



NRDC Comments on ENERGY STAR Specification for Set-top Boxes – Draft 2 Version 5.0

Submitted By:

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On behalf of the Natural Resources Defense Council (NRDC) and its 2 million members and online activists we respectfully submit our comments on ENERGY STAR’s Draft 2 Version 5 eligibility criteria for set-top boxes (STBs). Our comments supplement our [December](#) 18, 2015 submission on Draft 1.

1. Thin Clients and “Sleep” – NRDC is very supportive of ENERGY STAR’s intent to bring down thin client sleep power levels to one watt or less by January 1, 2018. EPA’s proposal is consistent with the direction it provided back in Version 4.1 which stated:

FUTURE SPECIFICATION REVISIONS - Section 7.1.1 - EPA intends to include the following topics in the next revision of the STB specification: i. Implement a mandatory Deep Sleep requirement for all qualifying STBs or DVGs, where Deep Sleep State power shall be significantly lower than that for Sleep Mode and On Mode.

The easiest category of STBs that can achieve truly deep sleep, e.g., no more than 1 Watt with quick resume, are thin clients as these devices are NOT connected to the head end and have much simpler wake and restart, herein referred to as resume, processes. As thin client STBs are often installed on more than one TV in the home, the total household savings that would be achieved by low power use when the thin client is not in use are significant. We also support ENERGY STAR’s proposed effective date of no later than January 1 2018 as industry has known about this upcoming type of requirement since October 2014, when the updated Version 4.1 specification was published, and has had more than 3 years to make the necessary changes.

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The elements of a successful implementation of a “deep sleep” state for thin clients per the revised sleep mode definitions in ENERGY STAR’s Draft 2 are:

a) Fast resume times/low latency – to avoid user dissatisfaction, the thin client’s resume time should not be much greater than the amount of time a TV takes to restart after a user returns and hits the on button on their remote. Per testing NRDC and its consultant Ecos did on new televisions, we found that the internet connected TVs (also referred to as smart TVs) had standby power levels of <0.5 W and resume times of 15 seconds or less. Most users would expect their pay TV service to become functional in a similar period of time. As such, we’d encourage ENERGY STAR to consider bringing this time period down to 15 or 20 seconds, instead of the proposed 30 seconds, which some consumers might find unacceptably long. Other data points that EPA could gather to inform this decision include the resume times of some internet connected over the top devices such as Roku, Apple TV and Amazon Fire TV, as well as the resume times laptop computers in sleep mode currently achieve.

b) Auto power down – Some of today’s thin clients continuously consume as much as 8.5 Watts of power in sleep mode. In order to achieve the energy savings a 1W or lower sleep mode power level delivers, the thin client must actually go into this mode when the user turns their TV off. As the remote control for the TV and set top box may not be properly programmed together or “synched,” it’s quite possible the thin client would remain in on mode even though the user turned off their TV. An auto power down (APD) setting of 4 hours or less helps address this concern. APD settings of no more than 4 hours should be the default which all thin clients must be shipped and installed by the service provider. To address the user profile such as a sports bar where the TV may remain on the same sports channel for more than 4 hours intentionally without the user having to override the pending APD event several times a day, the thin client’s operating system should allow the user to select a APD time of > 4 hours after initial set up. As the above example is an edge case, we encourage EPA and DOE to continue to maintain its language in the test method and specification that would penalize/discourage implementations whereby the user is provided with prompts to disable the APD during initial set up or at a later time.

c) Prevent alternate sleep states – A thin client STB should essentially have two operating modes for normal use – on, when content is being viewed, and deep sleep, when the TV is off or the user is not receiving content from the service provider, such as when a user is playing a video game on a game console connected to the TV or watching a movie from a Blu Ray player. Several of the pre 2015 model year smart TVs we measured had slow start times and had a user setting called Quick Start, which resulted in faster resume times when selected but dramatically higher standby power levels, sometimes as high as 24 Watts of continuous power draw. The current DOE TV test method does not capture this extremely high standby power when Quick Start was selected, unless the TV was shipped with it enabled by default or the user is presented with this option during initial TV set-up.

The test method and ENERGY STAR specification for thin client STBs should be developed in such a way to prevent this type of implementation and subsequent under reporting from occurring. The test should be designed to capture this potential extra energy use, regardless of how the thin client is initially shipped/configured. If ENERGY STAR requires a sufficiently fast

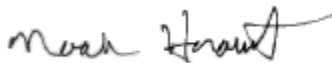
resume time, as we recommended above, then the motivation to introduce this type of additional sleep/standby state is likely eliminated.

2. Encouraging use of APD and scheduled sleep in other types of STBs – NRDC supports efforts to encourage the integration and deployment of well-designed hardware and software that help bring down the amount of power set top boxes consume when not in use. Table 1 in the proposed specification allows a manufacturer to report a much lower total energy consumption level due to the more favorable duty cycle used in the calculation. Unfortunately the APD and scheduled sleep settings may not be “sticky” and are highly dependent upon the installer, who could easily change the settings during the installation. I personally experienced this when I received my DVR from my service provider. In this case while my STB had an APD energy saving feature, it was not set up that way by my installer.

As there is no guarantee the APD and scheduled sleep settings claimed by the manufacturer will resemble the actual experience in the field, we recommend EPA revise some of its adders to reflect the reduced hours of on mode operation that would occur when APD is enabled by default and automatic scheduled sleep feature is available. The adders of 35, 45 and 18 kWh/yr. for DVR, DOCSIS 3.x, and multi stream, respectively, add up to almost a 100 kWh/yr. and are not fully warranted if the STB goes into a much lower power state when not in use.

We recommend ENERGY STAR come up with some middle ground that encourages manufacturers and service providers to deploy STBs with APD and/or scheduled sleep enabled, but establishes somewhat lower TEC target levels for models that utilize these features.

Respectfully submitted,



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