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ENERGY STAR® Program Requirements for Imaging Equipment – **Draft 3**

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Partner Commitments

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Commitment

The following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacturing of ENERGY STAR qualified imaging equipment. The ENERGY STAR Partner must adhere to the following program requirements:

- Comply with current ENERGY STAR Eligibility Criteria defining the performance criteria that must be met for use of the ENERGY STAR certification mark on imaging equipment and specifying the testing criteria for imaging equipment. EPA may, at its discretion, conduct tests on products that are referred to as ENERGY STAR qualified. These products may be obtained on the open market, or voluntarily supplied by Partner at EPA's request.
- Comply with current ENERGY STAR Identity Guidelines and Web-Based Tools for Partners document, describing how the ENERGY STAR name and mark may be used. Partner is responsible for adhering to these guidelines and for ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance.
- Qualify at least one ENERGY STAR qualified imaging equipment model within six months of activating the imaging equipment portion of the agreement. When Partner qualifies the product, it must meet the specification in effect at that time.
- Provide clear and consistent labeling of ENERGY STAR qualified imaging equipment. The ENERGY STAR mark must be clearly displayed:
 1. Either on the top/front of product or through electronic messaging that is pre-approved by EPA. Labeling on the top/front of product may be permanent or temporary. All temporary labeling must be affixed to the top/front of product with an adhesive or cling-type application;
 2. On the manufacturer's Internet site where information about ENERGY STAR qualified models is displayed. Specific guidance on using the ENERGY STAR mark on Internet sites is provided in the Web-Based Tools for Partners document;
 3. Either in product literature (i.e., user manuals, specification sheets, etc.) or in a separate box insert that provides educational language about the product's ENERGY STAR settings; and
 4. On product packaging/boxes for products sold at retail.

Note: EPA will distribute guidance regarding acceptable electronic labeling following the distribution of Draft 3 and welcomes suggestions for ways in which partners would like to employ electronic messaging. Stakeholders interested in offering recommendations to EPA about electronic labeling guidelines should contact Katharine Kaplan Osdoba (osdoba.katharine@epa.gov).

Note: Shortly, EPA will post the Web-Based Tools for Partners document on the ENERGY STAR Web site and clarify how Web labeling requirements apply to US and non-US focused Web sites.

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- Update the list of ENERGY STAR qualified imaging equipment models through the Online Product Submittal tool (OPS) on an annual basis at a minimum. Once the Partner submits its first list of ENERGY STAR qualified imaging equipment models, the Partner will be listed as an ENERGY STAR Partner on www.energystar.gov. Partner must provide annual updates in order to remain on the list of participating product manufacturers. If no new models are introduced during a particular year, Partner should notify EPA to ensure its partnership status is maintained.

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- Provide to EPA, on an annual basis, unit shipment data or other market indicators to assist in determining the market penetration of ENERGY STAR. Specifically, Partner must submit the total number of ENERGY STAR qualified imaging equipment products shipped (in units) or an equivalent measurement as agreed to in advance by EPA and Partner. Partner is encouraged to provide unit shipment data segmented by meaningful product characteristics (e.g., product type, size, speed, marking technology, or other as relevant) for both the United States (US) and outside of the United States (non-US). Partner is also encouraged to provide total unit shipments for each model in its product line, and the percent of total unit shipments that qualify as ENERGY STAR. The data for each calendar year should be submitted to EPA, preferably in electronic format, no later than the following March and may be provided directly from the Partner or through a third party. The data will be used by EPA only for program evaluation purposes and will be closely controlled. Any information used will be masked by EPA so as to protect the confidentiality of the Partner.
 - Notify EPA of a change in the designated responsible party or contacts for imaging equipment within 30 days.

74 **Performance for Special Distinction**

75 In order to receive additional recognition and/or support from EPA for its efforts within the
76 Partnership, the ENERGY STAR Partner may consider the following voluntary measures and should keep
77 EPA informed on the progress of these efforts:

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- Consider energy efficiency improvements in company facilities and pursue the ENERGY STAR label for buildings.
 - Purchase ENERGY STAR qualified products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR qualified product information to employees for use when purchasing products for their homes.
 - Ensure the power management feature is enabled for all ENERGY STAR qualified monitors in use in company facilities, particularly upon installation and after service is performed.
 - Provide general information about ENERGY STAR to employees whose jobs are relevant to the development, marketing, sales, and service of current ENERGY STAR qualified product models.
 - Provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the program requirements listed above. By doing so, EPA may be able to coordinate, communicate, and/or promote Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR Web pages, etc. The plan may be as simple as providing a list of planned activities or planned milestones that Partner would like EPA to be aware of. For example, activities may include: (1) increase the availability of ENERGY STAR qualified products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrate the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) provide information to users (via the Web site and user's manual) about energy-saving features and operating characteristics of ENERGY STAR qualified products, and (4) build awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event.
 - Provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and its message.



ENERGY STAR® Program Requirements for Imaging Equipment – Draft 3

Eligibility Criteria (Version 1.0)

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Below is the Version 1.0 product specification for ENERGY STAR qualified Imaging Equipment. A product must meet all of the identified criteria if it is to be qualified as ENERGY STAR by its manufacturer.

1) **Definitions:** Below is a brief description of terms as relevant to ENERGY STAR.

Products

- A. **Copier** – A commercially-available imaging product whose sole function is the production of hard copy duplicates from graphic hard copy originals. The unit must be capable of being powered from a wall outlet or from a data or network connection. This definition is intended to cover products that are marketed as copiers or upgradeable digital copiers (UDCs).
- B. **Digital Duplicator** – A commercially-available imaging product that is sold in the market as a fully-automated duplicator system through the method of stencil duplicating with digital reproduction functionality. The unit must be capable of being powered from a wall outlet or from a data or network connection. This definition is intended to cover products that are marketed as digital duplicators.
- C. **Facsimile Machine (Fax Machine)** – A commercially-available imaging product whose primary functions are scanning hard copy originals for electronic transmission to remote units and receiving similar electronic transmissions to produce hard copy output. Electronic transmission is primarily over a public telephone system, but also may be via computer network or the Internet. The product also may be capable of producing hard copy duplicates. The unit must be capable of being powered from a wall outlet or from a data or network connection. This definition is intended to cover products that are marketed as fax machines.

Note: To avoid confusion and per the request of a stakeholder, EPA has removed “sometimes referred to as ‘convenience copying’” from the definition for facsimile machines.
- D. **Mailing Machine** – A commercially-available imaging product that serves to print postage onto mail pieces. The unit must be capable of being powered from a wall outlet or from a data or network connection. This definition is intended to cover products that are marketed as mailing machines.
- E. **Multifunction Device (MFD)** – A commercially-available imaging product, which is a physically-integrated device or a combination of functionally-integrated components, that performs two or more of the core functions of copying, printing, scanning, or faxing. The copy functionality as addressed in this definition is considered to be distinct from single sheet convenience copying offered by fax machines. The unit must be capable of being powered from a wall outlet or from a data or network connection. This definition is intended to cover products that are marketed as MFDs or multifunction products (MFPs).
- F. **Printer** – A commercially-available imaging product that serves as a hard copy output device, and is capable of receiving information from single-user or networked computers, or other input devices (e.g., digital cameras). The unit must be capable of being powered from a wall outlet or from a data or network connection. This definition is intended to cover products that are marketed as printers, including printers that can be upgraded into MFDs in the field.
- G. **Scanner** – A commercially-available imaging product that functions as an electro-optical device for converting information into electronic images that can be stored, edited, converted, or

166 transmitted, primarily in a personal computing environment. The unit must be capable of being
167 powered from a wall outlet or from a data or network connection. This definition is intended to
168 cover products that are marketed as scanners.
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170 **Marking Technologies**

- 171
- 172 H. Direct Thermal (DT) – A marking technology that transfers an image by burning dots onto coated
173 media as it passes over a heated print head. DT products do not use ribbons.
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- 175 I. Dye Sublimation (DS) – A marking technology where images are formed by depositing (subliming)
176 dye onto the print media based upon the amount of energy delivered by the heating elements.
177
- 178 J. Electrophotography (EP) – A marking technology characterized by illumination of a
179 photoconductor in a pattern representing the desired hard copy image via a light source,
180 development of the image with particles of toner using the latent image on the photoconductor to
181 define the presence or absence of toner at a given location, transfer of the toner to the final hard
182 copy medium, and fusing to cause the desired hard copy to become durable. Types of EP include
183 Laser, LED, and LCD. Color EP is distinguished from monochrome EP in that toners of at least
184 three different colors are available in a given product at one time. Two types of color EP
185 technology are defined below:
186
- 187 a. Parallel Color EP – A marking technology that uses multiple light sources and multiple
188 photoconductors to increase the maximum color printing speed.
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- 190 b. Serial Color EP – A marking technology that uses a single photoconductor in a serial fashion
191 and one or multiple light sources to achieve the multi-color hard copy output.
192
- 193 K. Impact – A marking technology characterized by the formation of the desired hard copy image by
194 transferring colorant from a “ribbon” to the media via an impact process. Two types of impact
195 technology are Dot Formed Impact and Fully-formed Impact.
196
- 197 L. Ink Jet (IJ) – A marking technology where images are formed by depositing colorant in small drops
198 directly to the print media in a matrix manner. Color IJ is distinguished from monochrome IJ in
199 that more than one colorant is available in a product at any one time. Typical types of IJ include
200 Piezo-electric (PE) IJ, IJ Sublimation, and Thermal IJ.
201
- 202 *Note: EPA included the word “typical” before “types of IJ” in the last sentence at the*
203 *suggestion of a stakeholder, to accommodate the potential for future types of Ink Jet.*
- 204
- 205 M. Solid Ink (SI) – A marking technology where the ink is solid at room temperature and liquid when
206 heated to the jetting temperature. Transfer to the media can be direct, but is most often made to
207 an intermediate drum or belt and then offset printed to the media.
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- 209 *Note: Although a stakeholder suggested adding the word “typically” to the phrase “solid at*
210 *room temperature,” EPA has retained its language from Draft 2 to prevent possible confusion*
211 *between SI and IJ technologies.*
- 212
- 213 N. Stencil – A marking technology that transfers images onto the print media from a stencil that is
214 fitted around an inked drum.
215
- 216 O. Thermal Transfer (TT) – A marking technology where the desired hard copy image is formed by
217 depositing small drops of solid colorant (usually colored waxes) in a melted/fluid state directly to
218 the print media in a matrix manner. TT is distinguished from IJ in that the ink is solid at room
219 temperature and is made fluid by heat.
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221 **Operational Modes, Activities, and Power States**

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- 223 P. Active – The power state in which the product is connected to a power source and is actively
224 producing output, as well as performing any of its other primary functions.
225

226 Q. Automatic Duplexing – The capability of a copier, fax machine, MFD, or printer to automatically
227 place images on both sides of an output sheet, without manual manipulation of originals or output
228 as an intermediate step. Examples of this are one-sided to two-sided copying and two-sided to
229 two-sided copying. A product is considered to have automatic duplexing capability only if the
230 model includes all accessories needed to satisfy the above conditions.

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232 *Note: EPA elected, at the request of a stakeholder, to limit confusion by removing the*
233 *reference to an “automatic document feeder (ADF)” as an example of how to meet the*
234 *Automatic Duplexing requirement since some products do not utilize an ADF.*
235

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237 R. Default Delay Time – The time set by the manufacturer prior to shipping that determines when the
238 product will enter a lower-power mode (e.g., Sleep, Off) following completion of its primary
239 function.

240
241 *Note: EPA removed the definition of “Disconnect” previously included in Draft 2 at the*
242 *suggestion of a stakeholder because it is not used in the remainder of the document.*
243

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245 S. Off – The power state that the product enters when it has been manually or automatically switched
246 off but is still plugged into and connected to the mains. This mode is exited when stimulated by an
247 input, such as a manual power switch or clock timer to bring the unit into Ready mode. When this
248 state is resultant from a manual intervention by a user, it is often referred to as Manual Off, and
249 when it is resultant from an automatic or predetermined stimuli (e.g., a delay time or clock), it is
250 often referred to as Auto-off.

251
252 T. Ready – The condition that exists when the product is not producing output, has reached
253 operating conditions, has not yet entered into any lower-power modes, and can enter Active mode
254 with minimal delay. All product features can be enabled in this mode, and the product must be
255 able to return to Active mode by responding to any potential input options designed into the
256 product. Potential inputs include external electrical stimulus (e.g., network stimulus, fax call, or
257 remote control) and direct physical intervention (e.g., activating a physical switch or button).

258
259 U. Sleep – The reduced power state that the product enters: 1) automatically after a period of
260 inactivity, 2) at a user set time-of-day, 3) immediately in response to user manual action, without
261 actually turning off, or 4) through other automatically-achieved ways that are related to user
262 behavior. All product features can be enabled in this mode and the product must be able to enter
263 Active mode by responding to any potential input options designed into the product; however,
264 there may be a delay. Potential inputs include external electrical stimulus (e.g., network stimulus,
265 fax call, remote control) and direct physical intervention (e.g., activating a physical switch or
266 button). The product must maintain network connectivity while in Sleep, waking up only as
267 necessary.

268
269 *Note: EPA added the fourth type of entry into Sleep per stakeholder request, to recognize*
270 *other ways of entering Sleep beyond the three preceding scenarios, which may include*
271 *adaptation or “self learning” processes employed by the product based on user patterns.*
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274 V. Standby – The lowest power consumption mode which cannot be switched off (influenced) by the
275 user and that may persist for an indefinite time when the product is connected to the main
276 electricity supply and used in accordance with the manufacturer’s instructions¹.

277
278 **Note:** For Imaging Equipment products addressed by this specification, the Standby power level
279 usually occurs in Off mode, but can occur in Ready or Sleep. A product cannot exit Standby and
280 reach a lower power state unless it is physically disconnected from the main electricity supply as a
281 result of manual manipulation.
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¹ IEC 62301 – Household electrical appliances – Measurement of standby power. 2005.

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Note: EPA amended the preceding definition for Standby to match exactly the IEC definition. EPA also added an editorial note to explain the modes in which Standby power is usually observed.

Product Size Formats

- W. Large Format – Products categorized as Large Format include those designed for A2 media and larger, including those designed to accommodate continuous-form media at a width of 420 millimeters (mm) or wider. Large-format products may also be capable of printing on standard-size or small-format media.

Note: Per stakeholder request, EPA has clarified the definitions for Large Format, Small Format, and Standard to include products that accommodate continuous-form media. In Draft 2, products designed to accommodate continuous-form media were defined as a separate product size format. This definition, while still relevant for describing these types of products, has been moved to the Additional Terms section, since Continuous Form is no longer considered a specific Product Size under this specification.

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- X. Small Format – Products categorized as Small Format include those designed for media sizes smaller than those defined as Standard (e.g., A6, 4" x 6", microfilm), including those designed to accommodate continuous-form media at widths smaller than 210 mm.
- Y. Standard – Products categorized as Standard include those designed for standard-sized media (e.g., Letter, Legal, Ledger, A3, A4, and B4), including those designed to accommodate continuous-form media at widths between 210 and 297 mm. Standard-size products may also be capable of printing on small-format media.

Additional Terms

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- Z. Accessory – An optional piece of peripheral equipment that is not necessary for the operation of the base unit, but that may be added before or after shipment in order to add functionality. An accessory may be sold separately under its own model number, or sold with a base unit as part of a package or configuration.
- AA. Base Product – A base product is the standard model shipped by the manufacturer. When product models are offered in different configurations, the base product is the most fundamental configuration of model, which possesses the minimum number of functional adders available. Functional components or accessories offered as optional, rather than standard, are not considered part of the base product.
- BB. Continuous Form – Products categorized as Continuous Form include those which do not use a cut-sheet media size, and are designed for key industrial applications such as printing of bar codes, labels, receipts, waybills, invoices, airline tickets, or retail tags.
- CC. Digital Front-end (DFE) – A functionally-integrated, network-attached server or desktop-derived server that hosts other computers and applications and acts as an interface to imaging equipment. A DFE uses its own dc power supply or draws its dc power from the imaging equipment product with which it operates. A DFE provides greater functionality to the imaging product, but is not necessarily required for the imaging product to operate. A DFE also offers at least two of the following advanced features:
- a. Network connectivity in various environments;
 - b. Mailbox functionality;
 - c. Job queue management;
 - d. Machine management (e.g., waking the imaging equipment from a reduced power state);
 - e. Advanced graphic user-interface (UI);
 - f. Ability to initiate communication with other host servers and client computers (e.g., scanning to email, polling remote mailboxes for jobs); or
 - g. Ability to post-process pages (e.g., reformatting pages prior to printing).

Note: The definition of a DFE has been revised since the distribution of Draft 2 based on input from industry stakeholders. It now incorporates additional detail regarding the functionality offered by a DFE, which helps to differentiate it from a print controller.

DD. Functional Adder – A functional adder is a standard product feature that adds functionality to the base marking engine of an imaging equipment product. The Operational Mode portion of this specification contains additional power allowances for certain functional adders. Examples of functional adders include wireless interfaces and fax capability.

EE. Operational Mode (OM) Approach – A method of testing and comparing the energy performance of imaging equipment products, which focuses on product energy consumption in various low-power modes. The key criteria used by the OM approach are values for low-power modes, measured in watts (W). Detailed information can be found in the “ENERGY STAR Qualified Imaging Equipment Operational Mode Test Procedure” available at www.energystar.gov/products.

FF. Marking Engine – The very basic engine of an imaging product, which drives the image processing of that product. Without additional functional components, a marking engine cannot acquire image data to process and is, therefore, non-functional. A marking engine is reliant on functional adders for communication ability and image processing.

Note: EPA chose to use the more general term “marking engine” in favor of “print engine” to address non-printer based products, such as copiers. “Print engine” has been eliminated from the definition where it previously appeared in Draft 2 and replaced with “marking engine.”

GG. Product Speed – In general, for Standard-size products, a single A4 or 8.5” x 11” sheet printed/copied/scanned on one side in a minute is equal to one image-per-minute (ipm). If the maximum claimed speeds differ when producing images on A4 or 8.5” x 11” paper, the higher of the two shall be used.

- For mailing machines, one piece of mail processed in a minute is equal to one mail-piece-per-minute (mppm).
- For Small-format products, a single A6 or 4” x 6” sheet printed/copied/scanned on one side in a minute is equal to 0.25 ipm.
- For Large-format products, a single A2 sheet is 4 ipm and one A0 sheet is equivalent to 16 ipm.
- For continuous-form products categorized as Small-format, Large-format, or Standard-size, print speed in ipm should be obtained from the product’s maximum marketed imaging speed in meters per minute according to the conversion below:

$$X \text{ ipm} = 16 \times [\text{Maximum media width (meters)} \times \text{Maximum imaging speed (length-meters/minute)}]$$

In all cases, the converted speed in ipm should be rounded to the nearest integer (e.g., 14.4 ipm rounds to 14.0 ipm; 14.5 ipm rounds to 15 ipm).

For qualification purposes, manufacturers should report the speed of the product according to the prioritization of functions outlined below:

- **Print Speed**, unless the product cannot perform the print function, in which case,
- **Copy Speed**, unless the product cannot perform the print or copy functions, in which case,
- **Scan Speed**.

HH. Typical Electricity Consumption (TEC) Approach – A method of testing and comparing the energy performance of imaging equipment products, which focuses on the typical electricity consumed by a product while in normal operation during a representative period of time. The key criteria of the TEC approach for imaging equipment is a value for typical weekly electricity consumption,

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measured in kilowatt-hours (kWh). Detailed information can be found in the “ENERGY STAR Qualified Imaging Equipment Typical Electricity Consumption Test Procedure” available at www.energystar.gov/products.

- 2) **Qualifying Products:** In order to qualify as ENERGY STAR, an imaging equipment product must be defined in Section 1 and meet one of the product descriptions in Table 1 or 2, below.

Qualifying Products: Table 1 - TEC Approach

Product Area	Marking Technology	Size Format	Color Capability	TEC Table	Page
Copiers	Direct Thermal	Standard	Monochrome	TEC 1	12
	Dye Sublimation	Standard	Color	TEC 2	12
	Dye Sublimation	Standard	Monochrome	TEC 1	12
	EP	Standard	Monochrome	TEC 1	12
	EP	Standard	Color	TEC 2	12
	Solid Ink	Standard	Color	TEC 2	12
	Thermal Transfer	Standard	Color	TEC 2	12
	Thermal Transfer	Standard	Monochrome	TEC 1	12
Digital Duplicators	Stencil	Standard	Color	TEC 2	12
	Stencil	Standard	Monochrome	TEC 1	12
Fax Machines	Direct Thermal	Standard	Monochrome	TEC 1	12
	Dye Sublimation	Standard	Monochrome	TEC 1	12
	EP	Standard	Monochrome	TEC 1	12
	EP	Standard	Color	TEC 2	12
	Solid Ink	Standard	Color	TEC 2	12
	Thermal Transfer	Standard	Color	TEC 2	12
Multifunction Devices (MFDs)	Direct Thermal	Standard	Monochrome	TEC 3	13
	Dye Sublimation	Standard	Color	TEC 4	13
	Dye Sublimation	Standard	Monochrome	TEC 3	13
	EP	Standard	Monochrome	TEC 3	13
	EP	Standard	Color	TEC 4	13
	Solid Ink	Standard	Color	TEC 4	13
	Thermal Transfer	Standard	Color	TEC 4	13
	Thermal Transfer	Standard	Monochrome	TEC 3	13
Printers	Direct Thermal	Standard	Monochrome	TEC 1	12
	Dye Sublimation	Standard	Color	TEC 2	12
	Dye Sublimation	Standard	Monochrome	TEC 1	12
	EP	Standard	Monochrome	TEC 1	12
	EP	Standard	Color	TEC 2	12
	Solid Ink	Standard	Color	TEC 2	12
	Thermal Transfer	Standard	Color	TEC 2	12
	Thermal Transfer	Standard	Monochrome	TEC 1	12

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Note: The TEC test procedure explains that the TEC approach is applied to Standard-size products using either 1) heat-intensive- or 2) digital-duplicator-technologies. The marking technologies noted in Table 1 above are known to be heat-intensive processes, but future types of heat-intensive technology, such as new forms of fuser-based Ink Jet, are not excluded.

Note: In the Draft 2 specification, EPA informed stakeholders that Serial and Parallel Color EP devices would not be addressed separately in the Version 1.0 specification. The relevant product tables have been updated to reflect this decision, listing “Color EP” where “Parallel Color EP” and “Serial Color EP” were listed previously.

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Qualifying Products: Table 2 – Operational Mode Approach

Product Area	Marking Technology	Size Format	Color Capability	OM Table	Page
Copiers	Direct Thermal	Large	Monochrome	OM 1	16
	Dye Sublimation	Large	Color & Monochrome	OM 1	16
	EP	Large	Color & Monochrome	OM 1	16
	Solid Ink	Large	Color	OM 1	16
	Thermal Transfer	Large	Color & Monochrome	OM 1	16
Fax Machines	Ink Jet	Standard	Color & Monochrome	OM 2	16
Mailing Machines	Direct Thermal	N/A	Monochrome	OM 4	17
	EP	N/A	Monochrome	OM 4	17
	Ink Jet	N/A	Monochrome	OM 4	17
	Thermal Transfer	N/A	Monochrome	OM 4	17
Multifunction Devices (MFDs)	Direct Thermal	Large	Monochrome	OM 1	16
	Dye Sublimation	Large	Color & Monochrome	OM 1	16
	EP	Large	Color & Monochrome	OM 1	16
	Ink Jet	Standard	Color & Monochrome	OM 2	16
	Ink Jet	Large	Color & Monochrome	OM 3	16
	Solid Ink	Large	Color	OM 1	16
	Thermal Transfer	Large	Color & Monochrome	OM 1	16
Printers	Direct Thermal	Large	Monochrome	OM 8	17
	Dye Sublimation	Large	Color & Monochrome	OM 8	17
	Dye Sublimation	Small	Color & Monochrome	OM 5	17
	EP	Large	Color & Monochrome	OM 8	17
	EP	Small	Color	OM 5	17
	Impact	Large	Color & Monochrome	OM 8	17
	Impact	Standard	Color & Monochrome	OM 6	17
	Ink Jet	Large	Color & Monochrome	OM 3	16
	Ink Jet	Small	Color & Monochrome	OM 5	17
	Ink Jet	Standard	Color & Monochrome	OM 2	16
	Solid Ink	Large	Color	OM 8	17
	Solid Ink	Small	Color	OM 5	17
	Thermal Transfer	Large	Color & Monochrome	OM 8	17
	Thermal Transfer	Small	Color & Monochrome	OM 5	17
Scanners	N/A	Large & Standard	N/A	OM 7	17

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414 3) **Energy-Efficiency Specifications for Qualifying Products:** Only those products listed in Section 2
 415 above that meet the following criteria may qualify as ENERGY STAR. Effective dates are provided in
 416 Section 6 of this specification.

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 418 **Products Sold with an External Power Adapter:** To qualify, imaging equipment products using a single-
 419 voltage external ac-dc or ac-ac power adapter must use an ENERGY STAR qualified adapter, or one
 420 that meets the ENERGY STAR External Power Supply (EPS) specification when tested to the
 421 ENERGY STAR test method. The ENERGY STAR specification and test method for single voltage
 422 external ac-dc and ac-ac power supplies may be found at www.energystar.gov/products.

423
 424 **Products Designed to Operate with an External DFE:** To qualify, an imaging equipment product that is
 425 sold with an externally-powered DFE must use an ENERGY STAR qualified DFE, or one that meets
 426 the ENERGY STAR Computer specification when tested to the ENERGY STAR test method. The
 427 ENERGY STAR specification and test method for computers may be found at
 428 www.energystar.gov/products.

429
 430 **Products Sold with an Additional Cordless Handset:** To qualify, fax machines or MFDs with fax
 431 capability that are sold with additional cordless handsets must use an ENERGY STAR qualified
 432 handset, or one that meets the ENERGY STAR Telephony specification when tested to the ENERGY
 433 STAR test method. The ENERGY STAR specification and test method for telephony products may be
 434 found at www.energystar.gov/products.

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 436 *Note: EPA has added the modifiers “EPS”, “Computer”, and “Telephony” to identify the relevant*
 437 *specifications in the above descriptions for clarification.*

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 440 **Duplexing:** Standard-size EP and SI copiers, printers, and MFDs must meet the following duplexing
 441 requirements, based on product speed:

442
 443 Color Copiers, MFDs, and Printers

Product Speed	Duplexing Requirement
≤ 19 ipm	N/A
20 – 39 ipm	Automatic duplexing must be offered as an optional accessory at the time of purchase.
≥ 40 ipm	Automatic duplexing is required as a standard feature at the time of purchase.

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Monochrome Copiers, MFDs, and Printers

Product Speed	Duplexing Requirement
≤ 24 ipm	N/A
25 – 44 ipm	Automatic duplexing must be offered as an optional accessory at the time of purchase.
≥ 45 ipm	Automatic duplexing is required as a standard feature at the time of purchase.

446
 447 *Note: The earlier product tables used to address duplexing in Draft 2 have been restructured from*
 448 *three to two tables. The tables used for addressing monochrome and color printers have been*
 449 *adopted for monochrome and color copiers and MFDs, respectively, since common design*
 450 *platforms and development costs support collapsing duplexing requirements for product types and*
separating color and monochrome products into two groups.

446
 447 *Note: Based on reasoning that duplexing capabilities for SI-based products are similar if not the*
 448 *same as EP-based products, EPA has decided to apply duplexing requirements to products that*
 449 *use either one of these marking technologies. In Draft 2, only EP-based products were held to*
 450 *duplexing requirements.*

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- A. **ENERGY STAR Eligibility Criteria – TEC.** To qualify as ENERGY STAR, the TEC value obtained for imaging equipment outlined in Section 2, Table 1 above must not exceed the corresponding criteria below.

Manufacturers who have products with a functionally-integrated DFE should subtract the DFE’s energy consumption in Ready mode from the product’s total TEC result before comparing the product’s TEC to the criteria limits below. In order to take advantage of this allowance, the DFE must meet the definition in Section 1.CC. and be a separate processing unit that is capable of initiating activity over the network.

Note: The sentence, “The imaging equipment product should be capable of performing some core functions without the DFE present...functionality,” was removed from the above paragraph in response to stakeholder feedback to the Draft 2 specification.

Example: A printer’s total TEC result is 24.5 kWh/week and its internal DFE consumes 50W in Ready mode. 50W x 168 hours/week = 8.4 kWh/week, which is then subtracted from the tested TEC value: 24.5 kWh/week – 8.4 kWh/week = 16.1 kWh/week. 16.1 kWh/week is then compared to the following criteria.

Note: EPA has proposed excluding the power consumed by a physically- and functionally-integrated DFE from the overall TEC of the imaging product when considering the imaging product for eligibility under Tier I of Section 3.A. EPA is considering the possibility of employing a different approach in a Tier II of this specification that may consider the energy use of the DFE or the combined imaging-DFE product.

Note: In all of the following equations, x = Product speed (ipm).

TEC Table 1

Product(s): Copiers, Digital Duplicators, Fax Machines, Printers		
Size Format(s): Standard-size		
Marking Technologies: DT, Mono DS, Mono EP, Mono Stencil, Mono TT		
	<u>Tier I</u>	<u>Tier II</u>
Product Speed (ipm)	Maximum TEC (kWh/week)	Maximum TEC (kWh/week)
≤ 50	$(0.20 \text{ kWh/ipm})x - 1 \text{ kWh}$	TBD
> 50	$(0.80 \text{ kWh/ipm})x - 31 \text{ kWh}$	TBD

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TEC Table 2

Product(s): Copiers, Digital Duplicators, Fax Machines, Printers		
Size Format(s): Standard-size		
Marking Technologies: Color DS, Color Stencil, Color TT, Color EP, SI		
	<u>Tier I</u>	<u>Tier II</u>
Product Speed (ipm)	Maximum TEC (kWh/week)	Maximum TEC (kWh/week)
≤ 50	$(0.20 \text{ kWh/ipm})x + 2 \text{ kWh}$	TBD
> 50	$(0.80 \text{ kWh/ipm})x - 28 \text{ kWh}$	TBD

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TEC Table 3

Product(s): MFDs		
Size Format(s): Standard-size		
Marking Technologies: DT, Mono DS, Mono EP, Mono TT		
	<u>Tier I</u>	<u>Tier II</u>
Product Speed (ipm)	Maximum TEC (kWh/week)	Maximum TEC (kWh/week)
≤ 50	$(0.20 \text{ kWh/ipm})x + 2 \text{ kWh}$	TBD
> 50	$(0.80 \text{ kWh/ipm})x - 28 \text{ kWh}$	TBD

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TEC Table 4

Product(s): MFDs		
Size Format(s): Standard-size		
Marking Technologies: Color DS, Color TT, Color EP, SI		
	<u>Tier I</u>	<u>Tier II</u>
Product Speed (ipm)	Maximum TEC (kWh/week)	Maximum TEC (kWh/week)
≤ 50	$(0.20 \text{ kWh/ipm})x + 5 \text{ kWh}$	TBD
> 50	$(0.80 \text{ kWh/ipm})x - 25 \text{ kWh}$	TBD

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Note: The Draft 3 Tier II levels for TEC Tables 1 through 4 have been changed to “TBD.” Since the TEC approach is new to ENERGY STAR under the Version 1.0 specification, and because EPA’s TEC test dataset is limited, EPA has determined it is necessary to consider additional data before setting these levels for both speed bands. The timeline for Tier 2 is provided in Section 6.

Note: Draft 3 categorizes copiers with printers instead of with MFDs as they were previously grouped in Draft 2 because it was determined that similar TEC trends between copiers and printers warrant this change. Additionally, the TEC formulas have been revised per the following: 1) the speed threshold where the criteria adopts a different formula has been changed from 55 ipm to 50 ipm in each table; 2) the slopes and intercepts of the line segments have been modified in response to stakeholder feedback shared both in written comments and at the February 14th stakeholder meeting; and 3) EPA took the updated duplexing requirements into account when setting the criteria to capture the top 25% of products. The dataset that EPA considered for Drafts 2 and 3 is available at www.energystar.gov/productdevelopment.

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- B. ENERGY STAR Eligibility Criteria – OM.** To qualify as ENERGY STAR, the power consumption values for imaging equipment outlined in Section 2, Table 2 above must not exceed the corresponding criteria below. For products that meet the Sleep-mode power requirements in Ready mode, no further automatic power reductions are required to meet the Sleep criterion. Additionally, for products that meet the Standby-power requirements in Ready or Sleep mode, no further power reductions are required to earn the ENERGY STAR.

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For imaging products with a functionally-integrated DFE, the power consumption of the DFE should be excluded when comparing the product’s measured Sleep to the combined marking-engine and functional-adder criteria limits below. The DFE must not interfere with the ability of the imaging product to enter or exit its lower-power modes. In order to take advantage of this exclusion, the DFE must meet the definition in Section 1.CC. and be a separate processing unit that is capable of initiating activity over the network.

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Note: The above language regarding DFEs was added to the Draft 3 specification in response to stakeholder requests for clarification. This guidance was adopted largely from the Version 3.0 Printer, Fax, Printer/Fax, and Mailing Machine Memorandum of Understanding (MOU). As noted in Section 3.A., EPA is considering the possibility of employing a different approach in a Tier II of this specification that may consider the power use of the DFE or the combined imaging-DFE product, however, under Tier 1, this power should be excluded.

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Default Delay Time Requirements: To qualify for ENERGY STAR, OM products must meet the default-delay time settings provided in Tables A through C below for each product type. In addition, all OM products must be shipped with a maximum machine default-delay time not in excess of four hours.

Note: The default-delay times provided in Draft 3 were first proposed to industry in correspondence prior to the February 14th stakeholder meeting. Tables A through C below reiterate these proposed times with modifications based on input from stakeholders, as well as a table for Mailing Machines. An imaging product's maximum machine default-delay time is the maximum delay-time of which the imaging product is physically capable. This type of default-delay cannot be influenced by the user.

Table A: Maximum Default Delay Times to Sleep for Small-format and Standard-size OM Products, Excluding Mailing Machines, in Minutes

Product Speed (ipm)	Fax Machines	MFDs	Printers	Scanners
0 - 10	5	15	5	15
12 - 20	5	30	15	15
21 - 30	5	60	30	15
31 - 50	5	60	60	15
51 +	5	60	60	15

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Table B: Maximum Default Delay Times to Sleep for Large-format OM Products, Excluding Mailing Machines, in Minutes

Product Speed (ipm)	Copiers	MFDs	Printers	Scanners
0 - 10	30	30	30	15
12 - 20	30	30	30	15
21 - 30	30	30	30	15
31 - 50	30	60	60	15
51 +	60	60	60	15

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Table C: Maximum Default Delay Times to Sleep for Mailing Machines in Minutes

Product Speed (mppm)	Mailing Machines
0 – 50	20
51 – 100	30
101 – 150	40
151 +	60

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Standby Requirements: To qualify for ENERGY STAR, OM products must meet the Standby power criteria provided in Table D below for each product type.

Table D: Maximum Standby Power Levels for OM Products in Watts

Product Type & Size Format	Standby (W) – Tier 1	Standby (W) – Tier 2
All Small Format and Standard-size OM Products without Fax Capability	1	Tier 1 levels remain unchanged
All Small Format and Standard-size OM Products with Fax Capability	2	Tier 1 levels remain unchanged

Product Type & Size Format	Standby (W) – Tier 1	Standby (W) – Tier 2
All Large Format OM Products and Mailing Machines	N/A	TBD

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Note: The Standby requirements proposed in Table D were developed based on the current levels adopted by the US Federal Energy Management Program (FEMP), which are provided at <http://oahu.lbl.gov/>, as well as based on stakeholder feedback. When developing the eligibility criteria for OM Tables 1 through 8, EPA took into account the impact that these Standby requirements had on the dataset and adjusted the 25% specification levels for Sleep accordingly. EPA will consider appropriate levels for Large Format OM products and mailing machines as part of a Tier II effort.

The eligibility criteria provided in OM Tables 1 through 8 below address the marking engine of the product. Since products are expected to be shipped with one or more functions beyond a basic marking engine, the corresponding allowances below should be added to the marking engine criteria for Sleep. The total value for the base product with applicable “functional adders” should be used to determine eligibility. An example of this approach is provided below:

Example: Consider a Standard-size IJ printer with a USB 2.0 connection and a memory card connection. Assuming the USB connection is the Primary interface used during the test, the printer model would receive a functional-adder allowance of 0.5 W for USB and 0.1 for the memory card reader, for a total of 0.6 W of total functional-adder allowances. Since OM Table 2 provides a Sleep mode marking-engine criterion of 3 W, to determine qualification under ENERGY STAR, the manufacturer would sum the Sleep mode marking-engine criterion with the applicable functional-adder allowances to determine the maximum power consumption permitted for qualification of the base product: 3 W + 0.6 W. If the power consumption of the printer in Sleep mode measures at or below 3.6 W, then the printer would meet the ENERGY STAR Sleep criterion.

Qualifying Products: Table 3 – OM Functional Adders

Type	Details	Functional Adder Allowances (W)	
		Primary	Secondary
Interfaces	A. Wired < 20 MHz, e.g. USB 1.x, IEEE488, RS232	0.3	0.2
	B. Wired < 500 MHz, e.g. USB 2.x, IEEE 1394/FireWire, 100Mb Ethernet	0.5	0.2
	C. Wired > 500 MHz, e.g. 1G Ethernet	1.5	0.5
	D. Wireless, e.g. Bluetooth, 802.12	-	0.7
	E. Wired card/camera/storage, e.g. memory card / smart card readers, camera interfaces	0.5	0.1
	F. Fax	0.4	0.2
	G. Infrared	-	0.2
Other	Storage (e.g. disk drives, DVD drives)	-	0.2
	Scanners with CCFL lamps	-	2.0
	Scanners with non-CCFL lamps	-	0.5
	PC-based system (cannot print/copy without being connected to a PC)	-	-0.5
	Cordless handset	-	0.8
	Ringtone cancellation	-	1.0
	Memory	-	1.0 W per 1 GB
	Power-supply (PS) size, based on PS output rating (OR) [Note: this adder does not apply to scanners]	-	For PSOR > 10 W, 0.05 x (PSOR – 10 W)

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Note: The list of functional-adder types and corresponding allowances provided in Table 3 – OM Functional Adders, above, are those for which EPA has received considerable industry input and which EPA believes deserve further consideration. The majority of these functional adders were first proposed in the Draft 2 specification. EPA intends to release supplemental rationale supporting the values proposed for these adders and how these values were used in determining the marking-engine Sleep values provided in OM Tables 1 through 8.

Note: The power-supply size functional-adder was not applied to scanners when determining the marking engine criteria for these products, nor are they considered applicable in the table above for these products for two reasons: 1) it was felt that the existing scanner-specific adders already address the functions that might necessitate the use of a larger power supply, and 2) examination of the data submitted did not suggest that the very high power-supply values for some products were clearly reflected in their Sleep power measurements.

For the adder allowances shown in Table 3, distinctions are made for “primary” and “secondary” types of adder. A Primary adder is defined as the product’s data or network interface that is maintained during the OM test procedure. An interface is considered active and Primary whether it is actively utilized during the test or simply “awake” during the test (e.g., a USB connection may be actively used during the OM test, while a wireless connection also may be actively alert, but not sending data; both of these connections are considered Primary interfaces). Secondary adders are those that are inactive or asleep during the imaging product’s Sleep mode. Most functional adders typically are Secondary types.

OM Table 1

Product(s): Copiers, MFDs	
Size Format(s): Large Format	
Marking Technologies: Color DS, Color TT, DT, Mono DS, Mono EP, Mono TT, Color EP, SI	
	Sleep (W)
Marking Engine	58

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OM Table 2

Product(s): Fax Machines, MFDs, Printers	
Size Format(s): Standard-size	
Marking Technologies: Color IJ, Mono IJ	
	Sleep (W)
Marking Engine	3

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OM Table 3

Product(s): MFDs, Printers	
Size Format(s): Large Format	
Marking Technologies: Color IJ, Mono IJ	
	Sleep (W)
Marking Engine	13

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OM Table 4

Product(s): Mailing Machines	
Size Format(s): N/A	
Marking Technologies: DT, Mono EP, Mono IJ, Mono TT	
	Sleep (W)
Marking Engine	3

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OM Table 5

Product(s): Printers	
Size Format(s): Small Format	
Marking Technologies: Color DS, Color TT, DT, Color IJ, Mono DS, Mono EP, Mono IJ, Mono TT, Color EP, SI	
	Sleep (W)
Marking Engine	3

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Note: Large-format, heat-intensive printers are addressed in a separate table in the Draft 3 specification. These products, which were previously addressed with Small-format printers in Draft 2, are now addressed in the new OM Table 8.

OM Table 6

Product(s): Printers	
Size Format(s): Standard-size	
Marking Technologies: Color Impact, Mono Impact	
	Sleep (W)
Marking Engine	6

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OM Table 7

Product(s): Scanners	
Size Format(s): Large Format, Standard-size	
Marking Technologies: N/A	
	Sleep (W)
Scanning Engine	5

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OM Table 8

Product(s): Printers	
Size Format(s): Large Format	
Marking Technologies: Color DS, Color Impact, Color TT, DT, Mono DS, Mono EP, Mono Impact, Mono TT, Color EP, SI	
	Sleep (W)
Marking Engine	54

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Note: Columns for Default Time to Sleep, Standby, and Auto-off included in the OM Tables in Draft 2 have not been included in Draft 3. The former two columns are now proposed in Tables A through D in this section for the applicable products. The latter column for Auto-off has been removed entirely as EPA considers that the Standby power level requirements will adequately address this mode in products where Auto-off is employed.

Note: Following the distribution of the Draft 3 specification, EPA intends to distribute supplemental rationale explaining the processes used to determine the marking-engine Sleep values provided in OM Tables 1 through 8, along with the OM dataset upon which these values were based.

4) **Test Procedures**

Product Testing Set-up, Procedures, and Documentation: The specific instructions for testing the energy efficiency of imaging equipment products are outlined in three separate documents entitled:

- “ENERGY STAR Qualified Imaging Equipment Typical Electricity Consumption Test Procedure;”
- “ENERGY STAR Qualified Imaging Equipment Operational Mode Test Procedure;” and
- “Test Conditions and Equipment for Determining the ENERGY STAR Qualification Status of Imaging Equipment Products.”

The test results produced by these procedures shall be used as the primary basis for determining ENERGY STAR qualification.

Manufacturers are required to perform tests and self-certify those product models that meet the ENERGY STAR guidelines. Families of imaging equipment models that are built on the same chassis and are identical in every respect except for housing and color may be qualified through submission of test data for a single, representative model. Likewise, models that are unchanged or that differ only in finish from those sold in a previous year may remain qualified without the submission of new test data, assuming the specification remains unchanged.

If a product’s electrical power comes from Mains, USB, IEEE1394, Power-over-Ethernet, telephone system, or any other means or combinations of means, the net AC electrical power consumed by the product (taking into account ac-to-dc conversion losses, as specified in the OM test procedure) must be used for qualification.

Additional testing and reporting requirements are provided below.

- A. Number of Units Required for Test: Testing shall be conducted by the manufacturer or its authorized representative on a single unit of a model.
- a. For products outlined in Section 2, Table 1 of this specification, if the initial unit tested has TEC test results that meet the eligibility criteria but fall within 10% of the criteria level, one additional unit of the same model must also be tested. Manufacturers shall report values for both units. To qualify as ENERGY STAR, both units must meet the ENERGY STAR specification.
 - b. For products outlined in Section 2, Table 2 of this specification, if the initial unit tested has OM test results that meet the eligibility criteria but fall within 15% of the criteria level in any of the specified operating modes for that product type, then two more units shall be tested. To qualify as ENERGY STAR, all three units must meet the ENERGY STAR specification.

Note: EPA has added language to A.a. and A.b. above to clarify that additional testing is only necessary in the event that the initial unit tested meets the eligibility criteria margin by less than the percentages referenced for each respective test procedure. The initial unit and all subsequent units must meet the eligibility criteria for the model to earn the ENERGY STAR.

- B. Submission of Qualified Product Data to EPA: Partners are required to self-certify those product models that meet the ENERGY STAR guidelines and report information to EPA. The information to be reported for products shall be outlined upon publication of the final specification.

719 If a single product model is offered in the market in multiple configurations, the partner must test
720 all configurations of the model, but may report the test data for only the highest configuration
721 available.
722

723 **Example:** Models A and B are identical, with the exception that model A is shipped with a
724 wired interface > 500 MHz, and model B is shipped with a wired interface < 500 MHz. If both
725 models A and B are tested and meet the ENERGY STAR specification, then the partner may
726 report the test data solely for model A, to represent both models A and B.
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729 In addition, partners must submit to EPA excerpts from product literature that explain to
730 consumers the recommended default delay-times to power management settings. The intent of
731 this requirement is to support that products are being tested as shipped and recommended for
732 use.
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- 734 C. Models Capable of Operating at Multiple Voltage/Frequency Combinations: Manufacturers shall
735 test their products based on the market(s) in which the models will be sold and promoted as
736 ENERGY STAR qualified. EPA and its ENERGY STAR Country Partners have agreed upon a
737 table with three voltage/frequency combinations for testing purposes. Please refer to the Imaging
738 Equipment **Test Conditions** for details regarding international voltage/frequency and paper sizes
739 for each market.

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741 For products that are sold as ENERGY STAR in multiple international markets and therefore rated
742 at multiple input voltages, the manufacturer must test at and report the required power
743 consumption or efficiency values at all relevant voltage/frequency combinations. For example, a
744 manufacturer that is shipping the same model to the United States and Europe must measure,
745 meet the specification, and report test values at both 125 Volts/60 Hz and 230 Volts/50 Hz in order
746 to qualify the model as ENERGY STAR in both markets. If a model qualifies as ENERGY STAR
747 at only one voltage/frequency combination (e.g., 125 Volts/60 Hz), then it may only be qualified
748 and promoted as ENERGY STAR in those regions that support the tested voltage/frequency
749 combination (e.g., North America and Taiwan).
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- 751 5) **User Interface:** Manufacturers are strongly recommended to design products in accordance with
752 IEEE P1621: Standard for User Interface Elements in Power Control of Electronic Devices Employed
753 in Office/Consumer Environments. This standard was developed to make power controls more
754 consistent and intuitive across all electronic devices. For details on the development of this standard,
755 see <http://eetd.lbl.gov/controls>.
756

- 757 6) **Effective Date:** The date that manufacturers may begin to qualify products as ENERGY STAR, under
758 the Version 1.0 specification, will be defined as the *effective date* of the agreement. Any previously
759 executed agreement on the subject of ENERGY STAR qualified imaging equipment shall be
760 terminated effective February 28, 2007.
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- 762 A. Qualifying and Labeling Products under Version 1.0: The Version 1.0 specification shall
763 commence on March 1, 2007, with the exception of digital duplicators. All products, including
764 models originally qualified under previous imaging equipment specifications, with a **date of**
765 **manufacture** on or after the effective date, must meet the new (Version 1.0) requirements in
766 order to qualify for ENERGY STAR (including additional manufacturing runs of models originally
767 qualified under previous specifications). The **date of manufacture** is specific to each unit and is
768 the date (e.g., month and year) on which a unit is considered to be completely assembled.
769 a. **Tier I** – Tier I shall commence on **April 1, 2007**. Tier I applies to all products described in
770 Section 2 of this specification.
771 b. **Tier II** – Tier II shall commence on **April 1, 2009**. Tier II will apply to TEC products with
772 speeds faster than 55 ipm, as well as to Standby levels for Large-format OM products and
773 mailing machines. In addition, the definitions, products addressed, the manner in which
774 they are addressed, and levels included for all products included in this Version 1.0
775 specification may be reconsidered. EPA will inform stakeholders of plans to make such
776 changes at most 6 months following the effective date of Tier 1.

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- c. Digital Duplicators – Tier I of the Version 1.0 specification becomes effective for digital duplicators upon the finalization of the agreement between the European Commission and the US EPA.

Note: Though a stakeholder requested that the specification criteria for high-speed TEC products go into effect on March 1, 2010 rather than March 1, 2009, EPA has retained the 2009 effective date, considering it sufficient for these products. EPA provided the two-year extension to avoid creating a disincentive for the practice of remanufacturing, which is a government-supported and environmentally-beneficial practice commonly used for products at these speeds.

- B. Elimination of Grandfathering: EPA will not allow grandfathering under this Version 1.0 ENERGY STAR specification. **ENERGY STAR qualification under previous Versions is not automatically granted for the life of the product model.** Therefore, any product sold, marketed, or identified by the manufacturing partner as ENERGY STAR must meet the current specification in effect at the time of manufacture of the product.
- 7) Future Specification Revisions: EPA reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through stakeholder discussions. EPA will periodically assess the market in terms of energy efficiency and new technologies. As always, stakeholders will have an opportunity to share their data, submit proposals, and voice any concerns. EPA will strive to ensure that the specification recognizes the most energy-efficient models in the marketplace and reward those manufacturers who have made efforts to further improve energy efficiency.
- A. Color Testing: Based on submitted test data, future consumer preferences, and engineering advancements, EPA may modify this specification at some point in the future to include color imaging in the test method.
 - B. Recovery Time: EPA will closely monitor incremental and absolute recovery times as reported by partners testing to the TEC method, as well as partner-submitted documentation regarding recommended default delay settings. EPA will consider modification of this specification to address recovery time should it become apparent that manufacturer practices are resulting in user disabling of power management modes.
 - C. Addressing OM Products Under TEC: Based on submitted test data, opportunities for greater energy-savings, and engineering advancements, EPA may modify this specification at some point in the future to address products that are currently treated by the OM approach under the TEC approach, including Large-format and Small-format products, as well as products that employ IJ technology.

Note: 7.C. was added to the Draft 3 specification to include the possibility that, under future specification revisions, EPA may consider addressing products that currently fall under the OM approach under the TEC approach. This decision will be based on a consideration of the energy-savings potential of classifying these products under the TEC approach and collaboration with EPA's Country Partners and other industry stakeholders.