



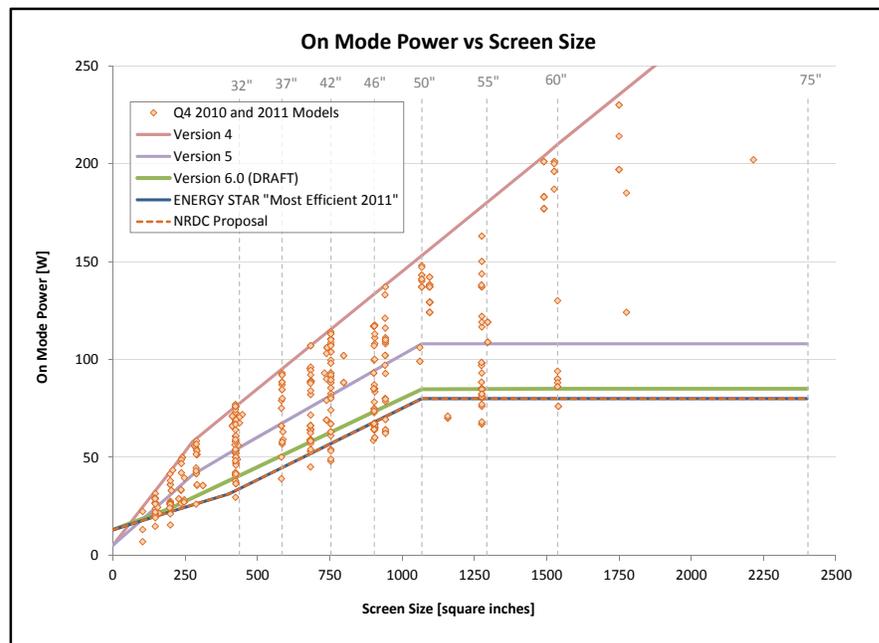
## NRDC Comments on ENERGY STAR's Version 6 Proposal For New TVs

Noah Horowitz, Senior Scientist  
Natural Resources Defense Council  
[nhorowitz@nrdc.org](mailto:nhorowitz@nrdc.org)

June 20, 2011

On behalf of our 1.3 million members and electronic activists, NRDC respectfully submits our comments on EPA's Draft 1 specification for ENERGY STAR TVs – Version 6.0. NRDC performed the first ever in depth study of the energy use of big screen digital TVs and through various forums, including ENERGY STAR, has continued to actively work to improve the energy efficiency of TVs. NRDC is supportive of ENERGY STAR's proposal and our comments provide further documentation regarding our support of the proposal and recommendations on a few areas that are not currently addressed in the specification (e.g. 3D TV and internet connected TVs)

1. **On Mode Power Levels** – *NRDC strongly supports ENERGY STAR's proposed on mode power limits for version 6.0.* NRDC would also be supportive of ENERGY STAR adopting the current ENERGY STAR Most Efficient 2011 specification as ENERGY STAR 6.0. Below is a plot of the various specification requirements for existing and potential future on mode power levels (note each data point may represent numerous qualifying models).



a. *Current Data Set* – During the June 8 EPA webinar it was stated that 70-90% of TV models on the market met ENERGY STAR as of mid 2011. The data for these models is being used by EPA to inform their spec setting process. Some manufacturers on the call suggested this figure may be lower for TVs over 50", suggesting that the EPA dataset was not representative of the entire market. An informal survey of a major electronics retailer's website (Best Buy) indicated that 83% (55 of 66) of their 50-60" models were Energy Star qualified, and 85% (28 of 33) of their 60" and over models were Energy Star Version 4 qualified. This suggests that across larger screen size categories, this dataset likely represents the vast majority of currently available models.

To the extent additional data is available, in particular for larger TVs, we encourage the industry to provide this data to the EPA and for EPA to add these models to the data set.

b. *Large Screen TVs* – During the webinar some of the manufacturers challenged the stringency of the part of the specification that covered large screen sizes. We have since reviewed the EPA dataset and found pass rates with the proposed Version 6 for popular sizes 40-50", 50-60", and 60+" of 25%, 26%, and 15%, respectively. This is a full year before the Version 6 specification requirements are effective, which suggests that a broad cross section of models above 50" will be able to meet the current Version 6 requirements. We also want to point out that new models are generally introduced in the spring and that EPA can expect several more qualifying models to be introduced in the Spring of 2012, the time leading up to the Version 6 effective date. Once on the market, the qualification rates for models in these sizes is likely to increase significantly compared to the current data set.

c. *Rationale for Adopting Energy Star Most Efficient 2011* – Several manufacturers and retailers are already working to meet the Most Efficient 2011 levels to demonstrate leadership and in some cases to qualify for utility rebates. EPA can build off this momentum and maintain continuity by adopting the Most Efficient 2011 specification as the levels for Energy Star Version 6.0. This will result in additional incremental energy savings compared to the current EPA proposal.

2. **Automatic Brightness Control (ABC)** – Since the switch to ENERGY STAR 4.0, many manufacturers have added a sensor to their new TVs that measures the light levels in the room and automatically adjusts the brightness of the screen. When properly implemented, this can result in a low cost method for achieving incremental energy savings for consumers without any sacrifice in performance or action by the consumer. The portion of the test method that addresses ABC currently requires testing to be performed at two room light levels -- 0 and  $\geq 300$  lux. The 0 lux level was picked for its simplicity as the technician simply covered the sensor during the test.

In reality, the 0 lux testing condition is equivalent to watching TV in a pitch black room or a cave, which is unrealistic and can provide artificially low reported power levels. In

addition some manufacturers might even choose to have a very steep drop off<sup>1</sup> in screen brightness levels and corresponding power use in this non real world condition. Even if the picture was unacceptably dim in this condition, the risk to manufacturers is minimal as consumers would not experience this extreme lighting condition. While we recognize the simplicity of testing at 0 lux, which translates to simply covering the sensor, this is not an acceptable testing condition.

We appreciate EPA's willingness to revisit this issue and to try to minimize the likelihood of gaming that might occur. NRDC remains supportive of encouraging ABC as a means to reduce TV power use. In order to make sure the savings are real and based on more real world operating conditions, we recommend the following:

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 or automatically perform an update that would disable it.

b) Require testing to be done at three or more specified ambient light levels. In lay terms, these should reflect low, medium and high room lighting levels, and the low level should be higher than 0 lux. The measured power values at each of these ambient light levels would then be averaged and the average would be the value reported to EPA to determine compliance with ENERGY STAR.

We, however, disagree with ENERGY STAR's proposal on line 169 that includes a correction factor. This would result in a reported power value that is different than what was measured. (This type of approach is however appropriate to help convert results from TVs measured with the test method for ABC in version 5 and 6.)

c) EPA should consider establishing a minimum screen brightness level for TVs tested at the lowest ambient lighting level used in the ABC test. This will help ensure users are satisfied with the screen brightness, and reduce the likelihood of them going into the menu and turning off this feature and losing future energy savings.

d) EPA should provide specific testing instructions on how to measure the ambient light levels, or preferably how to measure the amount of light entering the TV's sensor during testing.

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 common in the following years. As such, we believe the test

---

<sup>1</sup> We encourage EPA to review the power vs ambient room light level measurements performed by Ecos and more recently by Australian Digital Testing for CLASP.

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 ready” 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 manually terminate the internet connection/turn off the router, or unplug the Ethernet cable).

Of particular interest and potential concern is the implementation like Google TV whereby hardware and software are built into the TV<sup>2</sup> 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. For example a TV with this functionality could conceivably draw 10 extra Watts compared to a TV without this feature when on and continue to draw up to 10 Watts even when the TV is off and not downloading any content. ENERGY STAR in our opinion must at a minimum work to ensure this feature does not result in elevated standby power levels. In the above example, a TV drawing 10W standby for 17 hours/day would result in an extra 56 kWh/yr of standby energy compared to a TV that only draws 1W in standby. This is a big deal as a TV that draws 50 W when on seven hours per day, would consume 128 kWh/yr.

We support EPA’s call for additional data on this topic as it will help inform this discussion and the final specification. One approach we would like to float is to provide an additional watt of power for devices with this functionality, similar to the standby levels currently being achieved by laptops with their wake on LAN capability that only requires an additional 0.7W.

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 longer. For example a user may turn off their video game console when done playing in the evening but fail to turn off their TV because they think its already off as the screen is blank and no volume is coming out. In many homes, the TV may not be turned back on till the user returns home from work or later.

To address this issue, we encourage ENERGY STAR to add language to its specification similar to those already required by the California Energy Commission’s Title 20 regulations:

---

<sup>2</sup> Sony currently offers TVs with Google TV built into selected Sony TVs.

*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. **3D Images and Power Use** – ENERGY STAR’s proposal does not address in any way the power use of a TV when displaying 3D content. As 3D content is still very limited, we understand ENERGY STAR’s decision to not include it at this time. Given the projected growth of TVs capable of displaying 3D content and the likely growth in 3D movies and broadcasts, the energy use implications of 3D TV must be considered.

As such, we recommend ENERGY STAR work with the industry and DOE to quickly develop representative 3D content that could be used to measure power consumption. At a minimum we encourage EPA to add place holder language in its specification. This could include: by date X, manufacturers will be required to test and report the power use of 3D ready TVs while displaying the 3D test loop specified by EPA. If the industry process to generate 3D content for testing purposes is not completed by date \_\_\_\_, EPA will then pick a 2 minute clip of a popular movie with a wide range of brightness levels and colors by default ( eg 2 minutes of Avatar). This test data will answer the question on how much incremental power a TV uses when displaying 3D content compared to 2D content and this can be used during development of ENERGY STAR VERSION 7.

6. **Update Language Governing Home vs Retail Settings** – EPA is to be commended for shifting the TV industry from shipping all TVs in an overly bright and power consuming mode, generically referred to as retail or torch mode, to one where consumers are typically given a choice and encouraged to pick the home or standard mode. Sustainable energy savings are achieved when the user picks home mode during set up and does not change the settings to a brighter setting at a later date due to dissatisfaction (picture is too dim).

In the event the user, during initial set up, first selects retail mode (which translates to a very bright picture and higher power uses), the current language in the forced menu section, 3.2.4, requires the TV to: 1) display a second prompt requiring the user to confirm the choice of retail picture mode, or 2) display information on the start-up menu that the “home” picture mode is the mode in which the product qualifies for ENERGY STAR. While this is a big step in the right direction, we believe this language would be more effective if it instead stated something like: “Warning: You picked retail mode which consumes 10 to 30% more energy than home mode. Home mode is recommended as the brightness levels are set for home use and will save you money. This would then be followed by a second prompt – Please select, and one would again offer the choice of home or retail, with home being on top with a note in parentheses with words like recommended or saves money.

## 7. Support for Inclusion of Toxicity Requirements

In the EPA Webinar, ENERGY STAR introduced a proposal to include language in their specification on control of perfluorocarbons (PFC), sulfur hexafluoride (SF6) and nitrogen trifluoride (NF3), a class of very potent global warming pollutants that are 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 addition of requirements tied to reduce emissions of these chemicals. We encourage EPA to continue dialogue with stakeholders on how to most effectively draft the language for this topic.

The challenge in our view is how to ensure compliance with this requirement, beyond simply checking a box or signing a form. Possible options might include providing the name of the panel supplier(s) used and to require submission of suppliers’ specific documentation that could include digital photos of the equipment used to capture/treat the emissions and a purchase order documenting the installation. This could be coupled with language that ENERGY STAR TV Partners will facilitate access by EPA to audit the panel supplier’s facilities to verify the equipment is in place.