October 12, 2005

JEITA Comments on "Computer Framework Documents" and "Idle State Power Use of Personal Computers"

JEITA International Energy Star Committee

JEITA International Energy Star Committee's comments on "Computer Framework Documents" and "Idle State Power Use of Personal Computers" are stated below.

1. Comments on the Energy Star Computer Framework Documents

(1) Comments on Desktop Computers

• Hardware Requirements

(a) Hardware requirements should not just target internal power-supply components. Computers are systems and therefore the hardware requirements should be determined by the system's total power consumption, including power-supply losses, instead of setting criteria for each component part.

(b) The statement about the internal power supply efficiency can be read as "80% minimum efficiency" at each 20%, 50%, and 100% of the rated output.

Does this really mean that the average value of the all output efficiencies be 80% or better, as is the case with the external power supply regulation?

(c) The EPA should disclose to computer manufacturers the data used to decide on a minimum output efficiency of 80% for the internal power supply.

(d) Currently, almost all internal power supplies in ordinary use have output efficiencies of less than 80% at 20% of their rated outputs.

The EPA and computer manufacturers should conduct a thorough study into the costs and development times required to improve this performance.

• Modes of Operation

(a) There are cases of multimedia computers (those with television tuners and home server functions) that continue to supply power to television tuner components and home server components for user convenience even when the computers are in sleep mode or off mode.

Consequently, it is extremely difficult to meet the Tier I criteria values as stated. An examination is needed into formulating a separate category and criteria values for this type of product.

(b) Off mode power consumption criteria for desktop computers

The criteria for desktops ≤ 2 W and integrated computers ≤ 3 W are extremely demanding. Present desktops consume over 2 W. The EPA and computer manufacturers need to study how to improve this figure including costs and development times.

• Power Management Requirements

(a) We oppose the shipment requirement that WOL be enabled for the following reason.

When WOL is enabled, it is possible that a general-consumer computer will turn on without the user intending to turn it on. A computer should come on only when the user explicitly intends it to.

(b) The document states "the shipment requirement that WOL be enabled could keep the majority of computers from remaining in active mode most of the time," but the reason for this should be explained giving specific case examples.

(c) In Tier 2, the document states computers must retain "full network connectivity

while in sleep," but the benefits of this should be presented with examples, as in (a) above.

(2) Notebook Computers

• Modes of Operation

(a) The off mode should not be defined by the power consumed only by the external power supply; it should be defined in the state where the external power supply is connected to the notebook computer (provided that the battery is removed).

Our reasoning for this is that some circuitry is still active in notebook computers even in off mode (S4/S5). Consideration of the off mode should include this power consumption.

• Power Management Requirements

(a) Power is supplied to notebook computers from batteries when the AC adaptor is removed.

If WOL is enabled when shipped, batteries may discharge from full to empty in a short time, as illustrated in the example below.

Example: A notebook computer with a six-cell battery capacity of 52 Wh
Computer power consumption in off mode (S4/S5 state): 0.05 W
Increase in LAN device power consumption due to WOL enabling: 0.5 W

WOL	Battery Backup Period
Disabled	52 Wh/0.05 W = 43 days
Enabled	52 Wh/(0.05 W + 0.5 W) = 4 days

This example shows why the shipment requirement that WOL be enabled should be eliminated for notebook computers.

(b) If the shipment requirement that WOL be enabled in off mode (S4/S5) is made, an accompanying increase in power consumption occurs and therefore the definition is no longer valid that the notebook computer off mode criteria is the power consumed by the external power supply alone.

(c) The mode the computer moves to after 15 minutes of user inactivity should not be defined as the “display’s low-power or sleep mode (S3).” Similarly, the low-power mode should not be defined as S3/S4.

Some manufacturers ship computers with the 15-minute inactivity low-power mode set to a “proprietary low-power mode, which is different than S3, developed by the corporation” in consideration of user convenience (that is, priority on the S0 recovery time).

2. Comments on Idle State Power Use of Personal Computers

(1) Definitions

• Off Mode and Sleep Mode

(a) Frameworks and other definitive materials should be specified explicitly in relationship to ACPI. Furthermore, definitions should identically match those of frameworks.

• Idle State

(a) We would like it stated explicitly that a mouse does not need to be connected if a laptop computer already has a pointing device (touch pad, pointing stick, etc.) built in.

(b) Some tablet computers do not have keyboards. We would like it stated explicitly that a keyboard does not need to be connected in this case. Also, we would like it stated explicitly that a mouse does not need to be connected if a computer has a built-in digitizer.

(c) We would like it stated explicitly that it is permissible to set the wireless LAN RF output off for communication devices.

(2) Measurement Approach

(a) Computers are usually managed by model name so there is no need to record processor or video card information.

(b) The hard drive power management setting should not be defined as 10 minutes or longer. Instead, it should state “no power-saving functions shall operate while measuring the power consumption in the idle state.”

(c) Actions 5 and 6 in the initial preparations for laptops are not stated clearly. These statements can be interpreted as saying “perform two power consumption measurements, one at full brightness and one with the screen off.” We would prefer a flowchart presentation of how to execute the initial preparations and power consumption measurements.

(d) The AC power supply rating should take into account mutually recognized systems.

(e) Although the document states measurements begin exactly five minutes after the computer is switched on, it should also state that the average value over five minutes is measured while the system is stable.

Our reasoning for this is that the measurement interval the NRDC has defined may contain periods when the operating system executes some process (for example, virus scans or hard drive optimization for high-speed start-ups).

Furthermore, detailed explanations are needed on whether the following items can be changed from their shipping states and what changes if any are allowed.

• Power-saving settings
• Installed application programs
• OS settings