Anna Kapetanakos
General Attorney
AT&T Services, Inc.
1133 21st Street NW – Suite 900
Washington, DC 20036

T: 202-463-4133
F: 202-463-8066
C: 415-694-1530
Anna.kapetanakos@att.com

July 10, 2013

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: 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") May 30, 2013 request for comments on Draft 2 ENERGY STAR Version 4.1 ("Draft 2") specification for set top boxes ("STBs").

A. Introduction.

AT&T appreciates the opportunity to further collaborate with ENERGY STAR in developing Version 4.1 to replace the formerly finalized Version 4.0 requirements. Although AT&T agrees that there is value in refining existing allowances and expanding the menu of new functional allowances, Draft 2's aggressive reductions in many areas are simply not feasible to achieve given current technology and market conditions.

As explained further below, corrective actions are required in five areas: (1) the adder for AVP and HD must be restored or the base allowance correctly set, to accommodate Draft 2's absorption of the AVP and HD functionality into the base allowance; (2) the multi-room allowance must also be restored for whole home DVR configurations beyond the thin client platform; (3) the WiFi MIMO HNI adder should be increased to levels consistent with that which will occur when deployed in a home environment; (4) the HNI interface must be re-assessed and reset; and (5) when version 4.1 is finalized, it should remain in effect for a minimum of 36 months following the finalization of its successor specifications in order to provide the industry sufficient time to adapt to new standards.

These Comments explain why the energy efficiency targets reflected in Draft 2 are technically unfeasible and impractical. Of the 55 cable, satellite and IPTV STBs qualified on the May 29, 2013 Qualified Product List ("QPL"), AT&T estimates that 50 would fail to qualify under Draft 2. Should ENERGY STAR adopt Draft 2 without these revisions, AT&T may likely be forced to drop out of the program when the new requirements go into effect. To avoid this outcome, we respectfully urge ENERGY STAR to implement the adjustments proposed herein.

B. Draft 1 ENERGY STAR Version 4.1 ("Draft 1")

In its April 15, 2013 comments, AT&T commended ENERGY STAR for proposing substantially improved energy efficiency goals in Draft 1 and, as a result, bringing prospective voluntary energy efficiency targets more closely into alignment with what is technically feasible and practical for the industry to strive toward without jeopardizing innovation and the customer experience. The primary flaw AT&T identified in Draft 1 was its undervalued AEC allowance for MIMO WiFi Home Network Interface ("HNI"), for which we urged an increase to support delivery of a carrier grade wireless interface.

Specifically, Draft 1's formula reflected an HNI allowance of 8 kWh/year and a WiFi MIMO spatial allowance of 4 kWh/year for two 5 GHz streams. This caused a significant disconnect in the allowed energy consumption (12 kWh/year) and the actual consumption of no less than 25 kWh/year under ideal conditions and possibly as high as 62 kWh/year under challenging environments potentially encountered in consumer's homes. As a corrective action, AT&T proposed that the combination of the HNI allowance and WiFi MIMO allowance be increased by 25 KWh/year to a total of 37kWh/year.

Other industry members encouraged ENERGY STAR to increase existing allowances and/or proposed new allowances. In fact, no commenting party suggested that the proposed allowances in Draft 1 were too generous.[1] By failing to modify the base allowances and functional adder to offer reasonable standards for ENERGY STAR compliance, ENERGY STAR may likely impede innovation in the wireless STB arena.

C. Elimination of HD and AVP allowances, without an adjustment to base, is unjustified.

Contrary to recommendations in comments of industry members, ENERGY STAR adopted dramatic reductions in Draft 2. ENERGY STAR proposes to completely eliminate both the HD and AVP adders on grounds that the functionality is commonly deployed and would be addressed in the base allowance on a going forward basis. However, Draft 2 sets the base allowance at 5 kWh/year below Version 3.0 levels. The Version 3.0 specification treats HD and AVP as incremental adders. The effective reduction for IPTV STB would be 42 kWh/year, which is well below anything that is reasonable in light of currently available technology. In fact, as shown in more detail below, AT&T attempted to replicate the analysis that ENERGY STAR conducted to calculate the new base allowance (correcting for apparent errors) and calculated a value almost equivalent to the base allowance in Draft 1, plus the HD and AVP adders.

---

[1] See NRDC Comments on ENERGY STAR Draft 1 Version 4.1 Specification for Set Top Boxes, April 11, 2013. While encouraging ENERGY STAR to drive increased energy efficiency, NRDC did not advocate reduction of proposed allowances or functional adders contained in Draft 1. Rather NRDC's comments addressed: (1) inclusion of displayless video gateways, (2) establishing reasonable energy allowances for new functionality not already addressed, (3) treatment of thin client whole home DVR configurations, (4) modification of deep sleep incentives, and (5) encouraging ENERGY STAR to adopt particular deep sleep requirements in Version 5.

As an initial matter, it is instructive to track the trend of allowances available between Version 3.0 and Draft 2:

ES Spec	kWh/yr. Allowance - IPTV			
	Base	AVP	HD	Total
V3.0	50	12	25	87
V4.0	25	8	16	49
V4.1 draft 1	45	8	16	69
Version 4.1 draft 2	45	0	0	45

Under Draft 2, ENERGY STAR eliminates all allowances for HD and AVP but fails to make compensating adjustments to the base allowance for IPTV. As currently proposed, the change implicitly requires more than a 48% increase in IPTV base energy efficiency from the current standards set forth in Version 3.0 (assuming Version 3.0 AVP and HD allowances are rolled into the Version 3.0 base). There are no facts in the record to suggest that sufficient technological improvements have occurred since the adoption of Version 3.0 to justify a 48% energy efficiency improvement.

During the June 17, 2013 Draft 2 Version 4.1 Set-top Box Stakeholder Webinar ("Webinar"), ENERGY STAR representatives provided a high level description of the process for establishing the proposed base. As AT&T understands the process described at the Webinar, the proposed base allowance was deduced from products listed on the May Qualified Product List ("QPL") via a 4 step process. First, the product set of interest within the QPL was extracted. IPTV is a product set within this IP category. Accordingly, in this first step, other IP-based products needed to be correctly eliminated (e.g., over-the-top devices, thin clients for cable/satellite, etc.). Second, devices remaining that either lacked reported power consumption or were duplicate entries (e.g., the same devices with different product IDs) needed to be eliminated. Third, the applicable features then needed to be validated (e.g., some devices inexplicably list a multi-room capability for a non-DVR unit) and the adders proposed for Draft 2 subtracted. This step implicitly assumes the proposed allowances are completely accurate, which these comments demonstrate is not correct. The result of this third step, in theory, produces a group of devices with each having a deduced base power consumption. The fourth and final step was to determine the upper limit of the 1st quartile of the data set. The upper limit was intended to serve as the base allowance for the product set since it theoretically represents

the lower end of the base performance for the top 25% of performers in the product category. Following this process, ENERGY STAR produced a base allowance of 45 kWh/year for IPTV.

While the process described above is intuitively appealing, it suffers from a number of practical risks, any one of which could dramatically alter the estimate of the base allowance. Among these are the following considerations:

1. The products of interest for a particular subset must be accurate; otherwise inclusion of non-relevant products could, given the relatively small number of IPTV STB, shift the threshold for the 1st quartile dramatically.
2. The data set, once culled of potentially duplicated units and units for which a base cannot be computed (i.e., those lacking a published total power consumption), must be reasonably robust. In other words, the first quartile must be of a reasonably robust size and should reflect more than one vendor's product.
3. The additional feature allowances subtracted from the base must be accurately set and correctly associated with the particular unit. Any error will impact the base calculation. If the adder is over-estimated, the base will be overstated and vice-versa.
4. The product set examined should reflect the vast majority of STBs currently utilized.

A means for evaluating the reasonableness of the ENERGY STAR process is to assess whether the base allowances of the devices in a particular group are relatively consistent after the added feature allowances are removed (e.g., non-DVRs and DVRs are fairly randomly distributed amongst the quartiles). In addition, one would expect the mean and medians for the computed base to be consistent for DVRs, non-DVRs, and the combination of the two categories. It is not clear if this was examined by ENERGY STAR when testing the reasonableness of their results.

AT&T reviewed the May 29, 2013 QPL and strove to replicate the above process. [2] AT&T's calculations show a base allowance of 65 kWh/year, which is substantially above the value ENERGY STAR arrives at in its calculations for Draft 2. In fact, the result is essentially the same result as combining Draft 1 base allowance of 45 kWh/year, the AVP adder of 8 kWh/year, and the HD adder of 16 kWh/year, or a combined total of 69 kWh/year. The spreadsheet attached hereto as **Appendix A** provides supporting detail for this analysis.

ENERGY STAR should restore the IPTV base allowance and the AVP and HD functional allowances to levels previously proposed in Draft 1. In the alternative, ENERGY STAR should increase the IPTV base allowance to 69 kWh/year if it eliminates the AVP and HD functional allowances.

[2] AT&T confirmed that the IP category that served as the bases for its own analysis matched the IP products listed in the data set ENERGY STAR used for its analysis, which was subsequently made available on its website. AT&T also confirmed that the Total Energy Consumption ("TEC") agreed. In one instance, ENERGY STAR added a TEC not published on the QPL. AT&T used this updated value in its analysis.

D. Draft 2 mistakenly eliminates allowable energy consumption for certain whole home DVR configurations.

Draft 2, unlike Draft 1 denies a multi-room DVR functional allowance unless two conditions are met. Specifically, (1) the multi-room DVR must provide live programming to the subtending STBs, and (2) the subtending STB cannot receive content directly from or communicate with the service provider's network. These restrictions may have been directed at instances where service providers need tuners to communicate directly with the network. But for AT&T's service, which does not require such tuners, the restrictions would unnecessarily reduce the ability for products to achieve ENERGY STAR qualification, and reduce incentives to deploy many whole home DVR configurations. Accordingly, ENERGY STAR should revise the rules for its multi-room adder so they do not improperly penalize certain network architectures.

Under Draft 2 specifications, qualifying whole home DVR architectures receive a 59 kWh/year allowance but non-qualifying platforms lose what had been a 40 kWh/year allowance, which is replaced with a HNI allowance proposed at 10 kWh/year.[3] Replacement of the prior multi-room adder (40 kWh/year) with the HNI adder (10 kWh/year) is insufficient, by a wide margin, to address power consumption of whole home DVR functionality.

A stand-alone DVR varies significantly from the capabilities of the multi-room (or whole home) DVR. One DVR function is necessary but not sufficient for a whole home capability. The whole home component manages DVR transactions for multiple STBs, including delivering content streams that can differ for each requesting STB, supporting traditional DVR transactions (such as play, rewind, fast forward, etc) for each connected STB, and, at least for IPTV, supporting the pause and replay of live TV. All this requires additional hard disk drive storage, temporary buffer storage, and processing power that is unnecessary for a stand alone DVR. As such, the allowance for a stand-alone DVR is independent from the allowance of a whole home DVR capability. Furthermore, as is explained below, the HNI allowance under Draft 2 is insufficient to cover the networking functionality much less the whole home DVR energy requirements.

E. Draft 2's eligibility for a multi-room allowance should be architecture-neutral.

Although Draft 2 increases the multi-room adder from 40 kWh/year to 56 kWh/year, this allowance is limited to configurations where the whole home DVR STB provides all live and recorded content to the subtending STBs and the subtending STBs have no direct

[3] At the same time, Draft 2 provides a modest increment to the DVR functional allowance of 9 kWh/year. However, this additional allowance is specific to the ability to record content (i.e., the DVR function) and not the ability of other STBs to rely on a single DVR function (the whole home capability). The 45 kWh/year adder is available to stand alone DVR STBs, non-qualifying (based on Draft 2 definitions) whole home DVR STBs, and qualifying whole home DVR STBs. As such, it is unrelated to the whole home functionality.

communications with the service provider's network. To understand the implication of this modification, the table below illustrates the variance in total DVR allowance between Version 3.0 and Draft 2:

ENERGY STAR	Allowance (Kwh/yr) Base = IPTV					
Specification Version	Total non-DVR	Remove HNI	add DVR	add Multi-room	Total DVR	Change vs 3.0
3.0	105	-10	45	40	180	
4.0	63	-8	36	30	121	-33%
4.1 d1	83	-8	36	40	151	-16%
4.1.d2	61		45	0	106	-41%
4.1.d2 vs 3.0	-42%	-100%	0%	-100%	-41%	

Part of the rationale, expressed at the Webinar, for restricting the multi-room allowance was to encourage service providers to move away from configurations where tuners existed in the STBs subtending the whole home DVR. This justification, however, does not hold for IPTV because IPTV STBs, whether DVRs or non-DVRs, do not contain tuners. In the case of IPTV, the video stream requested for viewing or recording is sent as an IP stream from a server located in the service provider network to an authenticated IPTV STB. A tuner is not required to filter the high frequency band carrying the desired content from the entirety of the content being delivered to the consumer's home.

The efficiency of IPTV whole home DVR configurations, as deployed by AT&T, is clear when comparing the TEC of DVR and non-DVR IPTV STBs under Version 3.0. The relevant IPTV DVRs tested at levels between 143 and 145 kWh/year; non-DVR IPTV STBs tested at levels between 98 and 104 kWh/year. As a result, for whole home DVR configurations deployed by AT&T, at least 39 kWh/year is avoided for each non-DVR STB in a consumer's home.

Digital rights assurance is a critical consideration for every service provider and relevant to the whole home DVR architecture. All devices capable of viewing content must authenticate to the provider to ensure protection of the data stream. Whether the end device authenticates to the local server which in turn authenticates to the network, or whether all the devices authenticate to the service provider network, makes little difference in power consumption; the process for both approaches is the same. AT&T STBs currently authenticate directly to the service provider network.

AT&T uses Microsoft Mediaroom to provide the encryption, where decrypt keys regularly change. These keys are delivered only to specifically authenticated and authorized STBs. In a media server and thin client architecture, as envisioned by ENERGY STAR, a local server (i.e., the whole home DVR) would need to buffer and decrypt all of the incoming streams

and then re-encrypt before the stream is delivered to the thin client. Each thin client would thereafter need to authenticate at least to the local server before securing local keys for decryption of the secondary stream. Such a change would be a major alteration to the AT&T platform.

Furthermore and continuing with the hypothetical, deploying IPTV thin clients would likely cause an increase in processing power and memory for the existing IPTV whole home DVR, particularly if functions such as the Electronic Programming Guide were moved to the DVR. Because qualifying thin clients could not communicate with the service provider network, a major revision to the Microsoft Mediaroom environment would be required to permit thin clients to boot from and authenticate through the whole home DVR. These are major and costly modifications accompanied with risks of degradation to the customer experience, and without a sufficient probability of delivering material energy savings.

While it may be appropriate to grant certain whole home DVR configurations a larger allowance, it does not follow that total elimination of multi-room allowances for all other architectures is justifiable. The appropriate treatment would be, if necessary, to create at least two versions of the multi-room allowance based upon the architecture implemented:

(1) A whole home DVR "thin client" allowance of 59 kWh/year allowance could still apply for configurations described in Draft 2, and

(2) Other platforms not employing the "thin client" configuration but providing a whole home DVR capability (i.e., a single DVR and one or more non-DVR is deployed for the customer) could be set at a different level. More specifically, at least a 30 kWh/year allowance should be adopted for these configurations and could be referred to as a whole home DVR non-thin client allowance.

In both instances, the allowance represents the energy consumed by the additional processing and network LAN management functions required to deliver recorded content to connected devices or STBs, regardless of the chosen architecture. As before, when the multi-room allowance applied, the DVR configuration would not be eligible for the HNI allowance. However, the DVR allowance would still be applicable but, as it does now, would account only for the energy consumption associated with recording and replaying content stored on the DVR STB, regardless of whether one or multiple DVRs are deployed.

ENERGY STAR should correct this flaw in its eligibility for the multi-room allowance. Failing to do so penalizes IPTV and other platforms with architectures that replace energy consuming hardware with more energy efficient network communications.

F. Draft 2's WiFi allowance remains insufficient to reflect the energy consumption of a carrier grade interface delivering multiple video streams in widely varying home environments.

Draft 1 was the first specification to introduce an explicit allowance for WiFi connectivity for a video stream. That allowance seemed to exclusively address the MIMO or antennae configuration by providing 2 kWh/year for each stream in the 2.4 GHz band and 4 kWh/year for each stream in the 5 GHz band. Appropriately, whether the streams utilized a 802.11n or 802.11ac standard did not affect eligibility for the allowance. Draft 2 improves the allowance by granting 2 kWh/year for each 2.4 GHz band and 7 kWh/year for each 5 GHz band. Again, no distinction or restriction applies based on the WiFi standard employed. In its Webinar, ENERGY STAR representatives confirmed that allowance was agnostic to the WiFi standard employed.

The formula for the WiFi HNI allowance is largely based on the content of Version 1, Draft 3 ("Draft 3") of the Small Network Equipment ("SNE") specification.[4] ENERGY STAR indicated it hoped to make the revised MIMO WiFi HNI consistent with the Draft 3 SNE specification.[5] However, while Draft 2 adopts the same allowance for 2.4 GHz streams, without limitation on the WiFi standard employed, the allowance for the 5GHz stream is inexplicably reduced from 11 kWh/year to 7 kWh/year - a reduction of 36%. Furthermore, ENERGY STAR did not adopt the fixed component of the WiFi interface in the SNE specification. Rather, ENERGY STAR represented that the HNI allowance would absorb this aspect. Currently the Draft 2 HNI allowance is insufficient for that purpose.

The allowable energy consumption for a configuration with two 5 GHz channels[6] under Draft 3 of the SNE specification is 28 kWh/year for the WiFi MIMO (6 kWh/year + 2* 11 kWh/year). In its April 15, 2013 Comments, AT&T proposed adding a fixed component of the WiFi adder in addition to the proposed 4 kWh/year spatial allowance (for two 5 GHz streams). This proposal yielded 29 kWh/year, which is virtually identical to the SNE treatment.

The primary dilemma with Draft 2's WiFi interface allowance is that the existing HNI allowance under Version 3.0 is undervalued. The HNI allowance is currently 10 kWh/year but, as discussed in AT&T's Comments on the HNI adder, the interface actually consumes more than the allowed amount. This shortfall in the HNI allowance is further compounded by ENERGY STAR's desire for consistency between the WiFi HNI allowance for STBs and the WiFi allowance in the SNE specification. Such consistency is dependent on the use cases for a home WiFi access point being the same as for a STB WiFi interface used solely for video delivery.

---

[4] Draft 3 at page 7. *See* also: https://www.energystar.gov/products/specs/sites/products/files/Draft%203%20Version%201%200%20SNE%20Specification.pdf.

[5] *Id*. at pp. 9-10. Baseline WiFi Allowance: 0.7 W (approx. 6 kWh/year), 2.4 GHz (802.11n) allowance, per stream: 0.2 W (approx. 2 kWh/year.), 5 GHz (802.11ac) allowance, per stream: 1.3 W (approx. 11 kWh/year)." Note that the HNI adder provides an additional allowance that should be counted against the foregoing SNE allowances.

[6] Without limitation due to WiFi standard.

However, it is unlikely that the use cases would be similar. When streaming video, the assumption must be that the WiFi conditions will operate under extreme conditions of distance and noise. To do otherwise would jeopardize the customer experience or, at the least, misrepresent the energy consumption when devices are placed in service. Not only must a reasonably high bandwidth continuous stream be supported, it must be supported for long reach through interior walls (of varying thickness and materials) and in the face of relatively high noise conditions (e.g., interference from baby monitors, microwave ovens, and neighboring access points which may not even be in the same home). A power allowance based on "ideal" quiet and close conditions is simply unsupportable.

The WiFi interface, as deployed for AT&T wireless IPTV STBs, operates in both a transmit mode (to acknowledge video packets) and a receive mode (to accept video content). The transmit requirement is approximately 4.7 watts and the receive requirement is approximately 4.6 watts. In round figures, the interface will be in the receive mode 90% of the time and the transmit mode 10% of the time. Since this interface is the sole connectivity to the service provider network and because the middleware is currently unable to "reboot" in a time frame that meets customer expectations (i.e., under 30 seconds), the interface must remain continuously active and does not have an idle power state. The average requirement of the interface is, therefore, around 4.6 watts or around 41 KWh/year.[7]

AT&T is not alone[8] in arguing that the WiFi HNI allowance should increase, which is further evidence that Draft 2's proposed allowance is inadequate. ENERGY STAR should add a fixed component to the WiFi HNI so that, in combination with the existing HNI adder and the proposed per channel allowance yield, a reasonable WiFi permissible consumption figure results. AT&T proposes that the adders (HNI+ WiFi fixed+ WIFi/channel) be fine tuned to deliver no less than 41 kWh/year for an interface supporting two 5 GHz virtual streams. In situations where additional streams are active, the allowance would need to be larger.

G. The currently proposed HNI additional allowance, even at 10 kWh/year, does not fully account for the power consumed in operating the interface.

ENERGY STAR appropriately provides an allowance for a HNI. It is intended to address the power consumed by the in-home networking interfaces including Ethernet, HPNA, MOCA and WiFi. As Draft 2 recognizes (by providing an additional WiFi HNI adder), the various interfaces do not use the same power. In the Webinar, ENERGY STAR indicated that

[7] In its April 15, 2013 Comments on Draft 1, AT&T stated that the interface allowance for two 5 GHz streams should be 37 kWh/year. Subsequent use case testing by its vendor has indicated that this figure is underestimated by approximately 10%, and the interface should have an allowance of 41 kWh/year.

[8] *See*, April 15, 2013 Comments filed by Motorola, EchoStar/Dish, DIRECTV, and Cisco, respectively, proposing increases to the WiFi HNI allowance.

the basic HNI allowance is based upon an assumption that the interface uses 3 watts in the active state and 0.5 watts in the idle state. AT&T believes that there are two problems with these assumptions as it relates to the HPNA interface utilized for IPTV. First, in the active state, the interface as deployed by AT&T consumes about 2.25 watts when active. Second, the interface does not go into an idle state - the 2.25 watts is a continuous requirement. The net result is that a HNPA interface should have a 20 kWh/year.

Note that wired and wireless IPTV STBs, as recently tested for ENERGY STAR certification, have virtually the same power requirement. A wired non-DVR STB (ISB7000) tested at 104 kWh/year and the wireless non-DVR (ISB7005) tested at 101 kWh/year. The only practical difference between the two devices is that the ISB7000 utilizes an HNPA HNI and the ISB7005 uses a WiFi HNI. This is further confirmation of the fact that the current HNI allowance is inadequate. AT&T has shown the WiFi interface should receive an allowance of 41 kWh/year in total, and proposes that the HPNA HNI interface be increased to at least 20 kWh/year.

H. Draft 2 should account for energy consumption of Emerging Functions.

Draft 2 identifies a number of emerging functions that may be incorporated into the STB in the near future, such as Ultra High Definition ("UHD"), High Efficiency Video Process ("HEVP"), and Transcoding. However, it is not sufficient to simply list features that may receive an allowance some time in the future. Rather, ENERGY STAR should establish a process by which service providers can innovate without facing the risk of non-compliance due to the lack of an adder that accounts for the energy consumed by the newly introduced feature. In some instances, functionality needs to be introduced into a STB before material market demand has arisen. As a result, there may be additional energy consumption occurring in a device that has not been recognized by ENERGY STAR's current functional adders. Furthermore, the testing procedures may not be fully defined. If Draft 2 does not account for energy consumption of emerging functions, innovators would be forced to forego ENERGY STAR certification, or pre-announce features in sufficient time to permit adaptation of the ENERGY STAR specifications and testing procedure (which can result in losing time-to-market advantages).

The Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Set-Top Boxes[9] ("IVA") recognizes this predicament faced by innovators and provides a workable model that ENERGY STAR should use as a model. In essence, IVA's approach permits new functionalities to be disabled, if possible, during testing so that the lack of an adder for that new function does not result in a penalty. Recognizing that it may not be possible to fully or substantially disable some functionality, the service provider introducing the functionality may propose an offset to the energy consumption measurement as a means to avoid an "innovator penalty."

[9] *See*, IVA, page 3, paragraph 6.3, dated December 6, 2012.

Of course, such a proposed offset could serve as an interim adder for ENERGY STAR purposes. If this course is chosen, then there needs to be flexibility to fine tune the adder. It may be that different service provider platforms may implement similar functionality in different ways that have different power consumption implications. Other parties should have the option of adopting the interim adder or proposing a platform specific adder.

I. The finalized specifications should remain in effect for a minimum of 36 months following finalization of the replacement standard.

In order to incent and capitalize on innovation in energy efficiency, ENERGY STAR should take reasonable steps that will provide the industry sufficient time to adapt to proposed standards. Yet, it appears that each successive specification adopted by ENERGY STAR is increasingly aggressive and challenging to satisfy with less time available to the industry to react. To avoid such a consequence, ENERGY STAR should, at a minimum, assure that current specifications remain in effect for at least 36 months following the finalization of its successor specifications. This timeframe recognizes the complexity and cost of introducing new features into video delivery platforms. Further, ENERGY STAR should lay out the objectives for the successor specification early in the process. By identifying such goals (e.g., target efficiency improvements) early and allowing for open discussion, the industry will be better prepared to develop strategies for compliance early in the development cycle.

Energy efficiency improvements to the STB technology (e.g., smaller chips, wireless or networking enhancements, etc.) do not come to market in a set and predictable time interval, and material changes rarely occur every year or two. New STB technology typically requires substantial testing and validation before it is introduced into the consumers' homes. For example, networking over home power lines is addressed in recently published standards and present in some hardware. Yet, it is still being evaluated by service providers in order to fully understand the customer experience and cost implication when operated outside a controlled laboratory environment.

Moreover, once an improvement is available, considerable resources are required to acquire prototypes, identify and specify platform changes, put hardware into production, integrate the new capability into the existing infrastructure (i.e., human processes, hardware and software), and deploy and fully test the changes. This production flow becomes increasing challenging when it requires working with multiple partners (hardware, software, etc) to integrate functionality into the platform's operations. In addition, it is costly to maintain a wide array of different generations of devices in service. For example, maintaining multiple variations of a particular device increase inventory costs. Also, customer care operations (installation, repair and customer support agents) must understand the complexities of multiple devices in order to efficiently handle customer requests.

In summary, it is not economically feasible to launch a new STB every one or two years to keep up with ENERGY STAR's constantly evolving versions. The effects of adopting increasingly challenging specifications on a short timeframe ripple through the entire ecosystem (Installation, Care, Refurbishment, IT systems, Finance). As a result, inappropriately short "in-effect intervals" become a deterrent to ENERGY STAR compliance. In light of the resources and time expended in bringing energy improved STBs to market, the incentive to comply with ENERGY STAR specifications will be greatly diminished if newly adopted specifications render these products obsolete after one or two years.

J. Conclusion.

Draft 2's STB specification is overly aggressive. Given its target levels of performance, the IPTV STB AT&T currently purchases may likely not meet the objective levels for ENERGY STAR certification. This is a radical change from the past when all newly purchased STBS were ENERGY STAR compliant. 100% compliance has existed since Version 2.0 reactivated the ENERGY STAR program for STBs in 2009.

Based on the foregoing comments, AT&T urges ENERGY STAR to, at a minimum, revise Draft 2, as follows:

(a) Restore the HD and AVP allowances or adjust the base allowance to fully account for the functions being absorbed into the base. If the HD and AVP allowances are restored, the values should be 8 kWh/year for AVP and 16 kWh/year for HD and a base of 45 kWh/year. If the HD and AVP functionality are absorbed into the base allowance for IPTV, then the IPTV base allowance should be set at 69 kWh/year.
(b) Restore a multi-room allowance for IPTV whole home DVR STB either by providing an IPTV-specific multi-room allowance, by eliminating the disqualifier if communications occurs with the service provider network. AT&T recommends 30 kWh/year for the Multi-room IPTV whole home DVR STB allowance, which would apply in lieu of the HNI allowance.
(c) Increase the WiFi HNI allowance to account for at least 41 kWh/year of additional allowance in combination with the existing HNI allowance.
(d) Adjust the HNI adder to reflect better assumption about active and idle power requirements. The HNI adder should be reset to at least 20 kWh/year.
(e) Other adders relevant to IPTV should remain as proposed in Draft 2. More specifically, the multi-stream adder should remain at 8 kWh/year and the DVR adder should remain at 45 kWh/year.
(f) Keep the newly adopted specification in effect for a minimum of 36 months following the finalization of its successor specification.

If ENERGY STAR makes the above changes, the STB program should be viable for at least the IPTV segment. With these modifications, commonly equipped IPTV whole home DVR STBs will be permitted an allowable consumption of 152 kWh/year, wired non-DVR STB an allowable consumption of 97 kWh/year and wireless non-DVR STB an allowable consumption of 118 kWh/year. These results compare favorably to the qualification levels for Version 3.0. The IPTV whole-home DVR STB qualification level is reduced from 180 KWh/year to 152 KWh/year, which is more than a 15% improvement compared to Version 3.0. The wired non-DVR STB is reduced from 105 kWh/year to 97 kWh/year which represents almost an 8% improvement. Wireless non-DVR STB would be allowed 118 kWh/yr. The wireless non-DVR STB devices were not explicitly addressed in Version 3. Taken together, the allowances and resulting targets represent achievable progress for energy efficiency improvement for IPTV which is currently an unmatched line up of energy efficient units.

Sincerely,

/s/_____
Anna Kapetanakos