

### ENERGY STAR Set-top Box Draft 1 Version 3.0 Comment Response Matrix

ID	Topic	Comment Summary	EPA Response
P1	Effective Date	There is widespread industry support for the Consumer Electronics Association proposal that the <u>year</u> in which the Version 3.0 specification takes effect should be changed to allow for new energy efficient hardware to reach the market. The proposed January 2011 effective date should be changed to July 2012 at the earliest, and preferably July 2013.	The proposed July 2013 Tier 2 effective date is a significant departure from the planned January 2011 date originally set by EPA for Version 2.0 (early 2008). EPA believes that some STB manufacturers have spent significant time and resources working towards the January 2011 target, so any substantial delay would diminish the value of any innovative solutions that have been developed. A delay may also lead to a lack of differentiation between ENERGY STAR-qualified and non-qualified boxes. To address the concern, EPA is considering a combination of a short-term delay to the effective date and targeted, analysis-driven modifications to the proposed specification limits to maintain a robust and competitive ENERGY STAR STB market through 2013.
P2	Effective Date	There is widespread industry support for the Consumer Electronics Association proposal that the <u>month</u> in which the Version 3.0 specification takes effect should be changed to best accommodate product planning and production cycles and ensure the success of the program. The proposed January effective date should be changed to July.	EPA will propose moving the effective date for the Version 3.0 STB specification and subsequent revisions from January to June to accommodate this and other stakeholder requests to better align program implementation with product release cycles in this industry. Once the STB hardware specification is fairly well defined, EPA will proceed to engage stakeholders in the establishment of Service Provider Partner Requirements for 2011 and beyond.
P3	Effective Date	As new features for advanced home networking, 3D support, etc. are added to STBs, additional software development and integration is required to achieve the best power management solutions. The timing of this development and integration from a system perspective will need to be taken into consideration as Tier 2 requirements are discussed further over the next few months.	Stakeholders have indicated that a summer timeframe is preferable to January for new specifications to take effect. With that in mind, EPA is considering energy efficiency levels that can be reasonably be achieved in June 2011. EPA is proposing Tier 2 levels for 2013 to allow time for further development and integration activities.
P4	Effective Date	Recommend introducing an interim phase between the existing Tier 1 Version 2.0 STB specification levels and those that were proposed for Tier 2 (now Version 3.0), in order to demonstrate continued ENERGY STAR progress in driving STB energy efficiency. One approach would be to specify a very simple reduction from the existing Tier 1 levels (perhaps 15%) to take effect in 2011, with more stringent levels in 2012 or 2013.	EPA is considering modifications to the energy efficiency requirements set for January 2011, moving the effective date until June 2011 and setting more stringent requirements the next year. Any changes to the requirements will be based on data from currently-qualified STBs, as well as an understanding of changes that can be achieved by June 2011.
P5	Effective Date	The proposed development schedule for Version 3.0 includes a 9-month span between when the new specification is finalized (Apr-2010) and when it is scheduled to take effect (Jan-2011). Extensive testing is required to ensure that a STB will meet new requirements - 9 months is insufficient time for development and testing to be completed. Recommend a 1 year delay between specification finalization and effective date.	EPA intends for 2011 requirements to reward the most efficient boxes in the market, which are likely already in the development process. Tier 2 requirements proposed for 2013 allow additional time for these product development activities.

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P6	Effective Date	Given the number of parties involved in the development of next-generation STBs, propose further meetings to discuss both the content of the new ENERGY STAR requirements and the timeline for their implementation. This collaboration between the industry and EPA will be best for consumers and for EPA energy efficiency goals	The current Version 3.0 specification development process for STBs is designed to provide multiple opportunities for all interested parties to submit feedback to the EPA and for comments to be delivered in both public and private forums. In addition to the regularly scheduled conference calls, Webinars, and in-person stakeholder meetings, EPA has an open-door policy for stakeholders who wish to set up additional discussions in private. To arrange a meeting, please email STBs@energystar.gov.
P7	IP STBs	Typical IP STBs consume approximately 18W in On mode and 10W in Standby, for a TEC of approximately 100 kWh/year. Standby should be reduced to approximately 1W in 2011, which would reduce TEC to approximately 50 kWh/year.	EPA recognizes ongoing industry efforts to dramatically reduce Standby mode power consumption of IP STBs and will take this into consideration when proposing limits for IP boxes.
P8	Power Allowances	Both the CableCARD and DOCSIS TBDs from the Version 2.0 specification should remain as-is in the next version of the STB spec. These technologies have not changed since Version 2.0 became effective.	Stakeholders have universally suggested that the DOCSIS and CableCARD requirements from Tier 1 Version 2.0 should persist without modification in the next version of the specification. EPA's analysis of qualified product data suggests that these limits are appropriate in the short term. EPA will set the "TBDs" to be equivalent to the Tier 1 Version 2.0 levels for Tier 1 Version 3.0 and propose further improvements for Tier 2.
P9	Power Allowances	<p>The Tier 2 allowance targets in the Version 2.0 specification represent a significant reduction from Tier 1, without regard to necessary technology improvements needed to meet market demands. For example, a 50% reduction in the allowance for Home Networking is not suitable for newer technologies with more functionality and increased power needs. Recommend that the Advanced Home Networking allowance remain at 20 kWh/year and be applicable for any STB, without restriction.</p> <p>The proposed Tier 2 power allowance for DVR is too strict to accommodate a DVR that is used in a "whole-house DVR" architecture.</p>	EPA's review of qualified product data indicates that most of the Tier 2 limits are appropriate, with minor modifications. First, in order to accommodate recent technology trends in STBs, the additional functionality allowances for Advanced Video Processing and Home Network Interface have been incorporated into the base limits for both Satellite and Cable base types. EPA is also proposing a smaller modification to both the HD and DVR allowances for the June, 2011 effective date, to allow more full-featured STBs to qualify.
P10	Power Allowances	The Home Networking power allowance must support a variety of home networking protocols, each with different power needs. Ethernet, MoCA, WiFi, HomePlug, Wireless HDMI, ZigBee, and other protocols are becoming more and more prevalent in the STB marketplace.	ENERGY STAR is intended to recognize efficient products in a way that is technology neutral and rewards the most efficient designs. To the extent that these technologies do not impact the functionalities of products, EPA prefers to provide allowances based on functionality rather than technology where possible.
P11	Power Allowances	The "Tier 2 Additional Tuners" allowance should accommodate server-client architectures with a central STB that has many tuners. Recommend that the additional tuners allowance be extended for each tuner in a device.	The ENERGY STAR test procedure is designed to encourage appropriate scaling of power consumption to match actual usage. By requiring that only 2 tuners be active during the test, regardless of the total number of tuners available in a device, ENERGY STAR tests in a worst-case configuration. Manufacturers are therefore rewarded for the ability to power down tuners that are not in use.
P12	Power Allowances	Tier 2 Base Allowance was calculated base on an assumed 3W standby mode power level. The minimal standby mode power level required to maintain minimal communication with a satellite is 8 Watts. The satellite base allowance should be recalculated based on a standby power level of 8W instead of the original assumption of 3W	All calculations performed in 2008 to establish ENERGY STAR qualification criteria considered energy rather than power. The 3W example was intended to show how power levels in various modes affect calculated TEC values. This was the product of our work, rather than the input to the work which determined the qualification levels.

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P13	System Architecture	The industry is well on its way towards the adoption of new thin-client whole-home STB system architectures, which will have a significant long-term impact on energy efficiency. These systems aim to replace consumptive, feature-laden STBs at every TV with a central "hub" that will manage DVR and conditional access for every TV in a connected home.	EPA will look for opportunities for current and future revisions of the STB specification to reward advanced whole-home STB system architectures and other "thin client" implementations as a means to save energy. A whole-home DVR serving a variety of thin client devices should represent an inherently more energy efficient solution than a DVR for each television, as long as the solution is implemented properly.
P14	System Architecture	Server/Client architecture is quickly emerging in the market. This new architecture requires a huge, multifaceted software and hardware development effort. Industry's ability to integrate strict energy limits on evolving architecture will be limited.	EPA recognizes the long lead-times required for major hardware and software upgrades and redesigns. In this case, difficult but achievable ENERGY STAR energy efficiency targets are in place for manufacturers at the very beginning of this massive industry effort to roll out new hardware and system architectures. EPA believes that the start of a major hardware refresh cycle is in fact the best timing for ENERGY STAR to achieve efficiency gains across the STB market.
P15	Test Procedure	<p>The ENERGY STAR test procedure requires that a very small number of boxes be randomly selected for testing. This assumes that any STB is representative of all the STBs within a line of products. This is unfair, since the worst-performing STB would have to meet requirements that have been defined based on average numbers. As an alternative, consider the following suggestions to make the qualification procedure less sensitive to rare "outliers".</p> <ol style="list-style-type: none"> <li>1) Pick STBs from different lots (or with parts from different lots); Allow the tester to reject one or more outlying (high) STB with, possibly, an increase of the number of tested STBs by one or more.</li> <li>2) Instead of rejecting outlying STBs, allow outliers to exceed the target by a fixed margin. Other measurements would be required to be below the target.</li> </ol>	The random sample testing approach has been successfully implemented for various ENERGY STAR consumer electronics and IT products for many years. Because the manufacturing tolerances and component variations differ from manufacturer to manufacturer, EPA has left it up to the manufacturer to ensure that all products meet ENERGY STAR requirements. This approach also allows for easier verification of STB energy consumption in the field.
P16	Utility STB Programs	<p>EPA should not modify the ENERGY STAR STB and Service Provider programs in anticipation that a particular program model will be used. There is already plenty of opportunity for creative programs between energy utilities and service providers, such as:</p> <ol style="list-style-type: none"> <li>1) Replacement programs targeting the removal of the oldest STBs.</li> <li>2) Delivery of software upgrades to improve the energy efficiency of STBs in the field.</li> <li>3) In-home "energy tune-ups" for STBs, Televisions, and related equipment during service calls.</li> </ol>	EPA will consider modifications to the service provider agreement to allow both utilities and manufacturers to further their promotion of ENERGY STAR STBs. These discussions will start in March 2010.
P17	Service Provider Purchase / Fleet Reqs	The existing purchase and fleet requirements are an essential element of the ENERGY STAR STB program. Many Service Provider participants have made significant commitments in qualifying, labeling and promoting STBs. Lowering the bar below the current 50% level would greatly diminish the "star" status that current participants have earned and that future program participants must earn.	EPA welcomes ideas on how to lower the barriers to entry for service providers to label efficient boxes, without diminishing the status of service providers who have made significant fleet or purchase commitments. EPA will begin discussing these ideas with stakeholders in March after the draft STB requirements have been distributed for comment.