

## Hewlett-Packard Co. Input - EPA's PC Tier 2 Discussion Guide

Updated: 12/20/07

<b>Energy Efficiency Performance Assessment (EEPA) Approach</b>	
<b>Discussion Question</b>	<b>Enter Name &amp; HP Internal Comments</b>
<p>A. What challenges does platform dependence introduce to the ENERGY STAR Computer program?</p>	<p>During the December 6<sup>th</sup> meeting it was clarified that this question pertains mainly to Operating Systems. HP would like to see an EEPA tool that operates / tests uniformly independent of different types of Operating Systems ("OS agnostic").</p> <p>Given the highly configurable nature of most manufacturers' PCs, HP would also like to see development of an EEPA tool that does not result in having to test each possible configuration (SKU and Configure To Order (CTO) within a PC family to assure compliance.</p> <p>HP would like to see a solution developed that eliminates the need for redundant testing by manufacturers when customers require manufacturers to install the customer's software image on PC configurations that have previously been verified as being ENERGY STAR compliant. I.e. Verified as being ENERGY STAR compliant prior to installation of customer's custom software images.</p>
<p>B. How can performance under different EEPA workloads best be integrated into ENERGY STAR?</p>	<p>Perhaps create a product categorization methodology similar to the category requirements implemented in Tier1. E.g. Cat. A, B, C for DT PCs. We do not believe that a "one size fits all" EEEP assessment approach would be feasible given the different types of products and market segments involved.</p>
<p>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?</p> <p>Notebooks?</p>	<p>We understand that the current thinking is that the EEPA tool will involve two workloads – "Office Productivity" and a consumer workload characterized as "Media Rich".</p> <p>If EEcoMark is used, the "workload" (customer use pattern) needs to be representative of the use model (home usage vs. business usage vs. servers vs. workstations). There are a couple aspects of the usage model to consider: One is the number of hours in each state (sleep, active, idle, etc.) and the second is the usage model under the active condition. Active usage models vary between different desktop configurations such as business, consumer, workstations, etc.</p>
<p>D. Should the EEPA take into account different usage patterns for businesses compared to home users in arriving at a consensus usage scenario?</p>	<p>Yes, we believe that the customer the usage patterns will be significantly different among markets / user types. Continue using similar models as today in terms of active, idle, sleep, off hours. The second integrated model is the activity occurring during active usage (See question C).</p>

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<p>E. Should the EEPA reflect typical usage patterns of computer users in all ENERGY STAR countries in arriving at a consensus usage scenario?</p>	<p>HP supports developing typical customer use patterns that are used for product testing and that are harmonized / appropriate for use worldwide.</p> <p>We are not convinced that a “one size fits all” customer use pattern would make sense. Ideally, we would like to see development of one or two “typical use patterns” for the purpose of testing in order to minimize testing costs and yield data that are comparable. For example one use pattern for Commercial users and another for Consumer users. Another thing to consider is the potential for different use patterns for each product category (Workstation, Desktop PC, Notebook, etc.).</p> <p>Coordination with other regions will be essential to insure acceptance of the ENERGY STAR program and acceptance and comparability of energy efficiency data will be very important.</p>
<p>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?</p>	<p>We believe that there is divergence / lack of harmonization between the ENERGY STAR and Climate Savers Computing Initiative (CSCI) programs. CSCI is focusing on component level efficiency (internal power supplies and motherboards) as opposed to “system unit” performance. As discussed in question M below, we do not support continued emphasis on component level specifications in addition to “system unit” efficiency specifications.</p> <p>Lack of harmonization is problematic from a product design standpoint. HP would like to see the EPA and CSCI come together to harmonize energy efficiency requirements (specifications and implementation roadmaps) <u>at the system unit level</u> and also attempt to harmonize with other similar voluntary and regulatory programs in EU and AP.</p>
<p>G. What Sleep levels are appropriate for Desktop-Derived Servers covered in the Computers Specification?</p>	<p>S3 or S0 in idle or ‘away mode’ would be appropriate.</p>

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<p>H. Should EPA use the same approach used in Tier 1 for Workstations or should they be handled differently?</p>	<p>Based on HP's experience with the TEC metric for Workstations, there are both some positive and negative aspects of this approach.</p> <table border="1" data-bbox="706 260 1533 982"> <thead> <tr> <th data-bbox="706 260 1122 310">Good</th> <th data-bbox="1122 260 1533 310">Bad</th> </tr> </thead> <tbody> <tr> <td data-bbox="706 310 1122 520">Entry level Workstation platforms can pass Desktop Category B and C and indeed consume less power</td> <td data-bbox="1122 310 1533 520">Middle range of Workstation configurations (single processor in a dual socket box) do not qualify for ENERGY STAR even though they consume less power than a high end configuration that does qualify for ENERGY STAR</td> </tr> <tr> <td data-bbox="706 520 1122 646">High end Workstation platforms idle at lower power due to real improvements in software, bios and hardware changes</td> <td data-bbox="1122 520 1533 646">A manufacturer is not rewarded because they can't place an ENERGY STAR label on the full range of products</td> </tr> <tr> <td data-bbox="706 646 1122 709">Raised awareness of energy saving</td> <td data-bbox="1122 646 1533 709">Customers are not buying ENERGY STAR labeled systems.</td> </tr> <tr> <td data-bbox="706 709 1122 863">Introduced 80% efficient power supplies to the world with measurable energy savings. Customers like it and are motivated to save energy.</td> <td data-bbox="1122 709 1533 863">Creating a "summing" configurator from TEC as a percentage of a measured max power is impossible.</td> </tr> <tr> <td data-bbox="706 863 1122 982">Not including a separate off spec for Workstations and instead making it part of TEC is much preferred.</td> <td data-bbox="1122 863 1533 982"></td> </tr> </tbody> </table> <p style="text-align: center;"><b>Suggestions</b></p> <ul style="list-style-type: none"> <li>Develop a more realistic use model used in TEC calculation</li> <li>Do not separate off mode limit from TEC</li> <li>Create a performance or "mileage rating" metric like theoretical operations/watt.</li> <li>Establish max power different than using the SPECviewperf benchmark. The simplest method is to specify a % of the rated power supply output. Manufacturers are not motivated to over size a power supply because it costs more and it pushes the idle range below 20% load where the efficiency is really poor for customers who really care about energy savings. If this approach is not acceptable, then we recommend the development of a better maximum power benchmark that truly stresses the system.</li> <li>We would like the assessment tool to include or consider graphics capability and want to participate in development of Workstation energy efficiency measurement tools.</li> <li>Whatever happens, a configuration that actually consumes less power, should be rewarded with the ENERGY STAR label.</li> <li>HP would like to participate in the development of the benchmark test model development to insure that it properly measures energy efficiency of workstations.</li> </ul>	Good	Bad	Entry level Workstation platforms can pass Desktop Category B and C and indeed consume less power	Middle range of Workstation configurations (single processor in a dual socket box) do not qualify for ENERGY STAR even though they consume less power than a high end configuration that does qualify for ENERGY STAR	High end Workstation platforms idle at lower power due to real improvements in software, bios and hardware changes	A manufacturer is not rewarded because they can't place an ENERGY STAR label on the full range of products	Raised awareness of energy saving	Customers are not buying ENERGY STAR labeled systems.	Introduced 80% efficient power supplies to the world with measurable energy savings. Customers like it and are motivated to save energy.	Creating a "summing" configurator from TEC as a percentage of a measured max power is impossible.	Not including a separate off spec for Workstations and instead making it part of TEC is much preferred.	
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<p>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?</p>	<p>We assume this refers to Wii, xBOX, Playstation type devices. If our assumption is correct, these types of products should be addressed in a separate specification.</p>												

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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 center energy use?	If Thin Clients are included in this spec., they should not be included in either the desktop PC, Notebook PC, or Server categories.
K. Are there additional products that should be considered for inclusion in this Tier 2 Specification?	No
<b>Program Scope and Requirement Categories</b>	
L. Will an EEPA approach lessen the dependence on categorization of systems, as was done for Idle State requirements in Tier 1?	No, we believe that there will still need to include different product categories from a specification standpoint. One concern we have is that feature rich PCs containing tuners, audio cards, raid cards, multi hard drive(raid/non-raid), graphics will draw power, but might not be “exercised” by the software test suite and score too low to qualify for the ENERGY STAR. For Configure To Order (CTO) products, we need a simple method for testing and qualifying for the ENERGY STAR.
<b>Power Supplies and Components</b>	
M. Are the Tier 1 component-level requirements 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?	<p>We do not support specifying component level and or technology requirements (including specs. for internal and external power supplies, motherboards, different display technologies (LEDs, etc.)) in the ENERGY STAR PC standard. We prefer to see the EPA focus solely on defining specifications for the “System Unit” level energy efficiency.</p> <p>With the current PC 4.0 Tier 1 specifications, we have many models that meet the ENERGY STAR “system unit” efficiency specifications (particularly Consumer DT PCs) but that do not qualify for the ENERGY STAR due to the power supplies not meeting efficiency specifications.</p> <p>If power supply efficiency requirements will remain in place Tier 2, then we would prefer to see them remain unchanged from the current specification levels for DT PC power supplies. If more stringent internal power supply limits are inevitable, we would not want to see the efficiency limits exceed:  82% at 20% load  85% at 50% load  82% at 100% load</p> <p>Another approach to consider would be to provide an “adder” to the system unit efficiency specifications for X% efficient power supplies, (similar to the adder for WOL capability) if retaining power supply efficiency specifications is inevitable.</p> <p>For Notebook PC power supplies, we do support the proposed efficiency limits being proposed for the new ver. 2.0 spec. but do not support the proposal that PFC.</p> <p>Additionally, we request that the EPA issue a memorandum as soon as possible clarifying that PCs using EPSs will still be able to qualify for the ENERGY STAR under the existing ver. 1.1 EPS specs. until the new PC Tier 2 specifications come into effect July 1, 2009. Under the current ENERGY STAR PC spec. ver. 4.0 Tier 1, PCs using EPSs must comply with the EPS specifications in effect at the time a product (PC) is manufactured. We interpret this to include both the ENERGY STAR 4.0 Tier 1 specification and the EPS specifications.</p>

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<p>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 Tier 2 test procedures to accurately reflect real-world <i>usage</i> (i.e. <i>keyboards, mice, USB peripherals, docking stations</i>)?</p>	<p>We do not support adding additional peripherals beyond those that are currently required in the Tier 1 spec. The fact that PCs are highly configurable complicates the existing testing protocol and specification scheme. Adding additional devices such as USB peripherals, docking stations, etc. will further complicate the testing and specification development processes.</p> <p>For desktop PCs the only peripherals the PC should be connected to include a keyboard, mouse, and external display.</p> <p>We recommend that peripheral devices like speakers, hubs, printers, etc. be excluded from the PC testing requirements but allow these types of devices to be shipped with ENERGY STAR compliant and labeled PCs.</p> <p><u>Note:</u> IR receivers are required by Microsoft so this function should be included in Category C products configuration description if this class is carried forward.</p>
<p>O. What new energy-saving technologies becoming prevalent on the market are worth special consideration in Tier 2</p>	<p>As noted in our input to discussion question M, we do not support attempting to specify unique or specific technologies or software operating systems or applications in the ENERGY STAR specifications.</p> <p>The ENERGY STAR specifications should focus on energy efficiency and functionality of the product (system unit) as a whole.</p>
<p><b>Power Management and Network Requirements</b></p>	
<p>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?</p>	<p>As we understand the discussion on December 6<sup>th</sup>, this question involves whether or not allowances in the specifications should be considered associated with additional power management tools such as for example, the capability for one PC to access media content on another PC. This is something we are interested in hearing more about. The discussion should include assessing whether or not the capability would be required to work in a wireless environment.</p>
<p>Q. How should the Tier 1 network provisions (reduction of the speed of active Ethernet network links when transitioning to Sleep or Standby/Off, maintaining full network presence in Sleep, and Wake-On-LAN) be evaluated under the EEPA approach?</p>	<p>We do not support attempting to specify network transition or response times in an energy efficiency specification. Current transition / response times are less than 1 second and are driven by customer satisfaction expectations.</p> <p>Current network transition or response times are not in any way impacting customer adoption or acceptance of ENERGY STAR compliant products or power management enabling.</p>
<p><b>Testing Procedure &amp; Reporting Requirements</b></p>	
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<p>R. Should EPA investigate power levels for notebooks and integrated computers that incorporate the energy use of the displays?</p>	<p>Notebook PCs are already in scope of the ver. 4.0 spec. and we believe that display power consumption is considered and tested as part of the "system unit".</p> <p>Consider setting separate specifications for Integrated Computers to account for the additional power consumption required for the display.</p>
<p>S. What data collection is necessary to support the EEPA tool development? To support meaningful ENERGY STAR requirement levels?</p>	<p>As noted in the December 6, 2007 meeting, HP wants to insure that the data collection process accurately captures an accurate representation of the total installed base. E.g. An accurate and proportional representation of both ENERGY STAR compliant and non-compliant product configurations in the market that will be used as a basis for setting the new Tier 2 specification limits.</p>

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<p>T. When a final list of qualifying Tier 2 computers is eventually posted to the ENERGY STAR web site, the program 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.</p>	<p>We do not support publishing “annual energy consumption” values for PCs in absence of an industry testing standard (including a standardized use pattern) to base these metrics on.</p> <p>The usage patterns and configurations of PCs vary too much to get meaningful energy consumption numbers. Computers are not televisions, refrigerators or air conditioners.</p>
<b>Other Points / Comments HP Would Like to Raise</b>	
<p>Tier 2</p>	<p>The initial hope was that Tier II would simplify ENERGY STAR for our customers as compared to Tier I. We’re just beginning to learn how to explain the Tier I categories to our customers. If Tier II is just as complicated as Tier I, but just in a different fashion, then we’ve taken a big step backwards related to consumer education. We would like to get an idea from the EPA on what the category A/B/C efficiency specifications will look like if the industry has to move to a “back up” plan.</p>
<p>Category C: Tuner requirement (HD capable)</p>	<p>We tailor the TV tuner in our Consumer DT PCs for the country where it is shipped. Not all countries support HD TV capability, so the tuners we ship don’t meet the HD requirement. We request that the requirement for the HD tuner be waived, for countries that do not have HD TV broadcasts.</p>