Note: After reviewing stakeholder comments, EPA has determined that the current 30 minute time requirement for System Sleep Mode is appropriate for ensuring energy savings while avoiding prematurely entering Sleep Mode and disrupting product usability. EPA welcomes any information or feedback that highlights user experiences at different sleep mode timer settings for future revisions of this specification.

3.4 User Information Requirements

3.4.1 Products shall be shipped with informational materials to notify customers of the following:

i. A description of power management settings that have been enabled by default,

ii. A description of the timing settings for various power management features, and

iii. Instructions for properly waking the product from Sleep Mode.

3.4.2 Products shall be shipped with one or more of the following:

i. A list of default power management settings.

ii. A note stating that default power management settings have been selected for compliance with ENERGY STAR (within 15 min of user inactivity for the display, within 30 min for the computer, if applicable per Table 2), and are recommended by the ENERGY STAR program for optimal energy savings.

iii. Information about ENERGY STAR and the benefits of power management, to be located at or near the beginning of the hard copy or electronic user manual, or in a package or box insert.

3.4.3 Provisions 3.4.1 and 3.4.2 may be met through use of either electronic or printed product documentation, provided it adheres to all of the following:

i. Documentation is shipped with the product (e.g., in a printed manual or insert, on included optical media, in a file installed with the software load shipped to the customer); and

ii. Documentation is included either (a) only with ENERGY STAR qualified Computers; or (b) as part of the standard documentation if and only if accompanied by EPA-approved customer guidance on how to identify if their computer configuration is ENERGY STAR qualified.

3.5 Requirements for Desktop, Integrated Desktop, and Notebook Computers

3.5.1 Categories for TEC Criteria: Desktops and Integrated Desktops shall be evaluated according to the categories described in Table 3, and Notebook Computers shall be evaluated in the categories described in Table 4.

Table 3: Categorization of Desktop and Integrated Desktop Computers

Category	DT 0	DT I1	DT I2	DT I3	DT D1	DT D2
Performance Score, *P*[ii]	$P \leq 3$	$3 < P \leq 6$	$6 < P \leq 7$	$P > 7$	$3 < P \leq 9$	$P > 9$
Base Memory	None	None			None	
Base Graphics Error! Bookmark not defined.	Any Graphics	Integrated Graphics			Discrete Graphics	
Graphics Adders Error! Bookmark not defined.	dGfx ≤ G7	N/A			dGfx ≤ G7	

ii P = [# of CPU cores] * [CPU clock speed (GHz)].

Table 4: Categorization of Notebook Computers

Category	NB 0	NB I1	NB I2	NB I3	NB D1	NB D2
Performance Score, *P*[iii]	$P \leq 2$	$2 < P \leq 5.2$	$5.2 < P \leq 8$	$P > 8$	$2 < P \leq 9$	$P > 9$
Base Memory	None	None			None	
Base Graphics Error! Bookmark not defined.	Any Graphics	Integrated Graphics			Discrete Graphics	
Graphics Adders Error! Bookmark not defined.	dGfx ≤ G7	N/A			dGfx ≤ G7	

Note: After a detailed analysis of both the new ECMA categories and the proposed ITI categorization system, EPA proposes to use the ITI categorization for Notebooks and Desktops (while keeping Integrated Desktops in the Desktop category).

After discussions with stakeholders and further analysis, EPA has added a new DT/NB I3 category to the ITI approach. This category is intended to contain most switchable graphics notebooks, as EPA has specified that they are to be tested with their discrete graphics turned off and therefore subject to the integrated graphics levels. However, notebooks with switchable graphics are often designed with more powerful hardware to support the discrete portion of their graphics capabilities, so putting them into a category that is dominated by integrated-only graphics systems would result in misleading efficiency comparisons. The new NB I3 category enables them to compete with similar systems that have similar end uses and the same target market segment of customers.

3.5.2 Calculated Typical Energy Consumption (E_{TEC}) per Equation 1 shall be less than or equal to the maximum TEC requirement (E_{TEC_MAX}), as calculated per Equation 2, subject to the following requirements:

i. The Additional Internal Storage adder allowance ($TEC_{STORAGE}$) shall be applied if there are more than one internal storage devices present in the product, in which case it shall only be applied once.

ii. The Integrated Display adder allowance ($TEC_{INT\_DISPLAY}$) applies only for Integrated Desktops and Notebooks. For Enhanced-performance Integrated Displays, the adder is calculated as presented in Table 10.

iii. For a product to qualify for the Full Network Connectivity weightings, the following criteria shall be satisfied:

- Products shall meet a non-proprietary Full Network Connectivity standard such as ECMA 393 or another standard that has been approved by EPA as meeting the goals of ENERGY STAR. Such approval must be in place prior to submittal of product data for qualification.
- Products shall have the applied level of functionality enabled and configured by default upon shipment. If Full Network Connectivity features are not enabled by default, the system shall be tested and reported with Conventional TEC weightings.

iii P = [# of CPU cores] * [CPU clock speed (GHz)].

439 **Table 7: Mode Weightings for Notebook Computers**

Mode Weighting	Conventional	Full Network Connectivity			
		Base Capability	Remote Wake	Service Discovery / Name Services	Full Capability
T_{OFF}	25%	34%	38%	46%	50%
T_{SLEEP}	35%	30%	28%	22%	20%
T_{LONG_IDLE}	10%	8%	7%	6%	5%
T_{SHORT_IDLE}	30%	28%	27%	26%	25%

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Note: EPA has reviewed the TEC Weightings and believes that the foundation of the TEC model remains consistent with the data used in development of Version 5, which was drawn from a study of power state transitions in over 70,000 computers. The table below compares TEC weighting methods for Desktops and Notebooks in both Version 5 and Version 6. For Desktops, Version 6 gives slightly more emphasis to Idle States based on a smaller study done to determine the appropriate split for Long and Short Idle. For Notebooks, where power levels in Off and Sleep are similar, increased emphasis is also placed on higher power Idle States.

Desktop Computers		
	V5 (1)	V6, Draft 3 (2)
Off	55 %	45%
Sleep	5 %	5%
Long Idle	40 %	15%
Short Idle		35 %
Notebook Computers		
Off	60 %	25%
Sleep	10 %	35%
Long Idle	30 %	10%
Short Idle		30 %

Sources:

(1) http://www.energystar.gov/ia/partners/prod_development/revisions/downloads/computer/Microsoft_PowerTransitionReport.pdf?f0fe-40d2

(2) Ecma-383, 3rd Edition, Annex B.

441 **Table 8: Base TEC Allowances for Desktop and**
442 **Integrated Desktop Computers**

Product Category	TEC_{BASE} (kWh)
DT I0	69.0
DT I1	112.0
DT I2	120.0
DT I3	135
DT D1	118.0
DT D2	137