1 Following is the Version 7.0 ENERGY STAR® Product Specification for Televisions. A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

3 1 DEFINITIONS

4 A) Product Types:

5 1) Television (TV): A product designed to produce dynamic video, contains an internal TV tuner encased within the product housing, and that is capable of receiving dynamic visual information from wired or wireless sources including but not limited to:

6 a) Broadcast and similar services for terrestrial, cable, satellite, and/or broadband transmission of analog and/or digital signals;

7 b) Display-specific data connections, such as HDMI, Component video, S-video, Composite video;

8 c) Media storage devices such as a USB flash drive, a memory card, or a DVD; or

9 d) Network connections, usually using Internet Protocol, typically carried over Ethernet or Wi-Fi.

14 2) Hospitality Television: A TV product which includes the following features:

15 a) A control port for bi-directional communication (DB-9, RJ11, RJ12, RJ45, coaxial cable, or HDMI-CEC); and

17 b) Activated hospitality protocol software (e.g., SmartPort, Meeting Professionals International (MPI), Multiple Television Interface (MTI), Serial Protocol) to provide direct access to Video-On-Demand (VOD) systems, non-video hotel services or a digital media player designed for hospitality-specific applications.

21 B) Operational Modes:

22 1) On Mode: The power mode in which the product is connected to a mains power source, has been activated, and is providing one or more of its principal functions.

24 2) Standby-Passive Mode: The mode in which the TV is connected to a power source, produces neither sound nor picture, but can be switched into another mode with the remote control unit or an internal signal.

27 3) Standby-Active, Low Mode: The mode in which the TV is connected to a power source, produces neither sound nor picture, but can be switched into another mode with the remote control unit or an internal signal, and with an external signal, and is not exchanging/receiving data with/from an external source.

1 10 CFR 430.2
2 10 CFR 430, Subpart B, Appendix H, Section 2.14
3 10 CFR 430, Subpart B, Appendix H, Section 2.18
4 10 CFR 430, Subpart B, Appendix H, Section 2.20
4) **Standby-Active, High Mode**: The mode in which the TV is connected to a power source, produces neither sound nor picture, but can be switched into another mode with the remote control unit or an internal signal, and with an external signal, and is exchanging/receiving data with/from an external source.

   a) **Download Acquisition Mode**: The power mode in which the product is connected to a mains power source, produces neither sound nor picture, and is actively downloading data. Data downloads may include channel listing information for use by an Electronic Program Guide, TV setup data, channel map updates, firmware updates, monitoring for emergency messaging/communications or other network communications.

5) **Off Mode**: The mode where the TV is connected to a power source, produces neither sound nor picture, and cannot be switched into any other mode with the remote control unit, an internal signal, or an external signal.

C) **Additional Functions**: Functions that are not required for the basic operation of the device. Additional functions include, but are not limited to, a VCR unit, a DVD unit, an HDD unit, an FM-radio unit, a memory card-reader unit, or an ambient lighting unit.

1) **Thin Client Capability**: The ability of the TV to receive, decrypt, and display encrypted content provided by a Multichannel Video Programming Distributor (MVPD) over the Local Area Network via a server device co-located on the customer premises without the need for a client device at the TV.

2) **Full Network Connectivity**: The ability of the TV to maintain network presence while in Standby-Active, Low mode. Presence of the TV, its network services, and its applications, is maintained even if some components of the Television are powered down. The TV can elect to change power states based on receipt of network data from remote network devices, but should otherwise stay in Standby-Active, Low mode absent a demand for services from a remote network device. Full network connectivity is not limited to a specific set of protocols. Also referred to as “network proxy” functionality and described in the Ecma-393 standard.

D) **Special Functions**: Functions that are related to, but not required for, the basic operation of the device. Special functions include, but are not limited to, special sound processing, power saving functions (e.g., Automatic Brightness Control).

1) **Automatic Brightness Control (ABC)**: The self-acting mechanism that controls the brightness of a display as a function of ambient light.

2) **Gesture Recognition**: Ability to recognize non-verbal communication through a movement of the body, head, or limbs to express or emphasize an idea, sentiment, or command.

3) **Voice Recognition**: Ability to recognize spoken words or phrases and to convert said communication into text or commands to which meaning has been assigned.

E) **Television Settings and Menus**:

1) **Preset Picture Setting**: A preprogrammed factory setting obtained from the TV menu with predetermined picture parameters such as brightness, contrast, color, sharpness, etc. Preset picture Settings can be selected within the Home or Retail Configurations.

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5 10 CFR 430, Subpart B, Appendix H, Section 2.19
6 10 CFR 430, Subpart B, Appendix H, Section 2.13
7 10 CFR 430, Subpart B, Appendix H, Section 2.1
8 10 CFR 430, Subpart B, Appendix H, Section 2.17
2) **Default Picture Setting**: The Preset Picture Setting that the TV enters into immediately after making a selection from the Forced Menu. If the TV does not have a Forced Menu, this is the as-shipped preset picture setting.

3) **Brightest Selectable Preset Picture Setting**: The Preset Picture Setting in which the TV produces the highest screen luminance within either the Home or Retail Configuration.

4) **Home Configuration**: The TV configuration selected from the Forced Menu which is designed for typical consumer viewing and is recommended by the manufacturer for home environments.

5) **Retail Configuration**: The TV configuration selected from the Forced Menu which is designed to highlight the TV's features in a retail environment. This configuration may display demos, disable configurable settings, or increase screen brightness in a manner which is not desirable for typical consumer viewing.

6) **Forced Menu**: A series of menus which require the selection of initial settings before allowing the user to utilize primary functions. Within these menus contains an option to choose the viewing environment between Retail and Home Configurations.

7) **Electronic Program Guide (EPG)**: An interactive on-screen menu of TV program information downloaded from an external source or embedded interstitially in broadcast video streams (e.g., program time, date, and descriptions).

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**Figure 1: Illustration of Picture Settings for TVs with a Forced Menu**

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9 10 CFR 430, Subpart B, Appendix H, Section 2.15
10 10 CFR 430, Subpart B, Appendix H, Section 2.4
11 10 CFR 430, Subpart B, Appendix H, Section 2.3
12 10 CFR 430, Subpart B, Appendix H, Section 2.6
13 10 CFR 430, Subpart B, Appendix H, Section 2.16
14 10 CFR 430, Subpart B, Appendix H, Section 2.5
F) Power Devices:

1) **External Power Supply (EPS)**\(^{17}\): Also referred to as External Power Adapter. An external power supply circuit that is used to convert household electric current into dc current or lower-voltage ac current to operate a consumer product.

2) **Main Battery**\(^{18}\): A battery capable of powering the TV to produce dynamic video without the support of mains power.

G) Product Characteristics:

1) **Luminance**: The photometric measure of the luminous intensity per unit area of light traveling in a given direction, expressed in units of candelas per square meter (cd/m\(^2\)).

2) **Screen Area**: The viewable screen area of the product, calculated by multiplying the viewable image width by the viewable image height. For curved screens, the measurements shall be made along the curvature on the face of the screen rather than along a straight line/chord.

3) **Native Vertical Resolution**: The number of visible physical lines along the vertical axis of the TV (e.g., a TV with a screen resolution of 1920 x 1080 (horizontal x vertical) would have a Native Vertical Resolution of 1080).

Note: Per stakeholder comment, EPA has modified the definition Native Vertical Resolution to refer to the ‘number of visible physical lines’ instead of the ‘number of visible physical pixels.’

H) **Basic Model**\(^{19}\): All units of a given type of product (or class thereof) manufactured by one manufacturer, having the same primary energy source, and which have essentially identical electrical, physical, and functional characteristics that affect energy consumption and energy efficiency.

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\(^{17}\) 10 CFR 430.2

\(^{18}\) 10 CFR 430, Subpart B, Appendix H, Section 2.12

\(^{19}\) 10 CFR 430.2
I) Multichannel Video Programming Distributor (MVPD): A person such as, but not limited to, a cable operator, a multichannel multipoint distribution service, a direct broadcast satellite service, or a TV receive-only satellite program distributor, who makes available for purchase, by subscribers or customers, multiple channels of video programming.

J) Unit Under Test (UUT): The unit currently undergoing testing.

2 SCOPE

2.1 Included Products

2.1.1 Products that are: (1) marketed to the consumer as a TV (i.e., TV is the primary function); (2) capable of being powered from a wall outlet with an external power supply; and (3) meet one of the following product type definitions, are eligible for ENERGY STAR certification, with the exception of products listed in Section 2.2:

i. TVs

ii. Hospitality TVs

2.2 Excluded Products

2.2.1 Products that are covered under other ENERGY STAR product specifications are not eligible for certification under this specification. The list of specifications currently in effect can be found at www.energystar.gov/specifications.

2.2.2 Products that satisfy one or more of the following conditions are not eligible for ENERGY STAR certification under this specification:

i. Televisions with a Main Battery that enables operation without connected mains power.

ii. Products with a computer input port (e.g., VGA), that are marketed and sold primarily as computer monitors or other displays, and that do not contain an integrated TV tuner encased within the product housing.

3 CERTIFICATION CRITERIA

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 exact values without any benefit from further 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.

20 As defined in 47 USCS § 522(13)
3.2 General Requirements

3.2.1 External Power Supplies (EPSs): Single- and Multiple-voltage EPSs shall meet the level VI or higher performance requirements under the International Efficiency Marking Protocol when tested according to the Uniform Test Method for Measuring the Energy Consumption of External Power Supplies, Appendix Z to Subpart B of 10 CFR Part 430.

i. Single- and Multiple-voltage EPSs shall include the level VI marking.


Note: EPA has added that “…EPSs shall the meet the level VI or higher performance requirements” in order to allow for the specification to remain current should the requirements for EPSs become more stringent in the future.

3.2.2 General User Information: The product shall ship with consumer informational materials located in either (1) the hard copy or electronic user manual, or (2) a package or box insert. These materials shall include:

i. Information about the ENERGY STAR program,

ii. Information on the energy consumption implications of changes to default as-shipped Television configuration and settings, and

iii. Notification that enabling certain optional features and functionalities (e.g., instant-on), may increase energy consumption beyond the limits required for ENERGY STAR certification, as applicable.

3.2.3 Forced Menu: Any product that includes a Forced Menu upon initial start-up shall:

i. Provide users with a choice of Home Configuration or Retail Configuration. Partners may use alternative terminology if approved by the U.S. Environmental Protection Agency (EPA).

ii. Upon selection of Retail Configuration at initial start-up, either (1) display a second prompt requiring the user to confirm the choice of Retail Configuration, or (2) display information on the start-up menu that the Home Configuration is the setting in which the product qualifies for ENERGY STAR. If option (2) is selected, additional detail about ENERGY STAR certification and energy consumption expectations shall be included in printed product literature and on the product information page on the Partner’s website.

3.2.4 Preset Picture Setting Menu: For any product where consumers have the option of selecting different picture settings from a preset menu at any time:

i. The product shall display on-screen information that the Default Picture Setting reflects the setting under which the product qualifies for the ENERGY STAR. For example, such information may be indicated by including an electronic ENERGY STAR mark alongside the name or description of that picture setting or in the form of a message displayed each time any setting other than the Default Picture Setting is selected.

ii. Products with a physical ENERGY STAR mark affixed to the front or top of the TV may alternatively display on screen information that enabling picture settings other than the Default Picture Setting may change the energy consumption of the product.

iii. Optional: The product may display on-screen information indicating that factory-configured picture settings other than the Default Picture Setting meet ENERGY STAR if a TV in those settings can also meet the Section 3.3 On Mode Requirements. For purposes of ENERGY STAR certification, Partners shall report the presence of these settings which also meet the requirements in the specification to the EPA-recognized certification body and maintain internal documentation. EPA reserves the right to request this documentation at any time. The settings shall not be third-party tested or reviewed during certification and verification processes.
Note: Based on further input from stakeholders citing the complexity in changing product software if the qualification of a TV model changes once a new specification takes effect, EPA proposes an additional approach for TVs that have a physical ENERGY STAR label affixed to the front or top of the product. TVs with a physical label affixed to the TV would be allowed to use alternative language to communicate changes in energy consumption among different settings without needing to reference the ENERGY STAR, since the consumer already has a visual indicator that the model ENERGY STAR-certified. A model without the physical label affixed to the TV shall continue to provide on-screen information regarding the Default Picture Setting with the electronic ENERGY STAR mark or reference to ENERGY STAR as currently required under the Version 6.0/6.1 specification.

3.2.5 Standby-Passive Mode and Standby-Active, Low Mode Settings: If users can select and enable Standby-Passive Mode or Standby-Active, Low Mode functions from a display prompt in On Mode or a settings menu other than a Forced Menu, and if these functions may alter power consumption from the default, as-tested Home Configuration:

i. The product shall display on-screen information that the default as-shipped settings reflect the settings under which the product qualifies for the ENERGY STAR. For example, such information may be indicated by including an electronic ENERGY STAR mark alongside the name or description of the default as-shipped settings or in the form of a message displayed each time any setting other than the default as-shipped setting is selected.

ii. Products with a physical ENERGY STAR mark affixed to the front or top of the TV may alternatively display on-screen information that enabling settings other than the default as-shipped settings may change the energy consumption of the product.

Note: In the Final Draft, per stakeholder feedback, EPA has harmonized the on-screen information requirements for Preset Picture Setting Menus and Standby-Passive Mode and Standby-Active, Low Mode Settings. EPA is proposing that Partners may meet Standby Mode on-screen informational requirements by including ENERGY STAR messaging next to the default as-shipped configuration if the product does not have a physical ENERGY STAR mark affixed to the front of the TV. If the TV does have a physical label, the manufacturer has the option of providing a more general message such as ‘this selection may change the energy consumption of your product.’

3.2.6 Thin Client Capability and MVPD-ready Information: Products that meet with Thin Client Capability or are otherwise MVPD-ready shall:

i. Report the presence of Thin Client Capability and supporting information including, but not limited to, interoperability protocols, decryption, and decoding functions for display on the ENERGY STAR certified products list; and

ii. Inform the consumer in the user manual and/or on-screen prompt that the TV may be capable of operating without a set-top box from an MVPD.

3.2.7 Standby-Active, High Mode Capability: TVs with Standby-Active, High Mode shall automatically return to the default as-tested Standby-Active, Low Mode or Standby-Passive Mode following a manufacturer firmware update or other maintenance operation in Standby Active, High Mode within a period less than or equal to 15 minutes from the completion of said update/maintenance operation.
3.3 On Mode Requirements

3.3.1 For all TVs, On Mode power, as tested per Section 7.1.2 On Mode Test for TVs without ABC Enabled by Default or Section 7.1.3.2 On Mode Power Calculation (for TVs with ABC Enabled by Default) in Appendix H shall be less than or equal to the Maximum On Mode Power Requirement ($P_{ON,\text{MAX}}$) and high resolution allowance, as shown in Equation 1.

**Equation 1: On Mode Power Requirement for All TVs**

$$P_{ON} \leq P_{ON,\text{MAX}} + P_{HR}$$

Where:
- $P_{ON}$ is On Mode Power in watts;
- $P_{ON,\text{MAX}}$ is the Maximum On Mode Power requirement in watts calculated in Equation 2; and
- $P_{HR}$ is a high resolution allowance in watts, as applicable, calculated in Equation 3.

3.3.2 The Maximum On Mode Power Requirement ($P_{ON,\text{MAX}}$) in watts shall be calculated per Equation 2.

**Equation 2: Maximum On Mode Power Requirement**

$$P_{ON,\text{MAX}} = 78.5 \times \tanh(0.0005 \times (A - 140) + 0.038) + 14$$

Where:
- $P_{ON,\text{MAX}}$ is the maximum allowable On Mode Power consumption in watts;
- $A$ is the viewable Screen Area of the product in square inches; and
- $\tanh$ is the hyperbolic tangent function.

3.3.3 TVs with Native Vertical Resolution greater than or equal to 2160 lines are eligible for a high resolution On Mode Power Allowance ($P_{HR}$) as calculated per Equation 3.

**Equation 3: Calculation of On Mode Power Allowance for TVs with Native Vertical Resolution Greater than or Equal to 2160 lines**

$$P_{HR} = 0.50 \times P_{ON,\text{MAX}}$$

Where:
- $P_{HR}$ is the high resolution On Mode Power Allowance in watts; and
- $P_{ON,\text{MAX}}$ is the maximum allowable On Mode Power consumption in watts.

**Note:** In response to stakeholder feedback that the Draft 2 On Mode Power requirements were recognizing disproportionally fewer large models (above 60 inches), EPA has revised the coefficients in the $P_{ON,\text{MAX}}$ equation raising the limit slightly with increasing screen area. Accordingly, EPA has adjusted the high resolution allowance from 55 percent in Draft 2 to 50 percent in this Final Draft to maintain the same stringency that was proposed in Draft 2 for TVs, given that most TVs with greater than or equal to 2160 lines are above 60 inches in size.

The EPA Final Draft dataset includes all of the California Energy Commission models supplemented with models from the EPA ENERGY STAR Version 6.1 database tested to the DOE Final Rule for a total of 2207 unique models. The overall dataset Final Draft On Mode Power pass rate is nearly 16 percent. The pass rate for TVs with ultra high resolution greater than or equal to 2160 lines is over 13 percent. At least 10 major manufacturers are represented among the set of models meeting the proposed Final Draft On Mode Power Requirements. Based on how rapidly the television market evolves, EPA continues to anticipate a more than adequate selection of ENERGY STAR certified models by the time the specification takes effect in late 2015.
Finally, EPA is also proposing to remove the May 1, 2017 expiration date for the ultra-high resolution allowance. Doing so enables EPA to watch the market closely and adjust the allowance when appropriate to ensure the ENERGY STAR continues to recognize the top performing products with ultra-high resolution.

3.4 Standby-Passive Mode Requirements

3.4.1 Standby-Passive Mode power \((P_{STANDBY-PASSIVE})\), as measured per Section 7.3.3 Standby-Passive Mode of Appendix H, shall be less than or equal to 0.5 W.

EPA has decided to retain the 0.5 W limit, rather than reduce the limit to 0.3 W since the power savings would be very small and EPA understands that moving to 0.3 W would prevent some products with very efficient On Modes from qualifying for ENERGY STAR.

3.5 Standby-Active, Low Mode Requirements

3.5.1 Standby-Active, Low Mode, as measured per Section 7.3.3 Standby-Active, Low Mode of Appendix H, shall be less than or equal to 3.0 W.

3.6 Luminance Requirements

3.6.1 For products with a luminance in the Brightest Selectable Preset Picture Setting (the greater value of \(L_{DEFAULT\_RETAIL}\) or \(L_{BRIGHTEST\_HOME}\)) less than 350 cd/m\(^2\), luminance in the Default Picture Setting \(L_{DEFAULT\_HOME}\) shall be greater than or equal to 65% of the luminance in the Brightest Selectable Preset Picture Setting.

3.6.2 For products with a luminance in the Brightest Selectable Preset Picture Setting greater than or equal to 350 cd/m\(^2\) luminance in the Default Picture Setting shall be greater than or equal to 228 cd/m\(^2\).

Note: In Draft 2, EPA proposed that products with a Brightest Selectable Preset Picture Setting greater than or equal to 450 cd/m\(^2\) luminance have a luminance of greater than or equal to 293 cd/m\(^2\) in the Default Picture Setting. This approach was intended to permit products with brighter maximum screen luminance to be optimized for home use.

Stakeholders generally supported this Draft 2 proposal with some stakeholders noting that it could be further adjusted such that the as-shipped luminance be 228 cd/m\(^2\), which is closest to the median As-Shipped Luminance of TVs today, rather than 293 cd/m\(^2\). EPA confirmed that the median as-shipped luminance among its dataset of qualified products is approximately 232 cd/m\(^2\) and therefore proposes adopting this revised proposal. In the Final Draft, products with Brightest Selectable Preset Picture Setting luminance greater than or equal to 350 cd/m\(^2\), must have a luminance in the Default Picture Setting of greater than or equal to 228 cd/m\(^2\) (which is 65 percent of 350 cd/m\(^2\)).

Since approximately 88.5 percent of EPA’s dataset has Brightest Selectable Preset Picture Setting luminance below 350 cd/m\(^2\), this revised proposal still only applies to a small subset of currently certified models. The proposal still intends to guard against TVs being shipped too dim, while permitting products with brighter maximum screen luminance to be optimized for home use.

3.7 Download Acquisition Mode (DAM) Requirements for Hospitality TVs

3.7.1 A product may automatically exit Standby-Passive Mode or Standby-Active, Low Mode and enter Download Acquisition Mode according to a predefined schedule, in order to:
i. Download channel listing information for use by an electronic programming guide,
ii. Monitor for emergency messaging/communications, or
iii. Communicate via a network protocol.

3.7.2 DAM energy consumption for all DAM states ($E_{DAM}$), as measured per the CEA Procedure for DAM Testing, shall be less than or equal to 40 watt-hours per day (0.04 kWh/day).

Note: Products intended for sale in the US market are subject to minimum toxicity and recyclability requirements. Please see ENERGY STAR Program Requirements for Televisions: Partner Commitments for details.

4 TESTING

4.1 Test Methods

4.1.1 Test methods identified in Table 1 shall be used for certification as applicable.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Ac Mains-powered TVs</td>
<td>Uniform Test Method for Measuring the Energy Consumption of Television Sets incorporated in Appendix H to Subpart B of 10 CFR Part 430.</td>
</tr>
</tbody>
</table>

4.2 Additional Required Test for TVs with Standby-Active, Low Mode

4.2.1 The following method in Table 2 shall be used for TVs with a Standby-Active, Low mode:

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVs with Standby-Active, Low Mode</td>
<td>CEA-2037-A, Determination of Television Set Power Consumption</td>
</tr>
</tbody>
</table>

4.2.2 If the TV is network-enabled and tested in Standby-Active, Low per Appendix H, the following additional test is required for ENERGY STAR certification:

i. Perform all procedures specified in Section 6.7.5 Standby-active, Low of CEA-2037-A with the additional preconditions:

1) Place the UUT in On Mode as tested per Appendix H and momentarily press the power button on the remote control; and
2) Wait 5 minutes after pressing the power button before beginning the Section 6.7.5 procedures in CEA-2037-A.

ii. TVs, for which availability can be confirmed with one of the methods in Section 6.7.5.2 Availability of CEA-2037-A, shall be reported as having Full Network Connectivity.
4.3 Additional Required Test for Hospitality TVs

4.3.1 DAM energy consumption of Hospitality TVs shall be measured using the following method in Table 3:

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitality TVs</td>
<td>CEA Procedure for DAM Testing: For TVs, Rev. 0.3, Sept. 2010</td>
</tr>
</tbody>
</table>

4.4 Number of Units Required for Testing

4.4.1 One of the following sampling plans shall be used to test for ENERGY STAR certification:

- i. A single representative unit shall be selected for testing the Basic Model;
- ii. Units shall be selected for testing per the sampling requirements defined in 10 CFR 429.25, which references 10 CFR 429.11.

4.5 International Market Certification

4.5.1 Products shall be tested for certification at the relevant input voltage/frequency combination for each market in which they will be sold and promoted as ENERGY STAR.

5 USER INTERFACE

5.1.1 Partners are encouraged to design products in accordance with the user interface standard IEEE 1621: Standard for User Interface Elements in Power Control of Electronic Devices Employed in Office/Consumer Environments. For details, see http://eetd.LBL.gov/Controls.

6 EFFECTIVE DATE

6.1.1 Effective Date: The Version 7.0 ENERGY STAR Televisions specification shall take effect on September 30, 2015. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on its date of manufacture. The date of manufacture is specific to each unit and is the date on which a unit is considered to be completely assembled.

Note: EPA anticipates finalizing this specification revision in late December 2014, with the specification taking effect nine months later.

6.1.2 Future Specification Revisions: EPA reserves the right to change this specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through stakeholder discussions. In the event of a specification revision, please note that the ENERGY STAR certification is not automatically granted for the life of a product model.

7 CONSIDERATIONS FOR FUTURE REVISIONS

7.1.1 Standby-Active, High Mode: EPA and DOE are interested in learning more about Standby-Active, High Mode. EPA anticipates exploring this issue and potential power limits and duty cycle requirements in the next specification revision.
7.1.2 Trends and Improvements in Energy Efficiency: EPA anticipates continued gains in energy efficiency to be achieved in the next few years with advances in technology such as LED efficacy, the addition of reflective polarizing film, power supply improvements, lower screen reflectance, improved backplanes (Low Temperature Polysilicon and Indium Gallium Zinc Oxide), quantum dot technology, and next generation Organic Light Emitting Diodes (OLED). As such, EPA anticipates an opportunity for proposing further limits on power consumption in future revisions.