



PROGRAM BOOKLET

(Agendas, Draft Minutes, & Committee Rosters enclosed)

NFRC Fall Membership Meeting

Albuquerque, New Mexico

October 8-10, 2018



National Fenestration Rating Council

6305 Ivy Lane, Suite 140

Greenbelt, MD 20770

301/589-1776

www.nfrc.org



NFRC 2018 Fall Committee Meeting
 October 8-10, 2018, Albuquerque, NM
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NFRC 2018 Fall Committee Meeting Albuquerque, NM

DRAFT Meeting Schedule

MEETING SPACE:
 Blue = Ambassador/Registry
 Purple = Roxy
 Orange = Regal/Wurlitzer

Times	Monday 10/08/2018	Tuesday 10/09/2018	Wednesday 10/10/2018	
7:00 a.m.	Registration open at 1:00 p.m. on Monday.	Continental breakfast and breaks will be served for all meeting registrants Tuesday and Wednesday beginning at 7:00 a.m. Complimentary to all NFRC meeting registrants.		
8:00 a.m.		Diffuse Glazing TG 8:00 a.m. – 9:00 a.m.	Volunteer Leader Network Developing Effective Leadership Habits Presenter: Elliott Bales, Colonel, US Army (Ret.) 8:00 a.m. – 10:00 a.m.	
9:00 a.m.		Solar Non-Planar TG 9:00 a.m. – 10:00 a.m.		
10:00 a.m.		CMAST Advisory TG 10:00 a.m. – 11:00 a.m.		
11:00 a.m.		Condensation Resistance TG 11:00 a.m. – 12:00 p.m.		
12:00p.m.		Vacuum Insulating Glazing TG 12:00 p.m. – 12:30 p.m.		
12:30 p.m.		Networking Lunch 12:30 p.m. – 1:30 p.m.		
1:00 p.m.		Registration Opens 1:00 p.m.		Technical Committee Block 8:00 a.m. – 12:00 p.m. Subcommittees to Convene:** <ul style="list-style-type: none"> Software SC CMA (Technical) SC Daylighting SC Condensation Resistance SC U-factor SC Solar Heat Gain SC Lunch – On your own 12:00 p.m. – 1:30 p.m.
1:30 p.m.	LAP / CAP Workshop 1:10 p.m. – 1:55 p.m.			
2:00 p.m.	First Time Attendee Orientation 2:00 p.m. – 2:30 p.m.			
2:30 p.m.	NFRC 700 Certification Process Streamline TG 1:30 p.m. – 2:30 p.m.			
3:00 p.m.		NFRC Programs Forum 2:30 p.m. – 3:30 p.m.		
3:30 p.m.	Opening General Session 3:00 p.m. – 4:00 p.m.	Technical Committee Block ... continued 1:30 p.m. – 2:00 p.m. <ul style="list-style-type: none"> Ventilation SC Technical Committee will convene after short break once all Subcommittees have adjourned.		
4:00 p.m.	Research and Technology Committee Block 3:30 p.m. – 6:00 p.m. Subcommittees to Convene:** <ul style="list-style-type: none"> Optical Properties SC Thermophysical Properties SC Research SC Research and Technology Committee will convene after short break once all Subcommittees have adjourned.		Ratings Committee Block 2:30 p.m. – 4:30 p.m. Subcommittees to Convene:** <ul style="list-style-type: none"> NFRC 700 PCP Certification SC NFRC 705 CMA-PCP SC Ratings Committee will convene after short break once all Subcommittees have adjourned.	
4:30 p.m.			Regulatory Affairs 4:00 p.m. – 5:30 p.m.	
5:00 p.m.			Volunteer Leader Network Roberts Rules: The NFRC Version Roxy 6:00 p.m. – 8:00 p.m. RSVP HERE	
5:30 p.m.				
6:00 p.m.				Member Reception 6:00 p.m. – 8:30 p.m.

NOTES:

Schedule Subject to Change

**Subcommittees posted under each committee block will run consecutively as time allows. Groups listed will go in order, but time/date is not



Dear NFRC Members and Guests.

Welcome to our annual Fall Membership meeting. With the International Balloon Fiesta taking place this week, it's a great time to be in Albuquerque.

This event reminds me of all the strategic work our organization is doing. While it's amazing to see many colorful balloons floating in the beautiful New Mexico sky, what's equally amazing is the planning that goes into ensuring a successful flight.

Pilots must constantly assess the weather, making sure there is sufficient visibility to avoid obstructions and to choose a suitable take-off point. They also need to anticipate sudden changes, such as low-forming clouds and changes in wind speed and direction.

Most notably, once in flight, the pilot's ability to steer the balloon is limited to climbing or descending into winds blowing in different directions at various altitudes. With hundreds of balloons ascending at the same time, the pilot constantly takes cues from the environment and implements adjustments that allow returning safely to the ground.

This is a lot like the work we're doing at NFRC. Charting our direction and controlling our destiny requires monitoring and navigating our environment so we can make the course corrections that position us for long-term success. We've always been good at this, and part of what makes serving as your chair rewarding is seeing how everyone here has played a role in building the strong reputation NFRC enjoys today.

This reputation was built over the last 30 years, and during that time there have been many changes. The built-environment now encompasses far more than just the arrangement, function, and design of homes and buildings and the various ways in which they interact. It has expanded to include technology, sustainability, and social issues. Furthermore, the fenestration industry has firmly-established itself within this ecosystem where fenestration industry products contribute to the built environments energy performance, indoor air quality, and daylighting to play a major role in contributing to the green and healthy building movements.

While our success is cause for celebration, it is also cause for reflection. We must acknowledge that transformative changes in our industry and the external environment offer many new opportunities.

We work in a complex, evolving marketplace that is continually redefined by new technologies, specialization, a changing workforce, globalization, and many other trends. Accordingly, maximizing NFRC's impact makes it incumbent on all of us to forge solutions that will expand our reach and strengthen our relevance going forward.

NFRC is successful because we all contribute to building our stakeholders' trust in our ratings and shaping their perception of the value we create.

Let's continue working together toward a future that upholds everything we've accomplished and paves the way for new opportunities that we may not yet have imagined so we can take NFRC to new heights.

Sincerely,

Paul Bush
NFRC Board Chair



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NFRC's Fall Meeting: SPECIAL NOTES

Meeting Hotel

[Sheraton Uptown Albuquerque](#)
2600 Louisiana Boulevard NE
Albuquerque, NM 87110
505-881-0000

NFRC Program Booklet

NFRC is once again going **green** and will not have printed copies of this program book available onsite nor will we be providing USB flash drives. All items can be accessed online via the [NFRC Meeting Resources Page](#) prior to the conference. If you need hard copies, please print before coming to the meeting or use the hotel's business center.

Monday, October 8, 2018

First-Time Attendee Orientation 2:00 p.m. – 2:30 p.m. in the *Roxy Room*

This short orientation will give you an overview of what to expect over the next two days. It will include topics such as committee structure, how to vote, and how to get involved. If you are a first-time attendee, or just want to refresh your memory, we look forward to seeing you there.

Opening General Session 3:00 p.m. – 4:00 p.m. in the *Ambassador/Registry Room*

The meeting will kick off on Monday afternoon with the Opening General Session.

Regulatory Affairs Session 4:00 p.m. – 5:30 p.m. in the *Ambassador/Registry Room*

Member Networking and Awards Reception 6:00 p.m. – 8:30 p.m. Bus transportation will be provided from the hotel to the Anderson Abruzzo Albuquerque International Balloon Museum where we will have a chance to tour the museum and enjoy cocktails and hors d'oeuvres.

Tuesday, October 9, 2018

Meetings Start 8:00 a.m. We will begin with task group meetings, NFRC Programs Forum, and the Research and Technology Committee Block. All registered attendees are invited to a networking lunch from 12:30 p.m. – 1:30 p.m. in the Regal/Wurlitzer Rooms.

Robert's Rules/Volunteer Appreciation Reception 6:00 – 8:00 PM

This evening session will be an interactive session going over the basics of Roberts Rules. As you know, NFRC meetings have their own twist, so it will also address how to relate everything back to NFRC. *Immediately following this session there will be a volunteer appreciation reception with light appetizers and drinks provided.* This session is available to all attendees, [but please click here to let us know if you will be attending.](#)

Wednesday, October 10, 2018

Meetings Start at 8:00 a.m. We will begin with the Technical Committee Block followed by the Ratings Committee Block (2:30 p.m. – 4:30 p.m.). All subcommittee meetings will run in scheduled order within the Committee Block in the Ambassador/Registry Room.



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Closing Session at 5:00 p.m. The Board of Directors will meet in a closing session on Wednesday afternoon in the Ambassador/Registry Room. All registered attendees are welcome to observe the meeting and take advantage of a period for questions and comments for Board consideration.

Voting at the Committee Meeting



- ✓ Voting cards will be distributed onsite at registration to member companies (one per member company) and those holding proxies*.
- ✓ Members will be responsible for obtaining their voting cards from the NFRC registration staff prior to voting.
- ✓ Members will be responsible for ensuring the appropriate representative of the Member Company is in possession of the voting card prior to the need to vote.
- ✓ After each motion, voting members will be asked to hold up the appropriate card to vote on all motions up for vote at the meeting.
- ✓ NFRC staff will count visible cards to obtain voting results.
- ✓ **Voting Card Polling will be used Tuesday and Wednesday, October 9-10 at the Committee and Subcommittee Meetings.**

*[*Proxies must be received prior to the start of the NFRC Meeting.](#) They must be filled out and signed by a member representative from the absent organization.*

Upcoming Meetings and Reminders

We hope to see you in Baltimore for the NFRC 2019 Committee Meeting. Registration and other information will be available in January 2019.

NFRC 2019 Spring Committee Meeting
March 25-27, 2019
Baltimore, MD

NFRC 2019 Fall Membership Meeting
September 23-25, 2019
Location TBD

NFRC 2020 Spring Committee Meeting
March 16-18, 2020
Location TBD

NFRC 2020 Fall Membership Meeting
October 26-28, 2020
Location TBD



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Reminder: Your Feedback is Valued!

We look for our stakeholders' feedback to help us improve the meeting experience and ask that you complete the brief online meeting evaluation survey. The link will be sent via email shortly after the conclusion of the meeting.

Presentations from the meeting will be posted in the NFRC Member Community a few weeks after the meeting.

Thank you for your continued participation in the NFRC programs. We look forward to seeing you at future NFRC meetings.

Questions? Contact [Kristin Pate](#) prior to the meeting or onsite.





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Opening General Session

Monday, October 8, 2018

3:00 p.m. – 4:00 p.m.

Chair: *Paul Bush, Vitro Architectural Glass*

1. **Welcome to Albuquerque and Review of Schedule and Logistics – K. Pate**
2. **NFRC Update – D. Callahan (CEO)**
3. **NFRC Chairperson’s Welcoming Remarks – P. Bush**
4. **NFRC Financial Report – R. Clayton (CFO)**
5. **Legal Report – S. Meza**
6. **Adjourn**



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Regulatory Affairs Committee

Monday, October 8, 2018

4:00 p.m. – 5:30 p.m.

Chair: *Garrett Stone, Stone Mattheis Xenopoulos & Brew, PC*

1. Call to Order

- a. Welcome to all AttendeesCell phones & laptops to silent mode
- b. Antitrust reminder
- c. NFRC meeting guidelines
- d. Review committee voting requirements: one vote per member company listed on the roster.

2. Appoint Recording Secretary – (TBD)

3. Roll Call / Establish Quorum

4. Approve Minutes from September 25, 2017 meeting in San Diego, CA

5. Review and Approve Agenda

6. Reports

- a. Codes update (G. Stone)
- b. EPA ENERGY STAR update (D. Anderson)
- c. Canadian update (J. Baker)
- d. 2021 Codes Cycle SWEEP (J. Meyers)

7. Unfinished Business

8. New Business

9. Adjourn

SCOPE

The Regulatory Affairs Committee is responsible for:

The Regulatory Affairs (RA) helps to communicate and coordinate NFRC's mission with that of the Federal, state, and local government, international rating organizations, code development, professional and trade organizations and other voluntary programs; and reports back to the membership on activities that impact its members.

Committee Chain: * Regulatory Affairs and Marketing Committee

NFRC Staff Liaison: Tom Herron, Senior Director, Communications and Marketing * therron@nfr.org



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***** DRAFT MINUTES *****

Regulatory Affairs and Marketing Committee

Monday, September 25, 2017

4:00 p.m. – 5:30 p.m.

Chair: Garrett Stone, Stone Mattheis Xenopoulos & Brew, PC

1. G. Stone called the meeting to order at 4:00 p.m.
2. S. Wendt was appointed recording secretary.
3. Minutes from October 4, 2016 (Denver, CO) were approved as presented.
4. The agenda was reviewed and approved as modified.
5. Reports
 - i. Codes Update (G. Stone)
 - ii. ENERGY STAR update (D. Anderson)
 - iii. Canada Update (J. Baker)
6. Unfinished Business
7. New Business
8. The meeting was adjourned at 5:34 p.m.



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Regulatory Affairs Committee Roster*

AGC Glass Company North America	Milgard Manufacturing, Inc.
American Architectural Manufacturers Association	National Certified Testing Laboratories
Andersen Corporation	NT Window, Inc.
Apogee Enterprises	Oak Ridge National Laboratory
Associated Laboratories, Inc.	ODL Inc
Associated Materials, Inc.	Oldcastle Building Envelope
Birch Point Consulting, LLC	Pella Windows and Doors
California Energy Commission	PGT Industries
Cardinal Glass Industries, Inc.	Pilkington North America, Inc.
Champion Window and Patio Rooms Company	Plastic Glazing Coalition
Custom Window Systems, Inc.	PlyGem Windows
Door and Access Systems Manufacturers Association	ProVia Door, Inc.
Eastman Chemical Company	Roetzel & Andress
Efficient Windows Collaborative	SaintGobain Solar Gard, LLC
Element Materials Technology	Solatube International, Inc.
Energi Fenestration Solutions	Stone Mattheis Xenopoulos & Brew, PC.
Guardian IG	Sunrise Windows, Ltd.
Insulating Glass Manufacturers Alliance (IGMA)	Taylor Strategic Partnerships
International Window Film Association	Therma-Tru
Intertek-ATI	UL, LLC
Intigral	VEKA Inc.
JELD-WEN, inc.	VELUX
Keystone Certifications, Inc.	Vitro Architectural Glass
Kolbe & Kolbe Millwork Company, Inc.	Western Window Systems
Lawrence Berkley National Laboratory	WESTLab
Marvin Windows and Doors	WinBuild, Inc.
Masonite International Corporation	Window and Door Manufacturers Association (WDMA)
Mathews Brothers Company	WSP
MI Windows and Doors	

**Committee Membership requires members to sign up onsite at meeting (or by [sending an email](#) while attending meeting) for inclusion on roster/voting rights. Please note, if two consecutive meetings are missed without a voting representative being at the meeting (checked via meeting registration) the company will be dropped and interested parties must sign up once again.*

Only those organizations that have paid NFRC membership dues as of September 27, 2018, will be eligible to vote at the meeting.

*If you notice a problem, PLEASE contact the staff of NFRC as soon as possible. **Discrepancies cannot be addressed after October 4, 2018:** jfinn@nfr.org*



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Diffuse Glazing Task Group

Tuesday, October 9, 2018

8:00AM – 9:00AM MDT

Chair: Jacob C. Jonsson, LBNL

1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 2. **Appoint Recording Secretary ([TASK GROUP PARTICIPANT NAME])**
 3. **Review and Approve Agenda**
 4. **Unfinished Business**
 - a. Review of ballot comments
 - b. Review of research proposal comments
 5. **New Business**
 - a. ILC sample selection
 6. **Adjourn**
-

SCOPE

Find a way to obtain spectral data for diffuse glazing in a manner that would allow WINDOW calculations of IGUs. Determine best practice how to obtain data and verify the accuracy of these practices.



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Solar Optical Perf. Non-Planar Trans. Task Group

Tuesday, October 9, 2018

9:00AM – 10:00AM MDT

Chair: Charlie Curcija, LBNL

Co-Chair: Michael Fischer, Kellen

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines

2. Appoint Recording Secretary ([TASK GROUP PARTICIPANT NAME])

3. Review and Approve Agenda

4. Unfinished Business

- a. Review comments from one pager
- b. Review and approve presentation for the Research Subcommittee
- c. Prepare a Motion: Recommend the research subcommittee approve the one pager and forward to Research & Technology.

5. New Business

- a. Review and approve draft RFP

6. Adjourn

SCOPE

To develop a rating procedure for non-planar products using computer simulation software such as WINDOW/THERM.



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CMAST Task Group

Tuesday, August 9, 2018

10:00 a.m. – 11:00 a.m.

Chair: Jesse Winters, *Window Tech. Inc.*

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines

2. Appoint Recording Secretary ([TASK GROUP PARTICIPANT NAME])

3. Review and Approve Agenda

4. Unfinished Business

- a. CMA CPD – when items should be removed from the CPD (705, Section 4.2.D)
[Waiting for time limit as decided by 705 TG]
- b. CMAST algorithm improvement is waiting for 705 TG to create business rules.
 - i. CMAST Advisory TG to go forth with completing proposal/specification.

5. New Business

- a. Review draft version of the NFRC CMAST ACE User's Manual.

6. Adjourn

SCOPE

The CMAST Advisory Task Group is responsible for providing feedback about the usability of the CMAST software, and also for reviewing the CMA Technical/Ratings documents and CMAST User's Manuals, to provide feedback to the pertinent technical and ratings Task Groups.



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Condensation Resistance Task Group

Tuesday, October 9, 2018

11:00am – 12:00pm

Chair: *Dennis Anderson, UL, LLC*

1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 2. **Appoint Recording Secretary (NFRC STAFF)**
 3. **Review and Approve Agenda**
 4. **New Business**
 - a. Work Groups Update
 - b. Ballot responses summary
 - c. TG Task List
 - d. Next Steps
 5. **Schedule Next Meeting**
 6. **Adjourn**
-

SCOPE

The Condensation Resistance Task Group shall make recommendations to the Condensation Resistance Subcommittee for improving the accuracy and/or ease of use of the NFRC 500 simulation process.

Committee Chain: Technical Committee * Condensation Resistance SC * Condensation Resistance Task Group
NFRC Staff Liaison: Scott R. Hanlon, Director, Program Operations * shanlon@nfr.org



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Vacuum Insulating Glass Task Group

Tues, October 9, 2018

12:00PM – 12:30PM MDT

Chair: Dave Cooper, Guardian Industries

1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 2. **Appoint Recording Secretary ([TASK GROUP PARTICIPANT NAME])**
 3. **Review and Approve Agenda**
 4. **Unfinished Business**
 - a. BRTG Findings
 - b. Presentation to Research Subcommittee
 5. **New Business**
 6. **Adjourn**
-

SCOPE

The VIG TG mission is to conduct the necessary research, using recognized science and NFRC published procedures to accurately define, rate and label performance characteristics of fenestration incorporating VIG component(s).



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NFRC 700 Certification Process Streamline Task Group

Tuesday, October 09, 2018

1:30pm – 2:30pm

Chair: Steve Strawn, JELD-WEN

Co- Chair: Jason Seals, AAMA

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines
- d. Review Subcommittee Voting Requirements: one vote per member company

2. Appoint Recording Secretary ([NFRC STAFF NAME])

3. Approve Minutes from March 2018 meeting in St. Louis, MO

4. Review and Approve Agenda

5. Reports

- a. Presentation (S. Strawn/J. Seals) Update on projects
- b. Actions taken during conference calls or via ballots between March 2018 and October 2018
- c. Other

6. Unfinished Business

- a. Unfinished Business
- b. Other

7. New Business

- a. New Business
- b. Other

8. Adjourn

SCOPE

Review all requirements of NFRC Product Certification Procedures with the goal of removing non-value-added steps to streamline the whole certification process.

Committee Chain: * Ratings Committee * NFRC 700 PCP Certification Subcommittee
* NFRC 700 PCP Certification Process – Streamline Task Group

NFRC Staff Liaison: Una Money Penny, Sr. Manager, Product Development, umoneypenny@nfr.org



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Optical Properties Subcommittee

Tuesday, October 9, 2018

Chair: *Jacob Jonsson, Lawrence Berkley National Lab*

Vice Chair: *David Cooper, Guardian Industries*

1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 - d. Review Subcommittee Voting Requirements: one vote per member company
 2. **Appoint Recording Secretary (NFRC STAFF)**
 3. **Approve Minutes** from March 2018 meeting in St. Louis, MO
 4. **Review and Approve Agenda**
 5. **Reports**
 - a. VIG Task Group Report (D. Cooper)
 - b. Diffuse Glazing Task Group (J. Jonsson)
 - c. Solar Optical Perf. Non-Planar Trans. Systems Task Group (C. Curicja / M. Fischer)
 6. **Unfinished Business**
 7. **New Business**
 - a. NFRC 301 Ballot
Motion: F. Last . F. Last move the Motion passes/fails UVV
 - b. NFRC 302 Ballot
Motion: F. Last . F. Last move the Motion passes/fails UVV
 - c. Deconstruction of electrochromic products
 8. **Adjourn**
-

SCOPE

The Optical Properties Subcommittee shall be responsible for determining, reviewing, and maintaining solar optical properties data for glazing materials and systems for use in NFRC procedures. The Optical Properties Subcommittee shall report to the Research and Technology Committee.



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*** *DRAFT MINUTES* ***

NFRC Optical Properties Subcommittee

Tuesday, March 20, 2018

Under Research & Technology Committee Block: 02:30 p.m. – 4:30 p.m.

Chair: Jacob Jonsson, Lawrence Berkeley National Laboratory

Vice Chair: Dave Cooper, Guardian Industries

-
1. J. Jonsson called the meeting to order at 02:51 p.m.
 2. J. Padgett was appointed recording secretary.
 3. Minutes from September 2017 (San Diego) were approved as modified.
 4. The agenda was reviewed and approved as presented.
 5. Reports
 - a. Non-Planar Simulation Task Group – (C. Curcija)
 - i. C. Curcija stated that he has nothing to report. M. Fischer offered to serve as the vice chair of this TG.
 - b. Vacuum Insulating Glazing Task Group – (D. Cooper)
 - i. B. Shah states there will be a update at the subcommittee.
 - c. Diffuse Glazing Task Group – (J. Jonsson)
 - i. J. Jonsson reported the task group has submitted a ballot and has a research proposal that will be brought up at the research subcommittee.
 - d. Research proposal for diffused glazing work – (J. Jonsson)
 - i. J. Jonsson reported that this will be brought up at the research subcommittee.
 6. Unfinished Business
 - i. Venetian blind – C. Curcija mentions there is a discrepancy on the calculation of the venetian blind; and the windows attachment would like the manufacture to specify a maximum angle. Simulators are trained to force close the blinds. Possible new task group to be formed to handle this bug and to change the documents.
 7. New Business
 - a. NFRC 300 Ballot –
 - i. Approved with Comment: T. Culp / M. Fischer move forward as editorial & persuasive. Passes UVV.

MOTION: T. Culp / B. Shah move to forward the ballot to the Ratings Committee to approve and recommend implementation upon publication. Motion passes by UVV.
 8. The meeting was adjourned at 3:17 p.m.



NFRC 2018 Fall Membership Meeting
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Program Booklet

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NFRC 2018 Fall Membership Meeting
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Thermophysical Properties Subcommittee

Tuesday October 8, 2018

R&T Block Period: 3:30 pm – 6:00 PM

Chair: Charlie Curcija, LBNL

Vice Chair: Peter Lyons, Peter Lyons & Associates

-
1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 - d. Review Subcommittee Voting Requirements: one vote per member company
 2. **Appoint Recording Secretary (STAFF)**
 3. **Approve Minutes** from March 2018 meeting in St. Louis, MO
 4. **Review and Approve Agenda**
 5. **Reports**
 - a. NFRC 101 TG – J. Hayden, Pella, Inc.
 6. **New Business**
 - a. None
 7. **Adjourn**

SCOPE

The Thermophysical Properties Subcommittee is responsible for developing and maintaining NFRC 101. It is also responsible for the review and approval of the submitted data in accordance with these documents. This subcommittee reports to the Research and Technology Committee.

Committee Chain: *Research & Technology Committee * Thermophysical Properties Subcommittee
NFRC Staff Liaison: Steve Urich, Director, Programs surich@nfdc.org*



NFRC 2018 Fall Membership Meeting
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***** DRAFT MINUTES *****

NFRC Thermophysical Properties Subcommittee

Tuesday, March 20, 2018

Under Research & Technology Committee Block: 02:30 p.m. – 4:30 p.m.

Chair: Dr. Charlie Curcija, Lawrence Berkeley National Laboratory

Vice Chair: Peter Lyons, Peter Lyons & Associates

1. C. Curcija called the meeting to order at 03:18 p.m.
2. J. Padgett was appointed recording secretary.
3. Minutes from September 2017 (San Diego) were approved as presented.
4. The agenda was reviewed and approved as modified.
5. Reports
 - a. NFRC 101 TG – (J. Hayden)
 - i. J. Hayden reported the TG hopes to have a ballot for the fall. There will be a webinar to explain the changes. The TG has found that the generic values in appendix A for wood were possibly incorrect. The difference being .14 to .17 mostly on those that are less likely to be used. Suggestion was to do an ILC for the most commonly used woods from the wood manufactures to try and support and be able to keep .14.
 - b. NFRC 101 generic material electronic database development – (C. Curcija)
 - i. C. Curcija proposes we remove this item from the reporting list because of software changes making the list obsolete.
6. Unfinished Business
 - i. None
7. New Business
 - a. NFRC 101 Section 5.1.7.1 Ballot

MOTION: J. Hayden / J. Baker - move to forward the ballot to the Research and Technology Committee to approve and forward to the Board for approval and implementation upon publication. Passes with UVV
8. The meeting was adjourned at 3:37 p.m.



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NFRC 2018 Fall Membership Meeting
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Program Booklet

Research Subcommittee

Tuesday, October 9, 2018

Chair: *Bipin Shah, WinBuild, Inc.*

Vice Chair: *Peter Lyons, Peter Lyons & Associates*

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines
- d. Review Subcommittee Voting Requirements: one vote per member company

2. Appoint Recording Secretary (NFRC STAFF)

3. Approve Minutes from March 2018 meeting in St. Louis, MO

4. Review and Approve Agenda

5. Reports

- a. VIG Task Group Report (D. Cooper)
- b. Diffuse Glazing Task Group (J. Jonsson)
- c. Non-Planar Products (M. Fischer / C. Curicja)

6. New Business

- a. VIG RFP – BRTG Summary
- b. Fritted Glass RFP
- c. Non-Planar TG – One pager

7. Adjourn

SCOPE

The Research Subcommittee is to act as a repository for research requests. These requests will be prioritized and recommendations passed to the Research and Technology Committee. The Research Subcommittee is to function as an intermediary for the collection, coordination, and publication of research and test data pertinent to the NFRC organization and its membership. The purpose of this coordinated effort is to provide concise, useful information such as reports of tests in progress and accumulated test results.

Committee Chain: Research & Technology Committee * Research Subcommittee
NFRC Staff Liaison: Scott R. Hanlon, Director, Program Operations * shanlon@nfr.org



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***** DRAFT MINUTES *****
NFRC Research Subcommittee

Tuesday, March 20, 2018

Under Research & Technology Committee Block: 02:30 p.m. – 4:30 p.m.

Chair: Bipin Shah, Win Build

Vice Chair: Peter Lyons, Peter Lyons & Associates

1. B. Shah called the meeting to order at 03:39 p.m.
2. J. Padgett was appointed recording secretary.
3. Minutes from September 2017 (San Diego) were approved as presented.
4. The agenda was reviewed and approved as presented.
5. Reports
 - a. VIG Task Group Report -- B. Shah reported that the Bid Review TG met and they had 4 bids to review. They are waiting for some revision to come back and will be meeting after the spring meeting to move forward.
 - b. Diffuse Glazing One Page Review Task Group -- J. Jonsson reported that the TG created the one pager and have created the RFP.
 - c. Non-Planar Products -- M. Fisher reported that they are planning on bringing a one pager to the TG and then the fall meeting.
6. Unfinished Business
 - a. None
7. New Business
 - a. None
8. The meeting was adjourned at 3:45 p.m.



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Research and Technology Committee

Tuesday, October 9, 2018

Chair: *Bipin Shah, WinBuild, Inc.*

Vice Chair: *Lisa Winkler, Eastman, Performance Films Division*

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines
- d. Review Committee Voting Requirements: one vote per member company listed on the roster.

2. Appoint Recording Secretary (NFRC STAFF)

3. Roll Call/Establish Quorum

4. Approve Minutes from March 2018 meeting in St. Louis, MO

5. Review and Approve Agenda

6. Reports

- a. Optical Properties Subcommittee (J. Jonsson, D. Cooper)
- b. Thermophysical Properties Subcommittee (C. Curcija, P. Lyons)
- c. Research Subcommittee (B. Shah, Peter Lyons)

7. New Business

- a. TBD

8. Adjourn

SCOPE

The Research and Technology Committee is responsible for developing and maintaining accurate technical data used to support the NFRC rating procedures.

Committee Chain: Research & Technology Committee

NFRC Staff Liaison: Scott R. Hanlon, Director, Program Operations * shanlon@nfr.org



NFRC 2018 Fall Membership Meeting
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***** DRAFT MINUTES *****

Research and Technology Committee

Tuesday, March 20, 2018

Chair: Bipin Shah, WinBuild

Vice Chair: Lisa Winkler, Eastman, Performance Films Division

1. B. Shah called the meeting to order at 3:45 p.m.
2. J. Padgett was appointed recording secretary.
3. Roll call was taken and a quorum was established
4. Minutes from September 2017 (San Diego) were approved as presented.
5. The agenda was reviewed and approved as presented.
6. Reports
 - a. Optical Properties Subcommittee (J. Jonsson, D. Cooper)
 - i. **MOTION:** J. Jonsson / J. Hayden move forward the NFRC 300 ballot with editorial changes to Board of Directors for approval and recommend implementation upon publication. Motion passes VV.
 - ii. M. Fischer will co-chair and lead the Non-planar TG.
 - b. Thermophysical Properties Subcommittee (C. Curcija, P. Lyons)
 - i. **MOTION:** C. Curcija / J. Hayden Move forward NFRC 101 ballot to Board of Directors for approval and recommend implementation upon publication. Motion passes with UVV.
 - ii. Staff will investigate and report on an ILC for 2018 which may include commonly used woods and moisture content.
 - iii. NFRC will host a providing significant changes to the appendices in NFRC 101, which will then be balloted in Fall 2018.
 - c. Research Subcommittee (B. Shah, Peter Lyons)
 - i. Staff will post the Diffuse Glazing RFP on the NFRC website containing information how to provide comments.
 - ii. One pager from the Non-planar Products TG will be prepared and presented the Research SC for review.
6. Unfinished Business
 - b. None
7. New Business
 - b. None
8. The meeting was adjourned at 3:54 p.m.



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Research & Technology Committee Roster*

AGC Glass Company North America	MI Windows and Doors
American Architectural Manufacturers Association	Milgard Manufacturing, Inc.
Andersen Corporation	National Certified Testing Laboratories
Apogee Enterprises	Oak Ridge National Laboratory
Arconic	ODL Inc
Associated Laboratories, Inc.	Oldcastle Building Envelope
Associated Materials, Inc.	Pella Windows and Doors
Benson Industries	PGT Industries
Birch Point Consulting, LLC	Pilkington North America, Inc.
California Energy Commission	Pleotint
Cardinal Glass Industries, Inc.	Ply Gem Window Group
Chelsea Building Products	Quast Consulting and Testing, Inc.
Door and Access Systems Manufacturers Association	Roetzel & Andress
Eastman Chemical Company	SaintGobain Solar Gard, LLC
Efficient Windows Collaborative	Solatube International, Inc.
Element Materials Technology	Sunrise Windows, Ltd.
Guardian IG	Technoform
Humann Building Solutions, USGBC LEED TAG	Therma-Tru
Insulating Glass Manufacturers Alliance (IGMA)	UL, LLC
International Window Film Association	VEKA Inc.
Intertek-ATI	VELUX
Intigral	Vitro Architectural Glass
JELD-WEN, inc.	Wasco Products, Inc.
Keystone Certifications, Inc.	Wausau Window and Wall Systems
Kolbe & Kolbe Millwork Co., Inc.	Western Window Systems
Lawrence Berkley National Laboratory	WESTLab
Madico, Inc.	WinBuild, Inc.
Manko Window Systems, Inc.	Window and Door Manufacturers Association (WDMA)
Marvin Windows and Doors	Windsor Windows and Doors
Masonite International Corporation	Wiss, Janney, Elstner Associates
Mathews Brothers Company	World Millwork Alliance
	WSP

**Committee Membership requires members to sign up onsite at meeting (or by [sending an email](#) while attending meeting) for inclusion on roster/voting rights. Please note, if two consecutive meetings are missed without a voting representative being at the meeting (checked via meeting registration) the company will be dropped and interested parties must sign up once again.*

Only those organizations that have paid NFRC membership dues as of September 27, 2018, will be eligible to vote at the meeting.

*If you notice a problem, PLEASE contact the staff of NFRC as soon as possible. **Discrepancies cannot be addressed after October 4, 2018:** jfinn@nfr.org*



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NFRC 2018 Fall Membership Meeting
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Software Subcommittee

Wednesday, October 10, 2018

Block Period: 8:00 a.m.– 12:00 p.m.

Chair: *Catherine Best, Benson Industries, Inc.*

Vice Chair: *Ryan Harnden, Matthews Brothers*

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines
- d. Review Subcommittee Voting Requirements: one vote per member company

2. Appoint Recording Secretary ([NFRC STAFF NAME])

3. Approve Minutes from March 2018 meeting in St. Louis, MO

4. Review and Approve Agenda

5. Reports

- a. *WINDOW / THERM Approval TG – J. Hayden*
- b. *CMAST Advisory TG – C. Best*
- c. *CPD Advisory TG – J. Gordon*

6. Adjourn

SCOPE

The scope of the Software Subcommittee is to:

- *Develop guidelines for the development of software tools and their documentation as used in NFRC ratings;*
- *Review and prioritize software development requests;*
- *Provide oversight for software development efforts; and*
- *Develop and maintain software acceptance criteria.*

The purpose of this effort is streamlined, robust, accurate and well documented software that fulfills NFRC core mission.



NFRC 2018 Fall Membership Meeting
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***** DRAFT MINUTES *****

NFRC Software Subcommittee

Tuesday, March 20, 2018

Technical Committee Block: 4:30 p.m. – 6:30 p.m.

Chair: Catherine Best, Benson Industries, Inc.

Vice Chair: Ryan Harnden, Matthews Brothers

1. C. Best called the meeting to order at 4:31 p.m.
2. S. Urich was appointed recording secretary.
3. Minutes from September 2017 (San Diego, CA) were approved as presented.
4. The agenda was reviewed and approved as presented.
5. Reports
 - a. WINDOW / THERM Approval TG – J. Hayden
 - i. J. Hayden reported
 - b. CMAST Advisory TG – Staff
 - i. S. Nicholas reported
 - c. CPD Advisory TG – J. Gordon
 - i. J. Gordon reported
6. New Business
7. Presentation: Window/Therm Updates & Cloud-Based IGDB/CGDB – C. Curcija
8. The meeting was adjourned at 4:56 p.m.



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CMA Technical Subcommittee

Wednesday, October 10, 2018

Technical Committee Block Period: 8:00 am – 2:00 pm

Chair: Mahabir Bhandari, ORNL

Vice Chair: Mason Fritz, EFCO Corp.

-
1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 - d. Review Subcommittee Voting Requirements: one vote per member company
 2. **Appoint Recording Secretary (STAFF)**
 3. **Approve Minutes** from March 2018 meeting in St. Louis, MO
 4. **Review and Approve Agenda**
 5. **Reports**
 - a. CMA Technical TG – Mason Fritz, EFCO Corp.
 6. **New Business**
 - a. None
 7. **Adjourn**

SCOPE

To maintain a component based nonresidential procedure for fenestration products that will yield accurate energy performance data for use in code compliance and for meaningful building energy analysis.

Committee Chain: *Technical Committee * CMA Technical Subcommittee
NFRC Staff Liaison: Steve Urich, Director, Programs* surich@nfr.org



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***** DRAFT MINUTES *****

CMA (Technical) Subcommittee

Tuesday, March 20, 2018

Block Period: 4:30 p.m. – 6:30 p.m.

Chair: *Mahabir Bhandari, Oak Ridge National Laboratory*

Vice Chair: *Mason Fritz, EFCO Corp*

1. M. Bhandari called the meeting to order at 5:07 p.m.
 2. U. Moneypenny was appointed recording secretary.
 3. Minutes from September (San Diego, CA) were approved as presented.
 4. The agenda was reviewed and approved.
 5. Reports
 - a. CMA Technical TG updates
 - i. M. Fritz is leading the task group.
 - ii. M. Fritz reported on the development of the new simulator manual for ACEs.
 - iii. Table 4-3 review is underway.
 6. Unfinished Business
 - a. none
 7. New Business
 - a. No new business on the agenda
 8. The meeting was adjourned at 5:13 p.m.
-



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Daylighting Subcommittee

Wednesday, October 10, 2018

Block Period: 8am-12pm

Chair: *Ray Garries, MI Windows and Doors*

Vice Chair: *Roger LeBrun, VELUX-America*

1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 - d. Review Subcommittee Voting Requirements: one vote per member company
 2. **Appoint Recording Secretary ([NFRC STAFF NAME])**
 3. **Approve Minutes** from March 2018 meeting in St. Louis, MO
 4. **Review and Approve Agenda**
 5. **Reports**
 - a. Review of Concept
 - b. Initial consumer information plan
 - c. Concept proposal update
 - d. Next steps
 6. **Unfinished Business**
 7. **New Business**
 8. **Adjourn**
-

SCOPE

To create a rating system for daylighting potential utilizing the existing NFRC VT rating combined with known, bright day incident illuminance values

Committee Chain: *Technical Committee * Daylighting Subcommittee

NFRC Staff Liaison: Una Money Penny, Sr. Manager, Product Development, umoneypenny@nfr.org



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***** DRAFT MINUTES *****

NFRC Daylighting Subcommittee

Tuesday, March 20, 2018

Technical Committee Block: 4:30 p.m. – 6:30 p.m.

Chair: Ray Garries, MI Windows and Doors

Vice Chair: Roger LeBrun, VELUX America

1. R. Garries called the meeting to order at 5:11 p.m.
2. M. Scism was appointed recording secretary.
3. Minutes from September 2018 (San Diego, CA) were approved as presented.
4. The agenda was reviewed and approved as modified.
5. Reports
 - a. Daylighting Ratings task group / Subcommittee – (R. Garries)
 - i. R. Garries reported
6. Unfinished Business
 - a. None
7. New Business
 - a. None
8. The meeting was adjourned at 5:16 p.m.



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Condensation Resistance Subcommittee

Wednesday, October 10, 2018

Chair: *Kevin Vilhauer, Milgard Manufacturing, Inc.*

Vice Chair: *Steve Harp, Associated Materials*

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines
- d. Review Subcommittee Voting Requirements: one vote per member company

2. Appoint Recording Secretary (NFRC STAFF)

3. Approve Minutes from March 2018 meeting in St. Louis, MO

4. Review and Approve Agenda

5. Reports

- a. Condensation Resistance Task Group (D. Anderson)

6. New Business

- a. NFRC 500 Condensation Resistance Ballot
- b. NFRC 501 Condensation Resistance Ballot
- c. Harmonization Efforts with AAMA, CSA, ASTM

7. Adjourn

SCOPE

The Condensation Resistance Subcommittee is responsible for developing and coordinating NFRC 500: Procedure for Determining Fenestration Product Condensation Resistance Values and NFRC 501: User Guide to the Procedure for Determining Fenestration Product Condensation Resistance Rating Values.

Committee Chain: Technical Committee * Condensation Resistance Subcommittee
*NFRC Staff Liaison: Scott R. Hanlon, Director, Program Operations * shanlon@nfr.org*



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***** DRAFT MINUTES *****

NFRC Condensation Resistance Subcommittee

Wednesday, March 21, 2018

Technical Committee Block: 8:00 a.m. – 12:00 p.m.

Chair: Kevin Vilhauer, Milgard Manufacturing, Inc.

Vice Chair: Steve Harp, Associated Materials

1. K. Vilhauer called the meeting to order at 8:07 a.m.
2. M. Scism was appointed recording secretary.
3. Minutes from September 2018 (San Diego, CA) were approved as presented.
4. The agenda was reviewed and approved as modified.
5. Reports
 - a. Condensation Resistance Task Group – (D. Anderson)
 - i. D. Anderson reported that a ballot for a brand-new condensation index was developed.
 - ii. Ballots will be discussed at this meeting
6. Unfinished Business
 - a. None
7. New Business
 - a. NFRC 500 Condensation Resistance Ballot
 - i. Quast: S. Skoglund (Section 4.2) – NEG
MOTION: S. Skoglund / M. Thoman move to find this negative non-persuasive and send language to TG to develop language in simulation manual. Motion passes by UVV.
 - ii. Intertek: M. Thoman (Section 5.3.2) – NEG
MOTION: M. Thoman / D. Anderson move to find this negative persuasive and develop language at TG for ballot. Motion passes by UVV.
 - iii. JELD-WEN: S. Strawn (Appendix B) – NEG
MOTION: J. Kantola / J. Hayden move to find this negative persuasive and substantive and produce more research to determine thermocouple locations. Motion passes by UVV.
 - iv. VELUX: R. LeBrun (Appendix B) – NEG
MOTION: R. LeBrun / D. Anderson move to find this negative persuasive and substantive. Motion passes by UVV.
 - v. Roetzel & Andress: T. Zaremba (General) – NEG
Withdrawn and request that comments in response are addressed in TG.
 - vi. AGC Glass Company North America: M. C (General) – NEG
Withdrawn
 - vii. Pella: J. Hayden (General) – NEG
MOTION: J. Hayden / J. Baker move to find this negative persuasive and substantive and post directions on website. Motion passes by UVV.



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- viii. WESTLab: J. Baker (General) – NEG
Withdrawn
- ix. AAMA: J. Seals (General) – NEG
Withdrawn
- x. BirchPoint Consulting: T. Culp (General) – NEG
Withdrawn
- xi. Andersen: M. Mikkelson (General) – NEG
Withdrawn
- b. NFRC 501 Condensation Resistance Ballot
 - i. JELD-WEN: J. Kantola (Section 5) – NEG
Withdrawn
 - ii. Roetzel & Address: T. Zaremba (General) – NEG
Withdrawn; see NFRC 500 comment.
 - iii. AGC Glass Company: M. C (General) – NEG
Withdrawn
 - iv. Pella: J. Hayden (General) – NEG
Withdrawn
 - v. WESTLab: J. Baker (General) – NEG
Withdrawn
 - vi. AAMA: J. Seals (General) – NEG
MOTION: J. Seals / J. Baker move to find this negative persuasive and substantive. Motion passes by UVV.
 - vii. BirchPoint Consulting: T. Culp (General) – NEG
Withdrawn
 - viii. Andersen: J. M. Mikkelson (General) – NEG
Withdrawn based on previous action
- c. Harmonization Efforts with AAMA, CSA, ASTM
 - i. J. Seals reported. Simulation method almost ready, hope to publish by 2nd quarter, test method will take longer.
 - ii. Staff (S. Hanlon) raised concerns from participants regarding cooperation during development. J. Seals feels that cooperation is welcome.
 - iii. C. Curcija will provide additional research information
 - iv. J. Baker updated on where CSA stands and will most likely use the NFRC method when completed
 - v. D. Anderson reported on ASTM progress. Will develop a test method and intends to align with AAMA.
- 8. The meeting was adjourned at 8:32 a.m.



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U-factor Subcommittee

Wednesday, October 10, 2018

Chair: *Anthony Cinnamon, Wiss, Janney, Elstner Associates, Inc.*

Vice Chair: *Bipin Shah, WinBuild, Inc.*

1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 - d. Review Subcommittee Voting Requirements: one vote per member company
 2. **Appoint Recording Secretary (NFRC STAFF)**
 3. **Approve Minutes** from March 2018 meeting in St. Louis, MO
 4. **Review and Approve Agenda**
 5. **Reports**
 - a. Door Task Group (S. Jaspersen)
 - b. NFRC 100 Product Line Updating TG (M. Fritz)
 - c. Skylight Task Group (R. LeBrun)
 - d. Simulators Task Group (L. Turner)
 - e. Spandrel Validation Task Group (A. Cinnamon)
 - f. TDD Task Group (N. Diegert)
 - g. Testing Laboratory Task Group (M. Thoman)
 6. **New Business**
 - a. ANSI / NFRC 100 Grid / 3mm / 6mm Ballot
 - b. ANSI / NFRC 100 Table 4-3 Ballot
 - c. ANSI / NFRC 100 Diffused Glazing Ballot
 - d. Harmonization Efforts with AAMA, CSA, ASTM
 7. **Adjourn**
-

SCOPE

The U-factor Subcommittee is responsible for developing and coordinating NFRC 100: The Technical Procedures for Determining Fenestration Product U-Factors.



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***** DRAFT MINUTES *****

NFRC U-Factor Subcommittee

Wednesday, March 21, 2018

Technical Committee Block: 8:00 a.m. – 12:00 p.m.

Chair: Anthony Cinnamon, Wiss, Janney, Elstner Associates, Inc.

Vice Chair: Bipin Shah, WinBuild, Inc.

1. A. Cinnamon called the meeting to order at 8:35am CDT
2. M. Scism was appointed recording secretary.
3. Minutes from September 2018 (San Diego, CA) were approved as presented
4. The agenda was reviewed and approved as modified
5. Reports
 - a. Door Task Group — S. Jaspersen reported there are no action items; however, there is additional work to be completed at the many task groups, such as Door and NFRC 700 PCP.
 - b. NFRC 100 Product Line Updating TG — (M. Fritz)
 - i. M. Fritz reported that the TG developed a new scope and will be updated on the NFRC Community.
 - ii. Asked for volunteers from all parts of industry to join the TG.
 - c. Skylight Task Group — R. LeBrun reported that no issues were brought to them and the TG is dormant.
 - d. Simulators Task Group — (L. Turner) - S. Hanlon (staff) reported that TG will start meeting regularly to handle new issues.
 - e. Spandrel Validation Task Group — A. Cinnamon reported that the TG needs volunteers to provide physical samples and they current have one. Planning on having a ballot ready for fall.
 - f. TDD Task Group — N. Digert reported that several ballots are going through.
 - g. Testing Laboratory Task Group — M. Thoman reported no action
6. Unfinished Business
 - a. None
7. New Business
 - a. ANSI/NFRC 100 Trendline Ballot
 - i. Pella: J. Hayden (Section 5.11.2.C) – NEG
MOTION: J. Hayden / R. LeBrun move to find this negative persuasive and editorial. Motion passes by UVV.
 - ii. UL, LLC: D. Anderson (Section 5.11.4.1.1.A.ii) – NEG
Withdrawn
 - iii. Keystone Certifications: T. Rogers (Section 5.11.7.B) – NEG
MOTION: B. Shah / J. Baker move to find this negative non-persuasive, but TG should address the concern and take a look at the comment. Motion passes by UVV.
 - iv. BirchPoint Consulting: T. Culp (General) – NEG



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MOTION: T. Culp / M. Fritz move to find this negative persuasive and substantive. Motion passes by 23-17-5.

- a. Staff, chair, and others believe that this is a change in scope for the TG and needs BOD approval.
- b. Those in support of the motion disagree.
- c. This motion warrants further discussion with the chair to determine if this is a scope change.

- v. WESTLab: J. Baker (General) – NEG

Withdrawn

- b. NFRC 100 TDD Ballot

- i. Solatube International: N. Digert (Section / General) – APC

MOTION: N. Digert / B. Shah move to forward to Technical Committee for approval and publication, pending approval of other TDD ballots (NFRC 200, 201, 203, and 700) and completion of the ANSI document approval process during the next document cycle review. Motion passes by UVV.

8. The meeting was adjourned at 9:29am CDT



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Solar Heat Gain Coefficient Subcommittee

Wednesday, October 10, 2018

Chair: *Lisa Winckler, Eastman, Performance Films Division*

Vice Chair: *Brad Schultz, ALI*

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines
- d. Review Subcommittee Voting Requirements: one vote per member company

2. Appoint Recording Secretary (NFRC STAFF)

3. Approve Minutes from March 2018 meeting in St. Louis, MO

4. Review and Approve Agenda

5. Reports

- a. TDD Task Group (N. Digert)

6. New Business

- a. ANSI / NFRC 200 Grid / 3mm / 6mm Ballot
- b. ANSI / NFRC 200 Diffused Glazing Ballot

7. Adjourn

SCOPE

The Solar Heat Gain Subcommittee is responsible for developing and coordinating NFRC 200: Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence.

Committee Chain: Technical Committee * Solar Heat Gain Coefficient Subcommittee
*NFRC Staff Liaison: Scott R. Hanlon, Director, Program Operations * shanlon@nfr.org*



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***** DRAFT MINUTES *****

NFRC Solar Heat Gain Subcommittee

Wednesday, March 21, 2018

Technical Committee Block: 8:00 a.m. – 12:00 p.m.

Chair: Lisa Winckler, Eastman, Performance Films Division

Vice Chair: Brad Schultz, ALI

1. L. Winckler called the meeting to order at 9:43 a.m.
2. M. Scism was appointed recording secretary.
3. Minutes from September 2018 (San Diego, CA) were approved as presented.
4. The agenda was reviewed and approved as modified.
5. Reports
 - a. TDD Task Group — (N. Digert)
 - i. N. Digert reported that there are 3 ballot measures moving forward.
6. Unfinished Business
 - a. None
7. New Business
 - a. ANSI/NFRC 200 Trendline Ballot
 - i. Vitro Architectural Glass: M. B (Section 4.1) – NEG
Withdrawn
 - ii. UL, LLC: D. Anderson (Section 4.5) – NEG
Withdrawn
 - iii. WESTLab: J. Baker (General) – NEG
Withdrawn
 - iv. Pella: J. Hayden – APC
MOTION: J. Hayden / J. Baker Send back to task group based on actions taken on the NFRC 100 ballot and bring them both forward at the same time. Passes, UVV
 - b. ANSI/NFRC 200 TDD Ballot
 - i. B. Shah – APC
MOTION: B. Shah / M. Thoman move to forward to Technical Committee for approval and publication, pending approval of other TDD ballots (NFRC 100, 201, 203, and 700) and completion of the ANSI document approval process during the next document cycle review. Motion passes by UVV.
 - c. NFRC 201 TDD Ballot
 - i. Company: N. Digert – APC
MOTION: N. Digert / M. Thoman move to forward to Technical Committee for approval and publication, pending approval of other TDD ballots (NFRC 100, 200, 203, and 700) and completion of the ANSI document approval process during the next document cycle review. Motion passes by UVV.



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d. NFRC 203 TDD Ballot

i. Company: N. Digert – APC

MOTION: N. Digert / M. Thoman move to forward to Technical Committee for approval and publication, pending approval of other TDD ballots (NFRC 100, 200, 201 and 700) and completion of the ANSI document approval process during the next document cycle review. Motion passes by UVV.

8. The meeting was adjourned at 9:42 a.m.



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Ventilation Subcommittee

Wednesday, October 10, 2018

Block Period: 8:00 a.m. – 11:30 a.m.

Chair: *Ray Garries*

Vice Chair:

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines
- d. Review Subcommittee Voting Requirements: one vote per member company

2. Appoint Recording Secretary ([NFRC STAFF NAME])

3. Approve Minutes from March 2018 meeting in St. Louis, MO

4. Review and Approve Agenda

5. Reports

- a. Ventilation Ratings TG (Ray Garries)
 - i. Review of Andersen concerns
 - ii. Review of response plan and physical testing
 - iii. Latest physical testing results
 - iv. Screen effect and partial opening effect discussion
 - v. Next steps

6. New Business

- a. None

7. Adjourn

SCOPE

To create a NFRC Ventilation rating system utilizing net clear opening less a screen factor.

Committee Chain: Technical Committee, Ventilation Subcommittee
NFRC Staff Liaison: Michelle Scism, Quality and Compliance Manager mscism@nfr.org



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***** DRAFT MINUTES *****
Ventilation Subcommittee
Tuesday, March 20, 2018
Block Period: 4:30 p.m. – 6:30 p.m.
Chair: *Ray Garries, MI Windows*
Vice Chair: *TBD*

1. R, Garries called the meeting to order at 5:17 p.m.
 2. U. Moneypenny was appointed recording secretary.
 3. Minutes from September (San Diego, CA) were approved as presented.
 4. The agenda was reviewed and approved.
 5. Reports
 - a. The VR TG recommends to the Technical Committee to keep the VR rating on hold until the VR TG finalizes the technical issues described by Andersen Corporations letter.
 - b. The presentation from the S2018 meeting was reviewed for the benefit of those who were not in attendance at the VR TG meeting earlier today.
 6. New Business
 - a. Appointment of a vice-chair.
 - i. Will be deferred until discussion with staff ensues.
 7. The meeting was adjourned at 5:24 p.m.
-

SCOPE

To create a NFRC Ventilation rating system utilizing net clear opening less a screen factor.

Committee Chain: Technical Committee, Ventilation Subcommittee
NFRC Staff Liaison: Michelle Scism, Quality and Compliance Manager mscism@nfr.org



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NFRC 2018 Fall Membership Meeting
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Technical Committee

Wednesday, October 9, 2018

Chair: *Michael Thoman, Intertek, Inc.*

Vice Chair: *Lisa Winkler, Eastman, Performance Films Division*

1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 - d. Review Committee Voting Requirements: one vote per member company listed on the roster.
 2. **Appoint Recording Secretary (NFRC STAFF)**
 3. **Roll Call/Establish Quorum**
 4. **Approve Minutes** from March 2018 meeting in St. Louis, MO
 5. **Review and Approve Agenda**
 6. **Reports**
 - a. Daylighting Subcommittee (R. Garries, R. LeBrun)
 - b. Ventilation Subcommittee (R. Garries, TBD)
 - c. Component Modeling Approach Subcommittee (M. Bhandari, M. Fritz)
 - d. Condensation Resistance Subcommittee (K. Vilhauer, S. Harp)
 - e. U-factor Subcommittee (A. Cinnamon, B. Shah)
 - f. Solar Heat Gain Subcommittee (L. Winckler, B. Schultz)
 - g. Software Subcommittee (C. Best, R. Harnden)
 - h. Residential Component Based Calculation Task Group (S. Strawn, M. Webb)
 7. **Future Document Cycle – ANSI**
 8. **New Business**
 - a. TBD
 9. **Adjourn**
-

SCOPE

The Technical Committee is responsible for developing rating system tools and procedures necessary to ensure the technical accuracy of the rating system.

Committee Chain: Technical Committee

NFRC Staff Liaison: Scott R. Hanlon, Director, Program Operations * shanlon@nfdc.org



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***** DRAFT MINUTES *****

Technical Committee

Wednesday, March 21, 2018

8:00 a.m. – 12:00 p.m.

Chair: Michael Thoman, Intertek, Inc.

Vice Chair: Catherine Best, Benson Industries, Inc.

1. M. Thoman called the meeting to order at 9:45am CDT
2. M. Scism was appointed recording secretary
3. Roll call was taken a quorum was established
4. Minutes from September 2017 (San Diego, CA) were approved as presented
5. The agenda was reviewed and approved as modified
6. Reports
 - a. Daylighting Subcommittee — (R. Garries, R. LeBrun)
 - i. R. Garries reported no action items
 - b. Ventilation Subcommittee — (R. Garries, TBD)
 - i. R. Garries reported the TG is doing additional research; no other action items.
 - ii. Recommendation to have request to the board resolved by the fall meeting.
 - c. Component Modeling Approach Subcommittee — (M. Bhandari, M. Fritz)
 - i. M. Bhandari reported that Mason Fritz will take over CMA Technical TG chairmanship
 - d. Condensation Resistance Subcommittee — (K. Vilhauer, S. Harp)
 - i. K. Vilhauer reported that ballots are going back to TG for further review.
 - e. U-factor Subcommittee — (A. Cinnamon, B. Shah)
 - i. A. Cinnamon reported on the following:
 1. ANSI / NFRC 100 Trendline ballot is going back to TG and NFRC 100 TDD ballot is moving forward.
 2. **MOTION:** A. Cinnamon / R. LeBrun. Move forward to the Board for approval the ANSI / NFRC 100 TDD ballot, pending approval of other TDD ballots (ANSI/NFRC 200, 201, 203, and 700) and direct the ANS Committee to perform a mid-cycle public review with implementation and publication upon completion of the review. Pass UVV.
 - f. Solar Heat Gain Subcommittee — (L. Winckler, B. Schultz)
 - i. L. Winckler reported that NFRC 200 Trendline will go back to TG
MOTION: L. Winckler / M. Fritz. Move forward to the Board for approval the ANSI / NFRC 200, NFRC 201, and NFRC 203 TDD ballots pending approval of other TDD ballots (ANSI / NFRC 100 and NFRC 700) and direct the ANS Committee to perform a mid-cycle public review with implementation and publication upon completion of the review. Pass UVV.
 - g. Software Subcommittee — (C. Best, R. Harnden)
 - i. C. Best reported no actions
 - h. Residential Component Based Calculation Task Group — (S. Strawn, M. Webb)



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- i. M. Webb reported no actions
- 7. Future Document Cycle – ANSI – M. Thoman discussed the timeline for the next series for the ANSI document cycle.
- 8. New Business
 - a. None
- 9. The meeting was adjourned at 9:57am CDT



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Technical Committee Roster*

AGC Glass Company North America
Alcoa
American Architectural Manufacturers Association
Andersen Corporation
Apogee Enterprises
Associated Laboratories, Inc.
Associated Materials, Inc.
Benson Industries
Birch Point Consulting, LLC
California Energy Commission
Cardinal Glass Industries, Inc.
Chelsea Building Products
CLEB Laboratory inc.
Crystalite, Inc.
Door and Access Systems Manufacturers Association
Eastman Chemical Company
Efficient Windows Collaborative
Element Materials Technology
Energi Fenestration Solutions
Guardian IG
Insulating Glass Manufacturers Alliance (IGMA)
International Window Film Association
Intertek-ATI
Intigral
JELD-WEN, inc.
Keystone Certifications, Inc.
Kolbe & Kolbe Millwork Company, Inc.
Lawrence Berkeley National Laboratory (LBNL)
Madico, Inc.
Manko Window Systems, Inc.
Marvin Windows and Doors
Masonite International Corporation
Mathews Brothers Company
MI Windows and Doors
Milgard Manufacturing, Inc.
National Certified Testing Laboratories
Natural Light Energy Systems DBA Kennedy Skylights
Oak Ridge National Laboratory
ODL Inc
Oldcastle Building Envelope
Pella Windows and Doors
PGT Industries
Pilkington North America, Inc.
Pleotint
Ply Gem Window Group
Quast Consulting and Testing, Inc
Roetzel & Andress
SaintGobain Solar Gard, LLC
Solatube International, Inc.
Sunrise Windows, Ltd.
Technoform
Therma-Tru
Turner Engineering & Consulting, Inc.
UL, LLC
VEKA Inc.
VELUX
Vitro Architectural Glass
Wasco Products, Inc.
WESTLab
WinBuild, Inc.
Window and Door Manufacturers Association (WDMA)
Windsor Windows and Doors
Wiss, Janney, Elstner Associates
World Millwork Alliance
WSP

**Committee Membership requires members to sign up onsite at meeting (or by [sending an email](#) while attending meeting) for inclusion on roster/voting rights. Please note, if two consecutive meetings are missed without a voting representative being at the meeting (checked via meeting registration) the company will be dropped and interested parties must sign up once again.*

Only those organizations that have paid NFRC membership dues as of September 27, 2018, will be eligible to vote at the meeting.

*If you notice a problem, PLEASE contact the staff of NFRC as soon as possible. **Discrepancies cannot be addressed after October 4, 2018:** jinn@nfr.org*



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NFRC 2018 Fall Membership Meeting
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NFRC 700 PCP Certification Subcommittee

Wednesday, October 10, 2018

Ratings Committee Block: 2:30 pm -4:30 pm

Chair: *Jason Seals, AAMA*

Vice Chair: *Brad Schultz, ALI*

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines
- d. Review Subcommittee Voting Requirements: one vote per member company

2. Appoint Recording Secretary (STAFF)

3. Approve Minutes from March 2018 meeting in St. Louis, MO

4. Review and Approve Agenda

5. Reports

- a. NFRC 700 PCP Review TG – T. Seese, Simonton Windows
- b. Certification Process Streamline Task Group – S. Strawn, JELD-WEN
- c. Ventilation Rating Task Group – R. Garries

6. New Business

- a. NFRC 700 Grids and 3, 6 mm Glass Ballot
- b. NFRC 700 Retesting Fees Ballot
- c. NFRC 700 Test Only Product Lines Ballot
- d. NFRC 700 SDR Ballot

7. Adjourn

SCOPE

To create and maintain Product Certification Program (PCP) document and procedures.

Committee Chain: *Ratings Committee * NFRC 700 PCP Certification Subcommittee
NFRC Staff Liaison: Steven Urich, Director, Programs * surich@nfr.org



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***** DRAFT MINUTES *****
NFRC 700 PCP Certification Subcommittee

Wednesday, March 21, 2018
Block Period: 10:00 a.m. – 12:00 p.m.
Chair: Jason Seals, *AAMA*
Vice Chair: Brad Schultz, *ALI*

1. J. Seals called the meeting to order at 10:09 a.m.
2. J. Padgett was appointed recording secretary.
3. Minutes from September 2017 (San Diego) were approved as presented.
4. The agenda was reviewed and approved as presented.
5. Reports
 - a. NFRC 700 PCP Review Task Group (T. Seese)
 - i. T. Seese reported the TG has met several times and has forwarded ballots to be discussed under new business
 - b. Certification Process Streamline Task Group (J. Seals)
 - i. J. Seals reported the TG has met several times since the last meeting and the TG asked for volunteers to push the ideas generated through the process.
 - c. Ventilation Rating Task Group (R. Garries)
 - i. R. Garries reported no action items.
6. New Business
 - a. NFRC 700 Dividers on Labels Ballot
 - i. **MOTION:** T. Seese / J. Hayden move to forward the ballot to the Ratings Committee to approve and forward to the Board for approval and implementation upon publication. Motion passes by UVV.
 - b. NFRC 700 Retesting Fees Ballot
 - i. Associated Labs: B. Schultz (Section 8.6.1.5.D) – NEG
MOTION: J. Vaughan / J. Hayden move to find this persuasive and substantive. Motion passes by UVV.
 - c. NFRC 700 Updating Labels Ballot
MOTION: J. Hayden / J. Kantola move to forward ballot to Ratings Committee for approval and implementation upon publication pending legal review. Passed VV
 - i. Associated Labs: B. Schultz (6.3.H) – NEG
MOTION: J. Vaughan / T. Seese move to find this persuasive and substantive sent back to TG for further review and consideration. Motion failed 5-27-7. J. Hayden / R. LeBrun move to find this non-persuasive. Passes UVV.
 - ii. Masonite: T. Reid (6.3.H) – NEG
MOTION: S. Schreiber / J. Vaughan move to find this negative persuasive and substantive sent back to TG for further review and consideration. Motion failed 5-23-13. J. Hayden / T. Seese move to find this non-persuasive. Passed VV



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- iii. Quast Consulting & Testing: S. Skoglund (6.3.H, 6.3.h.i) – NEG
 - MOTION:** S. Skoglund / M. Thoman move to find this negative persuasive and substantive and to send back to TG for further review and consideration. Motion fails 10-13-15. J. Hayden / T. Seese move to find this non-persuasive. Motion passes 17-8-13
 - iv. J. Hayden / J. Kantola move to send the ballot forward to the Ratings Committee for approval and implementation upon publication pending legal review. Motion passes VV.
 - d. NFRC 700 TDD Ballot
 - MOTION:** N. Digert / R. LeBrun motion to forward to Ratings Committee for approval and publication, pending approval of other TDD ballots (NFRC 100, 200, 201, and 203) and completion of the ANSI document approval process during the next document cycle review. Motion passes UVV.
7. The meeting was adjourned at 11:10 a.m.



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NFRC 705 CMA-PCP Certification Subcommittee

Wednesday, October 10, 2018

Ratings Committee Block: 2:30 pm -4:30 pm

Chair: *Catherine Best, Benson Industries*

Vice Chair: *Mason Fritz, EFCO Corp*

1. **Call to Order**
 - a. Welcome to All AttendeesCell phones & laptops to silent mode
 - b. Antitrust Reminder
 - c. NFRC Meeting Guidelines
 - d. Review Subcommittee Voting Requirements: one vote per member company
 2. **Appoint Recording Secretary (STAFF)**
 3. **Approve Minutes** from March 2018 meeting in St. Louis, MO
 4. **Review and Approve Agenda**
 5. **Reports**
 - a. NFRC 705 CMA PCP TG – C. Best, Benson Industries
 6. **New Business**
 - a. NFRC 705 Grids and 3, 6 mm Glass Ballot
 - b. NFRC 705 Product Configuration Ballot
 7. **Adjourn**
-

SCOPE

To maintain a component-based certification and rating procedure for fenestration products that will yield accurate energy performance data for use in code compliance and for meaningful building energy analysis. The certification and rating program shall be credible, simple, cost- effective, fair, uniform, and useful.

Committee Chain: *Ratings Committee * NFRC 705 CMA PCP Certification Subcommittee
NFRC Staff Liaison: Steve Urich, Director, Programs* surich@nfr.org



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***** DRAFT MINUTES *****

NFRC 705 PCP Certification Subcommittee

Wednesday, March 21, 2018

Under Ratings Committee Block: 10:00 a.m. – 12:00 p.m.

Chair: Catherine Best, *Benson Industries*

Vice Chair: Mason Fritz, EFCO

1. C. Best called the meeting to order at 11:20 a.m.
2. J. Padgett was appointed recording secretary.
3. Minutes from September 2017 (San Diego) were approved as presented.
4. The agenda was reviewed and approved as presented.
5. Reports
 - a. NFRC 705 CMA-PCP TG (C. Best)
 - i. C. Best reported the TG has met and has brought forth two ballots for new business.
 - b. CMAST Advisory TG (J. Winters)
 - i. C. Best reported no action items.
6. New Business
 - a. NFRC 705 Specifying Authority Ballot

MOTION: M. Fritz / G. McKenna move to forward the ballot to the Ratings Committee to approve and forward to the Board for approval and implementation upon publication. Motion passes by UVV.
 - b. NFRC CMA for Residential Ballot
 - i. Jeld Wen: S. Strawn (1.2.2.1) – NEG

MOTION: J. Kantola / M. Thoman move to find this negative persuasive and substantive to go back to the TG. Motion passes by 28-5-7.
 - ii. Intertek-ATI: M. Thoman (1.2.2.1) – NEG

MOTION: Withdrawn due to previous action.
 - iii. Quast Consulting & Testing: S. Skoglund (1.2.2.1) – NEG

MOTION: Withdrawn due to previous action.
 - iv. Marvin Windows and Doors: D. M. (1.2.2.1) – NEG

MOTION: Withdrawn due to previous action.
 - v. Madico: J. M. (1.2.2.1) – NEG

MOTION: Withdrawn due to previous action
 - vi. Cardinal Glass Industries, Inc. – J.L. (1.2.2.1) – NEG

MOTION: Withdrawn
 - vii. WESTLab: J. Baker (1.2.2.1) – NEG

MOTION: Withdrawn
 - c. A new work group shall be formed from the 705 CMA PCP TG to address the residential concerns.
7. The meeting was adjourned at 11:35 a.m.



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Ratings Committee

Wednesday, October 10, 2018

Chair: *John McFee, Window and Door Manufacturer's Association*

Vice Chair: *TBD*

1. Call to Order

- a. Welcome to All AttendeesCell phones & laptops to silent mode
- b. Antitrust Reminder
- c. NFRC Meeting Guidelines
- d. Review Committee Voting Requirements: one vote per member company listed on the roster.

2. Appoint Recording Secretary (NFRC STAFF)

3. Roll Call/Establish Quorum

4. Approve Minutes from March 2018 meeting in St. Louis, MO

5. Review and Approve Agenda

6. Reports

- a. NFRC 700 PCP Certification Subcommittee (J. Seals, B. Schultz)
- b. NFRC 705 CMA-PCP Certification Subcommittee (C. Best, M. Fritz)
- c. Alternate Terminology Exploration Task Group (J. Seals)

7. New Business

- a. Ratings Chair Transition: Sue Schreiber, Kolbe & Kolbe Millwork, Inc., Vice Chair Fall 2018 / Ratings Chair 2019

8. Adjourn

SCOPE

The NFRC Ratings Committee is responsible for developing programs to assure the uniform application of ratings including the NFRC Label for NFRC technical procedures.

Committee Chain: Ratings Committee

NFRC Staff Liaison: Scott R. Hanlon, Director, Program Operations * shanlon@nfr.org



NFRC 2018 Fall Membership Meeting
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***** DRAFT MINUTES *****
Ratings Committee

Wednesday, March 21, 2018
Block Period: 10:00 a.m. – 12:00 p.m.

Chair: John McFee, *Window and Door Manufacturer's Association*
Vice Chair: TBD

1. J. Hayden called the meeting to order at 11:40am CDT
2. J. Padgett was appointed recording secretary.
3. Roll call was taken a quorum was established
4. Minutes from September 2017 (San Diego) were approved as presented.
5. The agenda was reviewed and approved as presented.
6. Reports
 - a. NFRC 700 PCP Certification Subcommittee (J. Seals, B. Schultz)
 - i. NFRC 700 Dividers on Labels Ballot - **MOTION:** J. Seals / T. Seese move to forward the NFRC 700 Divider on Labels ballot to the Board of Directors for approval and implementation upon publication. Motion passes by UVV.
 - ii. NFRC 700 Updating Labels Ballot - **MOTION:** J. Seals / B. Shah move to forward NFRC 700 Updating Labels ballot to the Board of Directors for approval and implementation upon publication pending legal review. Passed VV
 - iii. NFRC 700 TDD Ballot - **MOTION:** J. Seals / B. Shah motion to forward to Board of Directors for approval and publication the NFRC 700 TDD ballot, pending approval of other TDD ballots (NFRC 100, 200, 201, and 203). Motion passes UVV.
 - iv. Archived Data - **MOTION:** J. Seals / T. Seese move to have staff investigate making previous certification cycle archived data readily available to the public. Motion passes UVV.
 - v. A new task group was formed called Alternate Terminology Exploration TG chaired by Jason Seals reporting to the Ratings Committee.
 - b. NFRC 705 CMA-PCP Certification Subcommittee (C. Best, M. Fritz)
 - i. NFRC 705 Specifying Authority Ballot - **MOTION:** C. Best / M. Fritz to move the NFRC 705 CMA SA ballot to the Board of Directors for approval and implementation upon publication. Motion passes UVV.
7. New Business
8. The meeting was adjourned at 12:05pm CDT



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Ratings Committee Roster*

AGC Glass Company North America	MI Windows and Doors
American Architectural Manufacturers Association	Milgard Manufacturing, Inc.
Andersen Corporation	National Certified Testing Laboratories
Apogee Enterprises	Oak Ridge National Laboratory
Arconic	ODL Inc
Associated Laboratories, Inc.	Oldcastle Building Envelope
Associated Materials, Inc.	Pella Windows and Doors
Benson Industries	PGT Industries
Birch Point Consulting, LLC	Pilkington North America, Inc.
California Energy Commission	Ply Gem Window Group
Cardinal Glass Industries, Inc.	Quast Consulting and Testing, Inc
Chelsea Building Products	Roetzel & Andress
Door and Access Systems Manufacturers Association	SaintGobain Solar Gard, LLC
Eastman Chemical Company	Solatube International, Inc.
Efficient Windows Collaborative	Sunrise Windows, Ltd.
Element Materials Technology	Taylor Strategic Partnerships
Energi Fenestration Solutions	Technoform
Guardian IG	Therma-Tru
Insulating Glass Manufacturers Alliance (IGMA)	UL, LLC
International Window Film Association	VEKA Inc.
Intertek-ATI	VELUX
Intigral	Vitro Architectural Glass
JELD-WEN, inc.	Wasco Products, Inc.
Keystone Certifications, Inc.	Western Window Systems
Kolbe & Kolbe Millwork Co., Inc.	WESTLab
Lawrence Berkeley National Laboratory (LBNL)	WinBuild, Inc.
Madico, Inc.	Window and Door Manufacturers Association (WDMA)
Manko Window Systems, Inc.	Windsor Windows and Doors
Marvin Windows and Doors	World Millwork Alliance
Masonite International Corporation	WSP
Mathews Brothers Company	

**Committee Membership requires members to sign up onsite at meeting (or by [sending an email](#) while attending meeting) for inclusion on roster/voting rights. Please note, if two consecutive meetings are missed without a voting representative being at the meeting (checked via meeting registration) the company will be dropped and interested parties must sign up once again.*

Only those organizations that have paid NFRC membership dues as of September 27, 2018, will be eligible to vote at the meeting.

*If you notice a problem, PLEASE contact the staff of NFRC as soon as possible. **Discrepancies cannot be addressed after October 4, 2018:** jfinn@nfr.org*



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October 8-10, 2018, Albuquerque, NM
Program Booklet

Meeting Notes:

Use box below to type any meeting notes you would like to capture



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Board of Directors Meeting

Wednesday, October 10, 2018

5:00 p.m. – 6:00 p.m.

Chair: *Paul Bush, Vitro Architectural Glass*

Vice Chair: *Daniel Huard, Humann Building Solutions, USGBC*

1. **Call to Order**
 - a. Roll Call/Establish Quorum
 - b. Welcome to All Attendees ... Cell phones & laptops to silent mode
2. **Review and Approve Agenda**
3. **Appoint Recording Secretary (NFRC Staff)**
4. **NFRC Meeting Action Items**
 - a. Research and Technology Committee - B. Shah
 - b. Technical Committee - M. Thoman
 - c. Ratings Committee - J. McFee
5. **Board Action Items**
6. **New Business**
7. **Adjourn**

Board of Directors

NFRC Staff Liaison: Deborah Callahan, Chief Executive Officer * dcallahan@nfr.org



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Meeting Notes:

Use box below to type any meeting notes you would like to capture



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Fall 2018 NFRC Staff Directory

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Phone: 301-589-1776 * FAX: 301-589-3884



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Guidelines for Orderly Conduct of NFRC Meetings

The following general guidelines apply to meetings of NFRC Committees and Subcommittees. As guidelines, committee/subcommittee chairs have the discretion in how rigidly to enforce these requirements (subject to being overruled by the members on a specific issue pursuant to a 2/3 majority). The intent is that committee/subcommittee chairs will use their good judgment in applying these rules to assist NFRC in conducting its meetings in an orderly fashion, while giving interested parties a reasonable opportunity to present their views. However, nothing in these guidelines, nor any flaw in committee and/or subcommittee conduct or procedure, will be construed to prohibit the NFRC Board from taking action on any matter if it deems it necessary in the best interests of the organization.

1. All material to be presented or discussed at an NFRC scheduled meeting shall be published as a listed item of the NFRC meeting agenda. The initial agenda shall be published 30 calendar days in advance of the meeting. All significant written or electronic presentations or documents to be handed out during the NFRC meeting shall be submitted to the committee chair and NFRC staff for review and determination of compliance with any applicable NFRC requirements. The presentations shall be submitted to the respective chair, who in turn would provide a copy to NFRC staff, no later than 15 calendar days before the NFRC meeting date. Any revisions to a published agenda shall be made by the chair no later than 12 calendar days before the NFRC scheduled meeting. The final meeting agenda shall be published by NFRC staff no later than 10 calendar days before a scheduled NFRC meeting. Issues not included on the published agenda can be brought up as announcements or for preliminary discussion only. No final action is to be taken on any item not specifically listed on the published agenda.
2. At a scheduled NFRC meeting, no person shall present his/her view until the chair recognizes the person to do so.
3. Minutes shall reflect all written ballot responses that are declared to be negatives and/or approved with comments and shall also reflect how each was addressed.



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4. All motions put forth in an NFRC meeting **MUST** be typed or written down on a designated Motion Form to be formally presented to the group and incorporated into the meeting minutes. Chairs shall provide enough time for the NFRC staff to type or collect any written motions and register them in the meeting minutes. The chair shall not proceed to a vote on an issue or to the next issue or agenda item until minute taker advises the chair that the needed action item has been duly registered, the motion form has been received, and the motion has been read to the group.

5. The minute taker shall register all action items in the meeting minutes. The minutes should try to contain a short summary of the proponent's reason for making the motion, so as to provide background for the intent. If modifications are made to the motion, there should also be a short summary of the intent for the modification. Unless recognized by the chair, minute taker shall not list any issues/notes other than the action items and short summary in meeting minutes.

6. Rules of common courtesy and Roberts Rules of Order generally apply to the conduct of NFRC meetings.



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You have a VOICE - The NFRC Document Ballot Cycle – Details

NFRC - What is a Document Ballot?

The NFRC is grateful for its diverse community of volunteers who stand committed to keeping the NFRC's programs relevant and work diligently through task groups and subcommittees under the Research and Technology Committee, Technical Committee, and Ratings Committee. Much of the work concentrates on putting forth updates/changes to the NFRC's programs and technical documents as well as proposals for future research and research-related items.

The NFRC's document balloting process occurs two times per year--prior to the NFRC's Annual (Fall) and Committee Week meetings (Spring). This consensus-based process works to ensure that every company that participates through membership has an opportunity to share their expertise in the development and future success of the NFRC's varied programs.

- As ballots are reviewed, members are asked to vote one of three ways for each document up for review: Approve, Do Not Approve (Negative), or Abstain. Once the ballot cycle concludes (deadline for this cycle was February 23, 2018) all responses will be organized and a summary will be available for review approximately one week prior to the meeting.

These responses will then be discussed, reviewed, and voted on at the subcommittee meeting (upcoming meeting in St. Louis, MO, March 19-21, 2018).

Please note, below is a full description on the processing/categorization of these responses as well as the corresponding action as it will relate to the future of the ballot. [Review ballot summaries from current meeting \(also located on flash drive given to each registered attendee at registration\).](#)

✓ **Approve & Abstain Responses**

These responses are tallied and require no action by the subcommittee.

✓ **Processing of Negative Votes (Do Not Approve) on Written Ballots**

Subcommittees shall resolve negative votes on a subcommittee ballot at the next meeting. All negative votes must be submitted with specific written explanation for the basis or rationale for the negative vote and/or recommended alternative language. Important Note -

In the event that a negative vote is filed without a specific written explanation for the basis or rationale for the negative vote and/or recommended alternative language, the committee or subcommittee chair, and/or NFRC's staff, shall make a reasonable effort to contact the voter to request the voter to provide to the chair and NFRC staff in writing the required explanation and/or recommended alternative language. If NFRC staff or the chair is unable to reach the voter or if the voter declines to provide the required information within the required time-frame set by the chair or NFRC staff, the negative vote shall be ruled non-germane (see description below, under categorization of Negative Votes).



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Categorization of Negative Votes

Based on the content of the negative vote, the negative votes shall be classified by the committee or subcommittee chair in the following categories:

Negative Categorized as Substantive

Substantive is defined as a proposal or comment that materially changes the general intent, technical content, or substantive meaning of the applicable language in the ballot.

Result of approving a substantive motion

Substantive motions shall result in the ballot being referred back to the subcommittee, task group, or submitter. **NOTE:** Unless otherwise determined by the subcommittee chair, only the language subject to the substantive negative shall be reballotted.

Negative Categorized as Editorial

Editorial is defined as a comment that seeks to clarify, but does not change, the general intent, technical content, or substantive meaning of a rating procedure or program document, and includes correction of typographical errors, change of non-technical information, or elimination of ambiguous or redundant language.

Result of approving an editorial motion

Editorial motions shall result in NFRC staff making modifications to address negatives categorized as editorial. If necessary a task or work group may be formed to provide staff with recommended editorial language, or the committee or subcommittee may elect at that meeting to make the modification.

Negative Categorized as Non-Germane

Non-Germane is defined as comments that are deemed unrelated to the balloted issue or a negative vote submitted without required information.

Result of identifying a non-germane motion

Non-Germane motions shall require no further action by the subcommittee.

Negatives Withdrawn

Negative votes withdrawn by the voter shall require no additional action by the subcommittee or committee.



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NFRC Antitrust Compliance Procedures

NFRC is committed to requiring the organization and its members and representatives to be in full compliance with all federal and state antitrust laws, rules and regulations. NFRC recognizes that some of its members and participants may be potential competitors and NFRC wishes to scrupulously avoid any discussion or activity that could lead to, or be reasonably perceived as leading to, improper restraints on competition. NFRC's Board of Directors has adopted the following procedures to assist the organization and its constituents to maintain full compliance with these antitrust laws. These procedures apply to all NFRC members, directors on NFRC Board of Directors, officers, NFRC staff, and all participants in NFRC sponsored meetings and task groups and to all other meetings attended by individuals as representatives of NFRC.

Avoiding Improper Agreements and Discussions Among Competitors

1. Express of implicit agreements or discussions among competitors as to prices or price levels relating to their products and services is expressly prohibited. In addition, no discussion is permitted of any elements of a company's operations which might influence pricing such as:
 - a. how prices are determined and when they are issued;
 - b. costs of operations, supplies, labor or services;
 - c. allowances for discounts and rebates;
 - d. raw materials and costs and production and inventory matters;
 - e. terms of sale or products, including credit arrangements; or
 - f. profit margins and mark ups.

2. Competitors may not discuss or reach agreements not to compete with each other in any form. The following are examples of improper anti-competitive conduct prohibited by federal and state antitrust laws:
 - a. division of geographic market territories;
 - b. limitations on the nature of business to be carried on or the products to be sold; or
 - c. agreements to sell products for a specific market only.

3. Discussions or agreements to boycott or refrain from doing business with other commercial entity are also expressly prohibited in any form. Examples of these illegal boycotts include the following:
 - a. agreements not to pursue a new technology;
 - b. agreements about blacklisting or unfavorable reports about particular companies including their financial situation; or
 - c. agreements not to do business with identified vendors, customers and others.



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Compliance Education and Monitoring

1. It is NFRC's policy to periodically acquaint NFRC members, members of NFRC's Board of Directors, staff and other participants in the organization with the policies and procedures set forth in the Antitrust Compliance Procedures. As part of that compliance effort, NFRC will take the following steps to better ensure that NFRC meets these legal requirements:
 - a. Legal counsel for NFRC will brief NFRC Board and staff from time to time as to the requirements of the antitrust laws and the application of those laws to the activities of the organization;
 - b. NFRC Board and Chief Executive Officer will keep NFRC legal counsel informed of current and projected activities of NFRC and, as appropriate, request an antitrust review of those activities which will be shared with the Board.
 - c. NFRC legal counsel will be consulted on the agendas for NFRC meetings and the purpose of those meetings. Minutes of all NFRC sponsored meetings will be maintained and submitted to legal counsel for review for anti-trust implications;
 - d. At any meetings attended by persons who are acting on behalf of NFRC where discussion relates to matters with antitrust implications, the NFRC representative shall request that the discussion be stopped and ask that the request be made a part of the minutes of the meeting. If others continue such discussion, the NFRC representative shall leave the meeting and request that the minutes show that s/he left the meeting at that point and why s/he left. The NFRC representative shall immediately report the incident to NFRC's Chief Executive Officer who shall promptly inform the Board of the incident.
 - e. It is NFRC's policy that a copy of these Antitrust Compliance Procedures be given to each officer, director, committee member, official representative of member companies and NFRC employees at least annually and that the same be read, and/or disseminated, at all NFRC sponsored meetings.

Adopted by the NFRC Board of Directors - January 30, 2003



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Duties of Meeting Chairpersons

The chairperson of each committee is responsible for well-planned and fair meetings. Since many interests are generally present at NFRC meetings, it is the duty of the chairperson that all interests be heard and fairly dealt with. The chairperson of each committee, subcommittee and task groups shall use the most recent edition of *Robert's Rules of Order*. The chairperson is also responsible for the management of the work of the group. It is up to the chair to assure that the work of the group is proceeding as scheduled and to oversee the work of the group during periods between meetings.

The following are some suggestions for the chair.

- Members should understand why the group exists and what are the expected goals.
- At the beginning of each meeting, determine quorum and identify voting members (one vote per voting member for subcommittees or one vote per voting member listed on the roster). For each task group, determine a well represented group of industry professionals.
- Review past minutes and recommendations and, if appropriate, make them part of the agenda.
- Distribute an agenda in time for the group Members to prepare themselves. One of the first items on the agenda should be approval of the minutes from the last meeting, if not already approved by letter ballot or other means.
- Determine if any items are to be added to the agenda.
- Follow up with Members who have been assigned tasks to assure they are completed.
- During the meeting, follow the agenda. Make sure items are covered, and if action is to be taken, it should be completed prior to moving on to the next agenda item.
- If the discussion is not related to the agenda item under consideration, ask that it be held until the proper time on the agenda.
- Make sure all assenting and dissenting views are heard before taking any action.
- After any action or vote is taken, repeat the decision and announce the vote for, against, and abstentions ensuring that the group understands. Do not move on to another agenda item until this is done.
- Only enter into discussions to expedite the business of the group, such as keeping the discussion on the appropriate topic.
- Before adjourning the meeting, review all votes taken, recommendations made or assignments given. Group participants should leave a meeting knowing what was decided and who is responsible for tasks prior to the next meeting.
- Make all assignments clear and concise and give a time when they should be completed.
- Be aware of the general principles regarding antitrust and tax exemption compliance provided by NFRC and remind your members of those principles from time to time. If you are concerned about the legal implications of any of the committee's actions or deliberations, contact NFRC's Chief Executive Officer and ask for input from NFRC's legal counsel, as appropriate.



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Duties of Members Attending NFRC Meetings

- Be prepared to complete any assignments given within the time scheduled.
- Review agendas and be prepared to address the appropriate items.
- Speak only to the agenda items under consideration.
- Know the functions of the group.
- Be able to support views with facts or reasonable conclusions.
- Be a positive influence on all group actions.
- Respect other views.
- Make sure that actions to be taken, assignments given, or activities to be continued are understood.
- Read all materials provided prior to the meeting.
- Committee Membership Responsibilities:
 - To become a committee member, the designated member representative shall attend a meeting of the Committee and sign the appropriate Committee sign-up sheet. A Committee member may vote at the first Committee meeting the organization is included on the roster.
 - Committee members are expected to be experts on, or representatives of an organization directly involved in, the issues to be considered by the Committee.
 - Committee members shall be designated voting representatives, or designated alternate, of NFRC Members.
 - Acceptance of a position on a committee implies an agreement to participate constructively and consistently in committee proceedings.
 - After establishing committee membership, failure to attend two consecutive meetings without the approval of the chairperson will result in the removal of the committee member from the committee roster. Exercising of a proxy for more than two consecutive meetings does not constitute attendance.



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Getting Involved with NFRC

Guide to the different levels of participation

TASK GROUPS

NFRC Definition & Purpose: Task groups are formed by Chairs of the subcommittees from members and non-members and are responsible for researching and developing specific issues presented to them by the Chair. Task Group findings and recommendations are reported to the Subcommittee responsible for its formation. Task groups are dissolved at the conclusion of its mission.

Current Listing Available under “Groups”: <https://nfrccommunity.site-ym.com/>

Requirements and Details:

- All interested public welcome to join and participate.
- No NFRC membership or attendance requirements to be listed or participate as member of an NFRC Task Group.
- If interested in participation – name must be given to Chair of the task group.

SUBCOMMITTEES

NFRC Definition & Purpose: Subcommittees are formed from the membership at the discretion of the appropriate Committee Chair and with the approval of the Board of Directors. They are responsible for tasks given to them by the Committee as they relate to the development of specific programs or procedures. Subcommittee findings and recommendations are reported to the Committee responsible for its formation.

Current Listing Available under “Groups”: <https://nfrccommunity.site-ym.com/>

Requirements and Details:

- NFRC Membership qualifies for one vote per Subcommittee - *Membership Listing can be found at <https://nfrccommunity.site-ym.com/?page=MemberList>.*
- ALL voting members of the NFRC are automatically subcommittee members and are allowed ONE VOTE per company at the subcommittee level.
- Ballots are issued via the NFRC website (<https://nfrccommunity.site-ym.com/?page=Ballots>) and voted on prior to NFRC Membership meetings – subcommittee membership qualifies one to vote on these ballots. (*One vote per member company*)
- Subcommittee meetings held at the NFRC Membership Meetings often hold final votes for balloted items. **All voting members present are qualified to vote regardless of previous meeting attendance.** *One vote per Member Company.*
- Information on becoming an NFRC Member can be found at <https://nfrccommunity.site-ym.com/?page=MembershipApp> or by emailing membership@nffc.org.



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COMMITTEES

NFRC Definition & Purpose: Committees are mandated by the Bylaws or formed at the direction of the Board of Directors from the membership. They are generally responsible for the establishment of NFRC procedures and programs which are presented to the Board of Directors for final approval before implementation.

Current Listing Available under “Groups”: <http://nfrccommunity.site-ym.com/>

- Members Appointed by Board:
 - [Accreditation Policy Committee](#)
 - [Certification Policy Committee](#)
 - [Technical Interpretations Policy Committee](#)
 - [Verification Policy Committee](#)

- NFRC Member Supported (see below for details):
 - [Regulatory Affairs Committee](#)
 - [Ratings Committee](#)
 - [Research and Technology Committee](#)
 - [Technical Committee](#)

- Open Committee: (see below for details):
 - [ANS Standards Committee](#)

Requirements and Details:

- NFRC Committee Rosters (aka Committee Membership) are either BOARD appointed or are made up of interested member companies (Companies paying dues for NFRC Membership).
- To JOIN Member Supported COMMITTEE – Member must attend one meeting - signing the roster being sure to mark interest in having name added to the roster (becoming a voting member of the committee).
- Only one vote is allowed per NFRC dues paying Member Company.
- Member Name/Company Name will be added to the Committee Roster at the next meeting.
- Member Name/Company Name will be DROPPED from Roster if Representative misses TWO CONSECUTIVE COMMITTEE MEETINGS (absent for Roll Call)
- All current committee rosters are posted on the NFRC website prior to committee meetings for membership review or by contacting the Committee Chair or the NFRC’s membership department at membership@nfrc.org.





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ACRONYMS/TERMINOLOGY*

NFRC – *National Fenestration Rating Council – a nonprofit research/educational organization (501(c) 3) that develops and administer energy-related rating and certification programs that serve the public by providing fair, accurate, and credible information on fenestration performance.*

ACE – Approved Calculation Entity: An individual, who has attended an NFRC Calculation Training Workshop, completed and passed all necessary examinations, and has obtained a Certificate of Approval which qualifies him or her to carry out performance calculations of fenestration products for certification using the Component Modeling Approach.

AM – Air Mass: The ratio of the mass of atmosphere along the actual observer-to-sun line to the mass that would exist if the observer was at sea level, at standard barometric pressure, and if the sun was directly overhead (at the zenith).

AMC – Attachment Manufacturer's Certificate.

APC - Accreditation Policy Committee: A standing committee whose members are appointed by the NFRC Board of Directors to manage the NFRC Laboratory Accreditation Program (LAP). See the NFRC 710: Operating Policies Manual for further details.

APD – [Applied Films Product Directory](#)

ASL/ATL – Accredited Simulation/Testing Laboratory: Computer simulation or testing laboratory that has met NFRC Laboratory Accreditation Program (LAP) requirements, has entered into a NFRC laboratory License Agreement, and received a NFRC Certificate of Accreditation, none of which has been revoked.

CAMP – Compliance and Monitoring Program: NFRC administers this program that monitors program activity and assists and educates architects, builders, code officials and other regulatory agencies. The governing document for this program is the NFRC 707.

CAP – Certification Agency Program: NFRC administers this program which includes a set of rules and procedures by which an independent certification and inspection agency becomes licensed and operates. The governing document for this program is the NFRC 702.

CEAP – Calculation Entity Approval Program: NFRC administers this program that contains the rules and requirements for becoming an Approved Calculation Entity (ACE) and ACE Organization in the CMA Program. The governing document for this program is the NFRC 708.

CMA – Component Modeling Approach: A new rating methodology being developed by NFRC to address fenestration in commercial buildings.

CMA PCP – Component Modeling Approach Product Certification Program: NFRC administers this program which contains the rules and requirements for component manufacturers/participants seeking spacer and frame component approval and Specifying Authorities seeking product certification by requesting a CMA Label Certificate. The governing document for this program is the NFRC 705.

CMASST CPD – [Component Modeling Approach Software Tool Certified Products Directory](#): A freely accessible, web-based directory administered by NFRC that provides energy rating information for non-residential fenestration products as well as NFRC-approved components, and a listing of all CMA Label Certificates

CPC – Certification Policy Committee: A standing committee whose members are appointed by the NFRC Board of Directors to manage the NFRC Certification Agency Program (CAP) and to provide interpretations for the NFRC Product Certification Program (PCP). See the NFRC 710: Operating Policies Manual for further details.

CPD – [Certified Products Directory](#): A directory of fenestration products in electronic form, listing fenestration products and their performance ratings, for which product certification authorization has been granted by a licensed IA (inspection agency), and can be searched by the public.

CPD Number – Certified Products Directory Number: A unique identification number assigned by NFRC via the CPD to an authorized product.

*Additional terminology can be found in [NFRC 600: Glossary and Terminology](#).



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CTS – Calibration Transfer Standard: An insulation board that is faced with glazing, instrumented with temperature sensors between the glazing and the insulation board core, which is used to calibrate the surface heat transfer coefficients and the surround panel.

FMC – Fenestration Manufacturer's Certificate: An FMC may be used by a manufacturer under specific conditions in the event that a properly applied NFRC temporary label has been removed, or at the manufacturer's discretion upon request from a responsible party (i.e., building code official, builder, homeowner, etc.)

Fenestration – Products that fill openings in a building envelope, such as windows, doors, skylights, curtain walls, etc., designed to permit or limit the passage of air, light, vehicles, or people.

Fenestration Attachment – A device (such as, but not limited to, shades, films, or blinds) designed to be physically attached to, incorporated with or covering a fenestration product.

Film: Fenestration attachment products which consist of a flexible adhesive-backed polymer film which may be applied to the interior or exterior surface of an existing glazing system. See Fenestration Attachment.

HTDD – Hybrid Tubular Daylighting Device: A tubular daylighting device (TDD) whose light transmitting tube consists of more than one material and/or has more than one geometry throughout its length. Typically used with suspended ceilings or to illuminate spaces without ceilings.

IA - Independent Certification and Inspection Agency: An organization or person authorized by license to conduct specified services for the Certification Program.

IAC – Inter-Agency Comparison: Organization, performance, and evaluation of certification authorization processes by two or more certification agencies in accordance with predetermined results and/or submissions.

IG/IGU – Insulating Glass Unit: A preassembled unit comprising lites of glass, which are sealed at the edges and separated by dehydrated space(s). The unit is normally used for windows, window walls, picture windows, sliding doors, patio doors, or other types of fenestration. (**SIG** – Sealed Insulating Glass Unit)

ILC – Interlaboratory Comparison: Organization, performance, and evaluation of the same test sample or simulation by two or more laboratories in accordance with predetermined conditions.

IRC – Individual-in-responsible-charge: The individual(s) responsible for assuring that the quality of services offered and provided by an Licensed Certification Program are in full compliance with the NFRC 700, NFRC 702, and NFRC 705. An IRC shall participate in any workshops associated with the NFRC 702.

IVP – The Independent Verification Program: A requirement because of NFRC's status as an approved Certification Body (CB) for the EnergyStar® Windows Program. This is a program that will verify the performance ratings of EnergyStar® qualified and NFRC certified and labeled fenestration products sold in the market that agrees with the performance ratings listed in the NFRC Certified Products Directory. This program will use procedures that complement the inspection and validation testing requirements of the NFRC 700. A pilot program is scheduled for implementation in late 2011 and to continue through 2012. Full implementation is anticipated during 2013 upon the approval of the Board.

KD – Knocked Down Product: A fenestration product supplied by a licensed manufacturer/responsible party in an unassembled or partially assembled state, which requires further assembly at the jobsite.

LAP – Laboratory Accreditation Program: NFRC administers this program which contains the rules and requirements for licensed, accrediting thermal test and computer simulation laboratories. The governing document for this program is the NFRC 701.

OAVA – Outdoor Air Ventilator Assembly: An apparatus independent from but installed into a fenestration product for controlling the transfer of air through the product.

OWL – Outdoor Wetted Length: Measured from the interface between frame and glazing to the first adiabatic boundary on the outdoor side.

PCP – Product Certification Program: NFRC administers this program which contains the rules and requirements for licensed manufacturers/participants to label windows (and responsible parties to produce Label Certificates). The governing document for this program is the NFRC 700.

RH – Relative Humidity: The ratio of the amount of water vapor in the air compared to the maximum amount of water vapor that the air could hold at a particular temperature and pressure.



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SIRC – Simulator-In-Responsible-Charge: The individual(s) responsible for assuring that the quality of services offered and provided by an Accredited Simulation Laboratory are in full compliance with the LAP. An SIRC shall have successfully completed an NFRC Simulation Accreditation Workshop, passed an NFRC Simulation Accreditation Examination, attended an NFRC Annual Accreditation Workshop, and participate in any ILC evaluations in accordance with the LAP.

Site-Built Program – A rating program developed in 1999 by NFRC to rate non-residential fenestration products.

TB - Thermally Broken Members: System members with a minimum of 5.30 mm (0.210 in) separation provided by a thermal break.

TI - Thermally Improved Members: System members with a separation \geq 1.60 mm (0.062 in) provided by either a thermal break or open air space that may be interrupted by short thermal bridges between the interior and exterior surfaces.

TDD - Tubular Daylighting Device): A non-operable device primarily designed to transmit daylight from a roof surface to an interior ceiling surface via a tubular conduit. The device consists of an exterior glazed weathering surface, a light transmitting tube with a reflective inside surface and an interior sealing device, such as a translucent ceiling panel. See also “Hybrid Tubular Daylighting Device.”

NFRC Energy Performance Ratings

AL- Air Leakage: The volume of air flowing per unit time per unit area through a fenestration system due to air pressure or temperature difference between the outdoor and indoor environment. (NFRC 400).

Condensation Resistance – A relative indicator of a fenestration product's ability to resist the formation of condensation at a specific set of environmental conditions. The higher the Condensation Resistance value the greater the resistance to the formation of condensation. (NFRC 500).

SHGC – Solar Heat Gain Coefficient: A rating that expresses the percentage of incident solar heat transmitted through a fenestration product; the lower the SHGC, the less solar heat gain (NFRC 200 and NFRC 201).

U-factor – Thermal Transmittance: A rating that expresses the rate of heat flow through the fenestration product. The lower the U-factor, the less heat is allowed to transfer through the fenestration product (NFRC 100 and NFRC 102).

VT – Visible Transmittance: A rating that expresses the percentage of visible light transmitted through a fenestration product (NFRC 200).

Other Important Acronyms:

AAMA – American Architectural Manufacturers Association
AEC – Aluminum Extruders Council
AFRC – Australian Fenestration Rating Council
ANSI – American National Standards Institute
ASE – Alliance to Save Energy
ASHRAE – American Society of Heating, Refrigeration and Air-conditioning Engineers
ASTM International – formerly known as ASTM, The American Society of Testing and Materials
BIM – Building Information Modeling
CEC – California Energy Commission
CSA – Canadian Standards Association
DASMA – Door and Access System Manufacturers Association
EWC – Efficient Windows Collaborative
GANA – Glass Association of North America

ICC – International Code Council
-IECC – International Energy Conservation Code
-IBC – International Building Code
-IRC – International Residential Code
IGCC – International Glass Certification Council
IGMA – Insulating Glass Manufacturers Alliance
ISO – International Organization of Standardization
IWFA – International Window Film Association
LBNL – Lawrence Berkeley National Laboratories
LEED – Leadership in Energy and Environmental Design
NGA – National Glass Association
Title 24 – Building Energy Standard for California
WDMA – Window and Door Manufacturers Association