



ENERGY STAR® Program Requirements for Exterior and Interior Storm Windows

Partner Commitments Draft 2 Version 1.0

Note: The U.S. Environmental Protection Agency (EPA) welcomes feedback on the following Draft 2 Partner Commitments (pages 1–3) and Eligibility Criteria (pages 4–8) documents for exterior and interior storm windows. EPA will provide a Response to Comments document on all feedback received from stakeholders, and expects to release the final draft specification in Spring 2018, followed by another comments period. Please submit all comments and supporting information to windows@energystar.gov by May 4, 2018.

Below are the terms of the ENERGY STAR Partnership Agreement as they pertain to the manufacture and labeling of ENERGY STAR certified products. The ENERGY STAR Partner must adhere to the following partner commitments:

Certifying Products

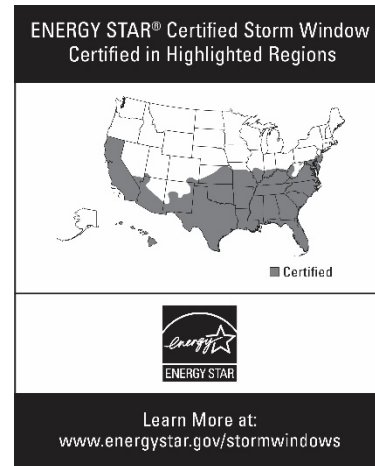
1. Comply with current ENERGY STAR Eligibility Criteria, which define performance requirements and test procedures for exterior and interior storm windows. A list of eligible products and their corresponding Eligibility Criteria can be found at www.energystar.gov/specifications.
2. *Prior to associating the ENERGY STAR name or mark with any product*, obtain certification from a third-party Certification Body recognized by EPA for storm windows. As part of this certification process, products must be tested in a laboratory recognized by EPA to perform storm windows testing. A list of EPA-recognized laboratories and Certification Bodies can be found at www.energystar.gov/testingandverification.

Using the ENERGY STAR Name and Marks

3. Comply with current ENERGY STAR Identity Guidelines, which define how the ENERGY STAR name and marks may be used. The Partner is responsible for adhering to these guidelines and ensuring that its authorized representatives, such as advertising agencies, dealers and distributors, are also in compliance. The ENERGY STAR Identity Guidelines are available at www.energystar.gov/logouse.
4. Use the ENERGY STAR name and marks only in association with certified products. A Partner may not refer to itself as an ENERGY STAR Partner unless at least one product is certified and offered for sale in the United States and/or ENERGY STAR partner countries.
5. Provide clear and consistent labeling of ENERGY STAR certified storm windows.
 - 5.1. Use approved ENERGY STAR labels. Select the correct product label to indicate the climate zones in which the product meets the ENERGY STAR criteria. Use Label 1 if the product meets the requirements for the North and North-Central Zone and Label 2 if the product meets the requirements for the North-Central, South-Central and South Zone. Note that both labels are inclusive of the North-Central Zone.



Label 1: North/North-Central Zone



Label 2: North-Central/South-Central/South Zone

Note: Based on commenter suggestions, EPA has revised the ENERGY STAR label design to differentiate between storm windows and windows, doors, and skylights.

- 5.1.1. Place the label on the product packaging or affix a removable sticker directly to the product.
- 5.1.2. Labels must be either grayscale or cyan blue. The minimum size for product labels is 2" (width) x 3" (height), and a width/height ratio of 2/3 must be maintained. The use of diagonal lines, crosshatching, dots or similar designs instead of shading to indicate climate zones is acceptable as long as state borders are clearly visible on the map.
- 5.2. The ENERGY STAR mark must be clearly displayed in product literature (e.g., spec sheets, catalogs) and on the manufacturer's Web site where information about ENERGY STAR certified models is displayed.

Verifying Ongoing Product Certification

6. Participate in third-party verification testing through a Certification Body recognized by EPA for storm windows, providing full cooperation and timely responses. EPA may also, at its discretion, conduct tests on products that are referred to as ENERGY STAR certified. These products may be obtained on the open market, or voluntarily supplied by a Partner at the government's request.

Providing Information to EPA

7. Provide data on sales of ENERGY STAR certified storm windows to EPA at least once every 12 months.
8. Report to EPA any attempts by recognized laboratories or Certification Bodies to influence testing or certification results, or to engage in discriminatory practices.
9. Notify EPA of a change in the designated responsible party or contacts within 30 days using the My ENERGY STAR Account tool (MESA) available at www.energystar.gov/mesa.

Performance for Special Distinction

To receive additional recognition from EPA for its efforts within the Partnership, the ENERGY STAR Partner may consider the following voluntary measures, and should keep EPA informed on the progress of these efforts:

- Provide quarterly, written updates to EPA as to the efforts undertaken by the Partner to increase the availability of ENERGY STAR certified products, and to promote awareness of ENERGY STAR and its message.
- Consider energy efficiency improvements in company facilities and pursue benchmarking buildings through the ENERGY STAR for Buildings Program.
- Purchase ENERGY STAR certified products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR certified product information to employees for use when purchasing products for their homes.
- Feature the ENERGY STAR mark(s) on the Partner's Web site and other promotional materials. If information concerning ENERGY STAR is provided on the Partner's Web site as specified by the ENERGY STAR Web Linking Policy (available in the Partner Resources section of the ENERGY STAR Web site), EPA may provide links, where appropriate, to the Partner's Web site.
- Ensure that the power management feature is enabled on all ENERGY STAR certified displays and computers in use in company facilities, particularly upon installation and after service is performed.
- Provide general information about the ENERGY STAR program to employees whose jobs are relevant to the development, marketing, sales and servicing of current ENERGY STAR certified products.
- Provide a simple plan to EPA outlining specific measures that the Partner plans to undertake beyond the program requirements listed above. By doing so, EPA may be able to coordinate and communicate the Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR Web site, etc. The plan may be as simple as providing a list of planned activities or milestones of which the Partner would like EPA to be aware. For example, activities may include: (1) increasing the availability of ENERGY STAR certified products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrating the economic and environmental benefits of energy efficiency through special in-store displays; (3) providing information to users (via the Web site and user's manual) about the energy savings features and operating characteristics of ENERGY STAR certified products; and (4) building awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event.
- Join EPA's SmartWay Transport Partnership to improve the environmental performance of the company's shipping operations. The SmartWay Transport Partnership works with freight carriers, shippers and other stakeholders in the goods movement industry to reduce fuel consumption, greenhouse gases and air pollution. For more information on SmartWay, visit www.epa.gov/smartway.
- Join EPA's Green Power Partnership. The partnership encourages organizations to buy green power as a way to reduce the environmental impacts associated with traditional fossil fuel-based electricity use. The partnership includes a diverse set of organizations, including Fortune 500 companies, small and medium businesses, and government institutions, as well as a growing number of colleges and universities. For more information on Green Power, visit www.epa.gov/greenpower.



ENERGY STAR® Program Requirements for Exterior and Interior Storm Windows

Eligibility Criteria Draft 2 Version 1.0

The following is Draft 2 of the Version 1.0 product specification for ENERGY STAR certified exterior and interior storm windows. A product shall meet all of the identified criteria to earn the ENERGY STAR certification.

Note: EPA has formally responded to stakeholder commenters on the Framework Document and Criteria Analysis Report, available for download from the ENERGY STAR Web site. EPA requests that stakeholders provide comments on the proposed Draft 2 specification and Criteria Analysis Report. EPA will provide a Response to Comments document on all feedback received from stakeholders, and expects to release the final draft specification in Spring 2018. Please submit all comments and supporting information to windows@energystar.gov by May 4, 2018.

1) Definitions:

Below are the definitions of the relevant terms in this document.

Product Definitions

- A. **Exterior Storm Window:** A fenestration attachment product consisting of a frame component and one or more pieces of glazing, installed over the exterior of a primary window in a residential building.
- B. **Interior Storm Window:** A fenestration attachment product consisting of a frame component and one or more pieces of glazing, installed over the interior of a primary window in a residential building.
- C. **Primary Window:** An assembled unit consisting of a frame/sash component holding one or more pieces of glazing functioning to admit light and/or air into an enclosure and designed for vertical installation in an external wall of a residential building.
- D. **Operator Type:** A designation used to distinguish between fenestration products based on how and whether the products open and close.
 - i. **Operable product:** A product with panels that may be opened and shut to accommodate ventilation needs.
 - ii. **Non-operable product:** A product with panels that do not open (also called “fixed”).
- E. **Low-E Coating:** A microscopically thin metal or metallic oxide composition that is deposited directly on a glazing surface to reduce its thermal infrared emittance.

Performance Metrics

- F. **Emissivity:** The ratio of the radiative energy emitted by a surface to that of a black body at the same temperature. The ratio varies between zero (0) and one (1).

- G. **Solar Transmittance (Tsol):** The fraction of solar energy that passes through a glazing material. The value is expressed as a number between zero (0) and one (1).
- H. **Air Leakage:** The volume of air flowing per unit time per unit area (cfm/ft²) through a fenestration system.

Other Definitions

- I. **Residential Building:** A structure used primarily for living and sleeping that is zoned as residential and/or subject to residential building codes. For the purposes of ENERGY STAR, “residential building” refers to buildings that are three stories or fewer in height.
- J. **Climate Zone:** Geographic regions that share general climatic conditions, such as a range of heating degree days and cooling degree days. The climate zones referenced are defined in the ENERGY STAR Windows, Doors and Skylights Program. These zones are based on the International Energy Conservation Code (IECC), with some modifications.
- K. **Weep Hole:** Small openings in the frame of an exterior storm window that allow water to drain out from between the storm window and the primary window.
- L. **Thermal Break:** Low-conductivity materials such as wood, plastic or other non-metal material placed between two conductive materials to limit heat flow; in the context of storm windows, thermal breaks are used with metal frame windows.

Note: Based on a commenter’s suggestion, EPA has revised the definition for air leakage by removing the phrase “to the incident solar ratio.”

EPA has also removed the definitions for Visual Transmittance, U-Factor, and Solar Heat Gain Coefficient (SHGC) from the definitions list based on stakeholder feedback asking that EPA remove terms from the definitions list that are not referenced directly in the specification document.

2) Scope:

- A. **Included Products:** Products that meet the definition of exterior and interior storm windows that are intended for use in residential buildings as specified herein and are eligible for ENERGY STAR certification, with the exception of products listed under excluded products.
- B. **Excluded Products:** Products described below are ineligible for ENERGY STAR certification.
 - i. Exterior storm windows without weep holes or other features that allow moisture to drain from between the storm window and primary window.
 - ii. Storm windows that are intended for non-residential buildings.
 - iii. Storm doors.
 - iv. Partial components of an exterior or interior storm window.

Note: In response to comments regarding the eligibility of storm doors in this proposed specification, EPA has specifically excluded storm doors from the scope of this specification.

3) Certification Criteria:

- A. Energy Efficiency Requirements:** For ENERGY STAR certification, products shall have Emissivity and Solar Transmissions ratings certified by an approved third-party certification body at levels which meet or exceed the certification criteria described in Table 1 for a given climate zone.

Table 1. Certification Criteria for Exterior and Interior Storm Windows

ENERGY STAR Climate Zone	Emissivity	Solar Transmission
Northern	≤ 0.22	> 0.55
North-Central	≤ 0.22	Any
South-Central	≤ 0.22	≤ 0.55
Southern	≤ 0.22	≤ 0.55

Note: After conducting additional analysis, EPA has determined that interior storm windows with low T_{sol} glass are cost-effective in the North-Central, South-Central and Southern Climate Zones. Therefore, EPA has revised its original proposal to allow interior storm windows with low T_{sol} glass to be certified in the Southern and South-Central Climate Zones, as well as allowing any T_{sol} to be certified in the North-Central Climate Zone.

EPA has also revised the criteria table so that it uses “Any” instead of “≤ 0.55 or > 0.55” in the specification language for solar transmittance in the North-Central Climate Zone based on a stakeholder’s suggestion.

- B. Air Leakage Requirements:** For ENERGY STAR certification, products shall have Air Leakage ratings at levels which meet or exceed the certification criteria specified in Table 2.

Table 2. Air Leakage Requirements

Product	Air Leakage Rating
Exterior Storm Window	≤ 1.5 cfm/ft ²
Interior Storm Window	≤ 0.5 cfm/ft ²

- C. Installation Instructions:** For ENERGY STAR certification, storm window manufacturers shall provide installation instructions online (with a Web address on the package) or packaged with the product. The electronic versions of instructions may be provided on the Web site of the retailer, manufacturer and/or industry association. The instructions shall include:
- A list of hardware and tools required for installation.
 - Diagrams and descriptions of product installation.
 - Guidance on proper installation distance from the primary window.
 - Guidance on the need for thermal breaks when installed over metal frame primary windows.
 - Guidance on properly sealed installation.

- vi. Guidance on safe removal and recycling of existing storm windows, if applicable.
- vii. Information on the applicability of the storm window operator type to the primary window operator type, especially with respect to any emergency egress requirements.
- viii. Provide a reference to the safety requirements defined in local building codes.

Note: EPA has added language to clarify that thermal breaks are necessary when installing storm windows over metal frame primary windows.

As suggested by a stakeholder, EPA has added “Guidance on safe removal and recycling of existing storm windows, if applicable” to the installation instructions.

4) Test Requirements:

Test methods shown in Table 3 should be used to determine the ENERGY STAR certification for exterior and interior storm windows.

Table 3. Test Methods for ENERGY STAR Certification

ENERGY STAR Requirement	Test Method Reference
Emissivity	National Fenestration Rating Council (NFRC) 301
Solar Transmission	NFRC 300
Air Leakage	Attachments Energy Rating Council (AERC) 1.2 in accordance with ASTM E283

Note: As suggested by a stakeholder, EPA has rephrased the proposed test method for air leakage from “ASTM E283 in accordance with AERC 1.2” to “AERC 1.2 in accordance with ASTM E283.”

5) Confirmation of Glass Options During Certification:

When applying for ENERGY STAR certification, storm window manufacturers shall provide approved test laboratories with the following:

- i. Sample of storm window product to be certified.
- ii. 7” x 7” manufacturer sample of glass used in the storm window product, labeled with glass option name and performance characteristics.
- iii. Test report per NFRC 300 and NFRC 301 for the submitted glass option from a laboratory participating in the Lawrence Berkeley National Laboratory Inter-Laboratory Comparison.

Note: EPA has provided additional details on the certification and verification process for storm windows.

The test laboratory shall confirm that the glass option used in the storm window matches the submitted glass sample. The test laboratories shall confirm solar transmittance using the EDTM Solar Spectrum Meter (Model #SS2450) or an equivalent. The test laboratories shall confirm low-e coating type and

location using the EDTM Glass Check PRO (#GC3000) or Glass Check ELITE (#GC3200), or an equivalent. Equivalent equipment for confirming the low-e coating type may include equipment that directly measures resistivity or emissivity, such as EDTM #RC3175, AZ Technology TEMP 2000A, AZ Technology SRI 1000, Devices & Services AE1/RD1, and Inglas TIR 100-2, or an equivalent.

6) Operable Products:

If a manufacturer offers operable and fixed variations of the same product line, the manufacturer shall submit a sample of each type of storm window to be tested for air leakage.

7) Verification Testing:

All ENERGY STAR certified storm windows shall be subject to verification testing, to be administered by an approved third-party certification body. The verification testing shall consist of the following minimum elements:

- i. An approved test lab shall compare the submitted storm window sample to the glass sample submitted during the initial certification using the same method for confirming solar transmittance and low-e coating type described in Section 5 of the Eligibility Criteria document.
- ii. An approved test lab shall test the submitted storm window sample for air leakage using the test method referenced in Section 4 of the Eligibility Criteria document.

8) Effective Date:

The ENERGY STAR Exterior and Interior Storm Windows specification shall take effect immediately upon publication. To be certified for ENERGY STAR, a product model must meet the ENERGY STAR specification in effect on the model's 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.

9) Future Criteria Revisions:

ENERGY STAR reserves the right to change the 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 industry discussions. In the event of a specification revision, please note that ENERGY STAR certification is not automatically granted for the life of a product model.