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Version 7.0 Computers Draft 1 Specification Webinar

U.S. Environmental Protection Agency
July 18, 2017





Introductions

- Ryan Fogle – EPA, Computers Product Lead
- John Clinger – ICF

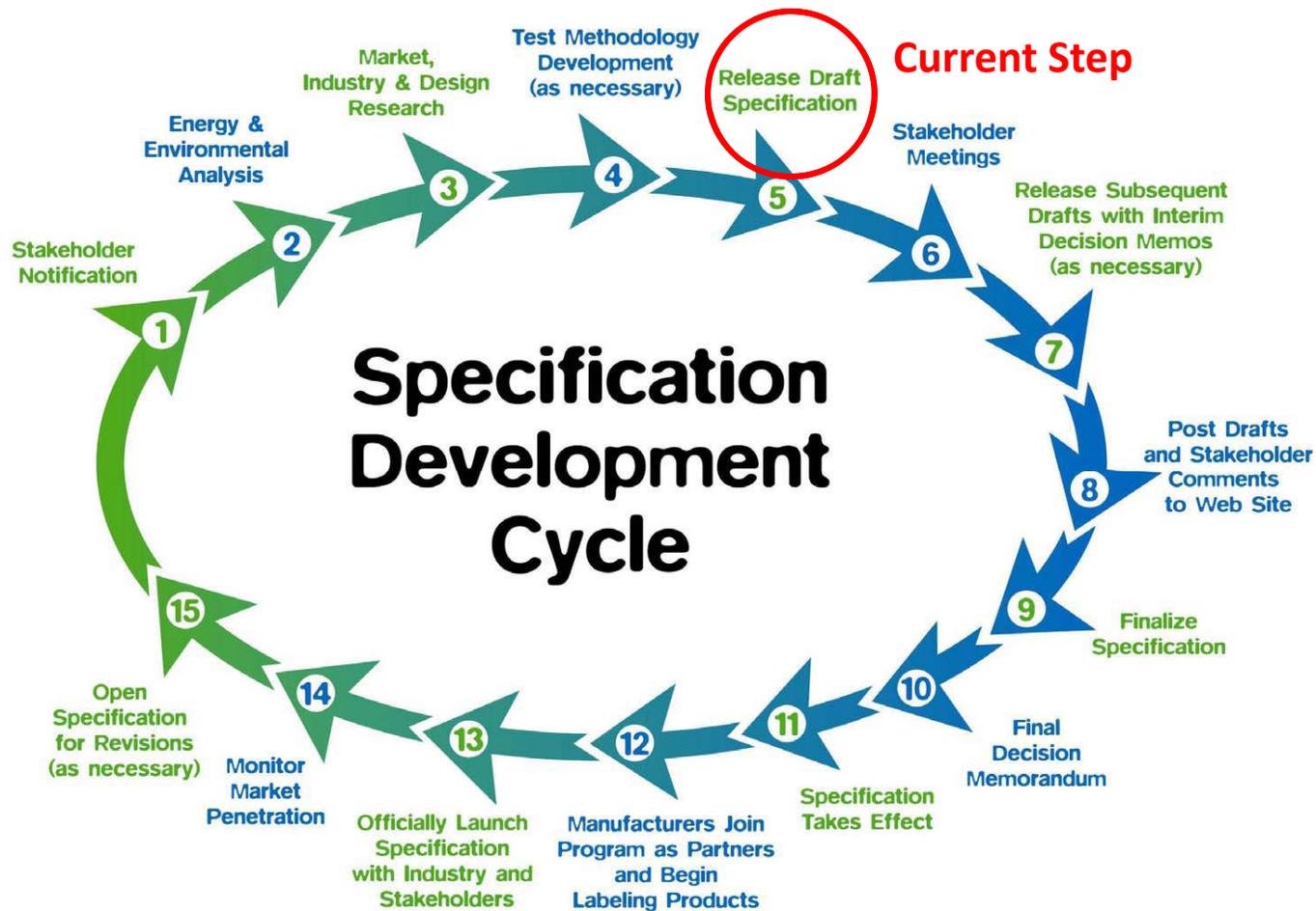


Outline

- Version 7.0 Proposal Highlights and Version 8.0 Approach
- Definitions
- Scope
- Internal Power Supply Requirements & Updated Incentive
- Notebook Energy Requirements
 - Mode Weightings
 - Update to P-score Categorization
 - Functional Adders
- Portable All-In-One Classification
- Thin Client & Workstation
- Timeline & Next Steps



Review of Specification Development Cycle





Version 7.0 Proposal Highlights

- Proposing revised requirements for the following:
 - Notebook computers
 - Slates/tablets
 - Thin clients
 - Internal power supplies
- Encourage adoption of very low power network capable modes such as Microsoft's modern standby (specifically connected standby) and Apple's Power Nap



Version 8.0 Approach

- Development expected to begin soon after the Version 7.0 effective date.
 - EPA may solicit feedback on certain elements of the Version 8.0 specification in subsequent drafts of the Version 7.0 revision.
- Current market penetration for desktops is 40%, which allows for additional time to investigate alternative approaches for desktops.
 - EPA will investigate categorization options for desktops that may offer better differentiation than the current p-score approach, while still providing sufficient information for end-users to capture the significant configurability within a product family.
- As more data becomes available, EPA may consider:
 - Revisions to mode weighting values.
 - Internal power supply efficiency at very low load levels.
 - Incorporation of active state energy measurements.



Definitions

- New Definitions:
 - Rack Mounted Workstation

- Revised Definitions:
 - Discrete Graphics (dGfx)
 - Additional Internal Storage
 - Full Network Connectivity
 - Revision clarifies that other non-ECMA 393 network capable low power modes can be used to achieve Full Capability and associated mode weightings.
 - Maximum power allowed has been reduced to target modes that provide network capability while meeting or beating current sleep mode power levels.
 - Switchable Graphics



Scope

- EPA is proposing to remove the following product categories from scope:
 - Small scale servers
 - Point of sale slates/tablets
- Ultra-Thin Clients/Zero Clients
 - EPA did not receive support for the inclusion of these products.
- Interactive Displays
 - EPA believes this product would be covered under the ENERGY STAR Displays specification.
- **Note:** The newly defined rack mounted workstations will continue to be included in scope so long as they also meet the general workstation definition.



Internal Power Supply Requirement

- Revised existing internal power supply requirements from 80Plus Bronze to 80Plus Gold equivalent.

Table 1: Requirements for Internal Power Supplies

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



Internal Power Supply Additional Allowance

- Revised existing internal power supply requirements incentives from 80Plus Silver and Gold equivalents to 80Plus Platinum and Titanium equivalent levels respectively. The magnitude of the incentive has not changed.

Table 5: 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	0.90 0.89	-	0.015
		0.90	0.92	0.94	0.92 0.90	-	0.03
	Integrated Desktop	0.86	0.90	0.92	0.90 0.89	-	0.015
		0.90	0.92	0.94	0.92 0.90	-	0.04

*Values for 100% loading point in Draft 1 do not align with 80Plus Platinum and Titanium. EPA intends to adjust these percentages to the red values in Draft 2 aligning with the latest values from the 80Plus website.



Revised Notebooks Requirements – Mode Weightings

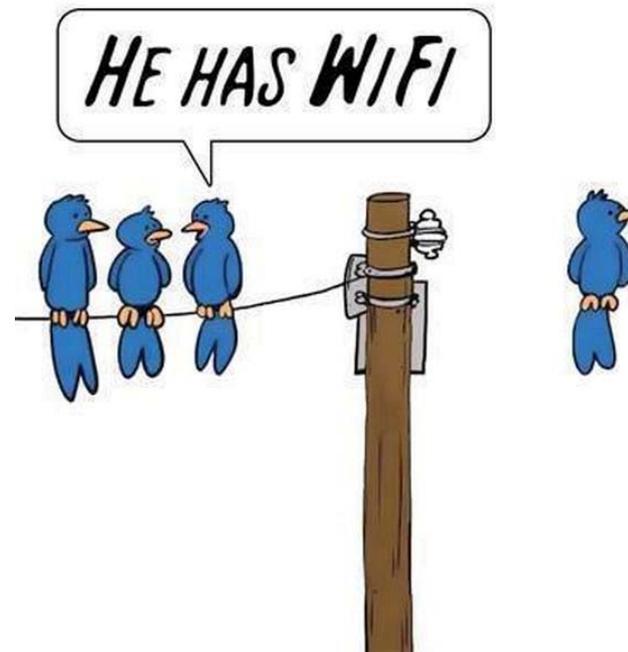
- Removed the base capability, remote wake, and service discovery / name services mode weightings as they are not being claimed in certification. This change also applies to desktops.

Table 4: Mode Weightings for Notebook Computers

Mode Weighting	Conventional	Network Proxy - Full Capability
T_{OFF}	25%	25%
T_{SLEEP}	35%	45%
T_{LONG_IDLE}	10%	5%
T_{SHORT_IDLE}	30%	25%

Question – Mode Weightings and Network Connectivity

- Do stakeholders have additional thoughts on how EPA can help drive the adoption of alternative very low power network capable modes, which can take advantage of the “Network Proxy - Full Capability” mode weighting?





Revised Notebooks Requirements – Categorization

- EPA has consolidated several of the categories from Version 6.1.
 - Addresses reduced separation in measured energy between lower and higher performance products;
 - Differentiation in the base allowance based on graphics capability is no longer meaningful.

Version 6.1 Version 7.0

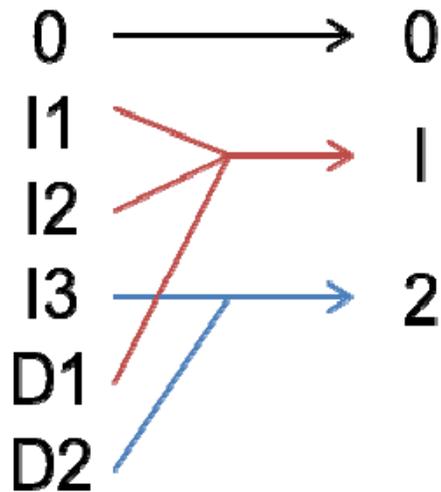


Table 7: Base TEC (TEC_{BASE}) Allowances for Notebooks

Category Name	Notebook	
	Performance Score, P^v	Base Allowance
0	$P \leq 2$	4.0
1	$2 < P \leq 9$	7.0
2	$P > 9$	11.0



Revised Notebooks Requirements – Functional Adders

- EPA has revised notebook functional adders to address advancements in efficiency.
 - Aligns with CEC’s computer regulation.
 - Memory adder is only exception.
- The base and functional adder changes for notebooks will apply to slates/tablets and Portable All-In-One Computers as well.

Function		Notebook	
TEC _{MEMORY} (kWh) ^{vi}		0.4	
TEC _{GRAPHICS} (kWh) ^{vii}	Graphics Category ^{viii}	G1 (FB_BW ≤ 16)	16
		G2 (16 < FB_BW ≤ 32)	20
		G3 (32 < FB_BW ≤ 64)	25
		G4 (64 < FB_BW ≤ 96)	29
		G5 (96 < FB_BW ≤ 128)	35
		G6 (FB_BW > 128; Frame Buffer Data Width < 192 bits)	44
		G7 (FB_BW > 128; Frame Buffer Data Width ≥ 192 bits)	55
TEC _{INT_DISPLAY} (kWh) ^{xii}		$8.76 \times$ $0.30 \times (1+0.4 \times EP)$ $\times (0.43 \times r +$ $0.0263 \times A)$	



Expected Notebook Energy Savings

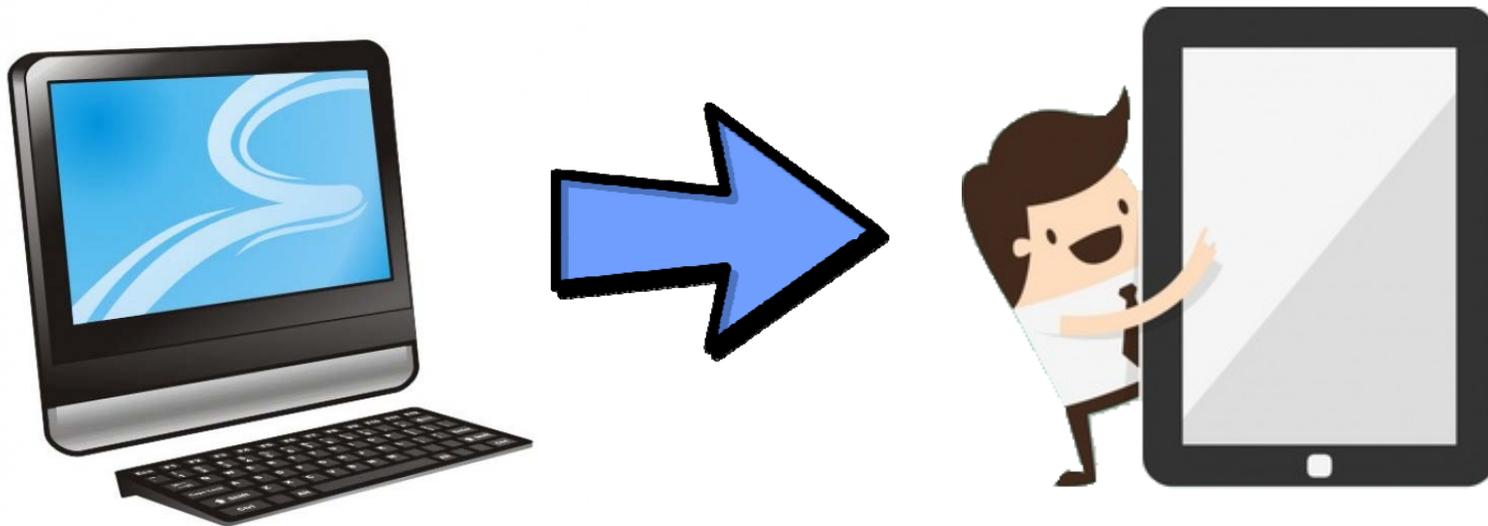
Performance Category	Energy Consumption Non-Certified Notebook (kWh/year)	Energy Consumption ENERGY STAR Notebook (kWh/year)	Product Level Savings (kWh/year)	Estimated National Savings Potential (kWh/year)
0	22	16	6	58,839,690
I1	26	20	6	58,839,690
I2	57	39	18	176,519,070
			Total	294,198,450



- Multiplied 2016 USD shipments by 1.05 based on 95% market penetration estimate to get total shipments
- Assumed 65% of market will not meet ES at release, and divided that aggregate value by 3 between the three performance categories
- Multiplied product savings by non-ES shipments for each performance category to calculate estimated annual savings

Portable All-In-One Computers

- Certified product data shows that portable all-in-one desktop allowances are far too generous for portable all-in-one computers, and that applying notebook requirements to them is more appropriate as they more closely resemble and behave like very large slate/tablets.
- This approach aligns with the treatment of portable all-in-one computers in the European Commission's Ecodesign regulation.





Thin Client Requirements

- The Version 6.1 base allowance for thin clients is overly generous for products currently on the market, based on ENERGY STAR data.
- EPA has revised the base allowance from 60 kWh to 31 kWh.
- EPA has not changed the graphics or WOL allowances as the available QPL data did not support additional changes for these allowances.

Table 10: Adder Allowances for Thin Clients

Adder	Allowance (kWh)
TEC _{BASE}	31
TEC _{GRAPHICS}	36
TEC _{WOL}	2



Workstations

- EPA reviewed the market penetration of workstations and found it is currently 10%.
- EPA plans on revisiting workstation requirements in Version 8.0
 - This may include an exploration of active requirements based on SPECviewperf and/or Linpack, as previously described in the considerations for future revisions section of Version 6.1.
- Rack-mounted workstations have been defined to clarify their intended inclusion in scope of Version 7.0.



Timeline

- Draft 1 V7.0 Specification Webinar - Today
- Draft 1 V7.0 Specification Comment Deadline – August 3
- Draft 2, V7.0 Specification Release – Q3 2017
- 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.

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Any Questions?



Draft 1 Specification Comment Deadline

- Please send written feedback to computers@energystar.gov

Comment Deadline

Thursday, August 3, 2017



Thank You!

- Questions on specification development:

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