UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

August 11, 2016

Dear ENERGY STAR Televisions Brand Owner Partner or Other Interested Party:

With this letter, the U.S. Environmental Protection Agency (EPA) is launching a revision of the ENERGY STAR specification for televisions. Throughout this revision process, EPA will work with stakeholders to develop the Version 8.0 ENERGY STAR Televisions requirements.

On May 17, 2016, the Environmental Protection Agency (EPA) issued guidance regarding ENERGY STAR certification of televisions with Automatic Brightness Control and other screen luminance dimming features. Initial efforts to better understand the energy implications of these features have led the Agency to conclude that more fundamental changes may be needed to the approach by which ENERGY STAR televisions are qualified. As such, EPA is launching this revision, beginning with a data assembly effort outlined below. In the interim, certification of televisions will continue consistent with ENERGY STAR Version 7.

In order to ensure that ENERGY STAR Televisions ultimately deliver the savings purchasers expect, their energy saving features need to persist across a wide array of viewing conditions. Televisions today offer consumers a broad selection of modes and settings that need to be understood, so that the ENERGY STAR specification appropriately rewards televisions that most effectively achieve energy savings along with a high quality viewing experience. Determining appropriate treatment of energy saving features will be a priority for this revision. One approach EPA is considering for ENERGY STAR certification under Version 8.0. is adding testing in additional modes, beyond the default mode, with requirements regarding persistence of energy saving modes. ENERGY STAR is also interested in better understanding the energy consumption of HDR-capable ultra high definition televisions under two particular circumstances: when translating SDR content via “HDR Plus” preset picture settings, and when playing native HDR10-encoded content.

EPA is assembling data, outlined below, to allow for the evaluation of such an approach and has attached a data collection template accordingly. **Please submit data to** televisions@energystar.gov **by September 19, 2016.** EPA is also gathering product data of its own, and will consider its data as well as any applicable data received from stakeholders by the stated deadline to inform the development of the next ENERGY STAR specification. **EPA will host a webinar on October 3, 2016 between 1-3 PM Eastern Time to review the data received and proposed Agency approaches to energy saving features. Please register for the webinar here.** EPA will follow this stakeholder webinar with a Draft 1 specification. Additionally, EPA is monitoring closely the Department of Energy’s actions specific to Uniform Test Method for Measuring the Energy Consumption of Television Sets incorporated in Appendix H to Subpart B of 10 CFR Part 430, and will integrate changes to this test method into the ENERGY STAR specification.

I look forward to working with you throughout this process to develop the Version 8.0 ENERGY STAR Televisions specification. Thank you in advance for sharing data that will enable the ENERGY STAR mark to continue representing the top performers in terms of energy efficiency. Please contact me at Radulovic.Verena@epa.gov or (202) 343-9845, or Matt Malinowski at matt.malinowski@icfi.com or (202)

862-2693 with questions or concerns. For any questions pertaining to the test procedure, contact Jeremy Dommu, DOE, at Jeremy.Dommu@ee.doe.gov or (202) 586-9870. Thank you for your continued support of ENERGY STAR.
Sincerely,

Verena Radulovic, Manager ENERGY STAR for Consumer Electronics

Data Assembly for Energy Saving Feature Persistence

Supporting definitions *(these definitions are provided to clarify the data assembly. If they are to be included in Version 8.0, they will first be vetted with stakeholders):*

- Motion Detection Dimming (MDD): An optional feature on some television models that automatically reduces screen luminance during periods where the information from one video frame to the next is changing rapidly. These changes typically correspond to rapid on-screen motion or frequent scene changes.
- Picture Parameters: Individual adjustable elements within preset picture settings such as backlight, brightness, contrast, color, sharpness, etc.
    - Backlight: parameter that adjusts the light output level of the backlight, edge light or emissive source within a display
    - Contrast: parameter that adjusts the white level of the display
    - Brightness: parameter that adjusts the black level of the display
- Reset Picture Settings: Feature through which TV resets all picture parameters and energy saving features back to factory default levels for the currently selected preset picture setting.

Data collection steps:
Follow the steps below to populate the excel data collection template, making note of the comments embedded in the spreadsheet cells and row and column headers.

1. ***Record general information about the TV, settings, and notifications.***
    a. Record
        i. Manufacturer
        ii. Model Number
        iii. Date of Manufacture of Sample Tested
        iv. Software Version # or Update Date
        v. Date Test Was Conducted
    b. List all
        i. available automatic brightness control settings
        ii. available motion detection dimming settings
    c. Record
        i. Minimum possible setting value for Backlight
        ii. Minimum possible setting value for Contrast
        iii. Minimum possible setting value for Brightness
        iv. Maximum possible setting value for Backlight
        v. Maximum possible setting value for Contrast
        vi. Maximum possible setting value for Brightness
    d. Describe any other automatic energy saving features beyond ABC and MDD and their possible settings
    e. Conduct and record results of picture parameters test. In a TV's default preset picture setting:

i. Adjust the backlight, contrast and brightness picture sub-settings to a non-default level (increase or decrease them by at least one increment, randomly selected).
ii. Record any observed changes to ABC setting, including whether it was disabled, enabled, changed to a different enabled level, or unchanged.
iii. Record any observed changes to MDD setting, including whether it was disabled, enabled, changed to a different enabled level, or unchanged.
iv. Record any observed changes to any other automatically enabled energy saving features.
v. Use the reset picture settings feature if available, otherwise individually reset the picture sub-settings and energy saving features to their default levels or factory reset the TV before the additional tests stipulated below.

f. Record any on-screen notifications given to the user that changing preset picture settings may cause ABC, MDD, or other automatic energy saving features to switch off, may change the unit's power consumption, or may cause it to no longer qualify for ENERGY STAR in that setting.
g. Note any on-screen notifications that encourage users to change picture settings

2. ***Record preset picture setting and notifications.*** For each available preset picture setting:
   a. Record the preset picture setting name, noting the default preset picture setting and making note of picture setting characteristics.
   b. If the TV has an ABC Sensor, record the default ABC setting (otherwise record "N/A"). If ABC is disabled in a particular preset picture setting automatically, note whether ABC can be manually enabled by user in that preset picture setting.
   c. If the TV has MDD, record the default MDD setting (otherwise record "N/A"). If MDD is disabled in a particular preset picture setting automatically, note whether MDD can be manually enabled by user in that preset picture setting.
   d. If the TV has any other automatically enabled special functions that impact power consumption, record their default settings (otherwise record "N/A"). If they are disabled in a particular preset picture setting automatically, note whether they can be manually enabled by user in that preset picture setting.
   e. Record the default picture parameter levels of backlight, contrast, and brightness.
3. ***Measure power consumption and screen luminance with ABC disabled and then with ABC enabled for each of the following picture settings a) the default preset picture setting, b) the most power consumptive preset picture setting, and c) HDR-upscaling mode, if available, or the preset picture setting that yields the next highest power consumption after the factory default preset picture setting if HDR upscaling is not available.***
   a. Place the television in the appropriate preset picture setting.
   b. Following section 7.1 (Uniform Test Method for Measuring the Energy Consumption of Television Sets), record each of the average power values measured with ABC disabled, and then with ABC enabled, including an additional measurement at a room illuminance of 300 lux. Do not average the power values; report them all individually.
   c. Record screen luminance values corresponding to each condition in 3b above with the IEC three bar test pattern, as described in section 7.2 of the Test Method.
   d. Record power consumption with the full screen black test pattern on the IEC test disc with ABC disabled, averaging power over a 1-minute period.
   e. Repeat these steps for all three preset picture settings identified in 3. above.
4. ***Measure power consumption with ABC disabled for all of the other home mode preset picture settings except Dolby Vision picture settings if present.***
   a. Place the television in the appropriate preset picture setting.
   b. Following section 7.1 (Uniform Test Method for Measuring the Energy Consumption of Television Sets), record the average power value measured with ABC disabled.

c. For power measurements associated with HDR picture settings, instead of the IEC 62087 test clip, manufacturers shall use the CLASP HDR test clip called "CLASP_UHD_4K_HDR_10bit_test sequence.mp4," which is posted on the webpage http://clasp.ngo/Resources/Resources/Headlines/2016/New-Video-Test-Sequence-for-Televisions. This webpage includes a link to a Google Drive folder containing several versions of this test clip in different formats. Please use the HDR 10-bit file with the exact file name referenced above.
d. Repeat these steps for other home mode preset picture settings other than the three picture settings identified in 3. above.

5. ***Measure power consumption and screen luminance with ABC disabled for all retail mode preset picture settings except Dolby Vision picture settings if present.***
    a. Place the television in the appropriate preset picture setting.
    b. Following section 7.1 (Uniform Test Method for Measuring the Energy Consumption of Television Sets), record each of the average power values measured with ABC disabled.
    c. For power measurements associated with HDR picture settings, instead of the IEC 62087 test clip, manufacturers shall use the CLASP HDR test clip called "CLASP_UHD_4K_HDR_10bit_test sequence.mp4," which is posted on the webpage http://clasp.ngo/Resources/Resources/Headlines/2016/New-Video-Test-Sequence-for-Televisions. This webpage includes a link to a Google Drive folder containing several versions of this test clip in different formats. Please use the HDR 10-bit file with the exact file name referenced above.
    d. Record the screen luminance value with the IEC three bar test pattern, as described in section 7.2 of the Test Method.
    e. Repeat these steps for all retail mode preset picture settings.