



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

April 24, 2009

Dear Computer Server Manufacturer or Other Interested Stakeholder:

The U.S. Environmental Protection Agency (EPA) welcomes your input on the **Final Draft ENERGY STAR[®] Version 1.0 Computer Server** specification. All stakeholders are encouraged to review the draft specification and provide any final comments **by May 8, 2009**. The specification is scheduled to become effective on May 15, 2009.

This Final Draft specification reflects input received on the previous Draft 4 document and is the final opportunity to comment on EPA's proposal prior to finalization. EPA has made the following decisions with respect to blade systems and performance as it relates to the number of cores:

- **Blades Systems:** Despite efforts to collect Idle power data for these product types, EPA received only one data point for purposes of analysis. Some stakeholders suggested that the specification treat Blade Systems similar to three and four socket systems, requiring power management in lieu of specific Idle power requirements. EPA continues to believe that since Blade Systems are capable of competing directly with single and dual socket systems it is important that they are evaluated using the same metrics. Furthermore, three and four socket systems are required to test and report Idle power to EPA for purposes of ENERGY STAR qualification. However, EPA also received feedback from stakeholders that suggests measuring Idle power in Blade Systems is more complex than the method that was proposed in the Draft 4 version. As a result of these outstanding issues, Blade Systems have been excluded in this Version 1.0 specification. Over the next several months, EPA will work with industry stakeholders to determine an appropriate test method for measuring Blade System Idle power and consider including them in the specification at a later date.
- **Performance Based on Cores.** Some stakeholders requested special consideration for systems using processors with greater than four cores per processor. EPA continues to believe that the best indicator of the base Idle level for Computer Systems is the number of discrete processors, not the total number of cores. According to several industry sources, a number of new multi-core products will be entering the marketplace within the Tier 1 timeframe. As such, EPA does not yet have sufficient data to consider additional allowances or special levels for multi-core processors at this time. If based on additional data EPA finds that special consideration for multi-core processors is warranted, consideration will be given to an allowance under Tier 2 requirements.

In addition, stakeholders will notice the following key changes in this Final Draft version:

- The definition for Computer Server now includes a requirement that eligible systems must have at least one installed hard drive able to store and boot a local operating system or hypervisor.
- A definition for Multi-Node Server has been added, and revisions made to the Dual-Node Server definition, to help clarify that only Dual-Node systems are eligible for ENERGY STAR.

- In order to further differentiate Multi-Node and Dual-Node Servers from Blade Systems, the definitions have been altered to indicate that the former are not hot-swappable while the latter are hot-swappable.
- The definitions for Single- and Multi-Output Power Supplies have been revised to further clarify how to classify single voltage Power Supplies with multiple physical outputs.
- A definition for I/O Port has been added to clarify how the “per port” Idle adders in Table 4 should be applied to I/O Devices.
- The definition for Product Family has been modified to allow for varying processor speed as long as the processor model and power profiles are identical.
- The definition for Maximum Configuration has been modified to clarify that the intent is to identify the configuration with the maximum power consumption, and not necessarily the maximum performance.
- Blade Systems have been added to the list of product categories *ineligible* for ENERGY STAR under Section 2: Qualifying Products.
- A note has been included in the Qualifying Products section to make clear that EPA intends to investigate including all Computer Server types in the Tier 2 specification, while storage and networking products will be investigated under separate initiatives.
- To address concerns of utility partners and other stakeholders, the power factor requirement at 100% loading condition for AC-DC Computer Server power supplies has been increased to 0.95.
- An exemption from power factor requirements is provided for any loading condition less than 75 watts output power, although partners must still test and report power factor at these levels.
- EPA has rewritten Section 3.B: Active Power Requirements and Table 4: Additional Idle Power Allowances for Extra Components to provide further clarity regarding these requirements.
- Language has been modified to further clarify that system attributes presented in Tables 3 and 4, for purposes of determining maximum Idle power requirements, represent the installed components in the system, not the level of capability the Computer Server is capable of supporting.
- The additional power allowances for I/O Devices have been altered to be technology neutral and based only on link speed and the number of ports on the device. These allowances can now be applied to external RAID and SAS controllers.
- Language has been added indicating that for purposes of determining Idle levels, all memory capacity numbers should be rounded to the nearest GB.
- A list of required information for the *Power and Performance Data Sheet* has been provided, as well as additional guidance on following the format provided in the template.
- The language regarding data formats for the Data Measurement and Output Requirements has been changed to reflect that the data format must be made available in “a published or user accessible” format, rather than an “open” format.
- The power measurement accuracy requirement has been modified to reference an accuracy based on plus or minus 10 watts at low loads (< 100 watts), instead of $\pm 10\%$.

- To address concerns over the ability to specify accuracy for processor utilization, a new definition for processor utilization has been included which is based on the time in Idle, the average frequency, and the frequency specification of the processor.
- The 1-second sampling requirements included in Section 4: Data Measurement and Output Requirements have been revised to give Partners greater flexibility in how they design computer servers to meet the accuracy requirements.
- The testing voltage for DC-DC servers has been changed from ± 48 VDC to ± 53 VDC to harmonize with several existing industry accepted standards.
- The environmental conditions (i.e. ambient temperature and moisture content) required in the test method provided in Appendix A have been changed to harmonize with the ASHRAE Environmental Guidelines (2008).
- The Idle test method has been altered to include the measurement of full load power using a manufacturer selected benchmark.

More details regarding EPA's rationale for proposing these changes are included in note boxes found throughout the document.

Development of Tier 2 Requirements

EPA will release a Draft Tier 2 framework document shortly following the finalization of the Tier 1 requirements with the intent of initiating discussion regarding potential metrics and requirements. As indicated in previous correspondence, a Tier 2 will focus on the development of criteria that recognize those Computer Servers that best combine computing performance and energy efficiency.

Comment Submittal

Comments on the Final Draft specification should be sent to Rebecca Duff, ICF International, at rduff@icfi.com by **May 8, 2009**. All comments will be posted to the ENERGY STAR Product Development Web site unless the submitter requests that their comments remain confidential. If you support the Final Draft specification, please state this in writing or via email. It is equally important that EPA understand which portions of the draft specification meet with stakeholder approval, in addition to identifying the sections that may need further revision.

Thank you for taking the time to review the Final Draft specification. Please feel free to contact me directly with any questions or concerns at (206) 553-6377 or fanara.andrew@epa.gov.

Sincerely,



Andrew Fanara
U.S. EPA
Climate Protection Partnership Division
ENERGY STAR Product Development Team