

April 13, 2012

Ms. Katharine Kaplan
ENERGY STAR Set-Top Box Program
U.S. Environmental Protection Agency
1310 L Street, NW
Washington, DC

Subject: DIRECTV Comments on ENERGY STAR® Set-top Box Version 4.1 Specification Review

Dear Katharine:

DIRECTV appreciates the opportunity to provide these initial comments on the ENERGY STAR Set-top Box Version 4.1 Specification Review, and commends the EPA for following through with the commitment it made (as noted in your March 20, 2012 letter) “to ensure that the requirements aligned with the evolution of the market and the performance of products in this quickly developing product category”.

As you know, DIRECTV has taken significant steps to improve the efficiency of its products since signing on as an ENERGY STAR partner four years ago. The extent of our commitment is evidenced by our winning of an EPA award for Excellence in Energy Efficient Design each of the last three years.¹ We are committed to continuing to design energy efficient television delivery systems in the future, and hope that this commitment can be acknowledged in this next revision of the ENERGY STAR STB program.

The best opportunity for significant energy savings in the home going forward is unquestionably through the deployment of server-client multi-room architectures. These newest multi-room solutions, already shipping from satellite TV providers, offer significant energy savings for the average U.S. household (2.9 TVs) over and above that available via today’s ENERGY STAR Version 3.0 compliant products. DIRECTV has estimated the additional household energy savings possible with its more advanced server-client architectures: presentation [here](#). We are encouraged that the EPA has recognized that these products are not adequately represented and is seeking input from industry about better recognition of the gains associated with these architectures in Version 4.1.

A key characteristic of this architecture is the placement of critical functionality in the server so as to avoid duplication of that functionality for each television served in a household. The original draft ENERGY STAR Version 4.0 specification did not acknowledge this characteristic, proposing instead very aggressive “across the board” decreases of an average 32% in the base allowance and 20% in the

¹ As noted by Ann Bailey (Director, ENERGY STAR Product Labeling) in DIRECTV’s award letter this year: “As of the end of 2011, DIRECTV customers are enjoying 33 million ENERGY STAR qualified receivers, with more than 2.2 million customers realizing even greater savings – 30 percent more, through DIRECTV’s Whole-Home DVR solution – all demonstrating DIRECTV’s superior commitment to efficiency. With this award, EPA is also recognizing DIRECTV’s move towards receiver-less options for consumers-offering customers a household of content with one central DVR, eliminating the need for millions of energy using receivers. Your commitment distinguishes DIRECTV as an industry leader.”

adders. Taking effect only 22 months after V3, these decreases are not supported by the current state of STB technology. While DIRECTV continues to work with silicon providers and set-top box manufacturers on technology allowing significant across the board improvements, each leap of energy consumption takes a minimum timeframe of 3 to 4 years to achieve meaningful savings. For example, DIRECTV has been improving the design of its HD DVR server in the hopes of closing some of the gap with V3 levels; however this improved design will not be introduced until 2013.

We also note that any requirement for “Deep Sleep” in order to reach Energy Star goals does not reflect an understanding of the limitations of one-way satellite broadcast systems. Mandating such a requirement places the ability of satellite to compete with the remainder of the Pay-TV industry at risk.²

We encourage the EPA to also consider new adders appropriate for technologies that have appeared on the horizon since Version 3 was adopted: including 4K, Ultra HD, HEVC, and full-HD 3D. Such consideration will help allow for innovation in the market, including the ability to continue to introduce new features in products, and to continue to improve the consumer experience. At the same time, DIRECTV supports including the HD and Advanced Video Coding adders in a revised base allowance, as all of our newly manufactured set-top boxes support these features.

Regarding the specific issues raised by EPA, DIRECTV has the following initial comments:

- Test procedure: We recommend that the EPA follow, and encourage others to follow, the CEA 2043 STB testing specification currently under development. CEA’s industry-led, consensus, standards-setting process allows for a specification that is both timely and (through CEA’s partnership with the American National Standards Institute, ANSI) credible.
- Multi-room: While the existing Version 3 multi-room adder should be preserved for use in the first generation multi-room architectures (in which recorded content may be streamed from a DVR set-top box to another, non-DVR set-top box), this adder is not adequate for server-client multi-room architectures. Additional allowances appropriate to encourage increased multi-room server deployments include:
 - Allowance for elimination of client devices (e.g. equal to one or more HD thin clients). This should be applicable whenever the server provides one or more video outputs that can be directly processed by devices already in the market that are designed for other functions, for example television sets, game players, etc., without the need for additional thin client devices. Use of standard technologies such as RVU, DLNA, etc., facilitates such architectures.
 - Additional tuners for simultaneously streaming to multiple thin-client devices (for example, the EU Voluntary Agreement allows 20 kWhr/yr/tuner)

² We point the EPA to the joint EchoStar/DISH/DIRECTV comments to the DOE (Docket Number:EERE–2010–BT–DET–0040 RIN:1904–AC52. “DISH Network L.L.C., EchoStar Technologies L.L.C., and DIRECTV L.L.C. Response to DOE Request For Information (EERE-2011-BT-NOA-0067) Concerning Energy Conservation Standards for Set Top Boxes”). To summarize, like other MVPD systems, satellite STBs maintain permanent communication with a network to allow for programming changes, security updates, and network resource configuration changes, and to also support other consumer-driven features such as remote access from mobile devices and customer purchases of premium content. Unlike other MVPD systems that employ a two-way communication relationship, satellite STBs employ a one-way, continuous connection with the satellite network. This means that although the satellite STB receives information from the satellite, the STB cannot send information to the satellite. The result is that satellite STBs cannot achieve a deep sleep without resulting in an unacceptably long restart time and missed or out-of-date user information. Interrupting the one-way satellite connection on a regular basis with a deep sleep mode would disadvantage providers of satellite television and video to a point where customers simply would not tolerate the long restart times and updating requirements.

- Allowance for the larger hard-drives for servers that are storing content for the entire home
- Multiple simultaneous decode (e.g. for PIP, secondary video output)
- Transcoding for STBs that convert from the formats used for delivery of content to the home to those used for delivery of content from the STBs to customer devices such as tablets and other mobile devices.
- Allowance for simultaneous network interfaces, including independent allowances for Wireless Data and Wireless Video. Server devices in the future will use multiple network interfaces to send video to clients, and in fact such interfaces can be used simultaneously. In such a scenario an allowance must be available for each such interface. Furthermore, the power requirements for a wireless connection serving up "service provider quality" real-time video services will be much higher than for a wired network interface or a regular wireless connection used only for data. Version 3 does not cover these wireless interfaces adequately.
- Customer Premises equipment: There is no place for LNBs in the ENERGY STAR STB program. Different MVPDs have their own network infrastructures to deliver their services to the home, and consume power in different parts of their systems. Cable and telecommunications television services rely upon an extensive, power consuming network infrastructure that is found outside of the customers' homes (cable and fiber lines connecting to head ends, amplifiers, etc.). There is no equivalent power consuming infrastructure for satellite services, and furthermore satellites are solar powered. Satellite providers should not be penalized in a marketplace of providers that use vastly different network delivery platforms. Leaving the LNBs out of the measurement will also make EPA's approach consistent with the approach in the EU Voluntary Agreement where this idea was similarly considered...and dismissed.
- Timeline: DIRECTV believes that the proposed reductions in power levels are overly aggressive for the timeframe under consideration and are not supported by the current state of technology development.

DIRECTV looks forward to continued participation in this Version 4.1 Review. In the next few weeks, we expect to have specific and quantitative proposals that we will forward to you. The ENERGY STAR STB program has in only a few years made a remarkable impact on the energy efficiency of this very complex product category, and DIRECTV has been very proud to be an integral part of this successful important voluntary initiative.

Kuriacose Joseph
Director, Engineering

Cc:
Matt Malinowski, ICF
Rachel Unger, ICF
Tom Bolioli, Terra Novum