



# **ENERGY STAR<sup>®</sup> Computers**

## **Version 9.0 Draft 1 Specification**

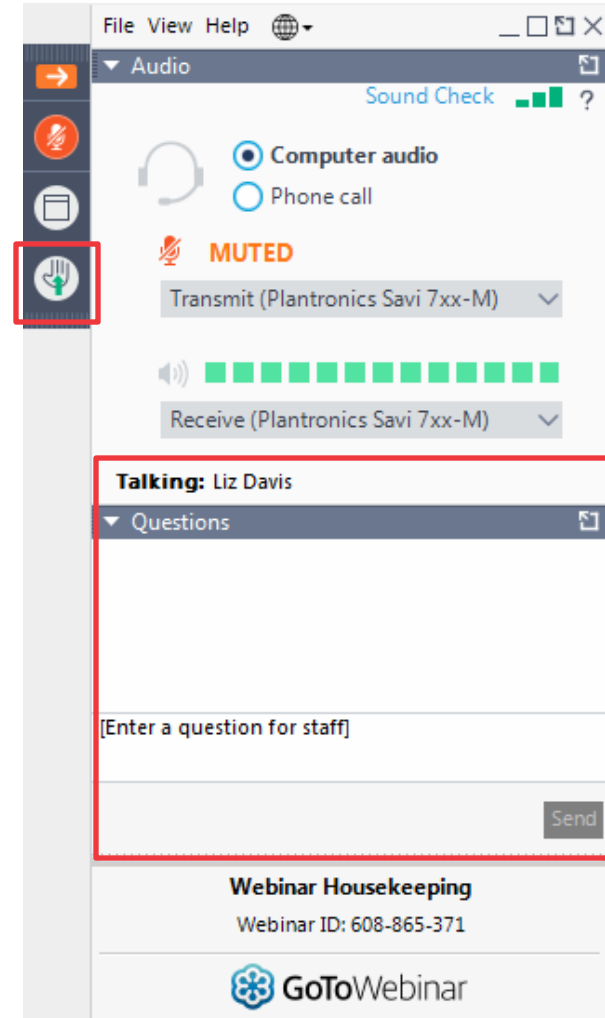
Stakeholder Meeting  
November 30, 2023



## Webinar Participation

- Please mute yourself when you are not speaking (use local mute or dial \*6)
- Feel free to ask questions at any time

Submit written comments to  
[computers@energystar.gov](mailto:computers@energystar.gov) by  
**January 11, 2024**





## Meeting Agenda

1. Introductions
2. Definitions
3. Scope
4. Certification Criteria
  - Power supplies
  - EEE
  - Notebook mode weightings and removal of full network proxy
  - Base allowances and functional adders
5. Workstations
6. Timeline and Next Steps



## Introductions

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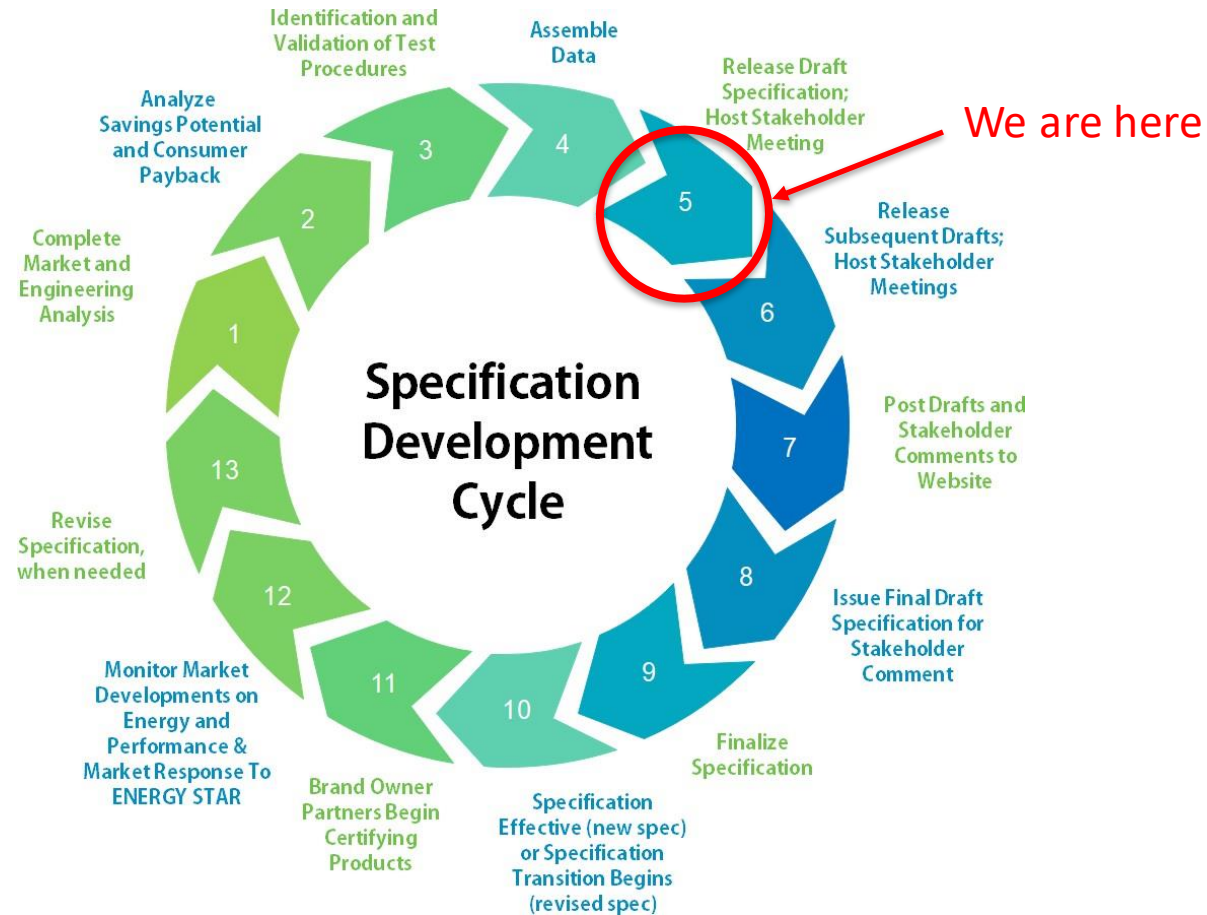
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# ENERGY STAR Specification Development Process





## Definitions – New Definitions

- EPA is proposing three new definitions based on stakeholder feedback on the discussion guide:
  - Central Processing Unit (CPU)
  - Core
  - System on Chip (SoC)



## Definitions – Revised Definitions

- EPA is also proposing revisions to the following existing revisions based on stakeholder feedback:
  - Workstation
  - Mobile Workstation
  - Slate/Tablet
- Note that EPA has not fully aligned with the EU definition of slate/tablets, specifically not adopting the language on mobile OS use as EPA has ENERGY STAR certified slate/tablets that use operating systems that are not intended for use on smartphones (e.g., standard x86 version of Windows 10/11) and intends to continue covering them in Version 9.



## Scope - Exclusion

- Open Pluggable Specification (OPS) Modules:
  - EPA received stakeholder feedback stating that while the specification is not intended to cover OPS modules, it was not fully clear that they were out of scope depending on interpretation of the computer definitions in Section 1 of the specification. To remove any ambiguity, EPA has explicitly added OPS modules as out of scope in this draft.





## Certification Criteria – Power Supplies

- IPS with rated power of 500 watts or less
  - Analysis of the 80Plus database shows over 2/3 of 115V IPS rated at 500W or less can meet Silver or higher levels
  - As such, EPA is proposing to increase the IPS requirements for IPSs rated at 500W or less to 80Plus Silver equivalent.
- IPS with rated power above 500 watts
  - Similar analysis of the 80Plus database for products rated at above 500W show that fewer than 25% of listings meet Platinum levels or higher.
  - As a result, EPA is proposing to maintain the existing IPS requirements from Version 8 for IPS rated greater than 500W in Version 9.
- EPA also received feedback requesting IPS requirements at very low loads. EPA remains committed to addressing efficiency at low load conditions through aggressive TEC requirements rather than creating new IPS requirements that do not align with existing requirements in the 80Plus program.



## Certification Criteria – Power Supplies

Table 1: Requirements for Internal Power Supplies with Rated Output of 500 Watts and Below

Loading Condition (Percentage of Nameplate Output Current)	Minimum Efficiency	Minimum Power Factor
10%	0.80	
20%	<del>0.82</del> 0.85	-
50%	<del>0.85</del> 0.88	0.90
100%	<del>0.82</del> 0.85	-

Table 2: Requirements for Internal Power Supplies with Rated Output Above 500 Watts

Loading Condition (Percentage of Nameplate Output Current)	Minimum Efficiency	Minimum Power Factor
10%	0.80	
20%	0.87	-
50%	0.90	0.90
100%	0.87	-



## Certification Criteria – Energy Efficiency Ethernet (EEE)

- Based on discussions EPA previously had with industry as part of the Version 8 development process about future expectations of computer products, EPA is now proposing that all ports with a speed of 1Gb/s or higher must have EEE enabled as-shipped to certify as ENERGY STAR.
- This is a revision to the approach in Version 8 where EEE availability was required for all ports with a speed of 1Gb/s or higher, but the feature was not required to be enabled as-shipped. Now it must be enabled as-shipped for all applicable ports.

## Certification Criteria – Notebook Mode Weightings

- As discussed with stakeholders as part of the Version 8 process as well as the Version 9 discussion guide, EPA has simplified and updated the notebook mode weightings to reflect current use patterns of notebooks based on an industry data set. This data set included data on millions of products and the new mode weightings were vetted during the Version 8 development process.
- The weightings of both off and short idle have decreased notably from Version 8, which has a significant impact on the following TEC analysis on notebooks

**Table 5: Mode Weightings for Notebook Computers**

Mode Weighting	Conventional
$T_{\text{OFF}}$	10%
$T_{\text{SLEEP}}$	60%
$T_{\text{LONG IDLE}}$	10%
$T_{\text{SHORT IDLE}}$	20%



## Certification Criteria – Removal of Full Network Proxy

- Given the simplification of the notebook mode weightings, EPA has removed now obsolete references to Full Network Proxy in Table 5 as well as throughout Section 3.5 of the specification.
- This includes removal of the previous ALPM allowance as it was reliant on meeting Full Network Proxy which is no longer part of the specification.

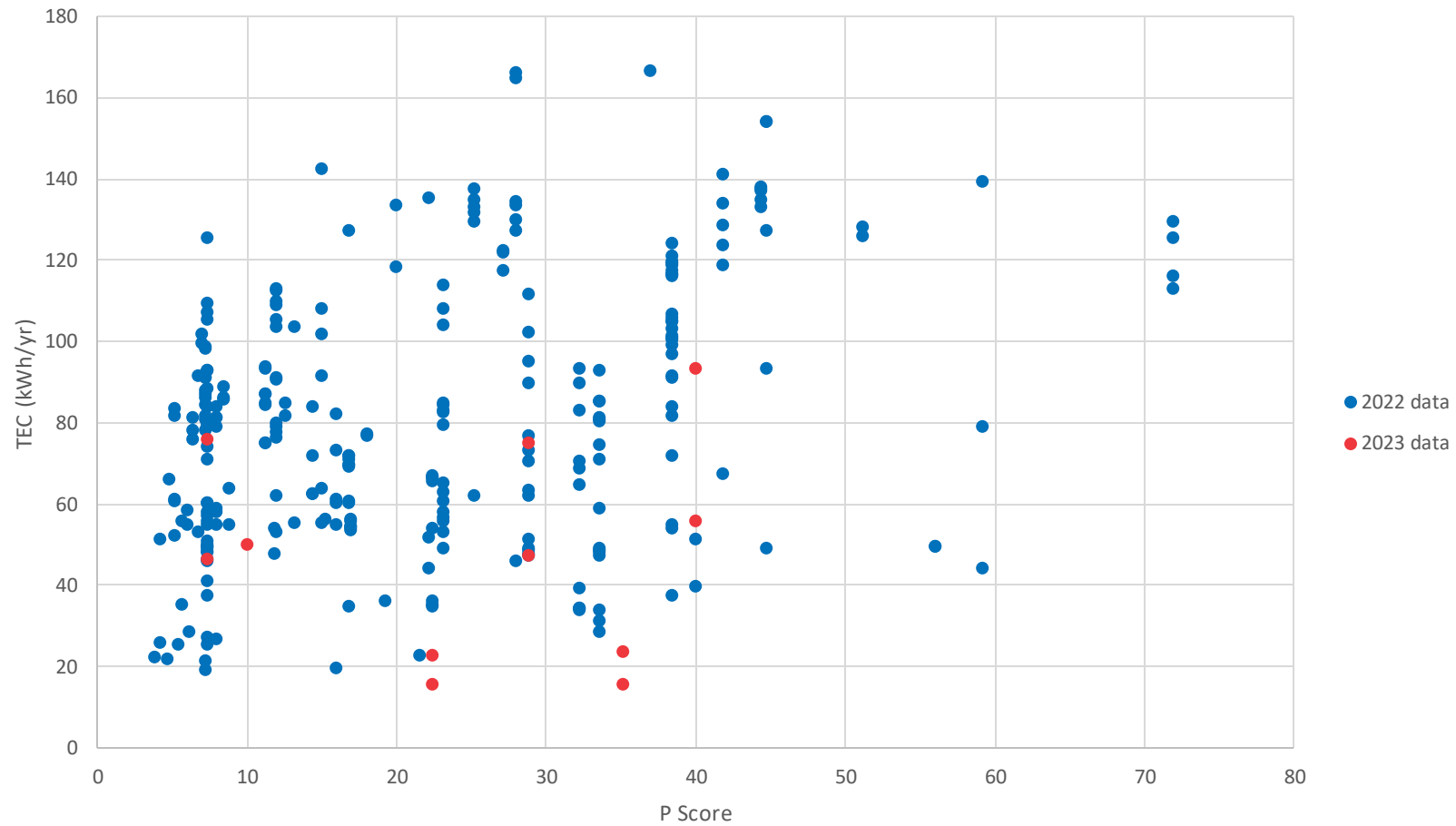


## Certification Criteria – What happened to P-score?

- EPA collected supplemental data from industry to calculate a more realistic p-score for all products in which we had complete data, including accounting for products with multiple core types within a CPU
- Analysis showed that there no longer appears to be strong justification to separate products by their performance capability as there are many higher performance products which use very little power in the modes EPA is focused on for certification (primarily sleep and long idle which together make up 70% of the metric weighting). There are also many products with low p-scores with poor TEC and low power mode measurements.
- This analysis was performed separately across notebooks, desktops and integrated desktops and the same conclusion was found in each.

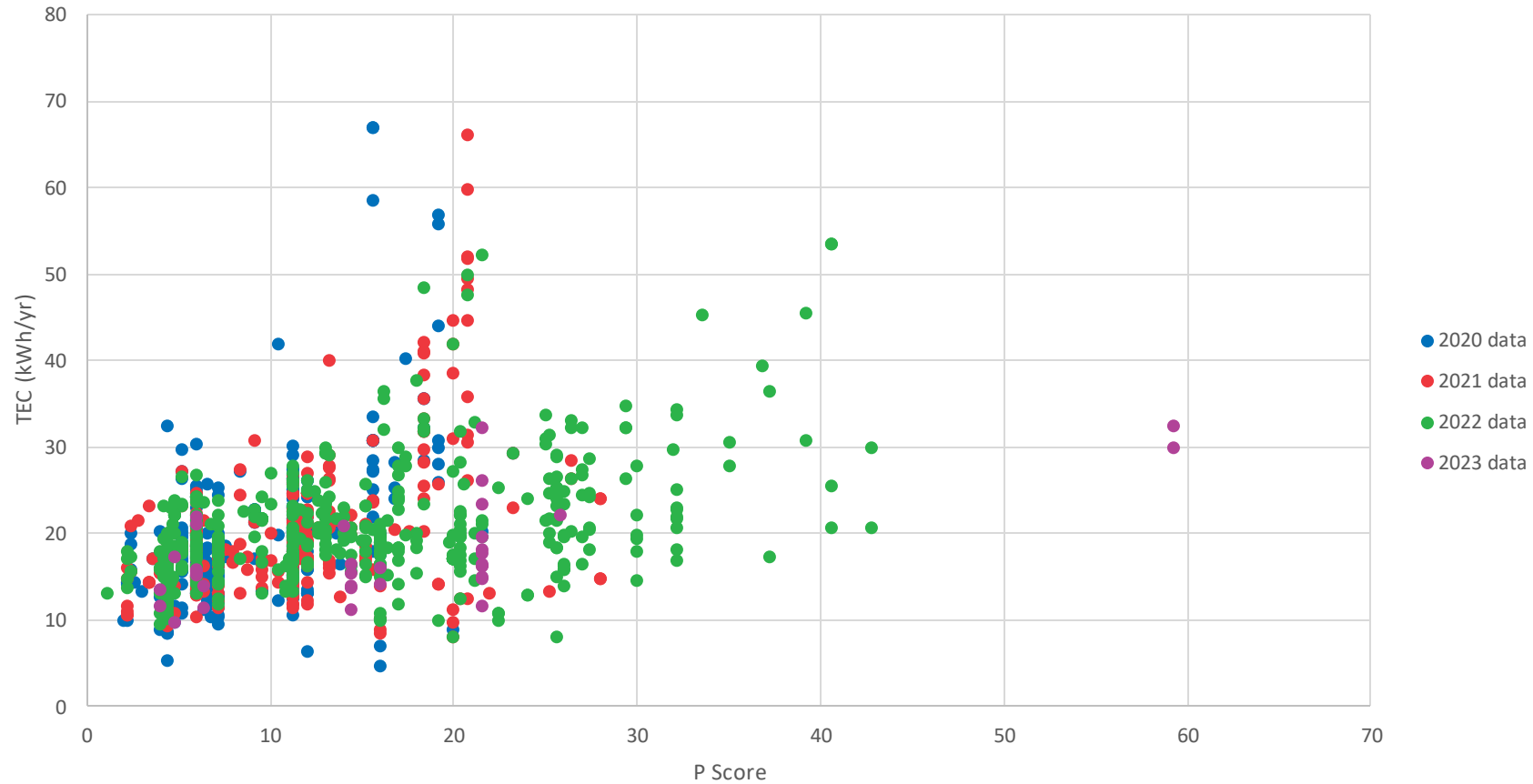


# Certification Criteria - TEC vs. P-score for Desktops





## Certification Criteria - TEC vs. P-score for Notebooks

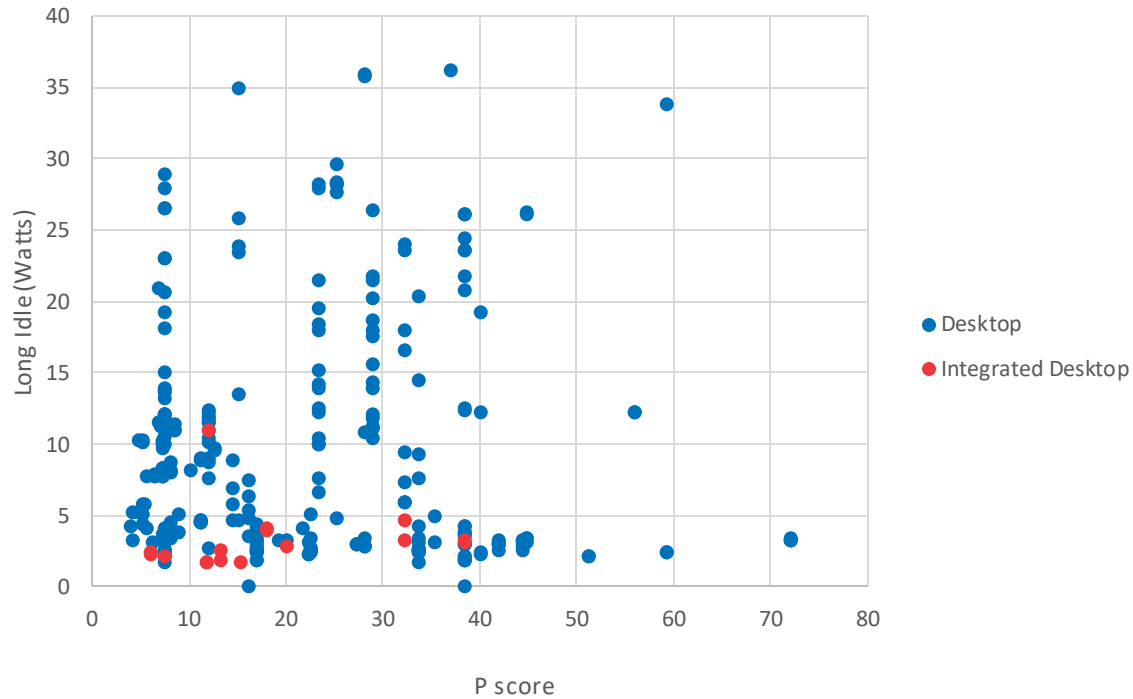




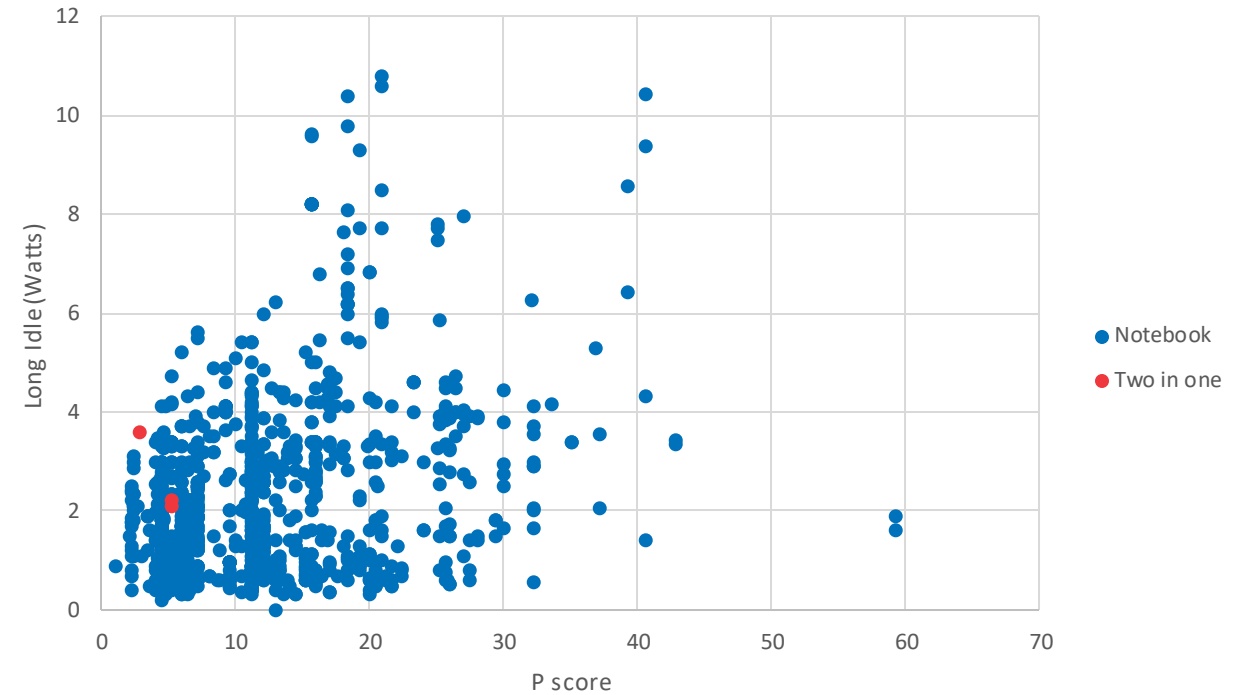


# Certification Criteria – Long Idle (W) vs. P-Score for All

Desktop Models



Notebook Models





## Certification Criteria – Base Allowances and Functional Adders

- Taking the new notebook mode weightings into account, EPA observed a very unusual observation that holding the existing functional adders at their existing values, the base allowances for notebooks and integrated desktops would need to be negative.
- EPA also observed that the vast majority of these products were claiming similar allowance values for memory as well as storage.
  - As a result, EPA removed those two adders for notebooks but increased the base allowance for both categories by a similar value (close to the average claimed for each) to arrive at positive base allowances. Essentially, an average memory and storage allowance has been baked into the base allowance in Version 9 for these two categories.
  - The desktop memory adder was also reduced by half to allow for a positive integrated desktop base allowance, this was factored into the new desktop base allowance as well.
- These changes result in roughly 30% pass rates in each area with representation across a wide range of performance bins in each category



## Certification Criteria – Base Allowances and Functional Adders

**Table 6: Base TEC ( $TEC_{BASE}$ ) Allowances for Notebooks, Desktops, and Integrated Desktops**

Category	Base Allowance
Notebook	2.0
Integrated Desktop	2.0
Desktop	15.0



## Certification Criteria – Base Allowance and Functional Adders

- In addition to the changes to memory and storage adders already discussed, EPA also aligned the discrete graphics adders with the CEC Tier 2 discrete GPU allowances for both notebooks and desktops, though EPA did not retain CEC's scope exclusion for products with a GPU FB\_BW greater than 600GB/s.
  - Discrete GPUs above this bandwidth threshold can still claim the adder as it is presented, but computer systems with GPUs that have bandwidths far greater than this value have never been and are still not a focus area for certification to the ENERGY STAR program as they are typically designed for gaming applications.
  - EPA believes that content creators who require this level of graphics performance will still be able to access it through ENERGY STAR workstation and mobile workstation offerings.
- EPA found that the existing mobile workstation adder value (4 kWh/yr) is still appropriate and has not proposed any changes to it in Version 9.



## Workstations

- EPA is still interested in referencing a more modern and relevant active state workstation benchmark in Version 9 but at this point is still lacking data and supporting information from stakeholders on newer benchmark progress and how we can best adopt those measurements going forward. EPA would appreciate additional stakeholder feedback to aid EPA in identifying the best modern workstation benchmark to reference in Section 3.7.2 below for potential inclusion in the Draft 2 specification.



## Timeline and Next Steps

- EPA continues to work towards completing this specification by the end of Q2 of 2024
- EPA is currently planning that the Draft 2 specification is targeted for release in Q1, with a Final Draft specification in mid Q2 and a final specification in late Q2 of 2024.



## Questions

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Stakeholders are encouraged to provide written comments for consideration to [computers@energystar.gov](mailto:computers@energystar.gov) by January 11, 2024.