



ENERGY STAR® for Exterior and Interior Storm Panels

Specification Framework Webinar

January 14, 2016

The Webinar will begin shortly.

Call-in Number: (866) 299-3188

Code: 2023439350

- Please mute your lines
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Doug Anderson

U.S. Environmental Protection Agency

Project Manager

ENERGY STAR Windows, Doors, and Skylights

and

Brian Booher

D+R International

Program Technical Lead



Welcome!

- **Thank you for participating**
- Please mute phones and laptops
- Please use chat feature to ask questions
- Designated note takers will capture questions and issues raised
- Presentation will be posted on the specification development page:
http://www.energystar.gov/products/spec/exterior_and_interior_storm_panels_version_1_0_pd



Agenda

- I. Introduction to Specification Framework Webinar
- II. ENERGY STAR Guiding Principles
- III. Background and Research
- IV. Definitions
- V. Scope
- VI. Qualification Criteria
- VII. Test Methods
- VIII. Next Steps



Introduction to Specification Framework Webinar

- EPA is considering a potential new ENERGY STAR[®] product specification for exterior and interior storm panels
- The purpose of today's webinar is to:
 - Review key proposals and discussion questions from the Specification Framework Document
 - Answer clarifying questions from stakeholders
- Comments and additional questions should be submitted in writing to the ENERGY STAR Windows Team at windows@energystar.gov by **February 12, 2016**



ENERGY STAR Guiding Principles

- ✓ Significant energy savings on a national basis
- ✓ Maintain or enhance product performance
- ✓ Reasonable payback period
- ✓ Qualifying products are broadly available
- ✓ Performance can be measured and verified
- ✓ Labeling would effectively differentiate products



Why Consider a Specification Now?

Market Innovation

- Storm panels with Low-E glass were introduced to the market in 2009

Certification Program

- The Attachments Energy Rating Council (AERC) formed in 2015 to develop technical procedures to certify the energy performance of fenestration attachment products

New Research

- DOE has sponsored research from PNNL and LBNL on the technical properties, market, and energy savings potential of storm panels
- See page 2 of Framework Document for citations



Results of Third-party Research

High per-unit savings:

- Low-E storm panels can **reduce heating and cooling energy use by 5%-14%** over clear glass storm panels

Large potential market:

- Storm panels are installed in approximately 500,000 homes annually, but it is estimated that **only 10% currently use Low-E glass**

Existing market barriers:

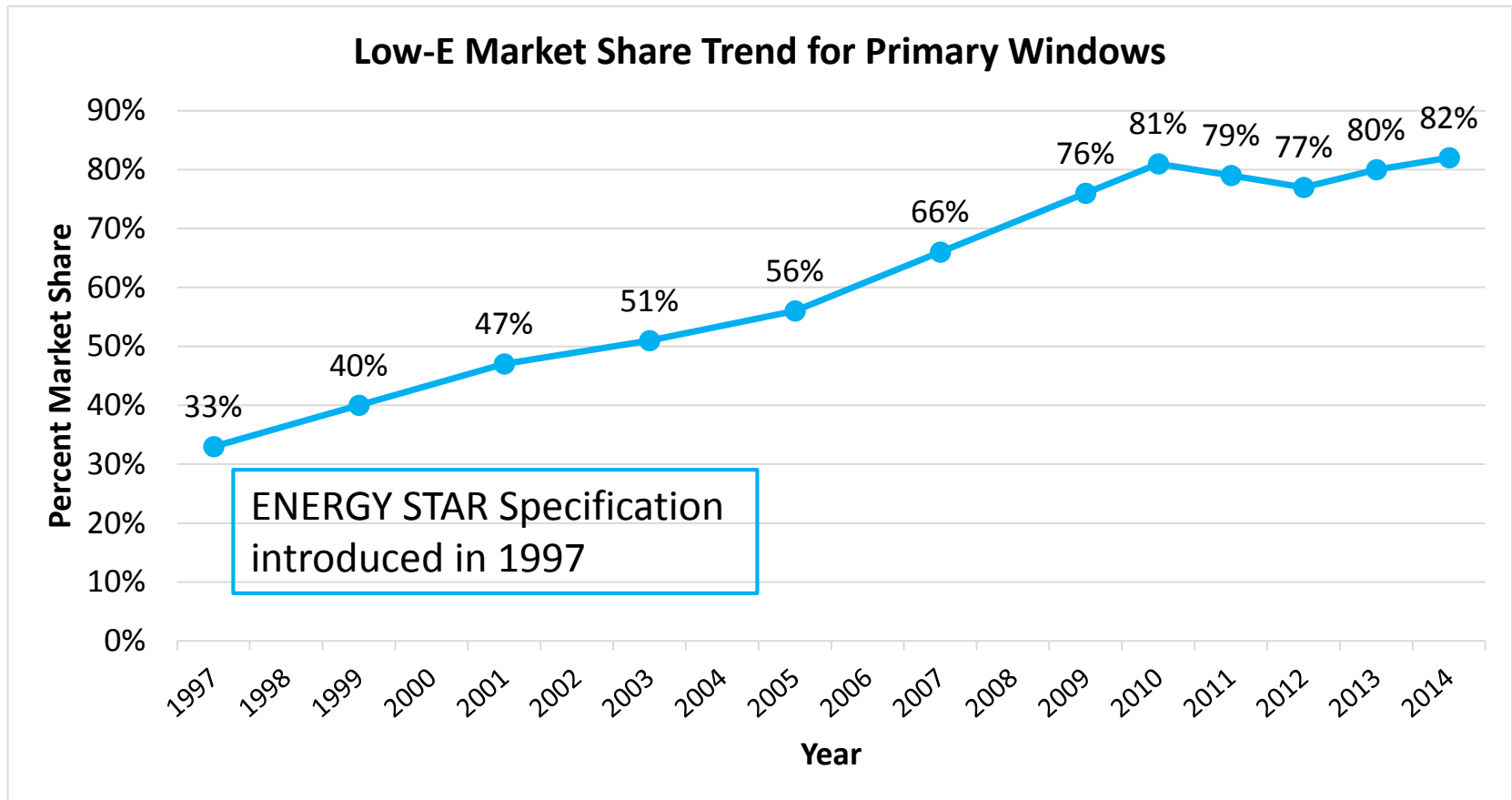
- **Lack of recognition** by energy rating and certification systems has been cited as a reason for low market adoption

Affordable and cost-effective:

- Low-E storm panels have an expected incremental **payback of approximately 5 years or less**



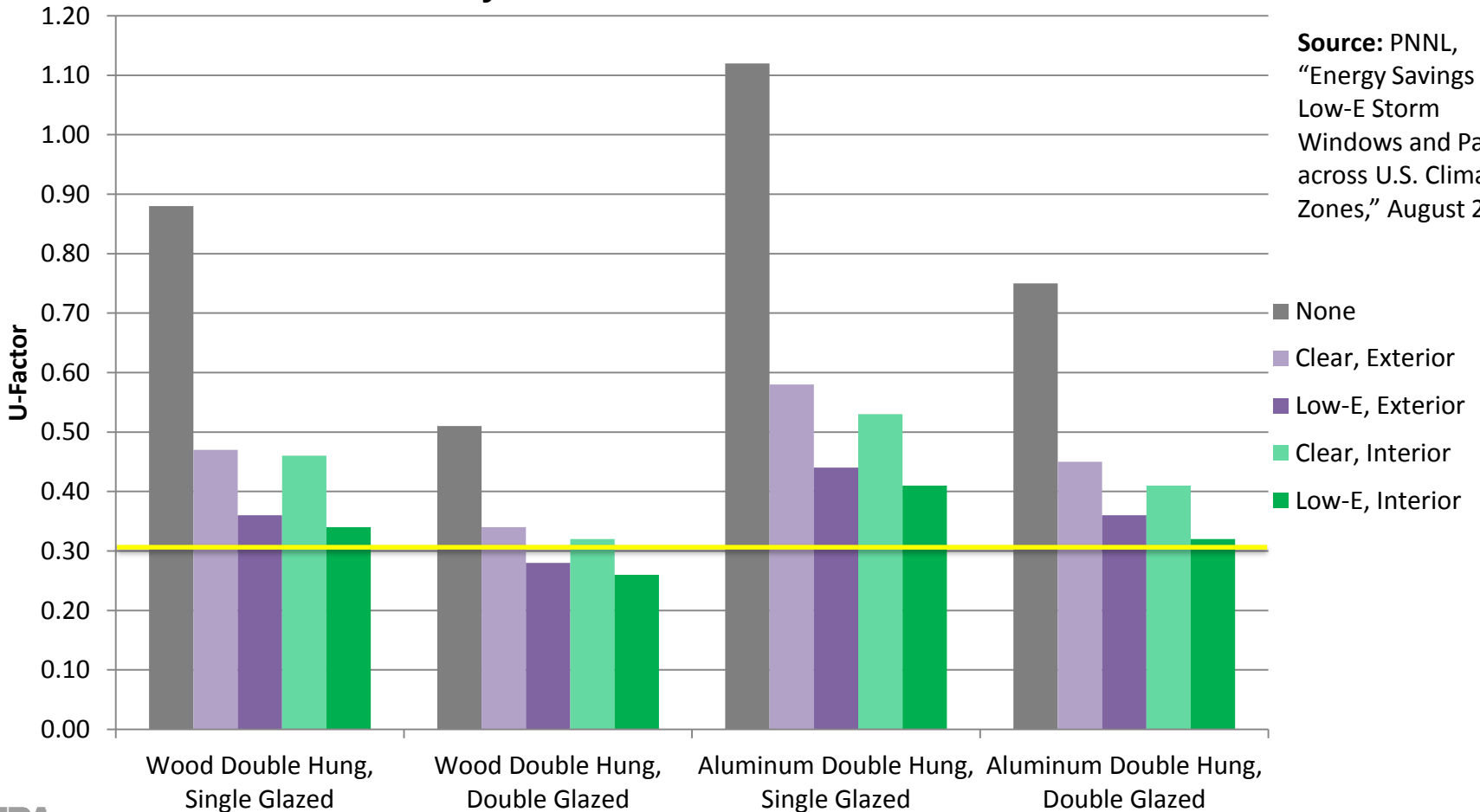
State of the Market





Energy Savings

U-factors of Window Systems with Interior and Exterior Panels

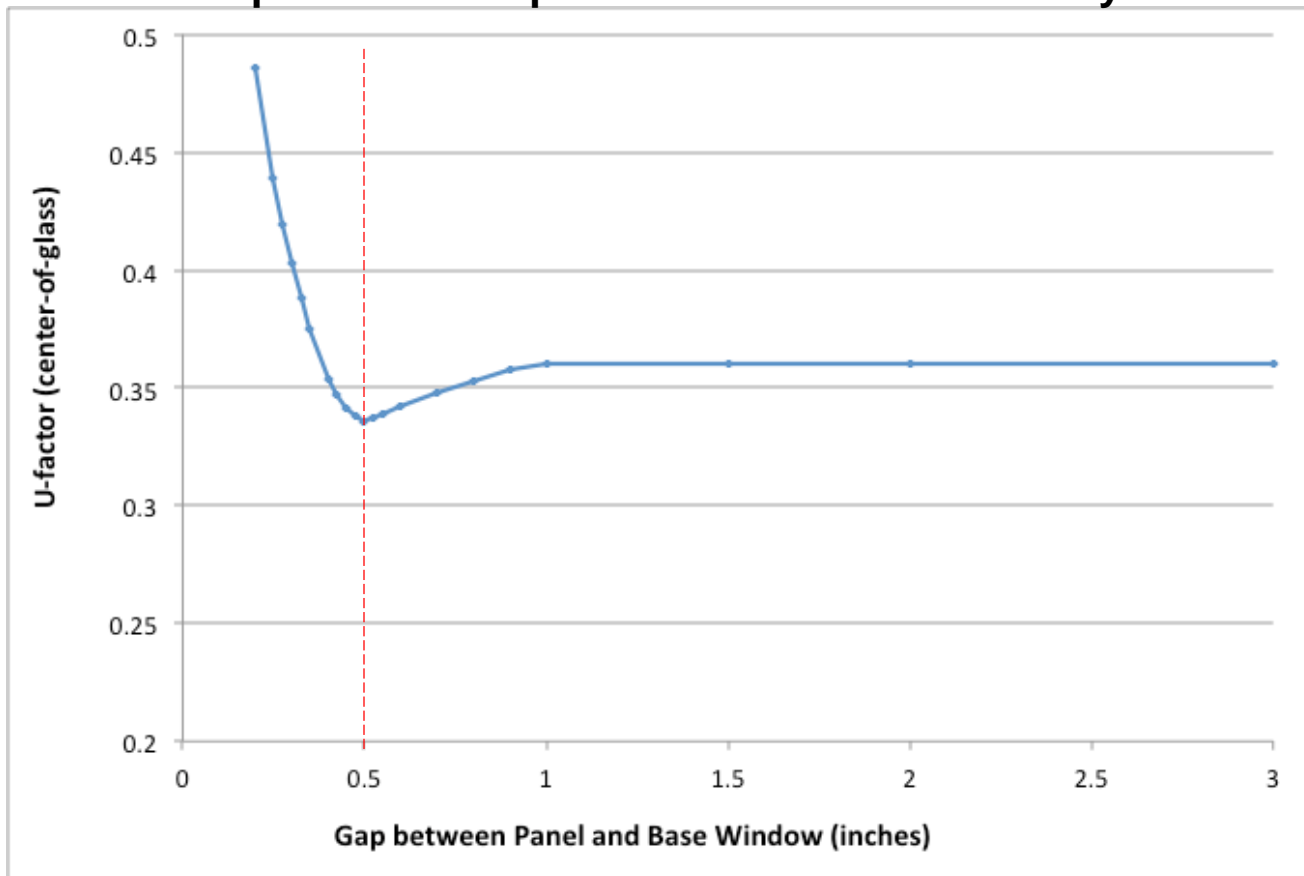


Source: PNNL, "Energy Savings of Low-E Storm Windows and Panels across U.S. Climate Zones," August 2015



How Storm Windows Improve Insulation

U-factor Impact of Air Gap between Panel and Primary Window

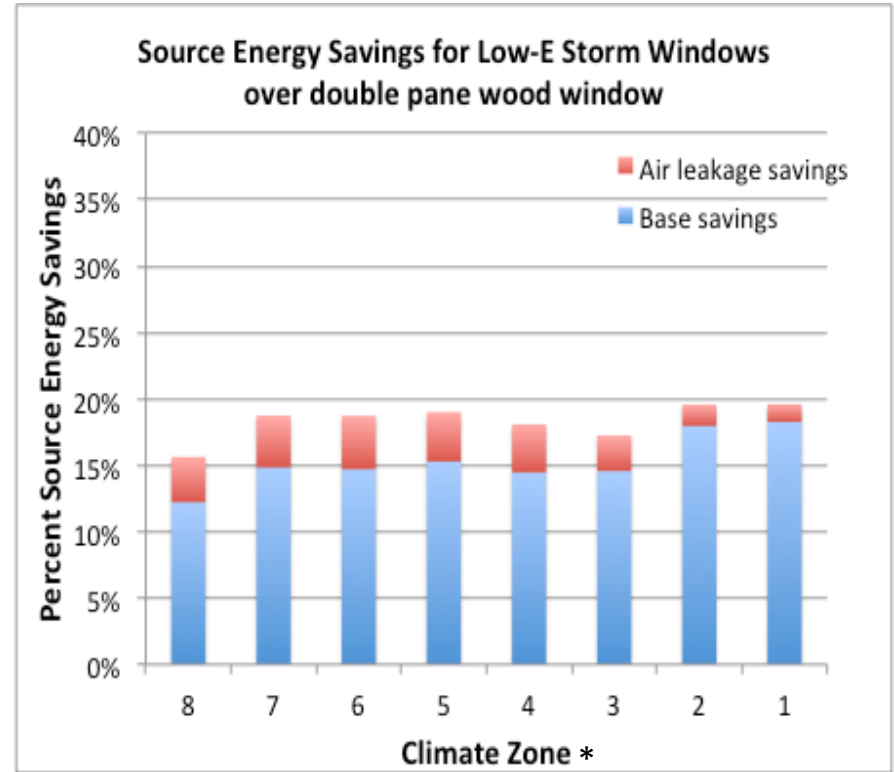
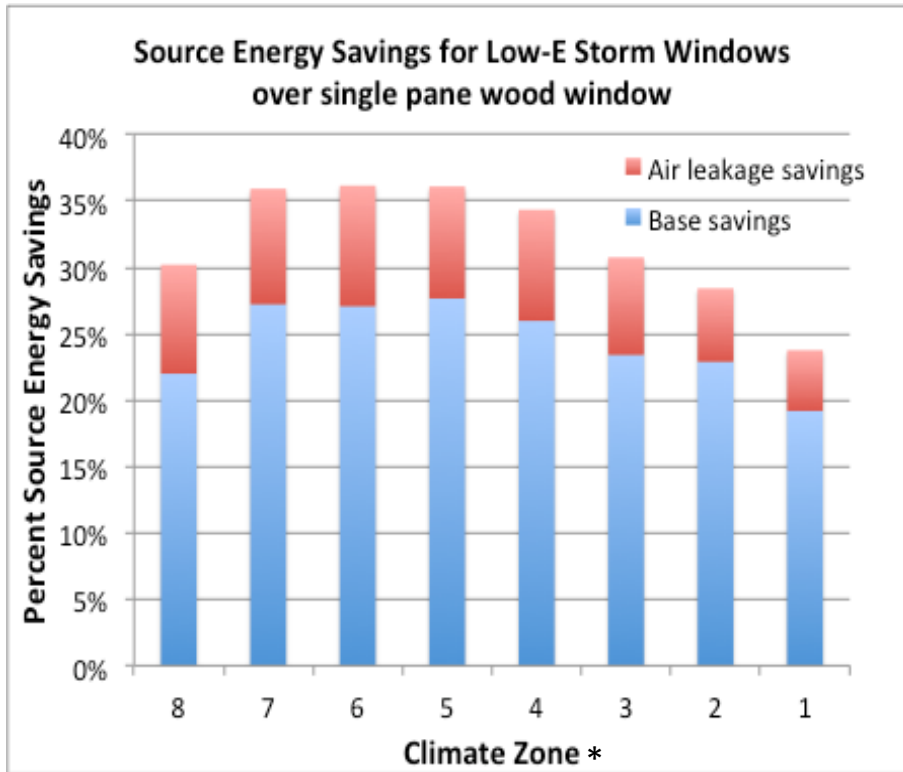


Panels should be installed at least 0.5 inches away from base window.

Source: PNNL, "Thermal and Optical Properties of Low-E Storm Windows and Panels," July 2015



Household Energy Savings

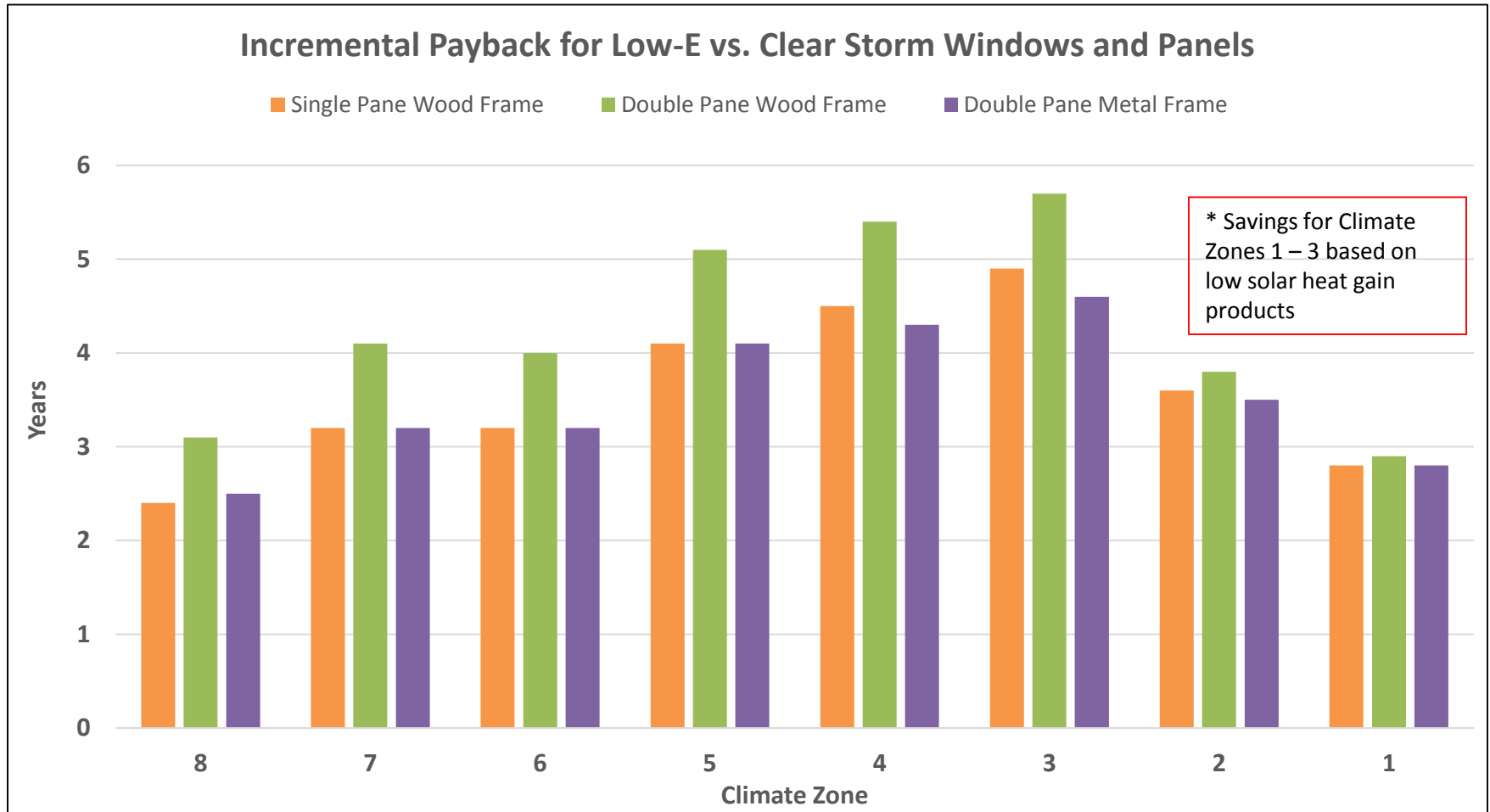


Source: PNNL, “Energy Savings of Low-E Storm Windows and Panels across U.S. Climate Zones,” August 2015

* Savings for climate zones 1 – 3 based on low solar heat gain products



Cost-Effectiveness and Payback





Questions on Background and Research

- Should EPA be aware of any other studies that support or refute the cited research?
- Are there any general concerns with EPA developing an ENERGY STAR specification for exterior or interior storm panels?



Definitions

- In the framework document, EPA provides definitions for product types, performance metrics, and other key terms
- EPA attempted to use industry standard definitions where available

Questions on Definitions:

- Are there more widely accepted terms industry uses for exterior and interior storm panels?
- Do the performance metric definitions match industry terms?
- Are there other terms relevant to this product category that should be defined as part of the specification development process?



Scope of the Specification

Included Products:

- Products that meet the definitions of exterior and interior storm panels that are intended for use in residential buildings

Excluded Products:

- Exterior storm panels without weep holes or other features that allow moisture to drain from between the storm panel and primary window.
- Partial components of exterior or interior storm panels.
- Storm doors or door inserts.
- Other related fenestration attachments, including window films, curtains, blinds, shades, shutters, awnings, and jalousie windows.



Questions on Scope

- Is there research and analysis available that supports including any excluded products in the scope of this specification development?
- Are there any subtypes or applications of exterior and interior storm panels that should be ineligible for ENERGY STAR certification? Please explain why these should be excluded.



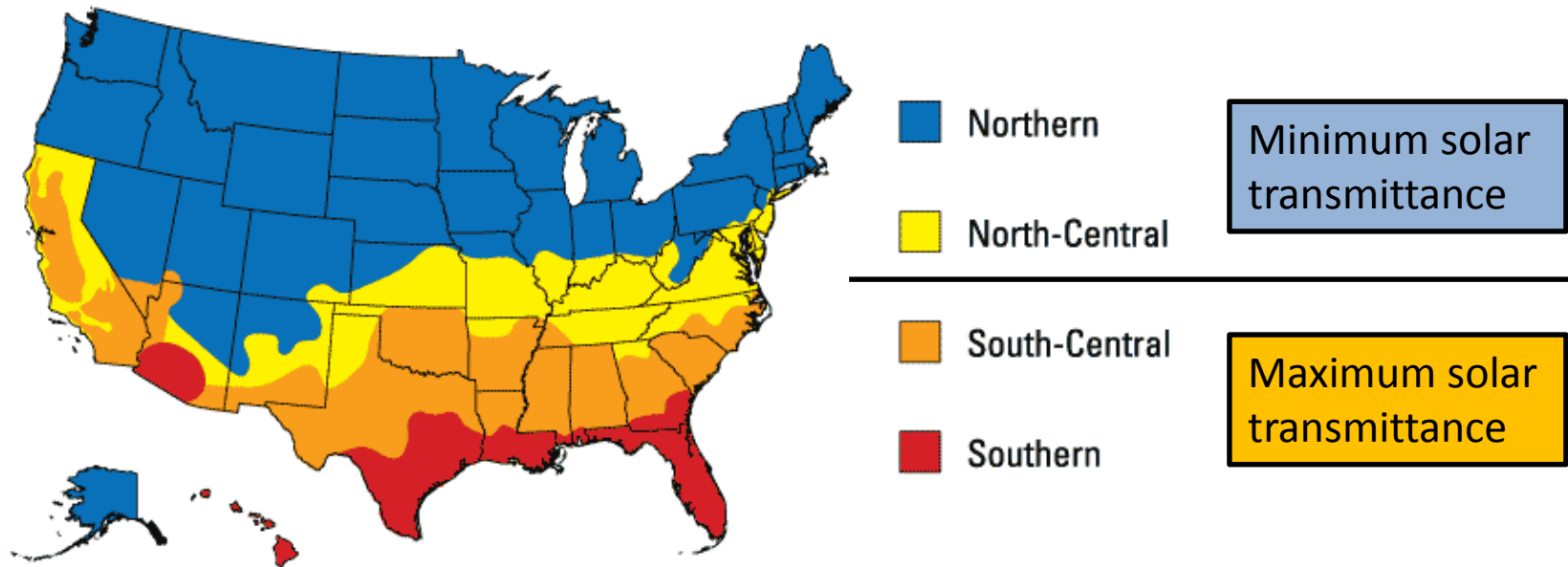
Qualification Metrics and Criteria

- EPA is not proposing specific qualification criteria for exterior and interior storm panels at this time
- Potential qualification criteria will be assessed through an iterative specification development process
- EPA is proposing to use the following metrics:
 - Emissivity
 - Solar Transmittance (T_{sol})
 - Air Leakage
- EPA will consider using existing regional energy efficiency and utility programs as a basis for ENERGY STAR qualification criteria

Using metrics for glass properties can effectively differentiate high performance products

Climate Zones

EPA proposes that storm panel qualification criteria vary based on the climate zone in which the product is installed.





Installation Instructions

Manufacturers should be required to provide installation instructions packaged with the product or readily available online

Proposed elements 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 framed primary windows
5. Guidance on properly sealed installation
6. Information on applicability of the storm panel operator type to primary window operator type (egress requirements)
7. Information on installing the storm panel on different types of openings



Questions on Qualification Criteria

- Should EPA consider additional or different qualification criteria?
 - U-Factor or SHGC?
- What specific performance levels should EPA propose?
- Should there be maximum T_{sol} requirements for southern climates and minimum T_{sol} requirements for northern climates?
- Are there scenarios where exterior or interior storm panels would negatively affect the performance of primary windows?
- What elements should be required (or not required) for installation instructions?



Product Certification and Test Methods

- AERC is working to develop technical procedures for product certification and expects to begin certifying products in early 2017
- EPA seeks comment on the applicability of the following industry-accepted test methods to exterior and interior panels:
 - Solar transmittance of glazing materials measured in accordance with **NFRC 300-14** and be listed in the IGDB
 - Emissivity of glazing materials measured in accordance with **NFRC 301-14** and be listed in the IGDB
 - Air leakage tested in accordance with **ASTM E283** at a test pressure of 75 Pa (1.57 psf) applied to the exterior and interior sides of the product
- EPA proposes using glazing materials listed in the IGDB to assess availability of products at different criteria levels



Questions to Consider

- Can the test methods listed above be used to accurately measure the energy performance of exterior and interior storm panels for the purposes of an ENERGY STAR program?
- Can the performance ratings in the IGDB be used to assess the availability of glazing options when evaluating qualification criteria? If not, what specific alternatives do stakeholders suggest?
- Considering that weep holes or other water drainage features are a necessary component of high-quality storm panels, should an alternate air leakage test method be considered?



Next Steps

Milestone	Expected Date
Deadline for Written Comments on Framework Document	February 12, 2016
Draft 1 Specification Issued	Summer 2016
Final Specification Issued and Effective	2017

Please send comments to windows@energystar.gov



Doug Anderson

Environmental Protection Agency

Anderson.Doug@epa.gov

Brian Booher

D+R International

Bbooher@drintl.com

ENERGY STAR Windows

windows@energystar.gov