

IEC TC100 TV Power Project



An Overview
by Jon Fairhurst
IEC TC100 62087 Project Leader
Sharp Labs of America



- The International Electrotechnical Commission is (IEC) over 100 years old
 - 179 technical committees (TCs) and subcommittees (SCs)
 - 700 project teams / maintenance teams
 - Voting is by National Committee
- We are a Project within TC100 (Technical Committee - Multimedia Systems)
 - Initially an NP (New Project); Now an MT (Maintenance Team)

- IEC Document Number:
 - IEC 62087 Ed. 2 (Edition 2)



- Scope:
 - Standardize an improved method of measurement for TV On-mode power consumption



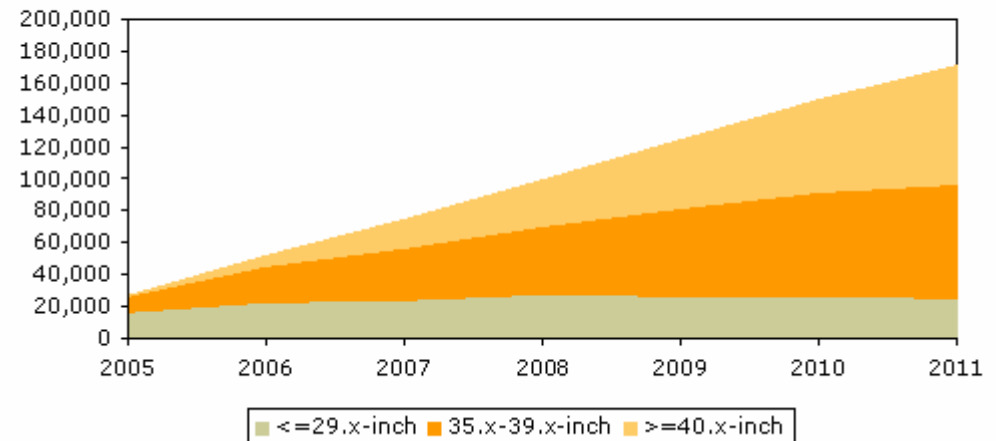
- Status:
 - Committee Draft (CD) issued 23-March-07
 - Comment period closed 29-June-07



TV Power Draw is on the Rise

- CEA: In 2006, US Consumer Electronics (CE) electricity use was 147 TWh
- Analog TVs accounted for 3.96% of residential US electricity use (1.44% of total US electricity use)
CEA/TIAX Report, January 2007
- Flat panel sales are growing
- Average display size is growing
- For a given brightness, power generally increases with screen area

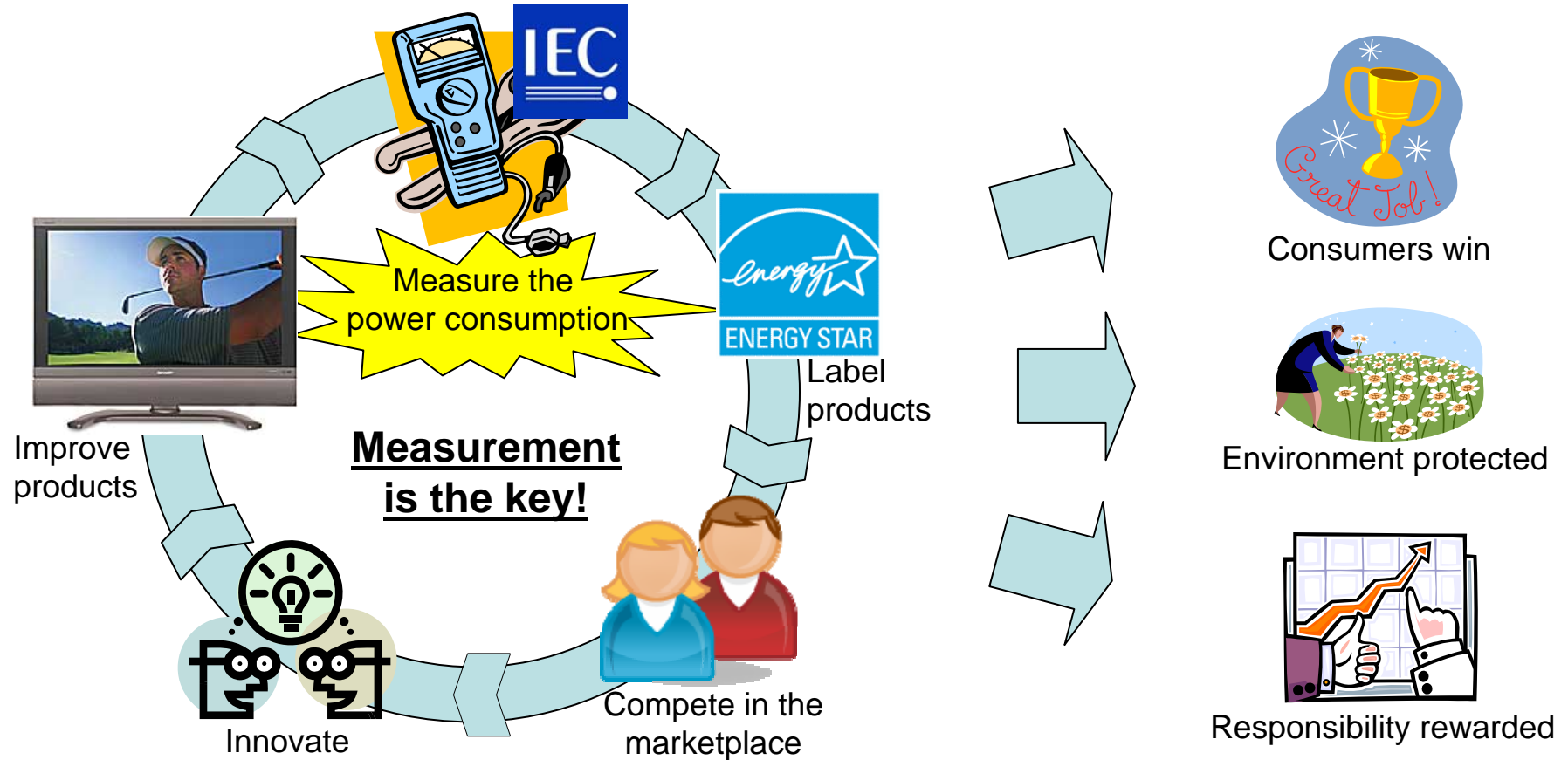
Worldwide LCD-TV Panel Shipment Forecast, 2005-2011
(Thousands of Units)



Source: iSupply Press Release, "iSuppli Raises LCD-TV Panel Forecast", March 13, 2007

Average hours per day per that a TV is on in a US household: **8 hours, 14 minutes**

- Nielsen, Sept. 2005 to Sept 2006 US TV Season



- DOE method: developed for B&W TVs!



JEITA



- JEITA Draft Report (Japan):

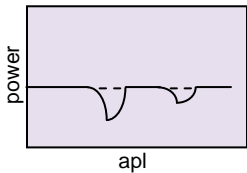
- Developed for LCD-TVs & PDP-TVs;
- Uses static signals only (black, white, colorbars, three bars)

- IEC 62087 (1st Edition):

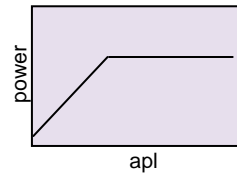
- Includes a variety of tests
- uses only 3-bar signal for on-mode measurement.
- Does not consider power saving features.



Challenge



LCD - VS - **PDP**



static - VS - **Live**



©Copyright

Schedule

Consensus model successful!

Solution

- Measurement of typical broadcast & Internet content
- Satisfy All!
 - JEITA_C compatible
 - Dynamic broadcast
 - Dynamic Internet
- Acquired content from volunteers
- Acquired content from US govt. websites
- Shared our work with EPA Energy Star (TC100 member)

Meetings



Jun 2005
NRDC



Sep 2005
TC100



May 2006
TC100



Jul 2006
TV Power



Sep 2006
IEC



Nov 2006
TV Power



Dec 2006
TV Power



Jan 2007
TV Power



Mar 2007
TV Power

Dec 2005
Project Leader
volunteers

Feb 2006
NP authored
to US TAG

Apr 2006
NP issued

Jul 2006
NP Approved

Sep 2006
1st video &
test signals
proposed

Full completion expected in early 2008

Jan 2007
Transition to MT

Feb 2007
2nd video
proposed

Mar 2007
CD issued

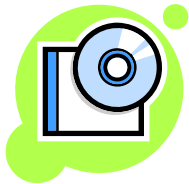
Jun 2007
Comments received
Work starts on CDV

The original new project proposal included the following goals:

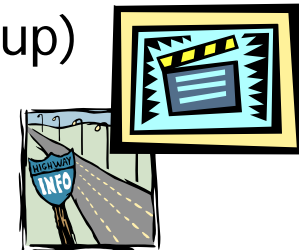
- To be technology and size neutral
- To consider dual function products, such as TVs with computer monitor capabilities
- To allow for fair and consistent comparison of products
- To have international scope and application
- To focus on out-of-the-wall power consumption (i.e., consumption from the power mains)
- To include a rich range of content for the test image
- To be an easy to use measurement technique
- To have an intuitive set up (e.g., out of the box/default settings) and run in a reasonable amount of time (i.e., a few hours with the ability to extrapolate results).
- Timely publication and promulgation: 2007.



- The Team completed the Working Draft (28 pages)



- The Team completed a DVD, including
 - Static test signals (for JEITA testing & warm up)
 - A Broadcast-content test loop (10 minutes)
 - An Internet-content test loop (100 images)



- The Team made the materials available to EPA Energy Star for early industry testing

- Project goals:
 - Add on-mode TV power measurement for new TV technologies
 - Preserve the measurements from the previous version
 - Editorial maintenance

- Document scope:
 - Method of power measurement for various consumer electronics products
 - Scope includes various modes
 - Disconnected, Off
 - Standby (-passive; -active, low; -active, high)
 - On-mode (play, average, record)

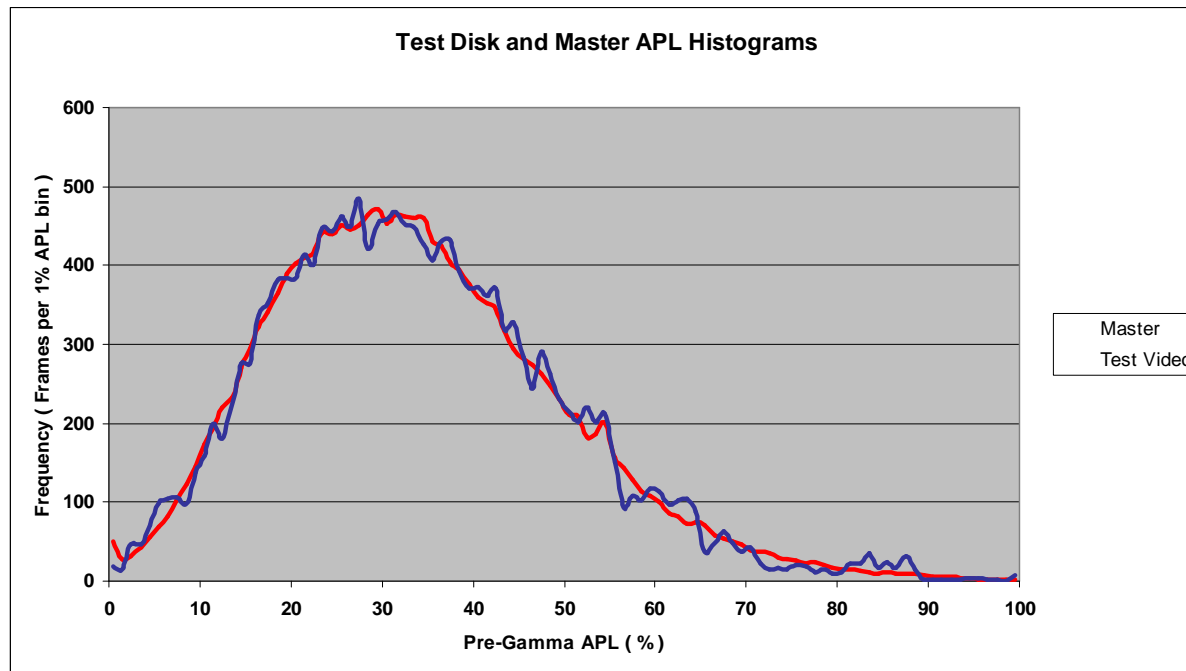
<u>Number of Pages</u>		
	Ed.1	Ed.2
Normative	9	14
Informative (Annex)	1	9

- Clause 11 (new): TV Power Measurement - On (average) mode
 - Audio (negligible impact on power consumption)
 - 1 kHz or center of frequency range
 - Sound output shall be perceptible
 - Video inputs (moderate impact on power consumption)
 - Input(s) to be used are not specified, due to regional differences
 - Stabilization (moderate impact on power consumption)
 - 30 minutes, or until stable power state has been reached
 - Other functions
 - No plug-in modules; Satellite dish power supply off
 - Special functions disabled, if user-controllable

- Clause 11 (cont.):
 - Aspect ratio
 - Video signal shall fill the entire screen
 - Power Saving Features (major impact on power consumption)
 - Special Power Saving Features disabled for normative measurement
 - Automatic Brightness Control shall be disabled
 - Benefits of Power Saving Features measured in the informative section - regional differences
 - Picture level adjustments (major impact on power consumption)
 - As originally adjusted by the manufacturer to the end user
 - If a setting must be made, choose Standard Mode or equivalent
 - If no Standard Mode, choose the first mode
 - Note: based on out-of-box levels, not by standardized brightness levels

- Clause 11 specifies 3 video signals (major impact on power draw)
 - Static Video Signals
 - Compatible with the JEITA TV Power Standard
 - White (16.7%), Black (16.7%), 3-bar (33.3%) and 75% colorbars (33.3%)
 - Dynamic Broadcast-Content Video Signal
 - Based on 40 hour prime-time measurements from five countries
 - 10 minute video test loop of donated, copyrighted materials
 - (BBC, MPTV, CEA, SLA)
 - Dynamic Internet-Content Video Signal
 - Based on 100 top Internet sites
 - 100 images of US Govt copyright free web pages (e.g. Energy Star)
- Selection or weighting of the three signals is in the informative section

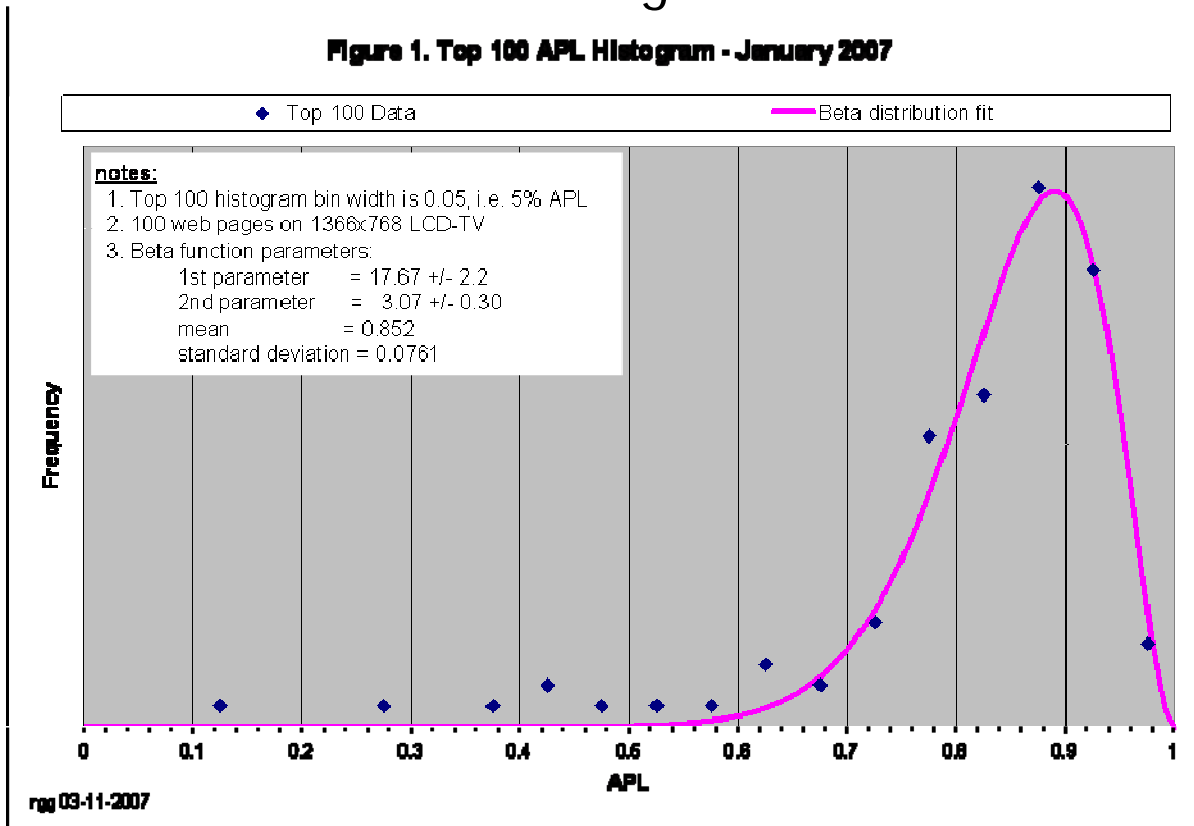
- Dynamic Broadcast-Content Video Signal



Mean: 34.64%

Dynamic Internet-Content Video Signal

Figure 1. Top 100 APL Histogram - January 2007



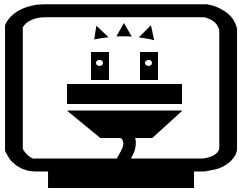


- Team to respond to formal comments
- Team to work toward completion in early 2008



- Team to continue to work with EPA Energy Star and other agencies as they develop their specifications
- Leadership intends to help publicize the benefits of efficient televisions





- The IEC TV Power Project is standardizing on-mode TV power measurement

- The result will provide global benefits



- Team is working closely with agencies and non-governmental organizations

- Team has worked quickly and achieved broad support using a consensus model

