

ENERGY STAR Computer Specification v. 6.0 – Comments on Draft 3 from the European Commission

We provide in the following comments from the European Commission to the draft 3 specification.

We note the EPA responses to our suggested changes to the specification as detailed in our previous comment document, dated 20 June 2012. In light of the draft 3 distribution, we have the following additional comments.

Please note – whilst our comments take into account the change to the ITI categorisation for desktops, the line numbers referenced are those from the last distributed full draft 3 specification, rather than the updated excerpt distributed subsequently by the EPA.

As a general comment, we would like to recommend to the US EPA to publish the final dataset with all the background analyses and the resulting qualification rates in order to be transparent for all partnering energy authorities, stakeholders and the general public how the energy requirements have been set. This should preferably be in one Excel file. The resulting qualification rates for each product group should be very easy to identify in this document because this is a main parameter for the specification development. The document should preferably be annexed to all the drafts published.

DEFINITIONS

Line 20 – Integrated Desktop Computer definition: The definition, as it stands, would not necessarily rule out smart TVs. Whilst the definition states that these are “typically designed to provide similar functionality as Desktop systems”, the functionalities listed in the desktop computer definition could apply to smart TV’s also. We suggest that the wording is tightened by adding the phrase:

”Products marketed as Smart TV’s, or similar, are not deemed to be integrated desktop computers for the purpose of this specification”

Line 35 – Tablet computer: The current draft states, “A Notebook Computer with a reversible touch-sensitive screen and an integrated physical keyboard.” There are products on the market which contain integrated physical keyboards that may be removed. We suggest that the US EPA consider whether tablet computers with detachable integrated keyboards would be classed as “Tablet computers” or later as “slate computers”. We would suggest the alternative wording of:

“A Notebook Computer with a reversible touch-sensitive screen and a permanently integrated physical keyboard.”

Or

“A Notebook Computer with a reversible touch-sensitive screen, shipped with an integrated physical keyboard.”

Line 38 – Slate definition: We support the decision to allow slates to qualify for the version 6.0 specification where they meet the draft 3 definitions and requirements. However, we suggest that manufacturers are asked to identify product data submitted as belonging to a slate (via online product submittal tool for example) to facilitate the development of slate requirements in version 6.1. Even if the intention is still to base requirements off the battery charger specification, it would be useful to have comparative data to support this.

Line 52: Mobile Thin Client definition: The definition for this product states, “A computer meeting the definition of a Thin Client”. The definition for Thin Client includes a requirement that the product is “designed for use in a permanent location (e.g. on a desk) and not for portability”. It is suggested that a small change to the “Mobile Thin Client” definition would remove this inconsistency. We suggest the definition is changed to:

”Mobile Thin Client: A computer meeting the definition of a Thin Client but designed specifically for portability, and also meeting the definition of a Notebook Computer. These products are considered to be Notebook Computers for the purposes of this specification”

Line 55 – Small scale server definition: We suggest the following changes to the definition of small-scale servers (in line with recent drafts of the EU ErP regulation for computers):

- Removal of reference to “minimal unscheduled downtime” as this reference is unnecessary.
- Change reference to “capable of operating in a simultaneous multi-user environment” to “primarily designed to operate in a simultaneous multi-user environment”
- Add the additional clarification that a small-scale server would not be “placed on the market with a discrete GPU meeting any classification other than G1.

Line 117 – GPU definition: Integrated graphics is defined as a graphics solution that “does not contain” a discrete graphics card. We suggest the following clarification, to make clear that if a product does not have a discrete graphics card, it would be considered to have integrated graphics:

”Integrated Graphics (iGfx): A graphics solution other than a Discrete Graphics Card.”

Line 155 – Operational Mode definitions: There are a range of new power modes coming to CPUs in the near future which could impact on the power modes described in the ENERGY STAR draft. These new power modes (S0ix active idle states) may result in the same power consumption as S3 sleep, but with much quicker wake up times to get back into full S0 state. S0i1 will be used during a typical idle mode. The inclusion of these modes in new architectures could dramatically reduce overall TEC if the systems are measured using S0i1. It is suggested that the use of these additional modes is tracked when manufacturers submit product data so that impacts on the ENERGY STAR specification can be monitored. The information can be used for future revisions of the specification.

Line 220 – Switchable Graphics definition: We suggest the following clarification in order to leave open the possibility for automatic graphics switching:

”Switchable Graphics: Functionality that allows both integrated and discrete graphics to be used at different times depending on the graphics rendering needs of the user or application”.

Line 222 – Note on Switchable Graphics: We suggest revising this to make it more accurately reflect all switchable graphics applications, as follows:

"This functionality allows one or more dGfx(s) to be powered down either manually and/or automatically when graphics rendering can be accomplished with an iGfx".

SCOPE

Line 256 – Handheld computers: There is some potential overlap here with "slate computers". Therefore we suggest that the wording be changed to:

"Handheld Computers (including eReaders but excluding slate computing devices)";

QUALIFICATION CRITERIA

Line 356 (tables 3 and 4) – Category Approach and base memory: There is now no base memory taken into account in either of the category approaches, so we suggest that all references to base memory are removed.

Line 394 – Desktops lacking a sleep mode: We have previously commented that even although some computers do not have a distinct sleep mode, they could still have a low power mode not exceeding 2 W for example, rather than 10 W. New CPUs supporting S0ix operating modes may result in a significant number of desktop PCs using less than 10 W in long idle.

It is also worth noting that it is likely that the ErP Ecodesign computer regulation is likely to include sleep limits, so for harmonisation purposes it may be worth considering these potential levels. It is recognized that the ErP Ecodesign computer regulation provides an exemption for desktop PCs using less than 10 W but it should be noted that this would be in short idle mode and not long idle as considered for the next ENERGY STAR specification. The draft text regarding sleep mode is as follows:

12 months after this Regulation has come into force

- 2.1. A product shall provide a sleep mode and/or another condition that provides the functionality of the sleep mode and which does not exceed the applicable power demand requirements for a sleep mode
- 2.2. Power demand in a sleep mode shall not exceed **5.00 W** in desktop computers and integrated desktop computers and **3.00 W** in notebook computers.
- 2.3. Desktop computers and integrated desktop computers where the idle state power demand is less than or equal to 10.00 W are not required to have a discrete system sleep mode.
- 2.4. Where a product is placed on the market with a WOL functionality enabled in a sleep mode:
 - (a) an additional allowance of 0.70 W can be applied;
 - (b) it must be tested with both a WOL functionality enabled and disabled and must comply with both requirements.
- 2.5. Where a product is placed on the market without Ethernet capability, it shall be tested without WOL enabled.

Line 398 – Switchable Graphics Adder: We support the stipulation that the adder cannot be applied to notebooks, and that products with switchable graphics may not apply the Discrete Graphics allowance. We sug-

gest that the text related to switchable graphics enabling is clarified to ensure that only products with switchable graphics enabled as default (rather than just with the capability to enable) qualify for the adder: *“for Desktop and Integrated Desktop systems providing Switchable Graphics and enabling it **as default** in ac mode, an allowance equal to 50% of the G1 graphics allowance for the platform type (Desktop or Integrated Desktop) may be applied.”*

Line 443 (tables 6, 7) – Mode Weightings In The TEC Formula: Could EPA please share their assumptions regarding future proxying levels in the market?

With increased proxying capability, market penetration to the specification could increase substantially. The following table shows the results of our analysis into market penetration levels with 100% compliance assumed to the various proxying levels (for the data collection subset within the data set provided to us by EPA for draft 3):

proxying level	market penetration	
	desktop	notebook
None	20%	22%
Base	30%	35%
Remote wake	37%	48%
Service discovery	48%	57%
Full capability	48%	74%

Increases in proxying seem particularly likely with forecast processor improvements, and therefore this could substantially impact the market penetration the ENERGY STAR specification far beyond the 25% target level.

Line 446 (tables 8, 9, 10) Base allowances and GPU adders: We note that the graphics adders and base TEC levels have been adjusted in response to stakeholder comments and analysis of 2011 and 2012 data, and support this in principle. We would very much appreciate the opportunity to comment further on the EPA approach to defining base allowances and GPU adders – could the EPA provide the full background data and analysis for the GPU adders?

Line 464 note vii – Subsequent TEC Graphics Adder: Multiple technical solutions are available on the market to power down any slave dGfx(s) installed in desktop or notebook computers. As such, we suggest the addition of a statement that any dGfx adders only apply once. The text could be drafted as follows:

*”vii **TECGRAPHICS Adder:** Applies for dGfx installed in the system in excess of the Category Base Graphics from Table 3 or Table 4, as appropriate to the product type. Applies only once, even if system has more than one dGfx installed”.*

Line 451 (table 10)– Other adders: We have the following comments on the other suggested adders:

Switchable graphics: We suggest that for consistency the switchable graphics adder is listed out in table 10.

Memory: We note that v5 allowances were 1 kWh Desktops, 0.4 kWh Notebooks – only on memory over base

And that v6 allowances are 0.8 kWh desktops and notebooks – on all memory present. Whilst we agree with the approach of harmonising the allowance for desktops and notebooks, there are some potential issues with this approach for notebooks, as illustrated in the example below:

Type	Old category	Memory present (GB)	v5 allowance (kWh)	v6 allowance (kWh)	increase v5 to v6 (kWh)	approx v6 base TEC (kWh)	% v6 base allowance
Desktop	D	8	4	6.4	2.4	135	5%
Desktop	D	16	12	12.8	0.8	135	9%
Desktop	D	32	28	25.6	-2.4	135	19%
Notebook	C	8	2.4	6.4	4	55	12%
Notebook	C	16	5.6	12.8	7.2	55	23%
Notebook	C	32	12	25.6	13.6	55	47%

The table above shows that the notebook memory allowance in v6 could be substantial – especially in future products with greater memory, where this adder could provide an additional allowance equivalent to around 50% of the base TEC. We suggest that the memory adder is revised to take account of the fact that there is now no base memory specified for products, and to ensure that memory allowances are not disproportionate.

Line 524: Requirements for Small Scale Servers: EPA has stated that it does not intend to change the small scale server requirements. However, our analysis (on interim data sets) shows that the following changes could be made to improve stringency without impacting pass rates (still allowing a 39 % pass rate to account for non-qualifying products not in the data set):

Alternative proposal	P _{OFF BASE} (W)	P _{OFF WOL} (W)	P _{IDLE BASE} (W)	P _{IDLE HDD} (W)
ALL SMALL SCALE SERVERS	0.5	0.4	15.0	6.0

Line 551: Requirements for Thin Clients: There are various aspects of the thin client requirements we would like to comment on:

- **WOL Adder:** We suggest the removal of the WOL adder, as this does not seem appropriate, nor consistent as thin clients are able to apply proxying use profiles,
- **Application:** The application of the thin client adders is not clear. It is not specified how the WOL adder should be applied – i.e. should it only be applied once where WOL is enabled as default for both sleep and off? It is the same for the graphics adder – it is not specified whether this should be applied only once or for each discrete GPU.
- **Display adder:** Thin clients may have an integrated display (although there are none in the data set) but there is no allowance for this in the TEC formula.
- **Market penetration:** It appears that the basic market penetration level for thin clients would be around 58 %¹. Accounting for proxying profiles would make this level even higher. We therefore suggest that the thin client requirements are re-defined so that a level closer in line with the 25% ambition can be proposed.

¹ There are no values in the data set for short idle for thin clients and many products don't have sleep measurements either. In order to analyse the data set, TEC was calculated equating these time periods to long idle power demand (off time x off W + sleep time x long idle W + short idle time x long idle W + long idle time x long idle W) as an approximation. It was assumed that the WOL allowance is only applied once and when enabled in both sleep and off, and that the graphics allowance is applied only once where a discrete GPU is present.

Comments on the draft 3 version 6.0 test method

We have no further comments on the draft test method.