



Comments on Energy Star program requirements for PCs – Version 5.0, Draft 2

Bernd Schächli and Thomas Bogner

Austrian Energy Agency

Overall we appreciate many of the revisions for PC requirements version 5.0. However we have some significant recommendations especially concerning the TEC proposal.

Definitions:

L257: It should be discussed if small servers (originally named desktop derived servers) are still kept under the program requirements for computers since now there would be the option to shift this product category to the computer server specifications.

One of the few justifications to keep it in the computer requirements could be that the category is explicitly focussed on small home servers (servers for data storage and access via small networks, home-networks up to 10 clients e.g. based on windows home server). However even in this case the category could also be introduced in the computer server specifications. A clear separation between products based on their function (clients vs. servers) may be more logical.

L301: There are different types of thin clients available today. Configuration can be quite different from slow processors and little RAM for typical office work places to faster processors with more RAM for more special applications. Some client models also do include a monitor. Corresponding with this different configurations also power demand varies between only a few watt (e.g. 4W) up to more than 20W in active mode.

Thus to address this product group properly a sub-categorisation may be necessary.

L346: The introduced link to ACPI states is appreciated and makes definitions clearer.

L376: The current TEC approach seems rather weak regarding the relevance for practical situations. The proposed time periods for the different modes seem questionable and it is

also not clear how the proposed TEC pattern should cover different usage patterns (e.g. home, office).

The babco-benchmark at least would have used 2 different usage patterns (standard office use and media rich application). In fact it would be even more appropriate to apply additional patterns for office and for domestic use. Furthermore there are applications with low computing demand and high computing demand both in the office and in the domestic environment actually finally requiring 4 different types of TECs. It should be easier and makes more sense to proceed with the OM approach for the moment.

Further comments on TEC are given below.

(Remark: we had big problems with testing the beta version of the babco benchmark on different types of hardware.)

Energy efficiency and power management criteria

L477: It is unclear why in the category of desktop appliances the criterion for sub-categorisation is only >3 cores per processor? Has this been based on significant data (can this be accessed somewhere?). The definition (minimum of 3 cores per discrete processor) implies that multiprocessor PCs are also considered. However multiprocessor systems would be lumped together in the same category with single processor systems? More explanation on that would be helpful.

L492: The categorisation for laptops in contrast to PCs does not distinguish sub-categories based on number of cores although there are also quad-core products available. Is there a reason for this? More explanation would be helpful.

L508: Proposed time periods for idle mode and other modes are surprising.

Compared to server and other equipment with permanent uptime PCs in typical office use often will only be operated for about 200 days per year which corresponds to 4800 h (20daysx10months excluding holidays, weekends etc.). In the typical case equipment should be off at night during working days reducing uptime to about 35% per working day. Consequently even if no sleep periods would be taken into account idle periods would be around 20% of the total of 8760h considered as a basis in the equation on page 11 of the document. Even if computers are sometimes not turned off at night percentages are unlikely to be greater than 25%. Usage in domestic environment will mostly be significantly lower. It is quite unclear why the presented values for operational mode weighting should reflect typical usage in office as well as domestic environment.

Nevertheless it may be that usage patterns may differ significantly between US and EU but also from country to country and a TEC also for that reason may not be representative. If the values taken from the references cited (LBL etc.) are based on broad assessments and thus are representative for the US it should be assumed that there may be significant differences between US and EU usage patterns.

Full network-connectivity and proxying should primarily help to shift some idle periods to sleep periods but will not be beneficial if off-times are reduced significantly.

Overall to date it is quite unclear what the advantage of the proposed "TEC-approximation"-approach really could be. Energy consumption in standard office usage (Word, email etc.) is mostly determined by idle consumption especially when off-mode consumption is limited to low levels like 1W.

The usage of sleep-options largely depends on the users and can be influenced by manufacturers only to limited degree.

The situation only gets more complex as computing intensive and media rich applications are concerned. In these cases also on active power becomes quite relevant. However active mode power due to a lack of benchmarks and testing procedures can not be addressed yet.

Overall we therefore strongly recommend to completely redesign the proposed criteria since the TEC approach as proposed at the moment it is not meaningful but produces potentially misleading information. In any case it would be necessary to check the representativeness of usage patterns on an international scale and to differentiate office and domestic usage patterns etc. We doubt very much that representative energy consumption data for various types of usage and environments can be produced by a single usage pattern!

For the moment we therefore strongly recommend to keep individual criteria for off-mode, sleep and idle consumption and to continue to work on on-active power for computing intensive and media-rich applications. A well developed TEC approach can be implemented at a later stage for high performance equipment as soon as on active mode can be covered by suitable benchmarks and test procedures.

L602: Thin Clients.

See comment under definitions. Configurations and consequently power demand is quite different. Thus there may be a need for sub-categorisation.