



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

OFFICE OF
AIR AND RADIATION

April 9, 2010

Dear Computer Server Manufacturer or Other Interested Stakeholder:

The U.S. Environmental Protection Agency (EPA) welcomes your input on the attached **Draft 1** Version 2.0 ENERGY STAR[®] specification for Computer Servers. Please note that this Version 2.0 document represents EPA's intended "Tier 2" requirements included in the existing Version 1.0 specification. In preparing Draft 1, EPA reviewed and considered all stakeholder feedback received to date in response to the previously released Preliminary Draft specification and subsequent stakeholder workshops and meetings. The deadline to provide comments on this Draft 1 specification is **May 21, 2010**.

The goals of this Draft 1 specification, and supporting documents, are to: 1) provide an update on the process to develop a specialized efficiency rating tool; 2) establish testing criteria and conditions for blade servers; 3) describe proposed modifications to existing Version 1.0 criteria that will continue to form the core of the ENERGY STAR Computer Servers specification; and 4) refine and present new specification definitions and structure.

The following are some of the key elements of this Draft 1 specification:

- **Section 1:** Definitions have been revised to capture stakeholder suggestions, provide a more cohesive set of server type definitions, expand on component/feature definitions, and revise text for clarity.
- Revised family provisions have been included in Table 1 to encourage further dialogue on the ENERGY STAR qualification structure. EPA will ultimately set family provisions based on evaluation of collected data and the impact of configurations on efficiency performance. **Note:** EPA plans to dedicate further stakeholder discussions to the topic of server families to continue to gather feedback on this proposal and alternatives.
- **Section 2:** Qualifying Products have been updated to reflect EPA's intended scope for the Version 2.0 specification. Stakeholder comments support EPA's proposal to continue limiting the overall scope to servers designed with no more than 4 processor sockets while expanding the list of eligible server types to include Blade Servers. Resilient Servers and Multi-node Servers with greater than two nodes are also covered in this draft. Other specialized product types, including servers with more than 4 processor sockets, Server Appliances, and Fully Fault Tolerant Servers continue to be ineligible for ENERGY STAR but will be reconsidered for inclusion in future revisions of the specification.
- **Sections 3.1 and 3.2:** Power supply efficiency and power factor requirements match those initially set forth in the Preliminary Draft. Net Power Loss (NPL) has been removed from the document.
- **Section 3.4:** Blade servers have been incorporated into the specification. The Draft 1 proposal places the same ENERGY STAR criteria in place for pedestal and rack-mounted servers on blade servers (including active mode efficiency), with testing conditions and approaches tailored to the modular nature of blade systems. Categorization is to be determined and will ultimately be based on future data collection and analysis. Draft 1 proposes (1) testing of an individually-metered single blade in a compatible blade chassis to measure Idle and full blade power *combined with* (2) a partially-populated chassis test for qualification purposes with half of the available bays populated with homogeneous, and representative, blade systems. Single blade power would be compared with the partially-populated measurements to derive chassis power, and active mode efficiency data from the partially-populated test would be used to

evaluate blade server efficiency. While the proposal allows only blade servers to be ENERGY STAR qualified, EPA understands the importance of blade chassis design in total system efficiency. Therefore, requirements are proposed in this Draft 1 for blade chassis power and features in order for the chassis to be approved for shipment with ENERGY STAR qualified blade servers.

- **Section 3.5:** Draft 1 reflects EPA's intent to require *disclosure* of active mode efficiency data, acquired through the use of an ENERGY STAR efficiency rating tool, for all servers seeking qualification. Accompanying Draft 1 is a design description from the Standard Performance Evaluation Corporation (SPEC) that summarizes key considerations and SPEC's proposals for features of such an efficiency rating tool. **EPA intends for this Draft 1 requirement and related notes be reviewed in conjunction with the design document.** EPA recognizes SPEC's existing work to develop power-performance benchmark tools capable of operation on volume servers (pedestal, rack-mounted, and blade), openness to broad industry participation, and development of general measurement methodologies. EPA is committed to using the SPEC efficiency rating tool to evaluate active mode efficiency provided the tool meets EPA's acceptance criteria, including:
 - Architecture and operating system (OS) agnostic;
 - Provides accurate, repeatable, unbiased results;
 - Available in an acceptable timeframe to the program;
 - Provides open access to the underlying testing process (including results from specialized components of the overall workload);
 - Development process allows for open interaction with the ENERGY STAR stakeholders through the specification development process.

Note boxes found in Section 3.5 of this Draft 1 detail important considerations for stakeholder review (e.g. architectures covered by the rating tool). Stakeholders are also encouraged to review slides 31-33 of EPA's presentation at the 2010 Green Grid Technical Forum for a discussion of the elements of the rating tool being considered; this presentation is available on the ENERGY STAR website at http://www.energystar.gov/ia/partners/prod_development/revisions/downloads/computer_servers/ES_Servers_V_2.0_Development_Update.pdf.

EPA seeks comment on the SPEC design document and will adapt future comment phases of the development cycle appropriately. EPA is managing the comment process on the SERT tool and stakeholders should forward all comments related to the tool to the ENERGY STAR email address specified at the end of this memorandum.

- **Section 3.6:** EPA has removed the Preliminary Draft requirement to incorporate Energy Efficient Ethernet (EEE) due to concerns over timing of ratification of the standard within IEEE and availability of compliant hardware. In its place, the test procedure found in Appendix A includes provisions to engage EEE during testing, if it is available. With this approach, the efficiency benefits of the protocol will be reflected during ENERGY STAR testing for systems adopting related hardware.
- **Section 4:** Standard Information Reporting Requirements have been clarified to note that benchmark selection for the disclosure requirement will be limited to a pre-determined set of options. Tightening this requirement is intended to support uniform disclosure and avoid market confusion. EPA intends to allow for updates to the list of options on a regular basis (and in between specification revisions, if necessary).
- **Section 5:** Data Measurement and Reporting has been updated to incorporate stakeholder feedback on input power measurement accuracy, processor utilization measurement, and sampling requirements. Stakeholders are also asked to provide feedback on a suggested airflow requirement brought to EPA's attention late in the Draft 1 development process.
- Test Procedures in Appendix A have been reformatted to more closely match the structure of other IT test procedures in the ENERGY STAR program. Measurement proposals are included for blade systems and a placeholder is present for future development of efficiency rating tool guidelines.

An updated Power & Performance Data Sheet (PPDS) format has been included to illustrate EPA's thoughts on how active mode efficiency data and other proposed changes may be incorporated into the Standard Information Reporting Requirements. This document is preliminary and subsequent drafts of the specification will be accompanied by more formal drafts of the PPDS.

More details regarding EPA's rationale for making the change listed above are included in note boxes throughout the document.

Please note that ENERGY STAR will be hosting a series of discussions about enhanced testing requirements for all ENERGY STAR products. You are encouraged to participate in these broad discussions, as well as discussions specific to computer servers. More information on upcoming meetings will be posted on the ENERGY STAR Web site at www.energystar.gov/mou.

Comment Submittal

All stakeholders are encouraged to provide written comments on the Draft 1 specification to servers@energystar.gov by **May 21, 2010**, as noted above. **EPA also welcomes early comments on the SERT design document by April 16, 2010 for consideration in a development meeting being held in late April.** 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 Draft 1 specification, please also state this in writing. 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 these documents. I look forward to working with you over the next few months as the specification development process continues. If you have any questions or concerns, please contact me at fanara.andrew@epa.gov or (206) 553-6377; or Evan Haines, ICF International, at ehaines@icfi.com or (202) 862-1158.

Sincerely,



Andrew Fanara
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Climate Protection Partnership Division
ENERGY STAR Product Development Team