LAP/CAP Agenda

• LAP
  – 2017 Simulation ILC: General Findings
  – Slightly Ventilated Cavities
  – CPD updates
  – Maintaining Certified Simulator

• CAP – NFRC 700 and 702
  – NFRC 700: Applied film inspection reminders
  – NFRC 702: Logs for tracking product lines inspected at a plant
  – NFRC 702: Product Lines and Inspection
  – NFRC 702: Attachment products
Certified Simulator Findings

- **Glass Construction** (7 lab, 26 non-lab); 28%
- **Modeling of the Divider** (20 lab, 61 non-lab); 68%
- **Materials usage** (11 lab, 66 non-lab); 39%
- **Exterior cavities** (7 lab, 36 non-lab); 36%
- **SHGC Exterior Tagging** (8 lab, 28 non-lab); 30%
- **CR Cavity Height** (10 lab, 61 non-lab); 60%
- **Product simulated backwards** (2 lab, 3 non-lab); 4%
Glass Construction

• The types of errors deemed critical errors include:
  – The wrong glass selected (2 lab, 6 non-lab)
    • Glass thickness
    • Low-e type
    • Low-e position within IGU
  – The gas mixtures are not constructed as indicted in the ILC (5 lab, 21 non-lab)
    • The IGU gaps use EN673 gas fill types; these are not NFRC approved
    • The IGU gaps were 100% air-filled when they were to use a gas fill
    • The gas fill percentages are not as specified in the ILC
    • Gap width simulated as nominal instead of as specified
Modeling of the Divider

• This ILC required the simulators knowledge of ANSI/NFRC 100, ANSI/NFRC 200 and the simulation manual – 68% of simulators had some type of error

• The dual glazed IGU: The ILC requested the results with the divider.
  – The gap was greater than 3mm between the divider and glass panes

• Per ANSI/NFRC 100 and the simulation manual the divider was not required to be modeled in THERM. (38% of simulators modeled the divider in THERM and did not follow the rules)

• Per ANSI/NFRC 200 the divider will affect the product SHGC and VT values. The 0 and 1 SHGC and VT table needed used in conjunction with COG values with equations 4-1 and 4-2 to obtain the correct SHGC and VT product values.
Modeling of the Divider (cont.)

- **The triple glazed IGU:** The ILC requested the results with the divider but did not specify the gap.
  - The gap was less than 3mm between the divider and glass panes
- **Per ANSI/NFRC 100 and the simulation manual** the divider was required to be modeled in THERM. However, the simulator was required to determine which gap the manufacturer places the divider. Only 51 simulators asked about the divider placement (28 were lab simulators). It is the responsibility of the simulator to never assume and be attentive to the details of the client as results be affected. 76% did select the correct gap location.
Modeling of the Divider (cont.)

• Other Divider Modeling Issues:
  – Emissivity in the divider hollow was not changed to 0.05 for unpainted surface.
  – One or more divider cavities were filled with 100% air when user defined gas mixtures were required.
  – A user defined gas was created but was for the wrong glass option
  – The cross-section was not set to vertical divider
  – The glass edge height was incorrect
Modeling of the Divider (cont.)

• Other Divider Modeling Issues:
  – The divider air cavities were linked to the IGU (sides and divider hollow)

All 3 cavities (sides & hollow of divider) shall NOT be linked to any glazing cavity.
Modeling of the Divider (cont.)

• Other Divider Modeling Issues:
  – The user defined gas in THERM used a cavity model set to NFRC instead of ISO 15099

Only ISO 15099 shall be used when making “Frame Cavity” material types. See illustration #4 for correct Cavity Model assignment.
Modeling of the Divider (cont.)

- Other Divider Modeling Issues:
  - The air gap without the divider used the same user-defined gas as the divider gap instead of properly linking to the glass.

This cavity does not have a divider in it to disrupt the convective flow so it is shall not be bucket-filled with a user-defined gas-filled frame cavity. There are two correct ways to deal with this empty glazing cavity:

1) Bucket fill the cavity and link it to the upper or lower IGU; or
2) Stretch the upper or lower IGU into the cavity, as shown in illustration #4.
Modeling of the Divider (cont.)

• Other Divider Modeling Issues:
  – An unexplained error on the simulators breaking the center glass pane of the glass unit and using one divider in a large air gap.

There is no manufacturing process that would trim the center glass pane for insertion of a divider, unless there was a caulk joint separating an upper and lower IGU. This is one complete insulating glass unit and this modeling technique is not allowed.
Modeling of the Divider (cont.)

• The Correct Divider Model
Materials usage

• **Spacer Modeling:**
  – This ILC required simulators to find the proprietary Quanex Spacer Standard (EPDM) material in Appendix C of NFRC 101 and add to their THERM library. 44% of simulators had incorrect conductivity assigned for this material.

• **Foam Cavity Fill:**
  – This ILC required a rigid Neopor F2300 foam to be simulated in the head and jamb profiles only. 19% of simulators used a different material type or incorrect user-defined conductivity.
    
    • Common Materials used: Expanded Polystyrene, Polystyrene, Neoprene, Foam Rubber
Exterior cavities

- Sealing Per Testing – 6.3.6 of the Simulation Manual
SHGC Exterior Tagging

- The simulation manual, per section 6.5.2, requires the exterior U-factor surface tag of SHGC Exterior to be applied to all surfaces below the sightline. *This tag is used to calculate the wetted length of the exterior frame to be used in WINDOW for SHGC calculation.*
CR Cavity Height

• The product was a fixed window with a NFRC standard height to 1500mm. The simulation manual requires that the CR height in THERM must be set to 1400mm for a 1500mm (non-vertical slider) real product height. **By not selecting the correct CR height, this can alter the condensation resistance value for the whole product.**

• For a divider the CR height shall be set to 1000mm per the simulation manual. Even though the CR is not ran, based on the CR input height, for vertical divider and are calculated based on U-factor, it is still important to follow the procedures as outlined in the simulation manual.
Product simulated backwards

- Simulated Incorrect
- Correct Orientation
General:

SIMULATION TOPICS AND UPDATES
Slightly Ventilated Cavities

If there are openings ≤ 2 mm that open into a frame cavity defined as “Frame Cavity Slightly Ventilated NFRC 100”, these small cavities shall be defined as the standard “Frame Cavity NFRC 100”.

Figure 6-12. Small cavities adjoining slightly ventilated cavities.
Slightly Ventilated Cavities (cont)

- Breaking a slightly ventilated cavity shall only occur for a cavity opening into the slightly ventilated cavity.
CPD Uploads

• Labs:
  – Updates are currently underway to update the CPD upload spreadsheets to accept 2017 submittals.
  – Continue to use 2014 in your CPD upload spreadsheet until the updates are completed.

• IA’s:
  – Please ensure test reports are using the 2017 rating procedures.
  – CPD uploads will still reflect 2014 until the CPD is updated to accept 2017.
Maintaining Certification

We have an ever increasing amount of certified simulators, non-lab and lab simulators. To be in compliance with the NFRC certification program, each simulator needs to perform at an expected level to maintain certification.

- Participate in the annual ILC
- Obtain and produce results within an acceptable standard deviation

*If you do not meet these criteria your certification could be suspended and additional training is required. Staff will review and implement a plan to bring simulators in compliance.*
Certification Agency Program

NFRC 700 AND NFRC 702
NFRC 700-2018:

• 8.6.1.3 Attachment Product and Applied Film Inspections

– The installation of the temporary NFRC labels, and the accuracy of the applied labels on the box/packaging for applied film products to include all Licensed Branders’ products, if applicable, shall be reviewed during an in-plant inspection.
NFRC 700-2018: (cont.)

• 8.6.1.6 Private Labeler and Applied Film Licensed Brander Inspections
  – Within 6 months of the labeler’s Schedule VI submission, an inspection of the Licensee’s location(s) shall be conducted, at which time the IA shall verify Licensed Brander’s manufacturing location(s) listed on Schedule I are NFRC Licensed and subject to annual inspection.
NFRC 702-2018: Logs

- Section 4.1.2.A.iv – NFRC staff will review during annual inspections.
  
h) Each IA is required to prepare a log of all product lines inspected annually at each license facility, and to maintain that log within 45 days following each licensed location in-plant inspection. The log shall record the annual target number of product lines to be inspected, the date of the inspection and each inspected product line ID number.
NFRC 702-2018: Product Lines and Inspection

- Section 4.1.2.h – Target number of certified products for inspection.

Table 4-2 Product Lines and Inspection

<table>
<thead>
<tr>
<th>Total authorized product lines produced at each facility</th>
<th>Target number of certified products to inspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 25</td>
<td>3</td>
</tr>
<tr>
<td>26 to 90</td>
<td>5</td>
</tr>
<tr>
<td>91 to 150</td>
<td>8</td>
</tr>
<tr>
<td>≥151</td>
<td>13</td>
</tr>
</tbody>
</table>

- Note: This table replaces the previous requirement of 20% of product lines at a facility to be inspected.
NFRC 702-2018: Attachment Products

- Section 4.1.2.v language was added, published and implemented

  g) If the fenestration attachment is fabricated at a location other than the licensee’s address, the IA shall inspect that location as listed on the Schedule I. For Applied Film Licensed Branders applying their own labels, the IA is required to verify the manufacturer is NFRC licensed.
Section 4.1.2.v language was added, published and implemented

h) If an IA is conducting an inspection of an Applied Film Manufacturer labeling products for Licensed Branders, the IA is responsible for ensuring labels for all Licensed Branders are properly applied even for Licensed Branders inspected by other IAs.
Assignments

• LAP Workshop
  – Based on the ILC results, a workshop, face to face or virtual, will be discussed for all certified simulators to attend and review the ILC results for fall 2018.

• Simulators TG (if required)
  – Slightly Ventilated Cavities

• NFRC Staff and APC
  – Maintaining certification; rules for simulators