



# **ENERGY STAR® Set-Top Boxes Final Draft Version 4.1 Specification**

**Stakeholder Webinar**

**January 31, 2014**

**U.S. Environmental Protection Agency**

**U.S. Department of Energy**



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# Agenda

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- 1 Introduction
- 2 Final Draft Summary
- 3 Open Comment
- 4 Next Steps

# Introduction

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1	Introduction
2	Final Draft Summary
3	Open Comment
4	Next Steps



# Webinar Details

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- Audio provided via conference call in:
  - Call in:** +1.877.423.6338 (in the US)  
+1.571.281.2578 (international)
  - Code:** 198-920
  - Please keep phone lines on mute unless speaking
  - Press \*6 to mute and un-mute your line
- Webinar materials will be available online shortly
  - Go to: [www.energystar.gov/RevisedSpecs](http://www.energystar.gov/RevisedSpecs)
  - Look for Set-Top Boxes & Cable Boxes
  - Click on: “Version 4.1 is under review.”

# Introduction

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- EPA and DOE appreciate stakeholders' continued engagement and participation in today's webinar

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ENERGY STAR Product Development

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ICF International

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Navigant

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# Webinar Goals

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1. Explain changes in the Final Draft based on:
  - Voluntary Agreement for Ongoing Improvement to the Energy Efficiency of Set-top Boxes
  - Prior stakeholder comments
2. Receive any final feedback
3. Discuss timeline of next steps and finalization

# Final Draft Summary

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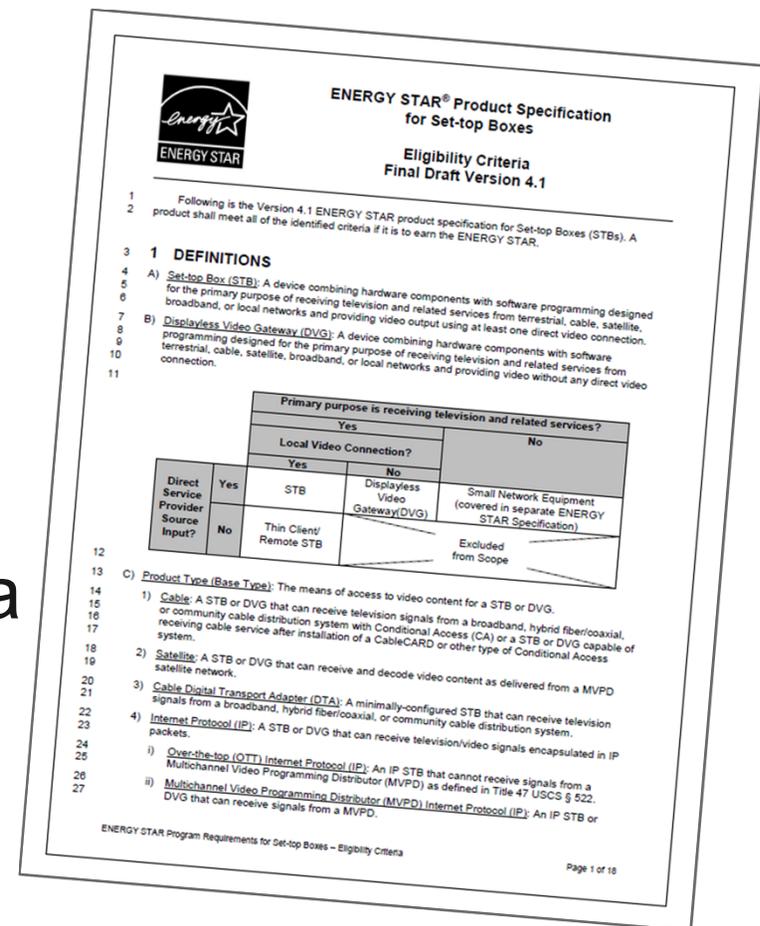


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# Final Draft Was Released Jan. 23



- Complements the Voluntary Agreement and will result in near-term savings
- Reflects comments received on Draft 2 and August 29 supplemental proposal
- Result of collaboration with a wide range of stakeholders



# Changes from Draft 2

- Changes in the Final Draft are based on:

Proposals in the  
August 29, 2013, memo

Discussion during the  
September 16, 2013,  
webinar

Testing harmonization  
with the Voluntary  
Agreement

# Testing Harmonization with the Voluntary Agreement (VA)

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- The major source of changes in the Final Draft is to reference CEA-2043 as the test method in order to harmonize with the voluntary agreement
- All testing performed for ENERGY STAR purposes will be compatible with the VA test procedure

# Testing Harmonization with the VA: TEC Metric



- Adopted the same TEC weightings as the VA
- Metric is called Typical Energy Consumption (TEC) instead of Annual Energy Consumption (AEC)

APD Enabled by Default	Automatic Deep Sleep	$T_{WATCH\_TV}$	$T_{SLEEP}$	$T_{APD}$	$T_{DEEP\_SLEEP}$
NO	NO	14	10	0	0
NO	YES	14	$10 - T_{DEEP\_SLEEP}$	0	Deep Sleep as-deployed duration
YES	NO	$7 - \frac{4 - T_{APD\ ON\ to\ SLEEP}}{2}$	10	$7 + \frac{4 - T_{APD\ ON\ to\ SLEEP}}{2}$	0
YES	YES	$7 - \frac{4 - T_{APD\ ON\ to\ SLEEP}}{2}$	$10 - T_{DEEP\_SLEEP}$	$7 + \frac{4 - T_{APD\ ON\ to\ SLEEP}}{2}$	Deep Sleep as-deployed duration

# Testing Harmonization with the VA: Deep Sleep



- No longer a separate incentive for Deep Sleep

~~Equation 3: Condition for Receiving the Deep Sleep State Incentive for STBs~~

$$~~P_{SLEEP\_SP} \leq \min[\max(0.15 \times P_{WATCH}, 3 W), 0.95 \times P_{SLEEP\_APD}, 0.95 \times P_{SLEEP\_MANUAL}],~~$$

- Deep Sleep for Thin Clients and Over-the-top IP STBs
- Two methods for implementing Deep Sleep:

1. User-enabled Deep Sleep



2. Scheduled Deep Sleep



(Additional methods may be allowed after obtaining written approval from DOE/EPA)

# Testing Harmonization with the VA: Deep Sleep



User-enabled Deep Sleep



Scheduled Deep Sleep



- In the Final Draft, only  $P_{SLEEP\_SP\_2}$  is used in TEC due to an established duration of User-enabled Deep Sleep

$$TEC = 0.365 \left[ (T_{WATCH\_TV} \times P_{WATCH\_TV}) + (T_{SLEEP} \times P_{SLEEP}) + (T_{APD} \times P_{APD\_ON\_to\_SLEEP}) + (T_{DEEP\ SLEEP} \times P_{SLEEP\_SP\_2}) \right]$$

EPA welcomes comment on an acceptable duration (btw. 0–4 hr) for User-enabled Deep Sleep.

# Testing Harmonization with the VA: Deep Sleep



- EPA added a Wait Time parameter for Deep Sleep distinguish it from Sleep Mode
  - CEA-2043 Section 8.3.2 (a) equates Sleep Mode with “No channel viewing or recording is supported on a UUT or Client”
  - But no equivalent criterion for Deep Sleep
  - May be unclear whether unit is in Deep Sleep or transition
  - Therefore Final Draft proposes a 30-second wait to permit unit to enter Deep Sleep

SPECIAL SLEEP Mode		
8.3.4 SLEEP (for DEEP SLEEP mode)	$T_{\text{SLEEP}} \geq 1 \text{ h}$ $T_{\text{SLEEP\_WAIT}} = 30 \text{ s}$	$P_{\text{SLEEP\_SP\_1}}$ or $P_{\text{SLEEP\_SP\_2}}$

EPA welcomes comment on the need for or appropriateness of the Deep Sleep Wait Time.

# Testing Harmonization with the VA: Deep Sleep



- Other Deep Sleep requirements in addition to those in the VA were originally proposed in the August 29 memo and discussed during the September 16 webinar:
  - Deep Sleep shall not prevent a device from performing a user-scheduled DVR recording or other function and vice-versa.
  - An override function may be provided but users shall first:
    - Be offered an explanation of the Deep Sleep feature and
    - Provided the opportunity to change the schedule to better suit their needs.
  - After the end of deep/scheduled sleep time, the STB must resume Sleep Mode functionality including the ability to transition to On Mode in 30 seconds or less.

# Testing harmonization with the VA: Network Connections



- Connection tables have been elaborated and reordered per the VA:

**Table 6: Input Connections**

Connection (Protocol)
1. Coax (QAM/DOCSIS)
2. Coax (Satellite/MoCA)
3. Coax (QAM/MoCA)
4. Wi-Fi
5. Coax (HPNA)
6. Ethernet (802.3)
7. Other

**Table 7: Network Connections**

Connection (Protocol)
1. MIMO Wi-Fi HNI
2. Wi-Fi
3. Coax (MoCA)
4. Coax (HPNA)
5. HomePlug AV
6. Ethernet (802.3)
7. Other

**Table 8: Output Connections**

Connection (Protocol)
1. HDMI/DVI
2. Component
3. S-Video
4. Composite
5. Coax
6. Other

- In addition, instructions on setting up Displayless Video Gateway (DVG) voice and data connections were expanded to also apply to STBs

# Testing harmonization with the VA: Verifying No Network Initiated Actions



*According to section 8.3.1(c) of CEA-2043, no network initiated actions shall occur during the Sleep Mode or Deep Sleep State tests. If a network initiated action cannot be prevented, or if it is unclear whether network initiated actions are occurring during the tests, then use the following steps:*

- i. Repeat the Sleep Mode test 3 times on the same unit, and*
- ii. Use the median value of all 3 tests as the Sleep Mode power measurement.*

# Testing harmonization with the VA: UltraHD Testing

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*STBs claiming the UltraHD Resolution allowance must be tested using UltraHD Resolution stream(s) if supported. If UltraHD Resolution streams are not supported the UltraHD Resolution allowance may not be used.*

# Testing harmonization with the VA: Rounding and Sampling



- Sampling and rounding have been updated for consistency with other ENERGY STAR specifications

## 3.1 Significant Digits and Rounding

- 3.1.1 All calculations shall be carried out with directly measured (unrounded) values.
- 3.1.2 Unless otherwise specified, compliance with specification limits shall be evaluated using directly measured or calculated values without any benefit from rounding.
- 3.1.3 Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.

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## 4.2 Number of Units Required for Testing

- 4.2.1 For qualification of an individual product model, the Representative Model shall be equivalent to that which is intended to be marketed and labeled as ENERGY STAR.
- 4.2.2 For qualification of a Product Family, the highest energy using model within that Product Family can be tested and serve as the Representative Model. Any subsequent testing failures (e.g., as part of verification testing) of any model in the family will have implications for all models in the family.

# Proposals in the August 29 Memo



- Final Draft includes increased base allowances (proposed after reviewing the dataset):

Base Type	Version 4.1 Draft 2 Allowance (kWh/yr)	Proposed Version 4.1 Allowance (kWh/yr)
1. Cable DTA	35	40
2. Cable	55	60
3. Satellite	50	65
4. MVPD Internet Protocol (IP)	45	65
5. Over-the-top (OTT) Internet Protocol (IP)	10	10
6. Terrestrial	18	18
7. Thin-client / Remote	15	30



# Proposals in the August 29 Memo

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- EPA proposed increased adder allowances:

- HNI

**10 kWh/yr**  **15 kWh/yr**

- UltraHD

**0 kWh/yr**  **20kWh/yr**

# Discussion During the September 16 Webinar



- Further discussion led to additional increases:

- HNI

10 kWh/yr  15 kWh/yr  17 kWh/yr  
(better reflects needs of MoCA 2.0)

- UltraHD

0 kWh/yr  20kWh/yr  UltraHD  
5 kWh/yr  
(provides more flexibility)  HEVC  
15 kWh/yr

# Discussion During the September 16 Webinar



- Allowances retained in the Final Draft:

- HNI

10 kWh/yr  15 kWh/yr  17 kWh/yr

- UltraHD

0 kWh/yr  20kWh/yr 

**UltraHD  
5 kWh/yr**

**HEVC  
15 kWh/yr**

- DOCSIS 3.0: 11 kWh/yr

(until Dec. 1, 2015, to accommodate deployment)

- MIMO Wi-Fi HNI: 2 kWh/yr

7 kWh/yr 

**3 kWh/yr for 2.4 GHz**

**10 kWh/yr for 5 GHz**

(better aligns with submitted data)

# Discussion During the September 16 Webinar



- Expanded the definition of Multi-room:

*The capability to provide live audio/video content to multiple devices (2 or more Clients) or support pause/time-shifting capability for otherwise standalone IP and Thin Clients within a single family living unit. This definition does not include the capability to manage gateway services for multi-subscriber scenarios.*

# Comments

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# Comments

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The line is now open for any final feedback or comments from stakeholders.

# Next Steps to Finalization

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# Certification Timeline

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- EPA is developing the Version 4.1 Qualified Product Exchange (QPX) requirements and will distribute them to CBs and manufacturers for comment shortly and release them for testing shortly afterwards.
- Manufacturers may elect to have their EPA-recognized certification body (CB) certify their eligible products to the Version 4.1 requirements as soon as they are final.



# Certification Timeline

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- 4.5 months after Version 4.1 finalization, CBs will be instructed to stop certifying new product submittals to the Version 3.0 specification. (Existing certifications will remain valid until the new effective date).
- Any eligible product manufactured after the effective date will have to meet the Version 4.1 requirements to bear the ENERGY STAR mark. All certifications of products to the Version 3.0 specification will be invalid.

# Anticipated Dates



Milestone	Anticipated Date
Final Draft	January 23, 2014
Final Draft Comments Due	February 12, 2014
V4.1 Final Specification <i>Can begin certifying to V4.1</i>	March 2014
<i>Stop certifying to V3.0</i>	July 15, 2014
V4.1 Effective Date <i>Only V4.1 certifications valid</i>	December 1, 2014

# Thank you!

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# Contact Information

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## Other Questions:

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