



April 15, 2013

Ms. Katharine Kaplan
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ENERGY STAR[®] Product Development
U.S. Environmental Protection Agency
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Re: ENERGY STAR Specification for Set-top Boxes Version 4.1 Draft 1

Dear Ms. Kaplan:

Thank you for the opportunity to provide comments on the ENERGY STAR specification for Set-top boxes, version 4.1. Cisco has long been engaged in the ENERGY STAR program and appreciates the efforts that you and those who support you make to develop specifications that not only increase the energy efficiency of covered products, but also promote innovation and value customer satisfaction.

Cisco is proud to have recently joined 14 others companies in the Pay TV industry to adopt a Set-Top Box Energy Conservation Agreement. The Signatories have agreed to undertake a number of substantive, measurable actions to improve STB energy efficiency, including a commitment that at least 90 percent of all new STBs purchased and deployed after 2013 will meet the ENERGY STAR 3.0 rating. The Voluntary Agreement will result in increased STB energy efficiency by an average of 45 percent and will generate residential electricity savings of \$1.5 billion annually. In addition, improvements regarding “light sleep” functionality already have been implemented.¹

While we recognizing that the Department of Energy (DOE) has issued a proposed determination to cover set-top boxes under its Appliance Efficiency program and subsequently issued a Notice of Proposed Rulemaking (NOPR) for a federal test procedure to measure energy efficiency of set-top boxes, we strongly suggest the EPA refrain from incorporating the DOE NOPR approach

¹ The Voluntary Agreement also includes commitments to immediately download “light sleep” capability to currently deployed cable STBs, to provide energy efficient whole-home DVR solutions, and to field-test “deep sleep” functionality. See Voluntary Agreement at Annex 3 § 2, Annex 4A § 3, Annex 4B § 3; *infra* at [citation forthcoming].

into v4.1. Cisco and others in industry have strongly opposed DOE's actions, and we're hopeful that DOE will back away from its regulatory approach, given significant stakeholder input opposing its actions. Though we understand the relationship between EPA and DOE on the ENERGY STAR program and that if federal rules were adopted, EPA would be bound to follow them, we strongly urge EPA to proceed with its program based on the approach it has taken in the past, and let the DOE process play-out on a separate track. Do not incorporate DOE rules unless and until those rules are adopted. If EPA persists in essentially adopting the NOPR into the ENERGY STAR 4.1 specification prematurely, Cisco is concerned that the ENERGY STAR specification maybe unworkable, undermining industry's ability to participate in the program.

One of the ways the NOPR is incompatible with the ENERGY STAR approach is how the "basic model" is determined and how that, in turn, may affect how Partners are then treated under the current ENERGY STAR program. Not only is the "basic model" approach totally unworkable – as detailed in Cisco comments to DOE attached here – but it also calls into question which entity is the "manufacturer" under the DOE rules, and thus, by extension, in the EPA ENERGY STAR program. Would Cisco be considered a "Manufacturer Partner" under the ENERGY STAR program, if EPA were to proceed with prematurely adopting the NOPR approach? This apparent conflict needs to be resolved, and Cisco would recommend that EPA refrain from prematurely adopting the NOPR in v4.1.

Assuming the NOPR would be disentangled from the EPA v4.1 proposal, we would like to suggest the following specific changes to the proposed specification:

1. Propose to keep base type of Cable DTA with allowance of 25 kWh/y.
 - a. Include additionally feature allowances for this Base Type, which may be taken for AVC, HD, Home Networking, WiFi, and Multi-Stream (Cable/Satellite).
 - b. EPA may optionally choose to define Cable DTA as excluding Cable upstream technologies, CableCARD, and DVR recording (DVR), so as to closely align with FCC rules which currently allow this class of set-tops to exclude separable security.
2. Within the EPAs initiative to include Video Gateway and Displayless Video Gateways within STB specification and to encourage the combining of multiple whole home video and home networking devices into fewer lower power devices, propose the adoption of additional or revised allowances for these functionalities:
 - a. DOCSIS 2.0, up to 1 downstream and 1 upstream channel, allowance of 20 kWh/y.
 - i. This allows 2.25W power for the DOCSIS tuner and modem in both on and sleep/APD modes. There is no significant savings attainable in sleep modes within the DOCSIS 2.0 industry standards.
 - ii. This TEC allowance is well below the energy used within the European Broadband Code of Conduct power allowances for similar functionality and Power base allowance in the EPA's Energy Star SNE 1.0 draft for Broadband Modem–Cable, with allowance of 5.9W.
 - iii. A product may only take allowance for either DOCSIS 2 or DOCSIS 3, as noted below, but not both.
 - b. DOCSIS 3.0, up to 8 downstream and 4 upstream channels, allowance of 50 kWh/y.
 - i. This allows approximately 8.5W power for DOCSIS tuner and modem in full bandwidth on-modes and 4.5W power for DOCSIS tuner and modem in low bandwidth 1-downstream and 1-upstream sleep/APD modes. This level assumes the

- adoption of low power 1x1 in sleep/APD modes for DOCSIS 3 and subsequent DOCSIS industry standards.
- ii. This TEC allowance is below the energy used within the European Broadband Code of Conduct power allowances for similar functionality. It provides a comparable TEC target as the Power base allowance in the EPA's Energy Star SNE Broadband Modem-Cable allowance of 5.9W. Assumes adoption of test cases from Energy Star SNE. If different test cases are considered, appropriate allowances should also be considered.
 - iii. Propose allowance for DOCSIS modems with greater than 8 downstream and 4 upstream, or an exception for these functionalities to be integrated into STB devices, requires further study.
 - iv. A product may only take allowance for either DOCSIS 2 or DOCSIS 3, but not both.
- c. Propose new allowance for Router functionality of 28 kWh/y.
 - i. This allows TEC based on EPA Energy Star SNE 1.0 draft power allowance of 3.2W. Assumes adoption of test cases from Energy Star SNE. If different test cases are considered, appropriate allowances should also be considered.
 - d. Propose new allowance for Access Point WiFi functionality of 18 kWh/y.
 - i. This allows TEC based on EPA Energy Star SNE 1.0 draft power of 2W. Assumes adoption of test cases from Energy Star SNE. If different test cases are considered, appropriate allowances should also be considered.
 - e. Propose new allowance for embedded Voice Over IP, Femto cell, or eMTA, or an exception for these functionalities to be integrated into STB devices, requires further study.
 - f. Propose new allowance for embedded whole home Energy Management solutions, or an exception for these functionalities to be integrated into STB devices, requires further study.
3. Propose allowance for Thin-Client/Remote of 35 kWh/y.
 - a. This returns to allowance in EPA Energy Star STB 3.0
 - b. Thin-Client/Remote allowance is too low, especially when combined with EPA's proposed Home Networking allowance for MoCA or other Home Networking Technologies on this Base Type.
 - c. A reduction to 10 kWh/y, compared to 35 kWh/y in v3.0 and even 20 kWh/y in v4.0, discourages use of this Base Type of STB before the category has had sufficient time to emerge and mature in its energy savings trajectory. This will likely prejudice the category from further adoption by the market and all but eliminate a significant energy savings compared to full featured Cable, Satellite, or IP service provider STBs.
 4. Propose allowance for Home Networking of 17 kWh/y.
 - a. The v 3.0 allowance of 10 kWh/y was insufficient, although its insufficiency was rarely exposed due to limited deployment of Thin-Clients to date and the Home Networking allowance was typically taken in higher featured base STB types.
 - b. STB 4.1 draft 1 proposes allowance of 8 kWh/y, which is not attainable with the best technology available within the target effective dates for v 4.1. For example, MoCA 2.0 may typically consume 3W in on mode and 1.5W in sleep/APD modes, which equates to TEC allowance of 17 kWh/y.
 5. Propose Deep Sleep Incentive to be graduated between Incentive deep_sleep = 0 when Psleep = 0.5 x Ptv, and Incentive deep_sleep = 0.17 when Psleep = max (0.15 x Ptv, 3W).

- a. Such an incentive gives an invitation for manufacturers to pursue sleep modes that reduce power to less than half of full power and not abandon pursuit of those technologies merely because they do not fully go below max (0.15 x P_{tv}, 3W).
 - b. Such an incentive sets deep sleep level based on percentage of on power, thereby inviting products of all functional allowances to pursue deep sleep incentive.
6. Propose removing requirements for specific use or timing requirements for entering deep sleep mode.
- a. For example, a STB which has a normal power button, which upon depressing activates the same low power mode meeting deep sleep levels, may be excluded because it is not a separate or clearly marked button for deep sleep. Typical user behavior, it can be argued, will more likely use a single power button, requiring a single press to go from on to sleep mode (for which the resulting power level meets deep sleep), and will lead to greater energy savings than having two power buttons, which leads to consumer confusion. However, in some STB models, two buttons may be required to enter the deep sleep mode. Therefore, to accommodate innovation within Deep Sleep adoption, propose EPA not over prescribe methods for entering Deep Sleep by defining button type, location, etc.
 - b. Propose EPA consider revising requirement to “enable Deep Sleep within 2 seconds” to “giving user feedback that Deep Sleep is being activated within 2-seconds, and achieve deep sleep power level within 15-minutes”.
 - i. A requirement to enter deep sleep within 2-seconds seems to add very little energy savings benefits and may unintentionally preclude reasonable implementations of deep sleep power levels. For example, a STB which has the capability to reduce power to a deep sleep level, but requires 1 minute or even 15 minutes to suspend and save current activities, will still offer a tremendous overall energy savings throughout the course of a year. The energy saved between 2 seconds and even 15-minutes is not worth limiting the broader adoption of deep sleep technology.
7. Propose return to TEC product family and test methodology, instead of AEC, unless and until such time DOE has formally advanced its test procedure.

Cisco recommends that EPA refrain from including recyclability requirements in the Manufacturer Partner Commitments. Cisco strongly supports the use of safe and recyclable materials in its manufacturing processes. However, including the requirements listed in the last minute amendments to v4.1 will have limited impact to EPA’s overall goals, complicate Energy Star v4.1 adoption, and do not represent the recycling methodologies currently available and in use for STB designs. Propose that the consideration of such standards should only be after further study by EPA and stakeholders and thereby should not be considered for v4.1.

Thank you for your consideration of these comments. We look forward to working with you and other stakeholders to craft the next generation ENERGY STAR STB specification that not only advances energy efficiency, but also promotes innovation and consumer experience.

Sincerely,
Chris Stallings
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Cisco Systems, Inc.