



March 23, 2010

Kathleen Vokes
ENERGY STAR Program
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460

RE: Comments on ENERGY STAR for Set-Top Box (STB) Draft 1 Version 3.0 Specification

Dear Kathleen:

On behalf of our 1.2 million members and e-activists, the Natural Resources Defense Council (NRDC) respectfully submits its comments on the second version of the ENERGY STAR for Set-Top Box (STB) Draft 1 Version 3.0 specification released on February 23, 2010. Thank you for the opportunity to provide input on this document and we look forward to the work ahead. We have organized our comments into four subsections:

- Data Availability
- Focus on Reducing Energy Use in Sleep Mode
- Tier 1 Comments
- Tier 2 Comments

Data Availability:

NRDC is pleased by the effort undertaken by ENERGY STAR to gather and analyze STB energy use data from the limited set of models surveyed. Conversely, we were disappointed by the lackluster response from industry in your call for data on both new and existing STB models to populate your database. While ENERGY STAR has provided a summary of the data, all the values were provided as annual energy use. In order to better assess the energy savings opportunities, one needs to know the power use in “On” and “Sleep” modes. As there is nothing confidential about the power use of a model already on the market, we would like to see ENERGY STAR make these raw data available to interested stakeholders. Ideally, the raw data for each model would be listed alongside the service provider(s) that are using each type of STB tested and whether or not the STBs are “new” (i.e., manufactured in the last 6-12 months) or “old”. The depiction below illustrates how the data could be arranged:

Model or Tested Unit #	On (watts)	Sleep (watts)	Service Provider(s)	New or Old	DOCSIS (Y/N)

These data will also help utilities and other stakeholders link to market share information (e.g. are the best selling models more or less efficient than other models).

Need to Focus on Reducing Energy Use when the STB is Not Being Used:

NRDC remains concerned with the slow pace of progress toward achieving market transformation for STBs, especially the very high power draw during periods of extended user inactivity. Many boxes from your dataset showed that a *majority* of the annual energy use of these systems is consumed *when not in use* (e.g., Sleep mode). In fact, the annual energy use of current full featured STBs may in fact be higher than the television set that it is providing content to, again in large part due to the unnecessarily high amount of Sleep mode power use. We address this concern in more detail in the second subsection below, “Tier 2 framework.” Directly below are the revisions we think are necessary for the Tier 1 specification.

Tier 1 Comments

Service Provider Agreement

NRDC does not support allowing STB manufacturers to label their boxes if they are distributed by a non-ENERGY STAR partner service provider. As was stated during each of the ENERGY STAR stakeholder meetings, the power draw of a set top box is determined by the box itself *AND* the network which it is connected to. As such, a particular box’s qualification needs to be tied to a particular service provider. For example, a set top box produced by manufacturer A may meet ENERGY STAR requirements when operated on the Comcast network but would not qualify when connected to Time Warner or Cox. The possible reasons for this are: a) the service provider may elect to turn off some of the energy saving features of the box, or b) the service providers software or “head end” equipment may not be able to take advantage of the power saving capabilities provided in the STB.

Accurately Capturing Energy Use of the Full System:

(1) LNB and ONT

These system features are currently excluded from power use test. The test procedures require removing the LNB power draw before testing power use of Satellite STBs (receivers). Same goes for Optical Network Terminals (ONT). In order to allow for a more accurate comparison between different providers, we believe all the relevant energy uses from the home “system” need to be included. As currently drafted, a user might incorrectly conclude that IPTV is a far superior choice from an energy and operating cost point of view because the power consumed from the ONT is not included in ENERGY STAR’s TEC calculation. A plausible scenario could arise where low-efficiency electrical components are moved “out of sight and out of box” to the antenna or ONT. A manufacturer or service provider could capture the benefit of ENERGY STAR labeling while the TEC of television services increases.

Draft 1 currently says, starting on Line 578,

c) Satellite Low Noise Block (LNB): Incremental power required to operate LNB(s), if drawn from the STB, may be subtracted from all power measurements. It is preferable that all LNB power drawn be supplied separately. Otherwise, the amount subtracted must be clearly noted on the 581 Qualified Product Information (QPI) form.

Revision: Set separate ENERGY STAR criteria for LNB and ONT and do not allow

service providers to display a label on a qualifying box unless the LNB or ONT also qualifies. Another approach is to require measurement of the power draw of the LNB and ONT and to add this to the reported TEC.

(2) Multi-Room and Thin Client Boxes

By splitting the allowance for total energy use for additional multi-room and thin client boxes, the ENERGY STAR draft 1 specification would allow a higher total allowance compared to a single STB set-up for a household that may only have one TV.

Draft 1 currently says, starting on Line 142,

“The STB may qualify, even if it is not capable of delivering a signal to a display.”

. . . And goes onto state on Line 204

“(9) Multi-room STB: A Cable, Satellite, IP or Terrestrial STB that is capable of distributing simultaneous, independent streams of video content to multiple displays or thin-client/remote STBs within a single family dwelling.”

The specification allows 25 kWh/year for multi-room functionality and 22 kWh/year baseline for a thin-client box. Therefore by splitting a traditional STB into two—one multi-room and one thin-client box—the manufacturer garners 47 kWh/year additional allowance.

Revision: Combine multi-room and thin client device categories into one device category that includes both Server and Client boxes. Set an appropriate Allowance for the new category.

Auto Power Down (APD)

As defined currently in the Draft 1 specification, the APD 4-hour “window” can be significantly diminished through speculative recording. APD is defined *as a feature of on mode, whereby the STB will enter Sleep mode within 4 hours of the last user input or primary function*. Once APD has put the box into Sleep mode, however, it may switch back to On mode without user input to perform a primary function; in this particular case regarding speculative recording, *“delivering live or recorded content to a local drive”*. This can be interpreted to reset the 4 hour time requirement after each speculative downloading event.

The impact on the overall APD algorithm as a result is that the TEC assumes too many hours of Sleep mode. ENERGY STAR calculates TEC based on 7 hours per day of APD/Sleep mode. Therefore, APD gets garners an extra 18 kWh/year credit (365day/year x 7hrs/day x 7.2W difference between On and Sleep mode). If we assume 2 hours of APD/Sleep mode per day under real-world use with speculative recording, an additional 13 kWh/year allowance by adding the APD function to this box because those 5 additional hours per day of APD/Sleep mode would have never occurred. This loophole works against standards that promote low power modes in STBs because products are given “credit” for more hours spent in low power mode than we would expect under normal use.

Revision: Remove line 216, “1) the device has ceased performance of all primary functions, or”, or change ‘or’ to ‘and’

Test Procedures

The draft 1 specification limits downloads to 2 hours/day (lines 301 to 305), which we think is reasonable. However, the test procedures currently do not address this. Download testing verification and necessary language are needed.

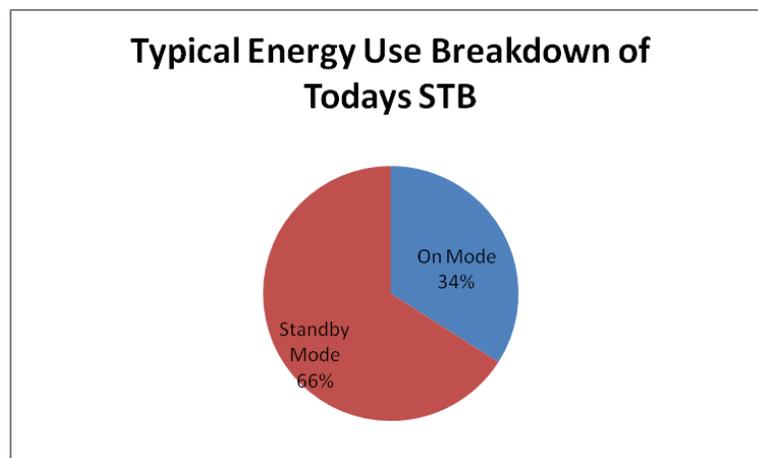
Tier 2 Comments

Addressing the High Power Draw in Sleep Mode

Despite the fact that STBs have been a part of the ENERGY STAR program for more than five years, we question whether the current TEC framework is working to transform the market as Sleep mode power continues to be so high. The Tier 2 specification needs to focus on-, and drive down, Sleep and Sleep mode energy use. While we don’t know the exact level that should be established NRDC thinks it is entirely reasonable to bring down Sleep mode power draw to 3 watts or less. At the March 19 stakeholder meeting we used the example of a battery-powered everyday ‘smart phone’, which uses a trickle of power when in “ready mode” and provide for identical needs and features as the STB:

- Need to track each discrete user.
- Equipped to handle billing and security concerns.
- Always ready to receive/send e-mail, SMS and/or phone call and instant ‘On’
- Can receive/play voice, data and video

To better describe this opportunity, take a common occurrence today whereby the difference between on mode and Sleep power is only 5W (On mode is 25W, Sleep mode is 20W and the user watches/records 7 hours of TV per day). In this case, the STB consumes 64 kWh/yr when in active use and 124 kWh/yr when the user is not using the STB. We need to move beyond the current paradigm where STBs frequently consume roughly two-thirds of their annual energy use (see graphic below) when they are NOT in use and look to ENERGY STAR to help drive this transformation.



We also recommend that ENERGY STAR look to current STB products in Europe, Asia and Australia, some of which provide the user with a choice of a 1W Sleep mode (i.e., “Standby”) for the user. While this seems to come with an unacceptably long refresh (e.g. time from when user hits the On button until the television is delivering the desired content), you can imagine a smart device whereby the box goes into a “deeper Sleep” when users are themselves sleeping from roughly midnight to 7 AM, when it is highly unlikely they will be turning a powered-Off television back On.

Moving to a Modal Power Framework

Given the increasing functionalities that STBs and other broadband access systems like the rapidly emerging multi-room and thin client architectures on the market, we would again urge ENERGY STAR to consider moving toward a modal power specification framework. As was the case for using a modal power framework for the ENERGY STAR for Audio/Video products, we think the Tier 2 specification could successfully take the same approach with sufficient lead time for stakeholders to understand the changes to inform product development cycles. These modal values could then be inputted into an equation provided by ENERGY STAR to provide interested stakeholders with an annual energy use value.

By going to a modal approach and requiring sound power management via an auto power down requirement, ENERGY STAR can be assured that new boxes use only as much power as the task required.

Conclusion

We appreciate the opportunity to provide comments on the ENERGY STAR Draft 1 Version 3.0 STB specification and look forward to working with you on future draft specification revisions in the coming weeks. If you have any questions, please feel free to contact Noah Horowitz (415-875-6170, nhorowitz@nrdc.org) or Pierre Bull (212-727-4606, pbull@nrdc.org).

Sincerely,

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