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Via email only: [stbs@energystar.gov](mailto:stbs@energystar.gov)

United States Environmental Protection Agency  
Attention: Katharine Kaplan  
Manager, Energy Star Product Development and Program Administration  
Office of Air and Radiation  
Washington, D.C. 20460

Re: Draft 1 Energy Star Version 4.1 specification for Set Top Boxes.

Dear Ms. Kaplan:

AT&T Inc. (“AT&T”), on behalf of itself and its affiliates, respectfully submits these comments in response to the U.S. Environmental Protection Agency’s (“EPA”) March 18, 2013 request for feedback on Draft 1 Energy Star Version 4.1 (“Version 4.1”) specification for set top boxes (“STBs”).

**A. Introduction.**

AT&T supports the efforts of the EPA in developing Version 4.1 to replace the formerly finalized Version 4.0 requirements. In order to improve energy efficiency for Energy Star qualified STBs it is critical that the program reflect state of the art performance judged technically feasible given current technology and market conditions.

The proposed Version 4.1 is a significant improvement over draft 4.0 levels. It brings prospective voluntary energy efficiency targets more closely into alignment with what is technically feasible and practical for the industry to strive toward without jeopardizing the customer experience.

However, Version 4.1’s calculation of AEC allowance for MIMO WiFi HNI is perilously undervalued, and if not adjusted, will place a lethal restraint on the growth of wireless interfaces in the STB industry. The calculation must be modified to reflect realistic energy levels consumed by a STB using MIMO WiFi HNI. Otherwise, as currently drafted, STBs using such a wireless interface simply cannot qualify as Energy Star compliant. EPA must increase the base AEC allowance for WiFi to ensure that the functionality of wireless STBs continue to increase.

In these comments, AT&T also proposes modifications to Version 4.1’s specifications in order to improve clarity of the specifications and to highlight other areas that merit further work.

**B. AEC Allowance for Integrated Wireless Interface should increase significantly.**

The AEC allowance set forth in Table 2<sup>1</sup> cannot support delivery of a carrier grade wireless interface. The current formula results in an incremental allowance of 4 kWh/year for two 5 GHz streams, which is reasonable for a MIMO wireless STB configuration. However, such an incremental power consumption allowance is too low for a wireless interface on a STB.

In order to sustain a broadband connection of sufficient capacity to reliably handle HD video, a carrier grade WiFi access point is required. However, a higher powered WiFi access point is needed to penetrate barriers and span the distance in a consumer's home. The wireless access point must also be capable of sustaining a high bandwidth connection in the presence of interference from other nearby devices. Wireless Access Points, either owned by the customer or not, and a continuing increase of devices operating in microwave and near microwave frequencies may create significant interference that a wireless STB interface must overcome. Unreliable wireless connections or ones with inadequate bandwidth will cause consumers to reject the feature as they would a deep sleep feature with excessive recovery times.<sup>2</sup>

The current specifications' 4 kWh/year allowance for MIMO WiFi HNI may be based on existing consumer wireless access points, such as a home router. As discussed above, however, higher energy consumption is required to stream constant quality video at a carrier grade level as opposed to plain lower bit rate data streams typically handled by consumer grade WiFi. As such, a carrier grade wireless interface will likely need a significantly higher allowance, certainly much more than that currently proposed in Energy Star Version 4.1 draft standards. AT&T recognizes that it is difficult for Energy Star to provide an accurate and fair allowance without base-lining such a carrier grade wireless unit in actual operation, which it did not have the opportunity to do. Nevertheless, this circumstance should not be permitted to set an unrealistically low energy consumption allowance for the STB wireless MIMO interface.

AT&T is the first service provider to introduce a wireless STB. In the design process, which was initiated well before Version 4.1 was introduced, AT&T and its vendors strove to achieve an overall energy consumption level consistent with that set in Energy Star Version 3 standard for wired STBs. Although future generations of wireless STBs may benefit from using different Software on Chips ("SOCs") to lower total energy consumption, introducing an innovative new interface along with changing the SOCs would be too much change to support for a new product introduction. At least for Version 4.1, providers should not be faced with the unacceptable choice of opting out of Energy Star certification or withholding a new customer feature from the market.

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<sup>1</sup> See line 316 of Draft 1 Version 4.1.

<sup>2</sup> Based on Section 4.7.2 of the Draft Version 4.1, and consistent with the DOE approach in its testing NOPR, Energy Star recognizes that consumers would likely reject a deep sleep feature with excessive recovery times.

A robust carrier grade wireless interface can consume as much as 8.5 watts. Under optimal conditions, it would be imprudent to expect the wireless interface to average less than 3.7 watts consumption on a continuous basis. The operation of this interface is currently addressed only through two allowances: the HNI allowance of 8 kWh/yr and the MIMO spatial allowance of 4 kWh/yr (for an interface using two 5 Ghz antennae). The result is a significant disconnect in the allowed energy consumption (12 kWh/yr) and the actual consumption of no less than 25 Kwh/yr and possibly as high as 62 kWh/yr. Therefore, Energy Star Version 4.1 needs to include an additional fixed AEC allowance of at least 25 kWh/yr for a carrier grade WiFi interface, in addition to the spatial stream and HNI allowance.

Ample opportunity exists to re-assess the interface allowance for Version 5.0 and thereby allow sufficient time in the manufacturing process to incorporate other changes that will drive energy efficiency improvements in the current unit.

**C. Proposed Modifications to Version 4.1's Eligibility Criteria.**

Appendix A, attached hereto, contains additional proposed modifications to certain eligibility criteria in Draft 1 Version 4.1.

**D. Conclusion.**

It is critical that Version 4.1 be refined further in order to set prospective voluntary energy efficiency goals in line with what is technically feasible and practical for the industry. Most importantly, if the EPA does not modify its AEC allowance for wireless interfaces, innovative companies that bring state of art wireless STBs to the market will be discouraged from, and in this specific case, unable to reach Energy Star compliance. The unacceptable circumstance can be rectified, as proposed above, by providing an additional 25 kWh/yr allowance for the wireless MIMO interface.

AT&T appreciates your consideration of these comments, and encourages Energy Star to continue collaborating with the industry to produce challenging, yet realistic, energy efficiency targets.

Thank you.

Sincerely,

/s/Anna Kapetanakos

**AT&T's Proposed Modifications and Clarifications to Draft 1 Energy  
Star Version 4.1 Specifications for Set Top Boxes**

**A. High Definition Resolution. (Lines 66-69)**

High Definition ("HD") is defined effectively as 720p60 or 1080i30. Energy Star should expand the definition to clarify that 1080p is considered HD. It should also consider the possibility of ultraHD 4K standards being incorporated into STBs late in the applicable period for Version 4.1.

**B. Multi-room. (Lines 77-79)**

The definition of Multi-Room references multiple devices in a single family dwelling. Use of the term "dwelling," however, could cause needless confusion. For example, a single apartment in a multi-unit apartment building might not be ordinarily considered a single family dwelling. AT&T suggests replacing "single family dwelling" with the term "single family living unit."

**C. Removable Media Player. (Lines 83-84)**

The definition of Removable Media Player limits the scope of these devices to DVD and Blu-ray because, at this time, only one device has these capabilities. However, similar functionality can be provided to transfer media to and from an external device such as a memory stick or tablet via a USB port or other digital interface for later viewing. The definition of Removable Media Player should be expanded to include other external devices.

In addition, transfers to any of these devices would require some additional processing power and memory. However, the definition provides no power credits. This additional functionality should also have a corresponding power allowance added to Version 4.1.

**D. Sleep Mode and Deep Sleep State. (Lines 100-108)**

As currently drafted, the difference between Sleep Mode and Deep Sleep State seems to be that recovery to the active state occurs in 30 seconds or less for Sleep, while Deep Sleep recovery requires greater than 30 seconds. The distinction between Sleep and Deep Sleep modes should be in the degree to which power down occurs and that neither state should be promoted through an Energy Star incentive treatment if recovery requires greater than 30 seconds. This clarification should be made in Version 4.1.

**E. Service Provider. (Lines 124-126)**

The definition of Service Provider states that it provides, among other things, "associated installation and support services." There may be instances where customers can self-install their equipment. To avoid confusion, the definition should omit reference to "installation" and instead include "customer support services".

**F. Auto Power Down. (Lines 207-209)**

In order for a product to be deemed as offering Auto Power down features, the "products shipped with software from the manufacturer shall ship with APD enabled by default, with APD timing set to engage after a period of inactivity less than or equal to 4 hours." Without getting into a discussion of the appropriateness of the 4 hour limit, there may not be a default set by the manufacturer on certain STBs because the APD timing is a global parameter set when the device actually registers on line with the service provider network (i.e., it is not set at time of

shipment). The current language could be read to foreclose the APD credit even if the global parameter was set to 4 hours.

AT&T suggests correcting this discrepancy by revising the text as follows: "Products shipped with software from the manufacturer shall ship with APD enabled by default, with APD timing set to engage after a period of inactivity less than or equal to 4 hours. Where the parameter is downloaded by the STB, the default download shall set APD timing to engage after a period of inactivity less than or equal to 4 hours in order to qualify for Energy Star APD credits."

**G. Test Methods for Energy Star Qualification. (Line 408/Table 3)**

Table 3 states that STB test methods shall be set by the proposed DOE test procedure for STBs contained in the January 23, 2013 Notice of Proposed Rulemaking published in the Federal Register on January 23, 2013. This test procedure has not been adopted, and has been opposed on a number of technical, legal, and procedural grounds. It is inadvisable to commit to this procedure at this time. Rather, Table 3 should identify CEA 2043 as the appropriate test method, once finalized, unless and until the DOE adopts an alternative standard pursuant to its authority and NOPR proceedings.

Furthermore, to the extent a new test procedure is implemented, it is not certain that the results produced by such revised testing will be consistent with the basis for allowances provided in Version 4.1. There should be a mechanism to recalibrate allowances if the newly adopted test methodology produces somewhat different results, under the same conditions, compared to the test method currently utilized by Energy Star.

**H. Number of Hours Assigned to Each Displayless Video Gateway Mode of Operation. (Line 565/Table 11)**

Table 11 identifies the hours used when testing a Displayless Video Gateway under CEA-2043 while the same hours of usage for other STBs tested under the NOPR are also specified in Version 4.1. This can easily lead to inconsistencies. These customer usage numbers have been in use for quite some time and customer conditions have changed radically in the last few years. As viewing on tablets, mobile phones, PCs and game consoles has increased, the hours of usage for STBs likely have been reduced. As such, Energy Star Version 4.1 should include a mechanism to ensure that customer usage hours credited are consistent and continuously updated as more accurate data is made available.