ENERGY STAR® Qualified Televisions Specification Revision Update
January 3, 2007

Introduction

EPA is sharing this update to inform stakeholders of the ongoing process to revise the ENERGY STAR criteria for televisions. In order to ensure an open and transparent specification revision process, EPA is releasing this document prior to the development of a First Draft so that interested stakeholders have an opportunity to comment on both the proposed direction and key issues, and provide responses to questions related to a new ENERGY STAR specification for televisions.

Much of the information in this update document has been aggregated from questions and/or concerns shared through meetings and correspondence with current partners, international agencies, and other industry stakeholders. This update document will be shared with all stakeholders who have indicated their interest in this process to EPA. EPA asks that responses to the questions included in this update, and any comments on this document, be submitted to Katharine Kaplan, U.S. EPA, via e-mail at kaplan.katharine@epa.gov or Mehernaz Polad, ICF International, via e-mail at mpolad@icfi.com no later than **Friday, February 2, 2007**. All written comments will be posted to the ENERGY STAR Web site for review, unless the submitter indicates otherwise. EPA welcomes the wider distribution of this document to others who may be interested in contributing to the revision of the ENERGY STAR specification for televisions. In addition, EPA is grateful for all of the input and feedback that stakeholders have provided over the past several months, which has helped to shape this document.

ENERGY STAR representatives will be attending the 2007 Consumer Electronics Show® in Las Vegas, NV, on January 8 – 11, 2007, and will be available for meetings with interested stakeholders to discuss this update document. If you are interested in scheduling a meeting, please contact Mehernaz Polad no later than January 5, 2007.

History of Current ENERGY STAR TV Specification

The ENERGY STAR TV specification was originally launched at The Consumer Electronics Show (CES) in January 1998. Since then, the specification has undergone a significant revision, through release of multiple tiers of the specification, to decrease the standby power consumption for products. The current ENERGY STAR specification for TVs is provided below, in Table 1.

Table 1: Version 2.2 ENERGY STAR TV Specification

Product Category	Phase I Standby Mode (effective 7/1/02)	Phase II Standby Mode (effective 7/1/04)	Phase III Standby Mode (effective 7/1/05)
TV	≤ 3 Watts	Analog: ≤ 1 Watt Digital: ≤ 3 Watts	≤ 1 Watt
VCR	≤ 4 Watts	≤ 1 Watt	≤ 1 Watt
Television Monitor	Analog: ≤ 1 Watt Digital: ≤ 3 Watts	→	≤ 1 Watt
Component Television Unit	≤ 3 Watts	→	≤ 1 Watt
TV/VCR Combination Unit	≤ 6 Watts	→	≤ 1 Watt
TV/DVD, VCR/DVD, and TV/VCR/DVD Combinations	≤ 4 Watts	→	≤ 1 Watt
DCR TVs with POD Slots	No POD Installed: ≤ 3 Watts POD Installed: ≤ 15 Watts	→	

The purpose of the current specification is to recognize TVs with low energy consumption when turned off or in the standby mode. This approach was an important first step in reducing TV energy use due to the vast amount of time they spend in standby mode and the millions of televisions in use in U.S. homes. In 1998 when the specification was introduced, EPA estimated that ENERGY STAR qualified televisions would use about 20 percent less energy in a year than comparable televisions. See Table 2 below. (Please note that this analysis was based on CRT technology; other technologies, such as LCD and plasma, were not prevalent in the consumer market when the current ENERGY STAR TV specification was released.)

Table 2: Initial ENERGY STAR TV Savings Analysis

	Baseline TV	ENERGY STAR TV	Savings	% Savings
Standby Energy (kWh)	40.4	12.3	28.1	69.5%
Active Energy (kWh)	143.7	135.9	7.9	5.5%
Total Annual Energy (kWh)	184.2	148.2	36.0	19.5%

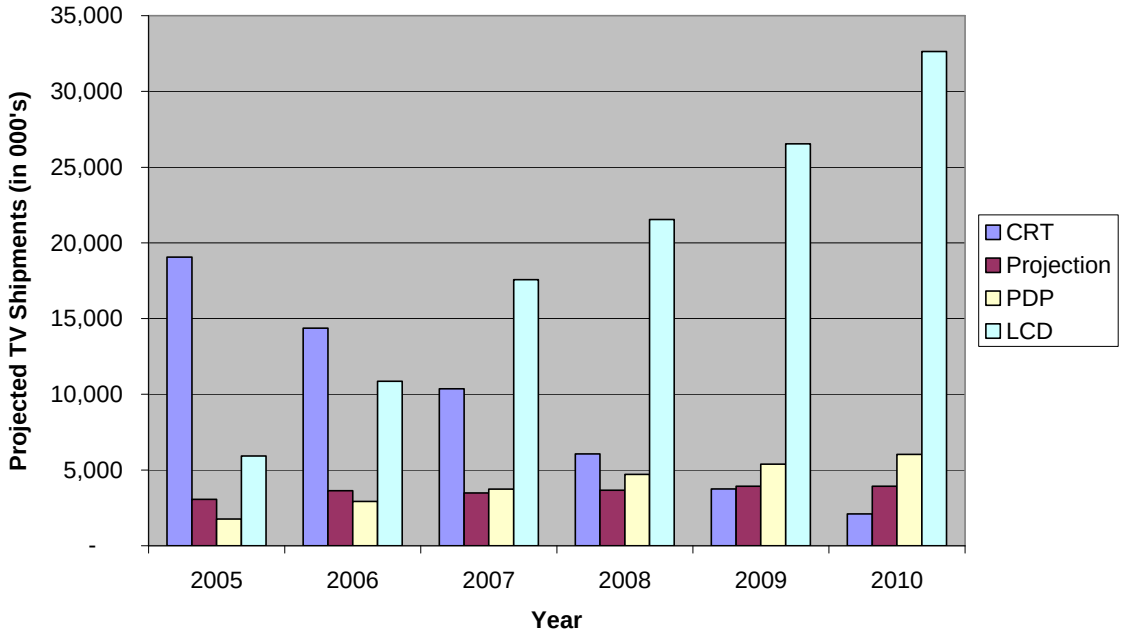
Source: Developed by Lawrence Berkeley National Laboratory (LBNL) for EPA ENERGY STAR in 1998.

Rationale for Revising the Current TV Specification

The current ENERGY STAR TV specification will be revised to adapt to a changing marketplace.

- **Market penetration of ENERGY STAR qualified TVs is currently over 60%,** which is considerably higher than the approximately top 25% of the market that the ENERGY STAR mark aims to recognize.
- **The TV installed base is large, and projected to continue growing at a rapid pace**.
  - According to Nielsen Media Research (NMR), there are now more TVs (2.73) in the average U.S. household than people (2.55).
  - iSuppli's Television Systems Market Tracker projects that television shipments to North America are projected to increase by almost 50% from 2005 to 2010, totaling approximately 44.72 million units by 2010.
- **TVs are getting larger and their energy consumption is increasing**.
  - By 2009, iSuppli estimates that 71.5% of the North American market will be comprised of flat panel televisions with screen sizes of 30 inches and above. Overall, many of the large screen, flat panel televisions being purchased by consumers will consume double or more the active mode power of the smaller CRT televisions that they are replacing. Much of this differential in power consumption is simply attributable to the increased size of the products being sold now.
  - iSuppli projects that between 2005 and 2010, shipments of CRTs to North America will decline by about 38% whereas projection, plasma and LCD TV shipments are projected to increase by 2%, 20%, and 32% respectively (see Figure 1).
- **TVs are 'on' more hours per day**.
  - According to NMR, for the September 2004 – September 2005 viewing season, the average U.S. household was tuned into television an average of 8 hours and 11 minutes per day. And this does not take into account additional hours that a TV is on due to peripheral devices such as game consoles, digital video recorders, and increased availability of cable/satellite programming.
- With the increase in active power tied to these newer products, **EPA believes that standby power alone is no longer an effective measure of television efficiency**.
  - Many new televisions also are digital and capable of showing a high-definition picture, which can increase overall power consumption when operating.

Figure 1: TV Shipments to North America by Technology (2006 Onwards Projected)



Source: iSuppli's Television Systems Market Tracker – Q3 of 2006

- **A growing number of consumers are becoming aware of the role of IT and CE products in contributing to rising energy costs**.
  - According to the Department of Energy's (DOE) Energy Information Administration (EIA), by 2015 electronics products may account for 18% of total household electricity demand – this will exceed lighting and appliances as a percent of total residential electricity consumption.
  - Several recent consumer surveys have highlighted growing consumer demand for more efficient electronics products.
    - According to a recent Lifestyles of Health and Sustainability (LOHAS) Consumer Report, for example, 80% of consumers rate energy efficiency as important to their purchasing decisions.
    - Gallup polls show Americans' concerns about environmental issues have increased more than 10 percentage points between 2004 and 2006.
    - A story that ran in the Wall Street Journal in July 2006 stated that 47% of consumers plan to spend less on discretionary items like HDTVs, PCs, and major appliances, due to higher energy and gas bills.

Goals of the TV Specification Revision

In keeping with the ENERGY STAR Guiding Principles for specification development, EPA intends to develop energy efficiency specifications for TVs that are performance-based and technology neutral, recognizing approximately the top 25% of the market in terms of energy efficiency, i.e., specifications that evaluate all models in the TV product-category the same way, irrespective of screen-type. This approach offers several benefits, including:

- Specification longevity, as EPA wants to ensure that the specification does not have to be revised each time a new screen technology is introduced for the mass-market;
- Easy comparison among different TV models. If all TVs have to meet the same criteria in order to earn the ENERGY STAR, consumers will be able to differentiate based on whether or not the TV has the ENERGY STAR mark on it, and easily choose the most energy-efficient model to suit their needs and preferences.

While EPA does not intend to differentiate between technologies, the energy efficiency criteria developed for TVs will allow normalization for screen-size, e.g., watts per inch^2. Some consideration of differences in resolution is also possible, depending on the factors that demonstrate the greatest influence on power consumption in EPA's data-set.

1. Are there other means of normalizing, apart from screen size, that stakeholders suggest EPA consider when developing the new specification?

EPA also intends, where possible, to make use of internationally supported test procedures and harmonize with its international partners, such as Australia, Canada, the European Union, and Japan. EPA is a member of a TV Working Group within the International Electrotechnical Commission (IEC), which is working on the development of an 'on' mode test procedure for TVs. This group is comprised of a variety of interested stakeholders, including TV manufacturers, component manufacturers, the Consumer Electronics Association (CEA), international representatives, energy efficiency advocates, and others. The TV Working Group intends to complete an 'on' mode test procedure suitable for all TV technologies by February 2007. Once the test procedure is completed, EPA will request that stakeholders test their latest, most feature-rich models using this new procedure. The results will inform 'on' mode levels for the Draft 1 ENERGY STAR TV specification (see draft timeline for the ENERGY STAR process on page 5 of this document).

Along with setting 'on' mode requirements for TVs, EPA intends to include low power mode requirements for these products in the new specification. The current ENERGY STAR specification calls for testing in the most consumptive low power mode to qualify, thereby delivering on consumer expectations that their qualified TV will consume $\leq$ 1 watt in standby, regardless of the set up mode the user has selected. To better understand TV technologies and features, and aid in the development of appropriate low power mode requirements for the new TV specification, EPA would appreciate stakeholder feedback on the following questions to better understand how these affect consumers:

1. What low power modes currently exist for TVs and what is envisioned for the future?
2. How does power consumption differ between the various low power modes?
3. For those TV models that have multiple low power modes, what added functionality is offered in those modes?
4. Are the low power modes cycled through automatically, or are they discrete modes that can be manually selected?
5. In which low power mode are TVs most commonly shipped?

In conjunction with the new ENERGY STAR TV specification, EPA intends to also address peripheral devices such as complex set-top boxes and audio products, in future specification development efforts, and/or enhanced functionality associated with TVs. To aid in best addressing these peripheral devices/functionalities that will provide consumers with access to a suite of qualified home entertainment products, EPA would appreciate stakeholder feedback on the following questions:

1. What peripheral devices/functionalities should be considered when developing the new TV specification?
2. For the peripheral devices/functionalities to be considered, can any information be shared with EPA on their duty-cycles and power consumption?
3. How do the peripheral devices impact the TV's power consumption? Can they be shut off? And if so, are they typically shut off?
4. How do the enhanced functionalities found in TVs today, e.g., capability of downloading IPTV, etc impact the TV's power consumption? Can these functions be disabled? Is there any information available on usage profiles for these enhanced functionalities?

When developing the new TV specification, EPA wants to be able to provide consumers with realistic annual energy consumption estimates. As such, duty-cycle assumptions must be developed for TVs.

1. Do stakeholders have information that can be shared with EPA regarding realistic duty-cycle assumptions for TVs?
2. Are there any sources that stakeholders can recommend for this type of information, e.g., Nielsen?

Finally, EPA recognizes that TV products have changed in terms of their form factor over the past several years, and continue to change, meaning that the area available for physical labeling on the product is diminishing. The aim of product labeling is to increase awareness of energy efficiency and draw consumers to qualified products. The use of temporary static clings continues to be an option for TV manufacturers under the current ENERGY STAR TV specification, for placement on the physical product. For other electronics products, EPA has offered alternatives to permanent physical labeling of the product, such as cling labels and electronic labeling.

1. Would TV manufacturers like to have electronic labeling as an alternative to physical labeling of the product under the new specification?
2. What other suggestions do partners have for meeting the above stated intention of physical labeling without actually labeling the product?

Draft Timeline for ENERGY STAR TV Specification Development

January 3, 2007: EPA distributes ENERGY STAR TV Specification Update
Week of February 21, 2007: EPA distributes request for TV test data, which will include TV test procedure (text) and a set of test clips – data to be submitted to EPA by March 30
April 9, 2007: EPA distributes ENERGY STAR Draft 1 TV Specification – comments due May 7
April 25, 2007: EPA hosts TV Stakeholder Meeting to discuss Draft 1 – location TBD
May 21, 2007: EPA distributes ENERGY STAR Draft 2 TV Specification – comments due June 18
June 21, 2007: EPA hosts TV Stakeholder Meeting to discuss Draft 2 – location TBD
July 2, 2007: EPA distributes ENERGY STAR Draft 3 TV Specification (if needed) – comments due July 30
August 13, 2007: EPA distributes ENERGY STAR Draft Final TV Specification – comments due September 10
September 24, 2007: EPA distributes ENERGY STAR Final TV Specification
No later than November 5, 2007: IEC provides completed, approved text clips to ENERGY STAR for reproduction and distribution
No later than January 1, 2008: ENERGY STAR makes available test procedure and clips for manufacturers interested in qualifying product
July 1, 2008: Specification becomes effective

Stakeholders who are interested in:

1. Being added to the ENERGY STAR TV distribution list and/or
2. Conducting testing of TVs in February using the newly developed IEC test procedure,

are encouraged to contact Mehernaz Polad at mpolad@icfi.com via e-mail no later than February 5, 2007 to request that they receive a copy of the accompanying test clip via Fed-Ex. Additionally, if stakeholders are interested in being added to the ENERGY STAR distribution list for other electronics products, to receive announcements of new specification development efforts for example, they are encouraged to contact Mehernaz at the above e-mail address.