



# ENERGY STAR®

## Version 7.0 Computers Draft 2 Specification Webinar

U.S. Environmental Protection Agency  
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## Introductions

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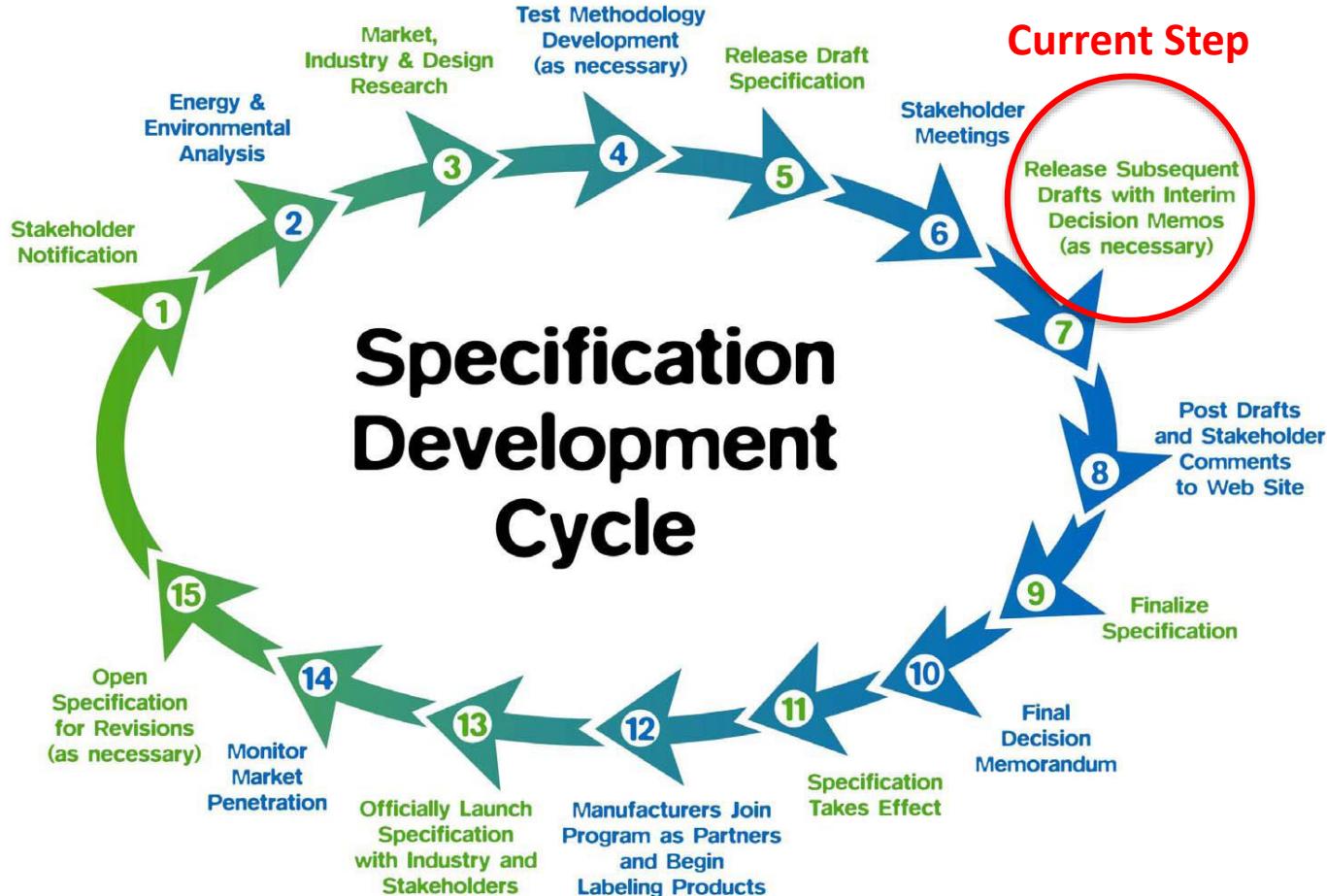


## Outline

- Definitions
- Scope
- Internal Power Supply Requirements
- Notebook Energy Requirements
  - Fully Network Connectivity
  - P-score Boundaries & Base Allowances
  - Functional Adders
- Thin Clients
- Timeline & Next Steps



# Review of Specification Development Cycle





## Definitions

- New Definition:
  - Mobile Workstation
- Revised Definitions:
  - Portable All-In-One Computer
  - Workstation
  - Discrete Graphics (dGfx)
  - Additional Internal Storage



## Scope

- EPA is proposing to exclude mobile workstations from the scope of Version 7.0
  - EPA has limited product energy information on these products
  - EPA believes these products have a limited presence in the market
  - Industry does not support a TEC requirement for these products which is necessary for inclusion in the ENERGY STAR computer specification.



## Internal Power Supply Requirement

- Investigated third party IPS offerings on consumer sites in response to stakeholder feedback on raising the IPS requirement from 80Plus Bronze to Gold equivalent.
  - Found a significant cost difference in Bronze vs. Gold below 500 watts nameplate, but that this difference above 500 watts was small, even finding examples where the most cost effective Gold option was slightly less expensive than the comparable Bronze equivalent product.
  - Proposing to revert to Bronze equivalent levels for IPSs with nameplate rating of 500 watts or less, and retain the Draft 1 proposal of Gold equivalent levels for IPSs with nameplate ratings above 500 watts.
- The 0.90 minimum power factor was corrected from 100% load to 50% loading condition in Table 2 to align with 80Plus Gold requirements.



## Internal Power Supply Requirement

**Table 1: Requirements for Internal Power Supplies Rated 500 Watts and Below**

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

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

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



## Notebook Requirements – Full Network Connectivity

- After considering stakeholder feedback on the Draft 1 changes to full network connectivity mode weighting, the Draft 1 language was maintained.
- Products certified to Version 6.0/6.1 using conventional mode weightings, and meeting the proposed criteria levels, will be able to certify without issue using the conventional mode weightings in Version 7.0
  - Full network connectivity mode weightings have been made less restrictive to allow products to take advantage of alternative solutions that meet or exceed the energy savings provided by existing solutions such as the ECMA 393 standard.
  - A more technology neutral approach will allow newer solutions to use mode weighting more appropriate for their expected behavior as they enter the market.



## Notebook Requirements – Base Allowances

- Stakeholder data and feedback indicated that switching the performance score boundary between Category 1 and 2 from 9 to 8 results in a slightly better distribution of system scores.
  - After reviewing the data provided, this change has been proposed in Draft 2.
- EPA also received feedback regarding multiple adders in Table 9. In adjusting these adders, EPA revised the base allowances in Table 8 below to ensure top quartile recognition of the market.

**Table 8: Base TEC ( $TEC_{BASE}$ ) Allowances for Notebooks**

Category Name	Notebook	
	Performance Score, $P^v$	Base Allowance
0	$P \leq 2$	6.5
1	$2 < P \leq 8$	8.0
2	$P > 8$	12.0



## Notebook Requirements – Functional Adders

- The following notebook functional adders were revised in Draft 2:
  - Discrete graphics
  - Integrated display
- An error with the memory adder in the Draft 1 analysis was also corrected, so while it's value has not changed in Table 9, it's affect has been corrected.

Table 9: Functional Adder Allowances for Notebook Computers

Function		Notebook
TEC <sub>MEMORY</sub> (kWh) <sup>vi</sup>		0.4
TEC <sub>GRAPHICS</sub> (kWh) <sup>vii</sup>	Graphics Category <sup>iii</sup>	$29.3 \times \tanh(0.0038 \times FB\_BW - 0.137) + 13.4$
	G1 (FB_BW ≤ 16)	
	G2 (16 < FB_BW ≤ 32)	
	G3 (32 < FB_BW ≤ 64)	
	G4 (64 < FB_BW ≤ 96)	
	G5 (96 < FB_BW ≤ 128)	
	G6 (FB_BW > 128; Frame Buffer Data Width < 192 bits)	
G7 (FB_BW > 128; Frame Buffer Data Width ≥ 192 bits)		
TEC <sub>SWITCHABLE</sub> (kWh) <sup>ix</sup>		N/A
TEC <sub>EEE</sub> (kWh) <sup>x</sup>		N/A
TEC <sub>STORAGE</sub> (kWh) <sup>xi</sup>		2.6
TEC <sub>INT_DISPLAY</sub> (kWh) <sup>xii</sup>		$8.76 \times 0.30 \times (1+EP) \times (0.43 \times r + 0.0263 \times A)$



## Notebook Requirements – Draft 2 Pass Rates

- The combination of base allowance and functional adder changes proposed in Draft 2 across the ENERGY STAR notebook data set, when considering all 2015 and newer models, are shown below:

Performance Category	Pass Rate
0	26.3%
1	25.6%
2	24.5%

- Breaking down the pass rates of category 2 for products with G5-G7 discrete graphics which were raised in stakeholder comment:

Discrete Graphics Category	Pass Rate
G5	21.4%
G6	100% (only 1 product)
G7	25%



## Thin Client Requirements

- EPA received requests for additional adders and amended base allowances for thin clients in response to Draft 1.
- EPA re-evaluated the thin client data, and found that the levels proposed in Draft 1 adequately differentiate the market and allow for inclusion of both low-end and high-end thin client products.
- EPA found that including the proposed amended base allowances and additional adders result in all currently certified thin clients being eligible for the ENERGY STAR under Version 7.0.
- As a result, EPA has retained the same thin client criteria in Draft 2 as was proposed in Draft 1, but welcomes any further feedback on the levels proposed with supporting data.
- EPA also received a proposal to change the V6.0/6.1 formatting structure for thin clients, but has determined that it would add needless complexity to the requirements and has maintained the formatting structure from previous versions as a result.



## Timeline

- Draft 2, V7.0 Specification Webinar – Today
- Draft 2, V7.0 Specification Comment Deadline – October 26
- Final Draft V7.0 Specification + Final Specification Release – Q4 2017
- V7.0 Specification Effective – Q3 2018
- V8.0 will be launched soon after the completion of the V7.0 specification effective date
  - Targeting completion of the V8.0 specification in advance of CEC Tier 2.



# Any Questions?



## Draft 2 Specification Comment Deadline

- Please send written feedback to [computers@energystar.gov](mailto:computers@energystar.gov)

**Comment Deadline**

Thursday, October 26, 2017



## Thank You!

- Questions on specification development:

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- Questions can also be directed to [computers@energystar.gov](mailto:computers@energystar.gov)