UK Market Transformation Programme (MTP) Technical Comments on Discussion Guide from US Environmental Protection Agency sent on 9 November 2007 regarding Energy Star Computer specification v4.0 Tier 2

Responses to questions raised in the discussion guide:

A. **What challenges does platform dependence introduce to the ENERGY STAR Computer programme?**
   - *Background:* Currently, the ECMA tool is being developed for Vista and Mac operating systems, with a plan to move to other operating systems (OSs) very quickly.
   - *MTP Comment:* As other operating systems would be unable to qualify as Energy Star initially because of the development status of the tool, an interim measure could be developed to qualify such devices on the basis of a revision of the Tier 1 values (idle, sleep, off/standby etc), therefore avoiding any bias in the market to a particular operating system. Such measures would also make it easier to include other products in the specification – for example thin client.

B. **How can performance under different EEPA workloads best be integrated in to ENERGY STAR?**
   MTP comments:
   1. Definitions will need to be very clear to ensure there is no scope for manufacturers to tailor which workload is use in order to achieve best results.
   2. A transparent process for development of workloads would result in the most robust specification. It is very unclear at the moment how the Bapco tool will work, and the standard ECMA presentation does not give sufficient detail of the tool to aid any greater understanding. Further detailed information on how the Bapco tool will work (and how stakeholders can input to this work) is required.
   3. Continued declaration by manufacturers of energy consumption in different power modes (and publication of this information) will facilitate member state understanding and reference to the Energy Star label.
   4. For the benchmark results to be meaningful, the workload profile will need to be realistic. KWh figures output from the benchmark tool should be representative of actual use.
   5. To ensure wide acceptance of the workload within the benchmarking tool, development of the workload would need to be transparent with clear stakeholder consultation at appropriate stages in the definition process.
   6. Ideally, basic versions of the benchmark would be available before testing begins in June, to give stakeholders the opportunity to respond regarding workloads etc.

C. **Do stakeholders believe that when paired with a calculated annual energy use value, an EEPA tool like EEcoMark will be a reasonable means of comparing the energy use of desktops? Notebooks?**
   MTP comments:
   This is a useful approach, but there are some issues with incorporating usage assumptions into metrics:

1. With the TEC approach for imaging equipment, print volumes, and therefore usage was very overestimated – this has been highlighted in industry feedback to the EuP study, although it was not clearly communicated clearly by industry at the time of imaging specification definition. There is a danger that over estimated use profiles could also be incorporated into a computer metric. This could result in misleading annual usage figures being provided to consumers.
2. An approach with a built in usage assumption can be difficult to interpret on a more technical level. The metric should be designed such that it is possible to work back from the kWh figure to understand time spent in each mode (preferably with also consumption in each mode), or that consumption in each mode is still collected.
3. There is a need for thorough consultation by EPA on any proposed usage profiles being incorporated to the benchmarking tool.

D. **Should the EEPA take into account different usage patterns for businesses compared to home users in arriving at a consensus usage scenario?**
   MTP comments:
   1. There is very little data available on usage patterns, therefore the EPA will likely need to take into account whatever usage patterns they can access. There are some studies done by TIAX/Roth but these are based on phone surveys. MTP has analysed data available on usage, and a briefing note providing background on this (including a reference to a logging study MTP undertook on domestic usage) can be accessed at:
   http://www.mtprog.com/ApprovedBriefingNotes/pdf.aspx?intBriefingNoteID=496
   2. As much data as possible should be collected and evaluated. However, it will be difficult to decide on ratios between domestic and non domestic usage profiles in order to arrive at a final usage profile (unless profiles are very similar, which is unlikely).

E. **Should the EEPA reflect typical usage patterns of computer users in all ENERGY STAR countries in arriving at a consensus usage scenario?**
   MTP comments:
   1. As mentioned previously, data is very limited. Whatever data can be accessed should be considered in an analysis of usage. It is unlikely that there will be sufficient data to make any distinctions between differing usage patterns in different countries.

F. **How does the proposed EEPA approach mesh with the Climate Savers Computing Initiative, which bases qualification largely on the efficiency of internal power supplies and motherboards?**
   MTP comments:
   1. Driving towards more efficient components through Energy Star, drives the market as a whole towards more efficient components, and therefore there are even wider benefits of Energy Star continuing to include requirements on power supply efficiency. MTP would support retention of power supply efficiency requirements in the tier 2 specification.
   2. Efforts should be made to harmonise with Climate Savers requirements.

G. What Sleep levels are appropriate for Desktop-Derived Servers covered in the Computers Specification?
MTP comments:
1. By nature of server operation, it could be questioned if sleep is relevant to desktop derived servers.
2. Considering the very low registration rates of desktop-derived servers (none currently listed on the EU database[1]), the worth of including desktop derived servers in this specification is questionable. These products may be better catered to in the Energy Star specification for servers, currently under development.
3. If moving desktop derived servers to the server specification, definitions would need to be strengthened.

H. Should EPA use the same approach used in Tier 1 for Workstations or should they be handled differently?
MTP comments:
1. There is only one workstation listed on the EU Energy Star website[2], which suggests that either workstations are not relevant to this specification, or that a different approach is required to encourage manufacturers to register their products – perhaps with revised criteria?

I. Should Game Consoles be covered under the Tier 2 Computer Specification or treated in a separate specification altogether? What test methods are applicable/available for this product category?
MTP comments:
1. Games consoles have different architecture and operation to standard PC platforms. Modal definitions would be very different. UK feedback from a games console manufacturer has suggested that the current specification and test methods could simply not be applied to games consoles because of these differences, and there are no games consoles currently registered on the EU database[3].
2. It has been suggested in EU and US webinar meetings that these could be better addressed in a separate specification, developed working closely with the manufacturers. MTP would support retention of games consoles in this specification as long as the modal definitions, consumption criteria and test methods could be made fully applicable to games consoles without implementing the coherence of the overall specification.
3. If necessary, EPA could develop a separate games consoles specification[4], as there are considerable improvements in energy consumption to be made in this area (reference MTP testing results). It would be important to monitor the area for convergence, at which point there may be opportunities to combine both specifications once again.

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[1] www.eu-energy star.org/en/en_database.htm as at 13/12/2007
[2] www.eu-energy star.org/en/en_database.htm as at 13/12/2007
[3] www.eu-energy star.org/en/en_database.htm as at 13/12/2007
[4] Note; if games consoles are included in a separate specification it is unlikely they will be covered under the EU-US agreement, so the specification would only apply in the States.

J. Should Thin Clients be evaluated alongside other computer categories in the ENERGY STAR Computer Specification? What research is available on energy consumption of thin clients and their impact on overall data centre energy use?

MTP comments:

1. It would be worth including thin clients in the specification. This approach would be most useful if criteria could be defined which would enable their energy consumption to be compared with PCs. There could be some complex considerations to take into account to make this possible, and there may need to be some collaboration with work on the server specification:
   o How to take into account additional server usage?
   o How could a benchmark be developed that could be applied to both thin client and PC (operating system issue with thin client)
   o Would a screen also be considered?
   o Is there sufficient spread in the thin client market for energy star to make a difference by highlighting the best performing / most efficient 25%?
2. Claimed savings related to thin clients would need to be carefully evaluated, with clear definitions to show differences between thin client and PCs. Recent MTP modelling suggested that when increased server usage was taken into account, laptops performed better than thin clients.

K. Are there additional products that should be considered for inclusion in this Tier 2 specification?

MTP comments:

1. It has been suggested that kiosks could be a potential consideration. From monitor and computer specification webinars, it sounds like a separate specification for "professional information provision" (kiosks and displays) or something similar would better address this type of product (crossing both specification areas).
2. It is likely that there is a reasonable saving potential considering that many of these devices are in an active mode for at least 12 hours per day.
3. If a separate specification were to be developed, it would be likely to be out of scope of the EC agreement.

L. Will an EEPA approach lessen the dependence on categorisation of systems as was done for Idle State requirements in Tier 1?

MTP comments:

1. It sounds like some categorisation will still be required – i.e. some means of identifying which benchmark workload should be used.
2. The EEPA approach can only be used on PC products with certain operating systems. Therefore with this approach it becomes less easy to compare different categories of computer i.e. PC and thin client.

M. Are the Tier 1 component- level requirement for internal/external power supplies appropriate when used in conjunction with an EEPA tool such as EEcoMark? Alternatively if they are appropriate, should component level requirements for internal/external power supplies be made more stringent?

MTP comments:

1. Driving towards more efficient components through Energy Star, drives the market as a whole towards more efficient components[5], and therefore there are even wider benefits of Energy Star continuing to include requirements on power supply efficiency. MTP would support retention of power supply efficiency requirements in the tier 2 specification.

2. If efficiency requirements are to be retained, it will be important to be clear on which specification they refer to. Specifications should be harmonised for clarity and consistency. Therefore, the computer specification should reference the "latest" Energy Star external power supply specification.

N. ENERGY STAR's existing Tier 1 framework requires measurement of desktop computers and workstations with keyboard and mouse attached. Consistent with these measures to create a realistic testing situation, should any commonly used peripherals be included in Tier2 test procedures to accurately reflect real-world usage (i.e. keyboards, mice, USB peripherals, docking stations)?

MTP comments:

1. It would be useful to address the energy consumption of docking stations as entities within the specification, rather than including these in the test procedure for laptops.

O. What new energy-savings technologies becoming prevalent on the market are worth special consideration in Tier 2?

No comments.

P. Are any allowances for additional management tools that aid in the adoption of computer power management (such as service processors in Sleep and Standby) worth consideration?

MTP comments:

1. The highest priority is that power management works and is usable. Additional consumption requirements could be taken into account once it is proven that any additional tools achieve a significant improvement.

2. There is an opporunity for a test of power management capability to be built into the benchmarking tool. A large advantage could be applied in the Bapco results for good power management. This could provide a real incentive to manufacturers to ensure power management is shipped enabled and functions well.

Q. How should the Tier 1 network provisions (reduction of the speed of active Ethernet in Sleep and Wake-On-LAN) be evaluated under the EEPA approach?

MTP comments:

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[5] Increasing demand for more efficient components, to make these components more affordable.

1. Such requirements could either be retained in the new specification, or included as a requirement within the benchmarking evaluation itself (discussed above).
2. Standby requirements should also be retained for international harmonisation purposes, and on-idle, sleep and standby consumption should continue to be measured and declared to ensure clarity of information on energy consumption and for cross checking purposes.

R. **Should EPA investigate power levels for notebooks and integrated computers that incorporate the energy use of the displays?**
MTP comments:
1. The best way to address this is to collect test data initially with the displays both on and off, and then to analyse the impact the screen has overall on the benchmark results.
2. Fairness of incorporating display for laptops, whilst desktops are considered in isolation from their display could be questioned, but the provision of the two figures could provide addition information to inform purchasers and policy makers, as it would be more representative of what the laptop is likely to consume.

S. **What data collection is necessary to support the EEPA tool development? To support meaningful ENERGY STAR requirement levels?**
MTP comments:
1. Usage is clearly very important, but very difficult to collect data on – see previous comments

T. **When a final list of qualifying Tier 2 computers is eventually posted to the ENERGY STAR website, the programme intends to post annual energy consumption figures and performance information to better inform consumers. Posting of this information is also being proposed for televisions. EPA invites feedback on this plan.**
MTP comments:
1. See comments under Q and B – Retention of per mode consumption values in reporting would aid accountability of the label and member state analysis / use.

Additional MTP comments:

Mode specific requirements:
1. Are there any standby requirements proposed within tier 2 for PCs, separate to the benchmarking requirement? This would ensure harmonisation with European discussions on standby.