



ENERGY STAR for Exterior and Interior Storm Windows

Draft 1 Criteria Webinar

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Agenda

- I. Introduction and Background**
- II. ENERGY STAR Proposed Draft 1 Criteria**
- III. ENERGY STAR Guiding Principles**
- IV. Climate Zones and Product Labels**
- V. Installation Instructions**
- VI. Consumer Checklist**
- VII. Program Timeline and Next Steps**



Introduction to Draft 1 Specification Webinar

- **On July 24, 2017, EPA released a proposal for ENERGY STAR Interior and Exterior Storm Windows, which includes the following documents:**
 - Draft 1 Version 1.0 Criteria (Partner Commitments and Eligibility Criteria)
 - Criteria Analysis Report
 - Consumer Checklist
- **The documents can be found at:**
https://www.energystar.gov/products/spec/exterior_and_interior_storm_panels_version_1_0_pd
- **The purpose of today's webinar is to:**
 - Review proposed Draft 1 Criteria
 - Answer clarifying questions from stakeholders



Background

- **Research**

- The US Dept. of Energy (DOE) funded several research projects to understand the technology and energy savings impact on residential homes.

- **Collaboration**

- DOE, LBNL, and PNNL
- AERC support and funded research
- Manufacturer and Stakeholder feedback

- **Transparency**

- Framework Document (Jan 2016) presenting issues and EPA's response to comments (August 2016)
- All key documents posted on web site for review
- Additional research and follow-up presented on web site



Background

- **Market Research**
 - Consumers purchase approximately 8 million storm windows every year
 - Only about 10% of those products currently use low-e glass
 - EPA estimates that the Draft 1 Criteria for storm windows have the potential to increase the market share for low-e storm windows
- **Key Analysis Finding** - Based on EPA's research and the research papers cited in the Criteria Analysis Report, the Agency believes that ENERGY STAR certified storm windows would satisfy all of the ENERGY STAR Guiding Principles and therefore are a good candidate for addition to the ENERGY STAR program.
- **Opportunity to address a missed market**
 - Lower-income households
 - Low-rise multi-family households
 - Households working with HUD and weatherization programs
 - Households in historic preservation districts



ENERGY STAR Proposed Draft 1 Criteria

- Exterior Storm Windows**

ENERGY STAR Climate Zone	Emissivity	Solar Transmission	Air Leakage (cfm/ft ²)
Northern	≤ 0.22	> 0.55	≤ 1.5
North-Central	≤ 0.22	≤ 0.55 or > 0.55	≤ 1.5
South-Central	≤ 0.22	≤ 0.55	≤ 1.5
Southern	≤ 0.22	≤ 0.55	≤ 1.5

- Interior Storm Windows**

ENERGY STAR Climate Zone	Emissivity	Solar Transmission	Air Leakage (cfm/ft ²)
Northern	≤ 0.22	> 0.55	≤ 0.5
North-Central	≤ 0.22	> 0.55	≤ 0.5
South-Central	ENERGY STAR certification not available for Interior Storm Windows in these zones.		
Southern			



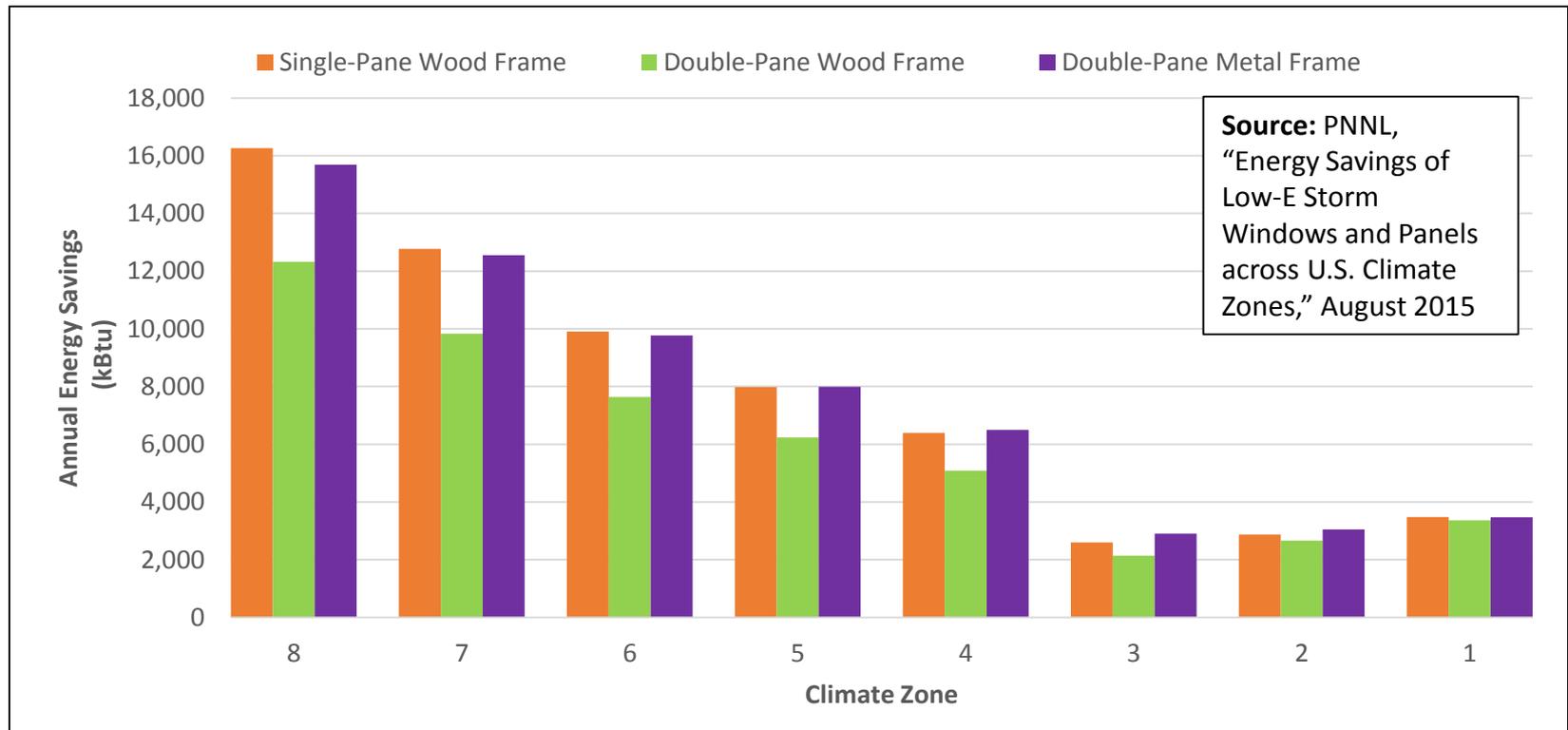
ENERGY STAR Guiding Principles

1. Significant energy savings on a national basis
2. Qualifying products are broadly available
3. Maintain or enhance product energy performance
4. Performance can be measured and verified
5. Reasonable payback period
6. Labeling would effectively differentiate products



1. Significant Energy Savings on a National Basis

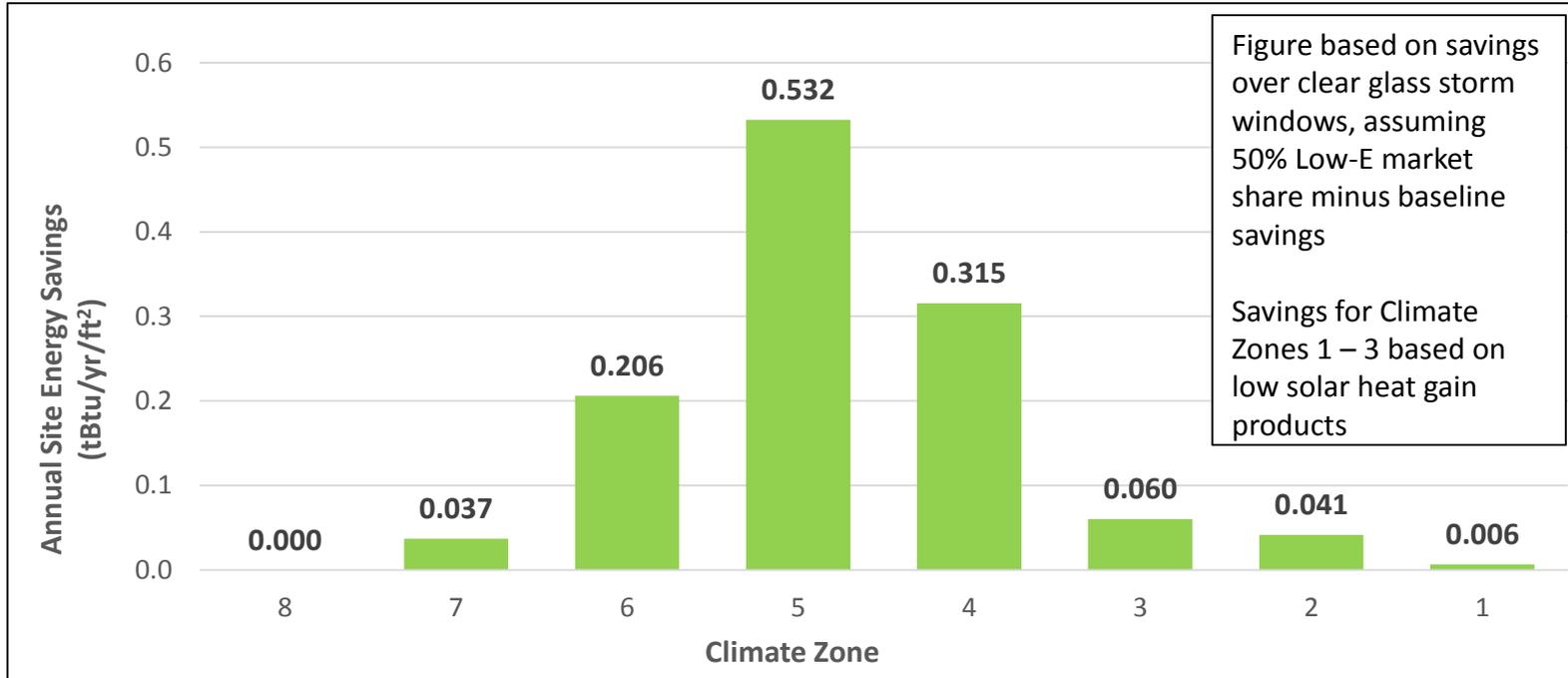
Annual Household Site Energy Savings for Low-E Storm Windows vs Clear Glass Storm Windows



Note: Savings for Climate Zones 1 – 3 based on low solar heat gain products



Potential National Savings from Low-E Storm Windows



Annual National Site Energy Savings, by Low-E Market Share

Low-E Storm Windows Market Share	Annual Site Energy Savings (tBtu)	Savings over Baseline (tBtu)
10% (Baseline)	0.299	-
25%	0.749	0.450
50%	1.499	1.200



2. Qualifying products are broadly available

- **Retail Research:**

- Researched price and availability of storm windows in 6 major U.S. cities: Boston, MA; Miami, FL; Madison, WI; San Francisco, CA; Fort Collins, CO; St. Louis, MO
- Found 121 different storm windows, 88 of which were low-e storm windows (includes different sizes in the same product line)

- **The IGDB Analysis:**

- Analyzed number of distinct glass options in IGDB that would meet the proposed criteria.
 - Identified 12 glass options from 5 manufacturers that would qualify for the proposed Northern Zone criteria
 - Identified 17 glass options from 4 manufacturers that would qualify for the proposed Southern Zone criteria.



3. Maintain or enhance product performance

EPA investigated a number of issues related to product performance raised in stakeholder comments. Based on research and feedback, EPA plans to address these concerns as follows:

- **Safety and Structural Certification**
 - EPA proposes to require a reference in installation instructions to follow safety requirements defined in local building codes.
 - EPA proposes to allow the use NAFS air leakage testing (if it is shown to have equivalent performance); however, EPA would not require products to be certified and labeled according to NAFS.
- **Condensation**
 - EPA proposes that weep holes or other moisture management technologies be required for exterior storm windows to mitigate the potential for condensation issues.
- **Visual Transmission**
 - EPA will provide educational materials, including a checklist for consumers, with information about the effect of low-e glass on visual transmittance.



4. Performance can be measured and verified

- **Performance metrics**

- Emissivity, Solar Transmittance, Air leakage
- Metrics align with current regional storm window programs (air leakage is an additional requirement).
- All the metrics can be measured and verified with testing.

- **Certification Requirements**

- EPA will use its standard process to solicit organizations to test and certify ENERGY STAR storm windows.
- Storm window manufacturers will submit application to approved certification bodies for models they wish to certify as ENERGY STAR.
- The certification bodies will confirm that product meets requirement for emissivity, solar transmission, and air leakage and submit data on certified products to EPA to be listed on the ENERGY STAR website.



- **Air Leakage Test Procedure**

- EPA proposes that air leakage be measured in accordance with AERC 1.2 test procedure “Physical Test Methods for Measuring Energy Performance Properties of Fenestration Attachments.”

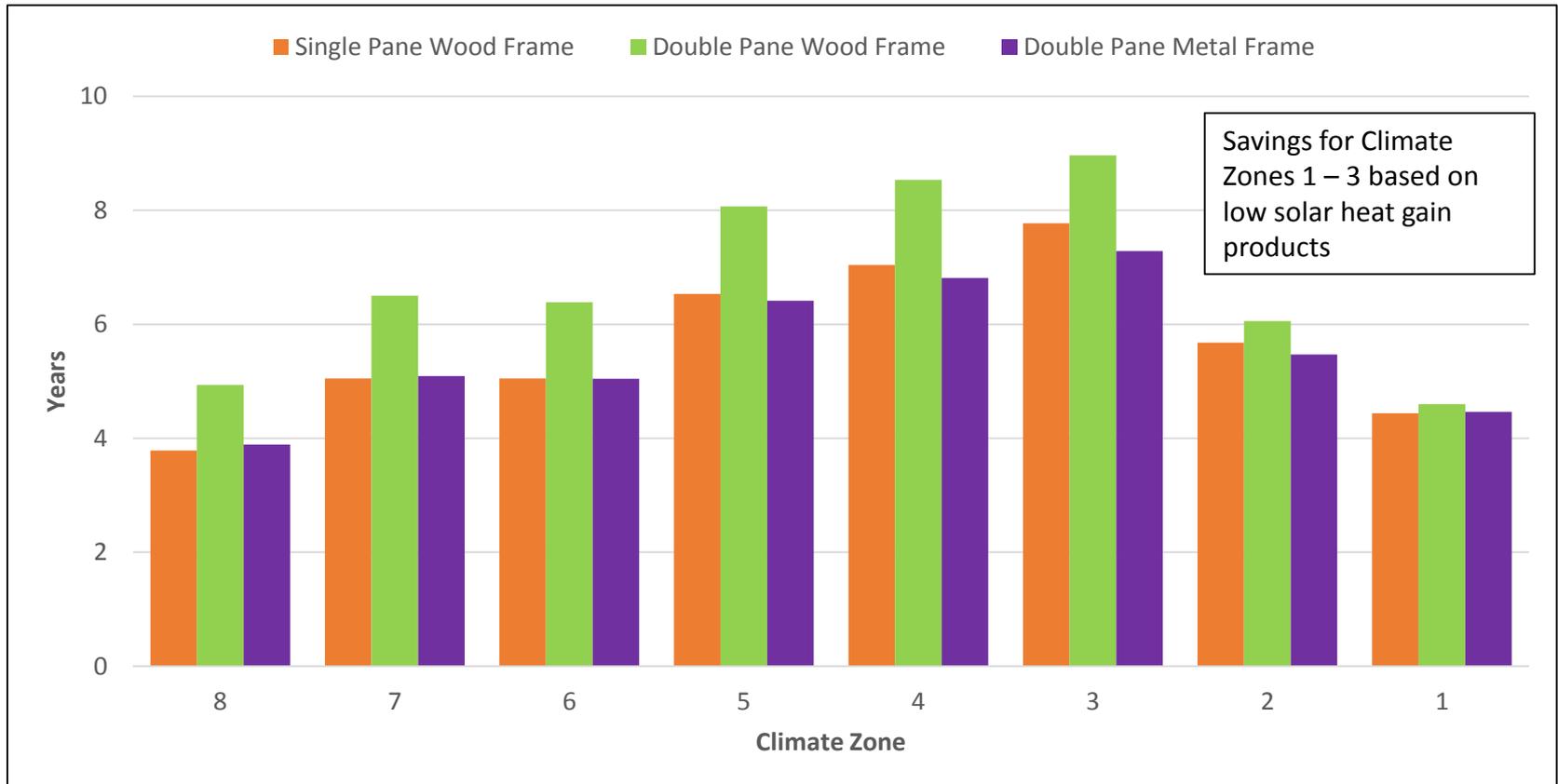
- **Alternative Certification**

- The Attachments Energy Rating Council (AERC) is currently developing procedures to certify fenestration attachments, including storm windows, for U-factor, SHCG, and Annual Energy Performance (AEP).
- AERC expects to publish technical documents on product certification by Fall 2017.
- Once available, EPA will evaluate these procedures to determine if they should be included as an alternative path for ENERGY STAR certification.



5. Reasonable payback period

Incremental Payback for Low-E Storm Windows



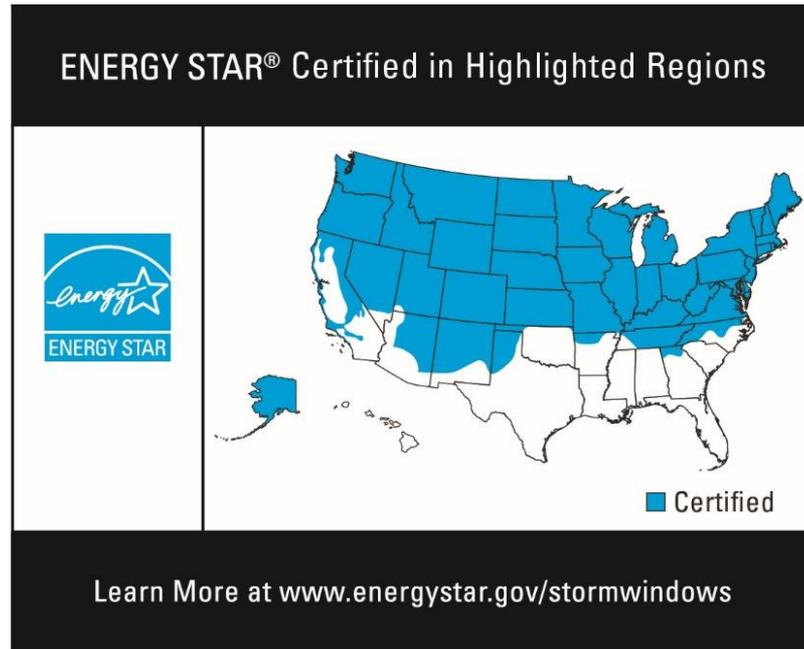


6. Labeling would effectively differentiate products

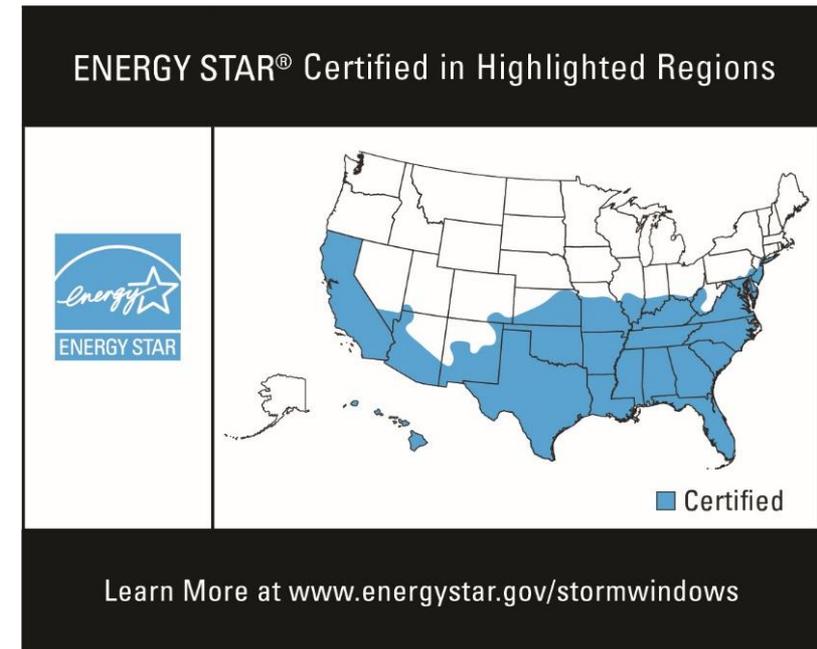
- An ENERGY STAR label will help consumers identify better performing storm windows with low-e coatings from clear glass storm windows.
- It can be hard to differentiate low-e glass from clear glass. A label should help consumers who find it challenging to understand and trust the marketing material about the technology.
- ENERGY STAR certification for storm windows will help utilities and weatherization programs promote the option of low-e storm windows or offer rebates/incentives to homeowners for installing ENERGY STAR certified storm windows.

Proposed Climate Zones and Product Labels

Label 1: North/North-Central Zone



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



NOTE: North-Central Zone can use either higher-gain or lower-gain low-e glass.



Installation Instructions

To qualify for ENERGY STAR, EPA is proposing that storm window manufacturers provide installation instructions online or packaged with the product, that include:

- 1) A list of hardware and tools required for installation.
- 2) Diagrams and descriptions of product installation.
- 3) Guidance on proper installation distance from primary window.
- 4) Guidance on thermal breaks when installed over metal frame primary windows.
- 5) Guidance on ensuring a properly sealed installation.
- 6) Information on applicability of the storm window operator type to primary window operator type, especially with respect to any egress requirements.
- 7) A reference to safety requirements defined in local building codes



Consumer Checklist

To educate consumers about low-e storm windows, EPA proposes to publish a ‘Consumer Checklist’ on its website. EPA is including a draft of this checklist for feedback with the Draft 1 Specification.

- **Checklist includes purchase considerations, such as:**
 - Condition of the primary window
 - Emergency egress
 - Local building codes
 - Visual transmittance with low-e glass
 - Storm windows in extremely hot climates
- The full checklist is available on the ENERGY STAR website listed in the announcement.



Program Timeline and Next Steps

Timeline	
Draft 1 Specification & Criteria and Analysis Report	July 2017
Stakeholder Meeting	August 3, 2017
Comments Due	August 31, 2017
EPA Response to Draft 1 Comments	October 2017 (est.)
Final Draft Specifications	November 2017 (est.)
EPA Response to Final Draft Comments	November - December 2017 (est.)
Publish Version 1.0 Requirements	December 2017 – January 2018 (est.)
Criteria Take Effect	Immediately following publication (est.)

Comments should be submitted in writing to the ENERGY STAR Windows Team at:

windows@energystar.gov by August 31, 2017



Questions?

Contact Information:

ENERGY STAR Windows General Mailbox (for comments)

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Thank you!