Home Innovation Research Labs

- Founded in 1964 as wholly-owned subsidiary of NAHB
- Independent, for-profit researchers assisting development and commercialization of new building technologies
  - Engineering research & development
  - Market & field research
  - Laboratory testing
- #1 in green home building certification (NGBS)
- Building codes and standards developers
- Partners with ICC-ES to fast-track issuance of ESRs
Purpose and Outline of Presentation

1. Review of building materials trends in new homes and remodeling
   1. Decks & Porch Surfacing
   2. Deck & Porch Railing Systems
   3. Exterior Trim & Fascia
   4. Fences & Privacy Walls
   5. Siding & Exterior Finishes
   6. Residential Roofing
   7. New Home Construction Industry Trends

2. Discuss current and future market opportunities
Home Innovation has been tracking annual materials purchases since 1995
- Builder Practices Survey of 1,500 U.S. Builders
- Consumer Practices Survey of 100,000+ U.S. households

Decades of custom market research, sponsored by hundreds of building materials manufacturers

Support of development and launch of hundreds of new building products
### Decking Volumes in New Homes and Remodeling, by Material Type (2017)

<table>
<thead>
<tr>
<th>Material Type</th>
<th>New Homes</th>
<th>Remodeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC &amp; other plastics</td>
<td>24</td>
<td>197</td>
</tr>
<tr>
<td>Plastic composite</td>
<td>45</td>
<td>197</td>
</tr>
<tr>
<td>Other untreated lumber</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Redwood</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Cedar</td>
<td>122</td>
<td></td>
</tr>
<tr>
<td>Treated lumber</td>
<td>46</td>
<td>571</td>
</tr>
</tbody>
</table>

About **1.2 billion** square feet of outdoor decking was installed on residences in 2017, ~85% for remodeling.

(Millions of Sq.Ft.)

Source: Annual Builder & Consumer Practices Reports
Decking Material in All New Homes, 2017

- Treated wood, 38%
- Cedar, 9%
- Redwood, 3%
- Other untreated wood, 4%
- Composite, 37%
- PVC & other plastic, 7%
- Other, 2%

Source: Annual Builder Practices Reports
Shares of Decking Material in New Single Family Detached Homes

Source: Annual Builder Practices Reports
Decking Material in Repair and Remodeling, 2017

- Treated wood, 50%
- Composite, 17%
- Cedar, 11%
- Redwood, 9%
- Other untreated wood, 4%
- PVC & other plastic, 2%
- Other, 7%

Source: Annual Consumer Practices Reports
Shares of Raised Porch and Decking Material in Residential Remodeling

Source: Annual Consumer Practices Reports
About 120 million linear feet of outdoor hand railing is installed on U.S. homes per year (~1 billion feet of lineals)

Source: Annual Builder & Consumer Practices Reports
Deck & Porch Railing Shares in New Homes, 2017

- Treated wood, 29%
- PVC & other plastic, 14%
- Composite, 12%
- Aluminum, 14%
- Iron or steel, 13%
- Masonry/concrete, 1%
- Redwood, 2%
- Glass Panel, 2%
- Other untreated wood, 3%
- Steel cable, 2%
- Cedar, 9%
- Other, 0%

Source: Annual Consumer Practices Reports
Deck and Porch Railing in New U.S. Homes

Source: Annual Builder Practices Reports
Deck & Porch Railing Shares in Repair & Remodeling, 2017

- Treated Lumber: 45%
- Iron or steel: 12%
- Composite: 12%
- Cedar: 8%
- Redwood: 6%
- Other untreated wood: 3%
- Masonry/concrete: 1%
- Other: 1%
- Aluminum: 5%
- PVC & Other Plastic: 7%

Source: Annual Consumer Practices Reports
Deck and Porch Railing in U.S. Home Remodeling

Source: Annual Consumer Practices Reports
Fences & Privacy Walls Installed in New Homes and Remodeling, 2017
(millions of LF)

<table>
<thead>
<tr>
<th>Material Type</th>
<th>New Homes</th>
<th>Residential Remodeling</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood Vertical Boards</td>
<td>138</td>
<td></td>
<td>771</td>
</tr>
<tr>
<td>Wood Rails or Timbers</td>
<td>272</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic or Composite</td>
<td>212</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chain Link</td>
<td>170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron or Steel</td>
<td>58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete &amp; Other</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brick or Block</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stone</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

About 1.8 billion LF of fence installed per year (8 billion SF)
Plastic or Composite = about 1.2 billion SF

Source: Annual Builder & Consumer Practices Reports
Fence & Privacy Wall Trends in New U.S. Homes

Source: Annual Builder Practices Reports
Fence & Privacy Wall Trends in New U.S. Homes (2nd Tier)

- Wood-Vertical Boards
- Wood Post with Rails
- Chain Link or Wire
- Iron or Steel
- Aluminum
- Plastic or Composite
- Stone or Brick
Fence & Privacy Walls Installed in U.S. Home Remodeling

Source: Annual Consumer Practices Reports
Siding in New Homes and Remodeling, 2017
(millions of sq.ft.)

Residential siding represents about 7.5 billion sq.ft. annually.

- **Vinyl & Polymer**: 567 (New Homes) - 1,829 (Remodeling)
- **Engineered Wood**: 409 (New Homes) - 693 (Remodeling)
- **Fiber Cement**: 600 (New Homes) - 419 (Remodeling)
- **Stucco**: 443 (New Homes) - 281 (Remodeling)
- **Natural Lumber**: 10 (New Homes) - 580 (Remodeling)
- **Metal & Other**: 495 (New Homes) - 347 (Remodeling)
- **Brick**: 347 (New Homes) - 179 (Remodeling)
- **Stone**: 260 (New Homes) - 209 (Remodeling)

Source: Annual Builder & Consumer Practices Reports
Your New Product Installs So Easily, Anyone Can Do It…

- Anticipate resistance from some skilled trades
- Demonstration is very important to selling
- Consider non-traditional users, like
  - remodeling generalists
  - handymen who welcome alternatives that don’t require special tools or training
- Consider do-it-yourselfers (prosumers, weekend warriors, etc.)
Management Labor Deficit

- Recent Home Innovation study of ASHRAE members revealed that there is a deficit management levels of construction companies – not just skilled tradespeople
  - The primary lack was project coordination and management
  - The skills were particularly lacking a deep knowledge of construction (not engineering) need jobsite experience and maturity to anticipate issues
- Technologies/apps/software solutions are available, but only tech saavy younger generation inclined to use them
  - Webinars to facilitate face-to-face contact
  - Tracking software to communicate real-time with building team
  - Communications apps