



# ENERGY STAR Computers Discussion Guide December 2022

## Overview

The U.S. Environmental Protection Agency (EPA) is sharing this ENERGY STAR Computer Program Discussion Guide: Version 9.0 to invite early stakeholder input on aspects under consideration for the revision of this specification. The topics that EPA feels are of particular importance for discussion prior to a Draft 1, Version 9.0 release are below. EPA is also sharing the anticipated schedule for this revision process.

- Updated and new definitions
- Mode weightings
- P-score categorization / boundaries
- Revisions to adders
- Internal power supply efficiency
- Workstation metrics

EPA will host a webinar on January 12, 2023, from 1-3 PM Eastern Time to engage with stakeholders on the content included in this discussion guide. Stakeholders are asked to share written feedback with EPA by January 27, 2023. As always, stakeholder engagement is a vital ingredient to the success of the ENERGY STAR program and EPA looks forward to working with all parties to develop the ENERGY STAR Version 9.0 Computers specification.

## Updated and New Definitions

Based on recent discussion with stakeholders, EPA realizes there may be a need to define the following new terms below to support revisions to criteria in the specification. EPA welcomes stakeholder feedback on whether there are consensus industry definitions that can be leveraged to define these new terms and if not, widely accepted definitions:

- Central Processing Unit (CPU)
- System on Chip (SoC)
  - Including but not limited to SoC's that incorporate CPU and GPU function in a single chip.

In addition, EPA has been made aware that the following two definitions may require modification to align with recent technology changes. EPA welcomes feedback on changes needed for each of the below both terms:

- Graphics Processing Unit (GPU): An integrated circuit, separate from the CPU, designed to accelerate the rendering of either 2D and/or 3D content to displays. A GPU may be mated with a CPU, on the system board of the computer or elsewhere to offload display capabilities from the CPU.
- Slate/Tablet: A computing device designed for portability that meets all of the following criteria: a) Includes an integrated display with a diagonal size greater than 6.5 inches and less than 17.4 inches; b) Lacking an integrated, physical attached keyboard in its as-shipped configuration; c) Includes and primarily relies on touchscreen input; (with optional keyboard); d) Includes and primarily relies on a wireless network connection (e.g., Wi-Fi, 3G, etc.); and e) Includes and is

primarily powered by an internal battery (with connection to the mains for battery charging, not primary powering of the device).

Additional questions regarding definitions:

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?
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?

## ***Revisions to Mode Weightings***

As communicated previously as part of the Version 8.0 process, EPA intends to update the notebook mode weightings in Version 9.0 to reflect current usage patterns of notebooks based on an industry dataset. This dataset included data on millions of products and their usage to inform the below mode weightings. The mode weightings previously proposed for adoption in Version 9.0 are shown below, which were agreed to between the Agency and industry as part of Version 8.0:

Mode Weighting	Conventional
T <sub>OFF</sub>	10%
T <sub>SLEEP</sub>	60%
T <sub>LONG IDLE</sub>	10%
T <sub>SHORT IDLE</sub>	20%

As a reminder, EPA updated the desktop mode weightings in the Version 8.0 specification based off the same large industry provided dataset mentioned above. EPA has been made aware of more recent user data by stakeholders that could suggest that slight modifications to the current desktop mode weightings may be warranted, but EPA is hesitant to change the desktop mode weightings again so soon as our understanding is that this presents additional complications for desktop product designers who are often designing new products 2-3 years out.

Questions regarding mode weightings:

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?
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?

## ***Revisions to P-score***

With the development of dual-hierarchy CPUs, drastically increasing core counts, and spiking processor frequencies, the existing p-score boundaries are in dire need of updates in Version 9.0 for desktops, integrated desktops, and notebooks. EPA is looking at potentially revising the following aspects of the existing p-score system:

- How to calculate “P”
  - Likely still using some modified combination of core counts and frequencies
- The numeric boundaries of performance categories

- The number of performance categories needed for each product type

EPA intends to make decisions on the items above based primarily on the latest product dataset available. Based on stakeholder conversations, EPA is also interested in collecting additional information on product characteristics during Version 9.0 certification process to further refine the p-score approach in future versions of the specification. This may include but is not limited to, Thermal Design Power, cache, max turbo frequency, and PCI version support along with max # of Peripheral Component Interconnect standard lanes.

Questions regarding p-score:

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.
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?

## ***Revisions to Adders***

EPA will take a fresh look at functional adder allowances in the Draft 1 specification updating where necessary and considering removing adders that may no longer be necessary. Some areas that EPA will be looking closely at are:

- Whether the discrete graphics adders should remain, and if so to what degree
- Whether the existing switchable graphics adder can be applied to notebooks to accommodate notebook products with physical MUX switches which provide enhanced performance
- Whether the existing storage and memory adders need to be revised

Questions regarding adders:

7. EPA seeks data that can help EPA refine the discrete graphics, storage, and memory adders in Version 9.0.
8. Are there any other existing adders not mentioned above that need to be revised?
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?

## ***Internal Power Supply Efficiency***

Historically, EPA has increased the stringency of the internal power supply requirements with each revision. As such, EPA is considering raising the IPS requirements in Version 9.0 such that 500+ watt IPSs meet 80 Plus Platinum equivalent levels and IPSs below 500 watts meet 80 Plus Silver equivalent levels. This revision would apply to both wattage bins with each increasing one 80 Plus category in stringency as compared to Version 8.0.

Questions regarding IPS:

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

## ***Workstation Metric***

The current workstation metrics (specviewperf and Linpack) have not been amended since Version 6.0 and have become outdated. EPA has been made aware of current efforts to finalize a new version of the SPECworkstation benchmark for workstations that better correlates with the performance in modern workstations. EPA would like to explore the possibility of adding an energy component to this benchmark in time for EPA to reference it in the Version 9.0. EPA believes such a metric would be more meaningful for workstation certification to ENERGY STAR.

Questions regarding workstations:

11. Can stakeholders provide any update on the status and development schedule of the latest SPECworkstation benchmark?
12. Can stakeholders provide any insight on whether it is possible to add a manual energy measurement component to SPECworkstation within the next 6 months?
13. If SPECworkstation 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?

## ***Version 9.0 Revision Schedule***

EPA sees value in giving stakeholders insight into the anticipated timeline for the Version 9.0 specification development early in our process. Following this discussion guide, EPA expects to release a Draft 1 and Draft 2 by the end of Q2, 2023 with publication of the final specification in Q3, 2023 that takes effect in Q2, 2024.