

## LABORATORY RESOURCES

- Capable and trained faculty, staff, and students
- Equipped for Window Testing and Performance Characterization for:
  - Glass Material
  - Thermal Radiation
  - Low-E-Coating
  - Sound Transmission
  - Solar Heat Gain Coefficient
- Evaluation of Wall and Ceiling Insulation Performance for:
  - Insulation Material
  - Siding and Paint Material
- Evaluation of Roof Material and Insulation Performance Characterization for:
  - Composition shingles
  - Tiles
  - Metal
- Equipment and Facility
  - Various equipment to perform testing for characterization of window glass products and Materials, determination of U, R, E and G values, visible and Ultraviolet (UV) light transmission, window glass coating thickness, insulation material R-values, and noise reduction coefficient.



## SPONSORS

Therma Corporation



Lutron Electronics



Sylvania Lighting



Jeld-Wen Windows



Home Depot



Lowe's



## CONTACT

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## Smart Home and Energy Efficiency Laboratory



## Mechanical and Aerospace Engineering San Jose State University

## LABORATORY

The Smart Home and Energy Efficiency Laboratory provides state-of-the-art research and education capabilities to provide students with relevant experience and skills to enter the workforce for the emerging and growing industries.

This laboratory could provide industry with performance testing of products in meeting NFRC ratings.



## SMART HOME

The smart home is defined as a 'building' where various devices, equipment, and products can be monitored and controlled through the application of smart mobile devices. This includes the control of lighting, heating and cooling, consumer electronics, safety and security, smoke and hazardous gases.



## ENERGY EFFICIENCY

Home energy refers to the efficient use of energy such as natural gas, electricity and home heating in maintaining a 'comfortable' environment. Application of smart mobile devices and the emerging technology would allow for improved Energy Management of Energy Efficient Homes.

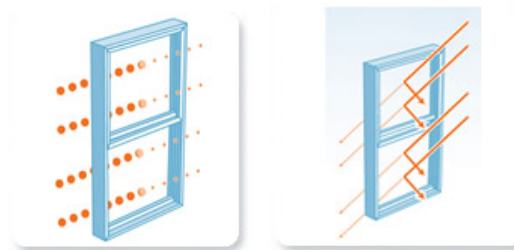


## NATIONAL FENESTRATION RATING COUNCIL

The NfRC administers an independent, uniform rating and labeling system for the energy performance of fenestration products such as windows. NFRC 100 standard provides rating on a variety of factors related to the energy performance of windows such as the U-factor, Solar Heat Gain Coefficient, Transmission of Light, Air Leakage and Condensation Resistance.



## THERMAL TRANSMISSION



## WINDOW ENERGY PERFORMANCE RATING

	<b>World's Best Window Co.</b> Series "2000" Casement Vinyl Clad Wood Frame Double Glazing • Argon Fill • Low E ABC-X-1-00001-00001	
	<b>ENERGY PERFORMANCE RATINGS</b>	
U-Factor (U.S. / I-P)	Solar Heat Gain Coefficient	
<b>0.35</b>	<b>0.32</b>	
<b>ADDITIONAL PERFORMANCE RATINGS</b>		
Visible Transmittance	Air Leakage (U.S. / I-P)	
<b>0.51</b>	<b>0.2</b>	
<small>Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org</small>		

## WINDOW, WALL, ROOF, INSULATION



## RADIATION AND LOW-E COATING



## WINDOW SOUND TRANSMISSION



## CFL AND LED LIGHTING

