



NRDC Comments on ENERGY STAR's Draft 2 Version 6.0 Proposal for New TVs

Submitted By:

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On behalf of the Natural Resources Defense Council (NRDC) and its more than 1.3 million members and e-activists, we respectfully submit comments on the EPA's Draft 2 Version 6.0 ENERGY STAR specification for new televisions. The ENERGY STAR program has played a key role in helping improve the energy efficiency and reduce the energy use of new TVs sold in the US and internationally, and we believe the proposed Version 6.0 update will continue this trend.

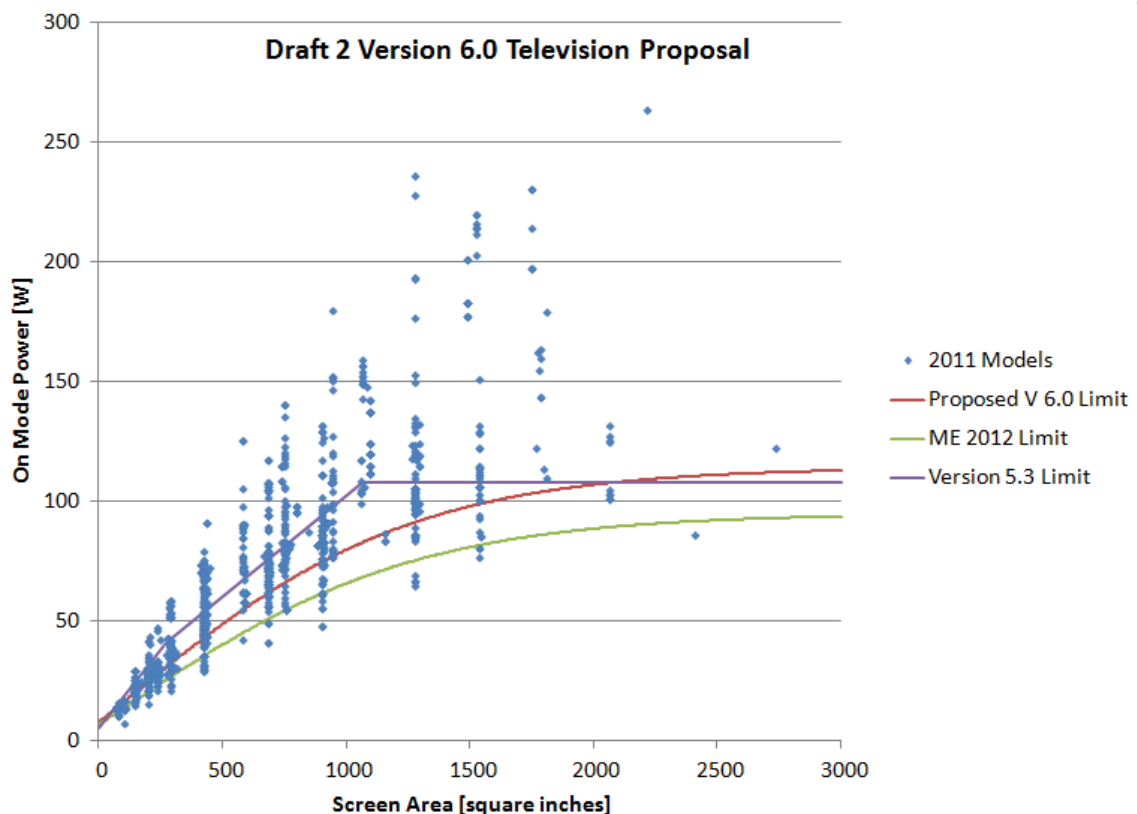
NRDC is very supportive of ENERGY STAR's February 3, 2012 draft and below we provide input on the following topics:

- On Mode Power – input on proposed specification curve (power as a function of screen area) and the qualification rate when the specification is finalized
- Automatic Brightness Control (ABC) – input on room illuminance levels to be used during the test and how to calculate the TV's on mode power level from the measured power levels
- Internet Ready/Connected TVs – recommendation to connect internet “ready” TVs to the internet prior to testing and to make the necessary changes to the test methods and power limits, if additional data justifies.
- Fluorinated Green House Gas Emissions (GHGs) – discussion on whether and how to include emissions of potent GHGs that may be emitted during production of LCD panels.
- TV Auto-power Down Recommendation

1. On Mode Power Levels

NRDC strongly supports both the approach and on model power limits EPA proposed in its ENERGY STAR Version 6.0 – Draft 2 eligibility criteria for new televisions. The plot below shows how ENERGY STAR Version 6 compares to the current Version 5.3 and the proposed ENERGY STAR Most Efficient 2012 requirements. The proposed Version 6.0 limits are roughly 15-25 % more stringent than Version 5.3 (actual savings vary by TV screen area) for TV sizes. It should be noted that EPA did not increase the stringency of the portion of its specification for the largest TVs on the market, e.g. TVs > 2000 square inches. In fact under Version 6.0, TVs > 2000 square inches would be allowed to use a few more Watts than they would have under Version 5.3, the existing specification. This is a concession made by EPA in response to feedback provided by several TV manufacturers.

The use of a curve whereby efficiency requirements increase as a function of screen area is sound policy. It allows very large TVs to qualify for ENERGY STAR and provides additional power budget as screen size increases. This proposal will help limit the category's overall energy use as consumers and businesses switch to larger TVs due to their increased availability, quality and rapidly decreasing pricing. Stated simply, if a manufacturer wants to produce a 72 inch TV that qualifies for ENERGY STAR it can provided it is even more efficient on a Watts per square inch basis than smaller sized models.



As of early 2012, EPA shows a qualification rate of 15% for models that would meet the proposed on mode power limits. We think this level of stringency is appropriate as the current data base does not include many of the 2012 models that will be introduced to the market this year. Per the exhibits at the January 2012 Consumer Electronic Show many of these new models will provide 15 to 40% energy savings compared to the 2011 models. As a result we expect the qualification rate for Version 6.0 to be considerably higher than 15% and perhaps >25% (EPA's typical qualification rate) once the specification goes into effect in early 2013.

2. Automatic Brightness Control (ABC)

We commend EPA for attempting to find a test method that more accurately measures likely TV power use when the Automatic Brightness Control¹ feature is enabled and that rewards manufacturers who properly implement it. We think EPA is on the right track and that its current proposal will help address the "gaming" that some manufacturers were previously employing. As documented by reports produced by Ecos Consulting and CLASP, some manufacturers had extremely steep power response curves for low room illuminance levels. In some cases the screen brightness (and corresponding power levels) were so low near 0 nits, the measurement point contained in ESTAR Version 5.3, that the user would not have a satisfactory experience and would likely disable the ABC function and/or shift to a brighter mode, such as retail or vivid. As a result, the TV's actual energy use would be considerably higher than the levels reported to EPA.

We are supportive of EPA selecting the levels of 10, 50, 150 and 300 lux as the measurement points and using the arithmetic average of the four power measurements as the reported on mode power level. We do not agree with comments made during the recent webinar that EPA should use an illuminance level of 0 nits as one of the measurement points. This is an artificially low value as TV viewing is not done in an absolutely pitch black room and this value perpetuates the types of measurement gaming that may be occurring.

Additional changes to this section that we recommend are:

- a) In order to qualify by using the ABC testing, the model must be shipped with this feature enabled and the manufacturer may not prompt the user to disable this function or push an update that would disable it at a later time.
- b) EPA should provide specific testing instructions on how to measure the ambient room light levels, or preferably how to measure the amount of light entering the TV ABC sensor during testing. Very different light levels are obtained if the test meter is placed perpendicular towards the screen sensor or away from the screen. Also

¹ When implemented properly ABC can help reduce a TV's annual energy use. TVs with ABC enabled automatically detect the room's illuminance levels and adjust the TV's screen brightness and power use accordingly

clarification should be provided as to whether the illuminance levels are measured with or without the TV being on. This is particularly important at low room light levels.

c) EPA should clearly state in its requirements that in order to qualify a TV with the ABC power levels, the ABC function must be enabled for all TV viewing settings, and not just the standard/home setting. While a user might choose to pick a brighter setting in the future such as vivid, the same opportunities for power savings should be captured for these other settings as well, since the TV will likely be viewed at different times of the day. The paperwork tied to qualifying a model should include a check box for the manufacturer to certify that the model is shipped with ABC enabled and that it has been applied to all viewing settings (e.g., home, vivid, cinema, etc) in a similar fashion. While the testing to qualify a product may not require testing for all these settings, the verification requirements should state that EPA may test TVs in multiple settings to verify ABC is being properly implemented in all viewing settings and non-compliance may result in delisting.

3. Internet/Network Connectivity

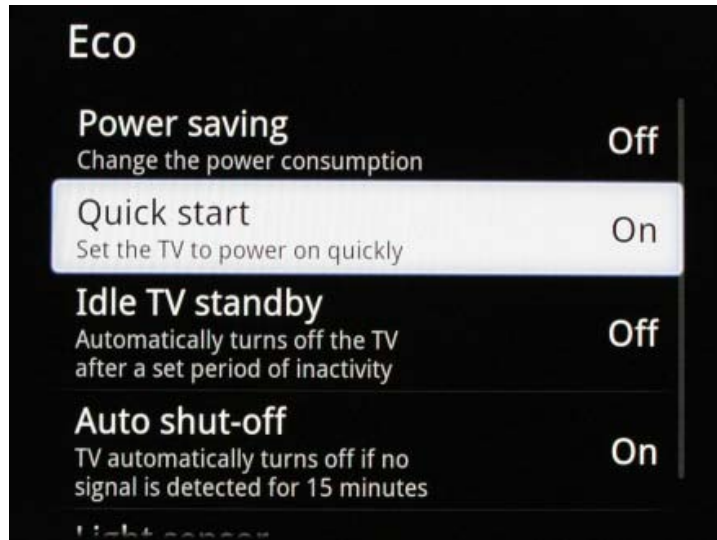
The current IEC test methods for measuring the energy use of TVs in standby/sleep (IEC 62301) and on (IEC 62087) do not provide a means to measure the incremental power use a device might consume if connected to the internet. Many new TVs introduced in 2011 include the capability to connect a TV to the internet via an Ethernet or wireless connection and this feature is expected to become even more popular in the following years. As such, we believe the test method and spec used by ENERGY STAR must measure and account for this potential incremental power use.

NRDC recommends adding additional language to the current test methods that would require internet enabled TVs to be connected to an internet connection during the on mode testing and that the tester may not disconnect the TV from the internet during measurement of standby power. The test should measure real life use conditions – standby power should record the power used after the user turns off the TV by hitting the power button on the remote control (but not allow the tester to physically disconnect the Ethernet cable, or turn off the router, etc.).

Of particular interest and potential concern is the first implementation of Google TV whereby hardware and software were built into a few Sony TV models that enable a user to perform searches over the internet and access content such as You Tube Video, photo, movie through the TV. If implemented poorly a TV with this feature would result in similar incremental power draws both when on and when in standby mode. Per a recent [CNET review](#) :

“Sony's traditional Eco menu adds a Quick Start mode that enables the GT1 to turn on in about 4 seconds—just like a standard TV—as opposed

to the 45-odd seconds it takes to boot up Google TV normally.² In that mode, the TV uses 24 watts of standby power instead of the default 0.14. The TV's picture-in-picture is restricted to viewing a small window showing the TV source inset into the larger Google screens.”



Enabling Quick Start enables the TV to turn on in 2 seconds, at the expense of standby power.

Most consumers would pick Quick Start as it clearly sounds more appealing than a “slow start”. Consumers would be totally unaware of the fact that making this selection results in the TV consuming an extra 23.8 Watts of power (24W instead of 0.14 W) in standby mode. In the event the TV stayed in this mode for the 19 hours/day the TV was not in use, this model would consume a whopping 43 kWh/yr worth of standby power which would increase the annual energy use of an ESTAR Version 6 TV by more than a third!

While this example is probably an extreme case as it was one of the first launches of a “Smart TV” and was built around older chipsets from Intel, it demonstrates the need for internet enabled TVs to be tested with the internet connection live and for the specification to clearly state what conditions the testing should be done with. This is the classic – if it’s not measured and reported, little attention will be paid to the issue.

During the set-up prior to testing, we would recommend selection of the settings that would result in the highest standby power levels that the user would reasonably pick. (per the above example, the testing should be done with Quick Start turned on).

In summary we recommend EPA survey the leading manufacturers to better understand how they implement internet enabled TV and gather data on what

² It is not clear whether the 45 second delay referred to is the time to re-establish the internet connection or the time for the TV to be ready simply to display a TV channel.

incremental power use, if any, these models use in the standby and on modes. If justified, this may require EPA to add small power adders for the incremental power use internet enabled TVs require. NRDC has spoken to one of the leading manufacturers of TVs and per their implementation the internet connection is terminated when the user shuts off the TV and it is restarted when the user turns the TV back on. As such, their TVs still meet the 1W standby requirements which suggest an adder may not be needed for standby power for internet enabled TVs.

EPA will also need to develop test method language on how internet enabled TVs should be set up prior to and during testing. For example, if the TV has a wireless internet connection, the TV should be connected to a live network prior to testing and the network connection cannot be manually disconnected, unless caused when the user hits the on/off button on the remote, during testing.

4. Autopower When No Signal is Received

In some user scenarios a TV screen may go black or blue when no signal is being received and continue to use considerable amounts of power until the user returns, which could be 18 hours or in the extreme several days later. A good example is when a user turns off their video game console or DVD player but fails to turn off their TV before leaving the room because the screen is blank and no volume is coming out. In this case, a sound implementation of auto power down that is shipped from the factory with this feature enabled would provide significant energy savings.

We encourage ENERGY STAR to add language to its specification similar to that already required by the California Energy Commission's Title 20 regulations:

A television shall automatically enter TV standby-passive mode or standby-active mode after a maximum of 15 minutes without video and/or audio input on the selected input mode.

5. Support for Inclusion of Requirements to Report/Control PFC Emissions

In the EPA Webinar, ENERGY STAR introduced a proposal to include the language shown below in their specification on control of PFCs, a class of very potent fluorinated global warming pollutants that are frequently used in the production of LCD panels.

“As applicable, Partner shall source LCD components from suppliers who have demonstrated that they are recovering or destroying on an annual basis at least 90 percent of the fluorinated greenhouse gases (F-GHGs) used in the manufacturing of, and ancillary operations (such as chamber cleaning) related to the production of LCD panels for ENERGY STAR qualified products.”

Given the mission of ENERGY STAR is tied to reduction of global warming emissions, we are supportive of EPA's attempts to reduce PFCs emissions. In its latest draft,

ENERGY STAR stated their intent to address this issue via other initiatives underway at EPA. As some factories may be venting PFCs directly to the atmosphere without any attempts to capture or treat these emissions, we think more immediate attention to this issue is warranted within the ENERGY STAR specification.

As such we provide an interim solution whereby TV manufacturers would need to declare whether or not each of the factories they are sourcing their LCD panels from are venting the PFCs directly to the atmosphere. This information would be posted on the ENERGY STAR website of qualified products. This will at minimum force manufacturers to look upstream and investigate whether or not the panels they are buying are treating PFCs in a responsible manner and if not it may cause them to require their suppliers to do so within a period of time or switch to suppliers that do. Making this information publicly available may also trigger additional inquiries from the TV buyers from major retailers and other interested parties.