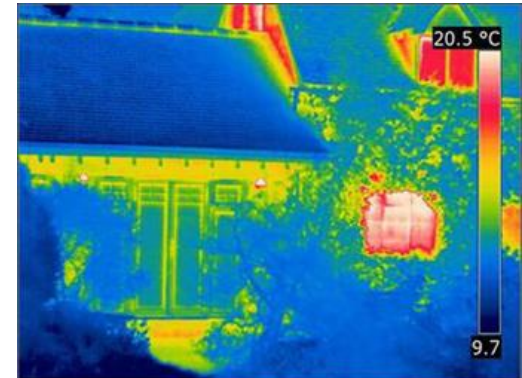
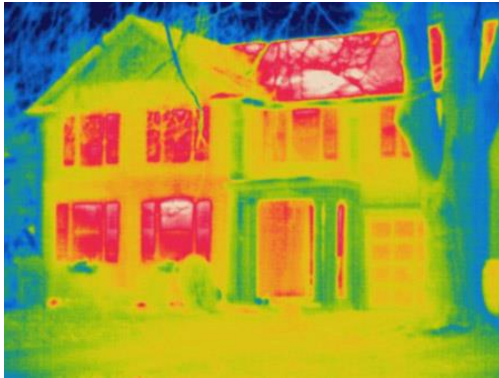


# **Highly Insulating (R-5) Windows for Illinois Utility Energy Efficiency Programs**

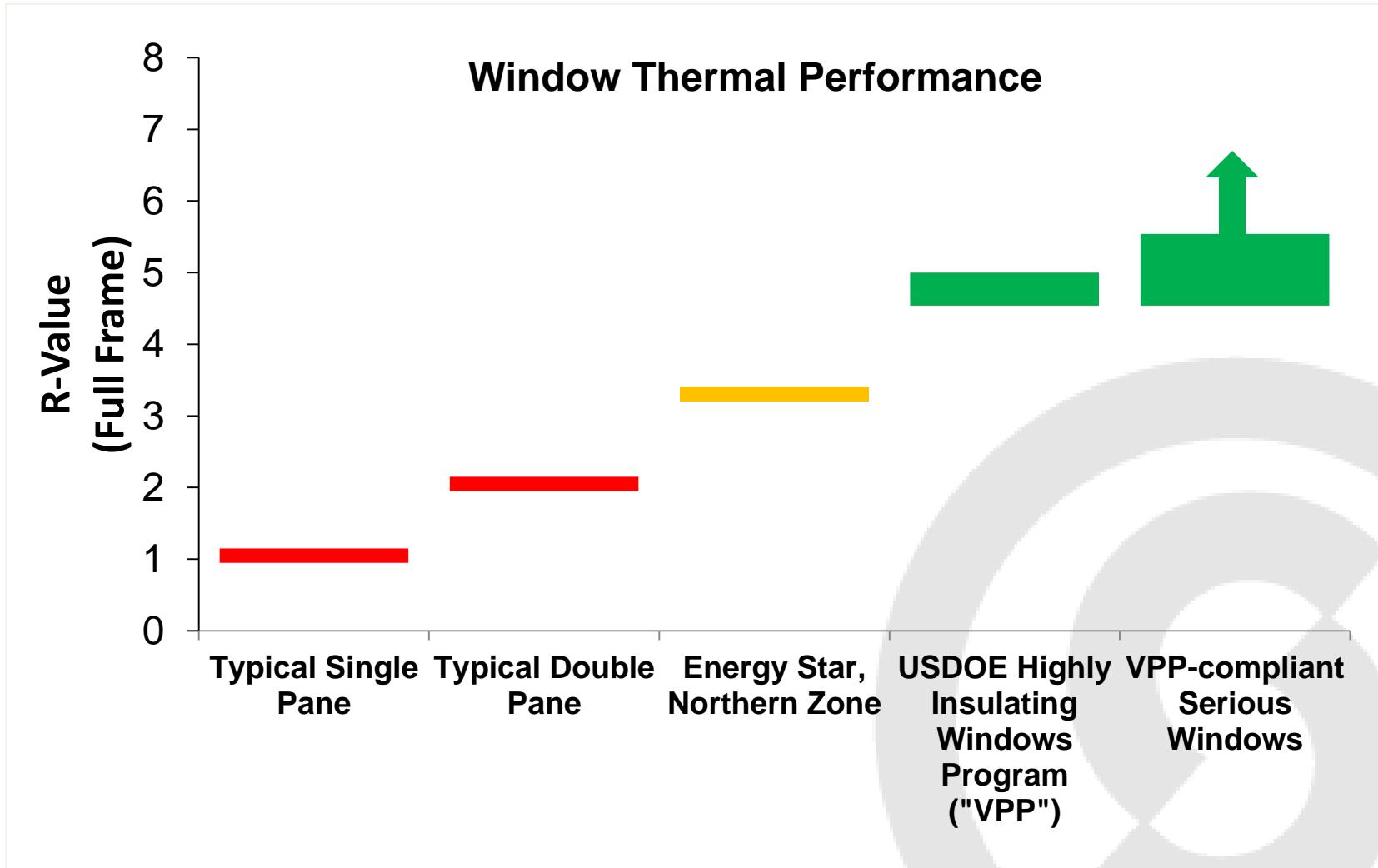
Presented to:  
Illinois Stakeholder Advisory Group  
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## Highly insulating windows: a large efficiency opportunity



- **~39% of US CO<sub>2</sub> emissions is tied to building operations, of which ~38% is used for heating & cooling**
- **Much of that now goes out the window – but doesn't need to**
  - Thermal transfer through the window
  - Air infiltration around and through the window
- **Windows can be cost-effective, either as a stand-alone measure or as part of a whole-home approach**



- **US DOE developed a specification for highly insulating (R-5) windows**
  - “Volume Purchase Program” (VPP)
  - Significantly higher performance than required for Energy Star
- **Highly insulating:**
  - NFRC rated
  - R-4.54 for operable windows (double hung, casement, slider, awning)
  - R-5.0 for fixed windows
  - Note: Energy Star northern zone requires R-3.3
- **Other critical window attributes**
  - Structural rating: AAMA Residential 25 Performance grade or greater
  - Air infiltration: < 0.3
  - Product warranty: glass: 10 years; other: 20 years
  - Note: Energy Star does not specify these critical attributes

- **IL DCEO updated the statewide WAP audit tool to enable assessment of R-5 windows**
- **CEDA\*\* evaluated and now regularly specifies R-5 windows in WAP**
  - Full R-5, including for operable windows
  - R-5 windows are specified often, but not always
  - Lower performing windows not used
- **Serious Materials and at least one other vendor now supply R-5**
- **Other vendors likely to begin supplying soon**

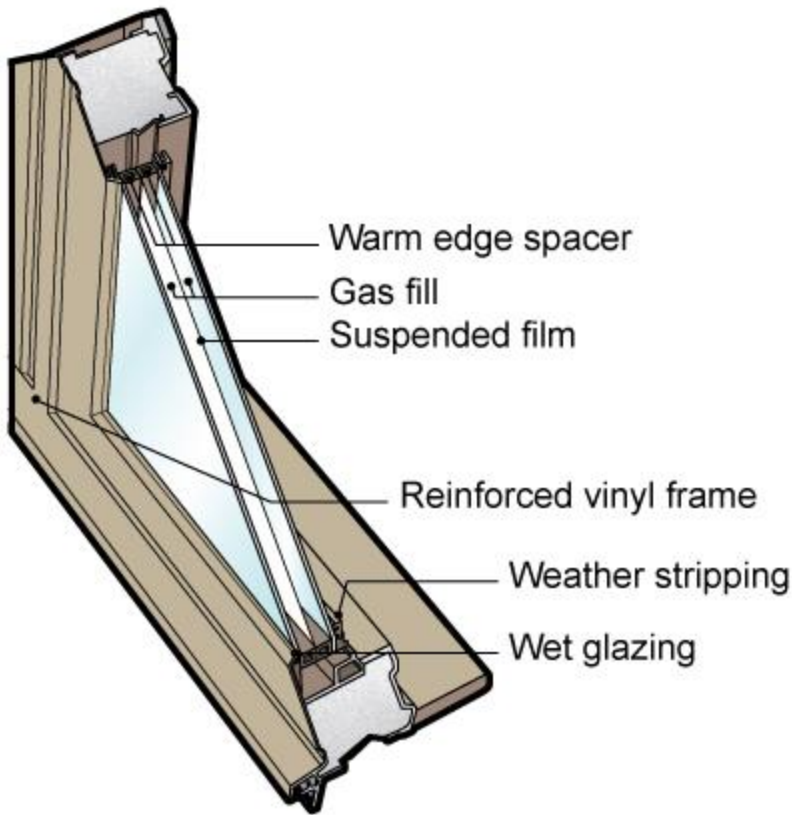


*Windows Work for  
Weatherization*

\* Illinois Home Weatherization Assistance Program

\*\* Community and Economic Development Association of Cook County

- **USDOE VPP set incremental price goal of <\$4/sqft for R-5 windows**
- **Driving incremental cost down requires high volume**
- **Cost vs. price?**
- **No incremental installation cost for Serious Windows**
  - Some other R-5 technology (eg, triple-pane glass) weighs more; may increase installation cost
- **Serious Materials is committed to driving higher performance/lower cost, through:**
  - Technology
  - Productivity
  - Investment
  - Volume
  - Partners
  - and not by squeezing wages and using questionable input materials



**A unique combination of key technologies deliver full frame R-value to offer high insulation and energy savings.**

Key Technologies	Benefits
Warm edge spacer	High insulation spacer technology extends SeriousWindows high center of glass R-values to the edge of the frame.
Inert gas fill	Argon, krypton, or xenon gas strategically placed between SeriousGlass™ and suspended film maximizes R-value by suppressing conduction and convection within our glass unit.
Suspended film	Suspended film reduces convection and energy transfer without the weight and size of more glass. Suspended film systems are customized in order to uniquely tune the window for thermal efficiency and maximum comfort. SeriousWindows suspended film systems offer UV protection up to 99.9%.
Weather stripping	Weather stripping substantially reduces air leakage and ensures the highest energy performance.
Wet glazing	Minimizes air leakage at the glass to sash bond, increasing R-value performance.

## Our Chicago plant: Putting skilled workers back to work

- Former owners declared bankruptcy, throwing 250 out of work in Dec 2008
- Serious acquired in 2009
- New equipment installed, products certified
- Hiring workers back as fast as demand for highly insulating products allows
- Large capacity



“This is more than just a job to me...I know we have to change...we can get this green bandwagon rolling .”

– Robin Scott, Serious Materials PA employee





- **Serious Materials works through several highly capable channels suitable to retrofits, e.g.,:**
  - Lowes (which offers both windows-only and installation)
  - Specialist window dealers
  - Contractors
  - Other specialists



- **Rebate for purchasers of R-5 windows**
  - Based on incremental cost of R-5 vs ENERGY STAR windows?
  - Based on value of incremental energy savings over ENERGY STAR?
  - Based on full value of energy savings over ENERGY STAR?
- **Co-fund IHWAP for households in which investment cap is exceeded**
  - IHWAP has an investment cap of ~\$5,500/household
  - Windows often not put in to full cost-effective potential due to the cap
- **Whole Home Program**
  - Windows as part of whole home approach due to interactive effectiveness with other efficiency measures
  - High performance windows may allow for down-sizing HVAC
- **Other ideas?**

## **KEY Questions**

- **Can windows be cost-effective?**
  - Yes – especially when full benefits are assessed, including reduced air infiltration, and both gas and electric savings
  - Particularly cost-effective if program design causes people who were planning to install windows to upgrade to highly insulating R-5 windows
- **Can windows be important as part of a whole home strategy?**
  - Yes - Reducing air infiltration can lower heating and cooling loads, reducing the required size of furnaces and boilers
- **Do highly insulating windows have non-efficiency benefits?**
  - Jobs in local manufacturing and installation
  - Improved occupant comfort
- **Can including windows in utility programs motivate consumers?**
  - Yes - Unlike building envelope measures people don't see or interact with on a daily basis, many people get excited about new windows because they look good, work well, and reduce draftiness.
  - New windows can attract consumers to energy efficiency programs



**We're here to work with you**

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