Commercial Program Update

Presented by:
Steven M. Urich - Director, Programs
April S. Rawson - Commercial Program Manager

September 24, 2019
Agenda

- Public Service

- Focus (Market Research)
  - Cadmus: Broad Scope / High-level Analysis
  - Staff: Industry Reports & Voice-of-the-Customer

- Program Development

- Next Steps
Credibility & accuracy of commercial fenestration ratings

Inform fenestration selection decisions

Increase consumer comfort

Increase building energy efficiency
Project Focus

- Why is market usage of NFRC’s commercial ratings program low?

- What can we do to increase usage?
Major Barriers to Market Adoption

- Speed
- Ease-of-Use
- Market Complexity
- Energy Code Enforcement Lax

Source: Cadmus Report, May 27, 2016
US Commercial Window & Door Demand

Forecasted to Reach $10.3B in 2020 & $12.3B by 2025

### Commercial Window & Door Demand by Market (million dollars)

<table>
<thead>
<tr>
<th>Item</th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonresidential Building Stock (bil 2009)</td>
<td>10720</td>
<td>11470</td>
<td>11710</td>
<td>12130</td>
<td>12740</td>
</tr>
<tr>
<td>$ windows &amp; doors/000$ stock</td>
<td>0.71</td>
<td>0.57</td>
<td>0.70</td>
<td>0.85</td>
<td>0.97</td>
</tr>
<tr>
<td>Commercial Window &amp; Door Demand</td>
<td>7640</td>
<td>6580</td>
<td>8250</td>
<td>10300</td>
<td>12310</td>
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<tr>
<td>Office, Retail, &amp; Lodging</td>
<td>3940</td>
<td>2970</td>
<td>3915</td>
<td>5220</td>
<td>6215</td>
</tr>
<tr>
<td>Institutional</td>
<td>1950</td>
<td>1845</td>
<td>2010</td>
<td>2520</td>
<td>2965</td>
</tr>
<tr>
<td>Industrial</td>
<td>1170</td>
<td>1185</td>
<td>1690</td>
<td>1780</td>
<td>2205</td>
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<tr>
<td>Other</td>
<td>580</td>
<td>580</td>
<td>635</td>
<td>780</td>
<td>915</td>
</tr>
</tbody>
</table>

Source: The Freedonia Group

Institutional = Hospitals, Nursing Homes, Schools

Source: 2016 MarketResearch.com, Inc.
## Label Certificate & Bid Report Usage

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<tr>
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<tr>
<td>LC</td>
<td>170</td>
<td>169</td>
<td>162</td>
<td>76</td>
</tr>
<tr>
<td>BR</td>
<td>2434</td>
<td>3436</td>
<td>3351</td>
<td>1669</td>
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<tr>
<td>Ratio BR/LC</td>
<td>14.3</td>
<td>20.3</td>
<td>20.7</td>
<td>21.96</td>
</tr>
</tbody>
</table>

- 1,121 LC issued from 2010 thru 6/30/19
- BR not tracked prior to 2016
- ~0.14% market penetration based on estimated eligible commercial projects*

*Source: Cadmus Report, May 27, 2016*
Field Research – Closer Look into Stakeholder Needs
Voice of the Customer

- Quick, Easy
- Product Comparison
- Level Playing Field
- Code Compliance
Industry Conferences

- Better Buildings Summits
- National Energy Codes Conferences
- Energy Exchanges
- Façade Tectonics Conferences
<table>
<thead>
<tr>
<th>Commercial</th>
<th>Residential</th>
<th>Labs</th>
<th>Other</th>
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<tbody>
<tr>
<td>Greg McKenna Kawneer</td>
<td>Joe Hayden Pella</td>
<td>Jeff Baker WESTLab</td>
<td>Daniel Huard USGBC</td>
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<td>Catherine Best Benson</td>
<td>Steve Strawn</td>
<td>Mike Thoman</td>
<td>Kerry Haglund Efficient Windows Collaborative</td>
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<td>Industries</td>
<td>JELD-WEN</td>
<td>Intertek</td>
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<td>Steve Fronek</td>
<td></td>
<td>Ken Nittler WESTLab</td>
<td>Mahabir Bhandari ORNL</td>
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<td>Wausau Window &amp; Wall Systems</td>
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<td>Kevin Dix</td>
<td></td>
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<td>Garrett Stone SMX&amp;B</td>
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<td>Manko Window Systems</td>
<td></td>
<td></td>
<td>Charlie Curcija LBNL</td>
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Stakeholder Needs / CTQs

- Consistency
- Accuracy
- Practical
- Flexibility
- Streamlined
- Simplified
- Speed
- Credibility
2 Pathways to Project Certification

- Custom Project Upload Path
- Commercial CPD Path
Custom Project Upload Path

1. Project Certificate requested
2. Product(s) modeled for project
3. Product ratings uploaded for certificate
4. Certificate generator makes certificate
5. Notify IA
   - Project selected for QA
     - Yes
       - Simulator signs certificate, sends out
     - No
       - Follow up QA
9. Simulator passes review
   - Yes
     - End
   - No
     - Simulator completes remedial work
10. NFRC notifies simulator

KEY: NFRC  NFRC IA  NFRC Certified Simulator
Commercial CPD Path to Certification

Product listing in CPD desired → Hire test lab, sim lab, to test, model product → IA reviews test, sim, approves product in CPD → Registered user accesses CPD

User enters project information → User enters size information → User selects glass(es) → User selects product(s)

CPD processes info, generates label certificate → End

KEY: NFRC, NFRC IA, Registered User, Manufacturer
Addressing Stakeholder Needs / CTQs

- **Consistency:** Same simulation methodology as PCP
- **Accuracy:** Ability to combine sections
- **Practical:** Ability to compare specified sizes
- **Flexibility:** Choice of certification paths
- **Streamlined:** Only products listed in CPD must be tested
- **Simplified:** Registered users can generate label certificates
- **Speed:** Process doesn’t interfere with critical path of projects
- **Credibility:** Increased commercial oversight through market penetration
Next Steps

- Program and technical rules refinement
- Balloting program documents
- Software development & testing
- Strategic launch campaign planning
- Training
Testimonials

Steve Fronek
VP Design Engineering

Kevin Dix
VP of Engineering & Technical Sales
Personal opinions, not Apogee or Wausau positions
Involved and very supportive of CMA update

Litmus Test
• "What’s good for the job," not for all stakeholders involved

Perspective Counts
• Wausau is a medium-size manufacturer
• ~50% windows; 50% curtainwall; ~0% storefront
• ~50% standard products; 50% customized
• Very little presence in residential/commercial “overlap” markets
• Higher-end mixed-use, institutional, education, health care, government, owner-occupied office
• Fully-staffed in-house project applications engineering department

Wausau will primarily use the project upload path
STAKEHOLDER NEEDS and CTQs

Tag Lines

- **FLEXIBILITY**
  - “BIM gone wild…”
  - 700+ lines in CMA database still not enough, 500+ new dies annually

- **SPEED**
  - “Time is of the essence…”
  - In design-build, product is undetermined until approved shop drawings
  - Get NFRC, Sim Labs and IAs off the critical path; it’s live ammunition

- **CREDIBILITY**
  - “Let the engineers be engineers…”
  - In Wausau markets, AE oversight is airtight - ethical and statutory
  - Only the AE can determine what’s “representative” of the project

- **PRACTICAL**
  - “Enough is enough”
  - Validation testing unnecessary; fix modeling errors at the source

- **ACCURACY**
  - “What are the numbers on my (big) building…?”
  - Mechanical equipment sizing
  - Product comparison
  - Use-phase energy consumption
  - Code compliance
Steve’s BOTTOM LINE

- The CMA update addresses the needs of commercial markets
- Consistent with weather-ability and structural compliance mechanisms
- Works for small projects and large projects
- Works for standard products and custom products
- Works for IPD, design-build and design-bid-build
- Works even in convoluted commercial supply and service chains

“I ask for your support…”
Manko Window Systems Inc. Background

- 30 Year Old Privately Held Company Started From Scratch in a Storage Shed
- Medium Sized Manufacturer of Aluminum Products
  - 40% Architectural Grade (AW) Windows and Doors
  - 10% Heavy Commercial Grade (CW) Windows and Doors
  - 40% Commercial Storefront systems and Doors
  - 10% Curtainwall
- ~90% Standard Products
- Products Primarily used in Low Rise Applications like Schools, Dormitories, Office Buildings, Places of Worship, Retail Locations, Condominiums, and other Mixed Use Developments
- Frequent Incidents of Residential/Commercial Overlap
- Significant Regional Presence in Various Wholesale Glass Products
Manko Windows, the NFRC, and CMAST

- I Have Attended Every Day of Every Meeting Since Joining.
- Attended (and passed) one of the first ACE classes.
- Decided that this **Program was not Appropriate** for the Marketplace that Manko Operates in.
- Proceeded to get Products entered into the standard CPD Directory. And Have maintained that Database since then.
Product Directory Path Needs

- Accurate Thermal Performance Data of Standard Product Lines
- A System That Can Disseminate this Accurate Data to Users on Very Short Notice
- Ability to be Used for Code Compliance Without Additional Oversight
- Ability to Assist in Efficient Building Design
Kevin’s BOTTOM LINE

- There are still details and issues to be addressed in this version of a Component Modeling Approach.
- I believe that this new proposed Product Directory Path has the ability to meet the needs of the commercial segment it is designed for, and it has my full support.
- I ask that you consider supporting this program as well.
Thank you!