NATURAL RESOURCES DEFENSE COUNCIL

NRDC Comments on ENERGY STAR Final Draft Version 4.1 for Set Top Boxes

Submitted By:

Noah Horowitz

NRDC Senior Scientist

nhorowitz@nrdc.org

February 7, 2014

On behalf of the Natural Resource Defense Council (NRDC) and its 1.3 million members and electronic activists we respectfully submit these comments on EPA's Version 4.1Final Draft specification for Set-top Boxes (STBs). Our comments supplement those NRDC submitted on June 26, 2013 on Draft 2 and others we previously submitted during this specification revision process.

Since Draft 2 was published, the Voluntary Agreement for STBs was finalized between the industry and advocates, and formally announced on December 23 by DOE and other parties. The existence of the VA[1] provides two opportunities for ENERGY STAR: a) align its test method for measuring and reporting the power and energy use of STBs with those contained in the VA, and b) maintain its role as a leadership label meant to identify the better performing models on the market and where appropriate to set targets or reach goals for new products that are not yet on the market. Our comments below address these two opportunities and focus on:

- Test method alignment – To prevent some set top boxes from improperly appearing to comply with ENERGY STAR or for some consumers receiving STBs that use more energy than the values listed on the ENERGY STAR website, EPA needs to ensure testing and qualification is based on testing on each individual service provider's network (e.g., separate testing and reporting is needed for an identical STB model deployed on Comcast vs Time Warner Cable). As each service provider is already doing this type of testing and reporting in fulfillment of its requirements under the VA, ENERGY STAR will not be adding any additional testing burden to the industry.

- Deep sleep – We support the new structure EPA proposes and provide some minor recommendations for improvement/clarification, specifically around the issue of how a product is enabled as it relates to its deep sleep settings and the need for a DVR in deep sleep to be able to wake to record a prescheduled show.

[1] A full copy of the Voluntary Agreement can be downloaded at: http://energy.gov/exit?url=http%3A//www.ncta.com/energyagreement

- Ultra HD and High Efficiency Video Processing Allowances – We encourage EPA to further investigate these adders and how they would be implemented. We also support EPA's decision to not allow thin clients from receiving these two allowances.

I. Test Method Alignment

NRDC supports EPA and DOE's decision to align its test method with the test method contained in the Voluntary Agreement. The current scheme used by EPA whereby the manufacturer qualifies the product by testing the STB on a single network of its choosing, has a major flaw that we urge EPA to correct before finalizing its specification. As the service providers have acknowledged that a manufacturer's set top box energy use may vary dramatically depending upon which service provider's system the box is connected, they agreed to require testing of a specific model to be done by each service provider for reporting and compliance purposes for the VA. Thus a hypothetical Motorola cable box model XYZ, would need to be tested by Comcast on their system, and by Time Warner on their system, etc. It is conceivable that the exact same box would use 110 kWh/yr on Comcast and meet ENERGY STAR levels while the box with the same model number connected to Time Warner Cable's would use 125kWh/yr. and not qualify for ENERGY STAR.

Per ENERGY STAR's current rules, the Motorola model XYZ box would be posted by the manufacturer and show a single set of modal power values and not reflect which system the box was tested on, or the variability that might exist when operated on other systems. This can result in significant consumer confusion on several levels:

- A STB listed on the ENERGY STAR list of qualified products and containing the ENERGY STAR logo may in fact not meet ENERGY STAR's requirements when deployed on certain service provider systems. In some cases a consumer who picked the service provider or STB based on its presence on the EPA list of qualified products would not receive the energy efficient box they thought they were receiving. This would be even more problematic for utilities that provide rebates for models listed as meeting ENERGY STAR, when in actuality they do not on certain service provider networks and the assumed savings they are "paying for" are not being achieved.

- The power and annual energy consumption values that will be publicly disclosed by the service providers as a condition of the VA may not agree with the value listed on the ENERGY STAR website for a model with the exact same model. This will create unnecessary confusion and put the reliability of ENERGY STAR's data into question.

In order to truly meet EPA and DOE's stated objective of aligning with the VA test method we recommend testing and reporting be done on live service provider head ends or systems like those at Cable Lab that can reproduce each system's operations, and:

1. Tie qualification of ESTAR STBs models to those service provider systems for which the tested STB meets the ESTAR limits. For example, if the manufacturer wants to list the box as meeting ENERGY STAR requirements for boxes deployed by Comcast, Time Warner and Charter Communications, then they must provide testing results for each of these systems. If the manufacturer has technical justification to conclude that there will be no difference between the energy reported for each system, then a manufacturer that provides a certification to EPA may submit the same testing report and request qualification and listing for the systems it specifies. As the service providers are already testing each of the boxes it deploys

within its network as a condition of the VA, this testing is already being done and does not present any additional testing burden on the industry.

2. EPA should work with the industry to develop a model numbering scheme that helps distinguish models that have the same construction but yield different energy use numbers depending on the system it's deployed on. Per the prior example, the Motorola XYZ box should have a suffix or alternate demarcation to distinguish between models deployed at Time Warner Cable and those deployed on Comcast's system. One solution would be to add after the base model number XYZ, "-TWC" for a STB tested on Time Warner Cable and "-CH" for a STB on Charter Communications. Similarly EPA should work with the industry to address the labeling issue whereby a service provider creates a model number such as the X-1 and sources their products from multiple manufacturers whose products vary in energy use. These products should have a discrete model number or suffix if there energy use varies by more than an EPA specified *de minimis* amount.

II. Deep Sleep

NRDC supports EPA's inclusion of a deep sleep provision that provides an incentive for manufacturers to ship their boxes with a scheduled deep sleep function in their STBs. By doing so a manufacturer could utilize a lower power value for up to 4 hours by using the deep sleep power value in the AEC calculation. Regarding EPA's implementation of deep sleep we provide the following recommendations/input:

Ability to wake to record a pre-scheduled program - We support EPA's requirement that when in deep sleep the STB must be able to wake to record a pre-scheduled show and then go back to deep sleep. While most users will not be recording a show during the likely default period of 1 to 5 am, it's quite conceivable they might during unique events like the Olympics or World Cup which may be broadcast from different time zones. In addition, some users may also choose to set the deep sleep mode for when they are typically not home and not watching TV, such as 9 to 5 on weekdays when they are at work, but might want to record a show that regularly airs during that period. All it takes is one time for a consumer to have a bad experience whereby the show they were hoping to view didn't get recorded due to the deep sleep function. After that they are likely to disable the deep sleep function to prevent reoccurrence of missed shows and the projected savings from deep sleep are no longer achieved.

Per the above we think it's essential for this requirement to remain in the ENERGY STAR spec. While it may require some minor, inexpensive software and/or hardware changes, we think it is worth it to ensure the significant savings offered by deep sleep and the EPA "credit" are actually achieved and this feature is not disabled. Also while the VA does not have this requirement, we believe it's entirely appropriate for EPA to include this requirement in its program as ENERGY STAR is meant to be a leadership specification and is voluntary, whereas the VA includes firm purchasing commitments by the service providers. Those manufacturers who elect not to provide this functionality can choose other means to achieve ENERGY STAR or simply not seek qualification for those models that are unable to meet ENERGY STAR's Version 4.1 annual energy consumption requirements.

Additional language needed around "enabled by default" - In order for the savings to be achieved and worth providing an incentive for, the set top box needs to be installed with the deep sleep settings enabled, consistent with the values reported to ENERGY STAR. While we

don't have a specific proposal, we encourage EPA to develop clarifying language that goes beyond the current language on line 197 that simply says "Deep Sleep functionality shall be enabled by default". This requirement should apply to both the manufacturer and the service provider who is deploying the box.

Require a user selectable scheduler as a requirement for the deep sleep credit – In addition to having a box include a default enabled sleep mode, which might simply be binary Y or N to enter into deep sleep from 1 to 5 am, the box should also be required to have a deep sleep scheduler that allows the user to select alternate times when the user might wish to have deep sleep enabled to further reduce the energy use of their box. This provides the user with customizable settings and the opportunity for additional savings beyond those during the 4 hour period.

III. Ultra High Definition and High Efficiency Video Processing Allowances

During the January 31 webinar questions were posed about the proposed allowances for ultra-high definition (UHD) and high efficiency video processing. For example, will the content that is received in the home be received as High Definition (HD) and then be upscaled to UHD by an UHD TV. Alternately if the processing is happening in the STB, then there would not appear to be any user benefit if all content was converted when the content is viewed on a non UHD TV, whose panel is unable to display content with UHD resolution.

Given the above uncertainty we ask the ENERGY STAR team to provide additional guidance on how to test STBs that apply for the UHD and High Efficiency Video Processing allowance. For example must UHD or MPEG 5 content be used and/or should the up-converting feature on a STB be enabled during testing in order to receive this allowance?

IV. Thin Client Energy Use

The industry has repeatedly promoted the benefits of shifting to whole home solutions which have a main box, that consumes additional power as it has multiple tuners and needs to be able to stream content to connected devices, and simple "thin clients" that receive their content from the main box and use much lower levels of energy. These installations will reduce whole home energy use for most customers that have multiple TVs hooked up to pay TV services.

As the thin clients are not connected to the "head end", they should be able to draw very low levels of power when in standby mode and not in use, and wake quickly. While the industry has been doing a good job bringing down the on mode power of thin clients, there continues to be small differences between their on and standby power levels, and thin clients continue to have much higher standby power levels than necessary.

As EPA has increased the base allowance for thin clients and the allowances for HNI and MIMO Wi-Fi HNI adders, the allowable energy use levels for ENERGY STAR thin clients has been increased by a significant amount. To prevent further increases in thin client energy use we urge ENERGY STAR to resist efforts to further increase the allowances for thin clients and to continue to encourage industry to work to bring down the standby energy use of thin clients, which represent in many cases 50% to 75% and more of their annual energy use.