



ENERGY STAR®

**Set-top Box
Specification Revision**

Kick-off Conference Call

03 December 2009

Agenda



1. Introductions

Kathleen Vokes, US EPA

2. Overview of the ENERGY STAR Program for New Participants

Kathleen Vokes, US EPA

3. Status of Programs for STBs and Service Providers

Stephen Pantano, ICF International

4. Schedule & Goals for STBs and Service Providers

Kathleen Vokes, US EPA

5. Technical Approach for STBs

Tom Bolioli, TerraNovum

6. Open Discussion

Stephen Pantano, ICF International

7. Wrap-up & Conclude

Kathleen Vokes, US EPA

ENERGY STAR Overview



- What is ENERGY STAR?



- A voluntary public-private partnership program
- A strategic approach to energy management
- Recognized by over 75% of Americans
- An internationally-recognized brand



ENERGY STAR Value



- More than 2,000 manufacturers labeling more than 40,000 product models
- Over 1,000 retailers in US and Puerto Rico
- More than 550 utilities and other energy efficiency program sponsors promoting ENERGY STAR

ENERGY STAR Overview



- Guiding Principles of Specification Development
 - Cost-effective efficiency
 - Performance maintained or enhanced
 - Significant energy savings potential
 - Efficiency improvements are achievable with non-proprietary technology
 - Product differentiation and testing are feasible
 - Labeling can be effective in the market

ENERGY STAR Overview



Specification Development Cycle



STB v2.0: Status



- The Version 2.0 specification (Tier 1) took effect January 1, 2009.
- Tier 2 limits are scheduled to take effect January 1, 2011. EPA is revisiting these limits through this revision process per its previous commitments.
- There are currently **45 qualified products** (US, Canada, Mexico markets) from **5 manufacturing partners**.

STB v2.0: Eligible Products



- Products currently eligible for qualification include Cable, Terrestrial, Satellite, IP, and Thin Client / Remote STBs that receive television signals for distribution to displays and recording devices.
- The following are specifically ineligible for qualification:
 - Game Consoles (covered by ENERGY STAR Computers specification)
 - DTAs (covered by ENERGY STAR DTA specification)
 - IP STBs sold or provided outside of a dedicated service or service contract (Plan to include these in tier 2)
 - Audio/Video products (covered by ENERGY STAR Audio/Video specification)

STB v2.0: Qualification Criteria



- ENERGY STAR uses a **Typical Energy Consumption (TEC)** approach to assess annual energy use in kWh.
- Products that offer **Auto Power Down (APD)** are rewarded.

Annual energy (kWh/yr) for a product with no auto power down

$$kWh_{\text{Base}} = 0.365 \times (14 \times P_{TV} + 10 \times P_{\text{Sleep}})$$

Annual energy (kWh/yr) for a product with auto power down capability

$$kWh_{\text{Base}} = 0.365 \times ((7 \times P_{TV}) + (10 \times P_{\text{Sleep}}) + (7 \times P_{\text{Auto PD}}))$$

- Energy consumption limits are derived from **base functionality** (STB type) plus **adders for additional functionality** (e.g., DVR, DOCSIS).

STB v2.0: Qualification Criteria



Table 1: Base Functionality Annual Energy Allowance

| Base Functionality | Tier 1 Annual Energy Allowance (kWh/year) | Tier 2¹ Annual Energy Allowance (kWh/year) |
|---------------------------|--|--|
| Cable | 70 | 50 |
| Satellite | 88 | 56 |
| IP | 45 | 36 |
| Terrestrial | 27 | 22 |
| Thin-Client/Remote | 27 | 22 |

Table 2: Additional Functionalities Annual Energy Allowance

| Additional Functionalities | Tier 1 Annual Energy Allowance (kWh/year) | Tier 2 Annual Energy Allowance (kWh/year) |
|--|--|--|
| Additional Tuners ² | 53 | 16 |
| Additional Tuners – Terrestrial /IP ³ | 14 | 8 |
| Adv. Video Processing ⁴ | 18 | 12 |
| DVR | 60 | 32 |
| High Definition ⁵ | 35 | 12 |
| Removable Media Player | 12 | 8 |
| Removable Media Player/Recorder | 23 | 10 |
| Multi-Room ⁶ | 44 | 25 |
| CableCARD ⁷ | 15 | TBD |
| DOCSIS ⁸ | 20 | TBD |
| Home Network Interface | 20 | 10 |

Service Provider Purchase/Fleet Requirement



Meet or exceed either a purchase or fleet requirement for each year of partnership

- Purchase requirement: 50% of new boxes purchased in a calendar year must be qualified.
 - Refurbishment cannot be counted.
 - Purchase requirement in 2011 and beyond is TBD.
- Fleet requirement: 10% of fleet in 2009, 25% in 2010, and TBD% in 2011 and beyond must be qualified.
 - The following may be counted toward the fleet requirement: newly-purchased qualified boxes put into homes, ENERGY STAR refurbished STBs put into homes, and STBs upgraded in the field to meet ENERGY STAR.

STB v3.0: Goals



- Resolve “TBD” allowances for DOCSIS & CableCARD.
- Revisit all other Tier 2 TEC limits to assess fit with ENERGY STAR program goals.
- Identify any new product features that warrant power allowances.
- Investigate duty cycle/APD changes.
- Expand the scope of the specification to include IP devices sold outside of service provider contracts.
- Clarify definitions and qualified product criteria to ensure clear and unambiguous divisions between ENERGY STAR product categories, esp. Audio/Video and DTA.
- Assess recent international program & test procedure developments for harmonization opportunities.
- Update specification to include latest ENERGY STAR best practices, lessons learned, definitions, etc.

STB v3.0: Timeline



- 03 December 2009
 - Kickoff conference call
 - Invite stakeholders to submit test data on products
- 05 January 2010
 - Data submissions due to EPA
- 15 January 2010
 - Draft 1 Version 3.0 STB specification distributed to stakeholders
- 12 February 2010
 - Stakeholder comments on Draft 1 due to EPA
- 01 March 2010
 - Final Draft Version 3.0 STB specification distributed to stakeholders
- February - March 2010
 - Develop Version 2.0 Service Provider requirements
- 01 April 2010
 - Publish final Version 3.0 STB specification and final Version 2.0 Service Provider requirements
- 01 January 2011
 - Version 3.0 STB specification effective date
 - Version 2.0 Service Provider requirements effective date

STB v3.0: Technical Approach



- Determine DOCSIS adder
- Determine CableCARD adder
- Continue v2.0 approach with Cable, Satellite and OTA
- Add IP devices currently not covered
- Where to fit Place-shifting Technology?
 - ES is looking for data that shows market adoption, technological capabilities and energy performance, expected usage patterns for TEC calculations, etc.

STB v3.0: Technical Approach



- IP Devices
 - Proposed IPTV Definition: *The secure delivery of high-quality video, via a managed broadband IP network, to a STB or to other consumer electronics devices such as PCs, game consoles or mobile devices.*
 - *Delineate by Service Provider and non-Provider?*
 - Usage data or estimations are required to support development of a standard duty cycle for IP STBs.
 - Stakeholders are encouraged to test IP STBs (those not currently covered by v2.0) to the ENERGY STAR test procedure and submit results for consideration.

STB v3.0: Technical Approach



- Test Procedure Harmonization
 - Goal to adopt IEC-62087 (through CSA 380 localizations) when revisions are completed.
 - References to draft IEC standard may be included in v3.0.
- Investigate Duty Cycle / APD Changes
 - 4 hour fixed limit in v2.0.
 - Investigate options that would allow for reduced time to Sleep.

Open Discussion



Comments?

Next Steps



- Visit the STB Product Development Web site at www.energystar.gov/RevisedSpecs
- Review this presentation and send your feedback and comments to STBs@energystar.gov by December 11.
- Contact Kathleen or Steve with further questions or comments.
- Participate in the STB and Service Provider revision processes.

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