ENERGY STAR Imaging Equipment Version 2.0 Draft 2

Stakeholder Webinar
August 15, 2012

Agenda

1. **Introduction**
2. TEC Requirements
3. DFEs
4. OM Requirements
5. OM Functional Adders
6. Definitions
7. Automatic Duplexing
8. Recovery Time
9. Toxicity and Recyclability
10. Test Method
11. Effective Date

Introduction

- EPA thanks all stakeholders who have been participating in the revision of the ENERGY STAR specification for Imaging Equipment

- Stakeholder participation is critical to specification development

Latest Activities

- February 24, 2012
  - Draft 1 Specification published
- March 7, 2012
  - Draft 1 Stakeholder Meeting
- June 29, 2012
  - Draft 2 Specification and Final Test Method published
- August 15, 2012
  - Draft 2 Specification Webinar

Meeting Objectives

1. Discuss issues identified in Draft 2 noteboxes and summarize comments received on the Draft 2 specification

2. Summarize comments received on the Draft 2 specification

3. Discuss approaches for the next Draft

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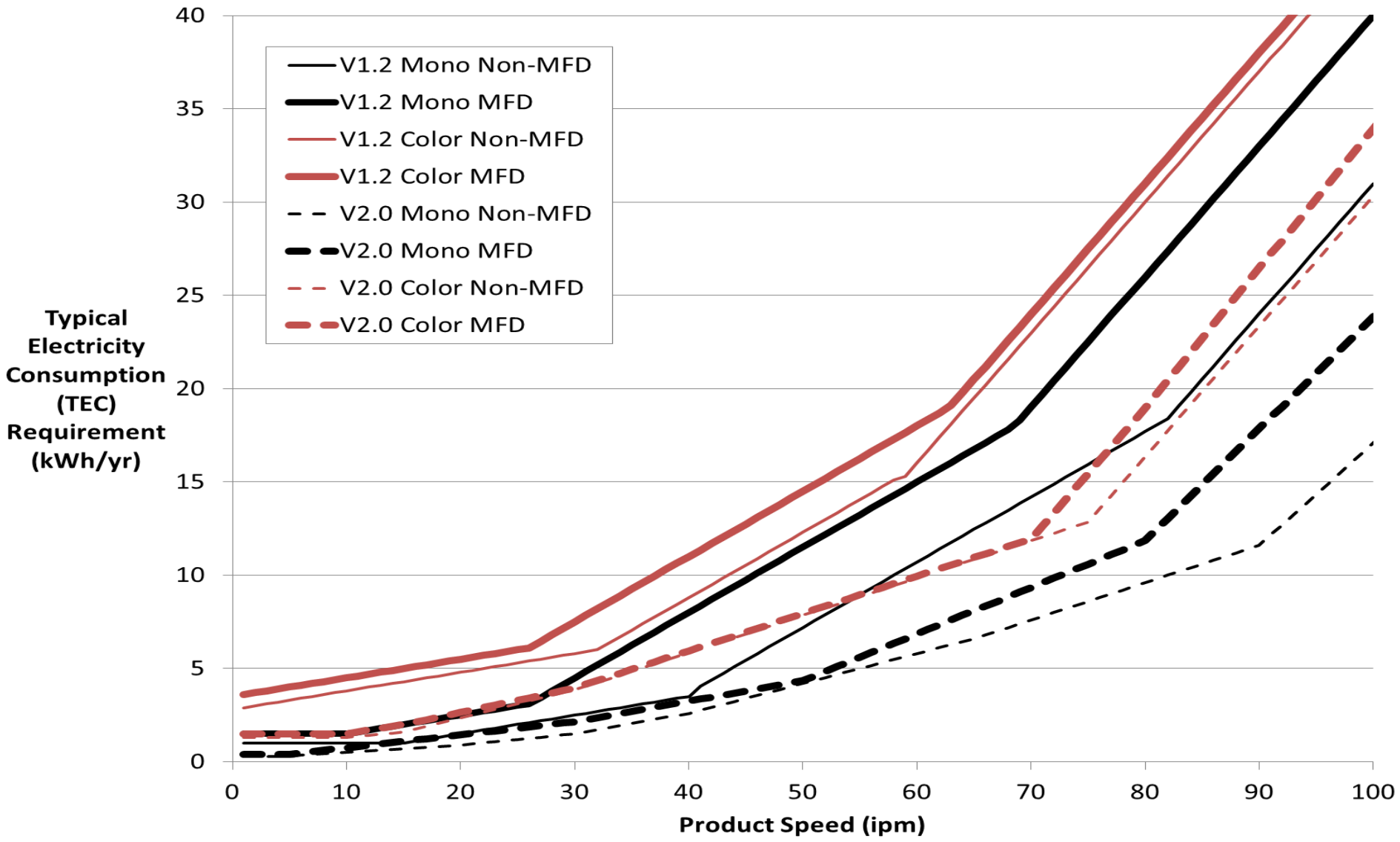
TEC Analysis

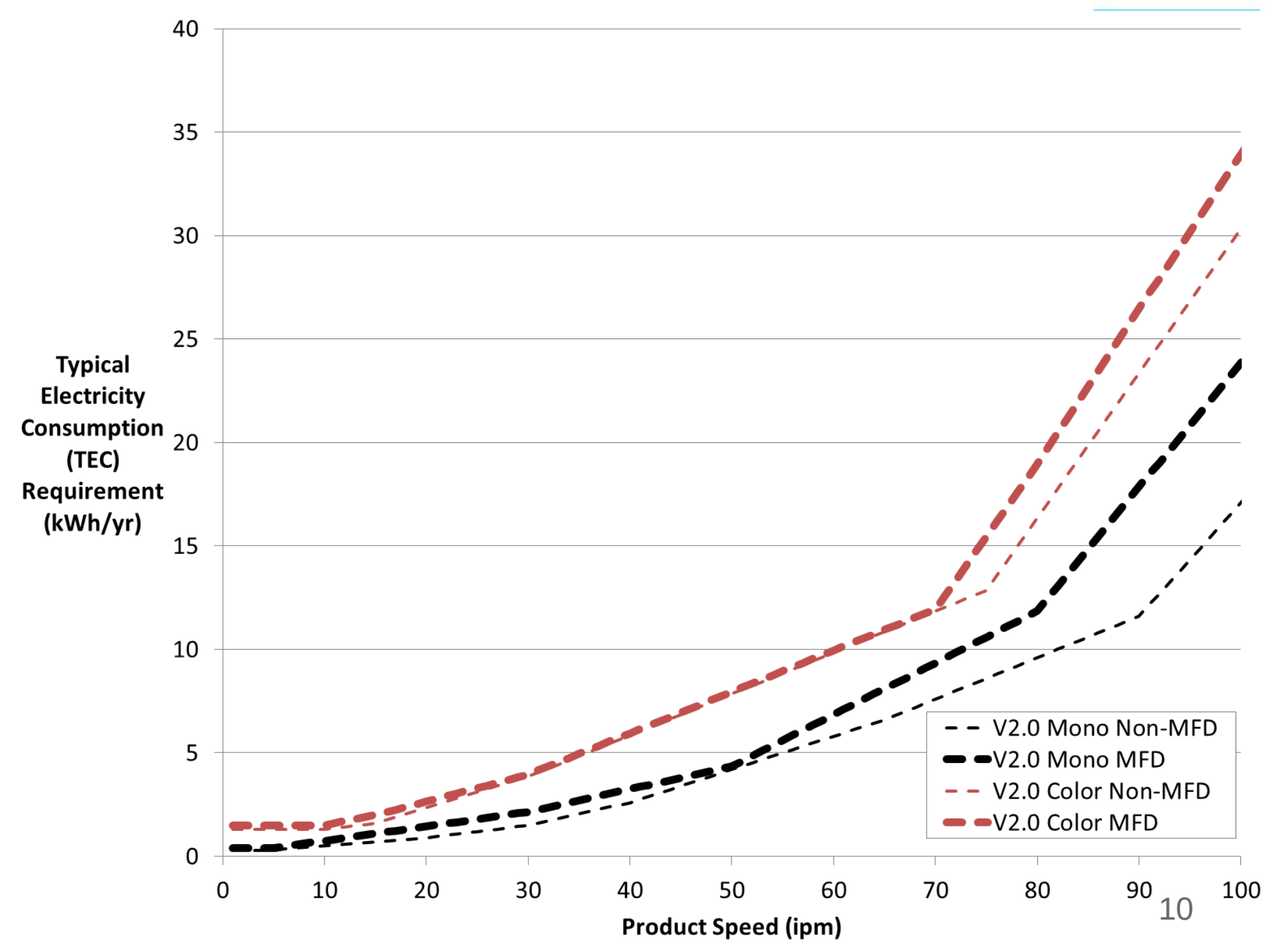
- In response to stakeholder comments, EPA revised the TEC limits in Draft 2:
  - Added further performance data provided by stakeholders
  - Returned to four product divisions – as in Version 1.2 (MFD and non-MFD, color and monochrome),
  - Revised qualification lines to provide additional segments (30–60 ipm) with more granular requirement
- TEC Requirement lines drawn such that:
  - TEC increases with speed
  - Color ≥ Mono
  - MFD ≥ non-MFD

TEC Qualification Rates

- Due to aforementioned conditions (Color ≥ Mono, MFD ≥ non, etc.), the proposed Draft 2 qual. lines represent the most appropriate performance levels
  - Provide product differentiation and enhanced energy savings from the existing specification
  - Provide adequate choice and energy savings for consumers

Comparing V1.2 to Draft 2




Typical Electricity Consumption (TEC) Requirement (kWh/yr)
40
35
30
25
20
15
10
5
0
0
10
20
30
40
50
60
70
80
90
100
Product Speed (ipm)
V2.0 Mono Non-MFD
V2.0 Mono MFD
V2.0 Color Non-MFD
V2.0 Color MFD

TEC Qualification Rates

TEC Category	Overall Qualification Rate
1 – Mono non MFD	35%
2 – Mono MFD	28%
3 – Color non MFD	31%
4 – Color MFD	42%

TEC Category	Qualification Rate 30–50 ipm
1 – Mono non MFD	38%
2 – Mono MFD	27%
3 – Color non MFD	32%
4 – Color MFD	47%

TEC: kWh/week vs. kWh/year

- Proposed adding kWh/year to the qualified product listing
  - Harmonize with how ENERGY STAR provides performance data on other products
  - In all instances, actual performance of units in the field will have different values based on usage, environment, etc.

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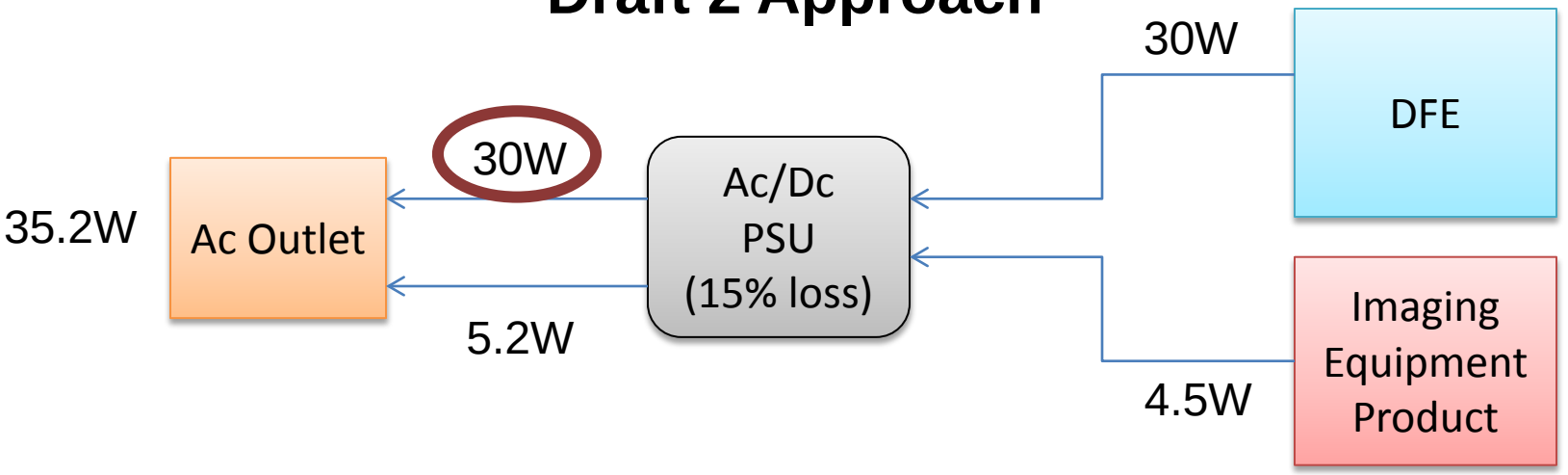
DFE Changes

- Removed Type 3
- Change to Category B
  - Proposing higher allowances for DFEs with multiple CPUs
    - Based on Computers dataset
    - Removed distinction between single-core and multi-core
- TEC_{DFE} Approach
  - Takes into account potential savings of Sleep Mode
  - DOE has modified the test method to measure power in Sleep Mode

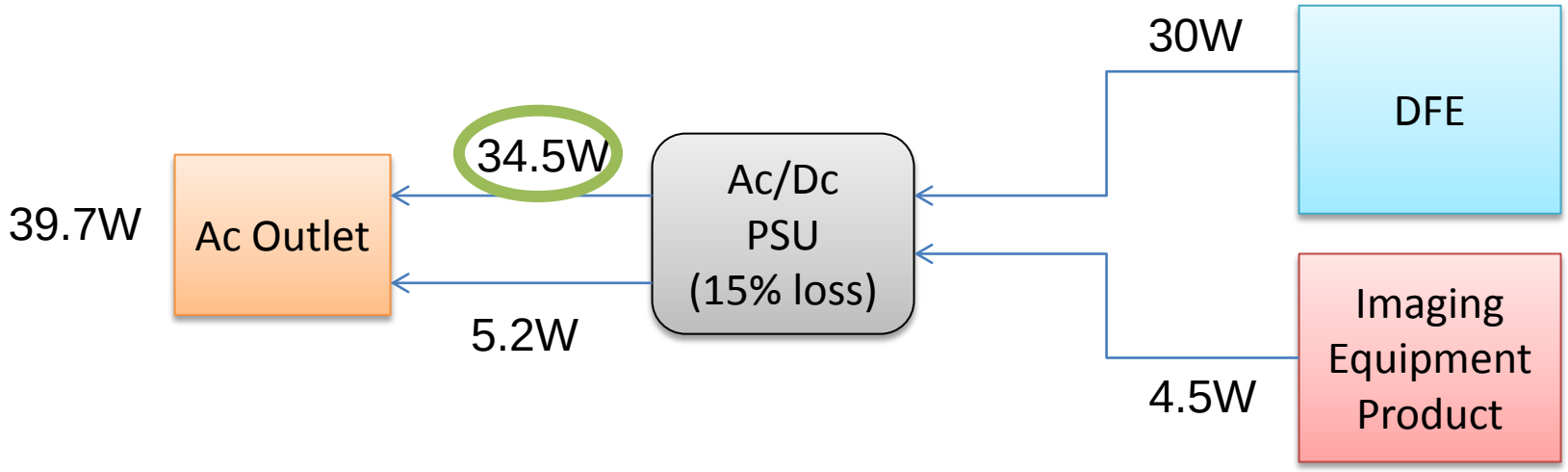
Type 2 DFE Consistency

- Requirements for Type 2 DFEs are inconsistent:
  - Cannot subtract the dc power of the DFE from the ac power of the imaging equipment
  - Need to account for power supply losses
- EPA proposes that Type 2 DFE dc power be multiplied by 1.15
  - Consistent with the 85% power supply efficiency used in the TEC_{DFE} requirements

Draft 2 Approach



Proposed Approach



Imaging Equipment product and DFE share same power supply. By applying the same power supply loss to both, there is a 4.5W difference in the ac measurement.

DFE Adder Proposal

- To reduce testing burden with Type 2 DFEs, EPA should treat DFE as an adder
  - EPA does not have sufficient data on DFEs to create an adder in Version 2.0
  - Interested in obtaining data from stakeholders and examining this approach in the future

Imaging Equipment Products Sold with Multiple DFEs

- How would EPA address units with multiple DFEs (e.g. a Type 2 DFE and an additional Type 1 DFE)?
  - EPA was not aware of this configuration
  - Propose to exclude from scope until we fully understand market, operation, and testing

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OM Requirements: Dataset

To address stakeholder concerns, EPA performed a new analysis on:

- **Qualified products as of April 12, 2012**
  - Excluding 498 models older than 2010 and 375 with no date
  - Excluding additional models with missing or questionable data
- **Non-qualified products collected in July 2011**
  - (Same as in Draft 1)

Questions and suggestions regarding removal of older models:

- Recommend removing models older than 7/2009 since average sales period < 3 years
- Others recommend keeping all models currently being sold, regardless of age

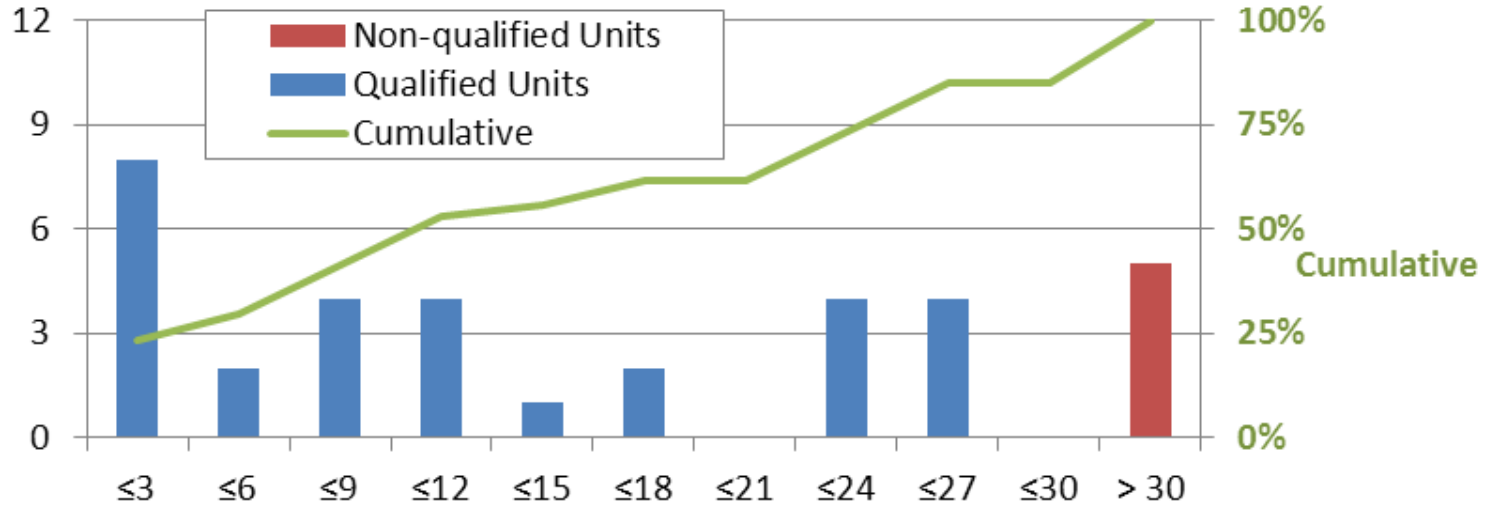
OM Methodology

Same methodology as for Draft 1:

1. Subtract allowances for adders that would be used under Version 2.0 test method
   - Interface and non-interface adders
2. Result is base consumption
3. Set base allowance to recognize efficient products while ensuring consumer choice

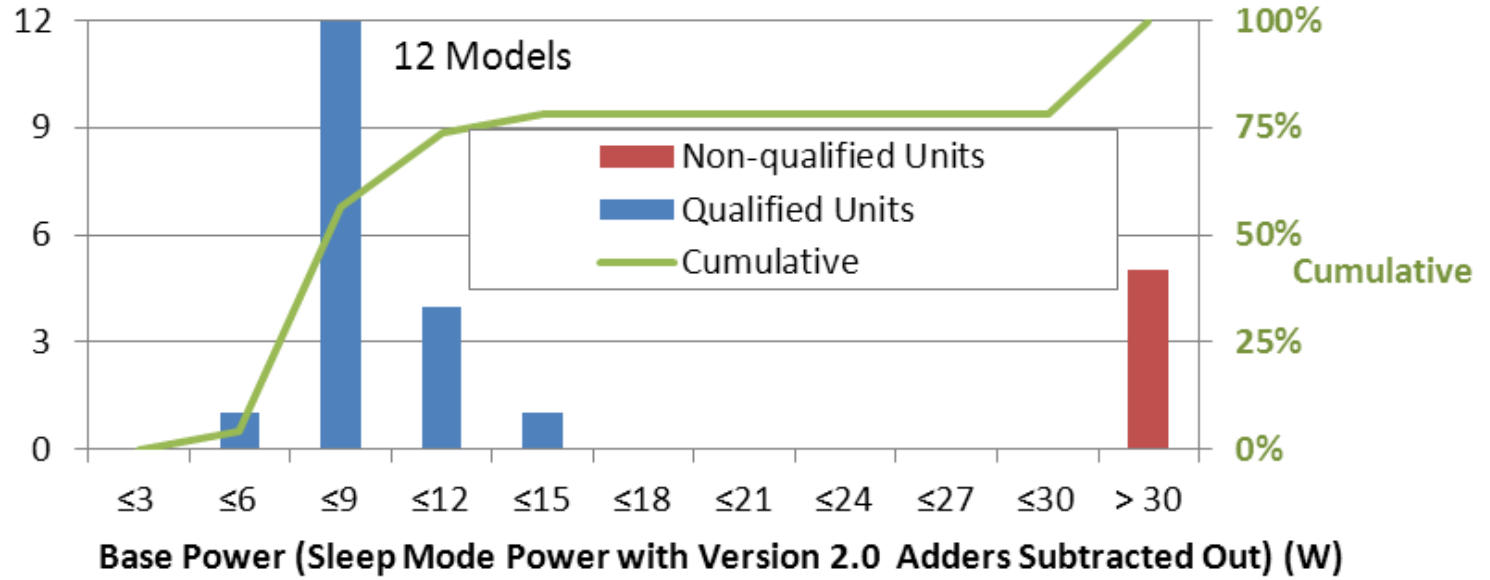
Updated dataset and revised allowances led to different results:

Draft 1



Number of Models - Large Non-ink Jet MFDs and Copiers

Draft 2



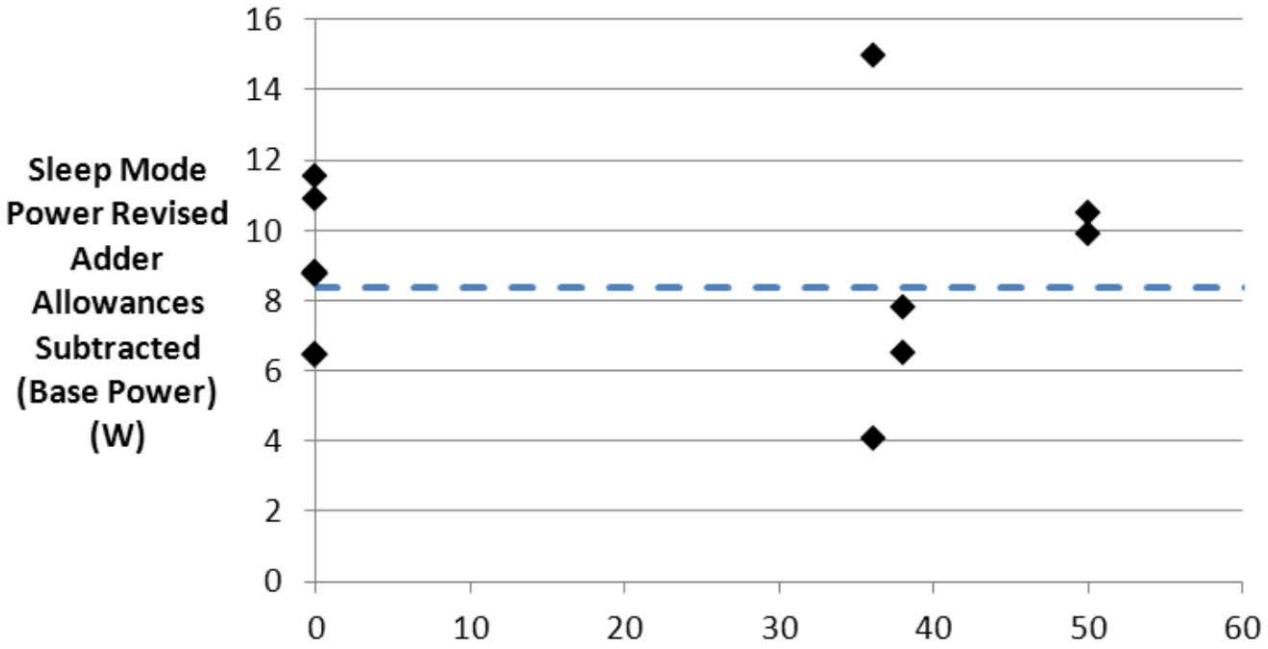
Number of Models - Large Non-ink Jet MFDs and Copiers

OM Methodology (cont.)

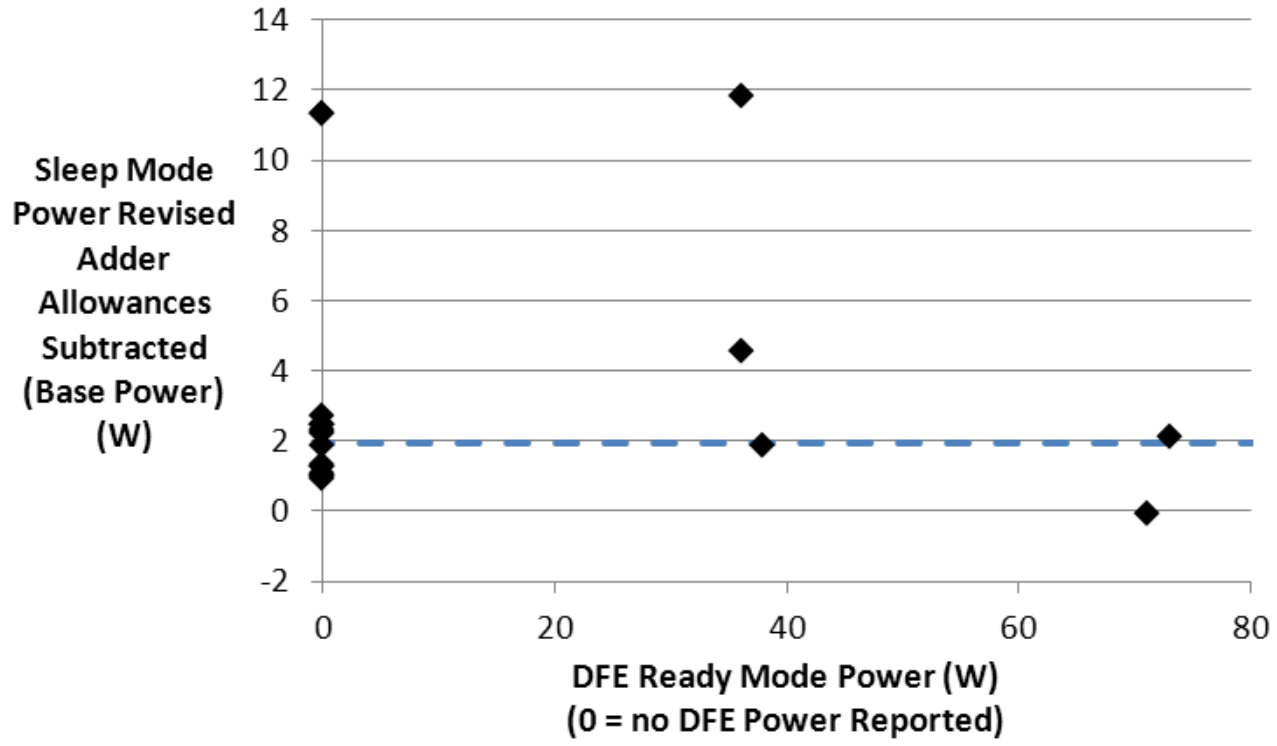
In response to comment, EPA reviewed the impact of the following additional functionalities on qualification:

- **DFEs**
  - Concerns that DFEs may be masking Sleep Mode power
- **Power supply output power rating**
  - Concerns that larger power supplies imply additional functionality beyond what is captured by the adders
- **Scanner**
  - Concerns about impact of USB scanners on qualification rates

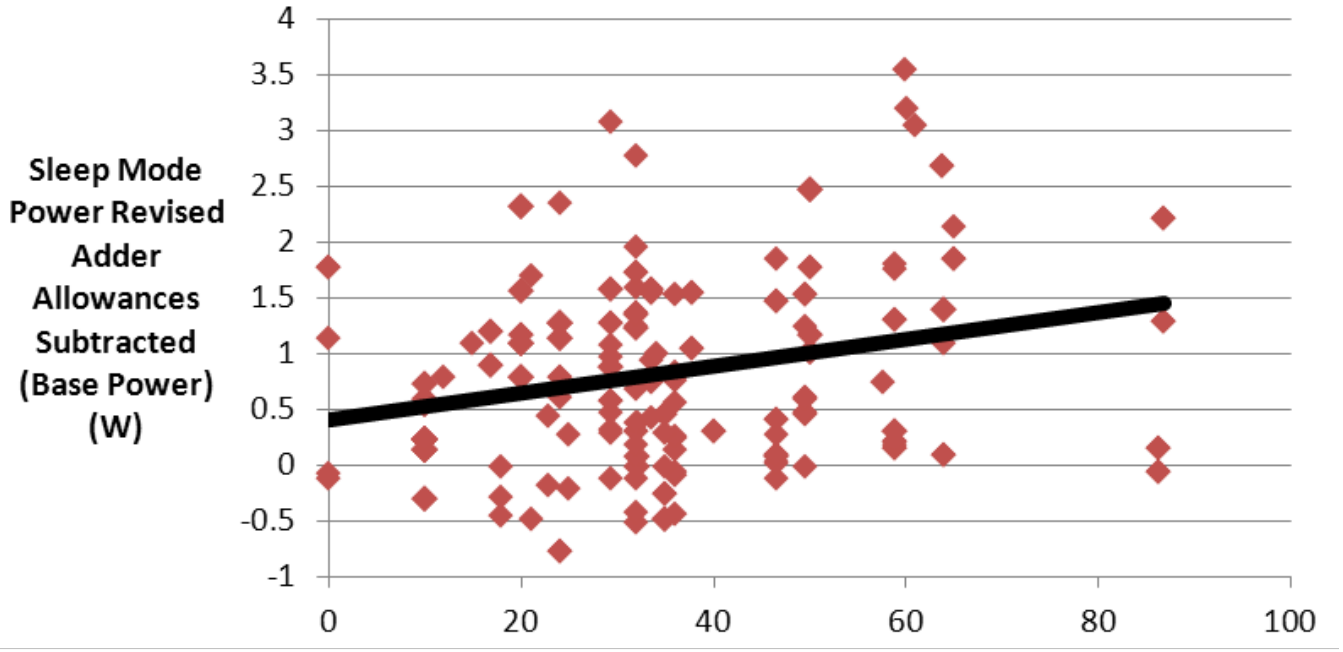
Large Format Ink-Jet Printers and MFDs



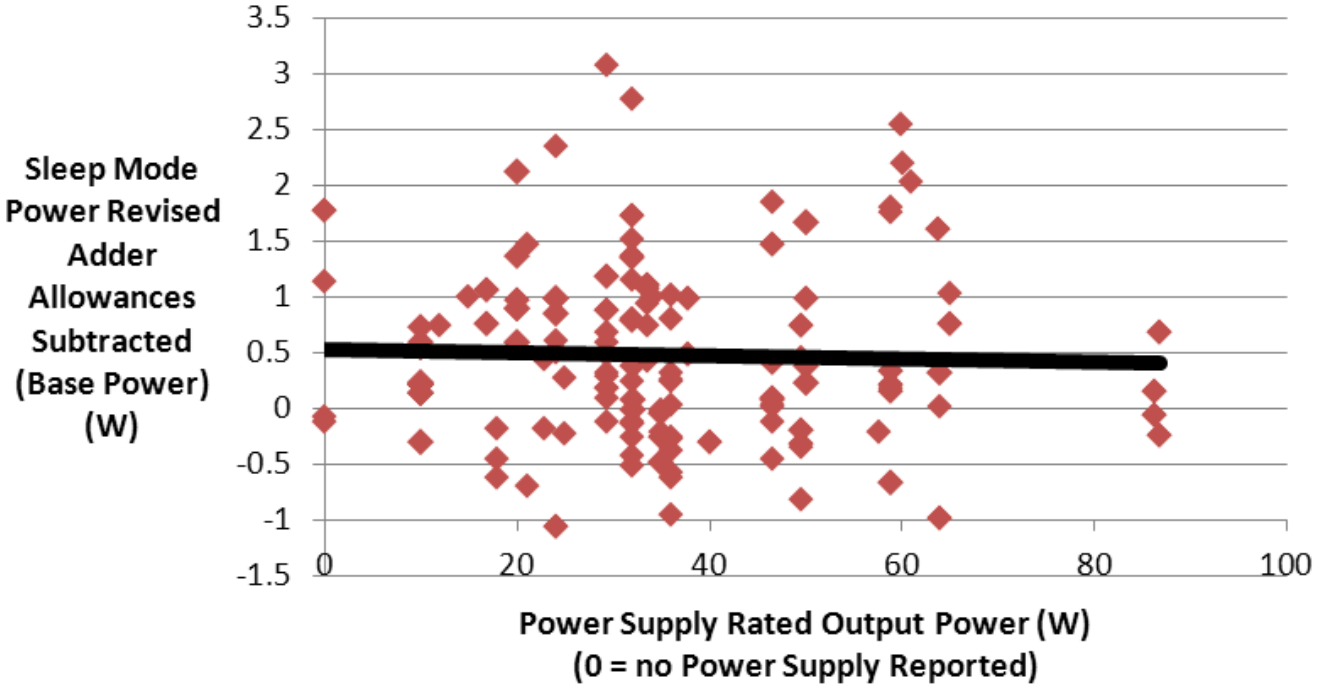
Large Format Non-Ink-Jet Printers



Std. Format Ink-Jet (No PS Adder)



Std. Format Ink-Jet (**With** PS Adder)



OM Requirements: Scanners

Received several inquiries as to how scanners were analyzed

- Excluded scanners with power supplies <10W
  - Proxy for USB
  - <10W threshold determined by reviewing product information online
- EPA did not exclude non-qualified models from analysis
  - Non-qualified scanners only 1% of shipments in 2010

OM Analysis Results

Re-analysis did not find that the levels proposed in Draft 1 discriminated against products with/without DFEs or larger power supplies (especially once the power supply adder was used for inkjet and impact products)

- Some levels could be slightly increased or decreased
  - Standard format could be lowered but felt the Draft 1 levels were appropriate
- Propose retaining the Draft 1 levels in most cases
- Comments that small format had greater allowance than large format

OM Category	Version 1.2 Base Allowance (W)	Base Allowances	
		Draft 1	Draft 2
Standard Format IJ	1.4	0.60	0.60
Scanners	4.3	2.7	2.5
Standard Format Impact Printers	4.6	2.3	**0.60**
Mailing Machines	7	5.6	**5.0**
Small Format Printers	9	9.0	**4.0**
Large Non-ink Jet Printers	14	2.5	2.5
Large Ink Jet Printers and MFDs	15	4.9	4.9
Large Non-ink Jet MFDs and Copiers	30	7.4	**8.2**

OM Requirements: Other Products

- Stakeholders provided some large-format data—EPA will review
- Stakeholders also suggested changes to Sleep Mode power limits for other product types
  - No additional data were supplied to justify these claims
  - No information on why the qualified product listing and the additional non qualified data do not represent the current market

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OM Adders – Draft 2 Changes

- **Power supply:** the size of the power supply can be interpreted as a proxy for speed or other functionality; restoring this adder preserves consumer choice
- **Hard Disk Drives:** increased to 0.15 W
- **Cordless Phone:** 0.5 W proposed in Draft 1; increased to 1.0 W in Draft 2
- **Touch-panel Display:** proposed for addition in Draft 2 at 0.2 W

- Corrected typo in Draft 1 - 0.5 W /GB for Memory

OM Adders – Suggested Changes

- **Touch Panel Adder:** Add Resistive or remove "capacitive" and "small" size limitations
- **Internal Disk Drives:** Exclude disk drives in DFEs
- **Fax/modem:** Do not limit to MFDs as other product types also have this interface.

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Definitions: Product Family

"For Imaging Equipment, acceptable variations within a product family include:

a) Color,

b) Housing,

~~c) Input voltage and frequency,~~

~~d)~~ **c)** Input or output paper-handling accessories,

~~e) Internal storage drive (hard disk drives (HDD) or solid state drives (SDD)), or~~

~~f) Any of the functional adders specified in Table 7.~~

d) **Electronic components not associated with the marking engine of the Imaging Equipment product."**

Conflicted with requirement to test products in each market sold.

Included in specification back as an adder

Allows for new adders not currently treated under the OM approach (Table 7)

Definitions: Product Family

- Stakeholders requested:
  - Expand product family definition to include products with different speeds
  - Retain input voltage and frequency to keep test burden constant
  - Re-instate “tested as shipped” in the representative model /product family definition

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Automatic Duplexing

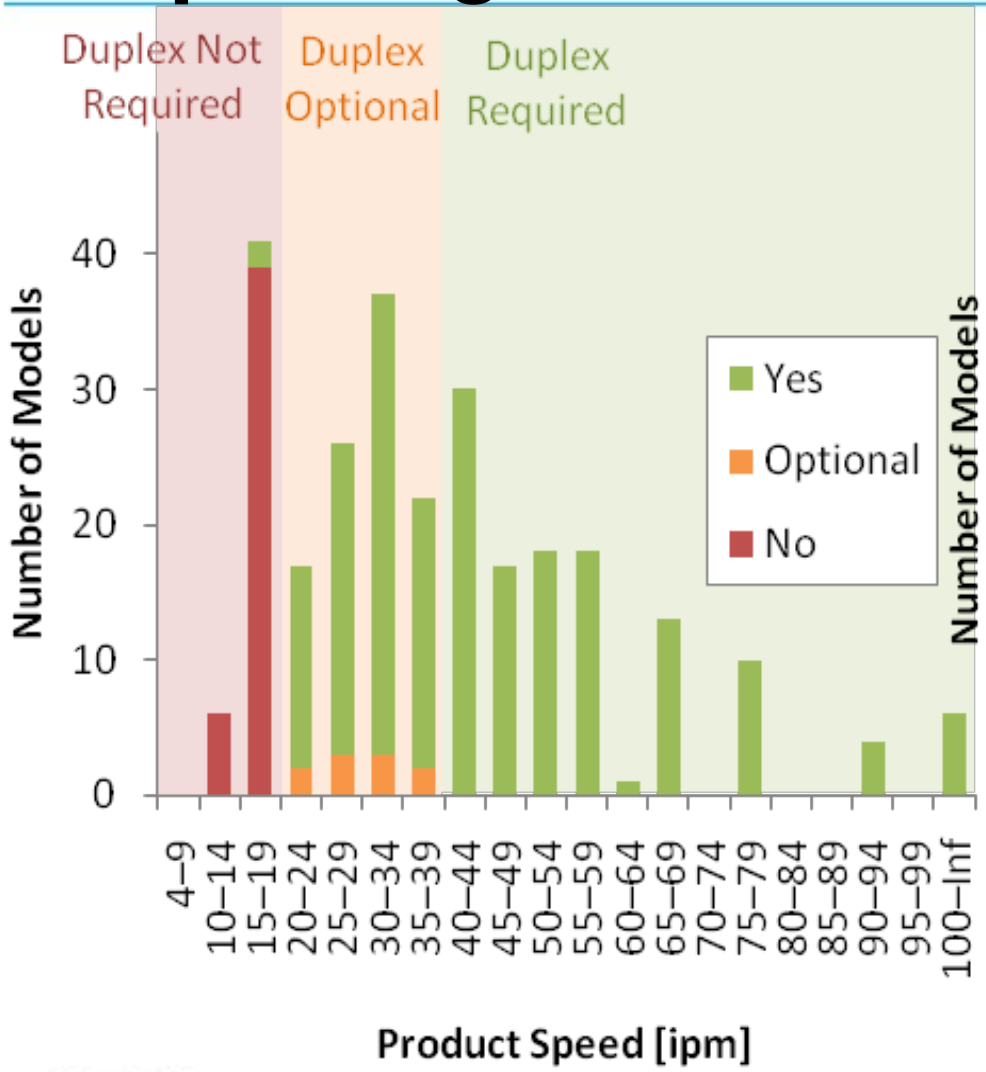
- EPA revised the duplexing requirement for TEC due to stakeholder concerns with special-use cases
  - Ledgers, schematics, etc., require single-sided printing
  - Automatic duplexing could discourage lower cost ENERGY STAR printers
  - Removed allowance of high speed non duplexing products from being labeled ENERGY STAR

Draft 1

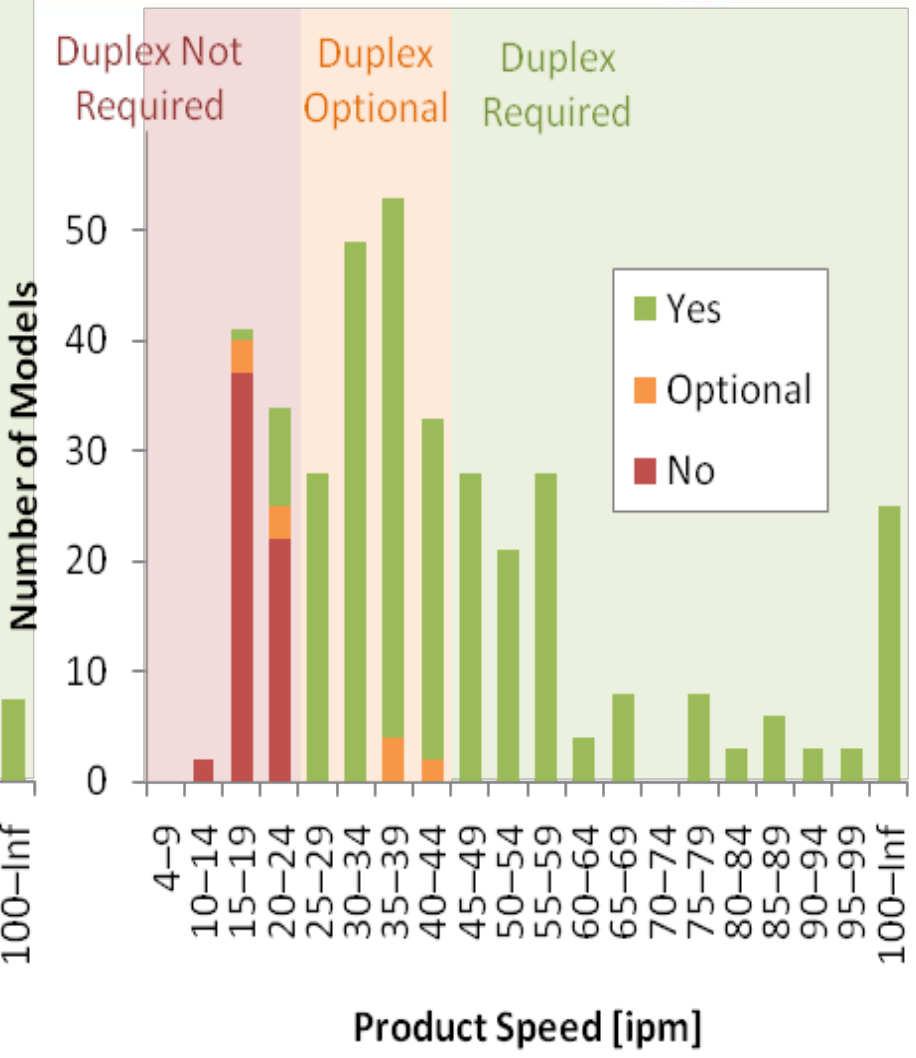
Draft 2

Automatic Duplexing Requirement	Monochrome Product Speed, s, as Calculated in the Test Method (ipm)	Monochrome Product Speed, *s*, as Calculated in the Test Method (ipm)
None	s ≤ 19	*s* ≤ 26
Integral to the base product	s > 19	*s* > 26

Prevalence of Automatic Duplexing



Monochrome



Color

Automatic Duplexing

- Received comments that duplexing should remain optional for 26–45 ipm product
  - QPL data demonstrate that most products are able to meet the proposed requirement but there are Special media printers where auto duplexing cannot be applied
- Also received suggestion that print drivers should have duplex set as default, for those products that require auto duplexing, including DFE print drivers

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Recovery Time

- EPA proposed reporting TEC Recovery Time data on the Qualified Product List (QPL)
- Report Active1 Time per the test method

Time from **Sleep Mode** through **1st sheet exiting product**

Test method also measures:

- Active0 Time: From Ready Mode through 1st sheet
- Active2 Time: From end of 1st job to 1st sheet of 2nd job

Reporting Recovery Time

- EPA proposed listing the reported Active1 recovery time on the QPL
  - Received suggestion to also report Active 0 and Active 2
  - Need to better define Active 1
- Reporting recovery time provides value, but all three times (Active0, 1, and 2) are not useful information

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Toxicity and Recyclability

- ENERGY STAR continues to avoid associating the label with models of poor quality or models with features that are not compatible with broadly held consumer or societal interests

- In response to significant stakeholder concern that placement of toxicity and recyclability requirements in the product eligibility criteria would hinder international harmonization, EPA, in consultation with ITI, has proposed moving these to the Partner Commitments

Toxicity and Recyclability (cont.)

- Stakeholders suggest referencing EU RoHS rather than replicating to be harmonized with the latest requirements

- Stakeholders also suggested following IEEE 1680.1 exceptions for safety in recycling

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Test Method

- DOE has finalized the test method (minor changes since previous draft):
  - Sleep mode for DFEs
  - Testing at higher commercial voltages in US
  - Updated network connection requirements to allow only 1 computer to be connected to UUT

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Timeline

Stage	Date
Draft 2	June 29, 2012
Comments due	July 30
Draft 2 Webinar	August 15
Final Draft	September
Comments due	October
Final Spec	December 2012
Effective	September 2013

Contact Information

- Please send any additional comments or questions to imagingequipment@energystar.gov or contact:

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Thank You!