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Via email only: 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: August 29, 2013 Amended Draft 2 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”) August 29, 2013 request for comments on its updated Draft 2 ENERGY STAR Version 4.1 (“Amended Draft 2”) specification for set top boxes (“STBs”).

A. Introduction.

AT&T appreciates ENERGY STAR’s collaborative approach in shaping the final specifications applicable to STBs in Version 4.1. Although Amended Draft 2 appropriately adjusts some conspicuous oversights in its datasets and certain functional allowances, additional modifications are needed to ensure that Version 4.1 reflects current technology, and continues to support the innovative advances manufacturers and other industry members have thus far achieved in improving the consumer experience and dramatically increasing the services’ energy efficiency. Rejecting reasonable allowances for the industry’s most innovative products will place Version 4.1 in the unintended position of impairing program participation.

AT&T has been an ENERGY STAR partner since Version 2.0 became available to IPTV providers. Since that time AT&T has introduced some of the most energy efficient options to consumers, and 100% of AT&T’s STBs distributed to date have been ENERGY STAR compliant. However, as cautioned in AT&T’s July 10, 2013 Comments, none of its devices currently distributed qualify for ENERGY STAR certification under Version 4.1. This conclusion does not change under the Amended Draft 2.

Energy efficiency technology over the past 12 months has not progressed at the pace ENERGY STAR assumes in Amended Draft 2. As a result, the specifications therein fail to align with the realities of IPTV STB capabilities. To avoid penalizing providers in the marketplace, Version 4.1 should be further adjusted to provide the industry pragmatic energy efficiency goals. These Comments focus on 3 priorities that ENERGY STAR should consider

when adopting final adjustments to Version 4.1 in order to accommodate reasonable allowance for IPTV facilities:

1. WiFi allowance. Establish a WiFi client Home Network Interface (“HNI”) allowance of 23 kWh/year that applies in lieu of the HNI interface. In the alternative, introduce a client WiFi HNI fixed adder that, when applied in combination with HNI adder, yields 23 kWh/year.
2. Multi-room adder. Implement a shared DVR allowance of 30 kWh/year that applies in lieu of the HNI allowance. In the alternative a shared DVR allowance, if applied in combination with the HNI allowance, should be set to yield 30 kWh/year.
3. HNI allowance. Increase the HNI allowance to 20 kWh/year.

B. WiFi allowance must reflect the fundamental difference between streaming HD video versus handling data wirelessly.

Appropriately adjusting Amended Draft 2’s WiFi allowance is critical to AT&T’s IPTV STBs, the only wireless interface currently on the market. Considering that AT&T’s IPTV STB is the only product that offers a wireless interface specifically designed for delivering high quality video, setting allowances that are inconsistent with its performance is unfounded.

ENERGY STAR’s rejection of stakeholders’ requests to increase the WiFi interface allowance is based on the inaccurate position that such proposals failed to provide supportive data.¹ AT&T directs ENERGY STAR to the July 26, 2013 Comments submitted by Cisco Systems, Inc. which provided measured power consumption for both WiFi access points and WiFi clients handling high quality video transmission.² The estimated allowances for the WiFi client and server solutions illustrate that Draft 2’s allowances³ are substantially undervalued.⁴ ENERGY STAR’s assumption that other more energy efficient video client WiFi interfaces will be available to meet Draft 2’s functionality allowance is unsupported in general and more specifically is contradicted by the data presented by Cisco.

In an August 12, 2013 meeting attended by key ENERGY STAFF, AT&T, and Cisco Systems, Inc., this data was further discussed and analyzed to demonstrate the inadequacy of the Draft 2’s WiFi allowances. During the course of that conference, a clear proposal was made, and supported by illustrating a regression of the data, to set the WiFi client allowance with a fixed component of 29 kWh/year and a variable component of 5 kWh/year.

The risk of setting the WiFi interface allowance too low will place an unworkable obstacle forcing a service provider to chose between being an ENERGY STAR partner with a WiFi interface that sacrifices the consumer experience, and relinquishing Energy Star

¹ See ENERGY STAR August 29, 2013 letter, p. 2.

² See Cisco Systems, Inc. July 26, 2013 Comments, pp. 4-5.

³ See ENERGY STAR May 30, 2013 letter.

⁴ See Cisco letter at p. 4-5. This data also documents the variation in power requirements increased from 2 to 3 virtual streams.

certification but delivering a quality customer experience. In its July 10, 2013 Comments, AT&T emphasized the unique hurdles a WiFi interface faces that must be acknowledged in ENERGY STAR's specifications:

1. WiFi transmissions are subject to interference from other devices operating in the same frequency band. When the signal power of the desired source is too low the interfaces generally must retransmit the content. Customers subscribed to a premium video service will not tolerate a video stream freezing or pixelating as a result of the retransmission of packets each time there is a signal interference.
2. Wireless STBs are designed to give customers flexibility in placing the device inside or within close proximity of the exterior of their home. In order to penetrate physical barriers, the WiFi radio must have sufficient power to deliver a sustained quality signal between the STB client and the STB access point.
3. Wireless STBs are placed in close proximity to the television. Televisions are placed at locations that fit with the home's décor and allow easy viewing, which is not necessarily at a location that has maximum WiFi reception.
4. WiFi devices handling data such as occurs with internet connectivity (and as contemplated in SNE 1.0) can tolerate packet retransmission, occasional buffer under-runs and can generally be placed to optimize WiFi connectivity. Thus WiFi devices considered in SNE 1.0 are an inadequate model for high performance video WiFi interfaces.

When a new function is introduced to the market, the allowance should be set so as to encourage rather than discourage innovation. The approach should err on the side of an over-allowance while experience is gained in operating the new feature in customer homes. The current allowances in Amended Draft 2 effectively ban WiFi devices supporting video from the ENERGY STAR program.

To reverse such unintended consequences, AT&T recommends that ENERGY STAR establish a WiFi client HNI allowance of 23 kWh/year that would apply in lieu of the HNI interface. In the alternative, ENERGY STAR can introduce a client WiFi HNI fixed adder that, when applied in combination with HNI adder, yields 23 kWh/year. In either approach, a MIMO adder would apply. The modification yields a conservative WiFi allowance of 37 kWh/year for a client interface with two 5 GHz virtual channels.

C. ENERGY STAR should restore the multi-room adder allowance available for shared DVRs.

In Draft 2⁵, ENERGY STAR inexplicably removed all power consumption allowances for shared DVR functionality unless it was delivered using thin client architecture. This proposal

⁵ See Draft 2 issued May 30, 2013.

raised almost uniform opposition by industry members. Yet, in Amended Draft 2 ENERGY STAR continues to justify the elimination of this allowance on the basis that shared DVRs, other than situations where thin clients are employed, provide minimal energy savings when deployed in a 3 STB home.⁶ This proposition is based on calculations that do not accurately reflect the operation in the consumers' homes nor take into account whether the devices could interoperate.

Specifically, the critical flaw in ENERGY STAR's calculations of savings from sharing a DVR compared to a baseline of 3 standalone DVRs⁷ is its use of an average Annual Energy Consumption ("AEC") across a wide variety of equipment. Use of averages in this instance ensures that the results will not be indicative of any actual deployment. The calculation should have been done by pairing appropriate models of DVRs with compatible non-DVRs on a service provider by service provider basis using the "as tested levels" on the Qualified Product List ("QPL").

Had ENERGY STAR compared DVRs with compatible non-DVRs, as articulated above, for IPTV, the DVR TEC would have been 145 kWh/year and the non-DVR STB TEC would have been 104 kWh/year. Based on these figures, Table 2 of the Amended Draft 2 understates IPTV consumption savings by 82% or 37 kWh/year.⁸ As deployed by AT&T, the shared DVR reduces consumption in a 3 STB household by 27%.

In its July 10, 2013 Comments, AT&T proposed a 30 kWh/year allowance for a shared DVR⁹ that reflects the energy consumed by the additional processing and network LAN management functions required to deliver recorded content to non-DVR STBs. Because the adder would also cover the HNI functionality, the shared DVR portion effectively accounts for 15 kWh/year compared to a consumption avoidance of 82 kWh/year, or more than five-fold the proposed allowance.

In summary, to avoid misguided incentives and to recognize efficiency of configurations other than thin clients, a shared DVR allowance should be established. At least in the case of IPTV, ENERGY STAR should implement a shared DVR allowance of 30 kWh/year that applies in lieu of the HNI allowance. In the alternative a shared DVR allowance, if applied in combination with the HNI allowance, should be set to yield 30 kWh/year. Adopting this multi-room adder circumvents ENERGY STAR from effectively sanctioning only one solution to whole home DVR functionality.

⁶ See ENERGY STAR letter, p. 2.

⁷ *Id.* at p. 2, Table 2.

⁸ Accordingly, a household with one IPTV DVR and two IPTV non-DVRs would consume 353 kWh/year (145 kWh/year for one DVR plus 2 x 104 kWh/year for 2 non-DVRs). Had the household been served with 3 DVRs, the consumption would have been 435 kWh/year (3 x 145 kWh/year for 3 DVRs). The consumption avoided by sharing the DVR in this situation is 82 kWh/year rather than the 37 kWh/year estimated by ENERGY STAR.

⁹ See AT&T Comments, p. 7.

D. Amended Draft 2's HNI allowance should be increased further to fully account for the power consumed in operating the interface.

In Amended Draft 2, ENERGY STAR increased the HNI allowance to 15 kWh/year¹⁰ despite industry members' recommendations for 20 kWh/year allowance.¹¹ As articulated in AT&T's July 10, 2013 Comments, and reaffirmed in the August 12, 2013 ENERGY STAR meeting, the HNI interface requires a minimum of 20 kWh/year.

In light of the aggressive reductions in Amended Draft 2 in comparison to Version 3.0's STB specification, it is critical that each allowance accurately reflects the current understanding of added functionality energy consumption. Little or no opportunity exists to pick up the shortfall of the HNI allowance through the overage in the base allowance. As it stands now, the base allowance for IPTV of 65 kWh/year (which includes consumption due to AVP and HD functionality previously covered with separate adders) is a reduction of 22 kWh/year compared to Version 3. When the adjustment for multi-stream is included, the reduction increases to 24 kWh/year.

Undervaluing the HNI allowance will effectively shift the unmet requirements into the base allowance. Under Version 4.1 Draft 1, the combination of the IPTV base, AVP, and HD totals 69 kWh/year. Under Draft 2¹², the IPTV base is at 65 kWh/year. In light of the further reductions made in the IPTV base, it is critical that the IPTV HNI allowance value be increased to 20 kWh/year.

E. Conclusion.

Energy Star should make three targeted modifications to Amended Draft 2 to substantially improve the 4.1 specification. First ENERGY STAR should establish a WiFi client HNI allowance of 23 kWh/year that applies in lieu of the HNI interface. In the alternative, it can introduce a client WiFi HNI fixed adder that, when applied in combination with HNI adder, yields 23 kWh/year. In either approach the MIMO adder would apply. Second, at least in the case of IPTV, ENERGY STAR should implement a shared DVR allowance of 30 kWh/year that applies in lieu of the HNI allowance. In the alternative a shared DVR allowance, if applied in combination with the HNI, can be set to yield 30 kWh/year. Finally, the IPTV HNI allowance value should be increased to 20 kWh/year.

Sincerely,

/s/

Anna Kapetanakos

¹⁰ See ENERGY STAR letter, p. 1.

¹¹ See AT&T Comments, p. 10; See also NCTA July 10, 2013 Comments, EchoStar/DISH July 3, 2013 Comments, DirecTV July 10, 2013 Comments, and Cisco July 26, 2013 Comments proposing a MoCA HNI adder of 10-12 kWh/year that would be applied in addition to the existing HNI adder, totaling 20-22 kWh/year.

¹² See Draft 2 issued May 30, 2013.