



■ INFORMATION TECHNOLOGY INDUSTRY COUNCIL ■

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SUBJECT: ITI Comments on Draft 3 of the Computer Spec

Please find below our comments on the proposed specifications for the ENERGY STAR™ Computer Program. Many of these were taken from the document that we submitted prior to our September 13 conference call. As always, we welcome the opportunity to respond to any questions or comments that you may have.

Desktops

Generally, ITI has serious concerns regarding the various idle mode levels that have been proposed, which in some cases may limit the technology options available to manufacturers that wish to participate in the ENERGY STAR program. One of EPA's guiding principles for the program states: "Energy-efficiency can be achieved with several technology options, at least one of which is non-proprietary." [See http://www.energystar.gov/ia/partners/prod_development/downloads/guiding_princip.pdf] In some instances, the proposed specifications may create a de facto violation of this principle.

- As we discussed this week, ITI would like EPA to accept an "adder" for graphics cards. A significant number of customers who desire ENERGY STAR-rated computers also want upgraded graphics, but are not interested in many of the other components included in the Category C definition. These customers may well forgo choosing an ENERGY STAR computer if it means having to purchase peripherals that they do not need.
- In some cases, the idle power values are under the 20% load. This data can skew the results.
- Internal power supplies are not specified to be 80% minimum efficiency below the 20% loading condition. The sleep and off values should not be adjusted to account for non 80% power supplies for these levels. Analysis from the EPA data set shows:
 - Average Power Supply loading during **Sleep: 1.36%**
 - Average Power Supply loading during **Off: 0.68%**

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- The data set demonstrates that there are platforms that are capable of meeting EPA-proposed idle levels without necessarily using an “80-Plus” supply. This is accomplished through the utilization of energy efficient processors and board components. Forgoing the 80+ PSU could result in a lower price for the customer and thereby increase acceptance of ENERGY STAR. For such systems, an 80+ PSU should not be required.
- In order to more closely align the Category B desktop definition with market requirements, ITI recommends the following changes:
 - Multi-core processor or greater than 1 discrete processor
 - One of the following:
 - > 512 MB of system memory
 - 512MB of system memory w/ discrete graphics solution
- We request that the WoL and DIMM power conclusions during S3 be re-evaluated. It is not intuitively obvious why the data set does not show increases.
- We also have concerns regarding the S3 and S5 power levels and the assumption of high-efficiency rails. We address this below.

Notebooks

- To be consistent with how desktop levels were set, levels should be rounded for idle to 15W and 20W for Categories A and B, respectively.
- Platform categories should mirror the same Category A and B requirements as desktops to reflect market requirements.
 - Category A: Anything not B
 - Category B:
 - Multi Core CPU
 - One of the following:
 - > 512MB of memory
 - 512MB of system memory w/ discrete graphics
- A Category C should be defined to capture the consumer/enthusiast/mobile workstation SKUs similar to desktop.
 - Definition: Mobile Category C -
 - Discrete Graphics w/ at least 256MB local frame
 - At least 1GB System Memory
 - HD / BluRay DVD

- Recommended Idle State = 30 Watts

Additional Comments -

- 1. Idle Power Test Data.** Idle power test methodology requires that a switch be used for the maximum speed supported by the NIC. Much of the data seems to indicate that idle power was tested without network connectivity (power would be very low versus the test condition), tested connected to a 100BT switch for a 1000BT NIC (the power would be low versus the test condition), or the system had an obsolete 100BT NIC (not a modern system) and therefore would have lower idle power because of the lower system capabilities.

Of the 60 Category a notebook systems, only 6 of them were connected to a network with a 1000BT switch. Seven of the 60 systems were connected to 100BT switches (which would give lower idle power measurements and throws off the data). Six of the 60 systems had 100BT NICs connected to 100BT switches (which gives a lower idle power measurement; it could be argued that these systems are obsolete as in '07 not many 100BT NIC machines will be sold).

- 2. WoL Adder.** EPA's analysis has concluded that there is no need for a 0.7W WoL adder. We don't understand what data led to this conclusion. There is concern that the averaged results of sleep power with WoL enabled were compared to sleep power with WoL disabled; and that the distribution of power across these different SKUs would have averaged out the affects of the NIC power adder.

We would expect that a correct methodology would measure the power of a system with WoL enabled, and WoL disabled (connected to an active 1000/100BT switch) would be noted. Then, the deltas for the single systems would be averaged. From the data, it is difficult to find the same system with WoL enabled and disabled.

In general, we would like to see how the calculations for this were done. There is a real power delta between WoL disabled/enabled and it doesn't make sense that the data would conclude otherwise. We believe there must be some mistake in the analysis to conclude otherwise.

Of the 60 Category A notebook systems, only 19 of them were connected to a network in the sleep state. Of these there were 6 notebooks that skewed the data considerably by having sleep powers with WoL enabled of 0.34W to 0.52W which is very low and probably attributable to the 100BT NICs (though this seems even load for that, is this DC power perhaps?).

Much of our sleep data shows an S3WOL notebook (on an active 100BT switch) varying between 1.7W to about 3.7W. For these same systems we see S3 sleep power (WOL disabled) power varying between 1W and 3.5W (a definite delta). This data of course was measured on the same machine (WOL enabled, then disabled).

We haven't had a lot of time to go over the data, however there is concern in general that the data does not match the testing criteria and much of it is lower than would be found on a system tested under the given test conditions.

Desktop Derived Server (DDS)

It is inconceivable to industry to have the same limits for the both Desktops and Desktop Derived Servers. A Desktop Deriver Server will often have more than one Hard Disk Drive, many additional boards, and not necessarily a Dual Core CPU. So, even if the limits are very constraining in the Desktop model, it is much worse in the Desktop Derived Server one. Industry would like to propose two possible options for idle mode for this particular product category:

1. Category B: minimum of 1GB memory; Dual Core OR a minimum of two HDDs
 - o Add 5W for all additional boards in all categories

or
2. Align all DDS configurations with the Category C idle mode levels of 95W. Our rationale for aligning them with the higher idle mode limits is due to the additional functions and features that are not typically found in most desktops, such as
 - Basic networking tasks (storing files, network printing)
 - Standard business application (email, messaging or collaboration)
 - Support either IDE or SCSI internal tape back-up units, external tape, and direct attach storage solutions
 - Messaging applications
 - Shared Internet access and web serving
 - Productivity and Back-Office applications
 - Raid Options
 - SATA or SCSI controller cards

Idle (Active mode) tolerances

Now that the EPA is including active mode (idle) requirements industry feels the agency should allow a certain amount of tolerance in the specifications in order to take into account all of the variability that occurs in manufacturing processes. This tolerance will vary between the CPU, Chipset, peripherals, PS efficiency, etc., for all product categories. Some items that need to be considered are, but not limited to,

- Testing equipment tolerances
- Spindle motors in the various drives utilized in our products
- Variations in power supply efficiency as we test out products for the global market place with all of the different voltage and frequency combination
- Processor TDP and supporting chipsets

Industry recommends that EPA allow a 15% tolerance level for active mode.

Looking Ahead

- Industry would like to see language to be added to the spec allowing EPA and industry to revisit levels in 2H 07 due to new technologies such as quad core, higher-performance graphics, and new 64-bit OS releases. Impact may be the greater use of functional adders for desktop during idle, standby, and sleep.
- The new Microsoft Operating System, "Vista," will require minimum configuration requirements, because most Federal purchasers will require Premium certification levels for their computer purchases [see <http://www.microsoft.com/whdc/winlogo/hwrequirements.mspx>]