NRDC

NATURAL RESOURCES DEFENSE COUNCIL

February 20, 2019

Mr. Ryan Fogle
United States Environmental Protection Agency
ENERGY STAR Program
1200 Pennsylvania Ave NW
Washington, DC 20460

Subject: NRDC Comments on ENERGY STAR Computers Version 8.0 Discussion Guide

Dear Mr. Fogle,

On behalf of the Natural Resources Defense Council (NRDC) and our more than 1.3 million members and online activists, we respectfully submit the following comments in regard to the ENERGY STAR Computer Discussion Guide Version 8.0.

NRDC has been an active participant in the development of ENERGY STAR specifications for computers for over a decade. Computers are the second largest electricity end-use among electronic devices after televisions, roughly on par with all data centers in the United States. Large and cost-effective energy saving opportunities remain for computers, as demonstrated in NRDC's 2016 study "Slashing Energy Use in Computers and Monitors While Protecting Our Wallets, Health, and Planet".[1] As such, improving computer energy efficiency is an important way to save American consumers and businesses money on their utility bills, make America's economy more competitive, and support job growth, all while reducing greenhouse gas emissions.

NRDC strongly supports EPA's efforts to rapidly update the computer specification with version 8. Version 7 which was adopted in early 2018 focused on notebooks. Requirements for desktop computers have not had major updates since version 6 which went into effect in 2014. With the rapid evolution of computer technology and the adoption of mandatory computer efficiency standards in California in 2016, it is urgent to revise the specification for desktop computers to ensure it continues to differentiate the most efficient desktop computers on the market.

We generally support the direction of the Version 8.0 discussion guide and with the following modification requests.

[1] Delforge P., July 2016, https://www.nrdc.org/resources/slashing-energy-use-computers-and-monitors-while-protecting-our-wallets-health-and-planet

Internal Power Supply Efficiency at 5% load – NRDC disagrees with EPA's assessment that the efficiency of power supplies at 5% load is at an adequate level to not require specific criteria. We strongly recommend 5%-efficiency requirements set at the median of the data set for each power supply badge level.

The 80 PLUS power supply efficiency data shows a range of 65 to 80 percent efficiency at 5%-load for Bronze units, 72 to 84 percent for Gold, and 73 to 84 percent for Platinum:

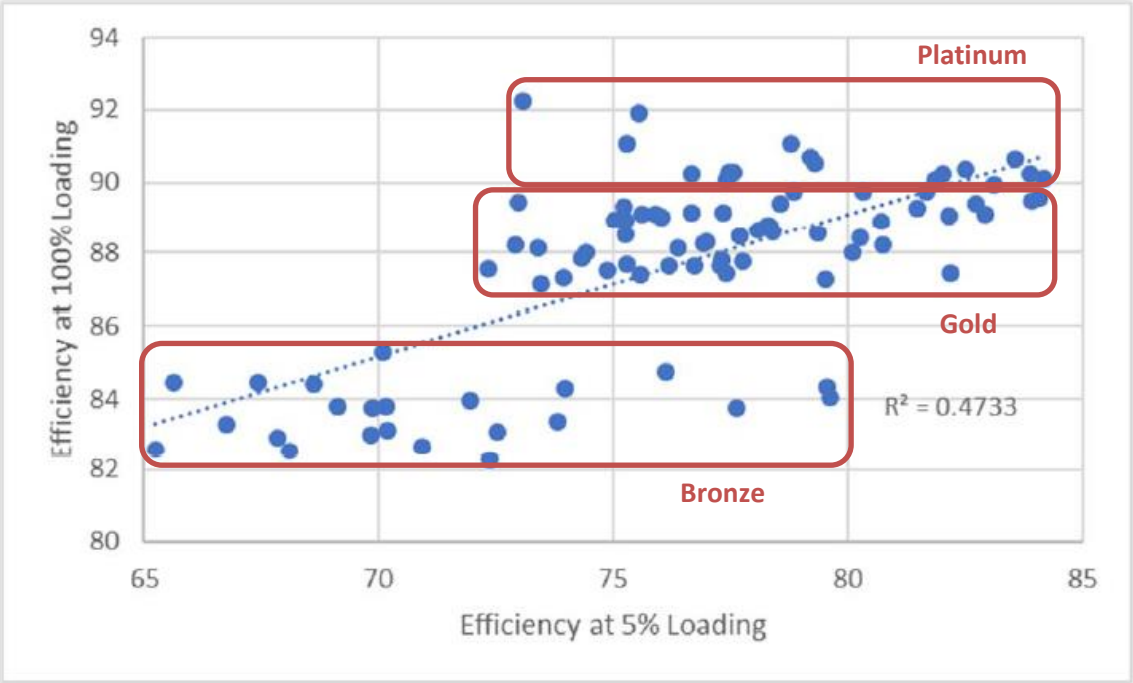

Figure 3. Efficiency at 5% Loading versus Efficiency at 100% Loading.

This data shows that setting efficiency requirements at the median of these ranges could reduce energy losses by 5 to 10% in the 5-10% power supply units (PSU) load range, which is where typical computers spend a lot of their operating time (short and long idle modes).

Contrary from external power supplies, desktop PSUs are unregulated, and generally lag in efficiency relative to both external and server power supplies. They also remain one of the components that uses the most energy in desktop computers, somewhere between 15% and 35% of total energy use for a computer operating at 5%, based on the 80 PLUS data.

80 PLUS and ENERGY STAR PSU efficiency requirements have historically been critical drivers of efficiency improvements in PSUs. However, these programs only set requirements at 20%, 50% and 100% load. This is useful but does not represent the most typical operating load point of computers when idle or performing low-intensity work such as office productivity, web browsing, social media, video and audio streaming, which are the vast majority of computer usage. Modern desktop computers typically operate between 5 and 10 percent PSU load for these tasks, far below the 20-percent 80 PLUS test point. And computer technology is evolving toward greater power scalability, meaning that computers are increasingly operating, and using

the most energy, at lower load points. It is therefore important to align PSU efficiency requirements with representative real-world operating conditions to ensure manufacturer investments in PSU efficiency yield the most energy savings.

PSU efficiency in idle mode remains critical despite the fact that the Typical Energy Consumption (TEC) metric already provides an incentive for manufacturers to ensure good PSU efficiency at 5% load, for two reasons:

1. Computers that can easily meet TEC requirements would still need to achieve the 5%-load requirement, saving more energy. This is especially important in the latter years of the life of the specification, when a large share of the market can meet the TEC requirements. A 5%-load requirement would ensure that ENERGY STAR still provides energy and cost savings to users throughout the life of the specification.
2. PSU are commodity components designed to 80 PLUS efficiency requirements. Providing a clear 5% efficiency requirement will ensure that PSU manufacturers focus on designing for efficiency over the critical 5 to 10% PSU load range. This would maximize the energy savings opportunity from PSU efficiency, leaving more room for additional savings from other measures, saving more energy and operating costs for users.

We therefore urge EPA to include a 5%-load efficiency requirement, if needed as a replacement for the 100%-load requirement which isn't as helpful. Power supplies tend to be sized so that most computers rarely exceed 50% load, which is adequately covered by the current 50%-load requirement, making 100% load less useful than 5% load.

<u>This 5% requirement is more important and would save more energy than increasing the requirement from Bronze to Gold for PSUs rated less than 500W, although we also support the latter.</u>

Mode weightings – We support EPA's intent to adjust mode weighting to better represent typical computer use, and we request that EPA provides more information on supporting data and analysis methodology to allow stakeholders to assess EPA's proposal.

NRDC supports EPA's effort to ensure that mode weightings are representative of typical use, and thank stakeholders who provided data. We support aligning the mode weightings in general, but do not have sufficient information to assess whether the proposed revised mode weightings achieve this objective. Ideally EPA would be able to share the full dataset for stakeholder review. If this is not possible due to confidentiality constraints, at a minimum we need the following metadata to evaluate the methodology used to collect this data and to determine the proposed mode weightings:

- Sample sizes, by user type (business/consumer): number, types, and geographic distribution of users
- For business computers, business size and industry type distribution
- For consumer computers, computer type (gaming/media/productivity)
- Identification methodology for computer modes (active, short idle, long idle, sleep, off)
- Weighting factors between business and consumer units if different from sample

Categorization – We encourage EPA to consider the long-term benefits of implementing the simplified expandability score categorization approach, rather than the short-term convenience of using existing approaches.

Expandability score is conceptually a better predictor of computer base energy use (before functionality adders) than p-score. Expandability score accounts for motherboard capabilities, which is a key factor in how much energy a computer uses when idle. P-score is not as good a proxy for that. We recognize that expandability score is challenging because it requires a lot of technical data. We support a simplified expandability score which combines the advantages of an expandability-based framework with the simplicity of p-score.

We appreciate that introducing a different metric from current ENERGY STAR and CEC policies would create new changes for industry in the short term. However, as a voluntary program, ENERGY STAR is well positioned to provide leadership for such change and has a long history of doing so. Computer policy frameworks around the country and the world largely have historically mostly aligned with ENERGY STAR because of the program's leadership, leading to relatively broad harmonization in computer efficiency policies, and largely avoiding a patchwork of different regulations. Maintaining this situation will require ENERGY STAR to continue to innovate and evolve its computer energy framework (test method, structural elements of the specification). Otherwise other jurisdictions will make their own changes which will result in less rather than more harmonization and will increase the long-term burden on industry that EPA intends to avoid in the short-term.

Thank you for the opportunity to participate in this specification development process and for your consideration of our comments.

Sincerely,

Pierre Delforge
Senior Scientist
Natural Resources Defense Council