



ENERGY STAR®

Low Load Internal Power Supply Webinar

U.S. Environmental Protection Agency
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Introductions

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Agenda

- Version 7.0 proposed IPS requirements
- Why Are We Talking About Low Load Requirements?
 - Comments received in Version 7.0
 - Final Draft Proposal
 - Data reviewed
 - Potential Impact on Version 8.0
 - Questions
- California IOU Proposal
- Open Discussion
- Next Steps



Why Low Load Requirements? Comments Received

- Many desktop computers spend most of their time at low loads
- Large efficiency losses can occur at load points at or below 10%
- 80Plus not a good indicator of IPS efficiency at or below 5% load point
- Stakeholders support data collection on low load energy measurements



Version 7.0 Internal Power Supply Approach

- 80Plus bronze equivalent up to 500W
- 80Plus gold equivalent above 500W

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

Loading Condition (Percentage of Nameplate Output Current)	Minimum Efficiency (115V)	Minimum Efficiency (230V)	Minimum Power Factor
20%	0.82	0.85	-
50%	0.85	0.88	0.90
100%	0.82	0.85	-

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

Loading Condition (Percentage of Nameplate Output Current)	Minimum Efficiency (115V)	Minimum Efficiency (230V)	Minimum Power Factor
20%	0.87	0.90	-
50%	0.90	0.92	0.90
100%	0.87	0.89	-



Version 7.0 Internal Power Supply Approach

- Revised internal power supply efficiency incentive in Table 6 from 80Plus silver and gold equivalent to 80Plus platinum and titanium equivalent
- Includes requirements for 10% load point

Table 6: Internal Power Supply Efficiency Allowance

Power Supply Type	Computer Type	Minimum Efficiency at Specified Proportion of Rated Output Current ⁱⁱ				Minimum Average Efficiency ⁱⁱⁱ	Allowance _{PSU}
		10%	20%	50%	100%		
IPS	Desktop	0.86	0.90	0.92	0.89	-	0.015
		0.90	0.92	0.94	0.90	-	0.03
	Integrated Desktop	0.86	0.90	0.92	0.89	-	0.015
		0.90	0.92	0.94	0.90	-	0.04



Why Low Load Requirements? Data Reviewed

- EPRI – Results from laboratory testing for the performance of desktop computer internal power supplies operating at minimal loading

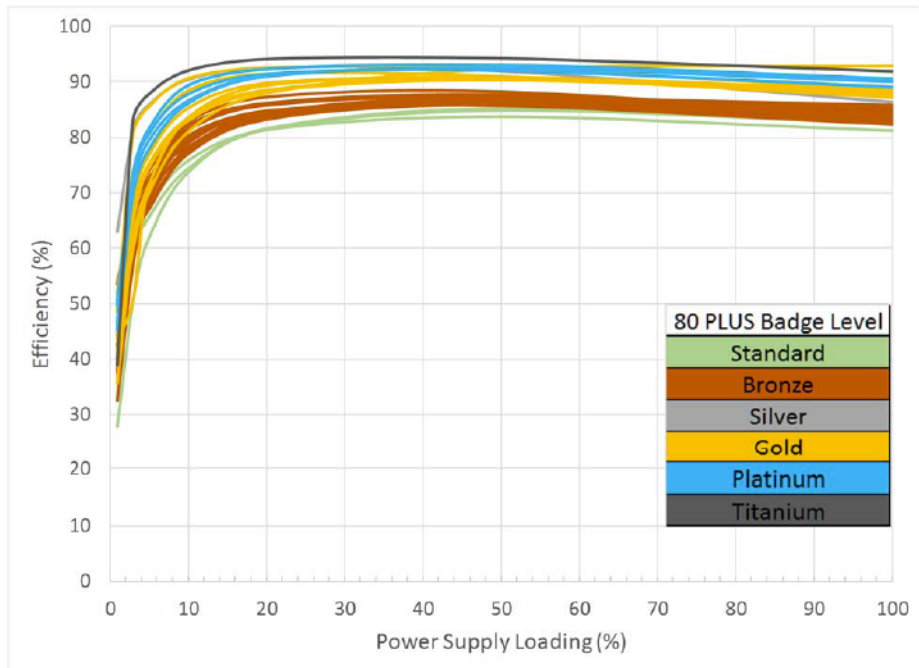


Figure 2, Loading versus efficiency with 80 PLUS badge level

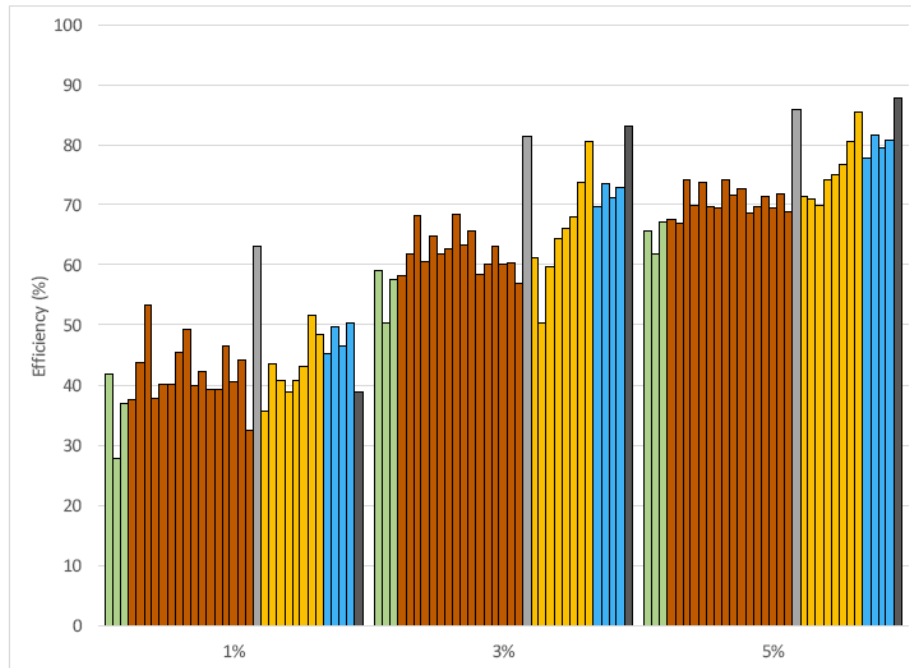


Figure 3, Bar chart with badge levels showing measured efficiency at 1, 3, and 5% loading. The color of the bar corresponds to the 80 PLUS badge level.



Why Low Load Requirements? Data Reviewed

- Additionally, another manufacturer shared data showing that 80% of desktop products in the QPL use 20% or less of their rated power in short idle (includes 1272 ES certified desktops).
 - Applies to products with a nameplate power rating of 500W or less
 - A vast majority of these products are between 10-20% load points in short idle, only a handful below 10%



CA IOU Proposal



Why Low Load Requirements? Data Reviewed

- Questions:
 - Will focusing on very low load efficiency levels negatively impact efficiency at higher load points?
 - The most efficient Titanium PSU in the EPRI study at load levels of 3% and above has terrible efficiency at 1% load (39%).
 - One of the most efficient PSUs between 1-5% loading only had mediocre efficiency at 20-100% load (Silver rated).
 - What is the tradeoff financially?
 - From an overall product energy consumption aspect, is focusing on very low load levels at the expense of higher load levels (e.g. 50%) a desirable outcome for overall program savings in real world usage?
 - How accurate are measurements at 1% and 3% load?



Open Discussion



Next Steps

- Draft 1, Version 8.0
 - EPA intends for this discussion to inform the development of the Draft 1, Version 8.0 specification.
 - Stakeholders are encouraged to provide additional feedback or other proposals based on this discussion.
 - Another call may be scheduled, as needed, to discuss further.
 - EPA is planning additional discussions over the next 9 months to discuss other major topics related to the Version 8.0 specification.
 - Tentatively looking at the ITI ELC Meeting in March as a potential venue for our next discussion on Version 8.0. (Proposed Topic: Categorization System)



Thank You!

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