

Topic	Subtopic	Comment	Recommended EPA Response
Definitions	Product Family	<p>One stakeholder commented in support of the changes to the product family definitions, while two stakeholders commented that there are products that have the same hardware but different speeds and requested that these types of products be accommodated in the definition of a product family.</p> <p>One stakeholder disagreed with the removal of voltage and frequency from the list of allowable variations, commenting that power measurements at multiple voltage and frequency are burdensome while the differences between the measurements are small, and that CBs recognize that measurements at 230 V/50 Hz are representative of measurements at lower voltages.</p> <p>Another stakeholder commented that the statement "Any changes or additions of electronic components in the system that lead to greater power consumption than the qualified representative model will require requalification"---currently in a notebbox in Draft 2---be added to the body of the specification.</p>	<p>EPA has not added speed to the list of allowable variations under the Product Family definition as the TEC requirements differ with product speeds, such that it may not be clear whether one model would qualify based on the performance of another at a different speed.</p> <p>EPA has decided to keep "input voltage and frequency" off the list of allowable variations. The comment implied that this will increase testing burden, but only products sold in the US are required to be third party certified, so this should not be a factor. If products are sold in the US with different frequencies and voltages, then they should be tested and qualified separately. Our data shows that while the majority of products only have a minor TEC value difference between 115 V and 230 V, there are some models which have a percentage difference greater than +/- 15%. Since there is no way to know which products would have minimal and significant differences, EPA has decided to require separate qualifications for different frequencies and voltages. For qualification of models for other markets (besides US) which have different voltages and frequencies, there is no need for third party certification and thus no additional certification burden.</p>
Definitions	GPU	<p>One stakeholder requested that EPA provide a definition for Graphics Processing Unit (GPU), used as an adder for differentiation between DFEs.</p> <p>Another was concerned about the focus on the GPU technology, while there are other technologies that can also achieve a higher product speed. For instance, the stakeholder's Application Specific Integrated Circuits (ASICs), which generate imaging equipment marking data, may not meet the definition of a GPU. On the other hand, a low-cost graphics card, could meet the definition and provide an allowance for the host DFE even if it does not generate marking data. The stakeholder therefore recommended limiting the allowance to components that actively generate/process marking data to create printed content, or process scan data, regardless of technology.</p>	<p>EPA has proposed a definition for Auxiliary Processing Accelerators (APAs) which includes GPUs, GPGPUs, and other application specific integrated circuits that actively generate or process marking data to create printed content or process scanned data.</p>
Definitions	Scanner	<p>A stakeholder that manufactures microfilm scanners asked for clarification whether scanners for film are included in the specification.</p>	<p>The proposed Version 2 definitions only include products that print/scan on paper. Film scanners could not be included in the specification without further analysis. EPA will consider film scanners in a future specification revision.</p>
DFE Requirements	Certification	<p>One stakeholder commented on the certification process for DFEs, asking for clarification of the process in several different cases:</p> <ol style="list-style-type: none"> 1. A Type 1 DFE is released separately from the imaging equipment product; 2. The imaging equipment product is sold in conjunction with several different Type 1 DFEs, including from different manufacturers; and 3. The imaging equipment product has a Type 2 DFE but is also sold with additional Type 1 DFEs. <p>In the first case, the stakeholder commented that EPA should hold DFE test data until an imaging equipment manufacturer indicates that the DFE will be sold with one of its products, at which point the DFE data will be paired with that of the imaging equipment product.</p>	<p>EPA proposes the following:</p> <ol style="list-style-type: none"> 1. These DFEs are not sold in the same sales channel as the Imaging Equipment product and are out of scope for Version 2.0. The Imaging specification is intended to label Imaging Equipment products, not DFEs. 2. These Imaging Equipment products shall be tested and qualified with the highest power consuming DFE available, as the representative model for the product family of the Imaging Equipment product sold with DFEs. EPA proposes to make an addition to the product family definition to allow variation in DFEs within the product family of an Imaging Equipment product that is sold with DFEs. 3. These Imaging Equipment products will be out of scope of Version 2.0. EPA does not have enough information on the prevalence of this behavior in the market, nor the net effect of this behavior on the energy efficiency of the Imaging Equipment product. EPA welcomes additional feedback on this topic for consideration in future versions.
DFE Requirements	Type 2 DFE	<p>One stakeholder commented that measuring power consumption for Type 2 DFEs is time consuming and costly. The stakeholder recommended that the total energy consumption of the imaging equipment product and DFE be measured, and the DFE accounted for with an adder.</p>	<p>EPA is maintaining the testing procedure of Type 2 DFEs, as in a single system-wide test of both the DFE and the marking engine, the DFE energy consumption can overwhelm that of the marking engine. EPA also notes that the current test method has been used successfully in the past.</p>
DFE Requirements	DFE Categories	<p>One stakeholder requested a technical justification for providing different requirements for the two DFE categories (A and B), while another commented that Category B should not include DFEs with a GPU.</p>	<p>The two DFE categories were developed with help from stakeholders based on product categories and requirements in the ENERGY STAR Computers specification: Category A is based on Small-scale Servers, while Category B is based on high-performance Desktop Computers.</p> <p>EPA received stakeholder feedback that higher performance DFEs often make use of GPU (or APA) technology. The addition of a GPU processing power was a significant variable in developing the Category B requirements, which are higher than Category A.</p>

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DFE Requirements	Power Supply	Three stakeholder commented that the current requirements for Type 2 DFEs do not account for the power supply losses and subtract dc power or energy of the DFE from the ac power or energy of the imaging equipment product. The stakeholders recommended consistency or, simply, measuring the total ac power or energy of the imaging equipment and DFE.	EPA has revised the Type 2 DFE requirements to account for ac to dc power conversion and higher power supply losses. The test method for Version 2.0 has been finalized, so no further changes can be made at this time, but EPA welcomes feedback on how it can be improved for Version 3.0.
General Requirements	Rounding	A stakeholder asked if a requirement limit can measure unrounded precision with three significant digits.	<p>The previously proposed rounding requirements (Section 3.1 of the Draft 2 Specification) already specify that quantities be measured and compared to the specification limits without any rounding. Therefore, the measurement precision is only limited by the instrument (subject to the measurement uncertainty provisions in the Test Method).</p> <p>The measurements <u>are</u> rounded for reporting on the ENERGY STAR website; however, EPA will continue the current practice of providing a fixed number of decimal points, as fractional quantities below 0.1 W or 0.1 kWh/wk are not meaningful to end-users.</p>
Timeline	Effective Date	<p>Multiple stakeholders commented that 9 months between finalization and the effective date is too short to redesign products to meet Version 2.0.</p> <p>Instead, the stakeholders suggested that the effective date fall between 1 year and 18 months after the finalization date.</p>	The 9 month transition time is not intended to accommodate product redesign, only to update web and collateral material to the new specification, the retesting of products as well as relabeling.
Timeline	Transition	<p>In addition to, or instead of, a longer delay between the finalization and effective date of Version 2.0, stakeholders also recommended the following to ease the transition burden on manufacturers and CBs:</p> <ol style="list-style-type: none"> 1. Allow models that currently meet the Version 2.0 requirements when tested to the Version 1.2 test method to qualify for Version 2.0 without re-testing. 2. Allow testing to the Version 2.0 test method before the Effective Date of Version 2.0 and/or when testing to the Version 1.2 specification. <p>Lastly, one stakeholder requested that verification testing be suspended between the finalization and effective dates so that manufacturers, labs, and CBs can focus on the transition.</p>	<p>The test method has changed significantly from Version 1.2 (e.g., allowable network connections, pre-test initialization, DFE testing), such that past results cannot be used to certify performance to the Version 2.0 specification.</p> <p>Labs can and are encouraged to use the Version 2.0 test method prior to the Version 2.0 specification effective date, now that the test method has been finalized.</p> <p>Finally, models are expected to continue meeting the specification to which they were originally qualified even if a new specification is forthcoming, such that there will be no suspension of verification testing following the finalization of Version 2.0.</p>
Sunseting the Specification		One stakeholder suggested sunseting the Imaging Equipment specification due to diminishing returns on further efficiency improvements, leading to higher costs and lower functionality of products. The stakeholder requested that EPA provide its criteria for sunseting.	EPA evaluated the potential savings from revising the specification prior to beginning the revision. Multiple stakeholders have further demonstrated that models can continue to decrease their energy consumption.
General Requirements	User Interface	Two stakeholders requested that EPA not reference the IEEE 1621 User Interface Specifications because it has color combinations that are problematic for color-blind people.	Color-seeing ability was taken into account during the development of IEEE 1621, and the standard references traffic signal light standards as guides in choosing appropriate colors on devices.
OM Requirements	Default Delay Time	Two stakeholders commented that Default Delay Time to Sleep is not clearly defined in the specification. One pointed out that Default Delay Time to Sleep and Maximum Default Delay Time to Sleep are used interchangeably, even though they are not the same. The other commented that the start of Default Delay Time to Sleep should be defined as the earliest time at which a new job can be initiated.	<p>EPA has clarified the Default Delay Time to Sleep Requirement as follows:</p> <ul style="list-style-type: none"> - Default Delay Time is the measured parameter of the UUT in its as-shipped state, - Required Default Delay Time (formerly Maximum Default Delay Time) is the value listed in the specification against which the measured parameter is compared to qualify the model, and - Maximum Machine Delay Time is the value also listed in the specification (4 hours for all products) beyond which the Default Delay Time cannot be extended by the end-user.
OM Requirements	General	Two stakeholders requested that EPA explain how it calculates the OM requirements from the qualified and non-qualified product data, so that they can anticipate and plan for changes in the requirement levels as new models are added to the dataset, while another stakeholder commented that decreasing the Sleep Mode allowance for OM products could impact recovery time, which could lead customers to disable Sleep Mode entirely.	<p>EPA calculated the OM requirements to recognize approximately the top 30% of models; while these requirements have changed between Draft 1 and Draft 2 due to stakeholder concern with the age of models in the dataset, they have not been changed further in the Final Draft and can be considered final, pending any comments.</p> <p>While EPA understands the potential for consumer dissatisfaction due to long recovery time, there is insufficient data at this time to set a recovery-time requirement.</p>

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Dataset	Age of Models	<p>Several stakeholders commented on the removal of older models from the dataset between Draft 1 and Draft 2. One stakeholder commented that the average sales period is less than three years and recommended removing models older than July 1, 2009 (the effective date of the Version 1.1 specification). Other stakeholders commented that EPA should remove:</p> <ul style="list-style-type: none"> - Scanners older than 3 years, - Mailing machines older than 5 years, and - Impact printers older than an unspecified "longer" time. <p>One stakeholder further suggested developing specific cutoff ages for each product type.</p> <p>Alternatively, three stakeholders noted that EPA should not remove products based on their age, but only if they are no longer being sold.</p>	<p>Based on stakeholder comments received at the webinar on 8/15, models may remain on the qualified product list past the time they are sold in the market; therefore, the age of the product was the method selected for filtering these older models.</p> <p>EPA conducted an analysis of data set to determine whether the age of the products impacted the qualification rates. The analysis noted that regardless of when products were qualified, the qualification rates remained constant.</p>
OM Requirements	Base Allowances	<p>Stakeholders commented on the OM base allowances in sleep mode, providing the following levels and justifications:</p> <ul style="list-style-type: none"> - <u>For mailing machines</u>: One stakeholder recommended 5 W, to preserve a quick (10 sec.) recovery time, while another recommended 5.6 W, as proposed in Draft 1, as Draft 2 did not take non-qualified models into account. - <u>For scanners</u>: Two stakeholders recommended 2.7 W, as proposed in Draft 1, as Draft 2 did not take non-qualified models into account, while another stakeholder questioned the use of power supplies smaller than 10 watts to filter USB scanners from the dataset. - <u>For large-format products</u>: One stakeholder commented that an analysis of large-format models available in the market reveals that the 25% level should be set at either 10.2 or 14 watts, and requested clarification on how the power supply was taken into account in EPA's analysis. - <u>Impact printers</u>: One stakeholder commented that an analysis of standard- and large-format impact printers reveals that the base allowances should be set at 1.6 watts and 8–9 watts, respectively. 	<p>EPA, in consultation with product specific industry representatives, have looked into including a power supply adder for high speed mailing machines and a lower, more representative, Type 2 DFE power supply efficiency. Despite these changes, the qualification rates for mailing machines and large format printers remain within program guidelines.</p>
OM Requirements	Power Supply Adder	<p>Two stakeholder requested that EPA clearly indicate that scanners may not receive the Power Supply Adder Allowance, even when they provide a (limited) printing function. Another stakeholder commented that the Power Supply Adder allowance should be applied to mailing machines, or that alternatively, that the Sleep Mode power allowance scale with mailing machine speed. Another stakeholder commented that the current adder incentivizes larger power supplies, and should therefore be expanded to apply to power supplies under 10 watts.</p> <p>In contrast, another stakeholder commented that the power supply adder is not appropriate because the power supply size does not deliver functionality to products. However, if retained, it should be offset by a corresponding reduction in the base allowances.</p>	<p>EPA confirms that scanners cannot receive the power supply allowance even if they provide some printing function (e.g., check imprinting).</p> <p>EPA has also concluded that since high speed mailing machines require a larger power supply, that providing the power supply adder to mailing machines aligns with our approach to other product classes.</p> <p>Lastly, EPA notes that the qualification rate for OM products remains ambitious despite the power supply adder, but will not be providing the adder below 10 watts, as such low-power printers do not provide the additional functionality that is intended to be captured by the power supply adder.</p>
OM Requirements	Flash Memory Card Adder	<p>A stakeholder commented that flash memory and camera connections should not be classified as a communication interface because their behavior is more similar to accessing a local memory location. Furthermore, an OM product must wake-up and handle inserted memory cards, so these functions require separate non-interface adders.</p>	<p>The ENERGY STAR Test Method for Imaging does not include a test for inserting and operating OM devices via the built in flash memory and camera connections because it's an area of the device that is rarely used, even by those who utilize such functionality. In addition, many products that provide this functionality can meet the proposed Version 2.0 requirements because insertion detection is far less energy intensive than leaving the interface up all the time.</p>

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OM Requirements	Number of Connections	<p>One stakeholder expressed concern with EPA dictating how products function in sleep mode, by requiring them to give up functionality (by powering down inactive interfaces) to meet the requirements. This is inconsistent with the ENERGY STAR Guiding Principles and a move away from general market trends.</p> <p>Another stakeholder agreed and further commented that the changes were too extreme and not supported by public data. Circuitry supports interfaces operating at a quiescent level that are ready to be connected and respond during sleep mode. Without the responsiveness, the product would not be kept in a sleep state for some user scenarios thereby defeating the energy reduction goal.</p> <p>In contrast, a third stakeholder commented that the adder allowances be further decreased to reflect the 25% qualification principle.</p> <p>Two other stakeholders asked whether two interface adders could receive allowances under two scenarios: if only one can be used to return from Sleep mode and if both can be used to return from Sleep Mode.</p>	<p>The number and order of network connections was developed in consultation with stakeholders. Products are typically connected to only one network interface in typical use; therefore, EPA wishes to encourage products to be responsive to user needs by powering down interfaces that are not actively used.</p> <p>The adder levels and approach in Version 2.0 is not arbitrary. Almost 40% of the dataset passes at these levels, including many devices with many interface options, though assuming power management of interfaces when not in use: WiFi need not be turned on if it is not a configured network interface, as with USB or Ethernet. These are all interfaces which have significantly higher power when connected and active.</p> <p>Mobile devices implement these types of savings techniques regularly. This approach promotes the use of insertion/link detection or managing the power of interfaces that are not connected to anything, a state that most, if not all, devices will find themselves in nearly 100% of the time.</p> <p>Since only one interface is used during the test (with the exception of fax capability), only one interface shall receive an allowance.</p>
OM Requirements	Touch Panel Adder	Several stakeholders commented on the Touch Panel Adder, requesting that the limitation of capacitive and small size be clarified or that the adder be applicable to touch panels of all technologies (e.g., resistive) and sizes.	EPA is proposing to allow the touch panel adder to be applied to all touch panel technologies and sizes. Additionally, EPA is requesting that touch panel type and size be reported during testing.
OM Requirements	Internal Disk Drive Adder	Two stakeholders commented that Internal Disk Drives included in DFEs should not receive an OM Adder Allowance in Sleep Mode and requested that EPA clarify this point.	The specification already indicates that "Product functionality offered through a DFE shall not be considered a functional adder" (Section 3.4.4.ii of Draft 2). The energy consumption of DFE Disk Drives has already been factored into the DFE allowance.
OM Requirements	Standby Power	A stakeholder recommended including a requirement on networked standby for imaging equipment corresponding to the proposed European Ecodesign regulation on Networked Standby, while another stakeholder asked if testing in Off Mode is acceptable for meeting the 0.5 W Standby Power requirement.	Rather than provide a separate Networked Standby Mode, the specification provides a Standby Power requirement that can be met in any mode, including Off Mode.
OM Requirements	Fax Adder	One stakeholder commented that the fax/modem allowance should not be limited to MFDs as other product types also have this interface, while another noted that an MFD must wake-up and handle incoming faxes, so the fax function requires a separate adder.	EPA has amended the applicability of the fax adder so that it not only applies to MFDs but also fax machines; EPA asked stakeholders for other examples of non-MFD products with a fax modem but received no feedback. EPA has therefore not made any other changes to the fax modem approach in the Final Draft.
Partner Commitments	Remanufactured Models	Multiple stakeholders commented that ENERGY STAR recognize remanufactured products because of their environmental benefit. The stakeholders requested that remanufactured products be allowed to bear the ENERGY STAR mark if they meet the previous specification (in effect when these models were originally manufactured), or that they be provided an allowance or credit.	Although EPA understands the benefits of remanufactured models, the structure of the ENERGY STAR program permits only one Version of the specification to be valid at any one time, such that remanufactured units would have to meet the same requirements as newly manufactured models.
Partner Commitments	General Toxicity and Recyclability	Several stakeholders commented that ENERGY STAR should remain focused on energy efficiency, to avoid duplication with other standards, inconsistency with other jurisdictions, complexity, increased costs of qualification, confusion over qualification criteria and verification requirements, and "risking the ENERGY STAR program reputation." Solving the above issues would require additional time and effort.	While energy efficiency remains the basis upon which top performers are selected, EPA addresses attributes related to other aspects of product performance in ENERGY STAR specifications as applicable to ensure that overall product performance is maintained relative to a non-qualifying product. By including additional attributes, the ENERGY STAR program seeks to avoid associating the label with models of poor quality or models with features that are not compatible with broadly held consumer or societal interests, thereby preserving the influence of the label in the market. In response to stakeholder concern that placement of toxicity and recyclability requirements in the product eligibility criteria could hinder international harmonization, EPA is proposing that these criteria reside instead in the ENERGY STAR Imaging Equipment Partner Commitment document, which is unique to the US market. Further, in response to feedback, EPA notes that it is the Agency's intention to harmonize with EU RoHS and that the toxicity and recyclability requirements are not subject to third-party certification.
Partner Commitments	Toxicity	Although several stakeholders disagreed with the Toxicity and Recyclability requirements in the partner commitments, they commented that if the requirements are retained, they should specifically reference the EU Reduction of Hazardous Substances (RoHS) Directive 2011/65/EU or dynamically reference the latest EU RoHS directive, rather than the some more generic RoHS formulation or a previous version of the EU RoHS directive.	The EPEAT 1680.2 standard is final and ENERGY STAR will align with the 1680.2 section 4.3.1 Ease of Disassembly requirements for both institutional and consumer products.

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Partner Commitments	Recyclability	<p>One stakeholder noted that even though EPA claims to harmonize with IEEE 1680.1, the ease of disassembly requirements in IEEE 1680.1 are only applicable to institutional products and with exemptions for safety. The stakeholder commented that it is unlikely that any imaging equipment could meet the ease of disassembly requirement without exemptions for electrical, mechanical, chemical or radiation hazards. Similar exemptions are included in IEEE 1680.2, which is specific to Imaging Equipment.</p> <p>The stakeholder also noted that IEEE 1680.1 is currently under revision, and it is unclear if the same type of requirement will be in the next draft.</p>	
Partner Commitments	International Partnership Agreements	<p>One stakeholder noted that over time ENERGY STAR programs in different jurisdictions have diverged and requested that EPA "specify when, where, and under what circumstances, products sold worldwide can be labeled."</p>	<p>EPA has entered into agreements with a few foreign governments to promote specific ENERGY STAR qualified products in their markets. These partnerships are intended to unify voluntary energy efficiency labeling programs in major global markets of common products and make it easier for manufacturers to participate by providing a common set of energy efficiency qualifications, instead of a patchwork of varying country-specific energy efficiency requirements.</p> <p>EPA continues to work with our international partnership countries to ensure that the efficiency criteria developed remain relevant to all of our markets. EPA recently changed the U.S. ENERGY STAR program, such that regardless of where they are manufactured, all products labeled and sold in the United States must be third-party certified. EPA believes that the new requirements are necessary to ensure ongoing confidence in the program among U.S. consumers although we recognize that market conditions in these other markets may warrant a different approach (i.e., self declaration). So, while there will be some divergence between the U.S. and some of the other international partners, notably regarding product-registration procedures, the core elements of the program – the level of efficiency requirements and the timing for their introduction – remain the same.</p>
TEC Requirements	Recovery Time	<p>Several stakeholders disagreed with EPA's proposal to report recovery time from sleep (Active1 time, as measured per the test method) on the qualified product list (QPL), for example because file type, file size, time in lower power modes, etc., will all affect recovery time. Furthermore, manufacturers report a recovery times different from Active1, which might result in consumer confusion.</p> <p>Two stakeholder agreed with reporting the Active1 time. One of the commenters suggested that incentives to encourage short recovery times be considered for the next specification revision, though the same stakeholder also noted that recovery times are already low for standard- and small-format OM products, which could allow shorter Default Delay Times to Sleep Mode.</p> <p>Others inquired which specific measurements should be published, while others still commented that if Active1 time is published, so should Active0 and Active2, to provide a more representative idea of performance under different scenarios.</p> <p>Two stakeholders stated that the Active0 (recovery time from Ready Mode) measurements will give rise to unreliable data and proposed changes to the test method to remedy this, including running two jobs one after the other and not relying on the Ready Mode lamp turning on. A third suggested that manufacturers should decide the appropriate testing approach until it can be specified through a test method revision.</p>	<p>The current TEC qualified product dataset has four times reported for many of the models</p> <ol style="list-style-type: none"> 1. Active 0 time: Time from when unit indicates it is in Ready Mode after turn on to first page 2. Active 1 time: Time from 1 hour of sleep mode to first page 3. Active 2 time: Time from 15 minutes after first job to first page of second job 4. Product recovery time from sleep as marketed <p>Since recovery time (Active1 time) and Default Delay Time to Sleep are useful to consumers and potentially a useful parameter for evaluating the impact of the Version 2.0 requirements on usability, EPA proposes to require reporting of both recovery time (Active1 time) and Default Delay Time to Sleep for all TEC products.</p> <p>Although Active 1 (time from sleep mode) tends to be greater than the others (56% of models), and Active 0 and Active 2 are the times that are more likely equal to each other (12% of models), there are no strong relationships between the numbers.</p> <p>EPA proposes to require reporting of both recovery time (Active1 time) and Default Delay Time to Sleep for all TEC products and to provide a simple average of these three values on the Version 2.0 Qualified Product List (QPL) (but having all of the data available in the expanded product data directory).</p>

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TEC Requirements	Automatic Duplexing Exception for Optional Accessories	<p>Stakeholders expressed concern regarding EPA's proposal to rescind an exception from the Automatic Duplexing requirements provided under Version 1.2 to models that had duplexers sold as an accessory. Specifically:</p> <ul style="list-style-type: none"> • Manufacturers do not know at the time of manufacture if a product will be sold as a duplex unit because customers decide which accessories to purchase with their product and the ENERGY STAR label is applied to the basic engine, • High speed imaging products may be sold with a duplex tray, but this tray might not be used, • To comply, manufacturers would need to create new product configurations, • Higher price of a product with duplexing capabilities is not appropriate for general customers, and • Work flow or special media may not allow duplex printing, requiring exemptions. <p>Another stakeholder stated that this could result in manufacturers eliminating ENERGY STAR qualified products so they oppose this change unless there is evidence that this is a real problem.</p>	<p>EPA has reviewed the comments concerning the automatic duplexing exception and recognizes that are circumstances in the manufacture and distribution of base products and duplex accessories which may make meeting the labeling requirements complicated.</p> <p>Under Version 1.0, EPA provided an allowance for ENERGY STAR labeled products to be sold without the duplex tray. EPA will continue to honor this allowance. As agreed to under Version 1.0, the partner must, in this case, make clear in their product literature, on their Web site, and in institutional sales literature that although the product meets the ENERGY STAR energy efficiency requirements, the product only fully qualifies for ENERGY STAR when bundled with or used with a duplex tray.</p>
TEC Requirements	Print Driver Duplexing Settings	One stakeholder suggested that EPA require the print driver (including the DFE print driver, if applicable) to print duplex by default for those systems that require automatic duplexing.	Since the print driver is hosted on the end-user's computer, not the Imaging Equipment, it falls outside the scope of the specification. No print driver requirements have been included in the Final Draft.
TEC Requirements	Duplexing Requirement	<p>One stakeholder recommended the following duplexing requirements:</p> <ul style="list-style-type: none"> - $s \leq 26$: None, - $26 < s < 45$: Integral to the base product or offered as an optional accessory, and - $s \geq 45$: Integral to the base product. <p>Another commented that automatic duplexing be required above 19 ipm as proposed in Draft 1 with applications in which duplexing is not practical exempted. Reasons include:</p> <ul style="list-style-type: none"> - Paper consumption is the most important factor in the life cycle impacts of imaging equipment - Cost of a duplex unit is offset by environmental savings of duplexing - Cheaper non-duplexing products may use cheaper components and may have shorter lifetimes and greater waste implications 	<p>Since the beginning of this specification revision, EPA expressed interest in standardizing the automatic duplexing requirement among product types and classes. The data set supported the removal of the optional duplex requirement for middle speed products, as most products above 26 ipm provide duplexing as an integral function.</p> <p>However, stakeholders made a strong case that for some lower-speed products, automatic duplexing is not practical and may have the potential effect of discouraging lower-cost ENERGY STAR qualified printers. Stakeholders also noted that removal of the optional accessory requirement for middle speed range products was also a cost issue and consumers should have the option to select this price impacting functionality. EPA recognizes these concerns and has reverted the proposed automatic duplexing requirement to provide separate automatic duplexing requirements based on color functionality.</p>
TEC Requirements	Energy Consumption in Duplex	One stakeholder commented that customers should be made aware if energy consumption is much higher in simplex versus duplex.	<p>The Test Method currently requires testing only in simplex mode (unless the product speed is faster in duplex, in which case the Test Method requires testing only in duplex). Therefore, there is no way to compare the two modes.</p> <p>EPA will explore the option of expanding its ENERGY STAR Tips as a way to educate consumers on this issue.</p>
TEC Requirements	Dataset	Two stakeholders noted that almost 100% of the models in the TEC dataset used for analysis meet the Version 1.2 requirements and commented that this does not reflect market conditions.	Recently released market penetration numbers indicate that almost 100% of 2011 shipments were ENERGY STAR qualified, consistent with the TEC dataset. Nonetheless, EPA always welcomes further data on non-qualified models from stakeholders to use in specification development.
TEC Requirements	Displaying TEC on Qualified Products List	Two stakeholders requested that if TEC is reported in kWh/year, then EPA should provide a disclaimer warning of the high usage assumptions in the TEC test.	The qualified products list (QPL) already includes a disclaimer about the comparability of TEC, including that "Actual energy consumption will differ, based on how the product is used. "

Topic	Subtopic	Comment	Recommended EPA Response
TEC Requirements	Maximum TEC Requirement	<p>One stakeholder requested that EPA publish the TEC qualification rates for each speed range, while others recommended setting the requirements such that 25% of products in each speed bin qualify, and revisiting the requirements for 30-40 ipm monochrome copiers and printers, where only 10% of copiers and 0% of printers qualified. Two stakeholders were further concerned that the TEC requirements were determined by copiers, fax, and stencil products, which have lower TEC values than printers and MFDs.</p> <p>Three other stakeholders commented that requirements for monochrome printers and copiers are technically infeasible, and would reduce market competition.</p> <p>On the other hand, two appreciated the differentiation between requirements for single and multi-function products reintroduced in Draft 2, while another commented that the color MFD qualification rate was much higher than other product categories and recommended that since these products meet different customer needs, their requirements should be developed independently of the other product types.</p>	<p>Per stakeholder feedback, EPA published the TEC qualification rates on the ENERGY STAR Imaging specification development website, indicating qualification rates greater than 20% for all the 19 ipm bins analyzed. Although altering the criteria could further increase the qualification rates in some of the speed bins, doing so would impact the subsequent bins as well as the other product classes - since they are tied together. Thus resulting in unacceptably high qualification rates at the higher speeds or other product categories (such as color MFDs).</p> <p>EPA has also excluded digital duplicators from the analysis, such that the published qualification rates reflect those of printers, copiers, fax machines (collectively non-MFDs), and MFDs.</p> <p>Based on stakeholder feedback, EPA conducted an analysis on the impact of A3 versus A4 paper width on TEC qualification rates. There was a only a minor differences in these two paper width products qualifying but for lower-speed non-MFDs. EPA is therefore proposing an adder of 0.2 kWh/week for A3 paper-width products to compensate for their larger fusers, longer warm-up time, and therefore higher TEC.</p>
TEC Requirements	Maximum TEC Requirement Proposals	<p>Proposals from stakeholders to improve the TEC requirements include:</p> <ul style="list-style-type: none"> • Modify requirements toward Draft 1 level • The lower limit of 1.0kWh/week for printers and 1.5kWh/week for MFD should be kept because this is the energy consumed by a printer with 6W in sleep mode only (no print output) and Japan Energy Conservation Law and Blue Angel is going to adopt this as the lower limit • Monochrome MFD of $S > 80$ ipm should be loosened according to this formula: $(s \times 0.7) - 44.15$ <p>The following recommendations were made for color MFDs to lower their current 70% qualification rate:</p> <ul style="list-style-type: none"> • $S \leq 27$: 1.5 • $27 < S \leq 36$: $(S \times 0.057) - 0.095$ • $36 < S \leq 45$: $(S \times 0.082) - 0.98$ • $45 < S \leq 59$: $(S \times 0.139) - 3.62$ • $S > 59$: $(S \times 0.427) - 20.72$ 	<p>EPA conducted extensive analysis of the data set to ensure that the proposed TEC requirements continued to differentiate products and provide adequate selection for consumers over a wide set of attributes and functionality. EPA has made some minor modification to the Mono non-MFD TEC max equations to provide more lenient power requirements for lower speed models (i.e., less than 30 ipm).</p>
TEC Requirements	Professional Products	<p>A stakeholder expressed concern that not enough high-speed "professional products", defined as high speed TEC products capable of handling heavier and larger paper, are meeting the Draft 2 TEC requirements and requested separate requirements such that:</p> <ul style="list-style-type: none"> • The Monochrome MFD/Non-MFD requirement for $S \geq 90$ should be $(S \times 0.6) - 36.15$ • The Color MFD/Non-MFD requirement for $S \geq 60$ should be $(S \times 0.75) - 35.05$ <p>This commenter also suggested that the TEC of these products also include that of any associated DFEs and that TEC data when printing in color should be used in the next specification revision.</p>	<p>EPA will not be developing new requirements for any new class of products during the final draft phase. However, EPA will consider in a future specification revision and has included this under the future revision issues to explore. EPA will reach out to stakeholder prior to the next revision to address this and the other identified issues.</p>
TEC Requirements	Units of Measurement	<p>A stakeholder requested that minutes be used in calculations instead of hours.</p>	<p>In order to maintain consistency of units in the TEC equations, the TEC equations will continue to use hours, as the energy measurements are made in kWh.</p>
Test Method	Uncertainty	<p>A stakeholder requested that EPA clarify that labs do not need to demonstrate they can meet the uncertainty requirements in the test method before each test, but through annual equipment calibrations.</p>	<p>A Third-party Laboratory or Supervised Manufacturer's Testing Laboratory (SMTL) is required to be audited at least once per year to gain ISO 17025 accreditation. The accreditation body is responsible for this accreditation. Certification bodies may only intervene in the frequency of equipment calibrations in Witnessed Manufacturer's Testing Laboratory (WMTL) situations, in which case the CB can set the requirements on the frequency of calibration of equipment.</p>
Test Method	Wakeup	<p>A stakeholder suggested that labs be instructed to report any spontaneous wakeup events that occur during testing and their probable cause.</p>	<p>The Test Method already specifies that service/maintenance modes should be disabled or excluded from the test. Furthermore, EPA and DOE were interested in wakeup due to network events, but determined that the development of an acceptable wakeup test was beyond the timeline of this specification revision.</p> <p>Nonetheless EPA welcomes further information on network wakeup for consideration in a future specification revision.</p>

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Test Method		A stakeholder stated that there is no default "as-is" product speed or network connection on the Test Reporting template and asked when the Draft qualified product exchange (QPX) template will be released for review.	The Draft QPX will be released around the same time as the final draft.