ENERGY STAR® TV Stakeholder Meeting: Draft 1 Version 3.1 Specification

April 24, 2009

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EPA

Learn more at energystar.gov

Welcome

Katharine Kaplan, U.S. EPA

Overview

- Welcome
- Introductions
- Meeting Goals
- Agenda Review
- Overview of ENERGY STAR

Introductions

Meeting Goals

- Present details on changes between Version 3.0 (Tier 1) and Draft 1 Version 3.1 (Tiers 2+3) specifications
- Present data analysis used to inform proposed Tier 2 and 3 On Mode requirements
- Gather feedback on key areas to inform development of Draft 2 Version 3.1 specification
- Initiate discussion of Tier 3 timeframe requirements/opportunities

Today's Agenda

9:30 a.m.	Welcome
9:45 a.m.	Overview of Draft 1 Version 3.1 Specification
10:15 a.m.	Proposed On Mode Power Levels
10:45 a.m.	On Mode Power: Utilities Perspective
11:00 a.m.	On Mode Power: Panasonic Perspective
11:15 a.m.	Open Discussion on Proposed On Mode Power Levels
12:15 p.m.	Lunch (on your own)
1:15 p.m.	TV Luminance: Proposed EPA Approach
1:25 p.m.	TV Luminance: Sharp Proposal
1:40 p.m.	TV Luminance: CEA Perspective

Today's Agenda (*cont.*)

1:50 p.m.	TV Luminance: CA Approach
2:05 p.m.	Open Discussion on TV Luminance Approaches
2:25 p.m.	Break
2:40 p.m.	EPA Download Acquisition Mode Proposal
2:50 p.m.	DAM: Macrovision Perspective
3:05 p.m.	Open Discussion on DAM
3:25 p.m.	CEE comments
3:40 p.m.	Additional Topics
3:50 p.m.	Wrap-up
4:00 p.m.	Meeting Adjourned

ENERGY STAR Overview

- ENERGY STAR is the government-backed symbol for energy efficiency
  - Identifies products in more than 60 categories that use less energy without sacrificing quality or performance
  - ENERGY STAR qualified products are an easy, convenient solution to energy and cost concerns
- Over **2,000 manufacturers** labeling more than 40,000 product models
- Over **1,000** retail partners
- More than **550 utility partners** promoting ENERGY STAR

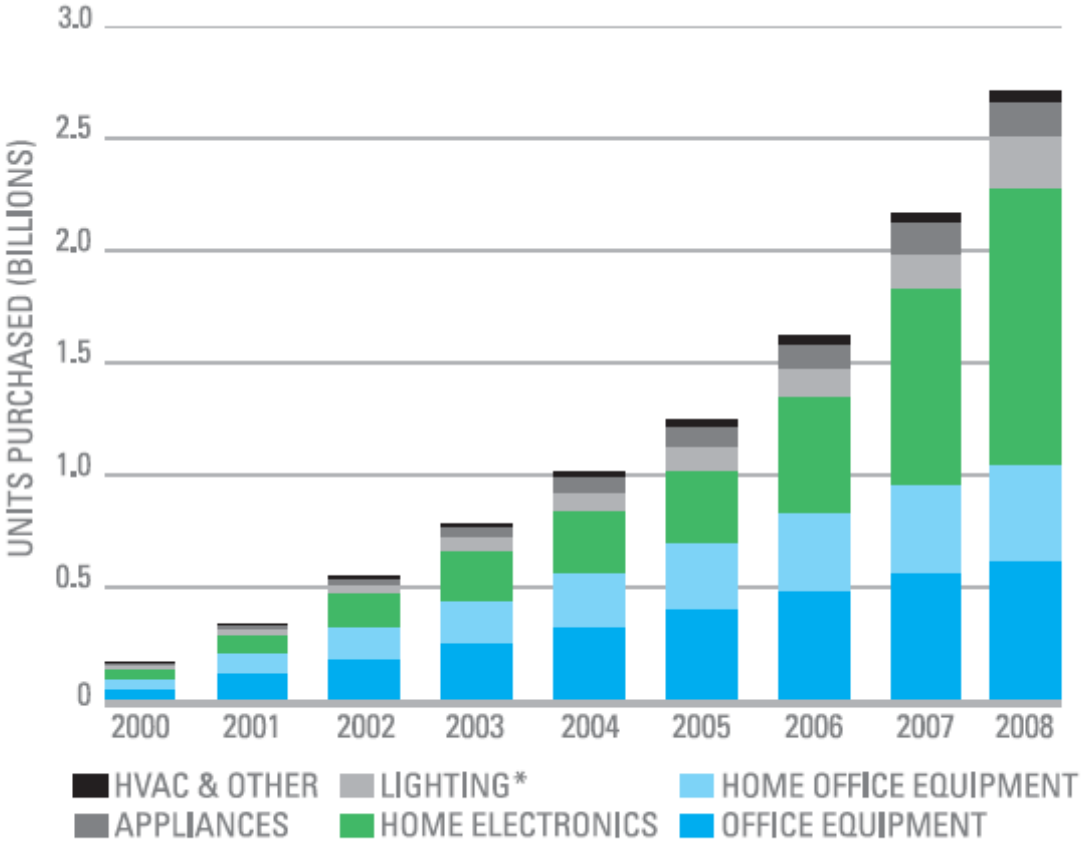
ENERGY STAR Product Labeling

Objectives

- To reduce greenhouse gas emissions, caused by the inefficient use of energy
- To make it easy for businesses and consumers to identify and purchase products with enhanced energy efficiency that offer savings on utility bills while maintaining performance, features, and comfort

ENERGY STAR Purchased Products

More than 2.5 Billion ENERGY STAR qualified products purchased since 1992



*Lighting category does not include purchases of compact fluorescent bulbs.

Brand Awareness and Success

- ENERGY STAR awareness now more than 75% of U.S. households
- Of those U.S. households that have purchased an ENERGY STAR product
  - More than 75 percent report the label as influential in their purchasing decision
  - More than 80 percent report they are likely to recommend ENERGY STAR qualified products to friends
- In 2008 alone, Americans, with the help of ENERGY STAR:
  - Saved consumers about $19 billion on their energy bills
  - Prevented 43 million metric tons of greenhouse gas emissions equivalent to the annual emissions of 29 million vehicles

TVs in Marketplace

- According to CEA, About 36 million TVs will be shipped to the United States in 2009
  - Over 37 million shipments in 2010
  - Over 39 million shipments 2012

- TVs use over 50 billion kWh annually
  - 4% of all household electricity use nationwide is for TVs
  - This represents enough electricity to power all the homes in the state of New York for an entire year

TVs in Marketplace (*cont.*)

- National TV energy use growing due to:
  - Market transition to high definition flat panel TVs
  - Increasing screen size
  - Increased hours of use
  - More TVs per home

- According to CEA, 89% of households want their next TV to be more energy efficient and 53% of consumers said they would be willing to pay a premium for a green TV

- DisplaySearch reported 45% of flat panel display shipments will have “green features” in 2010
  - Projected to be 70% by 2012 and dominate the market by 2014

GfK Roper Survey (Sharp Electronics): March 2009

- 82 percent say green features play a part in their purchase decision-making for a new consumer electronics product, such as a TV
  - 47 percent say it plays a part even if it is not the first thing they look for
  - 35 percent say they are definitely looking for it

- Americans are three times more likely to pay more up front for a product that saves on their electricity bills in the long run, than they are to purchase the less expensive product now

Earthtoys, April 16, 2009: http://www.earthtoys.com/news.php?section=view&id=9096

iSuppli Survey: April 2009

iSuppli: Green Awareness

By Greg Tarr -- TWICE, 4/22/2009 12:13:00

El Segundo, Calif. — More than half of all

iSuppli's monthly U.S. TV Consumer Pref

An additional 23.1 percent said that they l

Green Feature Influence on U.S
Purchases in March, 2009 (Percent
Purchases)

Level of Concern	Percenta
Not a Factor	49.43%
Consideration	23.09%
An Important Influence	27.48%

Even amid the current economic downturn, a growin
Consumer Preference Analysis indicates there is a r
also point to substantial differences in how effectivel

Among the top four brands in April, iSuppli said Sony

"Even amid the current economic downturn, a growing number of consumers are selecting products for their environmentally friendly features. "

TWICE, April 22, 2009: http://www.twice.com/article/CA6653388.html?desc=topstory

Overview of Draft 1 Version 3.1 Specification

Katharine Kaplan, U.S. EPA

Key Proposed Changes from Version 3.0

- Tier 2 and 3 On Mode power requirements based on screen size, all high definition
- Approach to address TV luminance
  - Luminance measurement procedure added to Section 4. Test Methodology
- Download Acquisition Mode (DAM) requirement
- Revisiting Automatic Brightness Control (ABC)
- TVs working towards long-term convergence with displays

Key Items Not Changing in V3.1

- Reference to IEC test procedures for measuring Standby and On Modes
- Standby Mode power consumption criteria of 1.0 watt
- Testing at factory default settings or forced menu requirement

Proposed On Mode Power Levels

Bijit Kundu, ICF International

ENERGY STAR Version 3.0

- To-date, 29 partners have qualified over **900** models under Tier 1
  - LCDs: 740+
  - Plasmas: 150+
  - Rear Projection: 18
  - OLED: 1

- ENERGY STAR seeks to identify the top performers when it comes to energy efficiency

- EPA initiated the Tier 2 and 3 development process earlier than planned based on apparent increasing market share
  - February 9, 2009

EPA

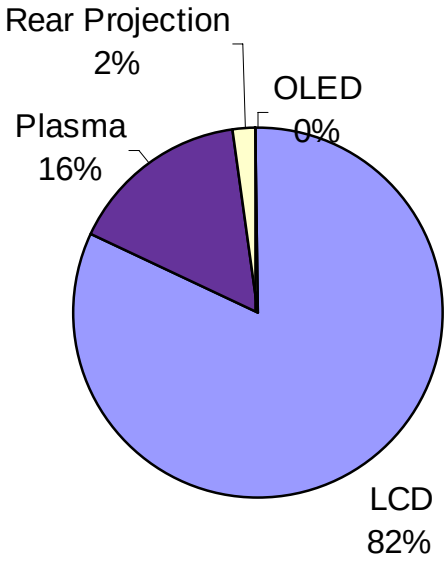
Data-set

- EPA distributed a data request to manufactures on 02/20/09
- Starting ENERGY STAR data-set (786)
  - Removed models indicated by manufacturers that would not be available in 2010 (-232)
  - Added additional product data that was submitted by manufacturers for models will be available in 2010 (+45)
  - Removed models for which there was no reported data at 115V (-104)

Data-set Market Share

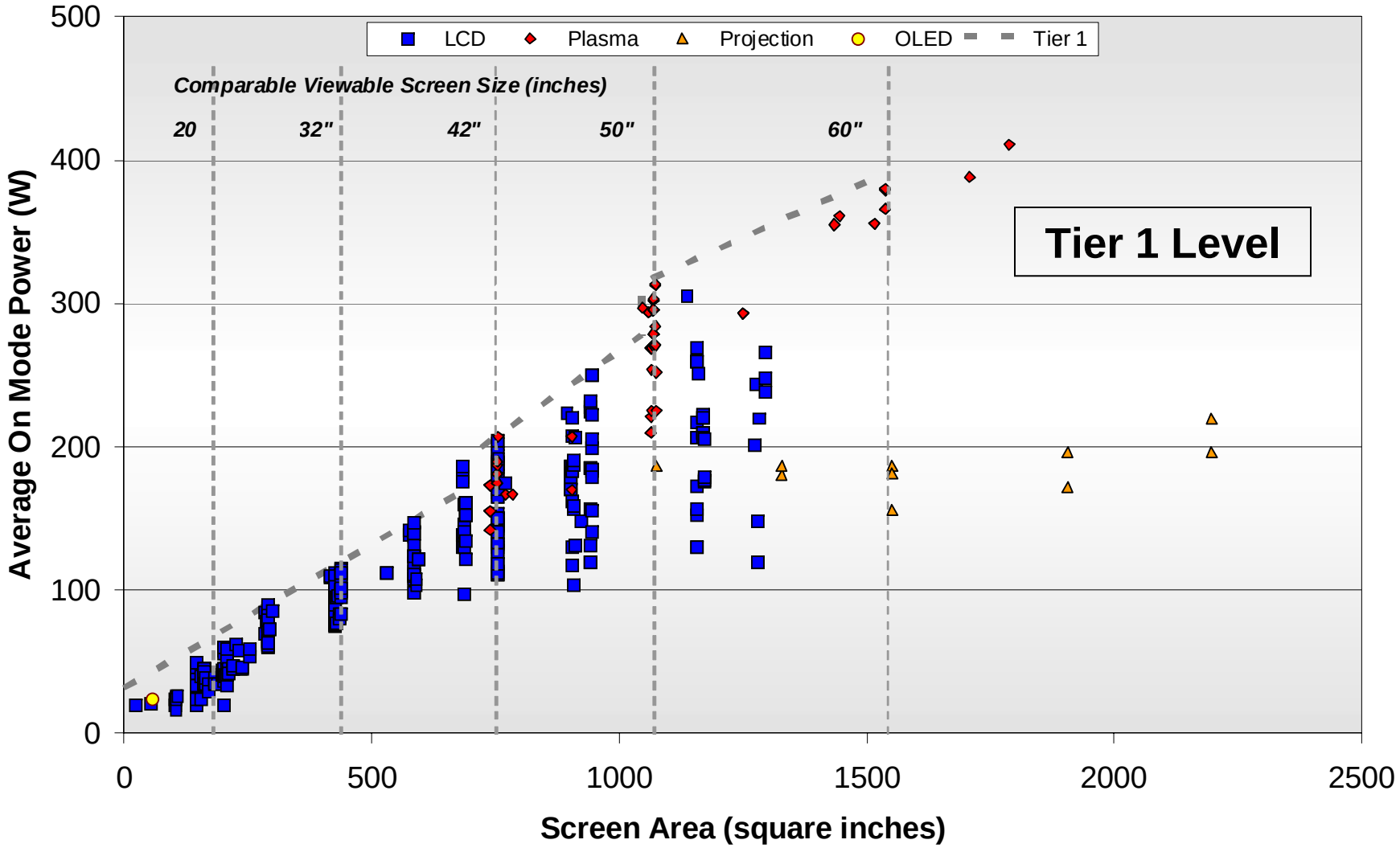
- Resulting data-set: 495 models

Display Type	Models	% of Total	2010 CEA Projections†
LCD	407	82.2%	79.7%
Plasma	77	15.6%	9.0%
RP	10	2.0%	1.3%
OLED	1	0.2%	0.6%



† CEA Projections do not add up to 100% as there are other technologies not covered under ENERGY STAR (e.g., front projection displays)

Data-set with Tier 1 Level (n = 495)



Tier 2 On Mode Power

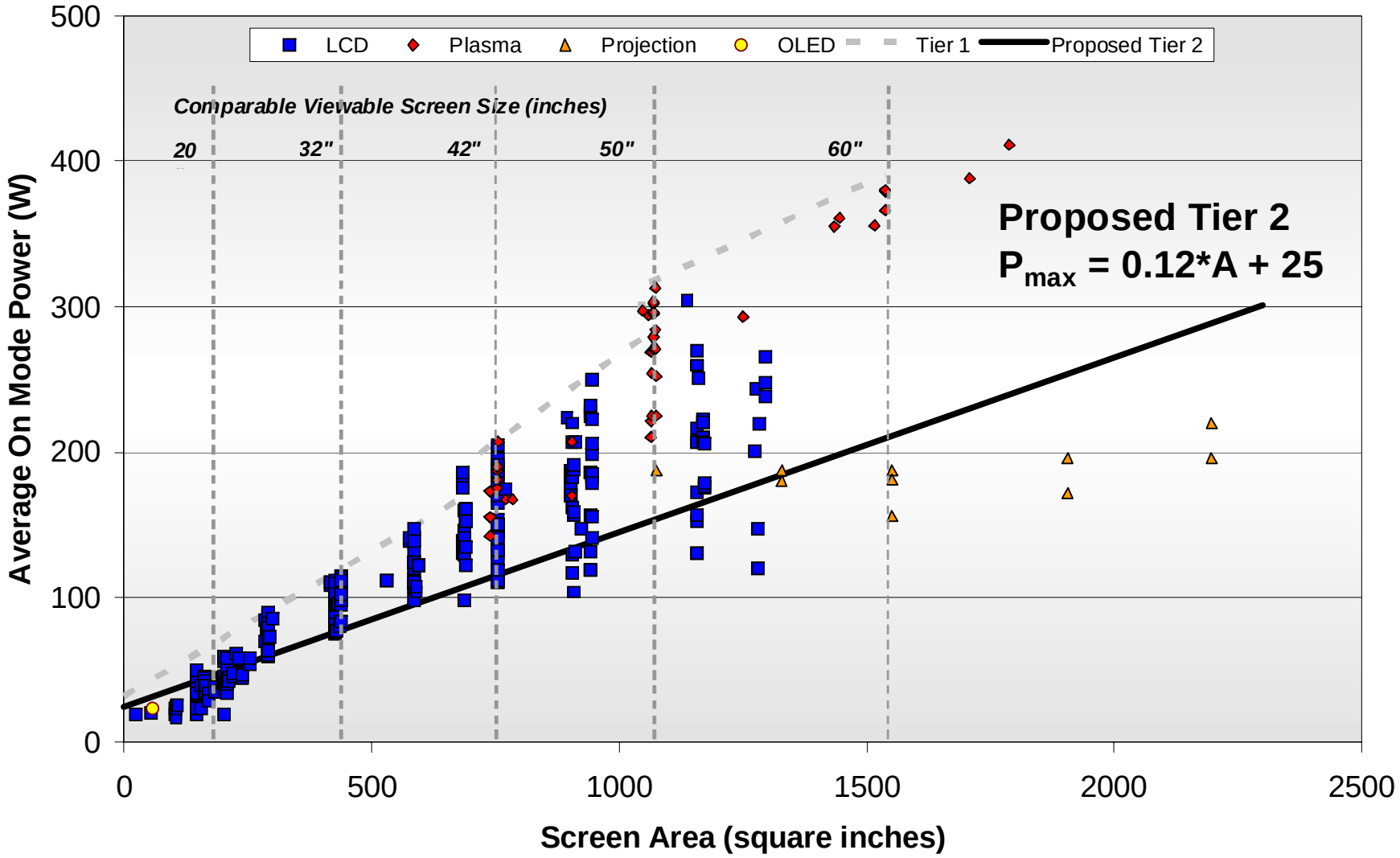
- Draft 1 proposed Tier 2 On Mode power level:

$$P_{max} = (0.12*A) + 25$$

P_{max} = On Mode Power Level
A = Viewable Screen Area in square inches

- Proposed Tier 2 level is not dependent on native vertical resolution
- Represents 114 models: 23% of total data-set
- Represents 18 of 26 manufacturers

Data-set with Proposed Tier 2 Level (n = 495)



Tier 3 Approach

- Proposed Tier 3 On mode requirement to ensure the relevancy of ENERGY STAR label while minimizing the costs and burden of frequent revisions

- Based on advances in TV efficiency over the past year and an evaluation of our current data set, EPA believes that a 30% increase in efficiency compared to what is proposed for Tier 2 reasonably anticipates what will be available in 2012

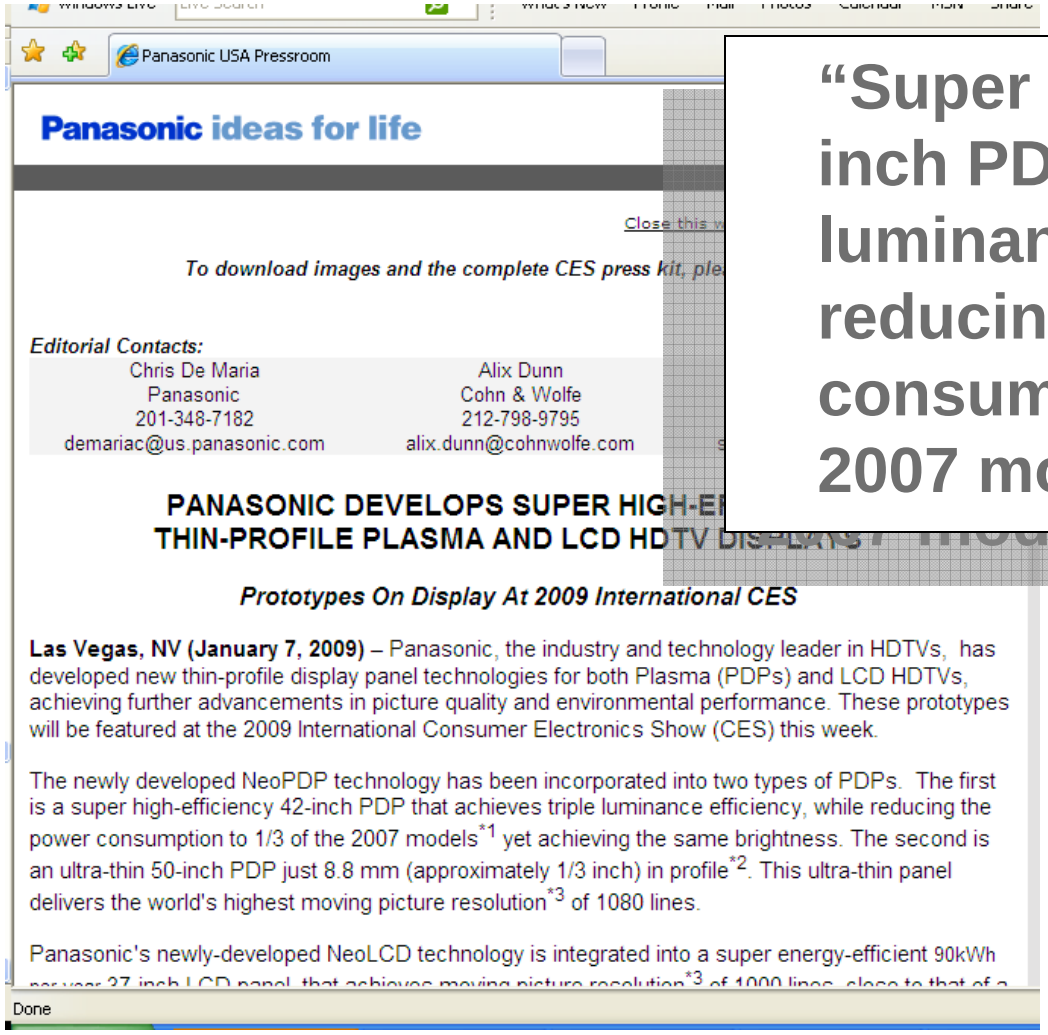
- Specifically, comparing the dataset used to establish the Tier 1 specification and a dataset of 2009 TV models indicates an improvement in overall TV efficiency of about 30% over a one and a half year period

Energy Efficiency: Design

- Design improvements to increase efficiency
  - Increase panel transmittance
  - Move to more efficient lamps
  - Improve pixel designs
  - Improve backlight structure
  - Improve luminous efficiency

- Designs improvements do not have to come at higher cost
  - Example: Replacement of backlight lamps with less expensive optical films

Examples from Manufacturers: Press Release


Panasonic USA Pressroom

Panasonic ideas for life

To download images and the complete CES press kit, ple

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PANASONIC DEVELOPS SUPER HIGH-E
THIN-PROFILE PLASMA AND LCD HDTV DISPLAYS

Prototypes On Display At 2009 International CES

Las Vegas, NV (January 7, 2009) – Panasonic, the industry and technology leader in HDTVs, has developed new thin-profile display panel technologies for both Plasma (PDPs) and LCD HDTVs, achieving further advancements in picture quality and environmental performance. These prototypes will be featured at the 2009 International Consumer Electronics Show (CES) this week.

The newly developed NeoPDP technology has been incorporated into two types of PDPs. The first is a super high-efficiency 42-inch PDP that achieves triple luminance efficiency, while reducing the power consumption to 1/3 of the 2007 models*1 yet achieving the same brightness. The second is an ultra-thin 50-inch PDP just 8.8 mm (approximately 1/3 inch) in profile*2. This ultra-thin panel delivers the world's highest moving picture resolution*3 of 1080 lines.

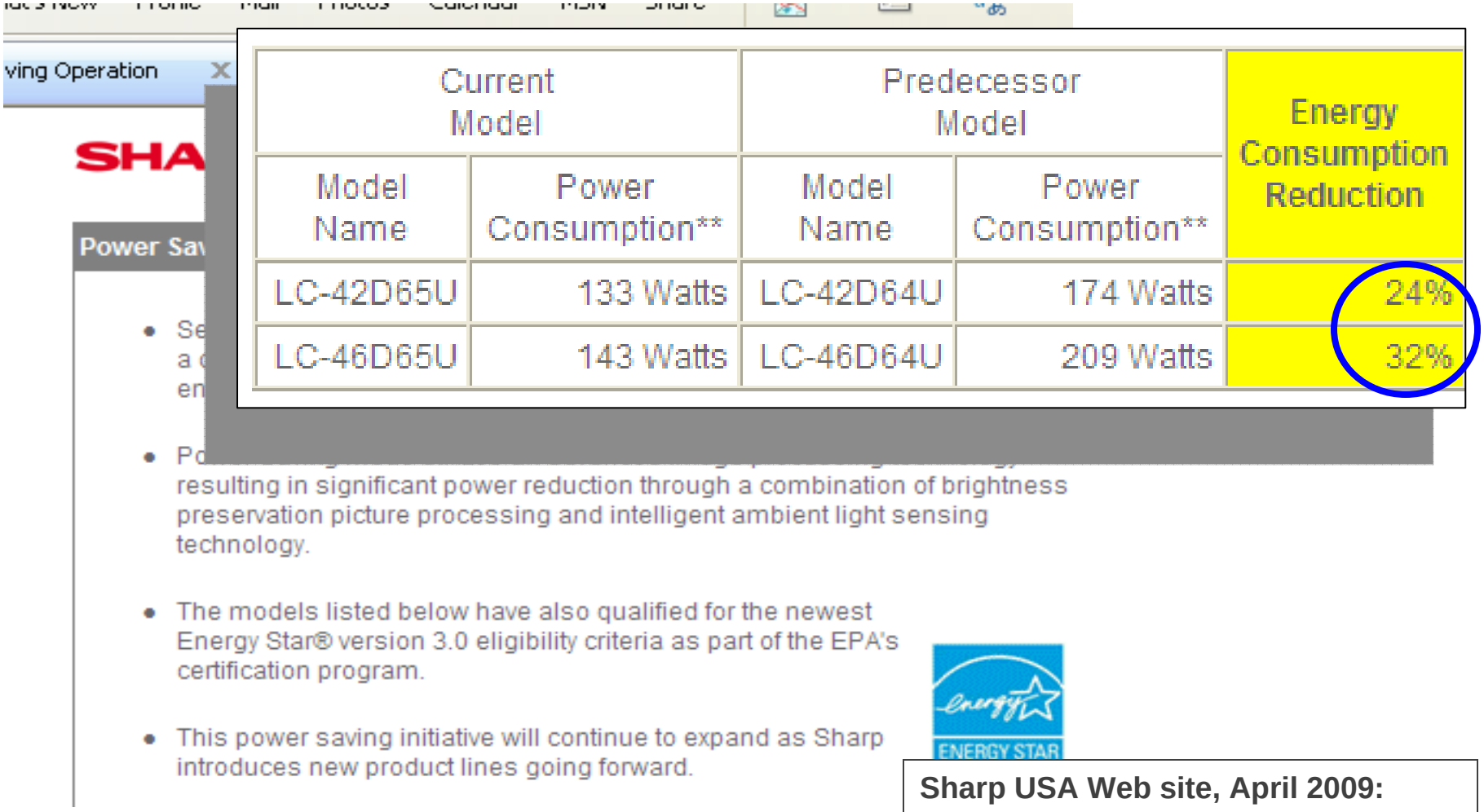
Panasonic's newly-developed NeoLCD technology is integrated into a super energy-efficient 90kWh

Done

"Super high-efficiency 42-inch PDP that achieves triple luminance efficiency, while reducing the power consumption to 1/3 of the 2007 models"

Panasonic Press Release, 01/2009:
http://panasonic.co.jp/corp/news/official.data/data.dir/en090108-8/en090108-8.html

Examples from Manufacturers: Web site



ving Operation

SHA

Power Sav

- Se a c en
- Po resulting in significant power reduction through a combination of brightness preservation picture processing and intelligent ambient light sensing technology.
- The models listed below have also qualified for the newest Energy Star® version 3.0 eligibility criteria as part of the EPA's certification program.
- This power saving initiative will continue to expand as Sharp introduces new product lines going forward.

Current Model		Predecessor Model		Energy Consumption Reduction
Model Name	Power Consumption**	Model Name	Power Consumption**	
LC-42D65U	133 Watts	LC-42D64U	174 Watts	24%
LC-46D65U	143 Watts	LC-46D64U	209 Watts	32%

Sharp USA Web site, April 2009:
http://www.sharpusa.com/about/power_saving/

Examples: Market Study

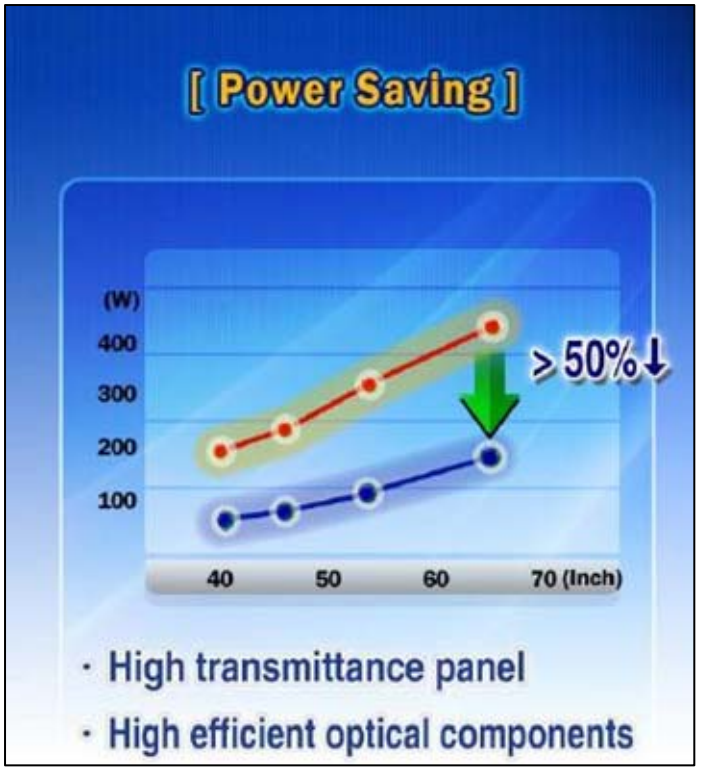
Example A. 32” LCD TV

From 2006 to 2009:

- **Power consumption reduced from 110 watts to less than 60 watts**
- **Brightness remained steady at 450-500 nits**
- **Number of lamps reduced from 16 to 4-5**

Source: DisplaySearch Green Technology in Flat Panel Displays Report: Market Technology and Trends

Example B.



Examples from Manufacturers: CES 2009

Sharp 32” LCD TV

2008 model 2009 model

~47% power reduction

Photo from Alex Chase, Energy Solutions, at CES 2009

Tier 3 On Mode Power

- Proposed Tier 3 based on ~30% increase in efficiency from (1) 2007 data-set used to establish Tier 1 and (2) 2009 data-set

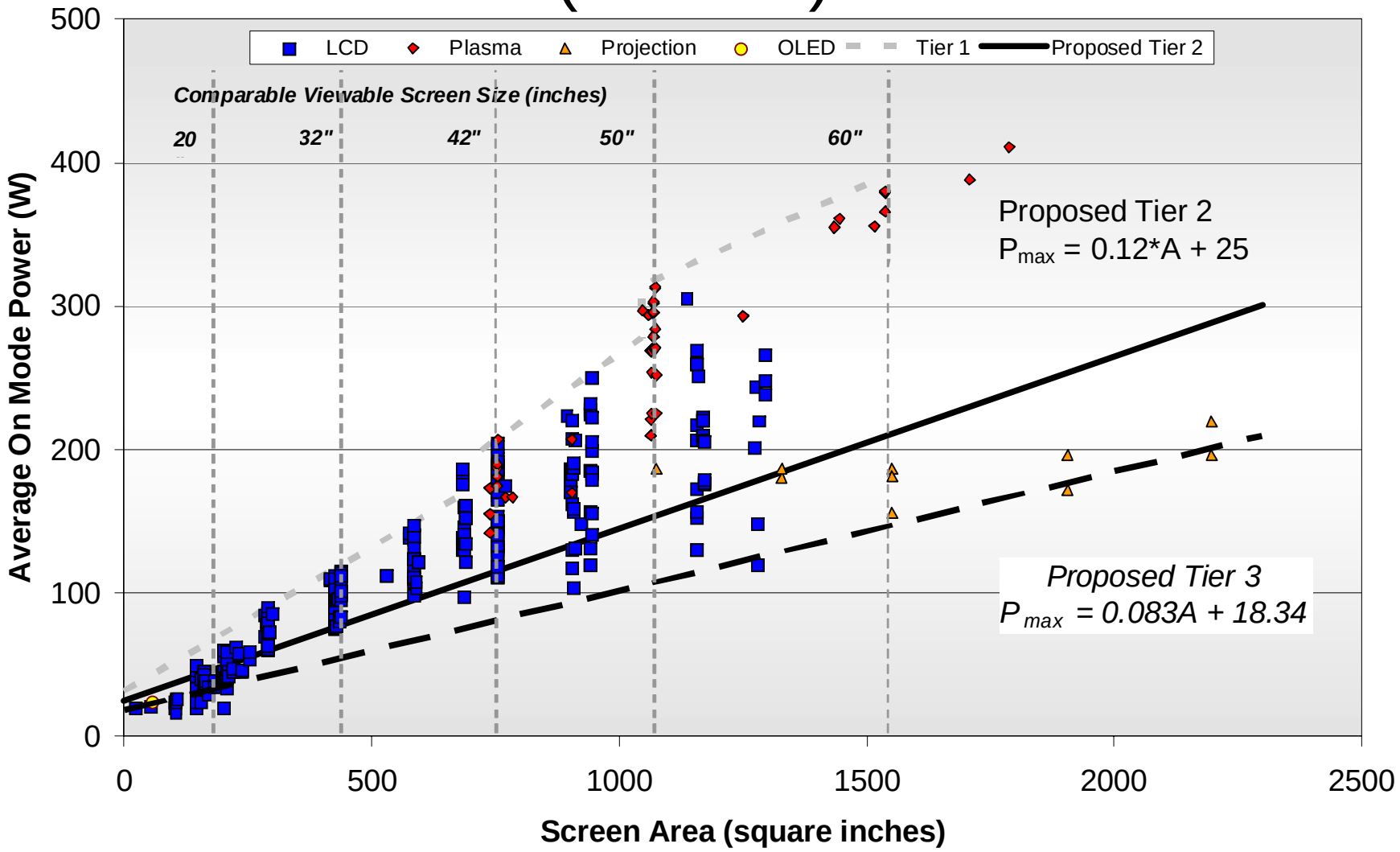
$$P_{max} = (0.083*A) + 18.34$$

P_{max} = On Mode Power Level
A = Viewable Screen Area in square inches

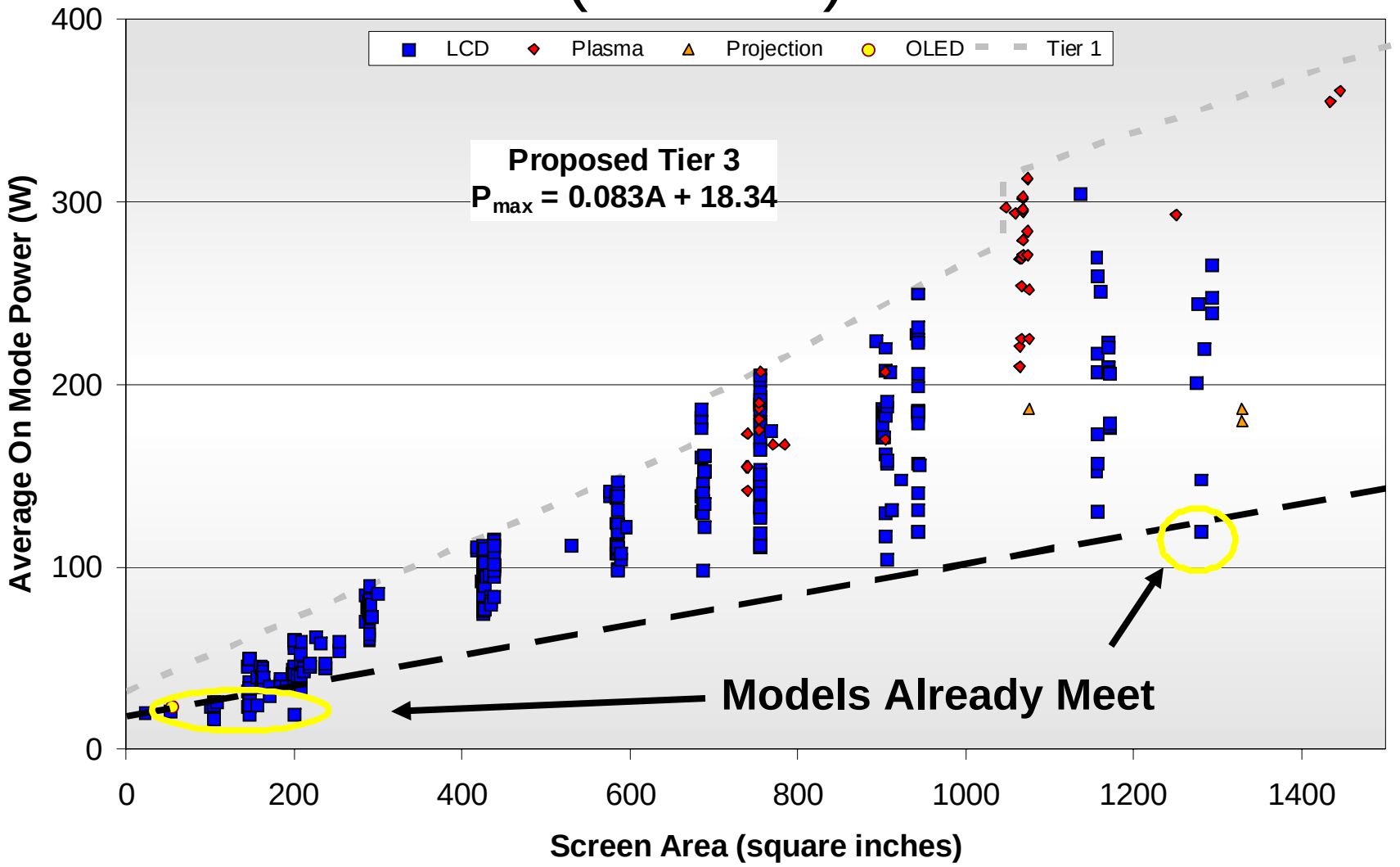
- Reasonably anticipates what will be available in 2012
- 28 models *already* meet proposed Tier 3
  - Some are on the market today
- EPA will review Tier 3 level in advance of effective date to ensure it is appropriate

EPA

Data-set with Proposed Tier 3 Level (n = 495)



Data-set with Proposed Tier 3 Level (n = 495)



Sample On Mode Power Limits

Table 2: Tier 2 and 3 On Mode Power Level Requirements for Example TV Screen Sizes

Viewable Diagonal Screen Size (Inches)	Aspect Ratio	Viewable Screen Size in Inches	Screen Area in Inches^2 (cm^2)	Tier 2 Maximum On Mode Power in watts	Tier 3 Maximum On Mode Power in watts
20	16:9	17.4 x 9.8	170.5 (1,100)	45	32
32	16:9	27.9 x 15.7	438.0 (2,826)	78	55
42	16:9	36.6 x 20.6	754.0 (4,865)	115	81
50	16:9	43.6 x 24.5	1068.2 (6,892)	153	107
60	16:9	52.3 x 29.4	1537.6 (9,920)	210	146

EPA

Tier 3 On Mode Power Wrap-up

- ENERGY STAR data-sets demonstrate increased energy efficiency in TV units from 2007 to 2009 - ~30%
  - Presence of energy efficiency technologies such as models with LED backlighting and OLED
- Market trends indicate improved energy efficiency in TVs
  - Manufacturer press releases and Web sites
  - Market studies (e.g., DisplaySearch)
  - Models demonstrated at CES 2009
- Based on these trends EPA views this as an indication that sufficient, cost effective efficiency gains will be achieved among larger TV categories to allow adequate selection of qualified models for consumers

On Mode Power: Utilities Perspective

Tim Michel, Pacific Gas and Electric
Alex Chase, Energy Solutions

On Mode Power: Panasonic Perspective

Mark Sharp, Panasonic Corporation of North America

Open Discussion on Proposed On Mode Power Levels

Lunch

60-minutes

TV Luminance: Proposed EPA Approach

Katharine Kaplan, U.S. EPA

TV Luminance

- Once Tier 1 became effective, multiple sources notified EPA that some qualified models were set with unacceptably low luminance levels leading dissatisfied consumers to choose a more power consumptive mode
- Low luminance levels associated with ENERGY STAR TVs can:
  - Diminish consumer savings;
  - Reduce environmental benefit;
  - Create an uneven playing field for partners; and
  - Tarnish the ENERGY STAR brand.
- In December 2008, EPA set guidance on *measuring* and *reporting* product luminance referencing
  - IEC 62087
  - Video Electronics Standards Association (VESA) Flat Panel Display Measurements Standard Version 2.0

TV Luminance Approach

- **Goal**: EPA wants to ensure that products that are tested and qualified as ENERGY STAR in the mode they will ultimately viewed in the home.

- In Draft 1 launch memo distributed February 2009, EPA proposed the following proposed luminance approach:
  - The home or standard luminance level be not less than 80% of the luminance level of the manufacturer's selectable mode with the highest luminance level.

TV Luminance Approach (*cont.*)

- This approach is consistent with international approaches in Europe and Australia
- Luminance measurement protocols proposed in Draft 1 are consistent with Displays Version 5.0 specification
- EPA is seeking stakeholder feedback on how to achieve stated goals

TV Luminance: Sharp Proposal

Jon Fairhurst, Sharp Labs of America

TV Luminance: CEA Perspective

Bill Belt, Consumer Electronics Association

TV Luminance: CA Approach

Tim Tutt, California Energy Commission

Open Discussion on TV Luminance Approaches

15-minute Break

EPA Download Acquisition Mode (DAM) Proposal

Katharine Kaplan, U.S. EPA

DAM Approach

- EPA was made aware of qualified TV models that were exceeding the EPA Standby Mode power limit of 1 watt for the majority of a day

- EPA requirement in Version 3.0
  - Products must not exceed of 1.0 watt in Standby and the lowest consuming Standby must be the default Standby
  - EPA intends with this requirement that products meet the 1 watt Standby requirement whenever the product is not in On Mode
  - EPA assumes a TV spends 19 hours a day in Standby Mode

DAM Approach (*cont.*)

- In Draft 1, EPA proposed an approach to address products in DAM that is consistent with ENERGY STAR Set-top Box Version 2.0 requirements
  - 2 hour limit for every 24 hour period that a product can wake from Standby to perform tasks such as scanning for program or system information
  - A single DAM event shall not be more than 15 minutes

DAM: Macrovision Perspective

Adam Powers, Macrovision
Solutions Company

Open Discussion on DAM

CEE Comments

Margie Lynch, Consortium for Energy Efficiency

Additional Topics

Katharine Kaplan, U.S. EPA

Automatic Brightness Control (ABC)

- Under Version 3.0, additional allowance was provided to products with ABC as a way to incentivize uptake of this energy-saving feature

- EPA and stakeholder agreed to track the use of ABC and the appropriateness of how ABC is treated in future specification
  - In current data-set 407 total LCD models, 102 (25%) have ABC feature

$$P_{a1\_broadcast} = (0.55 * P_{o\_broadcast}) + (0.45 * P_{abc\_broadcast})$$

ABC Questions to Stakeholders

- Is the 45% weighting for products in low ambient light level conditions appropriate?
- Is zero lux the appropriate value to approximate low ambient light level?
- Are there adjustments available for ABC control, or is it just On or Off?
- Does everyone reference ABC in the same way in manuals and product descriptions?
- Are products making use of ABC?

Convergence with Version 5.0 Displays Spec

- When possible EPA would like to harmonize the following criteria
  - References to IEC test procedures
  - Metrics (e.g., watt per square inch)
  - Definitions
  - Power levels
  - Functional adders

Wrap-up

Katharine Kaplan, U.S. EPA

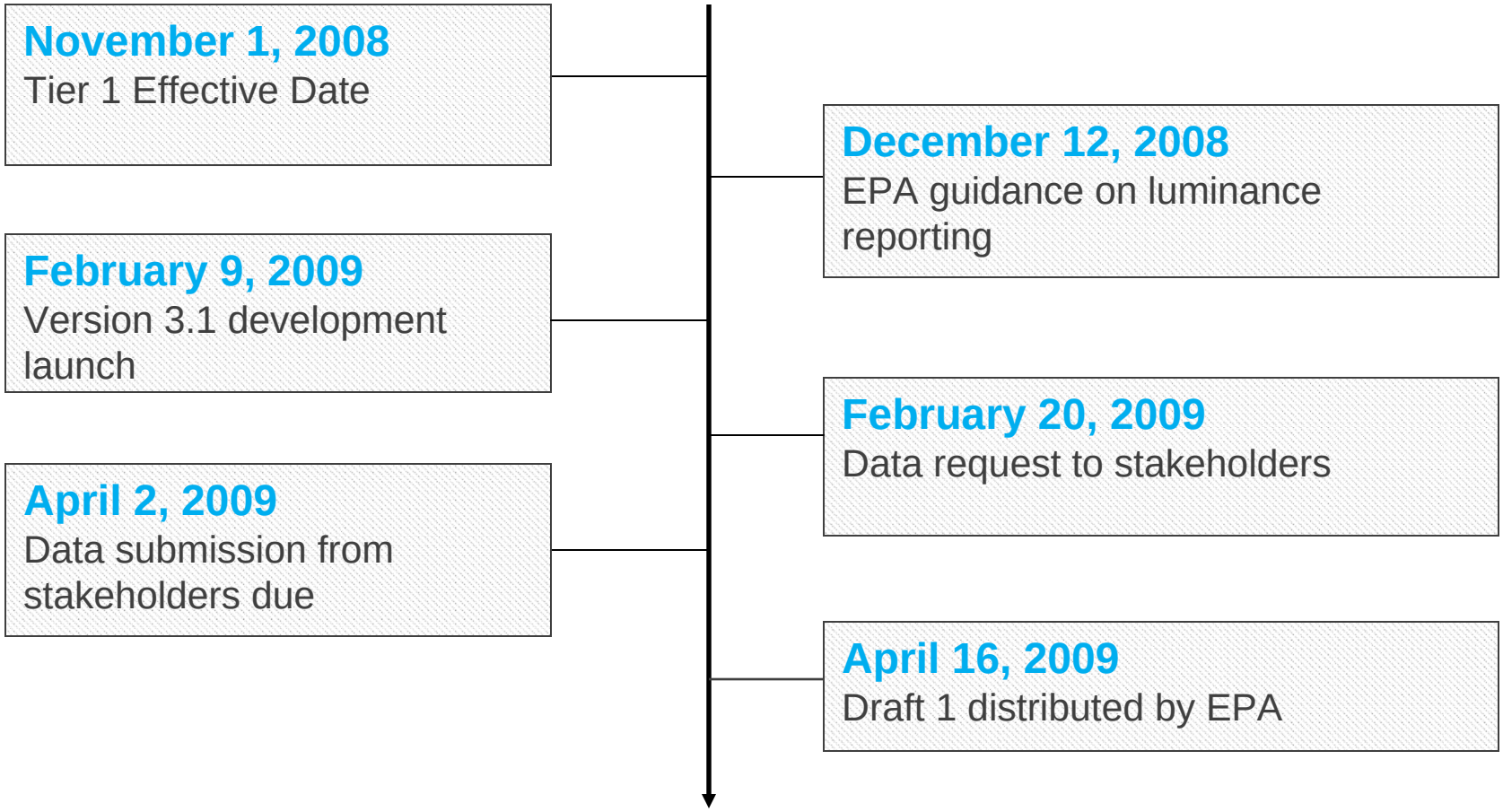
Next Steps (1)

- Data
  - Conference call for concerns and path forward (ALL)
    - Analysis data for date of mfr or available?
    - Proposal: dropping products older than 1 year
  - Examine features of models that do and don't meet proposed requirements (EPA)
  - Adding model name and number to data (ALL)
- Host call to strategize about what info we need to inform about luminance (EPA)

Next Steps (2)

- Set call with interested parties to discuss DAM (EPA)
- Post presentations on Web site (EPA)
- Submit comments to EPA by May 13 (stakeholders)

Timeline for Version 3.1 Specification Development



Proposed Timeline for Version 3.1 Specification Development

April 24, 2009
EPA hosts stakeholder meeting

May 13, 2009
Stakeholder comments on Draft 1 due

June 1, 2009
EPA to distribute Draft 2

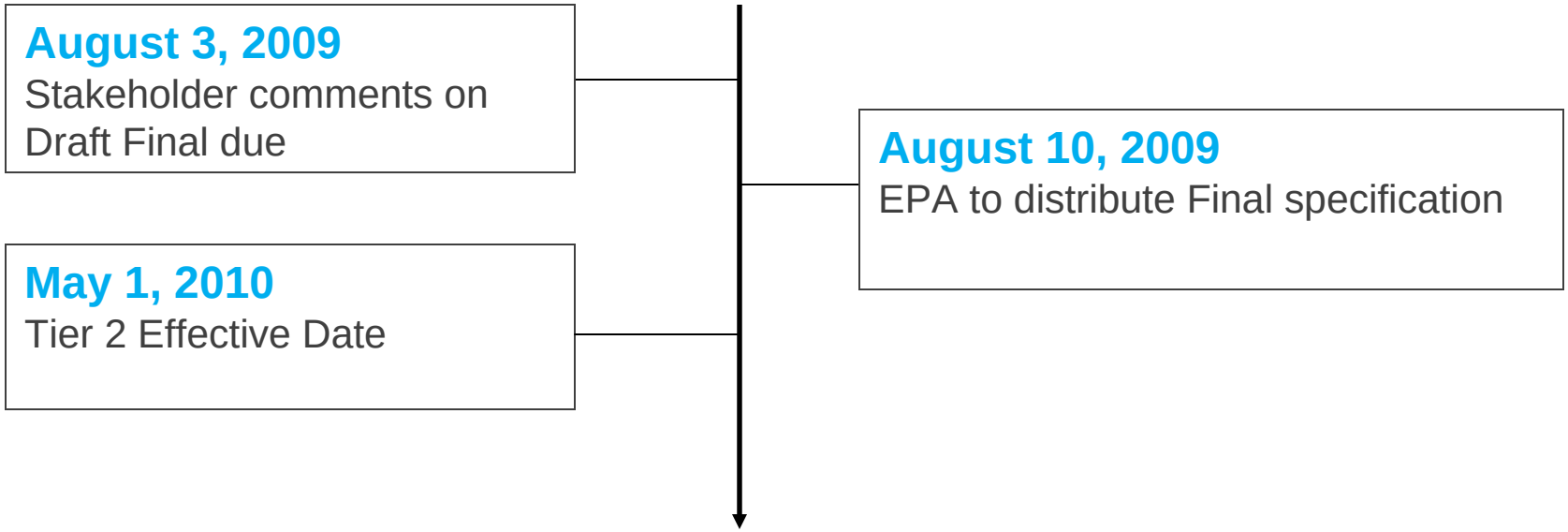
Week of June 15
Stakeholder Webinar on Draft 2

June 29, 2009
Stakeholder comments on Draft 2 due

July 13, 2009
EPA to distribute Draft Final

Week of July 27
Stakeholder Webinar on Draft Final

Proposed Timeline for Version 3.1 Specification Development (*cont.*)



Outstanding questions?

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Thank you

EPA

Learn more at **energystar.gov**