

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



OFFICE OF
AIR AND RADIATION

September 17, 2020

Dear ENERGY STAR® TV Partner or Other Interested Stakeholder:

With this letter, the U.S. Environmental Protection Agency (EPA) is launching a revision of the ENERGY STAR specification for televisions and releasing the [ENERGY STAR Version 9.0 TVs Draft 1 Specification](#) for stakeholder review. EPA will host a stakeholder webinar to present details of the Draft 1 specification and address stakeholder questions on **Wednesday, September 30, 2020 from 1:00 PM – 3:30 PM Eastern Time**. If you wish to attend this meeting, please register [here](#).

Since Version 8.0's release in February 2018, EPA has participated in efforts to test a significant number of current TV models and has monitored international test procedure developments. This work has brought to light challenges with the current approach to testing and recognizing TVs, including:

- Using a metric that encourages TVs to employ dim backlight settings;
- Setting requirements for only one Preset Picture Setting, which may not persist in the home; and
- Testing luminance by measuring a center-screen point with the 3-bar pattern, which is not reflective of viewer perceived luminance while viewing typical content.

As a result, EPA is now proposing use of performance-based criteria to encourage more efficient product design through the adoption of efficient components (e.g., LEDs, films, power supplies, etc.) and energy saving features (e.g., local dimming). The key features of the V9.0 approach are summarized below and described in more detail later in this letter. Version 9.0:

- Leverages a performance-based metric that encourages designs that produce light more efficiently;
- Requires the use of camera equipment to measure light averaged across the entire screen during dynamic video play (as opposed to a center-screen point measurement), resulting in a new metric called Dynamic Luminance;
- Evaluates TV performance in multiple SDR and HDR Preset Picture Settings; and
- Evaluates TVs with multicast traffic present on network, with and without smart speakers.

Version 9.0 Test Procedures

To the extent that the Department of Energy (DOE) requires use of the Federal Test Procedure, EPA plans to collect and post associated test results on the ENERGY STAR Product Finder. Under Version 9.0, TVs will be certified based on measurements from additional testing that EPA proposes for On Mode and measurements from both the Federal Test Procedure and additional proposed tests for Standby Mode. These additional tests were developed in consultation with DOE, in collaboration with NEEA, and have been recognized by a handful of industry and NGO stakeholders as solving some of today's more daunting TV testing issues. The On Mode test procedures that EPA proposes for the purposes of ENERGY STAR certification will measure performance/watt in commonly used preset picture settings. These tests and resulting performance-based criteria are based on the results from testing over 100, mostly 4K, TV models with automated test equipment. The tests require the use of camera equipment to measure light averaged across the entire screen during dynamic video play (as opposed to a center-screen point measurement), resulting in a new metric called **dynamic luminance**. EPA believes that

dynamic luminance measurements will better reflect the levels of light and degree of luminance uniformity that a typical viewer experiences.

EPA also proposes that automatic brightness control (ABC) and Motion Detection Dimming (MDD) remain disabled during the additional tests for ENERGY STAR certification. Testing with MDD disabled aligns with the provisional direction of the IEC MT62087 test procedure. EPA does recognize the potential saving opportunities that a well-programmed ABC feature can deliver to consumers. As a result, EPA is following the development of the updated approach towards ABC testing in MT62087 and will evaluate whether to include ABC-based metrics in future ENERGY STAR TV program requirements.

The proposed tests require that the TV be tested in three commonly selected preset picture settings: SDR default, SDR brightest, and HDR default. Current research shows that a majority of devices are either left in their default setting or have been put into their brightest preset picture setting. As a result, testing in both settings captures typical use and addresses the preset picture setting that is often the most energy consuming. In addition, with broadcast TV transitioning to HDR, the HDR10 PPS is expected to be much more commonly used in the near future and well within the lifetime of TVs sold today.

In addition to Standby Mode requirements based on the Federal Test Procedure, EPA proposes testing to measure standby power with Multicast DNS requests present on the network. EPA has observed that a significant number of smart TVs use more power (e.g. > 10 watts) in Standby-Active, Low Mode when configured to allow wake-by-voice commands via smart speaker. Furthermore, other smart TVs experience a similar increase in standby power when Multicast DNS requests are present on the network, with or without a smart speaker connection. Use of streaming media services (e.g. YouTube, Spotify) creates this type of network traffic. As a result, EPA believes this testing and the standby mode criteria will encourage efficient integration with smart speakers.

Updated Certification Criteria

EPA proposes On Mode criteria based on proposed additional test procedure measurements of three picture settings (default, brightest, and HDR):

- An efficiency limit based on screen area *and* measured luminance; and
- A power cap based on screen area (to provide a mechanism to limit extremely bright backlight settings, which are not constrained by the efficiency limit alone).

An Adjustment Factor is applied to the On Mode criteria to account for the power requirement differences innate to technologies that produce different screen resolutions. Today's market for televisions has evolved to consist of several standard resolutions; as such, EPA is providing adjustment factors for HD (1080p), 4K, and 8K resolution formats since they represent the majority of TV sales. In addition, as consumers have come to desire products that deliver an enhanced viewing experience, technologies have emerged to produce content with exceptionally high contrast ratios. The Agency acknowledges that these different formats and technologies have inherently different energy requirements and has developed the criteria proposed in Draft 1 accordingly.

The above criteria eliminate the need for today's minimum luminance requirements, allowing for a wide range of luminance settings while ensuring that luminance is provided efficiently. In doing so, this approach provides manufacturers more flexibility and an incentive to deliver light efficiently (i.e., more efficient TVs can be brighter than less efficient TVs).

Lastly, EPA proposes standby mode criteria based on both the Federal Test Procedure and the proposed additional standby tests.

Upcoming Webinar

The exchange of ideas and information between EPA, industry, and other interested parties is critical to the success of ENERGY STAR. Stakeholder participation is key to the ENERGY STAR specification development process and is strongly encouraged. EPA plans to hold a webinar on **Wednesday, September 30, 2020 from 1:00 PM – 3:30 PM Eastern Time** to discuss the Draft 1 Version 9.0 specification. **To participate in this webinar, please register [here](#) to attend.**

Feedback

Given the current circumstances, EPA is extending the normal comment period deadline to allow stakeholders to **provide any comments on the Version 9.0 Draft 1 Specification no later than October 29, 2020**. Please send comments via e-mail to televisions@energystar.gov. All comments received will be posted to the Version 9.0 TVs Specification development webpage, unless the submitter specifically requests that his or her comments remain confidential. Stakeholder engagement is vital to the ENERGY STAR program and EPA looks forward to further work with stakeholders in the development of the TVs Version 9.0 specification.

Please contact me at (202) 564-8538 or Kwon.James@epa.gov, or Emmy Feldman at (202) 862-1145 or Emmy.Feldman@icf.com, with questions or to share feedback for this effort.

Thank you for your continued support of ENERGY STAR.

Best Regards,



James Kwon, EPA Product Manager
ENERGY STAR for Consumer Electronics

Enclosures:

ENERGY STAR Version 9.0 TVs Draft 1 Specification
ENERGY STAR Version 9.0 TVs Draft 1 Data Package