NRDC, ACEEE, and ASAP Comments on ENERGY STAR Version 7.0, Draft 2 Specification for Televisions

September 26, 2014

On behalf of the Natural Resources Defense Council (NRDC), the Appliance Standards Awareness Project (ASAP), and the American Council for an Energy Efficient Economy (ACEEE), (collectively referred to as "advocates") we respectfully submit our comments on the ENERGY STAR Version 7.0 Draft 2 Specification for Televisions (Draft 2). The ENERGY STAR program has been instrumental in the reduction of new TV energy use. To help preserve these savings and continue to encourage ongoing improvements in the energy efficiency of new TVs in all operating modes, we provide the following feedback and recommendations:

1. We support the revised on mode power levels presented in EPA's 9/22/14 webinar.

As stated in our prior comments, the advocates agree with EPA's approach to establish on mode power limits at levels that are below 25% of today's models in recognition that its specifications typically have adoption rates of well over 25% of the market soon after the specification goes into effect.

EPA re-reviewed the data set and, per their new analysis, developed a slightly less stringent Draft 2 curve (see Figure 1) to determine on mode power limits. The advocates appreciate EPA's efforts to base its specification on the best and most recent data available. We support the Draft 2 on mode power limits and believe they will provide significant incremental savings for high definition TVs beyond those that just meet the current specification, Version 6.1.

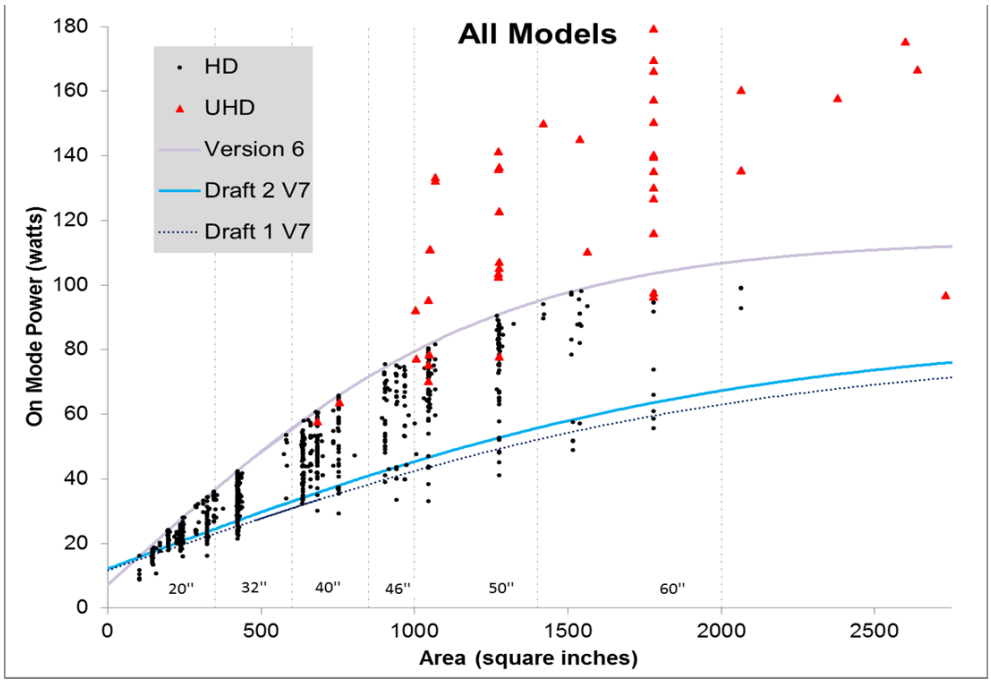

Figure 1: On mode power limit curves

2. We support EPA's decision to include a "power adder" for ultra-high definition TVs and to limit the duration of time which this adder remains in effect.

Market analysts and manufacturers project rapid adoption of ultra-high definition (UHD) TVs over the next few years. During its webinar, EPA showed predictions that UHD market share in the US will grow from 4% in 2014 to 33% by 2020 and that price points will be below $2000 in 2014. As Vizio, one of the top three sellers of TVs in the US, just released a 50 inch UHD TV for $999, the market share of UHD TVs may grow even faster than projected. In order to account for the additional power needs of UHD TVs as compared to ordinary high definition (HD) TVs, we agree with EPA's approach of providing a power adder for UHD TVs.

In considering the magnitude and appropriateness of such an adder, the advocates requested in their prior comments to EPA that it limit any proposed adders to levels that would ensure qualifying UHD TVs do not use any more energy than the Version 6 limits. Without such a policy, EPA would allow backsliding and allow manufacturers to continue to qualify for the latest ENERGY STAR specification even though the TVs consume more annual energy than the earlier specification required.

EPA has proposed a 55% on mode power adder for UHD TVs. While quite large, the advocates can initially support this level as it will ensure that new UHD models use less energy than Version 6 and the specification will provide a clear and meaningful initial target for manufacturers that will help begin to drive down the energy use of new UHD TVs.

As is commonly experienced, we expect the on mode power use of UHD TVs will continue to fall as the subsequent generations of UHD models are brought to the market. A great example of this trend was the rapid decline observed in the incremental power draw consumed by high definition TVs compared to standard definition TVs. Within a few years the incremental power needed for HD TVs shrank to almost zero

Based on a recent web search of Sony's UHD TVs, we observed a reduction of approximately 20% in their on mode power use for similar models over the course of a year and anticipate even greater reductions in the future.

Model Number	On Mode Power (Watts)
Model: XBR-55X850A	143
Model: XBR-5X900A	133
Model: XBR- 55X900B	113.5

Per EPA's latest draft, the UHD adder would stay in effect through May 1, 2017**.** Given the size of the adder and the rapid rate of change and product improvement that is anticipated, we propose that EPA add language to its specification that would require EPA to limit the duration of this adder through May 1, 2016, and require EPA to reassess the necessity or magnitude of a UHD adder going forward. For example, if a large percentage of new UHD models are

qualifying for ENERGY STAR 7.0, then EPA could reduce the size of the adder and publish an updated UHD adder by July 1, 2016, which would go into effect beginning on January 1, 2017, when that year's new models are introduced. With this mid-2016 timing, EPA's reassessment would benefit from about two years of design cycle information and data.

While ENERGY STAR will most likely revisit this issue in Version 8, there is no certainty when its next specification will be finalized or go into effect and we want to ensure that ENERGY STAR is helping to continue to drive down energy use of UHD TVs, especially in 2017 when the price points are expected to be much more attractive and annual sales are likely to be much higher. As EPA has proposed, models introduced by May 1, 2017, can continue to earn and display the ENERGY STAR label. This means that these models will continue to be identified as ENERGY STAR qualified throughout 2017, and beyond, even though they might not reflect the more efficient models on the market at that time, potentially resulting in a skyrocketing ENERGY STAR market share for UHD. Our proposed period of reassessment will help EPA avoid this scenario and maintain ENERGY STAR as an effective differentiator for UHD TVs.

3. We support EPA's proposed 3W level for standby-active low

Advocates support EPA's proposed 3W limit for standby-active low power use. Apple TV and Roku boxes use less than 3W when in on mode and are able to receive updates while in standby and wake quickly when a user first hits the remote control. Smart phones and tablets are able to maintain internet connections and keep apps such as weather updated when the device is not in on mode using a fraction of a Watt. Given these examples, new TVs should comfortably be able to achieve the proposed 3W limit when in standby-active low.

In order to address functions like Quick Start, which might be enabled after the initial set-up, we request that EPA require manufacturers to submit, as part of the qualification process, data on the standby-active low power use of features that may be enabled post set-up, as well as information on the amount of time the TV is expected to be in this mode.

Today, there are several TV models capable of using much more than the standby-active low 3W limit when they are "turned off", even though they are not configured that way by default or during the initial set up. For example, some TVs will have a very slow wake time whereby the TV takes an excessively long time to allow the viewer to select/view a channel or access the available apps that are offered by a "Smart TV." In this case, the user is likely to search through the settings menus to select a feature such as Quick Start which will ensure a significantly faster wake time. Neither the DOE test procedure nor ENERGY STAR specification address this situation.

Failure to limit these types of functions could cause energy consumption to increase considerably without the consumer even realizing. For example, a recent LG model has a Quick Start power use of 24W that remains effective for two hours after the user "turns off" the TV. This could easily translate into an additional 50+ kWh/yr for those users who view TV in the morning when first waking up, when they return from school/work, and in the evening. For many TVs today, that would translate to a 50% or more increase in annual energy use simply due to the power a TV uses when the user thinks it was turned off.

To ensure EPA and other stakeholders have sufficient data on the power used during standby-active low mode when features such as Quick Start and voice recognition are enabled after initial set up, EPA should require the following Quick Start information to be reported by manufacturers as part of the qualification process:[1]

- Which features are shipped enabled or are selectable during initial set up: Quick Start or equivalent, voice recognition, etc.
- Standby-active low power use levels (Watts) with these features selected, even if they are shipped disabled or are not part of the setup process
- The time period which the TV stays in standby-active low mode: X minutes after TV is turned off, all the time, etc.

4. Extend the 3W standby-active low power limit to all new TVs even if features such as Quick Start are not enabled by default or part of a forced menu.

As stated previously, we believe any TV should be able to maintain a power level of 3W or less in standby-active low, regardless of whether features such as Quick Start were enabled by default, selected during the initial set up, or activated at a later time. We therefore encourage EPA to explore ways to extend its 3W limit to all such cases and not just those currently covered by the conditions contained in DOE's test method.

In order to provide those manufacturers who might otherwise qualify for ENERGY STAR with sufficient time to make any modifications to their TVs, we would not object to EPA delaying this one requirement for a year from the effective date of Version 7.0. Failing to do so leaves ENERGY STAR vulnerable to unacceptably high levels of standby active low energy use by those manufacturers who leave parts of the TV powered up unnecessarily when a Smart TV is turned off. On the recent webinar it was clear that at least one manufacturer envisions extremely high levels of standby active low power use when Quick Start is selected as the entire TV remains powered with the exception of the TV's backlight. Setting a clear and reasonable target now, with sufficient lead time, will incent manufacturers to improve the power management of their TVs and is a more proactive and effective policy than simply hoping the problem will not occur or waiting 3 years to remedy it when a new specification goes into effect.

5. We recommend EPA include reporting requirements on the frequency and duration that a TV is in standby-active high mode

The EPA draft specification only requires TVs to go back from standby-active high to standby-active low within 15 minutes of completing downloads/updates that occur in standby-active high. The specification does not, however, include any limits on the amount of power used or the amount of time that can be spent in this mode. In order to better assess the potential energy consumed while in this mode, we recommend EPA require the reporting of the following two pieces of data:

[1] Failure to provide this data will result in an incomplete submission and prevent the model from being qualified for ENERGY STAR.

- Frequency: how often does the TV go into standby-active high mode: a few times a year, >= once a month, ≥ once a week, once per day, multiple times per day
- Duration: how long does it stay in this mode: 0-15 minutes, 15 minutes – 1 hour, 1-5 hours, >5 hours.

While there is no test method for this requirement, the data buckets provided will allow a manufacturer to easily select the answer.

Should the analyzed data indicate that some TVs are spending a significant amount of time in this mode, then we encourage EPA to work with DOE to develop a test method to capture this incremental energy use and for EPA to include it in its next specification revision.

5. We support EPA's proposed 0.3W level for standby passive mode

The data provided by EPA showed that almost every model currently on the market met 0.5W and that a large percent of models already use 0.3W or less. As such, we fully support EPA's proposal to reduce the standby passive power limit to 0.3W.

6. We propose a more comprehensive definition for ultra-high definition TVs

With regards to EPA's proposal of defining ultra-high definition (UHD) televisions solely on the basis of vertical pixel count, we would recommend EPA to consider a more comprehensive definition that accurately distinguishes this technology from high definition (HD) TVs. Additional parameters such as frame frequency and scan mode can be adopted based on CEA's definition, as discussed in the EPA webinar, or based on recommendation of the International Telecommunication Union (ITU)[2].

During the webinar some manufacturers suggested EPA should create a special category and adder for TVs with even greater resolution such as 8K TVs. Given the absence of 8K TVs on the market today and the likelihood that they will not have appreciable market share prior to ENERGY STAR Version 8 at the earliest, we do not support the creation of additional adders for this feature at this time. This issue can be revisited during the Version 8 specification setting process and any adders should be based on the incremental power that existing and projected models consume.

7. We encourage ENERGY STAR and DOE to work together to issue additional guidance on its test methods and to begin additional research in support of potential updates to the DOE test method that may be needed in the future.

During the recent EPA webinar there appeared to be considerable confusion amongst the stakeholders regarding the applicability and measurement of the standby active-low power mode during testing. Several manufacturers mentioned in their written comments to EPA that many of the 1W and below values reported for smart TVs in standby active-low may be incorrect. We

[2] Recommendation ITU-R BT.2020 June 2014 http://www.itu.int/dms_pubrec/itu-r/rec/bt/R-REC-BT.2020-1-201406-I!!PDF-E.pdf

therefore request DOE issue a guidance document or FAQs that could be inserted into the final ENERGY STAR specification emphasizing that the test for standby-active low requires TVs to be connected to the internet and that it may not be disconnected during the test.

In addition, we encourage DOE to:

- Research the power use of UHD TVs and to better understand the power differences when a UHD TV displays content initially received as HD content and upconverts it, and when the incoming signal is already in UHD.
- To collect data and make its own measurements on the power use of TVs when in standby-active high mode.

This information would be analyzed and, as necessary, modifications made to the test method.

8. Additional comments for EPA to consider

The advocates support EPA's proposal to allow "very bright" TVs to have a default picture setting minimum of 293 cd/m² when the brightest selectable preset picture setting is at least 450 cd/m². Additionally, we support EPA's proposal to allow non-default picture settings that meet ENERGY STAR requirements to be recognized as such in the menu section of the TV.

----////----

We appreciate the opportunity to submit these comments and should you wish to discuss our comments further, please contact Noah Horowitz at nhorowitz@nrdc.org or 415-875-6100.

Respectfully Submitted By:

Noah Horowitz
Natural Resource Defense Council (NRDC)

Anthony Fryer
Appliance Standards Awareness Project (ASAP)

Sameer Kwatra
American Council for an Energy Efficient Economy (ACEEE)