Fenestration Trends in the Southeast

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The Southeast Efficient Energy Alliance (SEEA) promotes energy efficiency as a catalyst for economic growth, workforce development and energy security across 11 southeastern states including Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia.
Areas of Work

- Energy Efficiency Policy
- Built Environment
- Energy Efficient Transportation
- Regional Investments
Building Code Basics

- National Code Development
- Statewide Code Adoption
- Code Compliance
- Local Code Adoption
Importance of Energy Codes

Energy codes are one of the only policy mechanisms to require EE in the Southeast.

Energy codes provide added benefits of comfort, durability and affordability.

Energy codes benefit all, even if you aren’t in the market for a new home.
DOE Residential Energy Code Field Study
What is the state of the built environment in our region?


Can code education and training move the needle on code compliance?

Research studies target both new residential and commercial buildings

PNNL-approved research standardized design to achieve statistically significant results

The most fine-grained component-level data we have on new homes in the region

- SEEA Conducted Field Study
- DOE Field Study State
### Key Data Points for the Field Study

1. **Duct Leakage**
2. **Building Envelope Leakage**
3. **Lighting**
4. **Exterior wall, foundation and ceiling insulation (R-Value and install quality)**
5. **Window SHGC and U-Value**
Approximately 29 billion BTUs, $13.2 million, and 112 megatons of CO2 can be saved by increasing compliance with SHGC in Arkansas over 30 years.
Virginia is exceeding in meeting the 2015 IECC window code requirements. High compliance rates can be a sign for increasing efficiency measures in code and in manufacturing.

*This data is preliminary.
This available data was used to better inform decision makers in the upcoming code requirements in GA. More efficient window requirements are effective January 1, 2020.
Fenestration Trends across the Southeast
Number of Windows by Region
Window Frame Materials

Northeast

- Wood: 38%
- Aluminum: 30%
- Vinyl: 29%
- Composite: 2%
- Fiberglass: 1%

Midwest

- Wood: 44%
- Aluminum: 26%
- Vinyl: 27%
- Composite: 2%
- Fiberglass: 2%

South

- Wood: 37%
- Aluminum: 49%
- Vinyl: 12%
- Composite: 1%
- Fiberglass: 2%

West

- Wood: 49%
- Aluminum: 23%
- Vinyl: 25%
- Composite: 1%
- Fiberglass: 2%
Percent Energy Star Windows

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<th>Region</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Refused (%)</th>
<th>Don't Know (%)</th>
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<tr>
<td>West</td>
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<td></td>
<td>3%</td>
<td>19%</td>
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</tbody>
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Fenestration and Resilience
Mexico Beach, Florida, 2018
Southeast Alabama, 2019
Windows performance during Irma (2017)

• Out of the 800 homes surveyed post-Irma, 71 had window damage.
• 97% of the window failures were in pre-2002 homes.
• 9 homes built pre-2002 had no window or door damage, which is credited to their retrofitted windows.
The Future of Fenestration in the Southeast
Future Focus

Old Building Stock
Approximately 85% of the building stock in the southeast was built before 2000. SHGC was introduced to code in 2000.

High costs
The cost to replace fenestration is high compared to initial builds. Finding innovative ways to lower this cost could result in more efficient buildings.

Compliance
Compliance with energy codes is approximately 95-100% in the region for fenestration. Keeping with this trend is necessary.

Advanced Building Technologies
Advanced window, skylight, and door technology has the potential to decrease load and increase energy production.
Questions