Window Attachments: The Next Big Energy-Saving Measure?

Stephen Bickel
D+R International on behalf of the Attachments Energy Rating Council (AERC)

2015 IEPEC Conference — Long Beach, California
# Annual Savings Potential Across Product Types

<table>
<thead>
<tr>
<th>Potential</th>
<th>Adoption</th>
<th>Heating (Billion Therms)</th>
<th>Cooling (TWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>100%</td>
<td>2-4.3</td>
<td>14.9-31.5</td>
</tr>
<tr>
<td>Achievable</td>
<td>10%</td>
<td>0.2-0.4</td>
<td>1.4-3.1</td>
</tr>
<tr>
<td></td>
<td>20%</td>
<td>0.4-0.8</td>
<td>2.8-6.2</td>
</tr>
<tr>
<td></td>
<td>50%</td>
<td>1-2.15</td>
<td>7.45-15.75</td>
</tr>
</tbody>
</table>

- For gas heating and electric A/C homes ~25% of homes in the US
Technical Annual Savings Potential by Climate Zone

Cooling Energy Savings (TWh)

- Northern
- Central
- Southern

Heating Energy Savings (Therms)

- Northern
- Central
- Southern

Legend:
- Cellular Shades
- Interior Panel
- Exterior Storm
### Household-Level Annual Savings – Typical Home

#### Average Household Savings in Million BTU (LBNL Weighted Scenario)

<table>
<thead>
<tr>
<th>Region</th>
<th>Cities in Region</th>
<th>Cellular Shades</th>
<th>Exterior Storm Windows</th>
<th>Interior Panels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern</td>
<td>Boston, <strong>Chicago</strong>, Denver, Minneapolis</td>
<td>5.4</td>
<td>14.8</td>
<td>15.9</td>
</tr>
<tr>
<td>Central</td>
<td>Atlanta, Fort Worth, <strong>San Francisco</strong>, Washington DC</td>
<td>6.5</td>
<td>13.0</td>
<td>13.1</td>
</tr>
<tr>
<td>Southern</td>
<td>New Orleans, Phoenix, <strong>San Antonio</strong>, Tampa</td>
<td>6.6</td>
<td>9.5</td>
<td>8.6</td>
</tr>
</tbody>
</table>
Thank You

Questions?
How can window attachments save energy?

Image courtesy of Larson Manufacturing
Energy Efficient Window Attachments
Cellular Shades

Images courtesy of Hunter Douglas, Larson, Newell, and Springs
Low-e Panels and Storm Windows

Interior Panel

Storm Windows

Images courtesy of Larson Manufacturing
Exterior Shades, Shutters, and Awnings

Images courtesy of Rollac and ___
How Window Attachments Work

- Reduce heat flow in summer and winter

![Diagram showing the principle behind window attachments](image-url)
Can the savings potential for Cellular Shades be realized?

- 85% of windows have a covering
- Rapid stock turnover
  - 154 million – 235 million window coverings sold each year
  - The majority of shipments are vinyl or metal horizontal blinds – 85 million units
Can the savings potential for Low-E Storm Windows and Interior Panels be realized?

- **37%** of installed base is still single pane windows
- **Less than 2%** of windows are replaced each year

<table>
<thead>
<tr>
<th>Low-E Panels/Storm Windows</th>
</tr>
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<tbody>
<tr>
<td>Stocked at major DIY retailers in many states</td>
</tr>
<tr>
<td>&lt;$100 per opening</td>
</tr>
<tr>
<td>Can be self-installed</td>
</tr>
</tbody>
</table>
Estimation Method

- Methodology (See Paper)

- Key limitations
Basis for National and Regional Estimates


Research and Presentation Funded by

Attachments Energy Rating Council

AERC
Coming Soon

- **January 1, 2017**
  Independent third-party certified energy-performance ratings from the Attachment Energy Rating Council (AERC)

- Field studies
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