ENERGY STAR Imaging Equipment Version 2.0 Final Draft

Stakeholder Webinar

December 18, 2012

Call-in Information

- Audio provided via conference call in:

Call in:	+1-877-423-6338 (in the US, Canada)
	+1-571-281-2578 (outside the US, Canada)
Code:	436598

- Phone lines will remain during the presentation to allow for open discussion

- Please keep phone lines on mute (*6) unless speaking

Agenda

1. **Introduction**
2. Digital Front Ends (DFEs)
3. Automatic Duplexing
4. TEC Requirements
5. OM Requirements
6. Recovery Time
7. Timeline of Next Steps

Introduction

- EPA thanks all stakeholders for participating in the specification revision
- EPA appreciates stakeholders' patience during the extended development of the Final Draft
  - Stakeholders raised important issues past the Draft 2 comment deadline
  - EPA hopes the Final Draft addressed the majority of these issues

Latest Activities

- June 29, 2012
  - Draft 2 Specification and Final Test Method published
- August 15, 2012
  - Draft 2 Specification Webinar
- December 5, 2012
  - Final Draft Specification published
- December 18, 2012
  - Final Draft Specification Webinar

Meeting Objectives

1. Discuss changes made in Final Draft based on stakeholder data and comments

2. Discuss timeline to finalization

No Changes from Draft 2

- Most Definitions
- Scope
- TEC Requirements for non-A3 products
- OM Requirements
  - OM base allowances
  - OM adder allowances
- Reduction in standby requirement to 0.5 watts

Summary of Changes in the Final Draft

- DFE Definitions
- Type 2 DFE OM performance levels
- Automatic Duplexing Requirements
- A3 paper width adder
- Reporting Recovery time
- Functional Adders
- Effective Date

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DFE Definition Changes

- Type 1 DFE Definition: Clarified that Type 1 DFEs sold with or as an option with an Imaging Equipment product at time of purchase must meet TEC_{DFE} requirements

- Auxiliary Processing Accelerator (APA): Provided a more general definition to replace GPU when used in the TEC_{DFE} requirements in Table 2
  - Based on Version 2.0 Computer Servers specification

Maximum TEC_{DFE} Requirements

- EPA has replaced GPU references in DFE category B with APAs.

- Based on stakeholder provided data, EPA has revised Type 2 TEC_{DFE} requirements using 80% power supply efficiency.

Maximum TEC_{DFE} Requirements

DFE Category	Category Description	Maximum TEC_{DFE} (kWh/week, rounded to the nearest 0.1 kWh/week for reporting)	
		Type 1 DFE	Type 2 DFE
A	All DFEs that do not meet the definition of Category B will be considered under Category A for ENERGY STAR qualification	10.9	~~9.2~~ 8.7
B	To qualify under Category B DFEs must have: 2 or more physical CPUs or 1 CPU and ≥ 1 discrete Auxiliary Processing Accelerators (APAs)	22.7	~~19.3~~ 18.2

Power Supply Efficiency

- Power consumed by DFEs that meet TEC_{DFE} requirements can be subtracted from that of imaging equipment product
- Stakeholders commented that for Type 2 DFE products, measured dc power cannot be subtracted from ac power without accounting for power supply loss

- EPA proposes the following based on stakeholder submitted data:
  - For TEC products, divide measured TEC_{DFE} by 0.80, using same efficiency assumption used in Table 2
  - For OM products, divide measured TEC_{DFE} by 0.60

Power Supply Efficiency in OM Products

- EPA received data from stakeholders showing that OM products sold with Type 2 DFEs require a different power supply efficiency assumption than TEC products
- When OM Sleep Mode testing is conducted, the Imaging Equipment product is in Sleep Mode while the DFE is in Ready mode, resulting in a low load on the power supply
  - Resulting power supply efficiency at low load is ~60%
  - This differs from the TEC_{DFE} testing conditions where the Imaging Equipment product must be in Ready Mode

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Automatic Duplexing

- EPA has reverted back to providing separate automatic duplexing requirements based on color and speed
  - Based on stakeholder feedback, EPA has increased stringency of requirements compared to Version 1.2

- EPA proposes to continue the allowance for ENERGY STAR labeled products to be sold without the duplex tray
  - Partner must make clear that product only fully qualifies for ENERGY STAR when used with duplexer tray

Automatic Duplexing

Color:

Monochrome Product Speed, *s*, as Calculated in the Test Method (ipm)	Automatic Duplexing Requirement
s ≤ 19	None
19 < *s* < ~~40~~ 35	Integral to the base product or optional accessory
S ≥ ~~40~~ *35*	Integral to the base product

Mono:

Monochrome Product Speed, *s*, as Calculated in the Test Method (ipm)	Automatic Duplexing Requirement
s ≤ ~~26~~ 24	None
~~26~~ 24 < *s* < ~~45~~ 37	Integral to the base product or optional accessory
s≥ ~~45~~ 37	Integral to the base product

- Red text shows revised requirement levels for Version 2.0 compared to the Version 1.2 levels in black
- Please note that the tables were mislabeled in Final Draft

Additional Considerations

- Section 3.3.1.i – Printers whose intended function is to print on special single-sided media for the purpose of single sided printing (examples given) are exempt from auto duplexing requirement.

- Section 3.3.1.ii – If a product is not bundled with an automatic duplex tray, the partner must make clear in all marketing material (web, literature, et al) that although the product meets the ENERGY STAR efficiency requirements, the product only qualifies for ENERGY STAR when bundled with or used with the duplexing tray.
  - 5/3/06 Clarification document under V1.0

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TEC Requirements – A3 vs. A4

- Several stakeholders commented that the reduction of TEC levels has disadvantaged A3 products
  - A3 products are those with a paper path width equal to or greater than 11 inches
  - They require a larger fuser which requires additional energy to warm
- Analysis shows that a 0.2 kWh/week adder for A3 products limits this disadvantage at slower speeds, while having no impact on qualification rates for higher speed products

A3 Adder Equation

- **Equation 6:**

$$TEC_{MAX} = TEC_{REQ} + Adder_{A3}$$

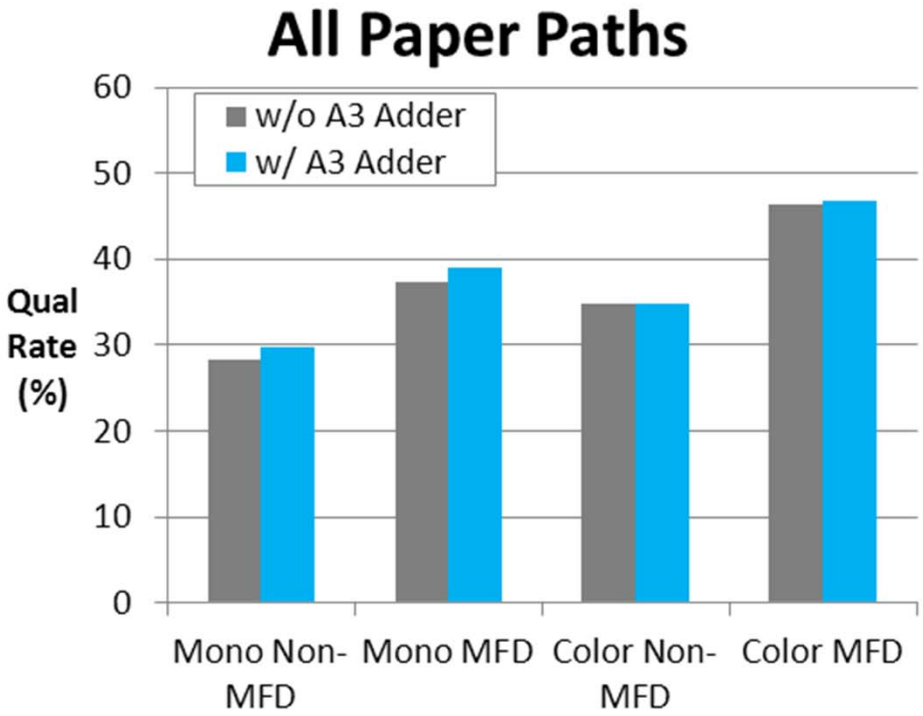
Where:

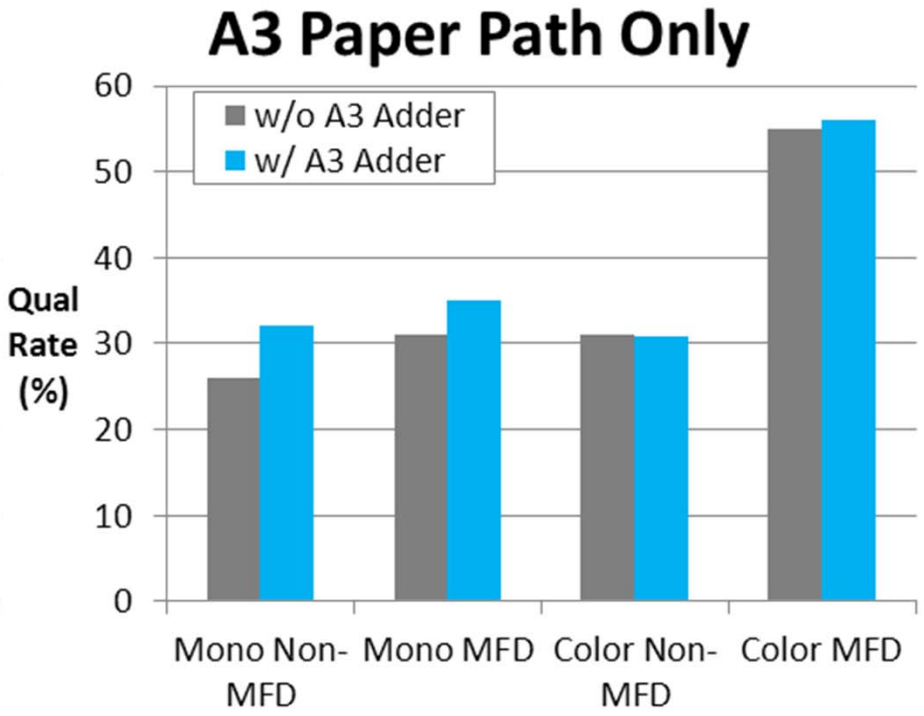
TEC_{MAX} is the maximum TEC requirement in kilowatt-hours per week (kWh/wk);

TECMAX is the TEC requirement specified in Table 5, in kWh; and

$Adder_{A3}$ is a 0.02 kWh/wk allowance provided for A3 products with a paper path width equal to or greater than 11 inches.

Impact of A3 Adder on Mono Non MFD





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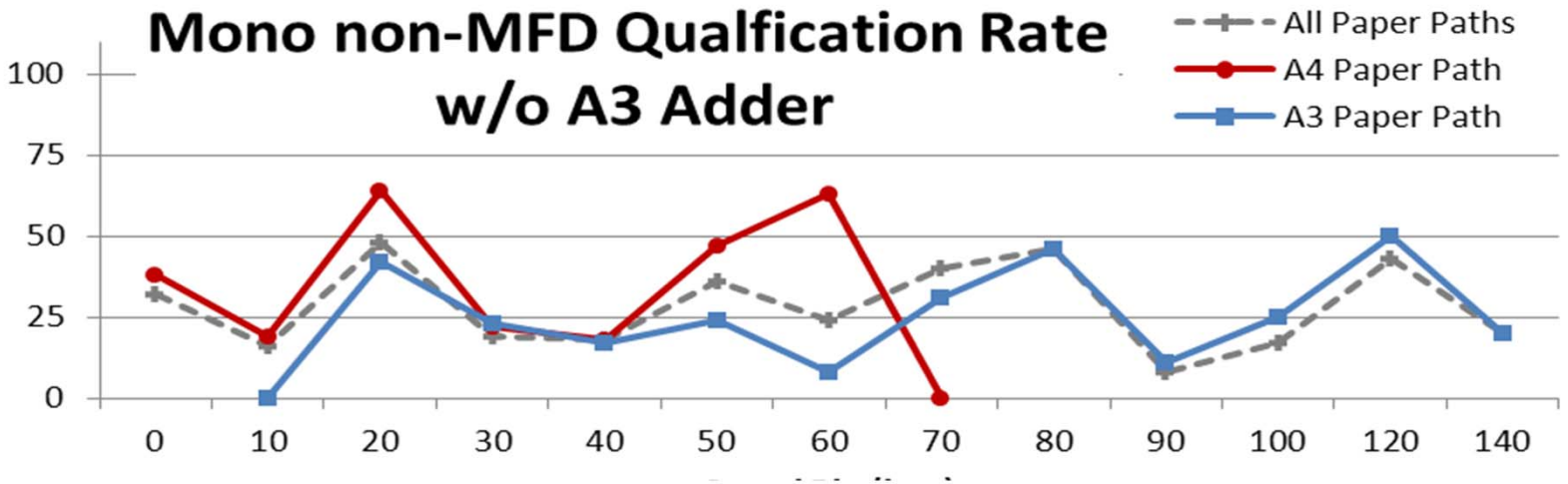
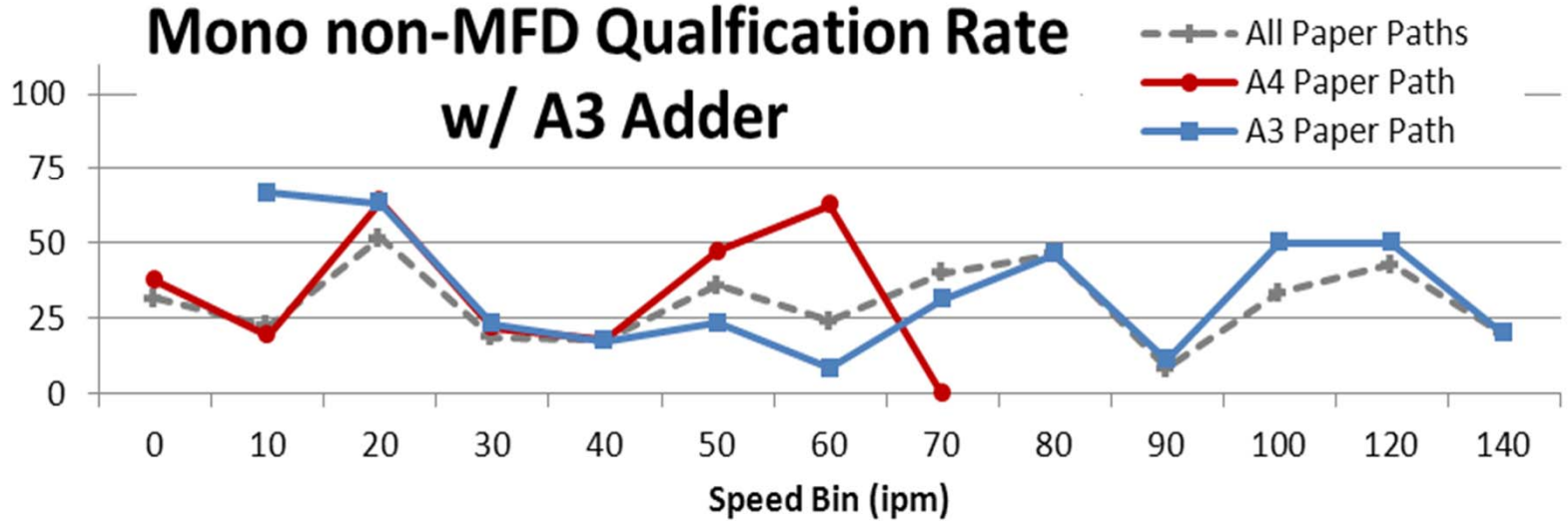
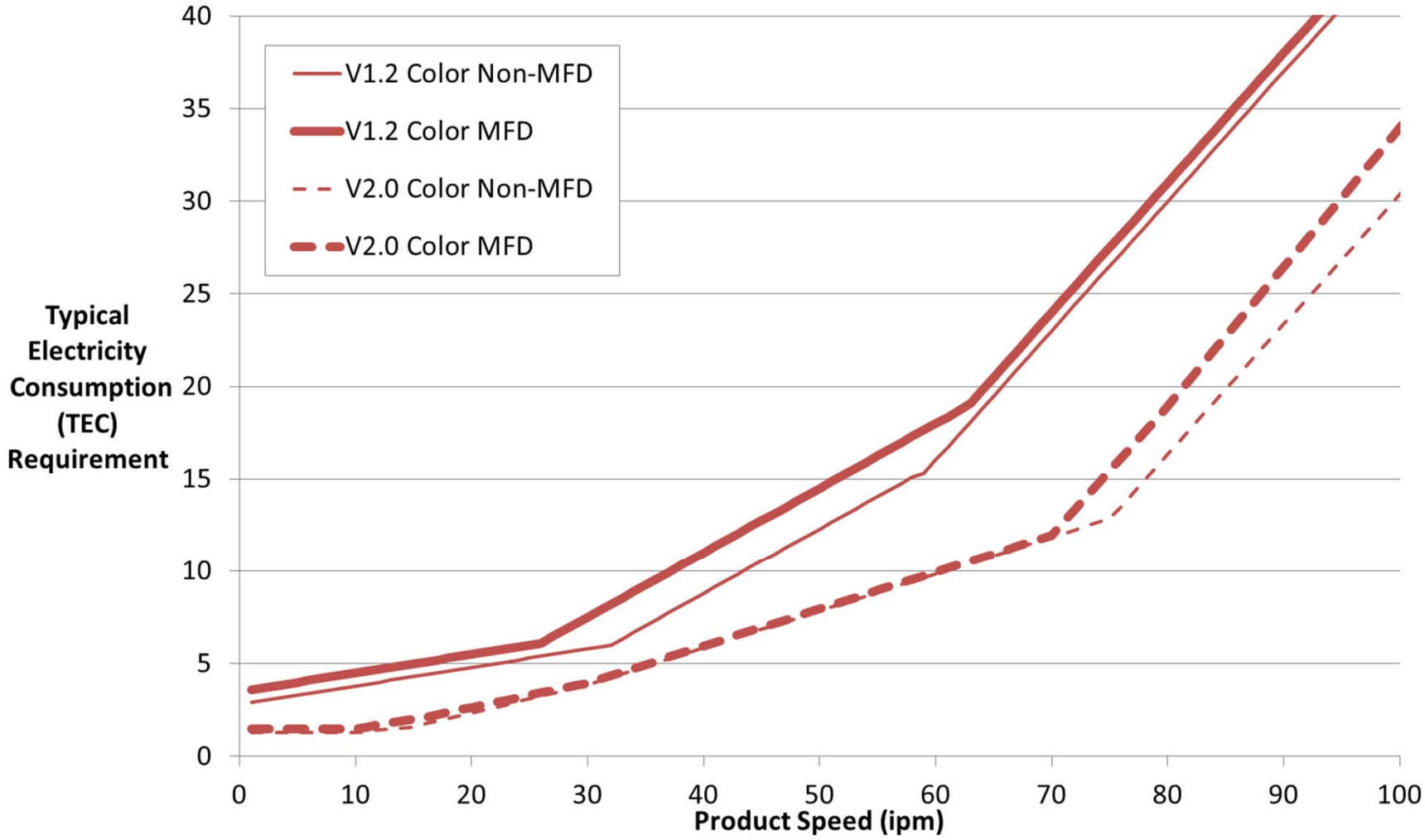




Comparison Between V1.2 and V2



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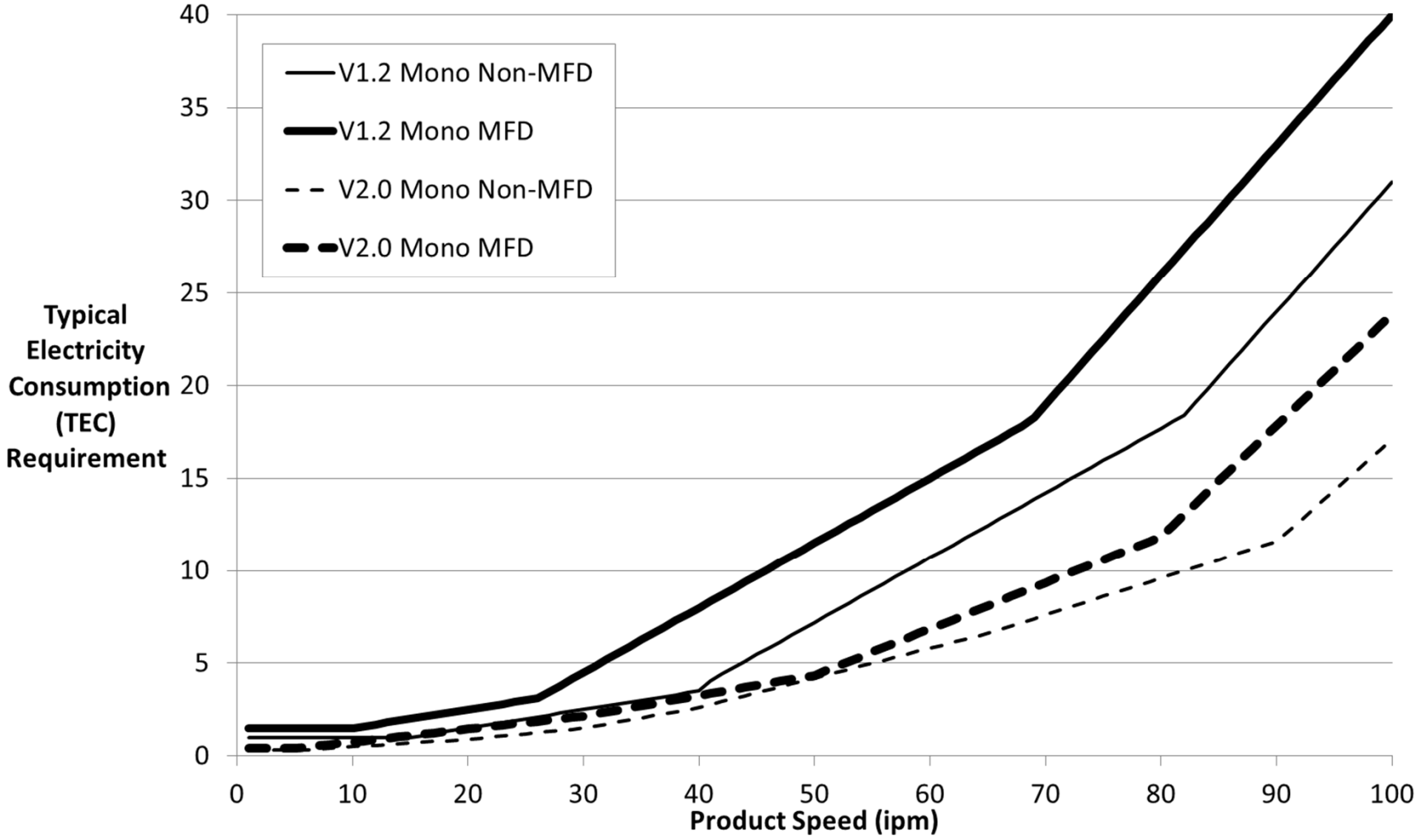
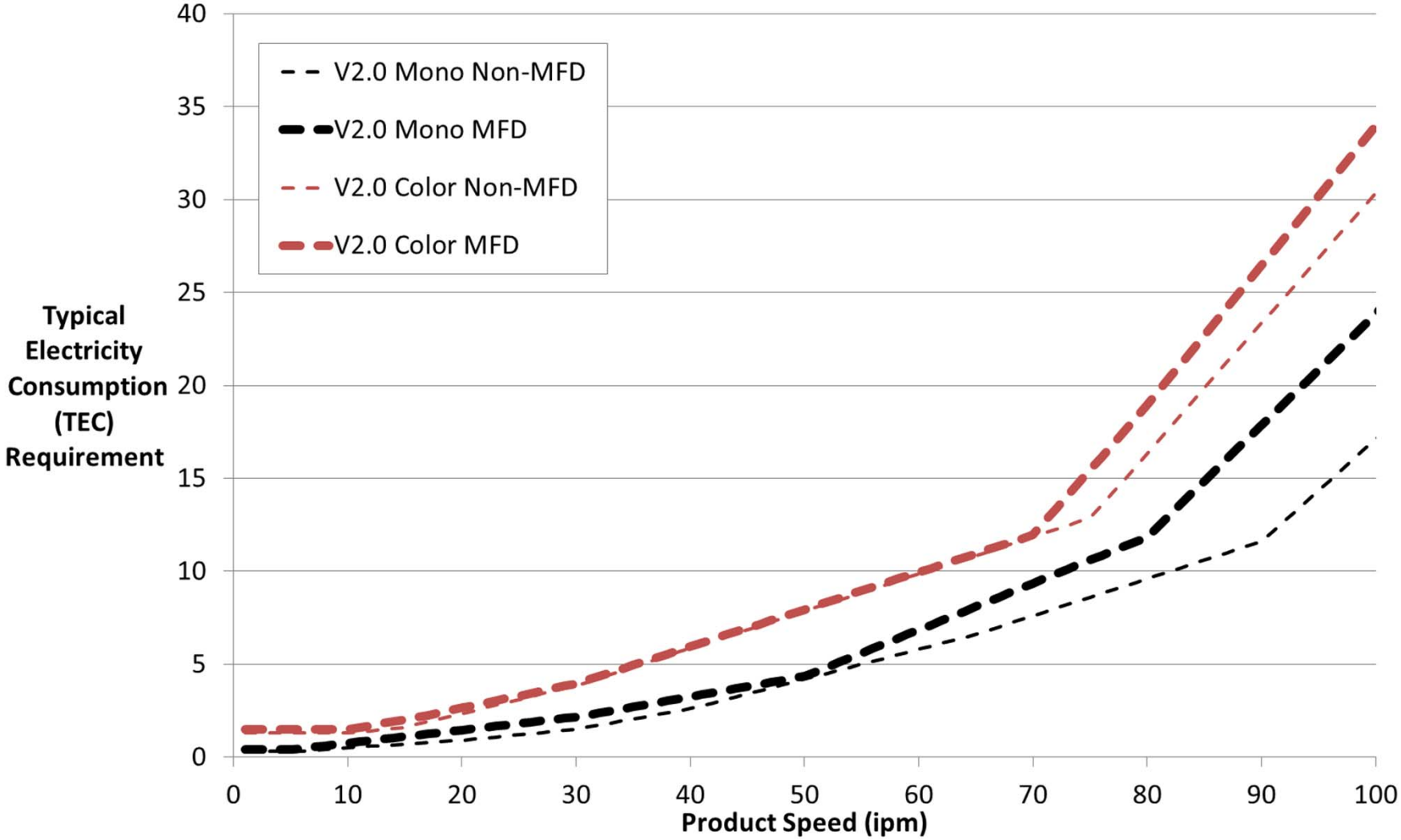


V2 TEC Requirements



TEC Qualification Rates

- Qualification rates for current Imaging Equipment market incorporating A3 adder

1 - Mono non-MFD ----------					2 - Mono MFD ----------					3 - Color non-MFD ----------					4 - Color MFD ----------				
Bin	Pass	Fail	Total	Pass%	Bin	Pass	Fail	Total	Pass%	Bin	Pass	Fail	Total	Pass%	Bin	Pass	Fail	Total	Pass%
0	21	65	86	24	0	43	61	104	41	0	24	36	60	40	0	29	46	75	39
20	81	147	228	36	20	175	271	446	39	20	52	123	175	30	20	125	169	294	43
40	41	126	167	25	40	68	150	218	31	40	21	44	65	32	40	99	70	169	**59**
60	14	31	45	31	60	22	29	51	43	60	6	9	15	40	60	33	37	70	47
80	13	30	43	30	80	33	22	55	**60**	80	11	1	12	**92**	80	0	4	4	0
Total	170	399	569	30		341	533	874	39		114	213	327	35		286	326	612	47

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Changes to OM Requirements

- No changes in base or adder levels from Draft 2
- Mailing machines eligible to receive power supply adder to accommodate higher-speed functionality
- The DFE requirements for OM products have been revised and will now factor in a 60% power supply efficiency when calculating Sleep Mode power for the Imaging Equipment product – as previously noted

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Recovery Time

- The current TEC qualified product dataset has 4 times reported for most models
  - Active 0 time: Time from when unit indicates it is in Ready Mode after turn on to first page
  - Active 1 time: Time from 1 hour of sleep mode to first page
  - Active 2 time: Time from 15 minutes after first job to first page of second job
  - Product recovery time from sleep as marketed

Reporting Recovery Time

- EPA is proposing to average of Active 0, 1, and 2 which is easy to understand and would discourage favoring any one mode.
- Example:

Active 0	Active 1	Active 2	Average
14.85 s	39.93 s	16.03 s	**23.60 s**

- Recovery Time is currently reported in the Imaging Equipment Qualified Product Exchange (QPX) template
  - EPA proposes to drop this reporting value on the QPL to avoid confusion

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Timeline

Stage	Date
Final Draft Published	December 5, 2012
Final Draft Webinar	December 18, 2012
Comments due	December 28, 2012
Final Spec	January 2013
Effective Date	October 1, 2013

Qualified Product Data Exchange

- XML-based qualified product exchange (QPX) system for CBs to submit information on products certified as ENERGY STAR via web services
- Update qualified product listings using real time data
- XML submission services will be phased in for all product categories - Not a new requirement (OPS, et al) and currently in place for V1.2 – just a update to reflect changes in V2
- EPA will be posting V2 Imaging draft data requirements for a limited testing period
- EPA encourages stakeholders to review and share their input on the draft data requirements

Written Comments

- Thank you to everyone for your helpful feedback on the Draft 2 specification.
- In addition to making verbal comments during today's call, stakeholders are encouraged to submit written comments to imagingequipment@energystar.gov

Comment Deadline

Contact Information

For questions related to specification development, qualification and other topics please contact

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For questions related to Imaging Equipment test method

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Thank you

- I would like to thank the Imaging Equipment specification development team who provided tremendous input and advice throughout this 21 month process
  - Matt Malinowski, ICF International
  - John Clinger, ICF International
  - Bruce Nordman, LBNL
  - Thomas Bolioli, Terra Novum, LLC

  - And of course to all of the stakeholders engaged throughout this process

Thank You!