SHARP LABORATORIES OF AMERICA

Via e-mail:
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United States Environmental Protection Agency
Office of Air and Radiation
Washington, D.C. 20460

Subject: **ENERGY STAR Televisions Draft 1 Version 6.0 Specification**

COMMENTS OF
SHARP LABS OF AMERICA

SHARP is an enthusiastic ENERGY STAR Partner and is committed to building high-efficiency, low energy-use products that enable our customers to minimize their environmental impact. The ENERGY STAR program continues to be the most effective approach for SHARP to communicate the low power consumption of our products to retailers and consumers.

On May 25th, EPA released Draft 1 of the Version 6.0 ENERGY STAR Specification for Televisions.

SHARP is concerned about the proposed requirements for the following reasons:

Energy Star should reward efficiency

SHARP applauds EPA's intended goal of rewarding the most energy efficient products. However, the proposed 85-watt cap splits the program in two - televisions under 50-inches are rewarded for efficiency, while televisions over 50 inches are measured by a one-size fits all

consumption cap. A 70-inch television that consumes only 85-watts would need to be roughly twice as efficient as a 50-inch , 85-watt TV, due to the larger TV's additional area.

In terms of area-per-watt a 50-inch, 85-watt TV would have an efficiency of 12.6 square-inches-per-watt while a 70-inch, 108-watt TV would have an efficiency of 19.4 square-inches-per-watt. Clearly, the 70-inch, 108-watt TV is the more efficient of the two TVs - in fact 54% more efficient, yet the 50-inch TV could qualify as an Energy Star product while the more efficient 70-inch TV would not.

Either 70-inch TVs are given half their fair allocation, or 50-inch TVs are given twice their needed power. In any case, a flat line above 50-inches does not reflect the reality of current display technology.

The Energy Star program should benefit all consumers

Consumers generally shop for a television with a given location in mind along with a given budget. These factors set the size target for the consumer. After the size range decision is made, the consumer shops for picture quality, industrial design, brand name, features, the particular model cost, and energy efficiency.

A consumer who shops for a large display is unlikely to find any Energy Star v6.0 models available while consumers shopping for mid-sized TVs are likely to find many Energy Star v6.0 models to choose from. This situation is unlikely to change the consumer's size target. It only makes it less likely that the consumer will give energy efficiency as much weight when shopping in the large TV category.

EPA should incentivize efficiency in all size categories

In general, TV manufacturers put their most advanced technologies - which are often the most efficient technologies - into their largest model televisions. EPA should ensure that these

large televisions can feasibly be rewarded with the Energy Star brand. If the designation is unattainable or too far out of reach, manufacturers may decide to put less emphasis on energy efficiency, which would harm consumers and the environment.

EPA should not set a fixed size goal for televisions

Energy Star 5.3, the "Most Efficient" program, and the proposed Energy Star 6.0 draft all have energy caps that start at 50-inches. To this date, EPA has not provided a rationale for choosing this particular size for the cap.

SMPTE specifies the optimum HDTV viewing distance as three times the picture height of a 16x9 TV. [1] For a 50-inch TV, this distance is 6.13 feet. Between the cost of the television, monthly cable or satellite bills, and packaged or downloaded media, Americans spend thousands of dollars per household on video entertainment. EPA should not show prejudice against large screen TVs - or expect that consumers should sit within two meters of their TVs for an optimum viewing experience.

[1] SMPTE 196M : Motion-Picture Film - Indoor Theater and Review Room Projection - Screen Luminance and Viewing Conditions. Additional seating distance information is available at http://home.roadrunner.com/~res18h39/calculator.htm. For instance, NHK recommends a maximum viewing distance of 6.78 feet for a 50-inch HDTV screen as shown in the paper, Psychophysical Analysis of the "Sensation of Reality" Induced by a Visual Wide-Field Display, by T. Hatada, H. Sakata, and H. Kusaka. http://www.vrsj.org/ic-at/papers/91117.pdf

Recent data [2] shows that 50-inch and above screens commanded a 22.7% of the US market share for TVs. Surely, EPA would want to accurately inform this significant part of the US market about the energy efficiency of their purchases.

[2] http://www.isuppli.com/display-materials-and-systems/marketwatch/pages/more-50-inch-and-larger-tvs-bought-by-us-consumers-in-q1-2011.aspx

Alternative to a size-based energy cap

SHARP understands that EPA does not want to reward more and more power consumption as sizes grow; however, the 50-inch cap is not the only way to achieve this goal. SHARP recommend a more elegant, alternative approach that includes a "soft landing" rather than a hard cutoff. In particular, SHARP recommends

Pmax = (0.055 * A) + 13.0 (W); where A < 200

Pmax = (0.070 * A) + 10.0 (W); where 200 <= A <= 1068

Pmax = (0.035 * A) + 47.6 (W); where 1068 < A <= 1725

Pmax = 108 (W); where A > 1725;

Note that 1725 sq. in. is roughly the area of a 63.5-inch TV.

This approach would make it progressively more difficult to qualify as TVs get larger, but the cap would be allowed to move beyond 50-inches. This maintains the objective 108W limit set in Energy Star 5.3, rather than the subjective limit of a 50-inch screen size.

The Automatic Brightness Control area needs refinement

SHARP strongly supports an improvement in the area of Automatic Brightness Control (ABC). However, the current proposal seems to be based on assumptions, rather than data, and may be overly complex.

CEA is currently initiating a home lighting study that will help EPA design an ABC requirement that reflects real-world viewing. SHARP recommends that EPA base the new measurement procedure and weighting on this data. SHARP prefers that measurement standards from IEC, EPA, DOE, CEA, and others be harmonized and based on real-world data. If EPA

moves ahead prematurely, it is possible that the new ABC method would be a short-lived, interim method that would be add odds with other measurement methods, and it may have unintended consequences.

EPA assumes that well-designed ABC controls are linear from 0 to 300 lux. This may not be the case. IEC chose 300 lux as a likely saturation point, not an end point on a linear scale. The home lighting data will both help EPA implement an effective measurement method and may also help manufacturers develop better optimized ABC algorithms.

SHARP is not convinced that four measurement levels are justified. We have yet to see data that supports the additional cost of measuring power at four light levels.

SHARP is also concerned about practical testing matters. It can be very difficult to provide an accurate light source at specific levels. When testing at 0 lux and 300 lux or greater, accuracy is not a concern. When specifying a specific level, such as 10 lux, it should also include a tolerance range, such as +/- 10%. Physical tests should be run to ensure that the tolerance range is achievable. In general, light sources take time to stabilize. Without a tolerance range, measurement labs will not know how long a stabilization time and how accurate an adjustment is required.

Internet connections

The IEC Internet-content video signal is representative of the brighter content often found on web pages for PCs. This content may be applicable for large professional displays that might show content with bright backgrounds, but it is much less applicable for TVs.

Internet-connected TV features are unique to each manufacturer. In general, online video content, such as provided by Netflix, VuDu, and CinemaNow, is much closer in profile to the Broadcast-content loop than the Internet loop. Photo sites are also popular and have video-like

contours. Many sites are accessed in order to provide data to small widgets, rather than full screen applications. Full screen applications are often provided from within "walled gardens" and are designed for TV-style aesthetics, rather than PC-style application designs. Even Google designed a dark to medium toned user interface for Google TV, even though their brand is strongly associated with the simple white background screen on PC browsers.

However, SHARP's main concern is not with the brightness levels; it is with the added cost and complexity of running the Internet-content loop at multiple illuminance levels.

Our recommendation is that TV power be measured while physically connected to the Internet. Since services are often limited to specific national regions, we recommend that no active use of any specific service be required, as that could be impossible at some international factory sites. In addition, Internet services are heterogeneous; no one service is representative of true, average viewer usage.

Toxicity and Recyclability should not be included in Energy Star for TVs

The Energy Star 6.0 draft proposes adding requirements related to toxicity and recyclability. This would be understandable if there were a causal link between energy saving technologies in televisions and potential environmental harm. SHARP is aware of no such link.

In fact, the move from CCFL backlights to energy efficient LED backlights has resulted in a reduction in mercury content and has enabled TVs to become thinner, lighter, and easier to recycle than ever before.

Stakeholders have come together to create IEEE 1680.3, a comprehensive environmental standard for televisions. There is also work in progress by the Sustainability Consortium and UL. The IEEE effort includes thousands of hours of work over a 2-1/2 year period and is rapidly approaching a membership vote. By contrast, this topic in version 6.0 draft has only reached an

informal discussion stage. Energy Star should avoid "leapfrogging" IEEE to ensure that any potential conflict or inefficiency between Energy Star and IEEE 1680.3 be avoided.

The effective date should be delayed

SHARP is concerned that the schedule for Energy Star 6.0 for Televisions is too aggressive. Though the rate of improvements in television power efficiency has slowed, 6.0 is scheduled to become effective less than a year after the effective date of 5.3. This virtually guarantees that many models designed to v5.3 goals would need to have logos removed during their annual product cycle.

In addition, the most important potential improvement of Energy Star v6.0 is likely to be the refinement of the ABC measurement method. However, data is not yet collected and consensus on new methods have not been reached. To date, it does not seem that EPA has performed the rigorous research required to ensure a well-modeled approach.

EPA should take the time necessary to ensure that the ABC measurement method will stand the test of time. It should not be designed as a one-off, interim - and potentially flawed - method.

In order to allow enough time for ABC development, to allow market data capture in the v5.3 environment, and to avoid costly mid model year changes, SHARP recommends an effective date of March 31, 2013.

Conclusion

SHARP strongly supports the Energy Star program and believes that is it best served by

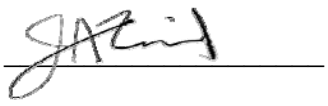
- including a "soft landing" to 108W for larger screens,
- refining ABC testing to reflect actual home lighting,
- avoiding the Internet-content loop as it is a poor model of Internet TV services, and

- allowing toxicity and recyclability to be handled by other organizations.
- delaying the effective date of the version 6.0 specification to ensure quality, yet to also avoid changes in the middle of the model year.

We hope that EPA strongly considers SHARPs comments as we work together to create an effective, accurate, and efficient next version of the Energy Star program for televisions.

Respectfully submitted,

SHARP LABORATORIES OF AMERICA

By: 

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