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ENERGY STAR Program  
U.S. Environmental Protection Agency  
Via email: [computers@enegystar.gov](mailto:computers@enegystar.gov)

**Subject:** ENERGY STAR Version 9.0 Computers specification

To Whom It May Concern:

On behalf of the Industry Council on Information Technology Industry Council ([ITI](#)) I am writing to provide comments on the Discussion Guide issued on December 13, 2022 on the U.S. Environmental Protection Agency (EPA) ENERGY STAR Version 9.0 Computers specification. The Discussion Guide raises a number of questions.

Before providing responses to the questions raised in the Discussion Guide, I would like to provide a brief introduction to ITI. ITI is the premier global advocate for technology, representing the world's most innovative companies. Founded in 1916, ITI is an international trade association with a team of professionals on four continents. We promote public policies and industry standards that advance competition and innovation worldwide. Our diverse membership and expert staff provide policymakers the broadest perspective and thought leadership from technology, hardware, software, services, and related industries.

Below please find the topic areas in the Discussion Guide and our answers to the questions raised under each topic.

## Definitions

Question 1. Are there any other new definitions EPA should be considering for addition to the Version 9.0? If so, is there existing industry language that can be leveraged to define those terms?

Answer 1. We recommend using "slate/tablet" as a definition since both words appear to be synonymous. We recommend aligning the "slate/tablet" definition with the European Commission Lot X definition that increases the size of the display from 6.5" to 7.0" and includes a new provision for mobile OS as shown below.

- "(5) 'slate/tablet' means a device that is designed for portability and has the following characteristics:
- (a) it has an integrated touch-sensitive display with a viewable diagonal size greater than or equal to 7.0 inches and less than 17.4 inches;
  - (b) it does not have an integrated, physically attached keyboard in its designed configuration;
  - (c) it primarily relies on a wireless network connection;
  - (d) it is powered by an internal battery and is not intended to work without battery;
  
  - (e) it is placed on the market with an operating system designed for mobile platforms, identical or analogous to smartphones."

Other new definitions:

- CPU = A central processing unit (CPU), also called a central processor, main processor or just processor, is the electronic circuitry that executes, including but not limited to, floating point or integer-based instructions comprising a computer program. Many processors contain multiple cores to perform these instructions.
- Core = A single functional unit of a CPU that handles software instructions such as arithmetic, floating point, and other data manipulation.
- SOC = (System On a Chip) An integrated circuit that integrates most or all components (CPU, memory, IO, graphics, storage) of a full computer system or other electronic system on a single silicon substrate or package.

Question 2. Are there any other existing definitions EPA needs to update in Version 9.0 to align with changes in technology or updates in the market? If so, is there existing industry language that can be leveraged to define those terms?

Answer 2. We don't think any changes need to be made to the GPU definition and we provided other definitions in response to Question 1.

## Revisions to Mode Weightings

Question 3. Should EPA adopt the new notebook mode weightings proposed above as originally proposed or is there newer data that should be considered to further refine these values for consideration in a Draft 1 specification?

Answer 3. ITI agrees with EPA to adopt the notebook PC mode weightings that were proposed during ENERGY STAR Computers Version 8.0 Computers specification development but were withheld for notebooks until ENERGY STAR Version 9 .0 Computers specification. Subsequently ITI members collected newer mode weighting data on notebook computers, but the net changes were not significant enough to justify further changes to mode weightings proposed in 2019.

Question 4. Is there a compelling case to further revise the desktop mode weightings that were revised in the Version 8.0 specification? If so, can supporting data be provided to EPA to justify this?

Answer 4. ITI agrees with EPA and believes the mode weightings adopted for desktop PCs during ENERGY STAR Computers Version 8.0 development should stay the same for ENERGY STAR Computers Version 9.0. As mentioned for notebook computers the newer mode weighting data collected on desktop computers did not result in any significant changes. In summary, ITI proposes no further changes to mode weightings proposed and adopted in 2019.

## Revisions to P-score

Question 5. Do stakeholders have strong preferences on how EPA reevaluates the calculation of "P" in Version 9.0 given recent advances in CPU and GPU technology? If so, EPA welcomes that feedback for consideration in the Draft 1 specification.

Answer 5. Multiple CPU manufacturers have released products with multiple types of cores which requires a modification to the P-score calculation to include these multiple types of cores and their associated frequency. The new recommendation for P-score calculation keeps the same spirit of the original P-score calculation and incorporates these multiple types of cores.

P-score = [((CPU Core Type 1:# of CPU Cores) x (CPU Core Type 1:CPU Clock Speed (GHz))) + ((CPU Core Type 2:# of CPU Cores) x (CPU Core Type 2:CPU Clock Speed (GHz)))]

Keep mostly the same language with a small modification where some CPU manufacturers call TDP Frequency as Base Frequency now, for “# of cores” and “CPU Clock Speed (GHz)” to be used: *where # of cores represent the number of physical CPU cores and CPU clock speed represents the Max TDP/Base core frequency, not the turbo boost frequency.*

Note: This methodology will require verifying consistent application of a P-score calculation in the dataset that will be used for the ENERGY STAR Version 9.0 categories. All entries in the data set will need to use the same methodology,

Question 6. Are there other performance characteristics not mentioned above that EPA should consider collecting through the Version 9.0 certification process to inform future specification development?

Answer 6. Another attribute that could be collected for a future category with the ENERGY STAR for Computers program is:

- Chassis Volume – This is already reported in Japan’s desktop computers regulation. This can be used as a simpler proxy for an Expandability Score to categorize computers.

ITI will also look more into this during the ENERGY STAR Version 9.0 process and might have more input about this area in the future.

## Revisions to Adders

Question 7. EPA seeks data that can help EPA refine the discrete graphics, storage, and memory adders in Version 9.0.

Answer 7. ITI would like to propose the following changes to the TEC Adders:

Memory Adder – we recommend that Notebooks use the same TEC Adder as what Desktop uses in Version 8.0.

Storage Adder – recommend that Notebooks use the same TEC Adders as what Desktop uses in Version 8.0 except that the 3.5” HDD adder would not apply for Notebooks.

Question 8. Are there any other existing adders not mentioned above that need to be revised?

Answer 8. Slidable displays is a new technology that has been publicly announced and will need some mention in the ENERGY STAR for Computers specification (an example of a slidable display can be viewed [here](#)). ITI recommends that, in the testing section, extra language be added to state that, for any display that

can be changed by the user, it should be tested in accordance with the standard with the display in its fully extended state.

Question 9. Are there any new adders that need to be considered given recent technology advances, and, if so, is there supporting data that can be provided to justify those adders?

Answer 9. Industry is reviewing EPA's questions regarding switchable (MUX) graphics and will aim to provide comments prior to the next draft.

## **Internal Power Supply Efficiency**

Question 10. Can stakeholders provide any additional data to expand EPA's current view of the IPS market specific to computers?

Answer 10. Power Supplies have very long lead times with extended lifetimes. Therefore, moving from one 80+ efficiency level to the next level is not a simple change and would not be possible with the short implementation schedule that ENERGY STAR Version 9.0 has laid out. ITI recommends keeping the internal power supply efficiency the same and instead focusing on overall TEC limits. Manufacturers can then choose the best power supplies and overall product efficiency needed to meet these new TEC limits with the best interest of their customers in mind.

## **Workstation Metric**

Question 11. Can stakeholders provide any update on the status and development schedule of the latest SPEC workstation benchmark?

Answer 11. The status of SPEC benchmarks will be left to SPEC to provide answers. SPEC has rules that preclude disclosure of non-public information.

Question 12. Can stakeholders provide any insight on whether it is possible to add a manual energy measurement component to SPEC workstation within the next 6 months?

Answer 12. The status and possibility of energy measurements in SPEC workstation benchmarks will be left to SPEC to provide answers. SPEC has a PTDaemon power measurement methodology that has been used in SERT and ENERGY STAR for Servers, so SPEC has credibility in developing energy-aware benchmarks.

Question 13. If SPEC workstation cannot accommodate energy relevant measurements in that timeline, are there any other more relevant metrics that EPA should explore for workstation criteria in Version 9.0 that provide greater benefit to customers than those currently referenced?

Answer 13. We recommend working with SPEC to leverage their work to create a regulatory standard workstation energy efficiency benchmark that could eventually replace the current workstation  $P_{MAX}/P_{TEC}$  method.

## Workstation Energy Efficiency Criteria

We also have concerns with the current workstation criteria for energy efficiency—although we recognize that this may not be able to be addressed by Version 9.0.

### Existing Version 8.0 Workstation issues:

1. Workstation Definition Modernization: There are concerns that the existing definition of workstation does not lend itself to systems which perform like a workstation using integrated graphics. Industry will provide a proposed amendment to the existing definition in the coming months.
2. Current Workstation Criteria Issue: The current workstation specification requires manufacturers to test their machines using LINPACK and SPECviewperf® to measure the Max Power of the machine. Yet, SPECviewperf® is currently not compatible with non x64 and x86 architectures creating a potential barrier for compliance for OEMs. While emulation of the workloads may be possible, such emulations may not stress the GPU and the CPU as intended by the standard. The ENERGY STAR v9.0 specification should therefore create an alternative path to compliance in the event that SPECviewperf® or LINPACK is not compatible with the architecture. As an example, the specification could read

“In the event that SPECviewperf® or LINPACK is not compatible with certain hardware and software combinations, an emulation of SPECviewperf® or LINPACK should be attempted. If emulation does not adequately stress either the CPU or GPU, the partner shall select an alternative workload which stresses the GPU or CPU, as applicable. If one of either SPECviewperf® or LINPACK is compatible, that compatible workload shall continue to be used in combination with a selected alternative. The combination of a selected alternative plus the compatible workload should demonstrably draw more power than the emulated combination of SPECviewperf® and LINPACK. This provision is not intended for systems that are supported by SPECviewperf® and LINPACK. The selected workload shall be publicly available and disclosed at the time of product registration.”

### Future v9 Workstation criteria:

ITI is reviewing the workstation criteria to see if it needs any changes.

Thank you for this opportunity to provide comments. I would be happy to set up a meeting with our members if you would like to discuss any of our recommendations in further detail.

Best regards,



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