ENERGY STAR® Program Requirements for Cable, Satellite, and Telecom Service Providers FINAL DRAFT – Version 1.0 March 14, 2008

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Commitment

The following are the terms of the ENERGY STAR Partnership Agreement as it pertains to cable, satellite, and telecom Service Providers that deploy set-top boxes (STBs) to subscribers. The ENERGY STAR Partner must adhere to the following program requirements:

- comply with current ENERGY STAR Identity Guidelines, describing how the ENERGY STAR marks and name must be used. Partner is responsible for adhering to these guidelines and for ensuring that its authorized representatives, such as advertising agencies, are also in compliance;

- meet or exceed either a purchase OR fleet requirement for each year of partnership:

  Purchase Requirement: ensure that 50% of all new STB purchases in a calendar year (e.g., 2009 and 2010) are ENERGY STAR qualified. "New purchases" are counted in the year in which the Service Provider takes delivery. STBs refurbished to meet ENERGY STAR can not be counted towards the purchase requirement.

  OR

  Fleet Requirement: ensure that at least 15% of all STBs used by subscribers during 2009 (30% of all STBs used by subscribers during 2010) are ENERGY STAR qualified. In order to meet the fleet requirement, a Service Provider may count newly-purchased ENERGY STAR STBs put into homes, ENERGY STAR refurbished STBs put into homes, as well as STBs upgraded in the field to meet the relevant ENERGY STAR requirements.

  The sum of the aforementioned should be divided by the total installed base at the close of the calendar year to derive the percent of fleet that is ENERGY STAR qualified in a calendar year.

  "Refurbished" means reconfigured to be brought into compliance with ENERGY STAR. STBs may be taken from the subscriber's location and reconfigured by the Service Provider or may be refurbished in the field through a software upgrade.

Note: The purchase and deployment requirements that were proposed in the Draft 3 specification have been changed to allow partners to meet either a new purchase requirement or "percent of active fleet" requirement as proposed in the discussion document circulated for stakeholder comment on February 13, 2008. EPA made this modification to achieve the goals of 1) encouraging use of ENERGY STAR qualified STBs by Service Providers and 2) conveying the requirements in the clearest way possible. EPA consulted In-Stat market data to select fleet requirements that most closely matched the impact of the purchase and deployment requirements proposed in Draft3, while still allowing partners to receive credit for refurbishment of legacy boxes.. Partners may choose to meet the purchase or fleet requirement in 2009, and may again choose the purchase or fleet requirement in 2010. That is, partners are not bound to continue on the purchase or fleet track from one year to the next.

Note: For both the purchase and fleet requirements above, Service Providers may use products manufactured prior to the January 1, 2009 effective date of the technical specification, provided the products meet the specification in every regard and are manufactured by an ENERGY STAR partner.

- ensure that ENERGY STAR qualified STBs continue to meet or exceed ENERGY STAR technical requirements for the duration of their deployment. This includes deploying and configuring the box in such a way that any power management features and notifications provided by the original equipment manufacturers function as intended. EPA may, at its discretion, conduct field tests on products that are referred to as ENERGY STAR qualified.

  When an STB requires enabled Auto Power Down (APD) functionality for purposes of maintaining ENERGY STAR qualification, the following requirements must be met:

  1. The STB must be configured with the APD setting engaging at four hours or less of inactivity. It is acceptable for the current program to complete before switching to the Sleep state. These energy-related settings shall persist unless the user chooses at a later date to manually: a) disable the APD, or b) adjust the default time period from four hours or less to some other value. Partner may choose to not allow user the option of changing the power down settings.

  2. The STB may exit an automatically-initiated Sleep mode in order to download content and scan for program and system information, scheduling information, or any other maintenance activity. After activity is complete, the STB must return to Sleep mode within a short period of time, not to exceed 15 minutes. If this occurs, the STB may exit the Sleep mode for no longer than an average of two hours in a twenty-four (24) hour period. This requirement of two hours per day does not include activities that an end user schedules (e.g., video recording of a daily show). Video downloads that are **not** user-scheduled (e.g., "speculative recording" or "push") **are** to be counted against the two hour average per day requirement.

Note: Based on stakeholder feedback, the APD section above has been edited to clarify that the two-hour-per-day-limit is intended as a yearly average. The language has also been clarified to include non-user scheduled video downloads.

Note: The above APD provision applies only when an STB requires this feature to meet the ENERGY STAR criteria. Manufacturers are required to inform Service Providers of this requirement and ship the STBs defaulted with the APD enabled and configured to meet the above requirements.

Example:
A STB with APD functionality will exit Sleep mode for the following activities over a one year period. The average time per day of 1.02 hours meets the requirement.

Activity	*Hours Per Occurrence*	*Occurrences Per Year*	*Total Time (Hours)*	*Average Time Per Day (Hours)*
Software Update	*4*	*2*	*8*	*0.02*
Program Info Update	*1*	*365*	*365*	*1*
Totals			*373*	*1.02*

- at every opportunity, install ENERGY STAR qualified low energy consumption remote boxes in Multi-Room STB installations;

- for all ENERGY STAR qualified STBs installed and configured as required to maintain ENERGY STAR qualification, provide clear and consistent labeling. The ENERGY STAR mark must be clearly

displayed on the product or via electronic notification.

1. via electronic notification:

   – The ENERGY STAR mark must appear in cyan, black, or white (as described in the ENERGY STAR Identity Guidelines);
   – The ENERGY STAR mark must be at least 10% of the screen by area, may not be smaller than 76 pixels x 78 pixels, and must be legible;
   – The ENERGY STAR mark must appear on average at least once per day for a duration of not less than five seconds.

Note: EPA has provided additional flexibility to the above labeling proposal by removing the specific requirements that the ENERGY STAR mark appear at resumption from Sleep and at initiation of APD. Service Providers and manufacturers may display the ENERGY STAR mark on qualified boxes at a location or event that they feel would most benefit subscribers and the Service Provider. Service Provider partners must be prepared to report back to EPA on their method for achieving a once daily impression.

2. via a permanent or temporary label on product

   – Label must follow guidance for certification marks provided in the ENERGY STAR Identity Guidelines (https://www.energystar.gov/index.cfm?c=logos.pt_guidelines).

- at time of installation, inform subscribers receiving an ENERGY STAR qualified STB of expected energy savings and environmental benefits through leave-behind materials that include the ENERGY STAR mark. Also inform users of any implications of altering the product's energy settings as well as any additional energy saving options, such as allowing users to opt out of features that increase energy use of the box, examples of which could be speculative recording and frequent EPG downloads, etc;

- educate subscribers and potential subscribers about ENERGY STAR and Partner's commitment to the program. Outreach methods must include, but are not limited to:

  1. providing information to subscribers (via the Web site) about energy-saving features and operating characteristics of ENERGY STAR qualified STBs; and
  2. labeling and promoting ENERGY STAR qualified STBs via the Web site.

  Partner is also encouraged to distribute a dedicated mailing or bill stuffer to inform subscribers about ENERGY STAR and Partner's commitment to energy efficiency;

- train sales staff, customer service representatives, and contractors performing installations on the ENERGY STAR program. This training shall include: a) identification of ENERGY STAR qualified products within the Service Provider's offerings and on the Partner's Web site, b) tips for answering questions about the ENERGY STAR program, and c) instruction regarding how to maintain ENERGY STAR qualification at installation;

- provide to EPA, on an annual basis, purchase or fleet data to assist in determining the market penetration of ENERGY STAR and verifying that Partner has met specification requirements. If participating under the Purchase requirement, Partner must provide the total number of STBs purchased and the total number of ENERGY STAR qualified STBs purchased. If participating under the Fleet requirement, Partner must provide the total number of STBs in use by subscribers, the total number of newly-purchased ENERGY STAR qualified STBs, the total number of refurbished ENERGY STAR qualified STBs, and the total number of STBs upgraded in the field to meet ENERGY STAR requirements. Data for both the purchase and fleet requirement shall be segmented between simple and complex boxes, and other meaningful characteristics. The data for each calendar year should be submitted to EPA, preferably in electronic format, no later than the following March and may be provided directly from the Partner or through a third party. **If submitted through a third party, the**

purchase, fleet, and refurbishment numbers from individual partners may be aggregated and masked prior to submission to EPA, although the percentage of new purchases that are ENERGY STAR qualified, or the percentage of active fleet that is ENERGY star qualified must be reported individually for each partner. The data will be used by EPA only for program evaluation purposes and will be closely controlled. Any information used will be masked by EPA so as to protect the confidentiality of the Partner;

- notify EPA of a change in the designated responsible party or contacts within 30 days.

Performance for Special Distinction

In order to receive additional recognition and/or support from EPA for its efforts within the Partnership, the ENERGY STAR Partner may consider the following voluntary measures and should keep EPA informed on the progress of these efforts:

- provide quarterly, written updates to EPA as to the efforts undertaken by PARTNER to increase availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and its message;

- consider energy efficiency improvements in company facilities and pursue benchmarking buildings through the ENERGY STAR Buildings program;

- purchase ENERGY STAR qualified products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR qualified product information to employees for use when purchasing products for their homes;

- feature the ENERGY STAR mark(s) on Partner Web site and in other promotional materials. If information concerning ENERGY STAR is provided on the Partner Web site as specified by the ENERGY STAR Web Linking Policy (this document can be found in the Partner Resources section on the ENERGY STAR Web site at www.energystar.gov), EPA may provide links where appropriate to the Partner Web site;

- ensure the power management feature is enabled on all ENERGY STAR qualified monitors and computers in use in company facilities, particularly upon installation and after service is performed;

ENERGY STAR® Program Requirements for Cable, Satellite, and Telecom Service Providers

Eligibility Criteria
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1) Definitions: Below are the definitions of the relevant terms in this document.

STB Types

All STB types can come as stand-alone tuners or as part of a larger device with other tuners and/or secondary functions such as, but not limited to, DVR and DVD playback/recording.

A. Cable STB: A STB whose principal function is to receive television signals from a broadband, hybrid/[fiber] coaxial, community cable distribution system and deliver them to a consumer display and/or recording device. Source: CSA C380-06 modified.

B. Internet Protocol (IP) STB: A STB whose principal function is to receive television/video signals encapsulated in IP packets and deliver them to a consumer display and/or recording device. Source: CSA C380-06.

C. Satellite STB: A STB whose principal function is to receive television signals from satellites and deliver them to a consumer display and/or recording device. Source: CSA C380-06.

D. Terrestrial STB: Any STB whose principal function is to receive television signals over the air (OTA) and deliver them to a consumer display and/or recording device. Source: CSA C380-06.

E. Thin-Client/Remote: A STB that is designed to interface between a Multi-Room STB and a TV (or other output device) that has no ability to interface with the Service Provider directly and relies solely on a Multi-Room box for content. Any STB that meets the definition of Cable, Satellite, IP or Terrestrial STB is not a Thin-Client/Remote STB.

Components

F. Conditional Access: The encryption, decryption, and authorization techniques employed to protect content from unauthorized viewing. CableCARD and Downloadable Conditional Access (DCAS) are examples of this technology.

G. Data Over Cable Service Interface Specification (DOCSIS): An international suite of standards that define interface requirements for cable modems involved in high-speed data and video/audio content distribution over cable television systems.

Functionalities

H. Base Functionality: For purposes of this specification, the primary functionality that defines the criteria that apply to a STB. The Base Functionality is one of the following: Cable, Satellite, IP,

Terrestrial or Thin-Client/Remote. (See the ENERGY STAR Program Requirements for Set-top Boxes, Version 2.0 for additional details.)

I. Additional Functionalities: Additional Functionalities consist of one or more of the following: Additional Tuners, Additional Tuners – OTA/IP, Advanced Video Processing, DVR, High Definition Resolution (does not apply to terrestrial), Removable Media Player, Removable Media Player/Recorder, Multi-Room, and CableCARD.

Additional Functionalities

J. Additional Tuners: An additional tuner provides a second source of media content either from a physically separate A/V input or from the primary input (used concurrently); they need not be for the same source media type. Out-Of-Band tuners built in compliance with standards ANSI/SCTE 55-1 2002 and ANSI/SCTE 55-2 2002 and other similar types of technologies are not considered additional tuners for the purposes of this specification. For example, a device with additional tuners has the ability to tune into two or more separate streams of video simultaneously and place those on separate outputs (outputs being either physical outputs, picture-in-picture, or recording mechanisms). Note that network-based outputs are not covered under the additional tuners definition but are covered in the definition of a Multi-Room device.

K. Additional Tuners – Terrestrial/IP: An Additional Tuner of Terrestrial or IP type.

L. Advanced Video Processing/Codecs: Advanced methods for video encoding, transcoding and decoding. Examples include, but are not limited to, H.264/MPEG 4 and SMPTE 421M.

M. CableCARD$^{(TM)}$: A plug-in card that complies with the ANSI/SCTE 28 interface that is inserted into a Digital Cable Ready device to enable the decryption of premium services and provide other network control functions. Also know as a “Card” or a “Point of Deployment” (POD module). CableCARD$^{(TM)}$ is a registered trademark of CableLabs®. Source: CSA C380-06 modified.

N. Digital Versatile Disk (DVD): An optical disc storage media format that can be used for data storage, including movies, with high video and sound quality.

O. Digital Video Recorder (DVR): A device that stores video in a digital format to a rewritable disk drive or other non-volatile storage media local to the unit. The term covers DVR functions integrated in a STB; it does not include software for personal computers that enables video capture and playback to and from the computer’s data storage nor does it include server based DVR capabilities.

P. High Definition Resolution: Video output with resolutions greater than 480i/p.

Q. Home Network Interface: A network interface such as WiFi, MOCA, DNLA, etc. that allows an STB to interface with external devices through a network. This allowance can be applied only to devices that are NOT Multi-Room or thin client devices (as the network capability of those devices is already accounted for in their allowances).

R. Multi-Room STB: An STB that meets the definition for Cable, Satellite, IP or Terrestrial STB above and is capable of providing independent content to multiple TVs within a single family dwelling. Products handling gateway services to multi-subscriber scenarios are not covered under this specification.

S. Removable Media Player: A device, such as a DVD player, whose primary purpose is the decoding of digitized video signals on a DVD.

T. Removable Media Player/Recorder: A device, such as a DVD recorder, whose primary purpose is

the production or recording of digitized video/audio signals on a DVD.

Operational Modes and Power States

U. On/Active: An operational state in which the STB is actively delivering one or more of its principal functions and some or all of its applicable secondary functions.

V. Sleep: A state in which the STB has less power consumption, capability, and responsiveness than in the On/Active state. The STB may enter a Sleep state from the On/Active state after:
   a. the user pushes a power/standby button on the remote or on the unit; or
   b. the STB auto powers down to a Sleep state. The energy consumption after auto power down to Sleep and after a user initiated power down to Sleep may, or may not be, equivalent.

Miscellaneous

W. Auto Power Down: The capability to automatically switch from the On state to a Sleep state after a period of time without user input, generally based on the amount of time the unit has remained "idle" from last active use, i.e., user input such as channel change, volume change, menu access, etc.

X. Cable, Satellite, and Telecom Service Provider: An entity that provides video (and possibly other) content to subscribers with whom it has an ongoing financial relationship. A Service Provider in the context of ENERGY STAR is one that distributes to end users STBs covered by this specification under an agreement such as a lease or rental arrangement.

Y. CSA: The Canadian Standards Association is a not-for-profit, membership-based association that works in Canada as well as globally to develop standards that affect areas such as public safety and health, quality of life, the environment, and trade.

Z. C380-06: CSA's test procedure for the measurement of energy consumption of STBs.

AA. Digital Television Adapter (DTA): Receives terrestrial (over the air), digital signals and converts them to an analog output suitable for analog TVs. DTAs do not provide digital signal output. For the purposes of this specification, the DTA category does not include converters that work with satellite or cable digital signals, nor does it cover devices with multi-functionality such as DVD players with digital to analog conversion capability. Source: ENERGY STAR Digital-to-Analog Converter Box specification.

DTAs are addressed under the Version 1.1 ENERGY STAR specification for Digital-to-Analog Converter Boxes, and are not included in this STB specification.

BB. Game Console: A stand-alone device whose primary use is to play video games. The primary inputs for game consoles are special hand held controllers rather than a mouse and keyboard used by conventional computers. Game consoles are also equipped with audio-visual outputs for use with televisions as the primary display, rather than an external monitor or integrated display. These devices typically do not use a conventional operating system, but often perform a variety of multimedia functions such as: DVD/CD playback, digital picture viewing, and digital music playback. Source: ENERGY STAR Version 4.0 Computers specification.

Game consoles are addressed by the ENERGY STAR Version 4.0 Computers specification, and are not included in this STB specification.

CC. Out-Of-Band Tuners: Tuners compliant with standards ANSI/SCTE 55-1 2002 and ANSI/SCTE

55-2 2002 and other similar types of technologies used to gain access to data channels outside of the audio/video source signal. These may facilitate two-way communication and allow the box to send diagnostic information back to the Service Provider as well as enabling Pay-Per-View content and other rich media interactive content.

DD. TEC: Total Energy Consumption. TEC is an assessment tool used in this specification that provides flexibility to approach the issue of energy efficiency while retaining a comparable metric to assess performance. In this specification, efficiency criteria are noted in terms of calculated energy use over a year for a typical user (kWh/yr) rather than power (Watts) for On and Sleep states.

EE. UUT: Unit Under Test (UUT) refers to the product being tested. Source: CSA C380-06 modified.

2) Qualifying Products: In order to qualify as ENERGY STAR under Tier 1 of this specification, STBs must meet the definition for these products in Section 1 and meet the technical requirements in the ENERGY STAR Program Requirements for Set-top Boxes, Version 2.0. The following devices that fall within the definition of a STB, or provide functions similar to STBs, do not qualify under this Tier 1 specification. EPA envisions that the below excluded products list will likely be modified for the Tier 2 phase of this specification:

Tier 1 Excluded Products:

- Game Consoles (See definition above)
- DTAs (See definition above)
- IP STBs sold or provided outside of a dedicated service or service contract
- Products that meet the definitions in the ENERGY STAR® Program Requirements for Consumer Audio and DVD Products

3) Testing Products for ENERGY STAR: Service Provider partners must ensure that ENERGY STAR qualified STBs continue to meet or exceed ENERGY STAR technical requirements for the duration of their deployment. This is confirmed by testing for ENERGY STAR qualification while the product is connected to the system, either on a live system or at a representative system in a laboratory. Partners must test STBs for ENERGY STAR qualification according to the test procedure specified in the ENERGY STAR Program Requirements for Set-top Boxes Version 2.0, and CSA 380 with ENERGY STAR modifications. If the units have been refurbished, to be considered part of a single model, all units must have undergone the same testing as new ENERGY STAR qualified models newly deployed to subscribers.

When qualifying and reporting STBs for ENERGY STAR, the following procedure can be used to determine that an appropriate representative sample size has been tested.

1) Select on a random basis five units of the STB model to be tested. If the units have been refurbished, all units must have undergone the same refurbishment or reconfiguration, and must have received the same new hardware components or new or updated software.

2) Test three units drawn at random from the pool of five units following the test procedure specified in the ENERGY STAR Program Requirements for Set-top Boxes – Version 2.0.

   a) If all three units meet the applicable ENERGY STAR criteria, and are not within 10% of the allowance in the specification, then the STB model meets ENERGY STAR requirements and no more testing is needed.

   b) If all three units meet the applicable ENERGY STAR criteria, but any are within 10% of the allowance in the specification, go to step 3.

c) If any of the three units do not meet the ENERGY STAR criteria, then the STB model does not meet ENERGY STAR requirements and cannot be referred to as ENERGY STAR qualified.

3) Test the additional two units in the pool. If both units meet the applicable ENERGY STAR criteria, then the STB model meets ENERGY STAR requirements and no more testing is needed. If either of the two units does not meet the applicable ENERGY STAR criteria, then the STB model does not meet ENERGY STAR requirements and cannot be referred to as ENERGY STAR qualified.

4) Effective Date: The ENERGY STAR Program Requirements for Cable, Satellite, and Telecom Service Providers Version 1.0 is effective immediately upon publication of the Final Specification. At this time, Service Providers may join as an ENERGY STAR partner and pledge to meet the requirements in this Version 1.0 specification that begin in 2009.

5) Future Specification Revisions: EPA reserves the right to revise the specification should technological and/or market changes affect its usefulness to consumers or industry or its impact on the environment. In particular, EPA will reevaluate the appropriateness of the Purchase and Fleet percentages for 2010 and 2011, when the Tier 2 technical specification becomes effective and there is more information on the likely availability of qualifying products. In keeping with current policy, revisions to the specification will be discussed with stakeholders. In the event of a specification revision, please note that ENERGY STAR qualification is not automatically granted for the life of a product model. To qualify as ENERGY STAR, a product model must meet the ENERGY STAR specification in effect on the model's date of manufacture.