ENERGY STAR®

Version 8.0 Computers
Draft 2 Specification Webinar

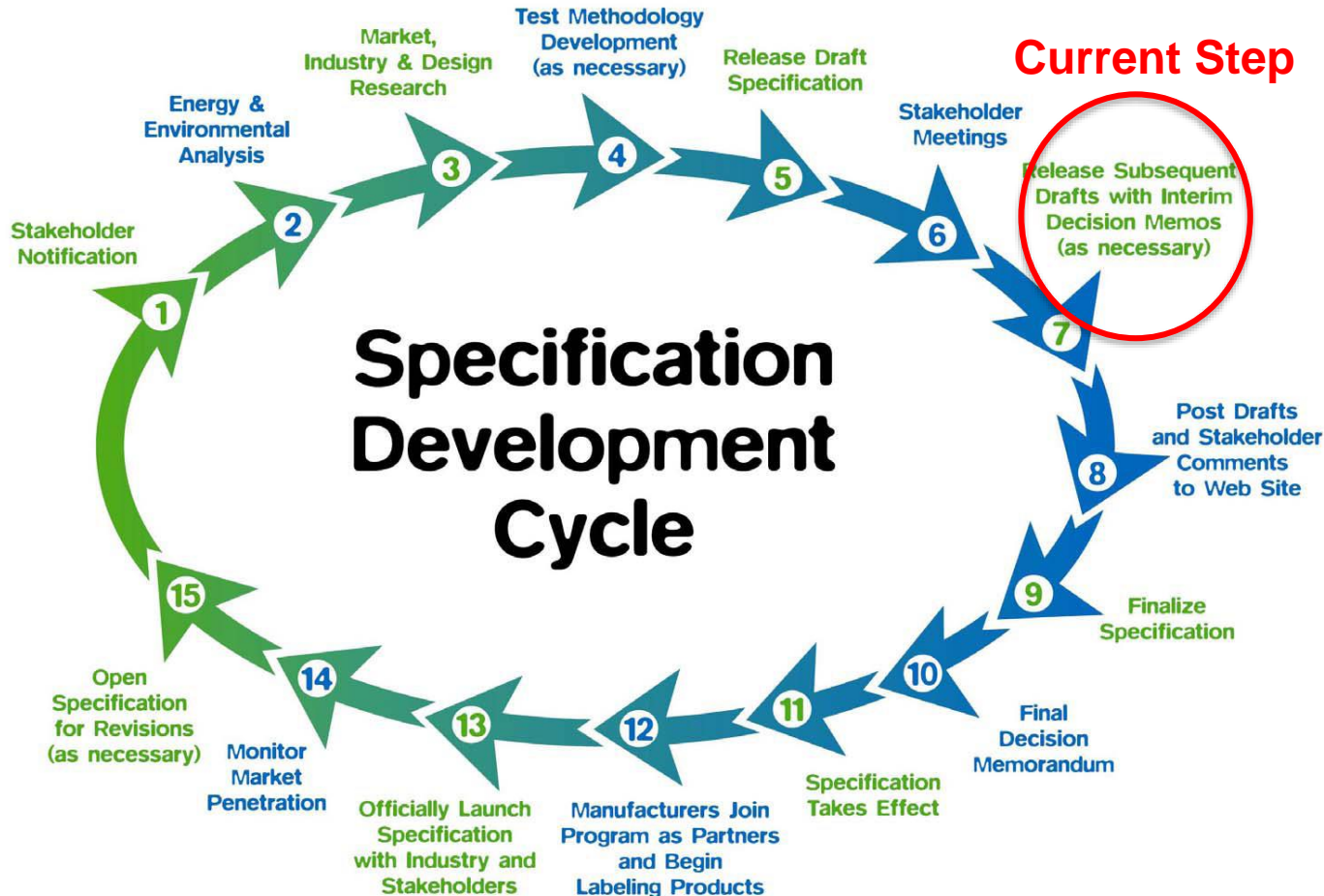U.S. Environmental Protection Agency
July 25, 2019

Introductions

- Ryan Fogle – EPA, Computers Product Lead

- John Clinger – ICF

- Jeremy Dommu – DOE Test Method Lead

- Mansi Thakkar – Navigant

- Aziz Iqbal – Navigant

Review of Specification Development Cycle

Outline

- Definitions
- Resume Time
- Energy Efficient Ethernet Requirement
- Internal Power Supply Requirement
- Full Network Connectivity Allowance
- Desktop Requirements
- Test Method
- Timeline & Next Steps

ENERGY STAR. The simple choice for energy efficiency.

Definitions

- New Definition:
  - Sleep Mode

    - *Removed 5 seconds terminology.*

  - Additional Internal Storage

    - *Clarified that additional storage devices are HDDs or SSDs which are installed beyond the primary storage device. Also clarified that primary storage device is the device with the OS installed on it.*

  - Constant Network Connectivity

    - *A capability that allows the wake of system operating system or software to facilitate communication and downloads from the network (e.g. instant messaging, email, management and maintenance tasks, etc.)*

Resume Time

- ## Draft 1 Feedback
  - Concerns exist regarding the inclusion of resume time in the sleep mode definition.
  - Discussed setting requirements with no test method, but there were concerns on how this would be reported consistently.

- ## Proposals
  - Amend definition for sleep mode to remove 5 second resume time.
  - Set levels for notebooks and desktops, but not workstations.
    - *Notebooks: 5 seconds*
    - *Desktops: 10 seconds*
  - Manufacturers will declare if their product fulfills the requirement and it will not be reviewed as part of the certification process.
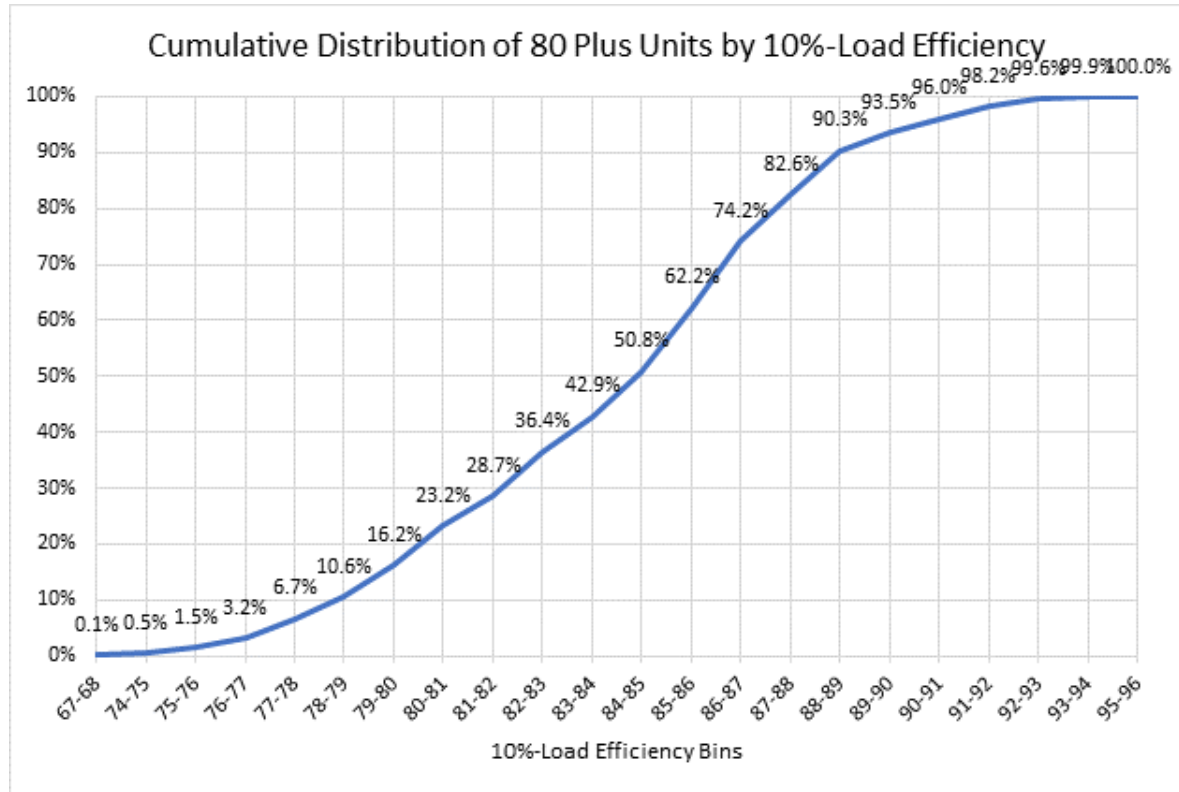
Energy Efficient Ethernet

- ## Draft 1 Feedback:
  - Supported the removal of the EEE adder.
  - Did not support the requirement of EEE enabled.
    - *A third of products would be ineligible for ENERGY STAR certification, including notebook computers.*

- ## Proposals
  - EPA is maintaining the removal of the EEE adder.
  - Proposing to require that all Ethernet ports with a speed of 1 Gb/s or greater support EEE.
  - Intent is to require that EEE is enabled on all ports in Version 9.0.

Internal Power Supplies

- ## Draft 1 Feedback
  - Interest in setting requirements for 10% load level for all products.
  - Maintain Bronze level for 500 W and below.

- ## Proposal
  - Maintain 80Plus Bronze for 500 W and below (as in V7.1), but with an additional 10% load point.
  - Efficiency level at 0.80.

Cumulative Distribution of 80 Plus Units by 10%-Load Efficiency

Full Network Connectivity Allowance

- ## Draft 1 Feedback:
  - Stakeholders requested an allowance for full network connectivity in desktop and integrated desktop products.
  - Proposed a 12% allowance to incentivize increased efficiency in full network connectivity modes.

- ## Proposals:
  - Reintroduced an incentive for full network connectivity for desktop products that can meet a level of 2.5 watts or less.
  - Found that the incentive did not save enough energy to warrant the allowance in integrated desktops and therefore EPA has excluded these products from the scope of the allowance.
  - Notebooks also excluded from the scope of the allowance and these products have not moved to new mode weightings yet.

Summary of Data Set Changes

- Generated on June 28, 2019
- Populated missing FW_BW data for D1 products
  - Used to more accurately calculate D1 graphics adders
- Use of ITI provided storage formula to estimate storage adders for products which sufficient storage data was not available
- Incorporated ITI corrections into ITI submitted data set (category clarifications)
- Inclusion of new ES products certified since the previous pull
- Inclusion of existing certified products which were previously missing data fields important for analysis that CBs provided prior to the latest pull

ENERGY STAR Criteria Levels - Desktops

Table 7: Base TEC (TEC$_{BASE}$) Allowances for Desktops

Category Name	Graphics Capability[iv]	Desktop	
		Performance Score, P^v	Base Allowance
I1	Integrated or Switchable Graphics	$P \leq 8$	25.0
I2		$P > 8$	45.0
D1	Discrete Graphics	$P \leq 8$	32.0
D2		$P > 8$	42.0

Table 8: Base TEC (TEC$_{BASE}$) Allowances for Integrated Desktops

Category Name	Integrated Desktop	
	Performance Score, P^{iv}	Base Allowance
1	$P \leq 8$	9.0
2	$P > 8$	22.0

Desktop Requirements – Functional Adders

- Draft 1 Feedback
  - Stakeholders requested that EPA consider new or updated adders for the following products:
    - *Discrete Graphics Adder – Harmonize with CEC Tier 2.*
    - *2.5 Gb/s Ethernet Port Adder*
    - *10 Gb/s Ethernet Port Adder*
  - Update adders to reflect new mode weightings.

- Proposal
  - Update the adders to reflect the new mode weightings.
  - Added a 10Gb/s Ethernet port adder.

- EPA has not included the CEC tier 2 discrete graphics adder update or the 2.5Gb/s Ethernet port adder.

Amendments to Adders

Table 10: Functional Adder Allowances for Desktop, Integrated Desktop, Thin Client, and Notebook Computers

Function		Desktop	Integrated Desktop	Notebook
TEC$_{MEMORY}$ (kWh)[vi]			$1.7 + (0.24 \times GB)$	$2.4 + (0.294 \times GB)$
TEC$_{GRAPHICS}$ (kWh)[vii],[viii]			$50.4 \times \tanh(0.0038 \times FB\_BW - 0.137) + 23$	$29.3 \times \tanh(0.0038 \times FB\_BW - 0.137) + 13.4$
TEC$_{SWITCHABLE}$ (kWh)[ix]			14.4	N/A
TEC$_{STORAGE}$ (kWh)[x]	3.5" HDD		21	26
	2.5" HDD		2.1	2.6
	Hybrid HDD/SSD		0.8	1.0
	SSD (including M.2 port solutions)		0.4	0.5
TEC$_{INT\_DISPLAY}$ (kWh)[xi]	$A < 190$	N/A	$[(3.43 \times r) + (0.148 \times A) + 1.30] \times (1 + EP)$	$8.76 \times 0.30 \times (1+EP) \times (0.43 \times r + 0.0263 \times A)$
	$190 \leq A < 210$		$[(3.43 \times r) + (0.018 \times A) + 26.1] \times (1 + EP)$	
	$210 \leq A < 315$		$[(3.43 \times r) + (0.078 \times A) + 13.2] \times (1 + EP)$	
	$A \geq 315$		$[(3.43 \times r) + (0.156 \times A) - 11.3] \times (1 + EP)$	
TEC$_{MOBILEWORKSTATION}$ (kWh)[xii]			N/A	4.0
TEC$_{10GLAN}$ (kWh)[xiii]			18.0	N/A

Desktop Requirements – Draft 2 Pass Rates

- The combination of base allowance and functional adder changes proposed in Draft 2 across the ENERGY STAR desktop and integrated desktop data set yield the following pass rates

Performance Category	Pass Rate
Integrated Desktop 1	26%
Integrated Desktop 2	25%
Desktop I1	26%
Desktop I2	26%
Desktop D1	26%
Desktop D2	26%

Test Method Updates in Draft 2

- Short Idle Test: Adopt Draft 1 proposals
  - For systems with cyclical charging, extend short idle test to capture a full cycle with minimal user input every 5 minutes.
  - Remove interim solution from Version 7.1 that allowed batteries to be disabled through software.

- Display Connection and resolution:
  - Adds a display connection priority that aligns with ENERGY STAR Displays Specification.
  - Requests comment on whether a display resolution requirement is necessary for repeatable testing and what that resolution should be.

- Sleep to Wake Latency: Removes the Sleep to Wake Latency test since it is no longer required by the specification.

Draft 2 Specification Comment Deadline

- Send written feedback to computers@energystar.gov

- **Please include any supporting data for additions or revisions to proposed requirements and/or adders with your written Draft 2 specification feedback.**

Comment Deadline
Friday, August 16, 2019

Timeline

- Draft 2, V8.0 Specification – July 15, 2019

- Draft 2 Webinar – July 25, 2019

- Final Draft V8.0 Specification + Final Specification Release – Q3/Q4 2019

- V8.0 Specification Effective – July 2020

Thank You!

- Questions on specification development:

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