

# **Industry Proposal**

## Revised Product Categories for Computer 6.0 Spec

### **1. Included Products**

- **Notebooks (Includes Consumer and Enterprise)**
  - Netbooks
  - Traditional Notebooks (including Clamshell slates, Mobile thin Client)
- **Desktops (Included Consumer and Enterprise)**
  - Nettops
  - Traditional Desktops
  - Integrated Desktops (AIO)
- Workstations (No Changes from Energy Star V5 Categories)
- Small-Scale servers (No Changes from Energy Star V5 Categories)
- Thin Clients (No Changes from Energy Star V5 Categories, except the need to include new AIO Thin Client)

### **2. Excluded Products**

- Slates/Tablets (BCS already addressed by DOE)
- Ultra-thin clients
- Mobile Workstations (new definition to be included in Energy Star V6 specification, but excluded from scope of regulation)

### **3. Capability adjustments (Adders)**

- Discrete Graphics (new Ecma-383 methodology – based on 7 discrete GPU groups)
- Storage (including adders for Solid-State Drives SSDs)
- Memory
- Screen Size, BL technology (New)
- TV-Tuners (New)
- Discrete Audio (New)

### **4. Energy Star V6 Data Collection for target setting**

- Base TEC Limits (Notebooks, Desktop Computers)
  - Includes broad Consumer and Enterprise shipping PCs
  - Includes Energy Star and Non-Energy Star systems (without 80Plus IPS)
  - Statistically significant sample size for each category
  - System data gathering (EPA, System Makers, Ingredient suppliers)
- System Adders (Notebooks, Desktop Computers)
  - Statistically significant sample size for each adder, covering multiple suppliers, and multiple generations of shipping devices from device suppliers to define top 25 percentile
  - System data gathering (EPA, System Makers, Ingredient suppliers)
  - Discrete Graphics: G1 through G7 inclusive

## Proposed Categories for Energy Star V6 (Computers)- April 25

### Notebook Categories

	<b>NB 0</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>NB4</b>
<b>Market *</b>	Netbook	Thin / Low-end	Mainstream	Performance	High-end
<b>Cores</b>	N/A )	cores $\leq$ 2 (less than or equal to 2 cores)	cores = 2 (equal to 2 cores)	$\geq$ 3 cores (greater than or equal to 3 cores)	$\geq$ 3cores (greater than or equal to 3 cores)
<b>Channels of memory</b>	Ch mem=1 (1 Channel of memory)	Ch mem=2 (2 Channels of memory)	$\geq$ 2 channels (more than or equal to 2 channels of memory)	$\geq$ 2 channels (more than or equal to 2 channels of memory)	$\geq$ 2 channels (more than or equal to 2 channels of memory)
<b>Screen size</b>	screen size $\leq$ 12.1" (screen size less than or equal to 12.1")	$\leq$ 13.3" (screen size less than or equal to 13.3")	Any screen size	Any Screen size	Any screen size
<b>Base Memory (min)</b>	1GB	2GB	2GB	2GB	4GB
<b>Base Graphics</b>	iGfx (integrated graphics)	iGfx (integrated graphics)	iGfx (integrated graphics)	iGfx (integrated graphics)	dGfx = G3 (discrete graphics = G3)
<b>Graphics Adders</b>	dGfx $\leq$ G7 (less than or equal to G7)	dGfx $\leq$ G7 (less than or equal to G7)	dGfx $\leq$ G7 (less than or equal to G7)	dGfx $\leq$ G7 (less than or equal to G7)	G3 < dGfx $\leq$ G7 (greater than G3 and less than or equal to G7)

### **Methodology Comments:**

This proposal is a starting point, subject to changes pending outcome of data collection phase to establish Energy Star V6 categories for PCs.

\* Market segment listed above is for Energy Star V6 data collection only. Not to be included in Energy Star V6 specification

## Desktop & Integrated Desktop Categories

**Note:** Unless specified, Integrated Desktop computers will have same category definition as traditional DT categories but with different TEC limits.

Category	DT 0	DT 1	DT 2	DT 3	DT 4
<b>Market *</b>	Entry	Mainstream	Performance	High Performance	Very High-end/Enthusiast
<b>Cores</b>	N/A	cores $\leq$ 2 (less than or equal to 2 cores)	$\geq$ 3 cores (greater than or equal to 3 cores)	$\geq$ 4 Cores (greater than or equal to 4 cores)	$\geq$ 4 Cores (greater than or equal to 4 cores)
<b>Channels of memory</b>	Ch mem = 1 (1 Channel of memory)	Ch mem = 2 (2 Channels of memory)	$\geq$ 2 channels (more than or equal to 2 channels of memory)	$\geq$ 2 Channels (more than or equal to 2 channels of memory)	$\geq$ 2 Channels (more than or equal to 2 channels of memory)
<b>Base memory (min)</b>	1GB	2GB	2GB	$\geq$ 4 GB	$\geq$ 4 GB
<b>Base Graphics</b>	iGfx (integrated graphics)	iGfx (integrated graphics)	iGfx (integrated graphics)	dGfx $\geq$ G5 based on 7-class dGfx classes (any additional dGfx allowed)	dGfx $\geq$ G5 based on 7-class dGfx classes (any additional dGfx allowed)
<b>Graphics Adders</b>	dGfx $\leq$ G7 (less than or equal to G7)	dGfx $\leq$ G7 (less than or equal to G7)	dGfx $\leq$ G7 (less than or equal to G7)	$\geq$ G6 (greater than or equal to G6)	$\geq$ G6 (greater than or equal to G6)
<b>PCIe</b>					$\geq$ 2 PCIe slots/end points of x8 or x16 configuration
<b>PSU Rating</b>					$\geq$ 500W
<b>Form Factor</b>	Both Traditional & Integrated DT	Both Traditional & Integrated DT	Both Traditional & Integrated DT	Both Traditional & Integrated DT	Traditional (with expansion slots)

### **Methodology Comments:**

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## **STATUS: Industry Action Items from 10 March Stakeholders Meeting**

- Share additional information regarding cost, size, weight, and heat impacts of efficiency criteria for external power supplies with greater than Level V efficiency – HP (Done)
- Industry to share graphic card data and help categorize the NRDC dataset by Ecma category (and secondarily, vintage) - AMD
- Share data analysis of relative TEC delta between TEC inclusive of Short Idle and TEC with all Long Idle – Intel (Done)
- Share proposal on categorization of products in Version 6 – ITI sub-team (WIP)
- Provide data on docking station power consumption. Emphasis on models that are *not* pass-through devices (e.g., integral NICs) - HP
- Provide written/graphical proposal(s) for further physical labeling alternatives (e.g., in-OS ENERGY STAR messaging) - Apple
- Provide efficiency and product data on internal power supplies with maximum rated load below 75W (a request was made to exempt such IPS from efficiency criteria) – HP/Dell
- Provide idle graphic data (NRDC analysis) – AMD (Done)
- Provide information on notebook features that require additional power during the battery charging process (e.g., USB power) – Intel
- Multi-attribute white paper – HP/Intel (Done)

## Old Categories (Computers)

### Notebook Categories (ECMA-383)

	NB 0 – Nov 09	NB 1 – Nov 09	NB 2 – Nov 09	NB 3 – Nov 09	NB4 – Nov 09
<b>Market</b>	Netbook	Thin / Low-end	Mainstream	Performance	High-end
<b>Cores</b>	cores $\leq$ 2 (less than or equal to 2 cores)	cores $\leq$ 2 (less than or equal to 2 cores)	cores = 2 (2 cores)	2 < cores $\leq$ 4 (more than 2 and less than or equal to 4 cores)	2 < cores $\leq$ 4 (more than 2 and less than or equal to 4 cores)
<b>Channels of memory</b>	ch mem < 4 (any number of channels less than 4)	ch mem < 4 (any number of channels less than 4)	2 $\leq$ ch mem < 4 (more than or equal to 2 channels of memory and less than 4)	2 $\leq$ ch mem < 4 (more than or equal to 2 channels of memory and less than 4)	2 $\leq$ ch mem < 4 (more than or equal to 2 channels of memory and less than 4)
<b>Screen size</b>	screen size $\leq$ 11.6" (screen size less than or equal to 11.6")	11.6" < Screen size $\leq$ 13.3" (screen size greater than 11.6" and less than or equal to 13.3")	Any screen size	Any Screen size	Any screen size
<b>Base Memory</b>	1GB	2GB	2GB	2GB	4GB
<b>Base Graphics</b>	iGfx (integrated graphics)	iGfx (integrated graphics)	iGfx (integrated graphics)	iGfx (integrated graphics)	dGfx = G1 (discrete graphics = G1)
<b>Graphics Adders</b>	dGfx $\leq$ G4 (less than or equal to G4)	dGfx $\leq$ G4 (less than or equal to G4)	dGfx $\leq$ G4 (less than or equal to G4)	dGfx $\leq$ G4 (less than or equal to G4)	G1 < dGfx $\leq$ G4 (greater than G1 and less than or equal to G4)

## Desktop & Integrated Desktop Categories (ECMA-383)

Category	DT 0 – Nov 09	DT 1 – Nov 09	DT 2 – Nov 09	DT 3 – Nov 09
<b>Market</b>	Entry	Mainstream	Performance	High-end
<b>Cores</b>	cores $\leq$ 2 (less than or equal to 2 cores)	cores $\leq$ 2 (less than or equal to 2 cores)	2 < cores < 6 (more than 2 cores and less than 6)	2 < cores < 6 (more than 2 cores and less than 6)
<b>Channels of memory</b>	ch mem = 1 (1 Channel of memory)	ch mem = 2 (2 Channels of memory)	2 $\leq$ ch mem < 4 (more than or equal to 2 channels of memory and less than 4)	2 $\leq$ ch mem < 4 (more than or equal to 2 channels of memory and less than 4)
<b>Base memory</b>	1GB	2GB	2GB	4GB
<b>Base Graphics</b>	iGfx (integrated graphics)	iGfx (integrated graphics)	iGfx (integrated graphics)	dGfx = G1 (discrete graphics = G1)
<b>Graphics Adders</b>	dGfx $\leq$ G4 (less than or equal to G4)	dGfx $\leq$ G4 (less than or equal to G4)	dGfx $\leq$ G4 (less than or equal to G4)	G1 < dGfx $\leq$ G4 (greater than G1 and less than or equal to G4)

## Notebook Categories (ENERGY STAR V4.0)

	Category A	Category B			
<b>Market</b>	Integrated GPU	Discrete GPU			
<b>Cores</b>	-	-			
<b>Channels of memory</b>	-	-			
<b>Screen size</b>	-	-			
<b>Base Memory</b>	-	-			
<b>Base Graphics</b>	-	dGfx (A GPU with a minimum of 128 megabytes of dedicated, non-shared memory)			
<b>Graphics Adders</b>	-	-			

## Notebook Categories (ENERGY STAR V5.0)

	Category A	Category B	Category C		
<b>Market</b>	Integrated GPU	Discrete GPU	High end Discrete GPU		
<b>Cores</b>	-	-	$2 \leq$ cores		
<b>Channels of memory</b>	-	-	-		
<b>Screen size</b>	-	-	-		
<b>Base Memory</b>	4GB	4GB	4GB		
<b>Base Graphics</b>	iGfx	dGfx	dGfx (A Discrete GPU with a Frame Buffer Width greater than 128-bit.		
<b>Graphics Adders</b>	-	3 kWh (FB Width > 64-bit)	-		
<b>Base storage</b>	1	1	1		
<b>Additional Internal Storage</b>	3kWh	3kWh	3kWh		

The ENERGY STAR V4.0 and V5.0 are the same test methods.

## Notebook Categories (Top runner 2007)

	Category l	Category m			
<b>Market</b>					
<b>Cores</b>	-	-			
<b>Channels of memory</b>	-	-			
<b>Screen size</b>	-	-			
<b>Base Memory</b>	max memory < 1GB	$1\text{GB} \leq$ max memory < 6GB			
<b>Base Graphics</b>	-	-			
<b>Graphics Adders</b>	-	-			

## Notebook Categories (Top runner 2011)

	Category Y	Category S	Category R	Category Q	Category P	Category N	Category M
<b>Market</b>	Netbook	mobile notebook	notebook	Discret GPU	Large Screen	High end notebook	Workstation
<b>Cores</b>	-	-	-	-	-	-	-
<b>Channels of memory</b>	ch mem < 2 (any number of channels less than 2)	2 ≤ ch mem (more than or equal to 2 channels of memory)	2 ≤ ch mem (more than or equal to 2 channels of memory)	2 ≤ ch mem (more than or equal to 2 channels of memory)	2 ≤ ch mem (more than or equal to 2 channels of memory)	2 ≤ ch mem (more than or equal to 2 channels of memory)	2 ≤ ch mem (more than or equal to 2 channels of memory)
<b>Screen size</b>	-	screen size < 12" (screen size less than 12")	12" ≤ Screen size < 17" (screen size greater than or equal to 12" and less than 17")	screen size < 17" (screen size less than 17")	17" ≤ Screen size (screen size greater than or equal to 12")	-	-
<b>Base Memory</b>		max memory ≤ 4GB	max memory ≤ 4GB	max memory ≤ 4GB	max memory ≤ 4GB	4GB < max memory ≤ 16GB	16GB < max memory
<b>Base Graphics</b>	-	iGfx	iGfx	dGfx	-	-	-
<b>Graphics Adders</b>	-	-	-	-	-	-	-

The Top Runner 2007 and 2011 are the same test methods.

## Desktop & Integrated Desktop Categories (ENERGY STAR V4.0)

Category	Category A	Category B	Category C	
<b>Market</b>	Entry	Mainstream	High-end	
<b>Cores</b>	-	1 < cores or 2 ≤ CPU Multi-core processor(s) or greater than 1 discrete processor;	1 < cores or 2 ≤ CPU Multi-core processor(s) or greater than 1 discrete processor;	
<b>Channels of memory</b>	-	-	-	
<b>Base memory</b>	-	1GB ≤ memory	2GB ≤ memory *1	
<b>Base Graphics</b>	-	-	dGfx A Discrete GPU with a Frame Buffer Width greater than 128-bit.	
<b>Graphics Adders</b>	-	-	-	
<b>Hard disk</b>	-	-	Minimum of 2 hard disk drives. *1	
<b>TV Tuner</b>	-	-	TV tuner and/or video capture capability with high definition support; *1	

\*1 : must be configured with a minimum of 2 of the following 3 characteristics:

## Desktop & Integrated Desktop Categories (ENERGY STAR V5.0)

Category	Category A	Category B	Category C	Category D
<b>Market</b>	Entry	Mainstream	Performance	High-end
<b>Cores</b>	-	cores = 2 (Equal to 2 Physical Cores)	2 < cores Greater than 2 Physical Cores.	4 ≤ cores (Greater than or equal to 4 Physical Cores)
<b>Channels of memory</b>	-	-	-	-
<b>Base memory</b>	2GB	2GB ≤ memory (Greater than or equal to 2 GB of System Memory)	2GB ≤ memory (Greater than or equal to 2 GB of System Memory) *2	4GB ≤ memory (Greater than or equal to 4 GB of System Memory) *2
<b>Base Graphics</b>	-	-	dGfx *2	dGfx A Discrete GPU with a Frame Buffer Width greater than 128-bit. *2
<b>Graphics Adders</b>	35kWh(FB Width ≤ 128-bit) 50kWh(FB Width > 128-bit)	35kWh(FB Width ≤ 128-bit) 50kWh(FB Width > 128-bit)	50kWh(FB Width > 128-bit)	50kWh(FB Width > 128-bit)
<b>Base Storage</b>	1	1	1	1
<b>Additional Internal Storage</b>	25kWh	25kWh	25kWh	25kWh

\*2: Must be configured with a minimum of 1 of the following 2 characteristics:  
The ENERGY STAR V4.0 and V5.0 are the same test methods.

## Desktop & Integrated Desktop Categories (Top Runner 2007)

	Category k	Category j	Category i		
<b>Market</b>	Entry	Mainstream	High-end		
<b>Cores</b>	-	-	-		
<b>Channels of memory</b>	-	-	-		
<b>Screen size</b>	-	-	-		
<b>Base Memory</b>	max memory < 2GB	1GB ≤ max memory < 6GB	max memory < 6GB		
<b>Base Graphics</b>	-	-	-		
<b>Graphics Adders</b>	-	-	-		
<b>I/O Bus (It is a bus between system bus controller and I/O controller.)</b>	< 2 lane	< 2 lane	2lane ≤ I/O Bus < 4 lane		

## Desktop & Integrated Desktop Categories (Top Runner 2011)

	Category Y	Category T	Category X	Category W	Category V	Category U
<b>Market</b>	Nettop	Integrated Desktop	Standard Desktop	High end Desktop Integrated GPU	High end Desktop Disctete GPU	Workstation
<b>Cores</b>	-	-	-	-	-	-
<b>Channels of memory</b>	ch mem < 2 (any number of channels less than 2)	2 ≤ ch mem (more than or equal to 2 channels of memory)	2 ≤ ch mem (more than or equal to 2 channels of memory)	2 ≤ ch mem (more than or equal to 2 channels of memory)	2 ≤ ch mem (more than or equal to 2 channels of memory)	2 ≤ ch mem (more than or equal to 2 channels of memory)
<b>Screen size</b>	-	-	-	-	-	-
<b>Base Memory</b>	-	-	max memory ≤ 4GB	4GB < max memory ≤ 16GB	4GB < max memory ≤ 16GB	16GB < max memory
<b>Base Graphics</b>	-	-	-	iGfx	dGfx	-
<b>Graphics Adders</b>	-	-	-	-	-	-
<b>Power Supply</b>	-	External Power Supply	Internal Power Supply	Internal Power Supply	Internal Power Supply	Internal Power Supply

The Top Runner 2007 and 2011 are the same test methods.