# LOW-E RETROFIT DEMONSTRATION AND EDUCATIONAL PROGRAM

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NAHB Research Center

AGC Flat Glass North America, Inc.

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Larson Manufacturing Company

Pilkington North America, Inc.

***Objective:***

Demonstrate the capability of low-e storm windows & retrofit glazing systems to improve the energy efficiency of existing residential and commercial building stock.

$853,962 Federal, $713,574 Cost Share

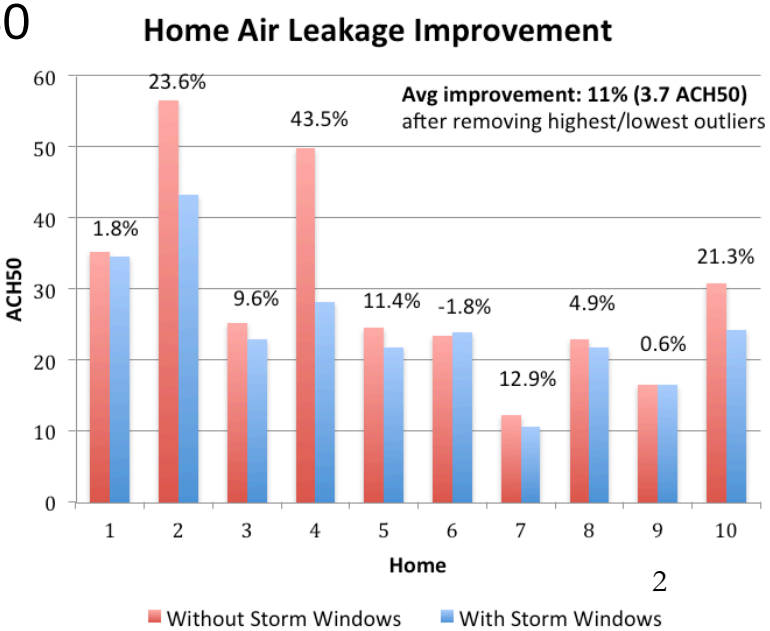
***Task areas:***

- Residential Case Study in Warm/Mixed Climate (building on previous cold climate study)
- Commercial Case Studies
- Weatherization Educational Program

# Low-E Retrofit Demonstration & Education Program

## Residential Case Study in Warm/Mixed Climate

- Following previous case study in Chicago, 10 older homes near Atlanta retrofit with low-e storm windows
  - Clear glass
  - High solar gain low-e
  - Low solar gain low-e
- Overall home air leakage was significantly reduced by an average of 11% or 3.7 ACH50
- Preliminary analysis shows approx 10% heating and 8% cooling savings from low-e storm windows.




QuantaPanel and Larson storm windows

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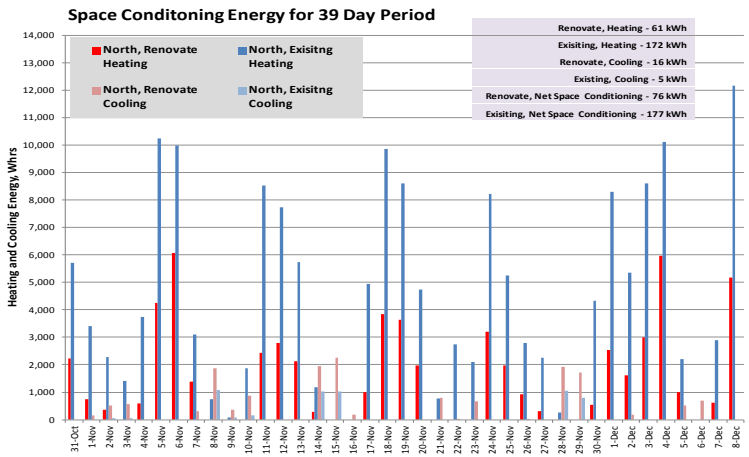
## Commercial Case Studies

- 12 story office building with single glazing in Philadelphia retrofit by adding low-e double glazing, to create a triple pane low-e system.
- Monitoring building utilities, but also detailed analysis on two isolated pairs of offices, side-by-side comparison with and without retrofit.
- After 5 months, 40% reduced energy use on east-facing office, 60% reduced energy use on north-facing office.
- 2nd case study in New Jersey starting this month.



Renovate by Berkowitz

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## Weatherization Education Program

- Worked with PA DCED, Energetics, LBNL to update PA's priority list to include low-e storm windows as a priority measure for weatherizing low income housing.
  - Based on NEAT analysis with 37 homes in 4 cities
  - Qualified as cost effective measure in all cases with SIR ranging from 1.4 to 2.2.
- Expanding to other states
- Developed training presentations and education package (including new fact sheet from Building Green / LBNL Window Retrofit project)
- Session and training booth at 2011 National Weatherization Training Conference

# Low-E Retrofit Demonstration & Education Program

## Expected Outcome and Next Steps

- Residential case study: final energy savings from low-e storm windows with different glass types in warm/mixed climate, to build on previous cold climate case study and simulations in all zones.
- Commercial case studies: final energy savings on 2-3 different building types and retrofit options.
- Next steps: using final results of the case studies along with educational package,
  - Continued state-by-state expansion of low-e storm windows / panels in low income weatherization, in both cold and mixed climates
  - Explore promotion through related programs (utility weatherization programs, Home Performance with Energy Star, etc.)
  - Continued expansion of retrofit low-e in commercial applications