



ENERGY STAR

Version 6.1 Computers

Revision

U.S. Environmental Protection Agency
U.S. Department of Energy

Agenda



- 1** Introduction
- 2** ENERGY STAR BCS Developments
- 3** Version 6.1 Revision Proposal
- 4** Open Comment & Timeline

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Introduction



- Final Version 6.0 Program Requirements released September 10, 2013
- Version 6.0 effective date is June 2, 2014
- Version 6.1 Revision
 - Goal is to complete Version 6.1 development in time to align with the Version 6.0 effective data above.
 - Proposing to expand scope to include Two-In-One and Slate/Tablet products

Written Comments



- In addition to making verbal comments during today's call, stakeholders are encouraged to submit written comments to computers@energystar.gov

Comment Deadline

Friday, January 10, 2014

- EPA and DOE thank stakeholders in advance for any final comments.

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ENERGY STAR BCS Update

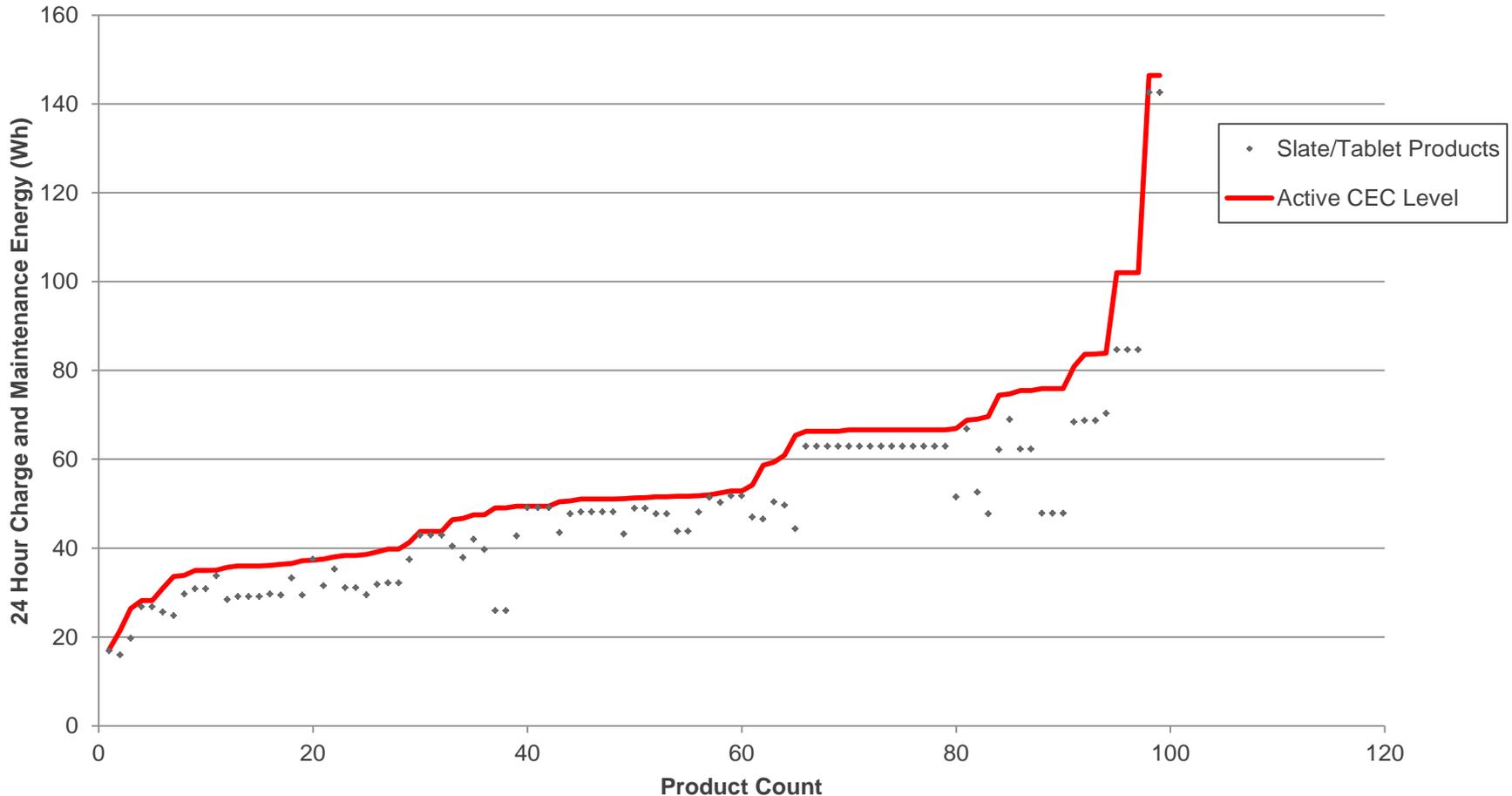


- EPA has proposed to sunset the ENERGY STAR BCS program for the following reasons:
 - Limited additional, cost-effective savings are available
 - Aggressive CEC requirements established
 - Presence of California Energy Commission (CEC) can serve as backstop
 - Continuing to allow labeling in light of CEC requirements would be misleading to consumers
 - Challenges in cost of administering the program

CEC Active Slate/Tablet Data



Active Performance for Slates/Tablets



(Products ordered by increasing E_b)

BCS Impact on Slates/Tablets



- Original suggestion was to address Slates/Tablets in the ENERGY STAR Version 6.1 Computers Specification revision by applying BCS requirements
- BCS requirements do not provide meaningful differentiation based on current CEC active requirements for “Group 1” and “Group 2” products
 - Products with E_b between 2 Wh → 100 Wh

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ENERGY STAR Version 6.1

Computers Specification Revision



1. New definitions and scope expansion
2. Testing in accordance with existing Notebook testing procedure
 - Requires revisions / additional guidance
3. Determining categorization of Two-In-One and Slate/Tablet products and applying Notebook efficiency criteria as appropriate

Version 6.1 Draft Definitions



1. Two-in-One Computer: A computer which resembles a traditional Notebook Computer, but has a detachable display which can act as an independent Slate/Tablet when disconnected. The physical keyboard base must contain processing capability typically found in a Notebook Computer.
2. Slate/Tablet: A computing device designed for portability that meets all of the following criteria:
 - i. Marketed as a Tablet/Slate computing device;
 - ii. Includes an integrated display with a diagonal size greater than 6.5 inches;
 - iii. Either lacking an integrated, physical keyboard or can be used with a detachable physical keyboard (factory or after-market);
 - iv. Includes and primarily relies on touchscreen input; (with optional keyboard);
 - v. Includes and primarily relies on a wireless network connection (e.g., Wi-Fi, 3G, etc.); and
 - vi. Includes and is primarily powered by an internal battery (with connection to the mains for battery charging, not primary powering of the device).

Definitions Questions



- Are there other sources that EPA should review for input on the current list of definitions?
- Is the current Slate/Tablet definition comprehensive enough? Is it in sync with the market?
- Are there suggestions for defining hardware differences between Notebooks and Slate/Tablets for requirement purposes?

Version 6.1 Scope



- EPA proposes to add Two-In-One and Slate/Tablet products into scope
- Any products with a diagonal measurement less than 6.5 inches (e.g. smartphones) would remain out of scope in Version 6.1



Scope Questions



- Are there concerns with removing devices with a diagonal screen size of less than 6.5 inches from scope in Version 6.1?
- Are there existing or planned products that would fall under the Slate/Tablet scope inclusion, but also under the non-PC based point-of-sale products scope exclusion?

Version 6.1 Testing Proposal



- Use notebook test methodology (with necessary edits) to test Two-In-One and Slate/Tablet products:
 - DOE initial assessment is that the current Notebook test method can be applied to Slates/Tablets with relatively minor edits to the existing test method
 - EPA/DOE will work with stakeholders to address any concerns or perceived technical limitations of the current test method

Testing Questions



- Are there significant technical limitations that prevent Slates/Tablets from being successfully tested using the TEC metric for Notebooks found in Version 6.0?
- Are there devices proposed for scope inclusion that are not a good fit for the existing test method?

Proposed Efficiency Criteria for Version 6.1



- Two-In-One Computers and Slates/Tablets which contain notebook level processing capability:
 - Follow appropriate notebook category in Table 6 of the Version 6.0 Computers Specification, based on installed hardware
- Slates/Tablets which use hardware not typically associated with Notebooks (e.g. ARM processors) would fall under the “0” category in Table 6 mentioned above

Proposed Categorization for Version 6.1



Table 6: Base TEC (TEC_{BASE}) Allowances

Category Name	Graphics Capability ^{iv}	Desktop or Integrated Desktop		Notebook	
		Performance Score, P^v	Base Allowance	Performance Score, P^v	Base Allowance
0	Any Graphics $dGfx \leq G7$	$P \leq 3$	69.0	$P \leq 2$	14.0
I1	Integrated or Switchable Graphics	$3 < P \leq 6$	112.0	$2 < P \leq 5.2$	22.0
I2		$6 < P \leq 7$	120.0	$5.2 < P \leq 8$	24.0
I3		$P > 7$	135.0	$P > 8$	28.0
D1	Discrete Graphics $dGfx \leq G7$	$3 < P \leq 9$	115.0	$2 < P \leq 9$	16.0
D2		$P > 9$	135.0	$P > 9$	18.0

- RISC based Slates/Tablets (e.g. ARM)

Mode Weightings for Version 6.1



Table 4: Mode Weightings for Notebook Computers

Mode Weighting	Conventional	Full Network Connectivity			
		Base Capability	Remote Wake	Service Discovery / Name Services	Full Capability
T_{OFF}	25%	25%	25%	25%	25%
T_{SLEEP}	35%	39%	41%	43%	45%
$T_{LONG\ IDLE}$	10%	8%	7%	6%	5%
$T_{SHORT\ IDLE}$	30%	28%	27%	26%	25%

- Two-In-One and Slate/Tablet products without sleep mode will be treated similarly to existing products in scope of Version 6.0 which do not have sleep mode

— Replace T_{SLEEP} with T_{LONG_IDLE}

TEC in Version 6.1

- E_{TEC} shall be less than or equal to E_{TEC_MAX}
- Use Equation 1 to calculate E_{TEC} :

Equation 1: TEC Calculation (E_{TEC}) for Desktop, Integrated Desktop, Thin Client and Notebook Computers

$$E_{TEC} = \frac{8760}{1000} \times (P_{OFF} \times T_{OFF} + P_{SLEEP} \times T_{SLEEP} + P_{LONG_IDLE} \times T_{LONG_IDLE} + P_{SHORT_IDLE} \times T_{SHORT_IDLE})$$

Where:

- P_{OFF} = Measured power consumption in Off Mode (W);
- P_{SLEEP} = Measured power consumption in Sleep Mode (W);
- P_{LONG_IDLE} = Measured power consumption in Long Idle Mode (W);
- P_{SHORT_IDLE} = Measured power consumption in Short Idle Mode (W); and
- T_{OFF} , T_{SLEEP} , T_{LONG_IDLE} , and T_{SHORT_IDLE} are mode weightings as specified in Table 3 (for Desktops, Integrated Desktops, and Thin Clients) or Table 4 (for Notebooks).

Functional Adders in Version 6.1



- Adders for graphics, memory, storage, integrated display are calculated from Table 7

Table 7: Functional Adder Allowances for Desktop, Integrated Desktop, Thin Client, and Notebook Computers

Function		Desktop	Integrated Desktop	Notebook
TEC _{MEMORY} (kWh) ^{vi}		0.8		
TEC _{GRAPHICS} (kWh) ^{vii}	Graphics Category ^{viii}	G1 (FB_BW ≤ 16)	36	14
		G2 (16 < FB_BW ≤ 32)	51	20
		G3 (32 < FB_BW ≤ 64)	64	26
		G4 (64 < FB_BW ≤ 96)	83	32
		G5 (96 < FB_BW ≤ 128)	105	42
		G6 (FB_BW > 128; Frame Buffer Data Width < 192 bits)	115	48
		G7 (FB_BW > 128; Frame Buffer Data Width ≥ 192 bits)	130	60

Functional Adders in Version 6.1



Table 7: Functional Adder Allowances for Desktop, Integrated Desktop, Thin Client, and Notebook

$TEC_{\text{SWITCHABLE}}$ (kWh) ^{ix}	0.5 × G1		N/A
TEC_{EEE} (kWh) ^x	8.76 × 0.2 × (0.15 + 0.35)		8.76 × 0.2 × (0.10 + 0.30)
TEC_{STORAGE} (kWh) ^{xi}	26		2.6
$TEC_{\text{INT_DISPLAY}}$ (kWh) ^{xii}	N/A	8.76 × 0.35 × (1+EP) × (4×r + 0.05×A)	8.76 × 0.30 × (1+EP) × (2×r + 0.02×A)

- Additional information for enhanced-performance integrated displays can be obtained from Equation 3 below:

Equation 3: Calculation of Allowance for Enhanced-performance Integrated Displays

$$EP = \begin{cases} 0, & \text{No Enhanced Performance Display} \\ 0.3, & \text{Enhanced Performance Display, } d < 27 \\ 0.75, & \text{Enhanced Performance Display, } d \geq 27 \end{cases}$$

Where:

- d is the diagonal of the screen, in inches;

TEC_{MAX} in Version 6.1

- Use Equation 2 to calculate E_{TEC_MAX}:

Equation 2: E_{TEC_MAX} Calculation for Desktop, Integrated Desktop, and Notebook Computers

$$E_{TEC_MAX} = (1 + ALLOWANCE_{PSU}) \times (TEC_{BASE} + TEC_{MEMORY} + TEC_{GRAPHICS} + TEC_{STORAGE} + TEC_{INT_DISPLAY} + TEC_{SWITCHABLE} + TEC_{EEE})$$

Where:

- *ALLOWANCE_{PSU} is an allowance provided to power supplies that meet the optional more stringent efficiency levels specified in Table 5; power supplies that do not meet the requirements receive an allowance of 0;*
- *TEC_{BASE} is the Base allowance specified in Table 6; and,*
- *TEC_{GRAPHICS} is the discrete graphics allowance as specified in Table 7, with the exception of systems with integrated graphics, which do not receive an allowance, or Desktops and Integrated Desktops with switchable graphics enabled in ac mode, which receive an allowance through TEC_{SWITCHABLE}; and*
- *TEC_{MEMORY}, TEC_{STORAGE}, TEC_{INT_DISPLAY}, TEC_{SWITCHABLE}, and TEC_{EEE} are adder allowances as specified in Table 7.*

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Questions on Mobile All-In-One Desktop Computers



- How prevalent are these products?
- How are these products currently handled?
- How to separate from Notebooks
 - What is the definition of limited portability vs. portability?

Open Comment



- EPA would now like to open up the line for any general comments from stakeholders.

Timelines



- EPA proposes the following timeline:

Version 6.1 Memo Comment Deadline	January 10, 2014
Version 6.1 Draft Specification Document	February 2014
Version 6.1 Final Specification Document	Late Spring 2014
Version 6.0 and 6.1 Effective Date	June 2, 2014

Comments and Questions



- Please send feedback to computers@energystar.gov

Comment Deadline

Friday, January 10, 2014

- Questions can also be sent directly to:

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or

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Thank you!



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