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

OFFICE OF
AIR AND RADIATION

May 15, 2009

Dear Computer Server Manufacturer or Other Interested Stakeholder:

I am pleased to inform you that the ENERGY STAR® Computer Server specification has been finalized. Your valuable feedback throughout the development process has been integral to the design of the specification. Please note that EPA considers this specification to be final and it is effective immediately.

Based on stakeholder feedback, the following minor revisions can be found in this final version:

- **Qualifying Computers under One Specification:** A note has been added above Section 1: Definitions explaining that manufacturers may qualify an individual computer model under only one ENERGY STAR specification (i.e., Computer Servers Version 1.0 or Computers Version 5.0). Manufacturers must select the ENERGY STAR specification most appropriate for their product model.

- **Computer Servers Shipped without a Hard Drive:** It was brought to EPA's attention that manufacturers sometimes ship computer servers without hard drives to Value Added Resellers (VARs) who then install a hard drive based on end user preference. Manufacturers may label these products as ENERGY STAR upon shipment to the VAR as long as the configuration was initially qualified with at least one hard drive installed at the time of testing. Manufacturers are encouraged to provide to VARs a list of acceptable hard drives that can be installed upon receipt of the server product to maintain ENERGY STAR qualification, absent any additional changes. EPA will also provide this information on the ENERGY STAR qualified product list. Therefore, the requirement that servers include "at least one installed hard drive able to store and boot a local operating system or hypervisor" has been removed from the Computer Server definition in Section 1.A. Additional notes have also been added under the definition for Product Family in Section 1.V and in Sections 3B: Active Power Requirements and 4B: Idle and Full Load Power Testing.

- **Solid State Drives:** Clarifying text has been included to indicate that solid state storage drives are to be treated the same as hard drives, which are eligible for additional Idle power allowances, and are listed as a base component in the definition for Product Family (Section 1.V).

- **Base Configuration Definition:** This is now defined as a reference configuration that does not qualify for any additional power allowances. Any applicable components above the level defined by the base configuration may qualify for additional power allowance(s) as described in Table 4.

- **Power Factor Levels for < 500W supplies at 10% load:** EPA changed the power factor level for single-output power supplies to "N/A", since this loading condition would produce an output of no more than 50 watts, which is below the 75 watt cutoff for power factor requirements.

- **Assumptions to be used to Report Energy Use on the Power and Performance Data Sheet:** EPA requires that manufacturers report the full range of possible energy use (kWh) values (i.e., 100% of time in Idle to 100% of time at full load) on the Power and Performance Data Sheet. The full range of values is intended to show the end user the maximum and minimum expected energy consumption for the computer server. EPA encourages manufacturers to provide established power calculators and specific information about the intended operating environment (e.g., average time at Idle, data

center PUE, etc.) so that purchasers can make more refined estimates of typical yearly energy use.

- **Data Measurement and Output Requirements:** EPA has indicated that the Data Measurement and Output requirements may be met by including add-on devices with the Computer Server at the time of shipment.

- **Data Measurement Accuracy:** Several manufacturers raised concerns regarding the ability of Computer Servers currently available in the marketplace to meet the proposed measurement accuracy requirements in Section 3D: Data Measurement and Output Requirements. EPA now *recommends* system level accuracy requirements for input power measurements: ±10% accuracy with a cutoff at ± 10 watts. In addition, the specification no longer prescribes processor utilization accuracy requirements, as no standard definition currently exists which takes into account advanced features like multithreading and dynamic voltage and frequency scaling. Manufacturers are now required to provide only an estimation of the processor utilization that is visible to the operator or user of the Computer Server in the operating environment. EPA believes that this estimate will provide data center managers the required information needed to identify underutilized assets and run their data centers more efficiently. In addition, manufacturers will be required to report (1) guaranteed accuracy levels for power and temperature measurements and (2) the time period used for data averaging, via the Power and Performance Data Sheet.

  Under Tier 2 of the specification, EPA intends to require the following measurement accuracy for all ENERGY STAR qualified systems: +/- 5% accuracy with a cutoff of +/- 5 watt accuracy (i.e. accuracy is never required to be better than +/- 5 watts). EPA also plans to work with industry to help develop a standard definition for processor utilization to better define accuracy requirements for this measurement in Tier 2.

- **Qualifying Computer Servers Through Value Added Resellers (VARS):** Additional guidance is provided in Section 4D for qualifying products through VARs. EPA has clarfied that in order for a Computer Server to be marketed and sold as ENERGY STAR through a VAR, that specific configuration must have either been qualified by the VAR itself or by the OEM. To this end, OEMs must provide VARs with a list of qualified configurations for each model, using approved components, which have been initially qualified and submitted to EPA by the OEM Partner. In addition, if a VAR markets and sells a Computer Server under one of its own brands, that VAR must become an ENERGY STAR Partner and qualify the Computer Server under their own brand name.

- **Effective Date for European Union:** For products sold in the European Union, the effective date will be on the 20th day following the publication of the specification in the Official Journal of the European Union.

In addition, a number of minor edits and clarifications were made to the *Appendix A: ENERGY STAR Test Procedure for Determining the Power Use of Computer Servers at Idle and Full Load*, including:

- Guidance for power analyzers with no specified current crest factor value;

- Clarification that power analyzers only need to meet the accuracy requirements for loads experienced during testing;

- Clarification that network connections must be “live” during testing, but that no specific traffic is required over the connection;

- Clarification that all measurements may be made manually or automatically recorded;

- Clarification that multiple power analyzers are allowed when required, provided measurements remain within the required accuracy range;

- Modification of the tolerance on ± 53 Vdc testing to ± 1 Vdc (from ± 1%) to harmonize with the referenced ANSI ATIS-0600315-2007 standard.

- Clarification that installed benchmark(s) shall not significantly impact Idle power levels, but may include a functionally equivalent Idle state for Idle measurement;

- Clarification that the Computer Server must boot from the primary storage device and not from external storage; and,

- Clarification that the Computer Server may not enter lower power states (e.g., computer sleep or hibernate) during Idle power measurement.

No other changes have been made to the specification. All EPA correspondence, stakeholder comments, and previous draft versions of the specification can be viewed on the ENERGY STAR Web site at: www.energystar.gov/NewSpecs.

ENERGY STAR Partnership and Product Qualification
Attached are the ENERGY STAR Partnership Agreement, Commitment Form, and Qualifying Product Information (QPI) form. The Agreement includes the partner commitments, technical specification, and explains the requirements of both the manufacturing partner and EPA. This Agreement needs only to be signed once; after that, you may expand your participation into other product areas, as appropriate, by submitting an updated Commitment Form. Existing ENERGY STAR partners need only complete a new Commitment Form to participate in the Computer Server program.

To familiarize you with the contents of the Partnership Agreement, the following is a list of partner commitments:

- Comply with the current product Eligibility Criteria (i.e., technical specification).

- Comply with the current ENERGY STAR Identity Guidelines.

- Qualify at least one Computer Server model as ENERGY STAR within one year of signing the Partnership Agreement.

- Provide clear and consistent labeling of ENERGY STAR qualified Computer Servers on the front of the product, in product literature, and on the Web site.

- Provide to EPA, on an annual basis, an updated list of ENERGY STAR qualifying Computer Servers.

- Provide to EPA, on an annual basis, unit shipment data of qualified Computer Server models. Please note that all data will be aggregated and masked by a third party prior to EPA submission.

- Notify EPA of a change in the designated responsible party or contact for Computer Servers within 30 days.

Once a Partnership Agreement is signed, manufacturers may begin submitting models for ENERGY STAR qualification. A QPI form should be completed for each Computer Server configuration or Product Family that you wish to qualify and can be sent with the signed Agreement.

Manufacturers should return the signed Partnership Agreement and Commitment Form, with completed QPI forms, to servers@energystar.gov.

Tier 2 Development
EPA has commenced efforts to develop the next tier of this Computer Server specification to ensure that the specification continues to identify the most energy efficient products in the marketplace. During the Tier 2 process, EPA plans to: review all specification elements and criteria for refinements; expand the scope to include, but not limited to, servers with greater than four processor sockets, Blade Systems, Fully Fault Tolerant Servers, Server Appliances, Multi-Node systems; and evaluate the potential benefits of a Net Power Loss approach. In addition, EPA is exploring an approach to efficiency that reconciles the energy consumed by the system and the *work* being performed.

As communicated in this final specification, EPA's goal is to finish Tier 2 in time to take effect by October 15, 2010. EPA will communicate its anticipated next steps by early June, 2009. EPA expects to include a Tier 2 framework at that time to facilitate discussion. Stakeholders who received past communications related to development of Tier 1 will continue to receive these updates and are encouraged to have interested colleagues contact Evan Haines, ICF International, at ehaines@icfi.com to be added to the contact list.

On behalf of EPA, I appreciate your participation in the development of this 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