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ENERGY STAR® Program Requirements for Imaging Equipment

Table of Contents Version 1.1 – DRAFT 1

6
7

Partner Commitments	2
Commitment.....	2
Performance for Special Distinction.....	3
Eligibility Criteria	4
1) Definitions.....	4
Products.....	4
Marking Technologies.....	5
Operational Modes, Activities, and Power States.....	5
Product Size Formats.....	6
Additional Terms.....	7
2) Qualifying Products.....	8
3) Energy-Efficiency Specifications for Qualifying Products.....	10
ENERGY STAR Eligibility Criteria – TEC.....	11
ENERGY STAR Eligibility Criteria – OM.....	13
4) Test Procedures.....	19
5) User Interface.....	21
6) Effective Date.....	21
7) Future Specification Revisions.....	21



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ENERGY STAR® Program Requirements for Imaging Equipment

Partner Commitments Version 1.1 – DRAFT 1

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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 (e.g., 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.
- 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.
- 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

65 party. The data will be used by EPA only for program evaluation purposes and will be closely
66 controlled. Any information used will be masked by EPA so as to protect the confidentiality of the
67 Partner.

- 68
- 69 • Notify EPA of a change in the designated responsible party or contacts for imaging equipment
70 within 30 days.

71

72 **Performance for Special Distinction**

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

76

- 77 • Consider energy efficiency improvements in company facilities and pursue the ENERGY STAR
78 label for buildings.

79

- 80 • Purchase ENERGY STAR qualified products. Revise the company purchasing or procurement
81 specifications to include ENERGY STAR. Provide procurement officials' contact information to
82 EPA for periodic updates and coordination. Circulate general ENERGY STAR qualified product
83 information to employees for use when purchasing products for their homes.

84

- 85 • Ensure the power management feature is enabled for all ENERGY STAR qualified monitors in use
86 in company facilities, particularly upon installation and after service is performed.

87

- 88 • Provide general information about ENERGY STAR to employees whose jobs are relevant to the
89 development, marketing, sales, and service of current ENERGY STAR qualified product models.

90

- 91 • Provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the
92 program requirements listed above. By doing so, EPA may be able to coordinate, communicate,
93 and/or promote Partner's activities, provide an EPA representative, or include news about the
94 event in the ENERGY STAR newsletter, on the ENERGY STAR Web pages, etc. The plan may
95 be as simple as providing a list of planned activities or milestones that Partner would like EPA to
96 be aware of. For example, activities may include: (1) increase the availability of ENERGY STAR
97 qualified products by converting the entire product line within two years to meet ENERGY STAR
98 guidelines; (2) demonstrate the economic and environmental benefits of energy efficiency through
99 special in-store displays twice a year; (3) provide information to users (via the Web site and user's
100 manual) about energy-saving features and operating characteristics of ENERGY STAR qualified
101 products, and (4) build awareness of the ENERGY STAR Partnership and brand identity by
102 collaborating with EPA on one print advertorial and one live press event.

103

- 104 • Provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase
105 availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR
106 and its message.



ENERGY STAR® Program Requirements for Imaging Equipment

Eligibility Criteria Version 1.1 – DRAFT 1

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Below is the DRAFT 1 Version 1.1 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.
- 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).

Note: If the MFD is not a single integrated unit but a set of functionally integrated components, then the manufacturer must certify that when installed correctly in the field, the sum of all energy or power use for all MFD components comprising the base unit will achieve the energy or power levels provided in Section 3 to qualify as an ENERGY STAR MFD.
- 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.

- 164 G. Scanner – A commercially-available imaging product that functions as an electro-optical device
165 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.
169

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.
174
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.
189
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 M. Solid Ink (SI) – A marking technology where the ink is solid at room temperature and liquid when
203 heated to the jetting temperature. Transfer to the media can be direct, but is most often made to
204 an intermediate drum or belt and then offset printed to the media.
205
206 N. Stencil – A marking technology that transfers images onto the print media from a stencil that is
207 fitted around an inked drum.
208
209 O. Thermal Transfer (TT) – A marking technology where the desired hard copy image is formed by
210 depositing small drops of solid colorant (usually colored waxes) in a melted/fluid state directly to
211 the print media in a matrix manner. TT is distinguished from IJ in that the ink is solid at room
212 temperature and is made fluid by heat.
213

214 **Operational Modes, Activities, and Power States**

- 215
216 P. Active – The power state in which the product is connected to a power source and is actively
217 producing output, as well as performing any of its other primary functions.
218
219 Q. Automatic Duplexing – The capability of a copier, fax machine, MFD, or printer to automatically
220 place images on both sides of an output sheet, without manual manipulation of output as an
221 intermediate step. Examples of this are one-sided to two-sided copying and two-sided to two-

222 sided copying. A product is considered to have automatic duplexing capability only if the model
223 includes all accessories needed to satisfy the above conditions.

224
225 R. Default Delay Time – The time set by the manufacturer prior to shipping that determines when the
226 product will enter a lower-power mode (e.g., Sleep, Off) following completion of its primary
227 function.

228
229 S. Off – The power state that the product enters when it has been manually or automatically switched
230 off but is still plugged in and connected to the mains. This mode is exited when stimulated by an
231 input, such as a manual power switch or clock timer to bring the unit into Ready mode. When this
232 state is resultant from a manual intervention by a user, it is often referred to as Manual Off, and
233 when it is resultant from an automatic or predetermined stimuli (e.g., a delay time or clock), it is
234 often referred to as Auto-off.

235
236 T. Ready – The condition that exists when the product is not producing output, has reached
237 operating conditions, has not yet entered into any lower-power modes, and can enter Active mode
238 with minimal delay. All product features can be enabled in this mode, and the product must be
239 able to return to Active mode by responding to any potential input options designed into the
240 product. Potential inputs include external electrical stimulus (e.g., network stimulus, fax call, or
241 remote control) and direct physical intervention (e.g., activating a physical switch or button).

242
243 U. Sleep – The reduced power state that the product enters automatically after a period of inactivity.
244 In addition to entering Sleep automatically, the product may also enter this mode 1) at a user set
245 time-of-day, 2) immediately in response to user manual action, without actually turning off, or 3)
246 through other, automatically-achieved ways that are related to user behavior. All product features
247 can be enabled in this mode and the product must be able to enter Active mode by responding to
248 any potential input options designed into the product; however, there may be a delay. Potential
249 inputs include external electrical stimulus (e.g., network stimulus, fax call, remote control) and
250 direct physical intervention (e.g., activating a physical switch or button). The product must
251 maintain network connectivity while in Sleep, waking up only as necessary.

252
253 **Note:** *When reporting data and qualifying products that can enter Sleep mode in multiple ways,*
254 *partners should reference a Sleep level that can be reached automatically. If the product is*
255 *capable of automatically entering multiple, successive Sleep levels, it is at the manufacturer's*
256 *discretion which of these levels is used for qualification purposes; however, the default-delay time*
257 *provided must correspond with whichever level is used.*

258
259 V. Standby – The lowest power consumption mode which cannot be switched off (influenced) by the
260 user and that may persist for an indefinite time when the product is connected to the main
261 electricity supply and used in accordance with the manufacturer's instructions¹.

262
263 **Note:** *For Imaging Equipment products addressed by this specification, the Standby power level*
264 *usually occurs in Off mode, but can occur in Ready or Sleep. A product cannot exit Standby and*
265 *reach a lower power state unless it is physically disconnected from the main electricity supply as a*
266 *result of manual manipulation.*

Note: EPA is closely monitoring revisions to the IEC standby definition (IEC 62301:2005).

267
268
269 **Product Size Formats**

270
271 W. Large Format – Products categorized as Large Format include those designed for A2 media and
272 larger, including those designed to accommodate continuous-form media at a width of 406
273 millimeters (mm) or wider. Large-format products may also be capable of printing on standard-
274 size or small-format media.

275

¹ IEC 62301 – Household electrical appliances – Measurement of standby power. 2005.

- 276 X. Small Format – Products categorized as Small Format include those designed for media sizes
277 smaller than those defined as Standard (e.g., A6, 4” x 6”, microfilm), including those designed to
278 accommodate continuous-form media at widths smaller than 210 mm.
279
- 280 Y. Standard – Products categorized as Standard include those designed for standard-sized media
281 (e.g., Letter, Legal, Ledger, A3, A4, and B4), including those designed to accommodate
282 continuous-form media at widths between 210 mm and 406 mm. Standard-size products may
283 also be capable of printing on small-format media.
284

285 **Additional Terms**

- 286
- 287 Z. Accessory – An optional piece of peripheral equipment that is not necessary for the operation of
288 the base unit, but that may be added before or after shipment in order to add functionality. An
289 accessory may be sold separately under its own model number, or sold with a base unit as part of
290 a package or configuration.
291
- 292 AA. Base Product – A base product is the standard model shipped by the manufacturer. When
293 product models are offered in different configurations, the base product is the most fundamental
294 configuration of the model, which possesses the minimum number of functional adders available.
295 Functional components or accessories offered as optional, rather than standard, are not
296 considered part of the base product.
297
- 298 BB. Continuous Form – Products categorized as Continuous Form include those which do not use a
299 cut-sheet media size, and are designed for key industrial applications such as printing of bar
300 codes, labels, receipts, waybills, invoices, airline tickets, or retail tags.
301
- 302 CC. Digital Front-end (DFE) – A functionally-integrated, network-attached server or desktop-derived
303 server that hosts other computers and applications and acts as an interface to imaging equipment.
304 A DFE uses its own dc power supply or draws its dc power from the imaging equipment product
305 with which it operates. A DFE provides greater functionality to the imaging product. A DFE also
306 offers **at least three** of the following advanced features:
307 a. Network connectivity in various environments;
308 b. Mailbox functionality;
309 c. Job queue management;
310 d. Machine management (e.g., waking the imaging equipment from a reduced power state);
311 e. Advanced graphic user-interface (UI);
312 f. Ability to initiate communication with other host servers and client computers (e.g.,
313 scanning to email, polling remote mailboxes for jobs); or
314 g. Ability to post-process pages (e.g., reformatting pages prior to printing).

Note: EPA has received comments from stakeholders that the definition of a DFE is not clear enough. EPA is willing to consider alternate definitions provided by stakeholders.

- 315
- 316 DD. Functional Adder – A functional adder is a standard product feature that adds functionality to the
317 base marking engine of an imaging equipment product. The Operational Mode portion of this
318 specification contains additional power allowances for certain functional adders. Examples of
319 functional adders include wireless interfaces and scanning capability.
320
- 321 EE. Operational Mode (OM) Approach – A method of testing and comparing the energy performance
322 of imaging equipment products, which focuses on product energy consumption in various low-
323 power modes. The key criteria used by the OM approach are values for low-power modes,
324 measured in watts (W). Detailed information can be found in the “ENERGY STAR Qualified
325 Imaging Equipment Operational Mode Test Procedure” available at www.energystar.gov/products.
326
- 327 FF. Marking Engine – The very basic engine of an imaging product, which drives the image production
328 of that product. Without additional functional components, a marking engine cannot acquire

329 image data to process and is, therefore, non-functional. A marking engine is reliant on functional
 330 adders for communication ability and image processing.

331
 332 GG. Model – An imaging equipment product that is sold or marketed under a unique model number or
 333 marketing name. A model may be comprised of a base unit or a base unit and accessories.
 334

335 HH. Product Speed – In general, for Standard-size products, a single A4 or 8.5” x 11” sheet
 336 printed/copied/scanned on one side in a minute is equal to one image-per-minute (ipm). If the
 337 maximum claimed speeds differ when producing images on A4 or 8.5” x 11” paper, the higher of
 338 the two shall be used.
 339

- 340 ▪ For mailing machines, one piece of mail processed in a minute is equal to one mail-piece-
 341 per-minute (mppm).
- 342 ▪ For Small-format products, a single A6 or 4” x 6” sheet printed/copied/scanned on one
 343 side in a minute is equal to 0.25 ipm.
- 344 ▪ For Large-format products, a single A2 sheet is equivalent to 4 ipm and one A0 sheet is
 345 equivalent to 16 ipm.
- 346 ▪ For continuous-form products categorized as Small-format, Large-format, or Standard-
 347 size, print speed in ipm should be obtained from the product’s maximum marketed
 348 imaging speed in meters per minute according to the conversion below:
 349

$$350 \quad X \text{ ipm} = 16 \times [\text{Maximum media width (meters)} \times \text{Maximum imaging speed (length-} \\
 351 \text{meters/minute)}]$$

352
 353 In all cases, the converted speed in ipm should be rounded to the nearest integer (e.g., 14.4 ipm
 354 rounds to 14.0 ipm; 14.5 ipm rounds to 15 ipm).
 355

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

- 358 ▪ **Print Speed**, unless the product cannot perform the print function, in which case,
- 359 ▪ **Copy Speed**, unless the product cannot perform the print or copy functions, in which
 360 case,
- 361 ▪ **Scan Speed**.
 362

363 II. Typical Electricity Consumption (TEC) Approach – A method of testing and comparing the energy
 364 performance of imaging equipment products, which focuses on the typical electricity consumed by
 365 a product while in normal operation during a representative period of time. The key criteria of the
 366 TEC approach for imaging equipment is a value for typical weekly electricity consumption,
 367 measured in kilowatt-hours (kWh). Detailed information can be found in the “ENERGY STAR
 368 Qualified Imaging Equipment Typical Electricity Consumption Test Procedure” available at
 369 www.energystar.gov/products.
 370

371 2) Qualifying Products: In order to qualify as ENERGY STAR, an imaging equipment product must be
 372 defined in Section 1 and meet one of the product descriptions in Table 1 or 2, below.
 373
 374

375 **Qualifying Products: Table 1 - TEC Approach**
 376

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

Product Area	Marking Technology	Size Format	Color Capability	TEC Table	Page
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
	Thermal Transfer	Standard	Monochrome	TEC 1	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
Multifunction Devices (MFDs)	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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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	17
	Dye Sublimation	Large	Color & Monochrome	OM 1	17
	EP	Large	Color & Monochrome	OM 1	17
	Solid Ink	Large	Color	OM 1	17
	Thermal Transfer	Large	Color & Monochrome	OM 1	17
Fax Machines	Ink Jet	Standard	Color & Monochrome	OM 2	17
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	17
	Dye Sublimation	Large	Color & Monochrome	OM 1	17
	EP	Large	Color & Monochrome	OM 1	17
	Ink Jet	Standard	Color & Monochrome	OM 2	17
	Ink Jet	Large	Color & Monochrome	OM 3	17
	Solid Ink	Large	Color	OM 1	17
	Thermal Transfer	Large	Color & Monochrome	OM 1	17
Printers	Direct Thermal	Large	Monochrome	OM 8	18
	Direct Thermal	Small	Monochrome	OM 5	18
	Dye Sublimation	Large	Color & Monochrome	OM 8	18
	Dye Sublimation	Small	Color & Monochrome	OM 5	18
	EP	Large	Color & Monochrome	OM 8	18

Product Area	Marking Technology	Size Format	Color Capability	OM Table	Page
	EP	Small	Color	OM 5	18
	Impact	Large	Color & Monochrome	OM 8	18
	Impact	Small	Color & Monochrome	OM 5	18
	Impact	Standard	Color & Monochrome	OM 6	18
	Ink Jet	Large	Color & Monochrome	OM 3	17
	Ink Jet	Small	Color & Monochrome	OM 5	18
	Ink Jet	Standard	Color & Monochrome	OM 2	17
	Solid Ink	Large	Color	OM 8	18
	Solid Ink	Small	Color	OM 5	18
	Thermal Transfer	Large	Color & Monochrome	OM 8	18
	Thermal Transfer	Small	Color & Monochrome	OM 5	18
Scanners	N/A	Large, Small & Standard	N/A	OM 7	18

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

Products Sold with an External Power Adapter: To qualify as ENERGY STAR under the Imaging Equipment Version 1.1 Tier 2 requirements, imaging equipment products manufactured on or after April 1, 2009 using a single-voltage external ac-dc or ac-ac power adapter must use an ENERGY STAR qualified adapter, or one that meets the ENERGY STAR External Power Supply (EPS) Version 2.0 requirements when tested to the ENERGY STAR test method. The ENERGY STAR specification and test method for single voltage external ac-dc and ac-ac power supplies may be found at www.energystar.gov/products.

Note: Products sold with an external power adapter in this draft have been updated to directly reference ENERGY STAR Version 2.0 EPS requirements. The Version 2.0 EPS requirements will take effect in November 2008. EPA believes that appropriate supplies will be available in the market in advance of the April 1, 2009 effective date of this Version 1.1 Specification for Imaging Equipment. Imaging equipment products manufactured before April 1, 2009 sold with an external power adapter may continue to qualify as ENERGY STAR under Imaging Equipment Version 1.0 Tier 1 and EPS Version 1.1 specifications.

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Products Designed to Operate with an External DFE: To qualify as ENERGY STAR under Imaging Equipment Version 1.1 Tier 2 specifications, an imaging equipment product manufactured before July 1, 2009 that is sold with a DFE that uses its own ac power source must use an ENERGY STAR qualified DFE, or one that meets the ENERGY STAR Version 4.0 Computer specification when tested to the ENERGY STAR test method. In order for imaging equipment manufactured on or after July 1, 2009 with an external DFE to qualify as ENERGY STAR under the Imaging Equipment Version 1.1 Tier 2 requirements, the DFE must meet the ENERGY STAR Version 5.0 Computer requirements. The ENERGY STAR specification and test method for computers may be found at www.energystar.gov/products.

Note: External DFE requirements have been updated to reference ENERGY STAR Version 5.0 Computer requirements. The Version 5.0 Computer requirements will take effect in July 2009.

A printer manufactured on April 1, 2008 with an externally-powered digital front end (DFE) must use a DFE that is capable of meeting the ENERGY STAR Version 4.0 Computer specification. If that same printer is manufactured on August 1, 2009, it must use a DFE that is capable of meeting the ENERGY STAR Version 5.0 Computer specification (the specification that will be in effect on August 1, 2009). The partner must requalify the printer with EPA, attesting to the ability of the DFE to meet the computer specification in effect on the IE product's date of manufacture. Stakeholders are encouraged to comment on this clarification or provide alternatives.

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

Duplexing: Standard-size copiers, MFDs, and printers that use EP, SI, and high performance IJ marking technologies addressed by the TEC approach in Section 3.A. must meet the following duplexing requirements, based on product speed:

Note: EPA is proposing to change the marking technology reference from “heat intensive IJ” to “high performance IJ” based on stakeholder feedback. Stakeholders are encouraged to comments on this clarification.

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Color Copiers, MFDs, and Printers

Product Speed	Duplexing Requirement
≤ 19 ipm	N/A
20 – 39 ipm	Automatic duplexing must be offered as a standard feature or 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 a standard feature or optional accessory at the time of purchase.
≥ 45 ipm	Automatic duplexing is required as a standard feature at the time of purchase.

Note: EPA has not received comments that support the need to amend the duplexing requirements. Therefore, there are no plans to modify these requirements during development of the Tier 2 specification.

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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

424 corresponding criteria below.

425
426 For imaging products with a functionally-integrated DFE that relies on the imaging product for its
427 power, manufacturers should subtract the DFE’s energy consumption in Ready mode from the
428 product’s total TEC result before comparing the product’s TEC to the criteria limits below. In order
429 to take advantage of this allowance, the DFE must meet the definition in Section 1.CC. and be a
430 separate processing unit that is capable of initiating activity over the network.

431
432 **Example:** A printer’s total TEC result is 24.5 kWh/week and its internal DFE consumes
433 50W in Ready mode. 50W x 168 hours/week = 8.4 kWh/week, which is then subtracted
434 from the tested TEC value: 24.5 kWh/week – 8.4 kWh/week = 16.1 kWh/week. 16.1
435 kWh/week is then compared to the following criteria.
436

437
438
439 **Note:** In all of the following equations, $x = \text{Product speed (ipm)}$.

440 **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, Mono High Performance IJ	
Tier II	
Product Speed (ipm)	Maximum TEC (kWh/week)
≤ 20	1.0 kWh
$20 < ipm \leq 72$	$(0.25 \text{ kWh/ipm})x - 4 \text{ kWh}$
$> 72 \text{ ipm}$	$(0.60 \text{ kWh/ipm})x - 29.2 \text{ kWh}$

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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, Color High Performance IJ	
Tier II	
Product Speed (ipm)	Maximum TEC (kWh/week)
≤ 6	1.0 kWh
$6 < ipm \leq 72$	$(0.25 \text{ kWh/ipm})x - 0.5 \text{ kWh}$
> 72	$(0.60 \text{ kWh/ipm})x - 25.7 \text{ kWh}$

447

448 **Note:** EPA is proposing to add the high performance IJ marking technology under the TEC
449 approach in TEC tables 1 and 2 based on stakeholder feedback. This marking technology was
eligible to qualify under the TEC approach in Version 1.0, though it was not noted previously in
these tables. Stakeholders are encouraged to comments on this inclusion.

450
451

TEC Table 3

Product(s): MFDs	
Size Format(s): Standard-size	
Marking Technologies: DT, Mono DS, Mono EP, Mono TT	
Tier II	
Product Speed (ipm)	Maximum TEC (kWh/week)
≤ 14	1.0 kWh
14 < ipm ≤ 72	(0.25 kWh/ipm)x – 2.5 kWh
> 72	(0.60 kWh/ipm)x – 27.7 kWh

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455

TEC Table 4

Product(s): MFDs	
Size Format(s): Standard-size	
Marking Technologies: Color DS, Color TT, Color EP, SI	
Tier II	
Product Speed (ipm)	Maximum TEC (kWh/week)
≤ 6	1.0 kWh
6 < ipm ≤ 72	(0.25 kWh/ipm)x – 0.5 kWh
> 72	(0.60 kWh/ipm)x – 25.7 kWh

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Note: The primary objective of ENERGY STAR is to recognize the most energy efficient products in the marketplace. In developing this specification, EPA considers the following criteria:

- Significant energy savings can be realized on a national basis
- Product performance is maintained or enhanced with increased efficiency
- Purchase of high efficiency product will be cost effective
- Energy efficiency can be achieved through several technology options
- Energy consumption and performance can be measured and verified with testing
- Labeling would effectively differentiate products and be visible for purchasers.

Based on U.S. market data obtained from Better Buys for Business, and other sources, and the list of currently qualified ENERGY STAR imaging equipment products, EPA estimates that the market share of qualifying products in the U.S. under Tier 1 ranges from 38-63%.

It is not EPA’s intention to design a specification that will allow every model to qualify. When revising a specification, EPA takes into account cost effectiveness to the consumer and product performance when recognizing the top percentile of products in the marketplace. The TEC levels proposed in these tables represent approximately 25% of models currently available on the market in the U.S. In all cases proposed Tier 2 TEC levels were made more stringent than Tier 1 to capture the top 25%. As in Tier 1, digital duplicators were not considered in setting the 25% pass rate. Further details on the TEC data analysis can be found in the data summary document distributed with this specification.

Stakeholders are encouraged to provide comments on these proposed new levels.

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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 requirement 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.

466 For imaging products with a functionally-integrated DFE that relies on the imaging product for its
 467 power, the power consumption of the DFE should be excluded when comparing the product's
 468 measured Sleep to the combined marking-engine and functional-adder criteria limits below. The
 469 DFE must not interfere with the ability of the imaging product to enter or exit its lower-power
 470 modes. In order to take advantage of this exclusion, the DFE must meet the definition in Section
 471 1.CC. and be a separate processing unit that is capable of initiating activity over the network.
 472

473 Default Delay Time Requirements: To qualify for ENERGY STAR, OM products must meet the
 474 default-delay time settings provided in Tables A through C below for each product type, enabled
 475 upon product shipment. In addition, all OM products must be shipped with a maximum **machine**
 476 delay time not in excess of four hours, which is only adjustable by the manufacturer. This
 477 maximum machine delay time cannot be influenced by the user and typically cannot be modified
 478 without internal, invasive product manipulation. The default-delay-time settings provided in Tables
 479 A through C may be user adjustable.
 480

481 **Table A: Maximum Default Delay Times to Sleep for Small-format and Standard-size OM**
 482 **Products, Excluding Mailing Machines, in Minutes**
 483

Product Speed (ipm)	Fax Machines	MFDs	Printers	Scanners
0 - 10	5	15	5	15
11 - 20	5	30	15	15
21 - 30	5	60	30	15
31 - 50	5	60	60	15
51 +	5	60	60	15

484 **Table B: Maximum Default Delay Times to Sleep for Large-format OM Products, Excluding**
 485 **Mailing Machines, in Minutes**
 486
 487

Product Speed (ipm)	Copiers	MFDs	Printers	Scanners
0 - 10	30	30	30	15
11 - 20	30	30	30	15
21 - 30	30	30	30	15
31 - 50	30	60	60	15
51 +	60	60	60	15

488 **Table C: Maximum Default Delay Times to Sleep for Mailing Machines in Minutes**
 489
 490

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

491
 492
 493 Standby Requirements: To qualify for ENERGY STAR, OM products must meet the Standby
 494 power criteria provided in Table D below for each product type.
 495

496 **Table D: Maximum Standby Power Levels for OM Products in Watts**
 497

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

Product Type & Size Format	Standby (W) – Tier 2
Standard-size OM Products with Fax Capability	
All Large Format OM Products and Mailing Machines	1

Note: EPA is proposing to keep the same Standby requirements for small format, standard size OM products in Tier 2 as listed in Tier 1. For all large format OM products and mailing machines, EPA proposes to set the Tier 2 Standby requirement at 1.0 W based on stakeholder feedback.

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The eligibility criteria 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. Manufacturers may apply no more than **three** Primary functional adders to each product model, but may apply as many Secondary adders as present (with Primary adders in excess of three included as Secondary adders). 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	0.3	0.2
	A physical data- or network-connection port present on the imaging product that is capable of a transfer rate < 20 MHz. Includes USB 1.x, IEEE488, IEEE 1284/Parallel/Centronics and RS232.		
	B. Wired ≥ 20 MHz and < 500 MHz	0.5	0.2
	A physical data- or network-connection port present on the imaging product that is capable of a transfer rate ≥ 20 MHz and < 500 MHz. Includes USB 2.x, IEEE 1394/FireWire/i.LINK, and 100Mb Ethernet.		
	C. Wired ≥ 500 MHz	1.5	0.5
	A physical data- or network-connection port present on the imaging product that is capable of a transfer rate ≥ 500 MHz. Includes 1G Ethernet.		
	D. Wireless	3.0	0.7
	A data- or network-connection interface present on the imaging product that is designed to transfer data via radio-frequency wireless means. Includes Bluetooth and 802.11.		
	E. Wired card/camera/storage	0.5	0.1
A physical data- or network-connection port present on the imaging product that is designed to allow the connection of an external device, such as flash memory-card/smart-card readers and camera interfaces (including PictBridge).			

Type	Details	Functional Adder Allowances (W)	
		Primary	Secondary
	G. Infrared	0.2	0.2
	A data- or network-connection interface present on the imaging product that is designed to transfer data via infrared technology. Includes IrDA.		
Other	Storage	-	0.2
	Internal storage drives present on the imaging product. Includes internal drives only (e.g., disk drives, DVD drives, Zip drives), and applies to each separate drive. This adder does not cover interfaces to external drives (e.g., SCSI) or internal memory.		
	Scanners with CCFL lamps	-	2.0
	The presence of a scanner that uses Cold Cathode Fluorescent Lamp (CCFL) technology. This adder is applied only once, regardless of the lamp size or the number of lamps/bulbs employed.		
	Scanners with non-CCFL lamps	-	0.5
	The presence of a scanner that uses a lamp technology other than CCFL. This adder is applied only once, regardless of the lamp size or the number of lamps/bulbs employed. This adder addresses scanners using Light-Emitting Diode (LED), Halogen, Hot-Cathode Fluorescent Tube (HCFT), Xenon, or Tubular Fluorescent (TL) technologies.		
	PC-based system (cannot print/copy/scan without use of significant PC resources)	-	-0.5
	This adder applies to imaging products that rely on an external computer for significant resources, such as memory and data processing, to perform basic functions commonly performed by imaging products independently, such as page rendering. This adder does not apply to products that simply use a computer as a source or destination for image data.		
	Cordless handset	-	0.8
	The capability of the imaging product to communicate with a cordless handset. This adder is applied only once, regardless of the number of cordless handsets the product is designed to handle. This adder does not address the power requirements of the cordless handset itself.		
	Memory	-	1.0 W per 1 GB
	The internal capacity available in the imaging product for storing data. This adder applies to all volumes of internal memory and should be scaled accordingly. <u>For example</u> , a unit with 2.5 GB of memory would receive an allowance of 2.5 W while a unit with 0.5 GB would receive an allowance of 0.5 W.		

Note: The secondary adder based on power supply output rating (PSOR) has been eliminated. This decision was made, in part, because the power supply size is not a function that delivers functionality to imaging products. Stakeholders are encouraged to provide comments on the elimination of the PSOR adder.

EPA has not modified any other category of adders. EPA encourages stakeholder feedback on making modifications to the other adders listed in the table based on products available in the marketplace.

520
521 For the adder allowances shown in Qualifying Products Table 3 above, distinctions are made for
522 “Primary” and “Secondary” types of adders. These designations refer to the state in which the
523 interface is required to remain while the imaging product is in Sleep. Connections that remain
524 active during the OM test procedure while the imaging product is in Sleep are defined as Primary,
525 while connections that can be inactive while the imaging product is in Sleep are defined as
526 Secondary. Most functional adders typically are Secondary types.

527
528 Manufacturers should consider only the adder types that are available on a product in its as-

529 shipped configuration. Options available to the consumer after the product is shipped or
 530 interfaces that are present on the product's externally-powered digital front-end (DFE) should not
 531 be considered when applying allowances to the imaging product.

532
 533 For products with multiple interfaces, these interfaces should be considered as unique and
 534 separate. However, interfaces that perform multiple functions should only be considered once.
 535 For example, a USB connection that operates as both 1.x and 2.x may be counted only once and
 536 given a single allowance. When a particular interface may fall under more than one interface
 537 Type according to the table, the manufacturer should choose the function that the interface is
 538 primarily designed to perform when determining the appropriate adder allowance. For example, a
 539 USB connection on the front of the imaging product that is marketed as a PictBridge or "camera
 540 interface" in product literature should be considered a Type E interface rather than a Type B
 541 interface. Similarly, a memory-card-reader slot that supports multiple formats may only be
 542 counted once. Further, a system that supports more than one type of 802.11 may count as only
 543 one wireless interface.

544
 545
 546 **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	63

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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	7

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 554
 555

OM Table 3

Product(s): MFDs, Printers	
Size Format(s): Large Format	
Marking Technologies: Color IJ, Mono IJ	
	Sleep (W)
Marking Engine	6

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 558
 559

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	7

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OM Table 5

Product(s): Printers	
Size Format(s): Small Format	
Marking Technologies: Color DS, DT, Color IJ, Color Impact, Color TT, Mono DS, Mono EP, Mono IJ, Mono Impact, Mono TT, Color EP, SI	
	Sleep (W)
Marking Engine	1

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OM Table 6

Product(s): Printers	
Size Format(s): Standard-size	
Marking Technologies: Color Impact, Mono Impact	
	Sleep (W)
Marking Engine	10

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OM Table 7

Product(s): Scanners	
Size Format(s): Large Format, Small Format, Standard-size	
Marking Technologies: N/A	
	Sleep (W)
Scanning Engine	1.8

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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	13.5

Note: The primary objective of ENERGY STAR is to recognize the most energy efficient products in the marketplace. In developing this specification, EPA considers the following criteria:

- Significant energy savings can be realized on a national basis
- Product performance is maintained or enhanced with increased efficiency
- Purchase of high efficiency product will be cost effective
- Energy efficiency can be achieved through several technology options
- Energy consumption and performance can be measured and verified with testing
- Labeling would effectively differentiate products and be visible for purchasers.

Based on U.S. market data obtained from Better Buys for Business, and other sources, and the list of currently qualified ENERGY STAR imaging equipment products, EPA estimates that the market share of qualifying products in the U.S. under Tier 1 ranges from 19-81%, depending on the category.

It is not EPA's intention to design a specification that will allow every model to qualify. When revising a specification, EPA takes into account cost effectiveness to the consumer and product performance when recognizing the top percentile of products in the marketplace. When possible, the Sleep levels proposed in these OM Tables represent approximately 25% of models currently available on the market in the U.S. In cases where the market penetration was high, Sleep levels were made more stringent to capture the top percentile of the models in the market. In some cases where there were less available qualified products, EPA set Sleep values for Tier 2 at the same levels as Tier 1, in order to include all currently qualified products. In these cases, the Sleep level is graphically higher in the Tier 2 specification due to the elimination of the power supply output rating (PSOR) adder. Tier 1 levels were set including the PSOR adders.

For products listed under OM Table 5, EPA is proposing to set this Sleep level the same as OM2 (1 W) because these products are similar in function as those list under OM Table 2 only smaller. Further details on the OM data analysis can be found in the data summary document distributed with this specification.

Stakeholders are encouraged to provide comments on these proposed new levels.

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4) **Test Procedures**

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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:

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583

- "ENERGY STAR Qualified Imaging Equipment Typical Electricity Consumption Test Procedure;"

584

- "ENERGY STAR Qualified Imaging Equipment Operational Mode Test Procedure;" and

585

- "Test Conditions and Equipment for ENERGY STAR Imaging Equipment Products."

586
587

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

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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

592 finish from those sold in a previous year may remain qualified without the submission of new test data,
593 assuming the specification remains unchanged.

594
595 If a product model is offered in the market in multiple configurations as a product “family” or series, the
596 partner may test and report the highest configuration available in the family, rather than each and
597 every individual model. When submitting model families, manufacturers continue to be held
598 accountable for any efficiency claims made about their imaging products, including those not tested or
599 for which data was not reported.

600
601 **Example:** Models A and B are identical, with the exception that model A is shipped with a
602 wired interface > 500 MHz, and model B is shipped with a wired interface < 500 MHz. If
603 model A is tested and meets the ENERGY STAR specification, then the partner may report
604 the test data solely for model A, to represent both models A and B.
605

606
607
608 If a product’s electrical power comes from Mains, USB, IEEE1394, Power-over-Ethernet, telephone
609 system, or any other means or combinations of means, the net AC electrical power consumed by the
610 product (taking into account ac-to-dc conversion losses, as specified in the OM test procedure) must
611 be used for qualification.

612
613 Additional testing and reporting requirements are provided below.

- 614
615 A. **Number of Units Required for Test:** Testing shall be conducted by the manufacturer or its
616 authorized representative on a single unit of a model.
- 617 a. For products outlined in Section 2, Table 1 of this specification, if the initial unit tested has
618 TEC test results that meet the eligibility criteria but fall within 10% of the criteria level, one
619 additional unit of the same model must also be tested. Manufacturers shall report values
620 for both units. To qualify as ENERGY STAR, both units must meet the ENERGY STAR
621 specification.
 - 622 b. For products outlined in Section 2, Table 2 of this specification, if the initial unit tested has
623 OM test results that meet the eligibility criteria but fall within 15% of the criteria level in any
624 of the specified operating modes for that product type, then two more units shall be
625 tested. To qualify as ENERGY STAR, all three units must meet the ENERGY STAR
626 specification.
- 627
628 B. **Submission of Qualified Product Data to EPA:** Partners are required to self-certify those product
629 models that meet the ENERGY STAR guidelines and report information to EPA. The information
630 to be reported for products shall be outlined shortly following publication of the final specification.
631

632 In addition, partners must submit to EPA excerpts from product literature that explain to
633 consumers the recommended default delay-times for power management settings. The intent of
634 this requirement is to support that products are being tested as shipped and recommended for
635 use.

- 636
637 C. **Models Capable of Operating at Multiple Voltage/Frequency Combinations:** Manufacturers shall
638 test their products based on the market(s) in which the models will be sold and promoted as
639 ENERGY STAR qualified. EPA and its ENERGY STAR Country Partners have agreed upon a
640 table with three voltage/frequency combinations for testing purposes. Please refer to the Imaging
641 Equipment **Test Conditions** for details regarding international voltage/frequency and paper sizes
642 for each market. Products tested must operate off of the international standard nominal voltage
643 supplies listed in the **Test Conditions**.

644 **Note:** EPA is proposing to add clarifications to the testing requirements in order to
645 ensure only commercial and personal imaging equipment are included based on
manufacturer interest. Industrial and production units do not meet the spirit and intent
of the specification. Stakeholders are encouraged to comment on this modification.

646 For products that are sold as ENERGY STAR in multiple international markets and therefore rated
647 at multiple input voltages, the manufacturer must test at and report the required power
648 consumption or efficiency values at all relevant voltage/frequency combinations. For example, a
649 manufacturer that is shipping the same model to the United States and Europe must measure,
650 meet the specification, and report test values at both 115 Volts/60 Hz and 230 Volts/50 Hz in order
651 to qualify the model as ENERGY STAR in both markets. If a model qualifies as ENERGY STAR
652 at only one voltage/frequency combination (e.g., 115 Volts/60 Hz), then it may only be qualified
653 and promoted as ENERGY STAR in those regions that support the tested voltage/frequency
654 combination (e.g., North America and Taiwan).
655

656 5) **User Interface:** Manufacturers are strongly recommended to design products in accordance with
657 IEEE 1621: Standard for User Interface Elements in Power Control of Electronic Devices Employed in
658 Office/Consumer Environments. This standard was developed to make power controls more
659 consistent and intuitive across all electronic devices. For details on the development of this standard,
660 see <http://eetd.lbl.gov/controls>.
661

662 6) **Effective Date:** The date that manufacturers may begin to qualify products as ENERGY STAR under
663 the Version 1.1 specification, will be defined as the *effective date* of the agreement. Any previously
664 executed agreement on the subject of ENERGY STAR qualified imaging equipment shall be
665 terminated effective March 31, 2009.
666

667 A. **Qualifying and Labeling Products under Version 1.1:** The Version 1.1 specification shall
668 commence on April 1, 2009. All products, including models originally qualified under previous
669 imaging equipment specifications, with a **date of manufacture** on or after the effective date, must
670 meet the new Version 1.0 requirements in order to qualify for ENERGY STAR (including additional
671 manufacturing runs of models originally qualified under previous specifications). The **date of**
672 **manufacture** is specific to each unit and is the date (e.g., month and year) on which a unit is
673 considered to be completely assembled.
674

a. Tier 2 – Tier 2 shall commence on **April 1, 2009**.

Note: All references to Version 1.0, Tier 1, and the Tier 1 effective date were omitted.

675 B. **Elimination of Grandfathering:** EPA will not allow grandfathering under this Version 1.1 ENERGY
676 STAR specification. **ENERGY STAR qualification under previous Versions is not**
677 **automatically granted for the life of the product model.** Therefore, any product sold,
678 marketed, or identified by the manufacturing partner as ENERGY STAR must meet the current
679 specification in effect at the time of manufacture of the product.
680

681 7) **Future Specification Revisions:** EPA reserves the right to change the specification should
682 technological and/or market changes affect its usefulness to consumers, industry, or the environment.
683 In keeping with current policy, revisions to the specification are arrived at through stakeholder
684 discussions and would commence no earlier than 2 years from the effective date of Tier 2. EPA will
685 periodically assess the market in terms of energy efficiency and new technologies. As always,
686 stakeholders will have an opportunity to share their data, submit proposals, and voice any concerns.
687 EPA will strive to ensure that the specification recognizes the most energy-efficient models in the
688 marketplace and reward those manufacturers who have made efforts to further improve energy
689 efficiency.
690

691 A. **Color Testing:** Based on submitted test data, future consumer preferences, and engineering
692 advancements, EPA may modify this specification at some point in the future to include color
693 imaging in the test method.
694

695 B. **Recovery Time:** EPA will closely monitor incremental and absolute recovery times as reported by
696 partners testing to the TEC method, as well as partner-submitted documentation regarding
697 recommended default delay settings. EPA will consider modification of this specification to
698 address recovery time should it become apparent that manufacturer practices are resulting in user
699 disabling of power management modes.
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- 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.