.

#### Line 654: Definition of the unit under test

The test unit should be clearly defined as a computer as delivered with fully installed software.

#### Line 677: Definition of off mode

See our comments to line 294.

Line 694: ACPI states

The S-1 state is not relevant here because it is not referred to elsewhere in the document. It can give confusion because it is defined as “standby” which also is used for the standby/off mode.

Line 727, 730: Power-throttling and power management settings

It is recommended that the unit under test is set up as delivered, however, it need to be assured that settings have not been adjusted with the purpose of qualifying and of being registered with a low consumption.

Line 734: Measurement procedure

It is not indicated how the measurements of the notebook and integrated desktops without monitor enabled will be used. Data could be used as part of the analyses, however, for the final procedure, this part of the procedure is supposed to be excluded.

Line 738: Voltage level

Products for the European market should be tested at 230 V and 50 Hz.