Draft 2 Version 6.0 ENERGY STAR Displays Specification Stakeholder Meeting

September 27, 2011

US Environmental Protection Agency

ENERGY STAR Program

EPA

Learn more at energystar.gov

Welcome & Introductions

Meeting Agenda

Time	Topic
9:30 a.m.	Welcome & Introductions
9:45 a.m.	Changes to the Test Method
10:45 a.m.	Definitions and Scope
11:30 a.m.	Power Management
12:00 p.m.	Lunch
1:00 p.m.	On Mode Power
2:15 p.m.	Sleep and Off Mode Power
2:45 p.m.	Break
3:00 p.m.	Emerging Display Technologies
3:15 p.m.	Non-energy Requirements
4:00 p.m.	Wrap-up
4:30 p.m.	Meeting adjourned

- Focus:
  - Clarifications in Test Method: Test Luminance, Network Connectivity.
  - Definitions and Scope.
  - Proposed On Mode Power Equations, discussion of resolution.
  - Partner Commitments and non-energy requirements.
  - *For Discussion in subsequent revision*: Automatic Brightness Control (ABC).

ENERGY STAR

- ENERGY STAR is the government-backed national symbol for energy efficiency
  - Started in 1992
  - Identifies products in almost 60 categories that use less energy without sacrificing quality or performance.

- For office equipment, specifications (new and revised) are developed jointly between the US EPA and European Commission.

- GOAL: Reduce greenhouse gas emissions through large win-win-win opportunities with today's energy efficient technologies and practices.

EPA

2011 Program Priorities

- Addressing new challenges and opportunities
  - Third-party certification across all product types
  - Verification program

- Maintaining strong brand is priority
  - More frequent reviews / updates to ENERGY STAR criteria
    - Consumer electronics will be reviewed/updated about every 2 years, including the use of out-year criteria that anticipate improved efficiency based on market trends

- Rolling out Most Efficient for select product categories
- Engage with consumers via social media campaigns
- Reinforce international partnerships

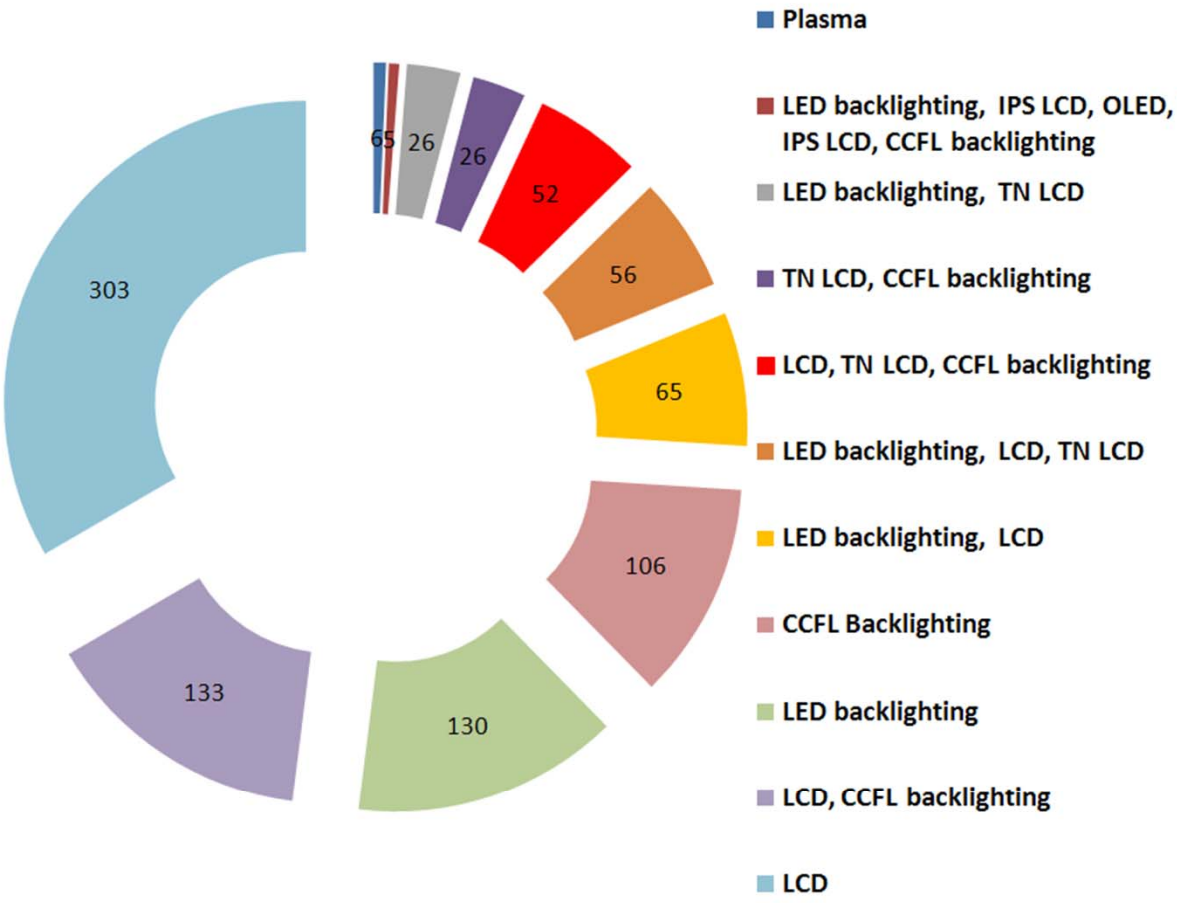
European Union Introduction

Jan Viegand - Technical Consultant to the European Commission, jv@vmas.dk

ENERGY STAR Agreement US - EU

- Agreement US Government – European Union on office equipment (2000, 2006).
  - Computers, displays, imaging equipment, servers, storage, UPS, SNE.
- New and revised specifications developed and approved in collaboration US EPA and EC.
- ENERGY STAR and ecodesign complementary.
- ENERGY STAR procurement requirement EC & central governments.
- EU registration for EU manufacturers.
- Product lists etc.: www.eu-energystar.org
- Prolongation new 5 years period ongoing.

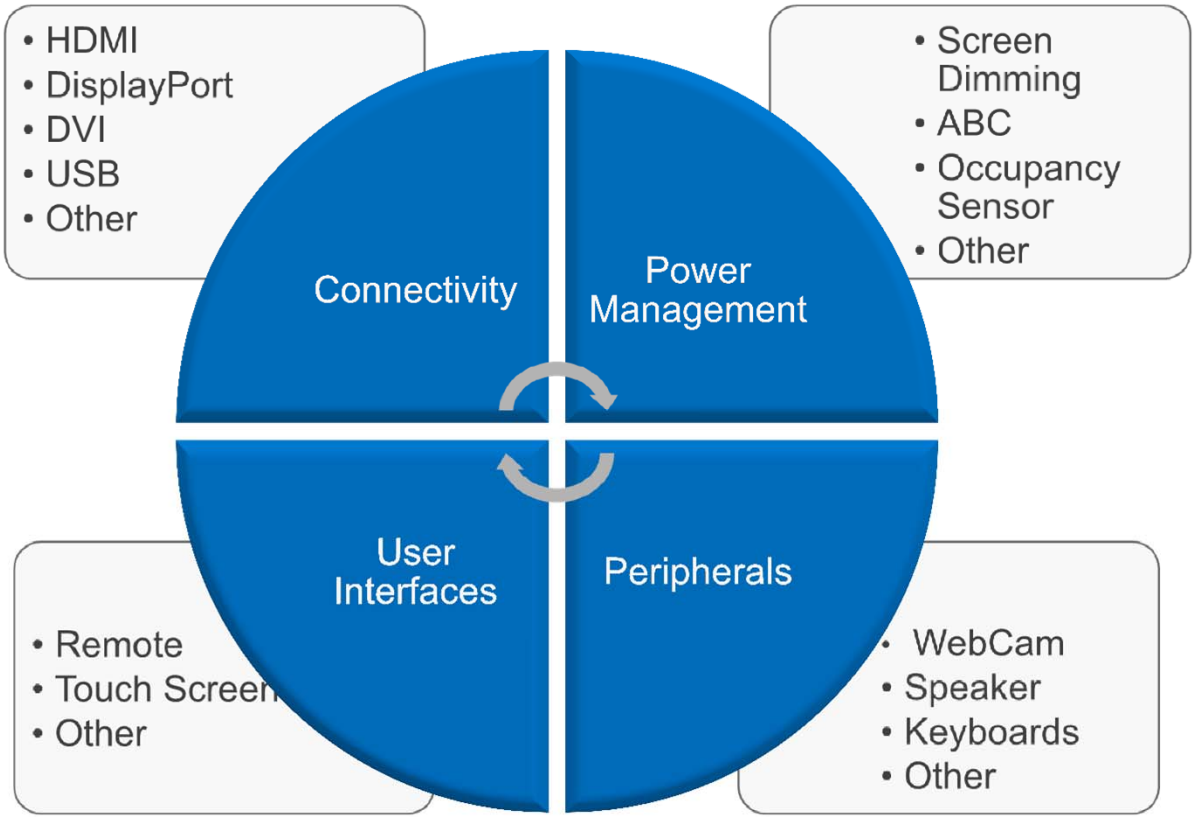
ENERGY STAR Qualified Display Technology



Backlighting

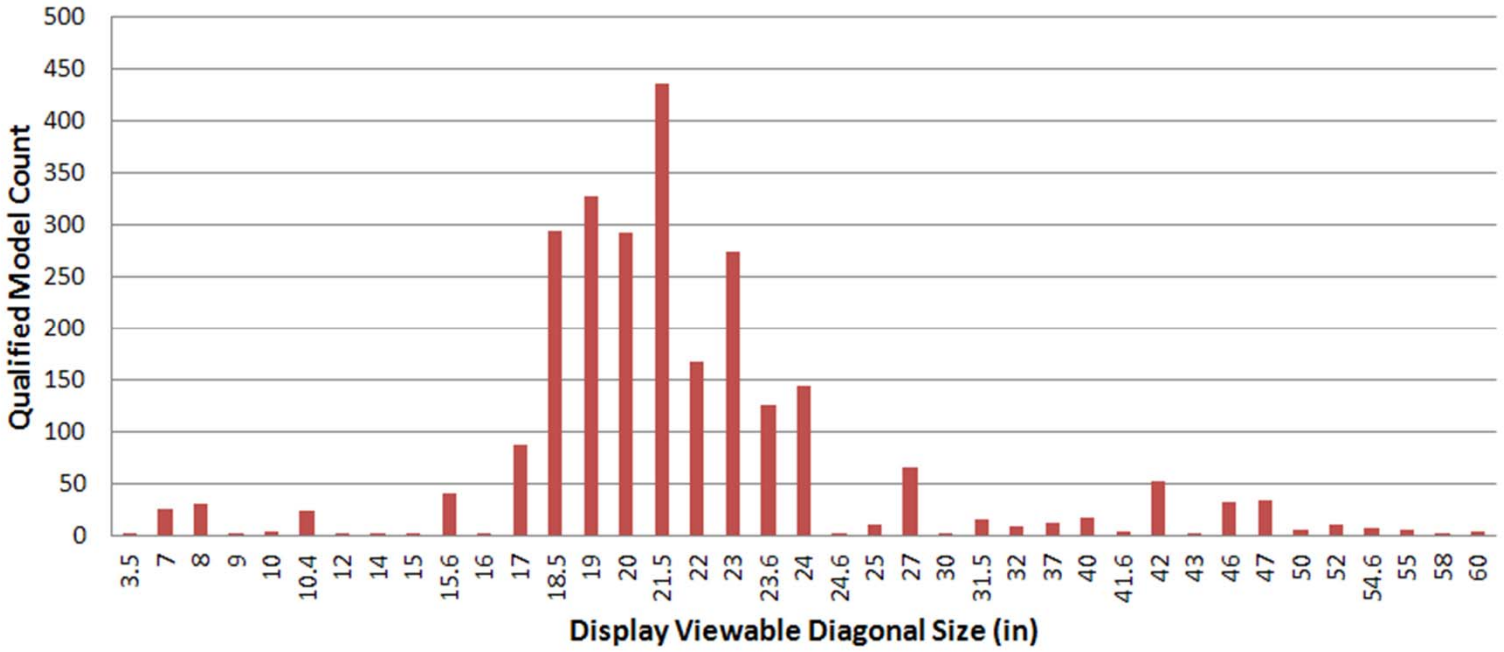
- 31% LED backlighting
- 35% CCFL backlighting
- 34% No backlighting categorization

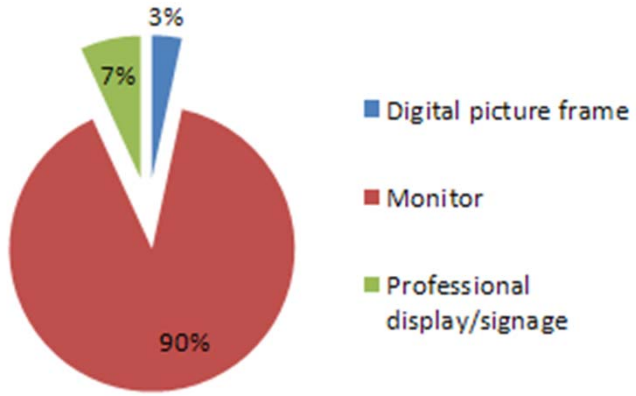
Display Product Complexity



Displays are evolving into highly integrated and complex products. Testing issues and power allowances will be addressed and evaluated during the specification revision

Qualified Product List





- 54 partners qualified over 2,500 models

Displays Version 6.0 Specification Revision History to Date

- Launch December 2010
- Framework Document: Resolution, Luminance discussion
- Draft 1 Released June 3, 2011; webinar for clarifications to test method June 23.
  - Test Method proposed revisions: IEC 62087 to apply to displays <30”, Network Connectivity.
  - Data assembly for displays <30”
  - Partner Commitment: F-GHG reductions
  - Comments and data submitted by July 18, 2011.

Version 6.0 Anticipated Timeline Going Forward

- Draft 2 Comments Due October 14, 2011.
- Draft 3 released late October/early November 2011.
- Draft Final released mid-December.
- Specification finalized end of December, and becomes effective end of September 2012.

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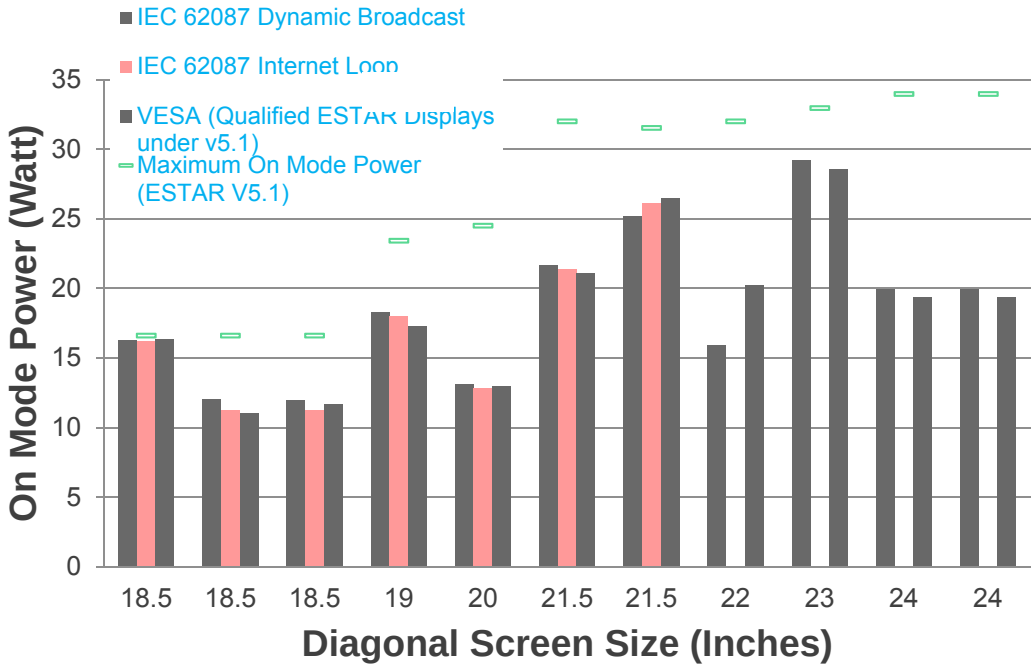
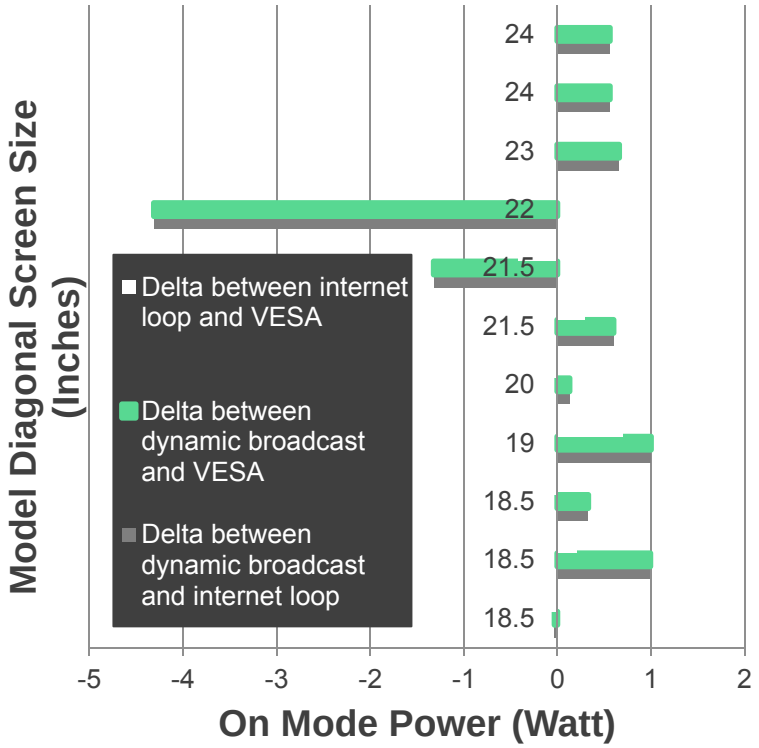
Changes to the Test Method

IEC 62087

Stakeholder Comment	ENERGY STAR Response
Several stakeholders supported the use of IEC 62087. One stakeholder commented that the IEC 62087 is not an adequate reproducible method for power consumption measurement and that the current VESA standard should be kept. Another stakeholder recommended that the Dynamic Broadcast Content Video Signal Test in section 11.6 of IEC 62087 should be used in both On Mode testing sections 8.2.B and 8.3.A of the Displays Test Method.	EPA intends for displays of all sizes to be tested using the IEC 62087 Dynamic Broadcast Content video signal. For displays that are not able to play the Dynamic Broadcast Content, EPA proposes testing them with the IEC 62087 three-bar static signal. EPA welcomes stakeholder feedback on any displays, such as digital picture frames, which may not be tested using either the IEC 62087 Dynamic Broadcast Content video signal or the IEC 62087 three-bar static signal.

On Mode Power Comparison Between IEC 62087 and VESA





- With the exception of one monitor, the majority of displays reported a delta of less than 1W between displays tested with IEC 62087 dynamic broadcast content and VESA.
- The delta between the dynamic broadcast and internet loop is 0.28W, on average.

Feedback?

- Do any displays products exist for which it would be difficult to use the IEC test method?
  - Digital picture frames: static image for products that are not able to play dynamic images. Is test loop accessible via USB?

Luminance

Stakeholder Comment	ENERGY STAR Response
One stakeholder commented that the 500 mm requirement for measuring luminance is not enough and should be coupled with requiring a measured area of 200 or 500 pixels. Another stakeholder suggested mentioning only pixels and avoiding distance requirements.	Due to the redundancy and inconsistency in recommending the LMD to be placed at a certain distance from the screen or covering a set pixel area, EPA has clarified the recommendation to measure an area of at least 500 pixels.

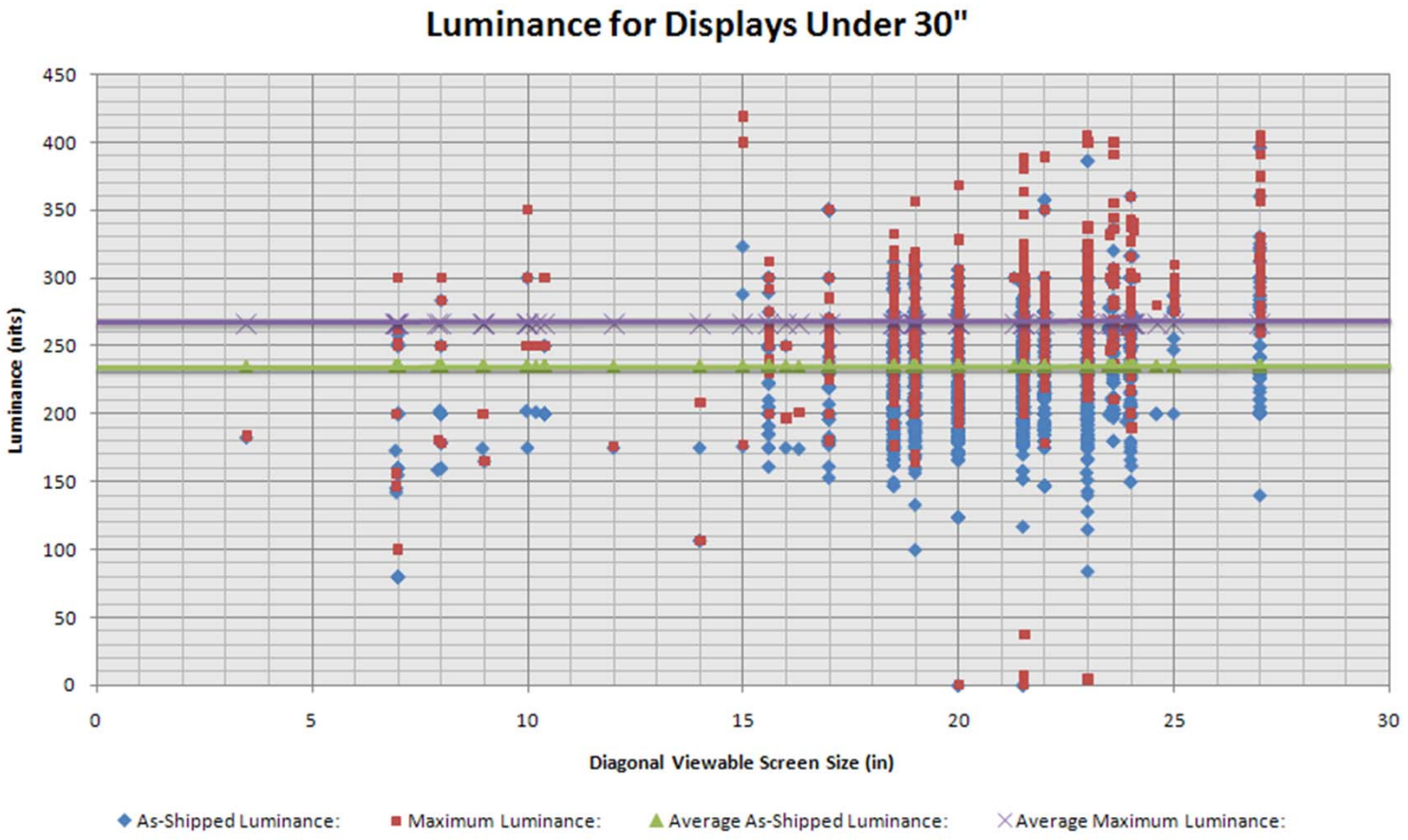
- Feedback:
  - Are there any issues with specifying only the pixel area for the luminance measurements?

Proposed Default Test Luminance

- Testing:
  - Displays < 30”: 200 cd/m^2 (nits)
  - Displays 30”-60”: at least 65% of maximum luminance

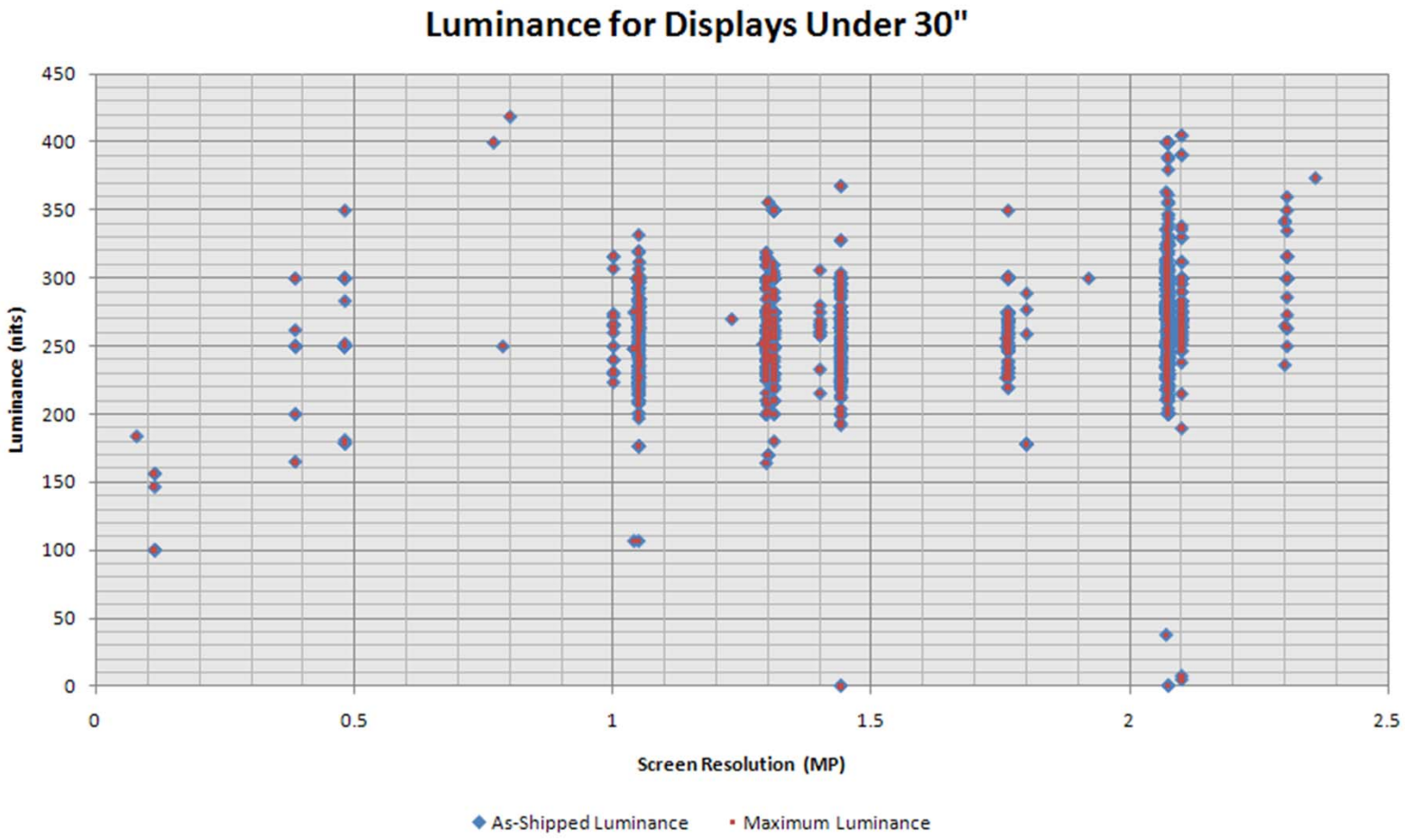
- Specification:
  - Also report as-shipped luminance and maximum luminance

Luminance for Displays Less Than 30”



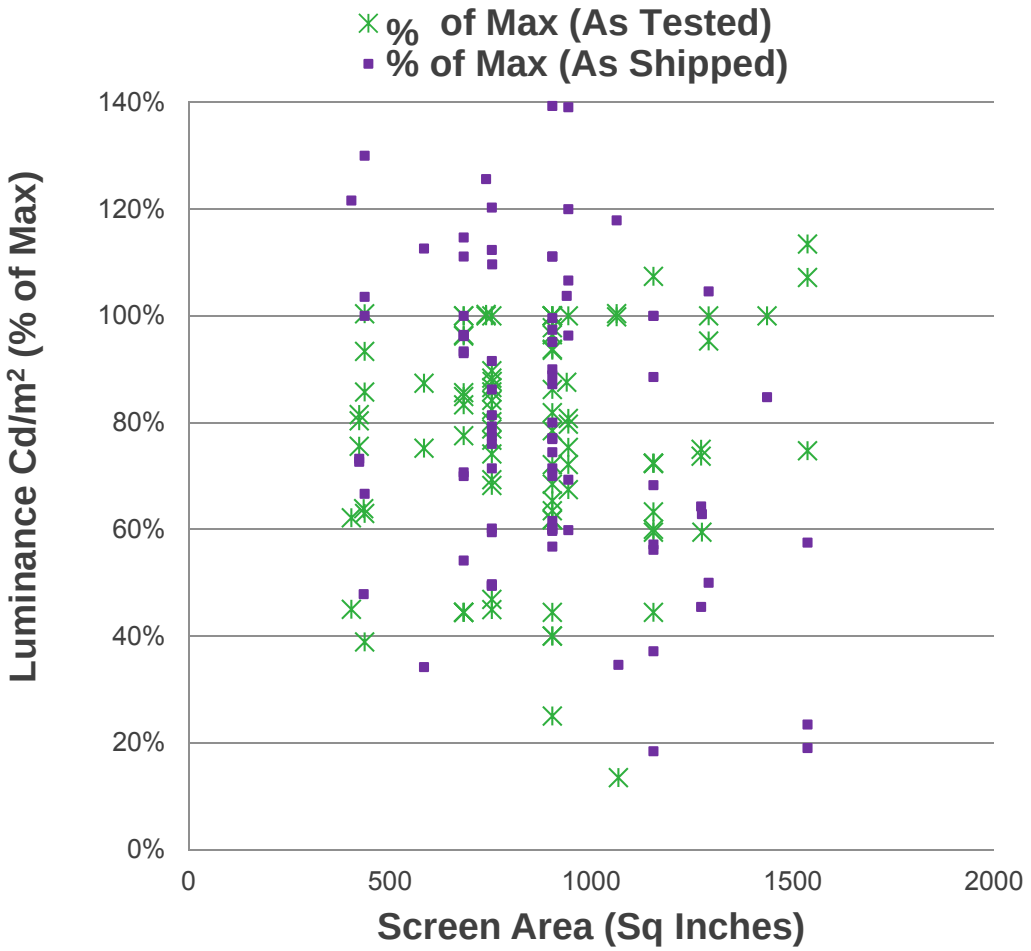
- Average as-shipped luminance is 235 nits
- Average maximum luminance is 266 nits

Displays Less than 30”: Luminance and Resolution



- There is no significant difference in luminance values for different resolutions.

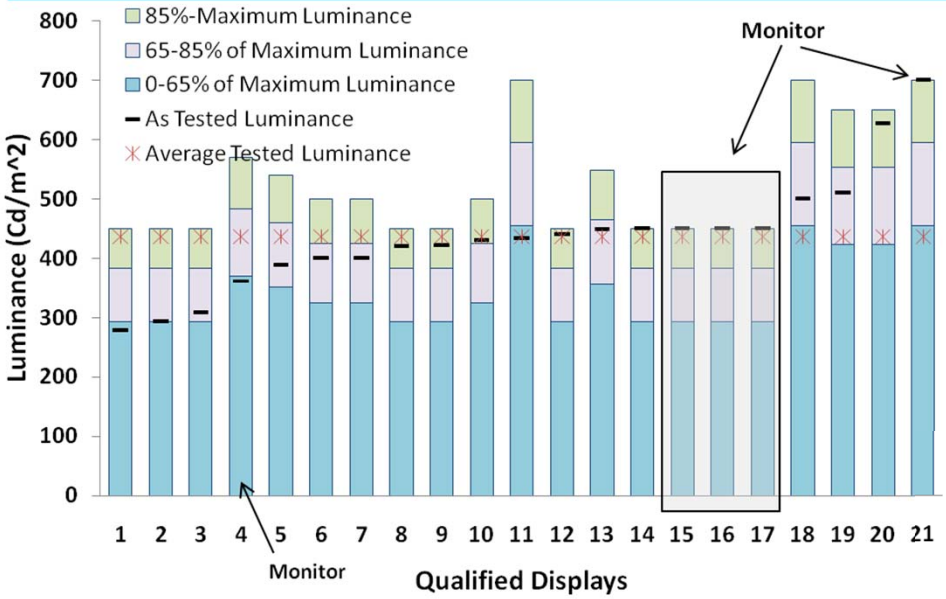
Version 5.1 Luminance Values for Qualified Displays with Diagonal Screen Size 30”-60”



- EPA currently requires Partners to test their products at a default luminance and report these luminance levels.
- Approximately 45% of displays shipped with a luminance greater than the tested luminance*.
- Some partners reported maximum luminance values lower than the as shipped or as tested luminance.

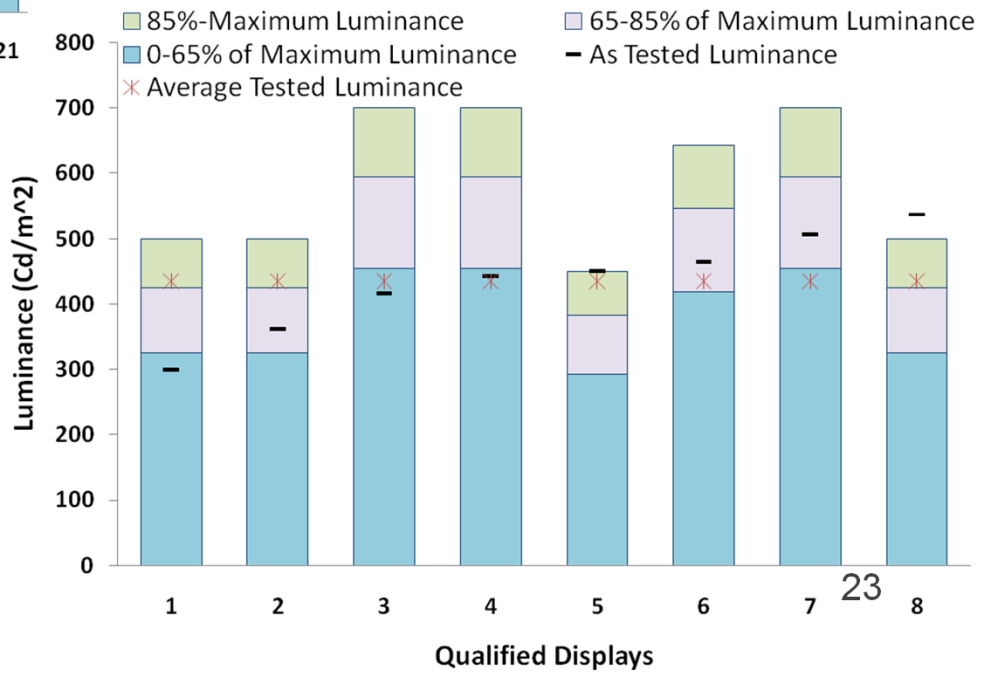
*Analysis is based on the 1,147 display models that qualified for the ENERGY STAR Display Specification as of March 2011, which are listed on the ENERGY STAR Qualified Product List.

Examples: Displays 30”-60”



46” Displays

52” Displays



Data/Network Connections

Stakeholder Comment	ENERGY STAR Response
Many stakeholders confirmed the growing trend of networking features in displays and suggested providing an additional power allowance to accommodate qualification of these features. One stakeholder commented that USB hubs will still consume power in Sleep Mode, even if no ports are connected. One stakeholder commented that no power adder is needed for On Mode power and there should be no adder for multiple ports. Another stakeholder provided a specific comment about clarifying that usually a bridge connection is not made via WiFi so a WiFi access point should be specified in the description.	EPA proposes that manufacturers engage the USB/Firewire/Thunderbolt hub controller (or similar) in the display when testing for ENERGY STAR qualification to reflect a more accurate depiction of the state of hardware when operated by the end user. The requirements for data and network connections during testing have been revised to provide more guidance across various types of connections. EPA seeks additional data and feedback pertaining to the power consumption associated with peripherals' (e.g., data or network hubs, speakers, mice) connection to displays during Sleep Mode testing.

Test Method Clarifications

C. Low-voltage Dc Input Power:

1) Products may be powered with a low-voltage dc source (e.g., via network or data connection) only if the dc source is the only available source of power for the product (e.g., no ac plug or EPS is available).

2) Products powered by low-voltage dc shall be configured with an ac source of the dc power for testing (e.g., an ac-powered USB hub).

3) Power for the unit under test (UUT) shall include the following, as measured per Section 6 of this method:

   i) Ac power consumption of the low-voltage dc source with the UUT as the load (P_L).

   ii) Ac power consumption of the low-voltage dc source with no load (P_S).

Note: The test method and qualification criteria have been clarified to delineate guidance for testing products powered by a low-voltage dc source, and for determining the On Mode Power for these products.

Test Method Clarifications (cont'd)

A. Power measurements:

1) Power measurements shall be taken from a point between the power source and the UUT.

2) Power measurements shall be recorded in watts as directly measured (unrounded) values.

Note: To ensure accurate power measurements and consistency with the eligibility criteria, EPA proposes unrounded power measurements be recorded.

3) Power measurements shall be recorded after instrument readings are stable to within 1% over a five minute period.

F. True Power Factor: Partners shall indicate the true power factor of their displays during On Mode measurement.

Note: Stakeholders did not express concern over measuring true power factor during On Mode testing. EPA therefore proposes to retain this measurement requirement to expand its dataset.

Test Method Clarifications (cont'd)

2) Signal Interface: Displays that offer both an analog and a digital interface shall be tested with the digital interface.

   i. Connect the UUT to a PC, network or other input source signal via the following precedence rules.

   ii. If the UUT has multiple digital interfaces, the UUT shall be tested with the first available interface from the list below:

      (1) Thunderbolt.

      (2) DisplayPort.

      (3) HDMI.

      (4) DVI.

   iii. If the UUT has only analog interfaces, analog component should take precedence over analog composite.

Note: Stakeholders commented that analog component more accurately represents real-world use and should take precedence over analog composite. EPA therefore proposes the use of analog component over analog composite for products with only analog interfaces.

Additional Feedback

- Questions or suggestions regarding data/ network connections?

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Definitions and Scope

Display Type Definitions

A) Product Types:

1) Electronic Display (Display): A commercially-available product with a display screen and associated electronics, often encased in a single housing, that as its primary function displays visual information from (1) a computer, workstation or server via one or more inputs (e.g., VGA, DVI, HDMI, Display Port, IEEE 1394), (2) external storage (e.g., USB flash drive, memory card), or (3) a network connection.

   a) Computer Monitor: A device that displays a computer's user interface and open programs, allowing the user to interact with the computer, typically using a keyboard and mouse.

   b) Digital Picture Frame: An electronic device whose primary function is to display digital images. It may also feature a programmable timer, occupancy sensor, audio, video, or bluetooth or wireless connectivity, for example.

   c) Signage Display: An electronic device with a display screen that is typically marketed as signage for use in retail and department stores, restaurants, museums, hotels, outdoor venues, airports, conference rooms and education markets.

Note: EPA welcomes stakeholder feedback on a definition of signage displays based on the technical characteristics, such as pixel size (e.g., number of pixels per square inch), of these products instead of how they are marketed, as is currently included.

Sleep Mode Definition

2) Sleep Mode: The power mode that the product enters automatically after indication from a data or network connection, or as determined by the product itself, while it is connected to a mains power source, is not producing sound or picture, and is not transmitting or receiving program information and/or data. The product can switch to On Mode from this mode in response to data or network connections, sensors, or user interface devices. While in Sleep Mode, the product offers one or more of the following user-oriented or protective functions, which may persist for an indefinite time:

   a) facilitating the activation or deactivation of other modes (including On Mode) via an occupancy sensor, remote control, or internal timer;

   b) continuous function: information or status displays including clocks; or,

   c) continuous function: sensor-based functions.

Stakeholder Comment	ENERGY STAR Response
One stakeholder mentioned that the definition of input signals in sleep mode is not clear.	EPA has further clarified the definition for input signals in sleep mode.

Luminance Definitions

D) Luminance: The photometric measure of the luminous intensity per unit area of light travelling in a given direction, expressed in units of candelas per square meter (cd/m^2).

1) Maximum Luminance: The preset setting in which the display is displaying the brightest On Mode conditions, as specified by the manufacturer, for example, in the user manual.

2) As-shipped Luminance: The factory default preset setting which is selected by the manufacturer for normal home or applicable market use.

Stakeholder Comment	ENERGY STAR Response
Several stakeholders noted that the maximum luminance varies from unit to unit depending on many factors such as “white point" and “color temperature”. Another stakeholder commented that the definition for "as-shipped luminance" should correspond to factory default settings and not to what is recommended by the manufacturer.	EPA has clarified the definition of as-shipped luminance, to indicate factory default preset settings, and the definition of maximum luminance, to indicate the luminance level specified by the manufacturer.

Product Family

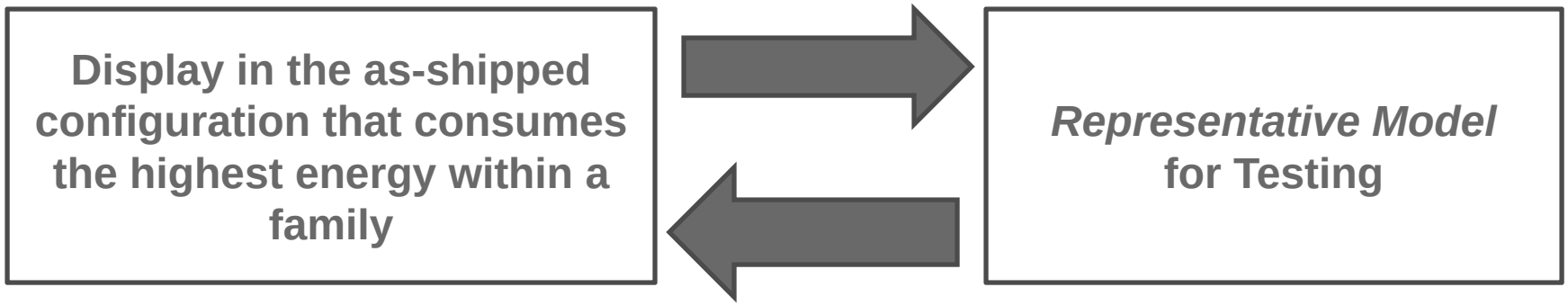
G) Product Family: A high-level description referring to a group of displays, made by the same manufacturer, typically sharing one common basic design that often contains variations in hardware configurations.

H) Representative Model: The product configuration equivalent to that which is intended to be marketed and labeled as ENERGY STAR.

Stakeholder Comment	ENERGY STAR Response
One stakeholder suggested making the product family definition more flexible by listing more possible differences between models within a family. Another stakeholder asked to preclude models with customized special configurations as being Representative Models within a family.	To increase flexibility with the product family definition, EPA has adopted the definition of 'Representative Model' to clarify the definition of family and to avoid additional testing burden and its associated cost. EPA has not precluded customized displays from being placed within the same family.

Product Family and Representative Model for Testing

- To clarify the constitution of a product family, EPA is proposing for the highest energy-consuming configuration within the family to be considered the Representative Model for testing.



EPA welcomes stakeholder input pertaining to situations where the proposed clarification is not applicable and might not provide accurate information to the consumer.

Scope of Products

- Currently includes ultra-thin clients (zero clients) (Thin clients are covered under the computers specification). How are ultra-thin clients different from displays with network connectivity?
- Excludes tablet computers.
- Excludes displays covered by ENERGY STAR Televisions specifications.
- Excludes some medical displays.
- Excludes displays larger than 60”.

Medical Displays

- Displays used in medical applications
  - Based on research and stakeholder feedback, displays used in medical applications were found to carry a range of different features.
  - To promote efficiency without harming performance, only products used in diagnostic medical applications that have power management capabilities and a power state meeting the definition of Sleep Mode are included in the scope of this specification.
  - Further, only products that do not need to meet FDA's specifications for medical devices (i.e., requiring lifetime luminance maintenance and prohibiting power management) are eligible for qualification under this specification.

Displays Larger Than 60”

- Displays with a diagonal screen size greater than 60”
  - Currently, EPA has limited data on the power consumption for displays greater than 60” and is therefore unable to include them in the scope of this specification.
  - EPA welcomes additional data that would enable EPA to consider expanding the scope of this specification to displays greater than 60.”

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Power Management

Automatic Brightness Control (ABC) Update

- EPA and the U.S. Department of Energy (DOE) are interested in improving the measurement associated with ABC enabled by default.
- Both EPA and DOE believe that the test conditions for room illuminance should be representative of consumer use.
- EPA intends to adopt the DOE test procedure for all overlapping products once it is finalized and is referencing the DOE recommendations for testing televisions to harmonize with the Version 6.0 draft specification for Televisions.
- EPA anticipates including a revised proposal for addressing ABC in a subsequent draft of this Displays specification later this Fall.

Other Opportunities

- Screen Dimming
  - Display dims the screen to a fraction of the brightness after a period of non-use.
  - EPA would like to incentivize screen dimming and seeks stakeholder input.

- Default Delay Time to Sleep
  - Display enters Sleep Mode, independently of the host, after a default period of time.
  - EPA seeks stakeholder feedback on appropriate delay times.

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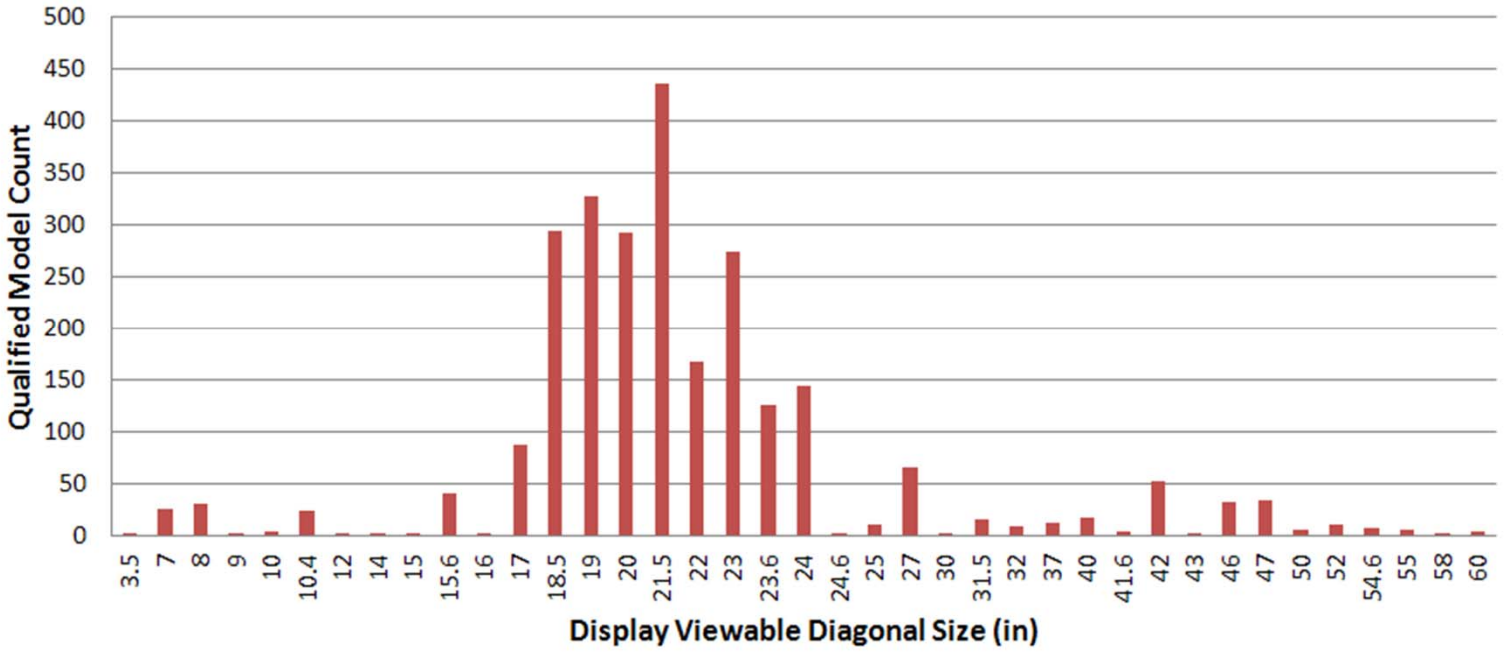
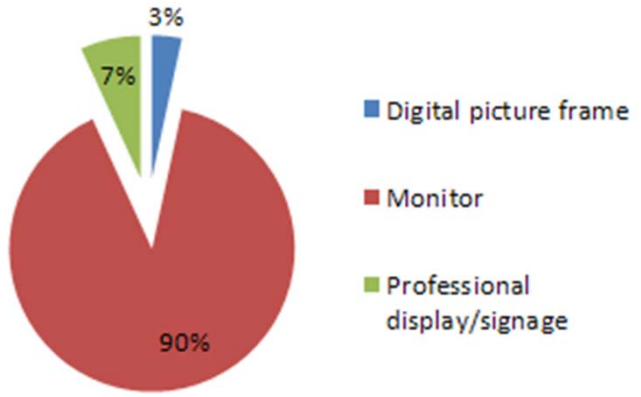
On Mode Power

Qualified Product List





- 54 partners qualified over 2,500 models

On Mode Levels: EPA Dataset

- Dataset used: more than 2,100 ENERGY STAR qualified products and ~500 non-qualified products.
  - 2,100 models represent models sold in the US and Canada. Total 2,500 models in the qualified product list include additional child models and displays not sold in the U.S. and Canada and were therefore not used in the analysis.
- Represents the majority of available models on the market.
- Includes 80+ digital picture frames, more than 1900+ computer monitors, and 200+ professional signage products.

On Mode Power

- Resolution discussion
  - EU and EPA presentations

- On Mode Power Levels for displays all sizes.

Resolution & On Mode Power – V 5.1

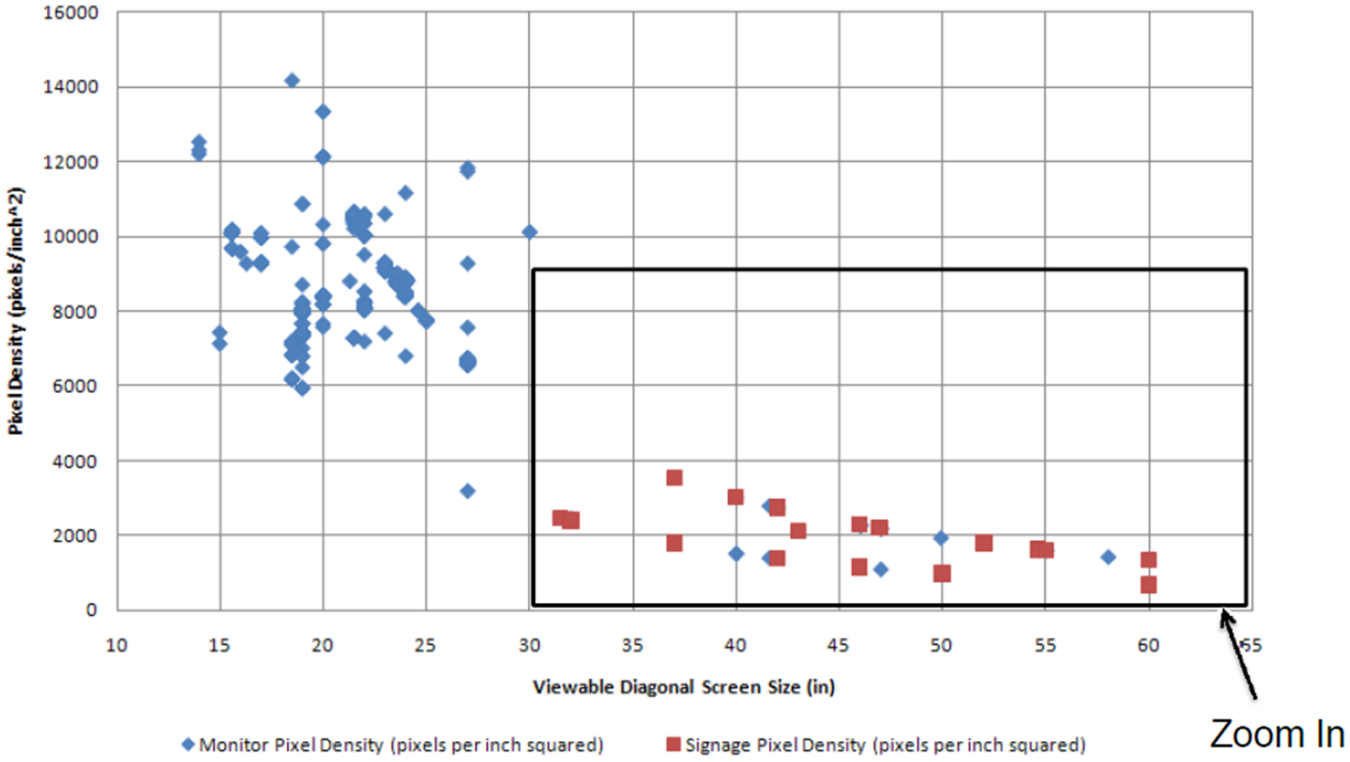
- Version 5.1 added resolution to the equation for On Mode power for displays < 30”
  - Display power consumption is a function of both resolution and screen area.
  - This methodology allowed ENERGY STAR to address
    - Power consumption of models with the same resolution but different viewable screen sizes
    - Power consumption of models with the same viewable screen sizes but different resolutions

Re-examining Resolution

- Upon re-examining its dataset, EPA has determined the following:
  - Professional signage have common resolutions, similar to TVs. The majority of Displays (like TVs) are 1080.
  - For displays < 30", resolution can vary widely. For these displays, namely computer monitors, resolution accounts for a greater share than area for the great majority of monitors.

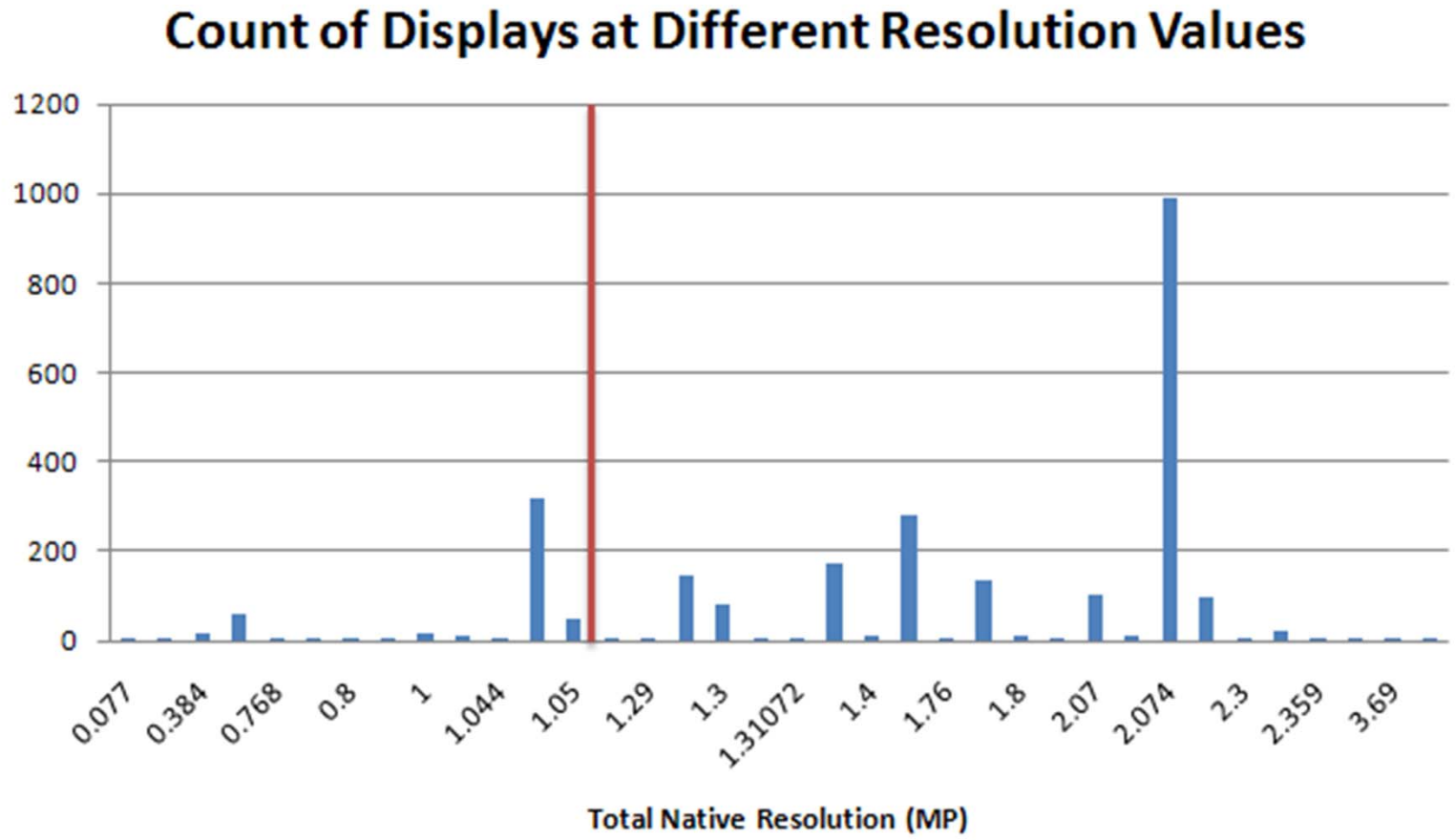
Resolution is More Uniform for Displays >30”

Pixel Density Across All Sizes



- Pixel density is much higher for monitors under 30”

Resolution of ENERGY STAR Qualified Displays <30”



1.1 MP lii

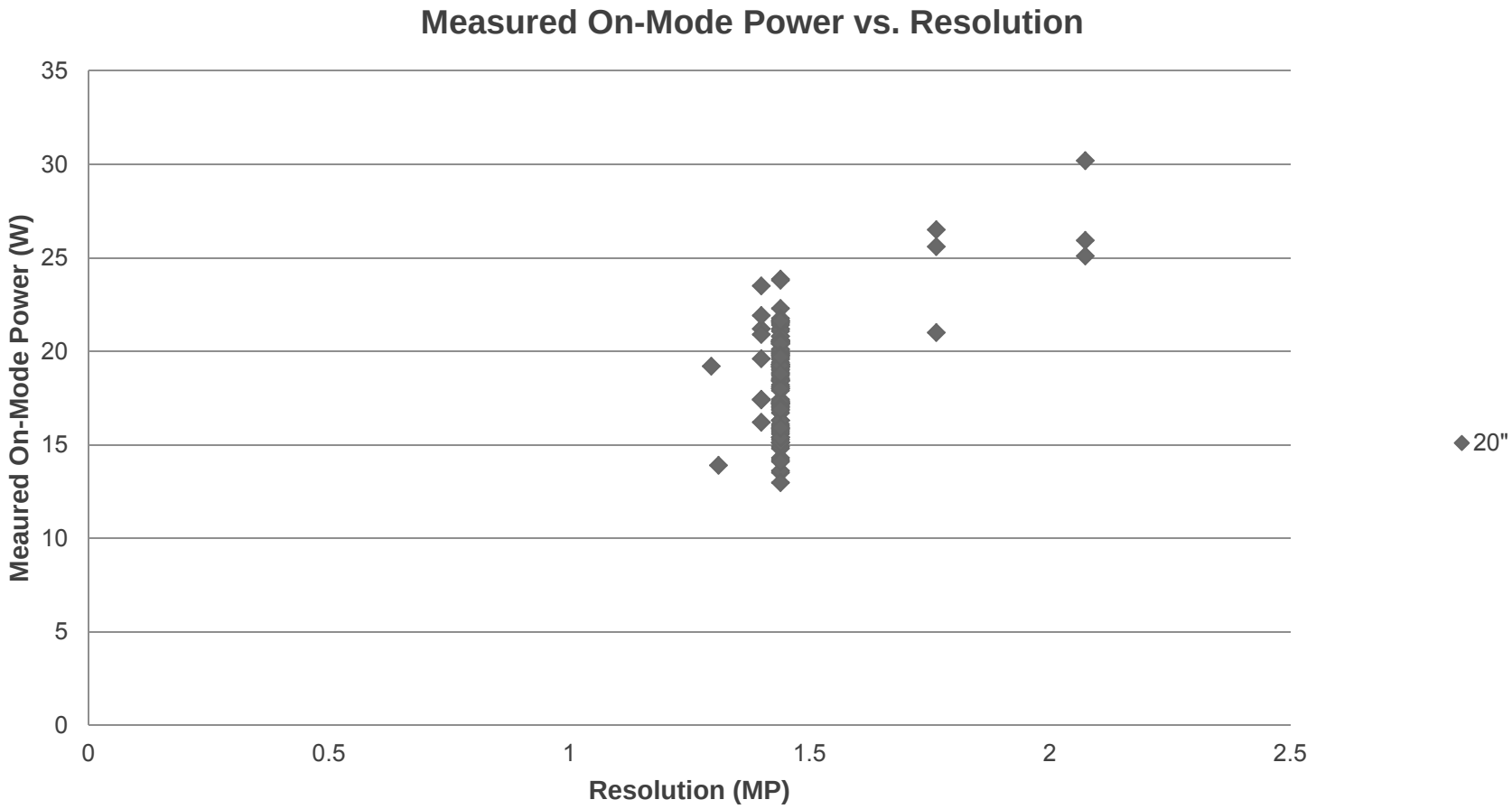
*Data from Qualified Product list as of 8/8/2011

Why 6 W/MP?

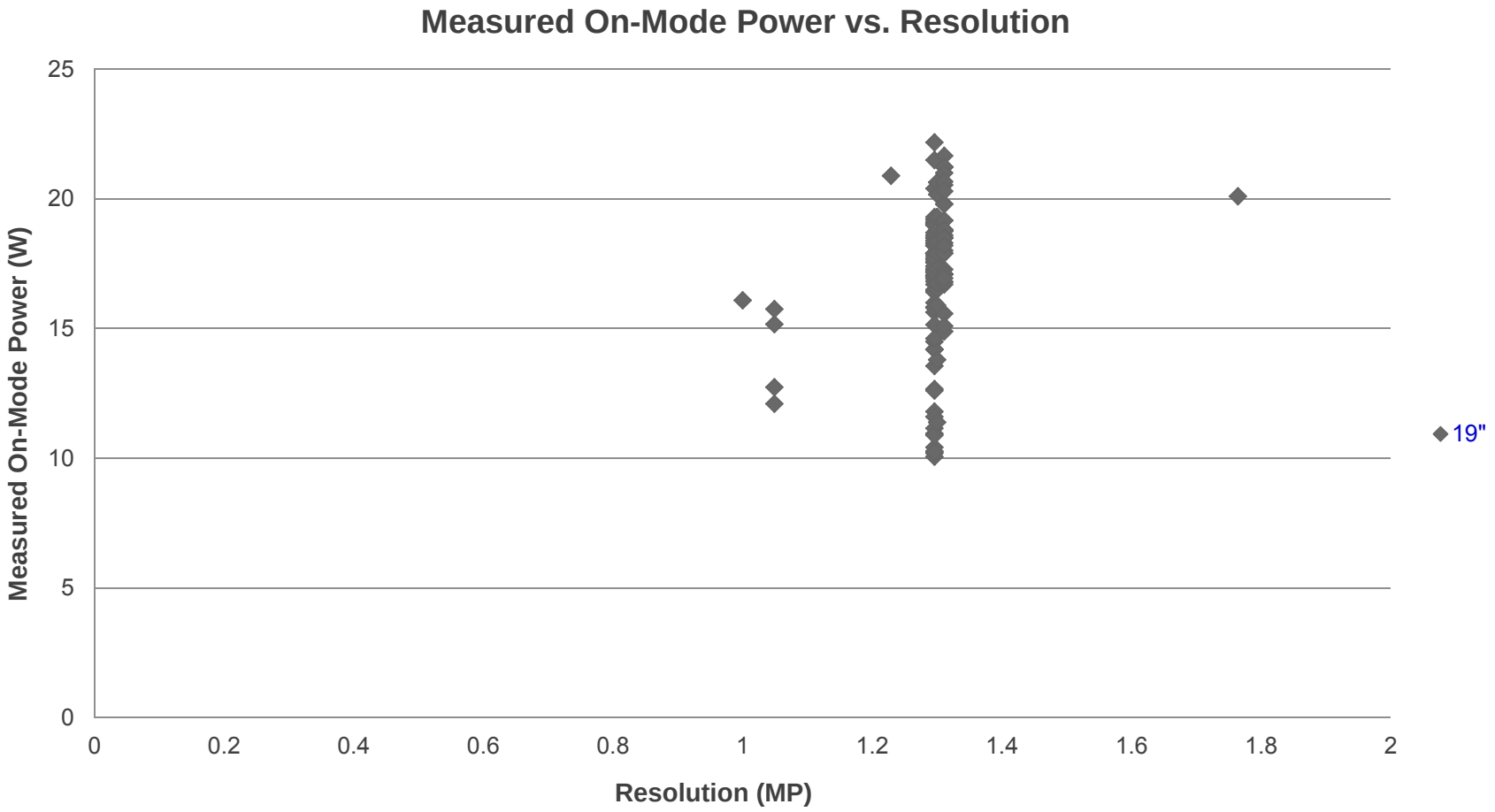
- To get a sense of the approximate watts per megapixel value for a given size, three sizes were selected based on the number of models and the diversity of resolution for those models, within each size.
  - 7” – which represents the most prevalent size found for digital picture frames (DPFs)
  - 19” and 21.5” – which represent popular monitor sizes

- Similar watt per megapixel values of 5, 6 and 7 were found across the three sizes.
- Based on the approximated W/MP, EPA is proposing to use resolution coefficient ‘6’.

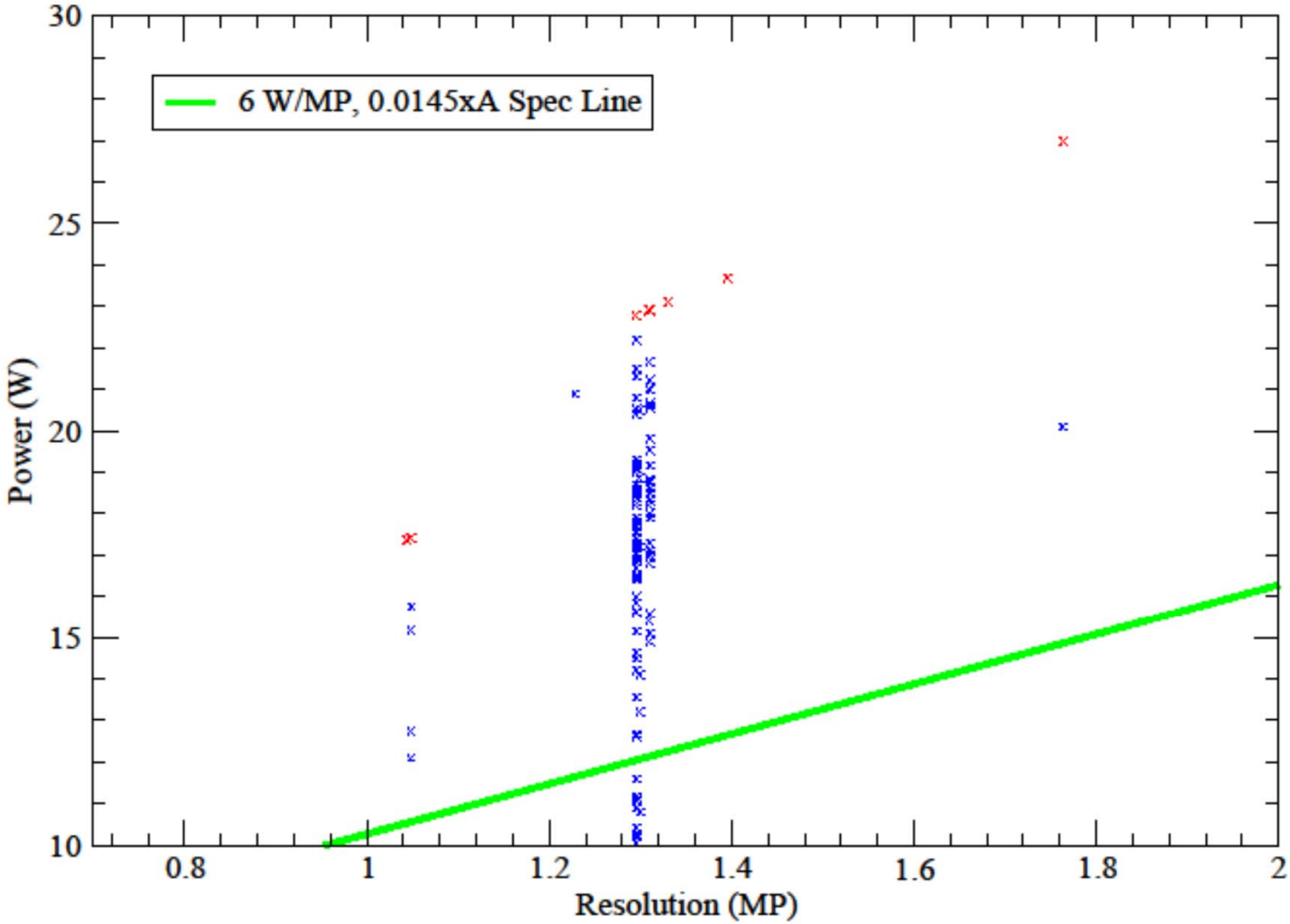
On Mode Power vs. Resolution for 20” Monitors (ENERGY STAR qualified models)



On Mode Power vs. Resolution for 19” Monitors (ENERGY STAR qualified models)



Power as a Function of Resolution for 19" Monitors (332 models, qualified and nonqualified)



Proposed: Same V 5.1 On Mode Power levels for displays <12” and 30”-60”

- Displays less than 12” are primarily digital picture frames. Products in the 30”-60” range are mostly digital signage.
- Both products types were added to the scope of products under Version 5.1.
- Given low market share, EPA is not inclined to increase the stringency of On Mode power levels at this time and proposes to retain existing On Mode power requirements.
- The qualified product list still shows broad selection of competitively priced products from a variety of manufacturers.

Proposed: Revise On Mode Power Levels for Displays with diagonal screen size 12”- 30” to differentiate top performers

- Rapid rise in market share since release of Version 5.1 suggests a change in the On Mode Power requirements.
- Proposed levels try to capture top quartile of available models.
- Listing of products that would continue to qualify under proposed On Mode power levels still shows broad selection of competitively priced products from a variety of manufacturers.

Proposed On Mode Power Equations for Displays less than 30”

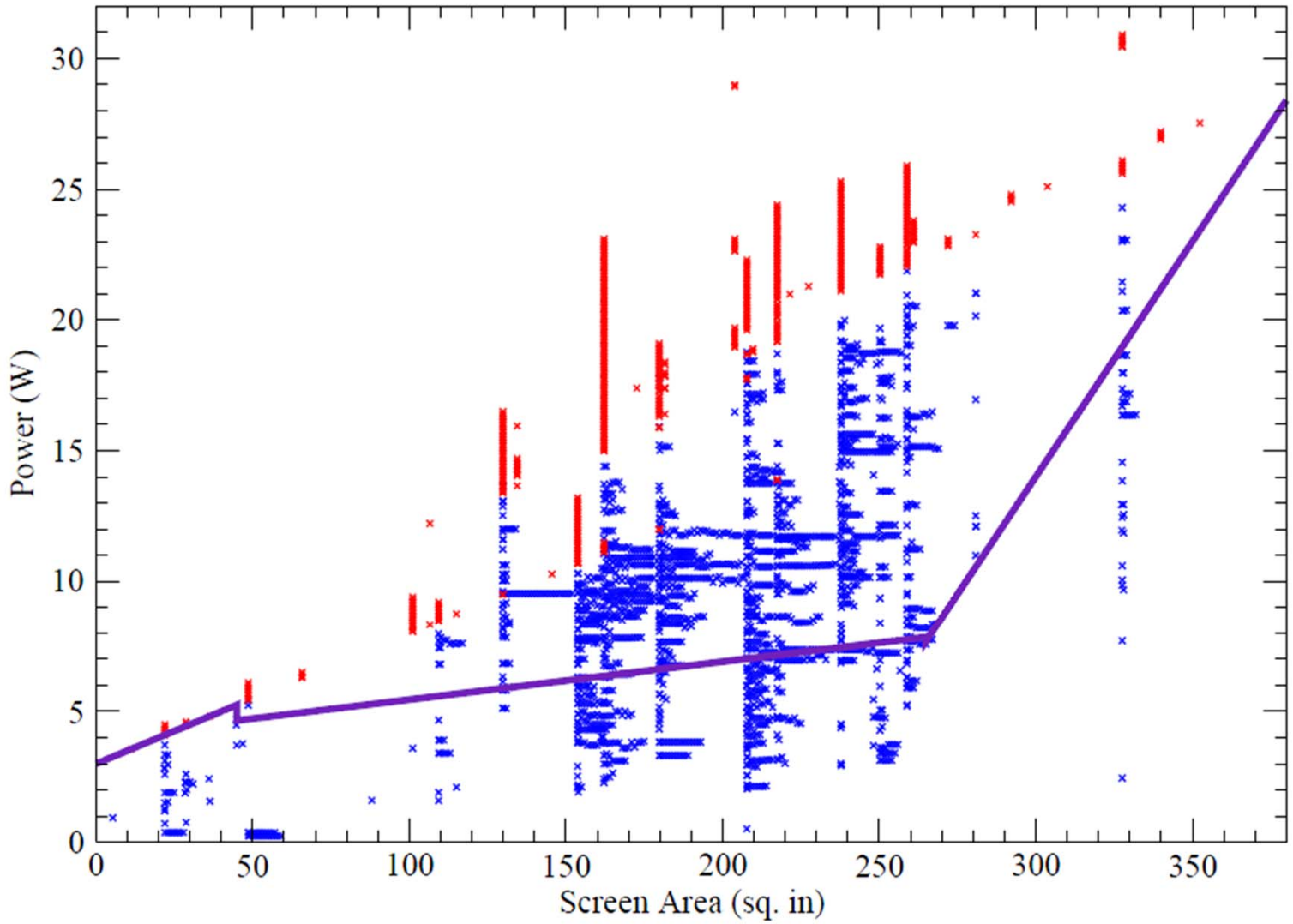
- Proposed Equations:
  - Displays < 12”: $P_{ON} = (6.0 \times r) + (0.05 \times A) + 3.0$
  - Displays 12” ≤ Size < 25”: $P_{ON} = (6.0 \times r) + (0.0145 \times A) + 4$
  - Displays 25” ≤ Size < 30”: $P_{ON} = (6.0 \times r) + (0.18 \times A) - 40.0$
    - Where “r” is the resolution in MP and “A” is the screen area
- 506 models from the Qualified Product list continue to qualify.

VESA vs. IEC 62087

- Stakeholders submitted data for ENERGY STAR qualified models that were re-tested using the IEC 62087 dynamic content.
- For more than half of the dataset, the VESA On Mode power values were slightly larger than the IEC On Mode power values, and vice versa for the rest of the dataset.
- The absolute difference in On Mode power remained below 2W for most of the data points.
- Data obtained using the VESA standard can be used to approximate the IEC standard On Mode power values.

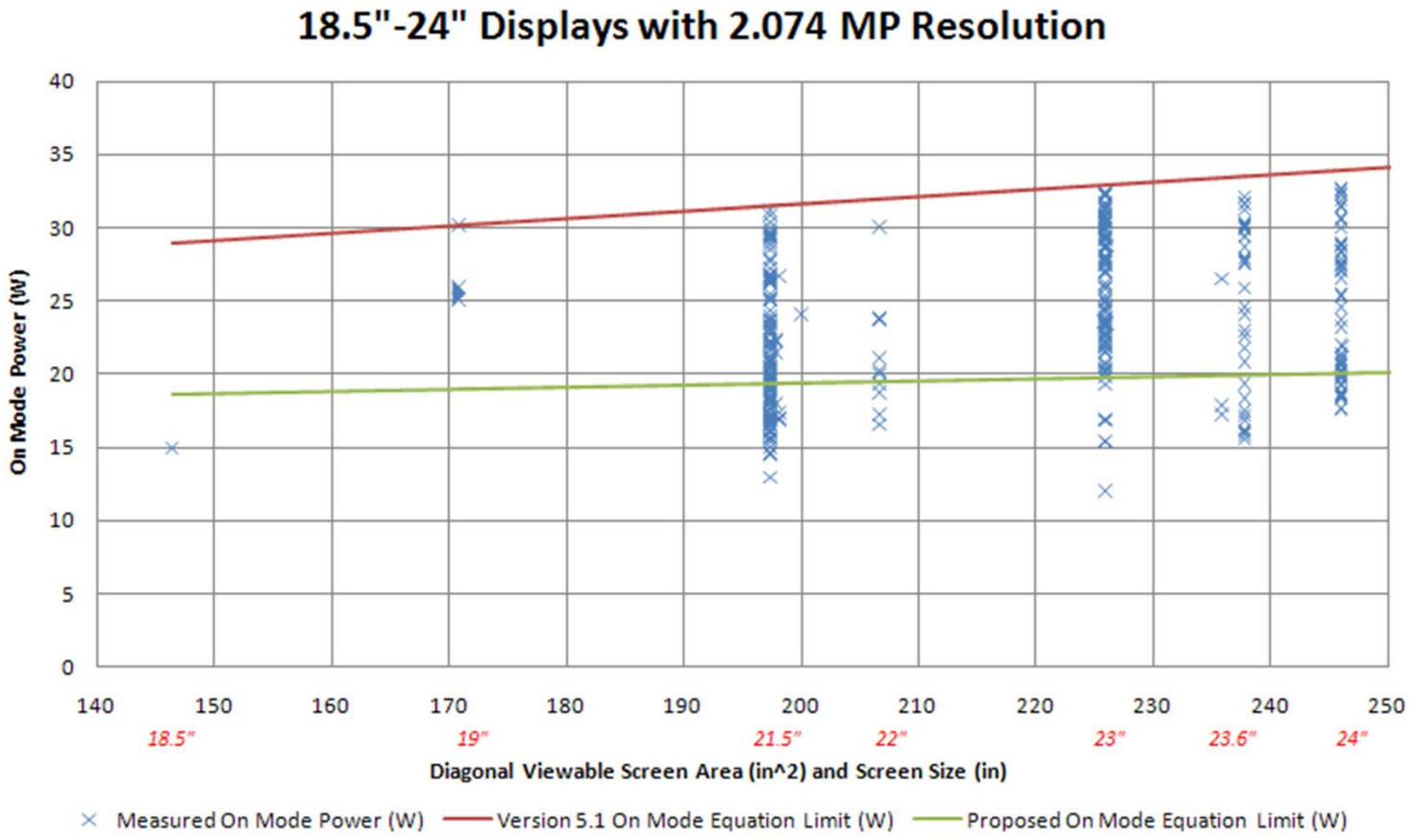
Proposed On Mode power levels

*** with 6 W/MP resolution allowance subtracted.**



Popular Displays with Common 2.074 MP Resolution and Diagonal Size 18.5”-24”

- **183 models out of 871 total, qualified and non-qualified models, with 2.074 resolution (~ 21%) would qualify with proposed On Mode power limits in Draft 2 of Version 6.0**
- **Out of the 871 models in the dataset, 764 products are ENERGY STAR qualified.**



Feedback?

- Seeking input on appropriate bin sizes
  - Aim to capture top 25% of models
  - Options:
    - Currently in 4 bins, according to segmentation of data: <12”, 12” ≤ 25”, 25 ≤ 30”, and 30”-60”
    - Single line from 12-30”?
    - Further segmentation of product sizes?

On Mode Power and Network Connectivity

- Differences in On Mode power?
  - Feedback that On Mode power with network connectivity is small/negligible.
  - Does power consumption vary between ultra-thin clients (zero clients) and displays with network capability?

Agenda

Topic	Time
Welcome and Introductions (US EPA and EU)	9:30 am
Changes to the Test Method	9:45 am
Definitions and Scope	10:45 am
Power Management	11:30 am
Lunch	12:00 pm
On Mode Power	1:00 pm
Sleep and Off Mode Power	2:15 pm
Break	2:45 pm
Emerging Display Technologies	3:00 pm
Non-energy requirements	3:15 pm
Wrap-up	4:00 pm
Meeting adjourned	4:30 pm

Sleep and Off Mode Power

Sleep Mode

Table 2: Maximum Sleep Mode Power Requirements (P_{SLEEP_MAX})

$P_{SLEEP\ MAX}$ (watts)
0.5

- Although stakeholders expressed concern that a 0.5 W limit would not allow displays with data/networking capabilities to qualify, EPA has not received sufficient test data to reconsider the requirement.
- Many ENERGY STAR qualified displays can already meet the 0.5 W limit. EPA welcomes feedback and data on any additional features, such as peripherals or data/network capabilities, which could increase power consumption in Sleep Mode.

Off Mode

Table 3: Maximum Off Mode Power Requirements (P_{OFF_MAX})

$P_{OFF\ MAX}$ (watts)
0.5

- Based on analysis of currently qualified products and data submitted, the majority of ENERGY STAR qualified displays that have an Off Mode already meet the 0.5 W limit.
- EPA is therefore proposing to retain the 0.5 W limit in Off Mode, harmonizing with the Off Mode requirement in the European Commission (EC) Ecodesign Regulation No 1275/2008.

Power Consumption of Data/Network Capabilities

- EPA proposes that manufacturers engage the USB/Firewire/Thunderbolt hub controller (or similar) in the display when testing for ENERGY STAR qualification to reflect a more accurate depiction of the state of hardware when operated by the end user.
- The requirements for data and network connections during testing have been revised to provide more guidance across various types of connections.
- EPA seeks additional data and feedback pertaining to the power consumption associated with peripherals' (e.g., data or network hubs, speakers, mice) connection to displays during Sleep Mode testing.

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Non-energy-use Requirements

Preventing Unintended Consequences: F-GHGs in LCD manufacturing

- For Version 6.0, EPA is proposing to add a new Partner Commitment for Display manufacturers, calling on them to source LCD components from suppliers who have demonstrated that they are reducing fluorinated GHG (F-GHGs) emissions in LCD production.
  - Leverages significant international work accomplished over the previous decade. This requirement was the foundation of the global LCD industry's voluntary commitment established in 2001 through the World LCD Industry Cooperation Committee (WLICC).
  - Based on discussions with stakeholders, EPA proposes that this requirement could be met through reporting to the Carbon Disclosure Project, or other industry initiatives that could collect information on F-GHG abatement efforts.
  - EPA is exploring a viable timeframe for meeting requirement given that LCD manufacturers are at various stages of installing/scaling up F-GHG emissions controls.
  - EPA is interested in highlighting strides already made by LCD manufacturers to reduce F-GHG emissions.

Feedback

- Are there other programs initiatives where industry is already engaged/ participating in reducing F-GHGs?
  - To what extent are suppliers reporting such information to manufacturers already?
  - Are companies planning to report information in sustainability reports?
- Can non F-GHGs be used in LCD manufacturing?
- How else can EPA recognize the achievements of companies that are already reducing their F-GHGs?

Non Energy Requirements

- In the interest of offering features consumers value, EPA would like to ensure that the ENERGY STAR label is associated only with products that meet minimum expectations for toxicity, recyclability, recycled content, etc.
- Consumers look to ENERGY STAR to deliver on value and features in addition to energy performance.
- Requirements acknowledge strides already made by industry over the past five years.
- *Aim is not to create product differentiation around non-energy requirements.*

Non Energy Requirements

- EPA commits to referencing existing standards already in the marketplace and welcomes feedback on:
  - Toxicity (ROHS Directive)
  - Design for Recyclability (IEEE 1680.1)
  - Packaging (references Sustainable Packaging Coalition definitions)
    - Flexibility proposed in Partner Commitments.
    - What specific efforts are Partners currently undertaking on packaging?
  - EPA proposes that existing reporting efforts & maintenance of quality assurance documentation would demonstrate compliance; not reviewed as part of the ENERGY STAR product certification process.

Comments

- In addition to providing verbal comments during today's Webinar, stakeholders are strongly encouraged to submit written comments to:

displays@energystar.gov

Comment Deadline
October 14, 2011

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Thank You